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SECTOR CASE STUDY

# Urban Civil

*WA Museum Boola Bardip — Perth, WA, Australia.*



**BG  
&E**  
Part of SYSTRA



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# Parramatta Square

## CIVIC PROJECTS

PARRAMATTA, NSW, AUSTRALIA  
CLIENT: WALKER CORPORATION

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**BG&E provided civil, flooding and drainage services for Parramatta Square, a project of significant scale and importance to the community.**

Located in the heart of the city, this development has firmly established Parramatta as a modern destination and one of Greater Sydney's three CBDs.

Parramatta Square is a three hectare mixed-use precinct developed by Walker Corporation, consisting of a total of six stages and accommodating a mix of commercial, education and retail developments.

3PS, 4PS, and 6PS/8PS are Class A commercial office towers with a 5 Star rating, directly adjacent to the Parramatta Train Station and the main western train line.

BG&E provided schematic design development in close collaboration with the architect, along with civil, flood, and drainage design services through to construction.

## CIVIL DESIGN

Civil works included:

- The upgrade of two intersections.
- Reconstruction of 350 metres of Darcy Street which provided the frontage to 4PS and 6PS/8PS.
- The public domain, a large paved area (4,800 square metres) including an outdoor dining facility, seating area, and a major pedestrian thoroughfare to Parramatta Train Station.

BG&E's role included road design, pavement grading, stormwater drainage, subsoil drainage design, utility coordination, water sensitive urban design and erosion and sediment control.

## FLOODING & DRAINAGE

BG&E was commissioned to undertake a flood assessment of the site to consider local overland and mainstream flooding from the Parramatta River.

Our role included:

- Developing a 2D hydraulic model for the Parramatta CBD to understand the local overland flood and to provide the best flood protection measures.
- Developing the baseline model scenario to set critical flood levels and flood patterns for the existing scenario.
- Preparing flood maps and reports and working with the architects to determine the design levels throughout the site based on the design criteria.
- Developing scenarios to determine the new building floor levels, basement carpark entries, and redeveloped pedestrian walkway entry to the Parramatta Train Station. The results have been used to inform automatic and manual flood barrier and flood door designs to provide the most effective flood mitigation strategies.
- Diverting large trunk stormwater drainage infrastructure through the site to accommodate the development of the site.



*Parramatta Square —  
Parramatta, NSW, Australia.*



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# Castle Towers

COMMERCIAL | RETAIL

SYDNEY, NSW, AUSTRALIA

CLIENT: QIC

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**BG&E provided structural civil engineering, materials and durability, flooding and hydrology, and construction engineering services for the one billion dollar expansion of the Castle Towers Shopping Centre and surrounding precinct in Sydney.**

This project was highly complex, involving both significant technical capability along with an evolving scope of work.

BG&E was engaged in multiple packages of work for the Castle Towers project:

- Castle Towers Site A Redevelopment — ongoing.
- Castle Towers Site B Subdivision — ongoing.
- Castle Towers Zone 3 Redevelopment — ongoing.
- Pennant Street Roadwork Widening — delivered for IFC.
- Woodward Building Development — ongoing.

## CASTLE TOWERS SITE B SUBDIVISION

QIC subdivided the old Castle Hill Public School site located opposite the existing Castle Hills Shopping Centre both on Pennant Street. The subdivision has created eight lots, all high-density mixed-use residential and commercial buildings, plus one park.

A key challenge of the Site B subdivision was the need to modify the original road designs to accommodate the proposed building from the Woodward Building Development that was relocated to within the subdivision site, before the roads in Site B were designed.



### CASTLE TOWERS ZONE 3 REDEVELOPMENT

Zone 3 of the Castle Towers Shopping Centre, originally opened in 1979, was redeveloped by QIC. The works involved partial demolition of the existing structure while maintaining other components of the building and ensuring key areas and tenant areas remained operational throughout construction.

All works were situated within the same structure, with the new structures extended above the existing retail sites and car park. The redevelopment involved:  
Upgrading existing retail spaces.

- Constructing a new, mixed-use building for commercial and retail use.
- Constructing a new hotel.

The civil team's scope of services included stormwater design, onsite detention, water quality, overland flow, integration with the existing drainage system of the shopping centre, and design of public domain footpaths and driveways.

Significant challenges of the redevelopment included:

- Coordination with three different architects, each responsible for various aspects of the development.
- Management of services and civil items traversing the site, which was still operational and accessible to the public.
- The placement of onsite detention tanks which was complicated by the existing Sydney Metro tunnels beneath the site that limited options for underground installation, requiring placement within the proposed building structure.



Castle Towers —  
Sydney, NSW, Australia.



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# AURA by Aqualand

## RESIDENTIAL

NORTH SYDNEY, NSW, AUSTRALIA  
CLIENT: AQUALAND

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**BG&E provided structural and civil engineering services for AURA by Aqualand — a one billion dollar, premium residential development on the site of the former headquarters of SAP at 168 Walker Street in North Sydney.**

BG&E's civil services included civil design, stormwater design, external footpath and driveway design, coordination with the council and the wider project team, and 3D surface modelling.

Structural services included design of a structural system with reinforced concrete core walls, columns, and post-tensioned slabs.

This project involved coordination with award-winning architects Woods Bagot, Richards Stanisch, and Webber Architects.

The development includes:

- Four interconnected towers.
- 386 residential apartments.
- An enormous rooftop terrace.
- A community lounge and media rooms.
- A fitness centre.
- Commercial space.
- Prime retail areas.

AURA's undulating façade, multi-towered design, and distinctive hourglass shape mark it as an iconic addition to Sydney's skyline.

# Levande the Cambridge

## AGED CARE

EPPING, NSW, AUSTRALIA

CLIENT: RICHARD CROOKES CONSTRUCTIONS



**BG&E provided early works and structural and civil design services for the development of Levande The Cambridge, a premium retirement village in Sydney.**

The project included:

- A 30 storey tower, including five levels of residential aged care and 16 levels of independent living units over a large, landscaped podium.
- Two smaller buildings, including a four level school and a level parish building, both constructed around an existing heritage church.

The tender design was already completed for Levande when BG&E was engaged on the project.

We provided early works to enable the project to progress on schedule while incorporating the newly rolled out Design Practitioners Act. This role involved value engineering services, final documentation, and construction phase services.

Urban civil design services provided by BG&E included:

- Stormwater design, including onsite detention and water quality.
- Site grading.
- Pavement design.
- External public domain design (for Parramatta City Council).
- Basement drainage.

The onsite detention tank was subject to stringent conditions imposed by the council as a part of the development approval process. These restrictions limited the flexibility of the stormwater management onsite, necessitating a large amount of coordination among the structures, hydraulics, and civil teams.

Levande The Cambridge is currently under construction and is slated for completion by early 2025.

*Levande The Cambridge —  
Epping, NSW, Australia.*



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# Homebush Active Transport Network

## TRANSPORT HUBS

HOME BUSH, NSW, AUSTRALIA

CLIENT: STRATHFIELD COUNCIL NSW

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**The Homebush Active Transport Network project involves the design of a new three kilometre cycle path between Airey Park and Strathfield Station.**

The project objective is to provide a safe and coherent link that prioritises cyclists and physically separates them from general traffic and pedestrians where possible.

BG&E provided civil engineering services, including:

- Reviewing alignment options and opportunities to connect with the existing network or prepare for future, broader network connections.
- Documenting the conceptual and detailed design for the new cycle path, including amendments to existing intersections, upgrades to traffic calming devices, and provision of new cyclist-friendly crossings.
- Designing the shared path alignment from planning concept through to detailed design.
- Investigating the impacts on existing stormwater infrastructure due to the shared path upgrades and providing cost-effective, engineering-based design solutions.
- Upgrading design options for all cycle path crossings along routes to improve connectivity and safety.
- Coordinating existing in-ground and above-ground utility services.
- Rearranging and upgrading traffic signals along the route.
- Designing soil and water management solutions.





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# Maitland Administration Centre

CAR PARKS | CIVIC PROJECTS

MAITLAND, NSW, AUSTRALIA  
CLIENT: MAITLAND CITY COUNCIL

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**To accommodate the rapid growth of Maitland, the City Council has established the Maitland Administration Centre, specifically designed to address the needs of their expanding community.**

The Administration Centre is located across the road from the Maitland Regional Art Gallery and incorporates the 19th century Town Hall Cafe.

BG&E provided structural and civil design services from concept to tender stage for the alterations and extensions undertaken. The design process included the adaptation of culturally significant heritage assets into new office spaces as well as the design of a new two storey office space connecting into the existing buildings on the site.

Structural design undertaken at the site utilised flat plate post-tensioned concrete slabs with a lightweight steel roof to satisfy the large spans and open plan design proposed for the site. The structure was founded on piles in challenging ground conditions.

Alterations undertaken on the existing structures involved the use of lightweight structural steel framing to minimise additional loads imposed on the existing footings.

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# Max McMahon Oval

## SPORTS & RECREATION STADIA

RUTHERFORD, NSW, AUSTRALIA  
CLIENT: MAITLAND CITY COUNCIL

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**BG&E was engaged by Maitland City Council to prepare concept and detail design plans for the civil works associated with the upgrade of Max McMahon Oval.**

The project, delivered in two stages, included the demolition of the existing facility and construction of a replacement single story amenities building housing change rooms, toilets, a canteen, and a multi-purpose hall.

The three million dollar upgrade of the Max McMahon Oval has elevated this important community facility up to 21st century standards.

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# Passmore Oval

## SPORTS & RECREATION STADIA

WICKHAM, NSW, AUSTRALIA  
CLIENT: NEWCASTLE CITY COUNCIL

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**The \$2.35 million grandstand upgrade at Wickham delivered dedicated female changerooms, improved disability access, and new community function areas to Passmore Oval setting an inclusive benchmark for Newcastle's sporting facilities.**

The redevelopment includes a new two storey clubhouse and changing room amenities building constructed next to the existing historic Passmore Oval grandstand.

BG&E was engaged by Newcastle City Council to provide structural and civil engineering design services for the multi-million-dollar project.

The structure included design of concrete strip footings on fill, new external blockwork walls, a reinforced and post-tensioned concrete floor slab, and lightweight steel roof structure.

The project also involved assessment of the heritage existing grandstand as the new structure projected through into the existing grandstand to form a viewing platform. The project was completed using a novated builder with BG&E providing construction site support throughout.





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# Maitland Regional Athletics Centre

## SPORTS & RECREATION STADIA

MAITLAND, NSW, AUSTRALIA  
CLIENT: BUILT

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**BG&E undertook structural and civil design from tender to construction stage for the new amenities building at the Maitland Regional Athletics Centre.**

The structural design included:

- A suspended slab on the ground, supported on timber driven piles due to the deep fill in the Maitland area.
- Load bearing masonry walls supporting a suspended RC concrete roof, which was also designed as a trafficable viewing platform for the sports field.
- A new eight metre high and 10 metre wide LED lighting base-cantilevered score board structure.

The civil engineering design included:

- Drainage design from the new amenities building to the existing storm water pits.
- Cut and fill optimisation.
- A new footpath design surrounding the sports field.

# Residential Aged Care Services Facilities

## AGED CARE

BRIGHT & HEYWOOD, VIC, AUSTRALIA  
CLIENT: CLARKE HOPKINS CLARKE



**BG&E provided civil and structural feasibility and concept design for the proposed Bright and Heyward Aged Care Masterplan, delivered by the Victorian Health Building Authority (VHBA) to support funding applications and approvals and determine project viability.**

The Victorian Government funded the redevelopment of aged care facilities in Bright and Heywood, managed by VHBA, to expand capacity and create dementia friendly environments, supporting older Victorians' mental health and complex care needs.

BG&E assessed feasibility and development options for both sites and collaborated with architects and the project team to deliver concept designs for redevelopment.

Key design considerations included:

- Bright facility — an approved but unconstructed paper road, not owned by the facility, would bisect the site if developed. This had to be carefully managed in the design process.
- Heywood facility — required extensive demolition, with careful planning to avoid impacting an existing server running through the site that could not be built over.

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# New Schools 2025: Technical Review & Advisory Services

## EDUCATION

VIC, AUSTRALIA

CLIENT: BILLARD LEECE PARTNERSHIP

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**BG&E was engaged by the Victorian School Building Authority (VSBA) to provide technical review and advisory services for the New Schools 2025 program, which included two school bundles scheduled for delivery in 2025.**

This work involved peer review, inspection of civil and structural design packages, and providing detailed comments and feedback.

Bundle A contained two primary schools, both with Kindergartens on School Site (KOSS) facilities:

- Wollert Central Primary School.
- Riverdale North Primary School.

Bundle B contained four primary schools, one which included a temporary KOSS facility, and one with a secondary school:

- Thompsons West Primary School.
- Pakenham North West Primary School.
- Casey Central Primary School.
- Clyde North Primary and Secondary School.

The scope of the technical review and advisory team was to provide VSBA with assurance that the designs met the requirements of its Building Quality Standards Handbook, NCC, Australian Standards, NATSPEC and laws and regulations applicable to the delivery of schools to VSBA.

Additionally, the project scope was to provide advice to enhance the value for money and benefits of the new facilities to the local community.

Each site was unique, and each delivered bundle consisted of several template buildings that could be slightly modified to suit the site specific conditions.

*New Schools 2025:  
Technical Review & Advisory Services —  
VIC, Australia.*



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# Fortitude Valley State Secondary College (Stages 1 & 2)

## EDUCATION

BRISBANE, QLD, AUSTRALIA

CLIENT: QLD DEPARTMENT OF EDUCATION

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**On a tight, constrained inner city brownfield site with numerous stakeholders, BG&E delivered a concise design and expanded our works to include all civil scope gap items — including water, flooding and rail. This comprehensive approach to civil design resulted in significant cost reductions and a cohesive final design solution.**

Brisbane's first vertical school, Fortitude Valley State Secondary College, gives students a learning experience that makes the most of the urban surroundings, subtropical climate, and the opportunity to engage with the community.



The architectural concept was designed by Cox Architecture with Thomson Adsett delivering the final architectural design. The project offers both traditional classrooms and contemporary workshop and collaborative spaces over a number of levels.

BG&E provided civil, structural, flood and traffic engineering for the flagship, future-focused educational facility.

The early works for this \$81 million development allowed integration between the flood modelling and the civil and structural design, with the project being constructed by Hutchinson Builders well ahead of the initial schedule.

Fortitude Valley State Secondary College sets a new benchmark for State education facilities and bolsters Brisbane's position as a leading provider of high-quality services.

*Fortitude Valley State  
Secondary College (Stages 1 & 2) —  
Brisbane, QLD, Australia.*





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# Park Ridge State School

## EDUCATION

BRISBANE, QLD, AUSTRALIA

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### **BG&E's ability to produce staged road designs allowed for the Park Ridge State School to be successfully constructed prior to the Department of Transport and Main Roads final road asset being completed.**

Stage 1 of the new school will include an administration, FamilyLinQ hub, early childhood education centre, classrooms, information and resource centre, amenities, canteen, multi-purpose hall, outdoor multi-purpose courts, sports oval, playground, car parking and covered areas.

BG&E was engaged to provide full structural and civil engineering services for this greenfield site.

Construction is underway and the primary school is set to open for Prep to Year 6 students for Term 1, 2025.

The new primary school is being constructed in the growing region of Logan, south of Brisbane, to enhance the local schooling network and provide enrolment relief to neighbouring state schools.

The civil components included in this scope are:

- Site grading, including earthworks, building pads, oval and landscape areas.
- Stormwater, in accordance with the current Mott MacDonald Consulting Engineers drawings dated 25 January 2023.
- Water and sewer connection.
- External roadworks and intersections, including staging, temporary alignment and road design.
- Carparks and access road alignment, grading and design.
- Pavement design.
- Signs and line marking.
- Erosion and sediment control.

# Queen Elizabeth II Jubilee Hospital

CAR PARKS | HEALTHCARE

BRISBANE, QLD, AUSTRALIA  
CLIENT: BUILT

**BG&E's seamless integration of civil engineering, structural engineering, and traffic engineering and transport planning delivered an under-budget final cost for Queensland Health in an escalating market.**

The QEII Hospital Expansion project is a significant investment into QLD's healthcare system that will help to meet the growing demand for health services on Brisbane's southside and generate 1,120 construction jobs in the process.

BG&E provided structural engineering, civil engineering, façade consultancy, and traffic engineering and transport planning services to assist the delivery of the new facility.

The \$465 million expansion includes a new dedicated facility set over five storeys that will deliver 112 additional overnight beds to the precinct and significantly boost capacity for in-demand elective surgeries.





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# Bernborough Ascot Retirement Village

## AGED CARE

BRISBANE, QLD, AUSTRALIA  
CLIENT: ST HILLIERS

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**BG&E delivered a design for the Bernborough Ascot Retirement Village that seamlessly integrated both the existing and future stages of the project — including the majority of the site infrastructure and landscaping requirements.**

Bernborough Ascot is set to be the most sustainable retirement community in Australia, after securing the sector's first 6 Star Green Star Communities rating from the Green Building Council of Australia.

The seven storey tower, known as Poinciana House, will include 53 luxury apartments, and the balance of the amenities consisting of an open space reception area, restaurant, residents' lounge, health and wellness centre (with a pool, yoga space, gymnasium and consulting rooms), a private rooftop terrace, and an outdoor bowling green.

BG&E was engaged to provide full structural and civil engineering for this greenfield site.

The civil components included in this scope are:

- Bulk earthworks, including cut and fill for basement construction.
- On-site drainage, including water quality and quantity mitigation measures.
- Internal stormwater drainage requirements, conveying runoff from the internal downpipe.
- Connections, hardstand surfaces and roadways, in accordance with approved SWMP.
- End-of-line stormwater quality treatment devices (as required).
- Internal site access roads and carparks.
- Site access, vehicle turning check and grading works to facilitate internal vehicle movements and car parking.



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# Optus Stadium

CIVIC PROJECTS | SPORTS & RECREATION STADIA

PERTH, WA, AUSTRALIA

CLIENT: BROOKFIELD MULTIPLEX

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**Formerly New Perth Stadium, Optus Stadium was completed in 2018 and accommodates permanent seating for up to 60,000 patrons, with potential for expansion of up to 70,000 seats. The Stadium forms a permanent centrepiece for the wider sports and entertainment precinct on Burswood Peninsula on the Swan River.**

Procured and delivered through a Design & Construct Managing Contract BG&E was engaged as a subconsultant to Arup to provide both civil and structural engineering services for the Stadium and wider precinct development.

For the structural component of the project, BG&E provided the detailed structural engineering design, modelling and documentation for the stadium substructure components.

Due to the presence of underlying soft alluvial soil materials with high consolidation settlement characteristics a piled foundation system was adopted to found the steel framed Stadium structure and the Event Level concourse ground slab. Driven concrete piles were selected to avoid handling, treatment and management of the contaminated soils.

Co-ordinating with the super-structure team, BG&E developed pile layouts, designed all pile-caps and the suspended Event Level slab. Due to the high soil settlements below slab services were integrated into the slab using thickenings or in suspended service trenches.

In addition, BG&E designed and documented the external ticketing gates structures and external landscaping structures and assisted the Contractor with temporary works designs for components of the super-structure.

Taking the Lead for the Civil design, BG&E's team focused on addressing the existing land conditions of the 73 hectare precinct. The civil works and stormwater design philosophy was to provide a sustainable and environmentally considerate design solution integrated with the interfaces of the surrounding State Transport Infrastructure and the landscaping vision and design for the Sports Precinct.

Given the soft underlying soil materials, our Civil team had to work to the existing ground levels, as significant fill would trigger long term consolidation settlement. This approach was adopted to avoid ongoing maintenance of the pavements, roads, in-ground services, and key landscaped areas such as the community oval.

This was undertaken over the asset's design life while minimising the impact of the design and construction on the surrounding important ecological features such as the Swan River and River-fed Lake.

The Swan River Foreshore is a significant existing public realm resource, and the project provides an important opportunity to ensure that this resource is maintained and enhanced from environmental, infrastructure, health and safety, and ecological perspectives.

*Optus Stadium —  
Perth, WA, Australia.*



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# WA Museum Boola Bardip

CIVIC PROJECTS | CULTURAL & HERITAGE

PERTH, WA, AUSTRALIA

CLIENT: WA STATE GOVERNMENT

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**The WA Museum Boola Bardip formally opened on 21 November 2020 in the Perth Cultural Centre, the State’s premier cultural hub which houses its scientific and cultural collections.**

The name “Boola Bardip” pays homage to the local First Nations people’s history and deep connection to their country. In Whadjuk Nyoongar, it means “many stories,” reflecting the rich cultural heritage of the land where the museum stands.

BG&E provided structural and civil engineering services for this important building where stories are shared. The dramatic design links contemporary architecture with the historic and heritage listed buildings, creating a visual landmark for the State.

Project details:

- Gallery floors were designed for total imposed loads of 14.5 kilopascals and 120 kilonewtons concentrated loads with stringent deflection and vibration acceptance criteria.
- Gallery floors comprise composite steel floors spanning 20 metres on two, two storey high fabricated structural steel trusses. These trusses are located within wall lines and vary in depth — between seven metres and 15 metres.
- The trusses span up to 45 metres with a 17 metre cantilever where the new building is located over the existing heritage building.
- To minimise overall steel tonnage, high strength 450 grade steel plate was used in the trusses.
- Columns are a mix of reinforced concrete and composite steel and concrete.

Column free gallery spaces are elevated 15 metres above ground over clear external pedestrian areas of 40 metres by 50 metres, and over the top of an existing heritage building, requiring a long span and cantilevering structure.

*WA Museum Boola Bardip —  
Perth, WA, Australia.*



# Homefire Film Studio

COMMERCIAL | RETAIL

PERTH, WA, AUSTRALIA

CLIENT: HESPERIA PROPERTY



**Working alongside the project managers, TPM, Hassel, and Built, BG&E provided structural and civil engineering services.**

The WA State Government has invested \$233.5 million to construct a screen production facility in Perth to highlight the creative industry in the West and strengthen the State's capacity to attract larger national and international film, television, and gaming projects. The development comprises four sound stages with associated buildings and workshops.

Civil services provided by BG&E included:

- Site earthworks design and modelling.
- Site drainage design.
- Design of the site's internal road, carpark, and footpath.
- Widening of Marshall Road and intersection design.
- Pavement design.
- Sewer and water reticulation design.

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# Riva Primary School

## EDUCATION

PERTH, WA, AUSTRALIA  
CLIENT: CARABINER

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**BG&E provided structural and civil engineering services to Riva Primary School (formerly known as Forrestdale South East Primary School) — a new primary education facility in Perth that sits on a previously unoccupied 33,000 square metre site.**

The civil scope includes earthworks, new parking, sports courts, stormwater drainage, and pavement design.

The structural scope of the works included eight single storey buildings, a two storey building, covered sand pits, bicycle stores, a bin store, services enclosures, and retention walls associated with site terracing and access ramps.



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# Fiona Stanley Hospital

## HEALTHCARE

PERTH, WA, AUSTRALIA

CLIENT: BROOKFIELD MULTIPLEX

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**BG&E was engaged as civil design consultants for the landmark Fiona Stanley Hospital, collaborating with the Department of Health and stakeholders on the civil project brief. Following this, we joined the project under a design and construct contract with Brookfield Multiplex.**

Named after prominent Australian epidemiologist Fiona Stanley, the two billion dollar Fiona Stanley Hospital, completed in 2014, was WA's largest health infrastructure project upon its completion, blending innovative design with green vistas to promote well-being and healing.

BG&E laid a significant role in the design and construction of the 232,000 square metre cohesive healthcare precinct, which included:

- 783 bed, seven floor hospital providing surgical, acute care, emergency, and inpatient and outpatient services.
- Pathology and education facility, formed by two individual two storey buildings that sit over a 586 bay car park.
- 60 bed mental health building.
- Administration building, comprising two levels of office space and a plant room at the roof level.
- Four storey rehabilitation centre.
- Three storey central plant, plus a basement area that feeds into a buried service tunnel that supplies the other buildings.

Services included:

- Site coordination including bulk earthworks, public roads, car parks and full servicing deriving the overall precinct stormwater drainage strategy.
- Stormwater drainage strategy including buildings and site discharge via a combination of local on-site detention, trunk systems, and major infiltration basins and wetlands including pollution controls.
- Civil engineering including the design and documentation of internal roads, main drainage infrastructure, and car parking facilities within the super lots created within the health care precinct.
- Collaboration with the hydro-geological subconsultants in the development of a precinct water balance study to determine the effect of the installation of the large infiltration and detention tanks and basins on the regional groundwater levels, quantity, and quality.
- Façade engineering including façade design, system costing, materials science assessment and material selection, shop drawings, submission reviews, and conducting factory and site inspections.

The striking façade includes precast concrete panels with multiple finishes, curtain walling, aluminium clad and glazed canopies, composite aluminium cladding, skylights, external shading devices and glazed entrance walls.

*Fiona Stanley Hospital —  
Perth, WA, Australia.*



# Queen Elizabeth II Central Energy Plant

COMMERCIAL | HEALTHCARE

NEDLANDS, WA, AUSTRALIA  
CLIENT: BROOKFIELD MULTIPLEX

**The Queen Elizabeth II (QEII) Central Energy Plant (CEP) project forms the new energy plant for the QEII Medical Centre precinct, south west of Perth.**

It replaces the previous plant building for two major hospitals (the existing Sir Charles Gairdner Hospital and the New Children's Hospital) and will also service the planned Women's Hospital.

Spanning six storeys and a total gross floor area of 11,500 square metres, the CEP consists of:

- The CEP, a stand-alone building housing a major mechanical, electrical, fire, and hydraulic engineering plant.
- Industrial workshops and waste management facilities.
- The service crossing tunnel that connects all major buildings to the CEP building.



The CEP building is comprised of a six metre deep basement and a structural steel superstructure supporting topped precast concrete hollowcore floors. The basement was constructed with contiguous pile perimeter walls and concrete columns supporting an in-situ reinforced concrete ground floor slab. The flue stack was constructed using a structural steel work frame, designed and detailed to facilitate modular construction. The façade was constructed from precast concrete panels supported off the structural steel framing and designed by BG&E.

The industrial workshops and waste management facilities replace the existing workshops and are comprised of a hybrid of structural steel and in-situ concrete construction.

The 500 metre service tunnel, measuring five metres deep and eight metres wide, was constructed with contiguous piles and an in-situ concrete floor, the tunnel is designed to support traffic loads above.

*Queen Elizabeth II Central Energy Plant —  
Nedlands, WA, Australia.*



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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.