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SECTOR BROCHURE

# Healthcare & Laboratories

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



FIONA  
STANLEY  
hospital

BG  
&E

OPPORTUNITIES  
THROUGH  
EXCELLENCE  
[bgeeng.com](http://bgeeng.com)

# Introduction

**BG&E is an international civil and structural engineering consultancy celebrated for its innovative, cost-effective, and award-winning designs.**

With a dynamic team of over 780 people spanning 16 offices worldwide — including Australia, New Zealand, South East Asia, the United Kingdom and Middle East — we unite local and international professionals to deliver practical solutions with a strong focus on constructability.

Our clients consistently return to us, attesting to our exceptional service, responsiveness, and track record for delivering tailored solutions for technically challenging projects. The quantity and scope of engineering awards we've received acknowledge our diverse industry contributions and the exceptional quality of the services we deliver across a host of regions, disciplines, and sectors.



# Healthcare

**As healthcare evolves, emerging technologies and treatment methods present challenges that demand innovative design. Flexibility is essential, enabling hospitals and healthcare centres to adapt without requiring structural changes as medical practices advance.**

The true measure of a hospital's success isn't its bed count — it's the volume of patients it can treat. Efficiency is key — and the ability to treat more patients within the same structure is the real metric for performance.

Healthcare continues to evolve at pace — driven by groundbreaking technologies, advancing models of care, evolving services, and rising demand. Facilities must be able to adapt to these changing parameters safely, affordably, and efficiently. A facility that is malleable to change is the core tenet of effective healthcare infrastructure.

Hospitals and healthcare facilities are typically designed for a 70 year lifespan, with the expectation of at least three major refurbishments — reflecting the sector's priorities of durability and future-proofing.

*New Melton Hospital —  
Melton, VIC, Australia.*



**At BG&E, we design structures that facilitate radical changes in treatment time and patient throughput over the course of their lifecycle. From structural and civil engineering to materials and durability services, façade consulting, and geotechnical services — we deliver dependable, flexible, and reusable infrastructure that can adapt to advancing medical practices without requiring structural changes.**

Healthcare infrastructure encompasses a wide range of facilities and models:

- Hospitals — from major acute hospitals to small regional and rural hospitals.
- Specialist facilities — including cancer treatment centres, children's hospitals, and mental health units.
- Healthcare related research facilities and laboratories.
- Hospital precincts — including car parks, central energy plants, logistics hubs, and other supporting structures.
- Emergency access infrastructure – including rooftop helipads and ambulance bays.
- Post-pandemic infection control and isolation facilities.

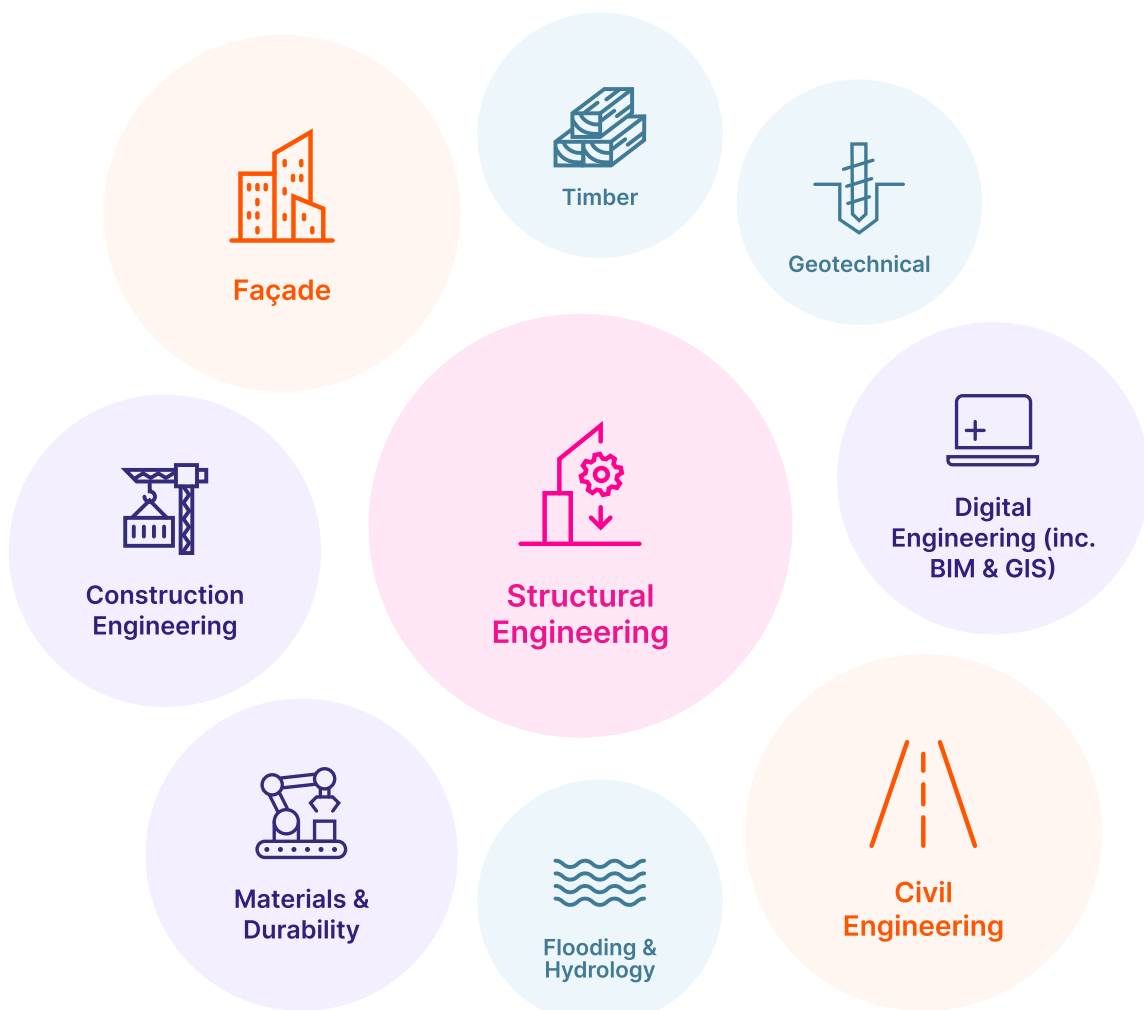
The healthcare sector is also highly localised. The country — and even the state — where a project is being delivered can dramatically shape outcomes. Regulatory requirements, funding models, and the client (public, private, or partnership) all vary widely. With on-the-ground teams in the geographies we operate in, BG&E leverages deep local knowledge to deliver compliant and cost-effective infrastructure.

*Queen Elizabeth II Jubilee Hospital —  
Brisbane, QLD, Australia.*



# Cross-Disciplinary Collaboration

BG&E stands out for the seamless collaboration of our in-house technical teams. This allows us to deliver optimal designs in terms of buildability and the final product for new healthcare facilities of any scale, as well as thoroughly understand existing structures for refurbishment, extension, and asset management.





*SJG Midland Private Hospital —  
Midland, WA, Australia.*

## Key Considerations

**BG&E brings extensive experience in managing the structural complexities associated with the scale and specialised functional requirements of healthcare infrastructure.**

### VIBRATION PERFORMANCE

Healthcare facilities require strict control of vibration to ensure human comfort and protect the operation of sensitive clinical areas and equipment.

BG&E applies detailed vibration analysis for clinical and surgical spaces, including sensitivity studies of mass, stiffness, restraining elements, and excitation variability. Each floor level is analysed with respect to vibration performance to confirm compliance with technical and functional performance criteria.

### FUTURE FLEXIBILITY

Hospitals must adapt to evolving healthcare practices, technologies, and treatment methods without requiring major structural changes.

BG&E works closely with architects, developers, and clients to embed flexibility in the structural design. This includes optimising column placement, design loading considerations, and change of function or re-planning, particularly future wet area set downs and future floor and wall penetrations.

### BUILDINGS OF SCALE

Large hospital structures require movement joints to minimise the effects of movements and accommodate volume changes over the building's life cycle caused by shrinkage, temperature variations, creep, axial shortening, and settlement. Without careful design, these uncontrolled movements can lead to excessive cracking and unserviceable deflections.

BG&E uses full analytical modelling to understand and design for stresses and movements resulting from straining actions. This approach reduces the number of movement joints, reducing the need for additional structural framing and shear walls, and limiting maintenance issues affecting the structure, architectural fabric, and façade system.

### TEMPORARY WORKS & CONSTRUCTION ENGINEERING

The successful delivery of healthcare infrastructure projects depends on practical, buildable solutions that support complex construction programs.

BG&E's in-house Construction Engineering team has extensive experience delivering large-scale projects on D&C delivery models, enabling us to anticipate construction and logistics requirements and implement practical design solutions.

*Midland Public & Private Hospital —  
Midland, 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 780 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.

