

Capability Statement




COMPETENCY
CAPACITY
COMMITMENT

**BG
&E**
RESOURCES

Acknowledgement of Country

BG&E Resources acknowledges Aboriginal and Torres Strait Islander peoples as the first peoples of Australia and the Traditional Owners and Custodians of lands and waterways on which we work and live.

Our operations are conducted on the traditional lands of the Whadjuk people of the Noongar nation in Perth, the Bindjareb people in Mandurah, the Larrakia people in Darwin, the Kurna people in Adelaide, the Gurambilburra Wulgurukaba, Bindal, Nywaigi, and Gugu Badhun peoples in Townsville, the Turrbul and Jagera peoples in Brisbane, the Awabakal people in Newcastle, the Gadigal people of the Eora nation in Sydney, and the Wurundjeri and Boon Wurrung peoples of the Kulin nation in Melbourne.

We honour the wisdom of, and pay respect to, Elders past and present, and we acknowledge the cultural authority of all Aboriginal and Torres Strait Islander peoples across Australia.

We also acknowledge the vital contribution made by our Aboriginal and Torres Strait Islander employees and we thank those who have guided our approach and generously shared their insights.

Image: Aboriginal artwork created by Jayda Sebire (Indigenous Artist and former BG&E Resources People and Culture Assistant).
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Your Trusted Advisor

At BG&E Resources (BGER) we are united by our purpose - we embrace innovation to solve complex problems for today and future generations.

As the business landscape evolves, proponents, government agencies and contractors (among others), need a trusted advisor to capitalise on the possibilities while managing the ever-increasing challenges to bring projects to market.

BGER is a multidisciplinary engineering, design, project delivery and advisory consultancy, providing technical solutions for clients in the Resources, Energy and Industrial sectors.

Resources

From traditional commodities to critical and rare earth minerals – BGER has a comprehensive understanding of the mining project life cycle.

Offering multidisciplinary capabilities in mechanical, structural, electrical, civil, process, geotechnical, EIC, marine and coast engineering, we help clients enhance their Brownfield projects and develop bankable Greenfield initiatives.

We have specialist expertise in mine site infrastructure, tailings storage facilities, process plants, rail systems, bridges, haul roads, ports and marine, non-process infrastructure, power systems and waste and wastewater solutions as well as mine closures and rehabilitation.

Energy

The global energy transition is one of the most complex challenges we face.

Working collaboratively with clients and communities, we deliver innovative energy solutions to help our clients decarbonise.

We have robust experience in solar, wind, hydrogen, Battery Energy Storage Systems (BESS), hydropower, biofuels and thermal systems to name a few.

Our work minimises risks in system reliability and energy supply, manages short and long-term uncertainty in energy pricing, embraces new technologies and adheres to regulatory requirements, including ESG matters.

Industrial

The race to net zero presents challenges for chemicals and other raw materials. It is also transforming our global supply chains, necessitating expansion in ports and marine facilities and increasing demand for energy, water and wastewater.

Our specialists help clients respond to increasing demand for commodities, while managing aging infrastructure and future-proofing assets to mitigate the risks of climate change.

We have a successful track record in contributing to most ports in Australia, as well as to several advanced manufacturing facilities including green steel.

100+

Clients in the Resources, Energy and Industrial sectors

0

Lost Time to Injury (LTI) in the Past Five Years

\$35B

Capital Value of Top 10 projects Delivered [FY23]

77%

Employee Engagement [FY23] (5% Above Industry Average)

50+

Decarbonisation Initiatives and Projects Delivered [FY23]

30%

Female Representation in Leadership

↑ EPC/OE

Growing Project Delivery Capability Across Australia

1.5%

Indigenous Participation and Growing



Technical Excellence

Our people are passionate about leveraging their technical ingenuity to solve complex problems.

Technical excellence is the bedrock of our business. It drives our people and propels the outcomes that we provide for clients, communities, asset owners and operators, and financiers.

Our dedicated professionals and subject matter experts focus on understanding our clients' business objectives, their desired project outcomes, as well as the latest industry research for the sectors in which we operate.

A Premium Client Experience

The success of our project work depends on leveraging the best expertise of our people. That's why we allocate the most qualified professionals to help realise our clients' development vision and bring their projects to life.

Our work is underpinned by strong engineering design principles, industry-leading technology and pragmatic advice to deliver exceptional outcomes, every time.

This approach provides the following benefits:

- Ease of understanding of regulatory frameworks
- Efficient navigation through the development approvals process
- Protection and preservation of our cultural heritage, the environment and waterways
- Healthy, transparent and trusted relationships are established with stakeholder groups
- Respectful liaison with Traditional Owners is undertaken
- Fair and equitable outcomes are achieved for First Nations' communities
- Project knowledge is retained, including lessons learned
- Innovation is embraced and deployed.

Technical Leadership Team

The quality and excellence of our world and ability to deliver the best technical and cost-effective solutions for our clients is guided by our Technical Leadership Team.

Led by the most senior members of our business, this team facilitates learning and knowledge transfer, professional collaboration and mentorship to drive continuous excellence in our technical capabilities. It also encourages our people to perform to high technical standards and rewards staff for incorporating innovation into projects.

Safety is at the Heart of our Business

Our diverse and culturally aware teams embrace safe work practices that are environmentally sound.

Safety is integral to everything we do at BG&E Resources. We care about our people, clients, and the communities in which we operate, and strive for zero harm in everything we do.

Health, safety and quality are embedded in our work practices, while heritage and sustainability are considered throughout the entire project life cycle.

We recognise the importance of continuously reviewing safety in design issues at all stages of a project, from investigation, design, construction, operation (including maintenance), closure and rehabilitation.

Exceeding regulatory obligations, we leverage a formalised Health, Safety, Environment and Quality Management framework that allows us to analyse and implement practical measures to mitigate risks.



Leadership

- Understanding of client needs
- Technical Leadership Team governance
- Strong Chartered presence
- Adherence to Technical Standards & Regulatory Instruments
- Committed to Technical Excellence
- Striving for low-carbon impacts



+ Systems

- ISO Accredited Quality Management System (QMS)
- Design Assurance
- Engineering Verification Procedures
- Safety in Design
- Net Zero in Design
- Risk Mitigation & Management
- Project Governance (Action Tracking, Monitoring, Performance & Auditing)
- Continuous Improvement (Lessons Learnt)



+ Characteristics

- Client Centric
- Risk Adverse
- Reliable
- Accountable
- Innovative
- Simplification
- Community & Culture





Image: Indigenous peoples' hands. Copyright approved via Shutterstock.

Respecting, Protecting and Preserving our Cultural Heritage

Diversity across our workforce and our supply chain is vital.

Our clients trust in our ability to enhance their social license to operate, including through the provision of mutually rewarding cultural heritage consultation and management, healthy Indigenous partnerships, and ethical procurement from Aboriginal-owned and operated businesses.

Working with Traditional Owners, First Nations peoples, Indigenous Prescribed Body Corporates and Aboriginal Corporations, is seeded in early engagement as it enables our team to deliver benefits for today (across the life cycle of proponents' projects) and for future generations.

Early engagement underpins our approach to cultural heritage management as it enables us to understand the needs and desires of all stakeholder groups, as well as any existing Indigenous Land Use Agreements (ILUAs) which have been registered with the National Native Title Tribunal (NNTT).

We partner with highly experienced local archaeologists and ethnographic specialists to provide clients with access to an abundance of heritage site data, and to collectively undertake walk-throughs of proposed project sites.

From the Kimberley in the North to Esperance in the South of WA, across central Australia and along the Eastern seaboard – we engage with Traditional Owners and Custodians, Prescribed Body Corporates (PBCs), Aboriginal development corporations and First Nations communities to preserve their cultural heritage and when helping proponents and/or government agencies to deliver projects.

Cultural Heritage Management Capabilities

- Stakeholder consultation and engagement to help Traditional Custodians of the land and Native Title Claimants to establish IULAs, registration to the NNTT and compensation frameworks (among others).
- Advice for proponents regarding the application of legislation including the Native Title Act 1993, Heritage Act 1972 (Aboriginal Cultural Heritage Bill 2021) and Repeal Bill 2023.
- Developing scopes for archaeological and ethnographic surveys.
- Indigenous business contracting (including teaming with Aboriginal-owned and Supply Nation-certified businesses to develop First Nations regional workforces).
- Capacity building (including coaching, mentoring and career pathway development, etc. for First Nations peoples).
- Reconciliation Action Plans.

First Nations' Partnerships

We have a range of actions in place to increase Aboriginal and Torres Strait Islander employment and engagement in our business, to help First Nations communities become self-sustaining (current participation is approximately 1.5 per cent of our workforce and we are striving to increase that to three per cent by December 2025).

We proudly support Aboriginal and Torres Strait Islander owned businesses and have established a majority-owned Aboriginal company, TICS (WA) Pty Ltd (TICS). TICS is a NATA-accredited laboratory to ISO 17025, providing nondestructive testing (NDT) services.

Similarly, we have strategic partnering arrangements with several Aboriginal-owned businesses, including Karlayura Contracting, which provides design and construction support for clients.

We have also established a similar partnering agreement with i24s, an Aboriginal-owned and operated workforce company, providing security, civil works and commercial cleaning services for mine sites in remote locations across Australia, as well as for commercial premises in capital cities (their clients include BHP, Horizon Power and Cundaline Resources, among others).

Most recently, we also established a partnership with Pirrpala, a 100 per cent Aboriginal-owned and operated small scale project delivery provider.

Our partnerships also span the globe, specifically in China, for the procurement of equipment and professional services, including on Country inspections of fabrication, testing, compliance and design reviews.

Reconciliation

Review our [Innovate Reconciliation Action Plan](#), [Aboriginal and Torres Strait Islander Engagement Strategy](#), [Human Rights Statement](#) and [Anti-Discrimination Policy](#).



Mechanical Engineering

Drawing on our consolidated experience, we provide client-centric mechanical engineering services for small and large projects.

Our team of engineers are proficient in the use of dynamic analysis and non-linear Finite Element Analysis (FEA), on a wide range of small and large projects.

Capabilities

- Bulk Materials Handling Design
- Mining including Crushers, Overland and Transfer Conveyors, Stockyards with Stackers and Reclaimers, Process Plant Equipment, Loading Systems
- Plant and Equipment Trouble Shooting
- Port including Train Unloaders, Conveyors, Stockyards and Shiploaders
- Mining Process Plant including Equipment Design and Selection
- Process Improvement
- Tailings Storage Facilities and Pumping Design
- NPI Equipment Design and Services
- Mining Workshops
- Water Treatment Plants
- Site Technical Support Services
- Debottlenecking and Optimisation Studies
- Process Upgrades and Modifications
- Site Support During Shutdowns and Commissioning

Run-of-Mine (ROM) 4 at the Roy Hill Mine, Western Australia.



Structural Engineering

Leading the development of advanced construction techniques in the areas of process plants, industrial buildings and large infrastructure assets.

We have expertise in both traditional and prefabricated construction techniques including heavy lifting of oversized precast structures, temporary works and strengthening of existing structures for construction loading.

Capabilities

- Mines and Process Plants
- Non-Process Infrastructure (NPI)
- Ports and Loadout Facilities
- Aerodrome/Airport Facilities
- Modular Accommodation Villages and Housing
- Tailings Storage Facilities
- Diesel Fuel and Liquid Natural Gas (LNG) Infrastructure
- Industrial Facilities
- Water Treatment Plants
- Value Engineering



Civil Engineering

Specialising in the optimisation of bulk earthworks and providing design, documentation and construction support services for all aspects of road infrastructure.

BGER offers a full suite of services including bulk earthworks design, roadwork design, stormwater design, utility services design, traffic engineering and contract management.

We have played a key role in numerous mining projects on the East and West coasts of Australia, designing heavy haul roads and railways.

Capabilities

- Civil Works including Bulk Earthworks
- Rail and Associated Infrastructure and Systems
- Access Roads
- Flood Studies and Waterways Assessments
- Hydrology & Flood Protection Design
- Non-Process Infrastructure (NPI)
- Heavy Haul Roads and Access Roads
- Guide Bank and Rock Protection Design/Documentation
- Bore Field and Water Supply
- Hydraulic Structures and Underground Services
- Construction Phase Support

Electrical Engineering

Focusing on the design of electrical, instrumentation and control aspects of mining and resources projects in both process and non-process infrastructure.

We have a record of providing solutions that are cost effective and easy to build. Our consolidated experience draws upon our involvement in numerous projects where we have been instrumental in the development of process plants as well as industrial and commercial buildings.

Capabilities

- Power Supply and Distribution
- Temporary and Permanent Power Design
- Process Plant Controls Design
- Plant Utility Upgrades and Improvements
- Power Supply and Distribution
- Power System Simulations
- Protection Studies
- Temporary and Permanent Power Supply
- Substation and Switchroom Design
- vArc Flash Assessments
- Lighting and Small Power Supply
- Earthing Designs and Lighting Protection
- Process Plant Controls System Design (PLC and DCS)
- Instrumentation
- Communication Systems
- CCTV
- Plant Utility Upgrades and Improvements
- Solar Power Systems
- 3D Modelling
- FAT and Site Commissioning Support Engineering
- Compliance/Due Diligence Inspections

Project Delivery

Providing end-to-end project delivery services – for Greenfield developments, Brownfield improvements and fully integrated mine-to-port projects – to maximise capital expenditure and asset performance.

Building on our engineering consulting expertise, we have developed a reputation for the successful delivery of projects under a range of models, including as a preferred project delivery partner.

We also act as a single point of contact for our clients working as an EPC Contractor, Owners' Engineer, Project Manager, Engineering Consultant or Commissioning Manager. Our flexibility enables us to tailor the project delivery model best suited to your needs.

Our Approach

As a preferred engineering, design and project delivery partner, we coordinate all design, procurement and construction work on behalf of our clients to ensure projects are delivered safely and sustainably, on-time and on-budget with quality and performance integrated throughout.

The foundation of our success in project delivery lies in having a flexible and efficient approach, understanding our clients' drivers, influences and objectives and establishing appropriate governance and controls.

Our end-to-end capabilities are comprised of quality engineering and design, effective procurement strategies including contracts and tenders as well as robust construction management approaches and on-site representation.

Our Difference

Fostering trust and teamwork is at the heart of our approach. We take the time to understand the needs and objectives of our clients, and partner to develop the optimal delivery strategy for projects.

Our comprehensive services and unprecedented depth of knowledge across all phases of the delivery life cycle enable our clients to maximise the life and profitability of their assets while minimising risk and downtime.

BGER applies advanced technologies, value engineering techniques and industry best practices to minimise schedule and cost variations while optimising the constructability, maintainability and operability of assets.

Leveraging our team's ingenuity, multidisciplinary engineering skills and in-house expertise, we provide contemporary advice on program strategies with support and leadership to enable a seamless transition throughout the delivery process.

Our strengths are in the development of innovative designs and our pragmatic approach to providing unique solutions to complex engineering problems. We understand the importance of communication and collaboration and always adopt a best-for-project lens to the decisions we make.



Capabilities

Procurement

- Pre-Contract Support including ECI and Tender Management
- Bid Evaluation including Technical, Commercial, Schedule and Construction
- Post-Contract Award including Package Management and Progress Reporting
- Quality Management including Inspections, FATs and ITPs/MDRs

Construction Management

- Sub-Contractor Management
- Client Engineering Representation
- Project Controls (i.e. Scheduling, Cost Management, Quality, etc.)
- HSE Management and Support
- Progress Claim Assessment and Certification
- HSE Support

Completion and Commissioning

- Completions Management
 - Systemisation Plans
 - Walkdown and Handover Planning
 - A-ITR Coordination
 - Vendor Coordination
- Commissioning Management
 - Commissioning Management (from Pre-Commissioning to Handover)
 - Commissioning Management Plans
 - Commissioning Planning and Schedule Development
 - ITR matrix, ITR Management and Handover Dossier Compilation
 - Vendor Management
- Operations Readiness Support
 - Stakeholder Management
 - Ramp-Up Planning

Commercial

- Project Controls including P6 Planning, Scheduling and Impact Analysis
- Project Commercial Guidelines, Templates and Flowcharts
- Clarifications and Claim Management
- Supply Chain Management and Strategies
- Cost Management
- Risk Management and Root Cause Analysis



Tailings Storage Facilities (TSFs), Mine Closure and Rehabilitation

Delivering cost-effective, low residual risk TSFs, pumping and piping systems as well as managing mine closures and rehabilitation.

Ground Engineering

Providing a full suite of geotechnical engineering services – from onshore and nearshore site investigation through to detailed foundation design.

Successful project outcomes start from an early understanding of geological hazards and ground risks, followed by active management of these risks throughout the project life cycle.

BGER's engineering geologists and geotechnical specialists work collaboratively to plan and execute site investigations, analyse and design while using the latest software and technology to provide construction phase support and undertake asset condition assessments.

Our experience gained on projects in Australia, New Zealand, Indonesia and Africa, allows us to assess key geotechnical risks and adopt practical design measures to manage them. We leverage historical project learnings to better inform solutions to unforeseen ground conditions, construction difficulties, construction material characterisation and supply.

Capabilities

- Site Investigation
- Rock and Soil Slope Stability
- Soft Ground Engineering
- Deep Pile Foundations
- Earth Retention
- Dam Engineering
- Pavement Design
- Temporary Works
- Construction Support

Capabilities

TSFs

- Pre-Feasibility to Definitive Studies
- Site Selection and Storage Options
- Geotechnical Site Investigation
- Instrumentation and Monitoring
- Tailings Characterisation
- Dam Break and Inundation Studies
- Deposition/Stacking Modelling
- Independent and Annual Audits
- Construction Management
- Construction Quality Assurance
- Forensic Investigation
- Seismic Studies/Liquefaction Assessment
- Geotechnical Stability Assessment
- Construction Material Sourcing and Assessment
- Risk Assessments & Audits
- Advice for compliance to GITSM and TSM Standards
- Education for TSF Operations
- ESG

Pumping and Piping Engineering

- Slurry Pumping and Piping Systems
- Water Pumping and Piping Systems
- Computational Fluid Dynamics (CFD) Using ANSYS
- Settling Velocity Calculation
- Network Analysis Using Fluid Flow Software
- Site Troubleshooting
- Slurry Storage Tank Design
- Oxygen Injection Recirculation Circuits
- Thickening and Filtration Circuits
- Multistage Pumping Systems – Series and Parallel
- Chemical Storage & Dosing Systems
- Fire Water Systems
- Process Plant and Infrastructure
- Air, Water and Wastewater Services
- Gravity Flows and Launder Designs
- Tails Pumping Systems

Pumping and Piping Engineering

- Landform Design
- Closure Support
- Cost Estimation and Provisioning
- Risk Assessments and Gap Analysis
- Water Quality Assessment and Management
- Stakeholder Engagement including Cultural Heritage Management
- Groundwater and Hydrogeology
- Mine Waste Characterisation
- Soil Assessments
- Geospatial Modelling, GIS, UAVs
- Integration of Closure and Rehabilitation Plans into Life-of-Mine (LoM) Plans
- Rehabilitation Advice and Supervision

Energy and Renewables

Providing exceptional engineering solutions for energy generation and supply that optimise value and help decarbonise.

Our Energy team’s pragmatic approach enables us to reduce capital expenditure in both energy generation and supply while achieving an overall reduction in Levelised Cost of Energy (LCOE).

We design solutions to minimise risk in system reliability and energy supply while managing both short and long term uncertainty in energy pricing, technology development and regulatory requirements.

Utilising NetZero in Design™, we successfully navigate the rapidly evolving technology and regulatory environment to provide a clear strategy to net zero.

Capabilities

Advisory

- Energy and Power Studies (Demand and Generation)
- Energy Resource and Technology Studies
- Risk Management (Supply and Contractual Risks)
- Market and Commercial Advisory (including Purchase Power Agreements (PPAs) and project delivery, etc.
- Demand Side Management, Energy Efficiency and Auditing
- Life cycle Assessments, Decarbonisation and Net Zero Strategies
- Regulatory Advice related to Energy and CO₂ Emissions

Technology Experience

- Solar, Wind, Hydrogen, BESS, Hydropower, Biofuels, Thermal, etc.
- Scaling from Kilovolt-Amperes (kVA) to Gigavolt-Amperes (gVA) and from Kilowatts (kWh) to Terrawatts (tWh)

Engineering and Design

- Standalone Power, Remote Area Power, Hybrid Power and Microgrids
- Energy Generation, Storage, Distribution and Monitoring
- Electrification, Energy Transition and Technology Integration
- Total Energy Optimisation (TESO) and NetZero in Design™
- Clean Energy Council of Australia (CEC) Accredited Design and Installation of Grid Connected and Standalone Power Systems
- Network Connections and Transmission Studies

Delivery

- Procurement Management and Supplier Review
- Technology FAT, Installation and Commissioning Support





Ports and Maritime Engineering

Offering expertise in the characterisation of marine site conditions for the optimal design of port facilities.

Our Ports and Maritime team of professionals have decades of experience in port planning, marine site investigations, port design studies and maritime and coastal engineering.

Our deep expertise in Maritime and Coastal engineering is balanced with a broad knowledge of mine to port supply chains, facilitating fit-for-purpose technical solutions that meet our clients' functional requirements.

Capabilities

Port Planning

- Stakeholder Engagement
- Site Identification and Selection
- Master Planning including Strategic Staged Expansion
- Supply Chain Modelling Input and Interpretation

Marine Site Investigations

- Specifications and Interpretations
- Hydrographic Surveys
- Geotechnical Geophysical Investigations
- Metocean Investigations
- Design Criteria Determination
- Brownfield Site Inspections

Port Design Studies

- Numerical Modelling – Winds, Caves, Circulation and Sediment
- Physical Modelling
- Under Keel Clearance (UKC) Simulation
- Ship Handling Simulation – Desktop and Full Bridge
- Dynamic Mooring Analysis

Maritime and Coastal Engineering

- Navigation Channels, Dredging and Reclamation
- Marine Structures including Jetties, Wharves, Ro-Ro, Barge Ramps
- Coastal Protection including Breakwaters, Causeways and Seawalls
- Port Landside Infrastructure including Laydown, Buildings, Access Roads and Services, Breakwaters, Causeways and Seawalls

Process Engineering

Delivering bespoke design for projects with a focus on optimising costs and increasing circuit efficiencies.

Our specialists have a proven track record in flowsheet design, commissioning, operations, hydrometallurgical test work and modelling.

With expertise in SysCAD modelling, process control strategy design, and geochemistry, we support a wide variety of circuits and assist with evaluations of alternative and innovative flowsheets.

Capabilities

- Alumina (Bayer Process) and High Purity Alumina (HPA)
- Lithium (Hard Rock and Brine)
- Rare Earths
- Nickel
- Vanadium
- Phosphate
- Gold
- Iron Ore
- Petrochemicals and Chemicalst

Rail Engineering

Providing structural and civil engineering services for major intermodal facilities, refurbishment/upgrade projects and new rail lines.

We have a strong reputation for heavy haul projects through our ongoing involvement in railway infrastructure.

Our experience extends to the field of hydrology models, waterways analysis, bridges and culvert design.

Capabilities

- Rail Alignment
- Drainage and Scour Protection
- Hydrology and Waterways
- Track Structure
- Rail Access Roads
- Bridges and Culverts
- Formation and Earthworks
- Corridor Access Permits
- Rail Maintenance and Operational Facilities
- Systems Capacity Modelling
- Signalling
- Overhead Wire and Traction Power
- Quantity Surveying
- Geotechnical Investigations and Design
- Environmental Management





Advisory (Environmental, Social and Governance)

Delivering world-class solutions by collaborating with all stakeholder groups to help clients manage risk, provide equitable outcomes for communities, achieve their ESG ambitions and increase shareholder returns.

To achieve a sustainable future, resources and energy companies, port authorities and other utilities, need to strike a balance between reducing carbon emissions, maintaining a social license to operate and maximising financial returns.

Increasingly, investors, shareholders, employees and community groups are turning their attention to developing, deploying and embedding ESG into their operations.

Our collective advisory and engineering capabilities include:

- Stakeholder Consultation and Engagement
- First Nations Engagement and Cultural Heritage Management
- Sustainability
- Climate Change and Resilience
- Decarbonisation
- Energy Transition and Renewables
- Governance, Reporting and Disclosures.

Asset Management

To deliver more value to clients, BGER invested in Silver Edge Technologies (SET), a data-driven asset management business providing innovative capabilities for the Rail, Ports, Resources and Infrastructure sectors.

SET brings the power of data, a practical approach to asset management and deep domain knowledge of technology and critical assets to our clients, based on ISO 55000 standards.

The combination of using innovative technologies alongside strategic and operational asset management services enables clients to analyse and visualise the current and future conditions of their assets to drive improvements in maintenance and reliability.

SET's approach is based on a practical application of asset management, engineering, and maintenance. Our tailored solutions provide accurate and continuous insights into assets coupled with engineering knowledge, analytical capabilities and Digital Twin technology. These mature data analytics solutions are ready to solve asset maintenance problems by combining expert domain knowledge with applied predictive modelling and machine learning.

Projects



Port of Kings (POM) 4
at The Roy Hill Mine,
Western Australia.

Geraldton Port Maximisation Project (PMaxP)

Client: Mid-West Port Authority (MWPA)

Delivered over four years, PMaxP is designed to facilitate growth and increase trade at Geraldton Port from 16 million tonnes per annum (Mtpa) to 25 Mtpa by 2026.

In May 2022, the State Government announced its investment into MWPA's PMaxP in response to growing demand from industry in the region.

The \$350 million infrastructure project will enable MWPA to facilitate diverse and emerging trade opportunities and significantly increase throughput capacity over the next 10 years.

In September 2022, BGER was engaged to provide project delivery services.

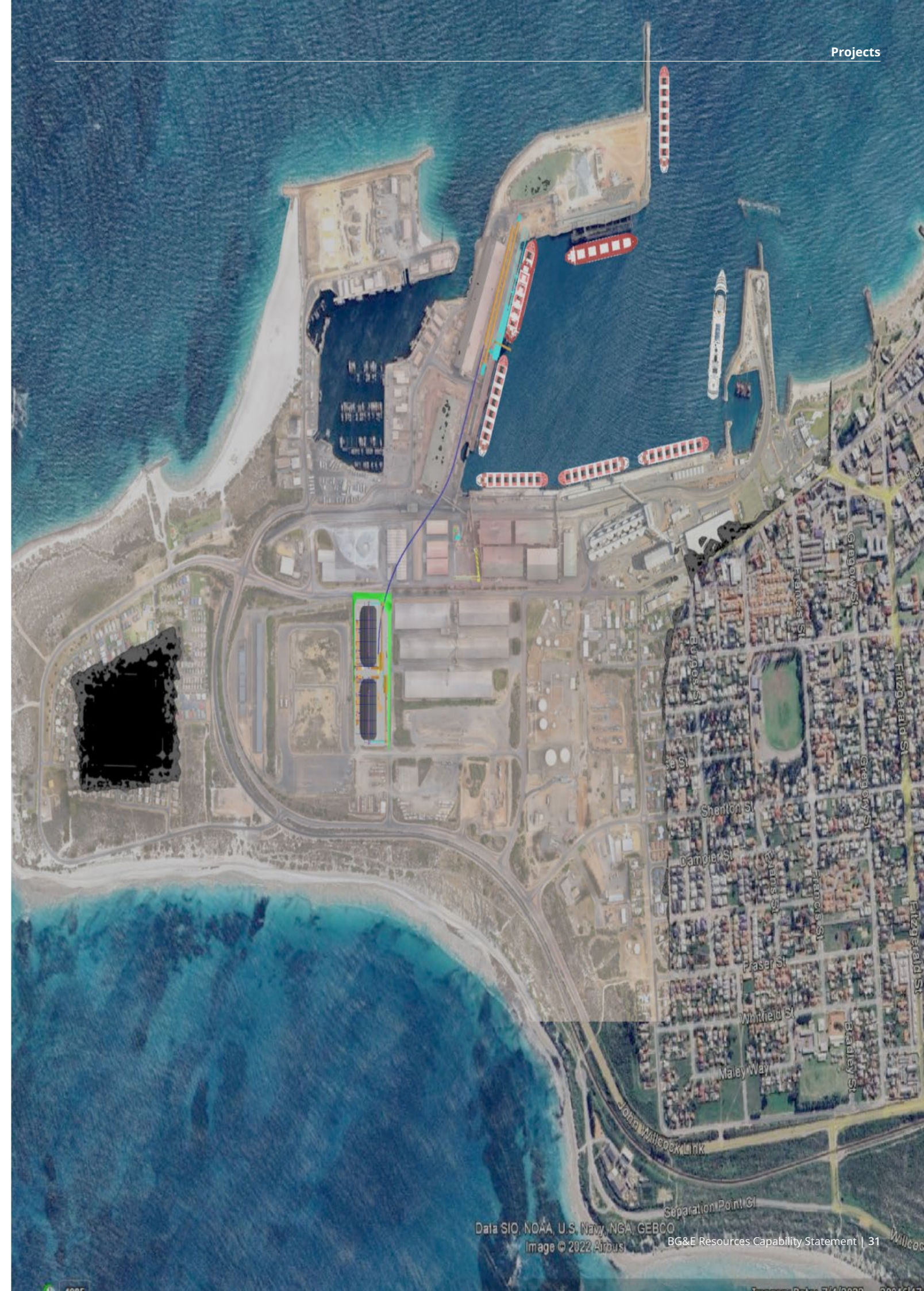
Our teams have made great progress, advancing to detailed design to improve berth capability (Berth 1 & 6) to accommodate a shiploader and provide for additional trade.

Detailed design of the Lease 11 Truck unloader is now complete and features innovative water recycling techniques to ensure optimal water quality for washing down and maintaining the new facility.

Scope of works:

- Prepare design briefs and basis of designs for PMaxP elements
- Prepare designs to IFC Status
- Prepare works schedules and procurement delivery schedules
- Provide cost estimates of each of the work packages
- Prepared tender documents and assist with the tender process for work packages
- Offsite inspection of Procured Items including internationally procured items (including shiploader, steelwork, etc.)
- Configure and maintain project controls for the scope of work
- Undertake works Superintendence on behalf of MWPA
- Manage all the site works associated with the PMaxP to ensure they are delivered safely, to the required quality and in accordance with the established budgets and schedules
- Oversee commissioning and project handover to MWPA Operations.

Image: Geraldton Port Maximisation Project (PMaxP), Western Australia.





Decarbonising Fortescue's Infrastructure – Early Engineering

Client: Fortescue Future Industries (FFI)

We are helping Fortescue to deliver on its Decarbonisation Plan to eliminate fossil fuel use and achieve real zero terrestrial emissions across its Australian iron ore operations by 2030.

Image: Courtesy of Fortescue. Copyright 2023.

BGER has been engaged to commence early engineering works to provide permanent power and supporting infrastructure to enable the electrification of mining equipment and assets across Fortescue's operations.

Our Electrical and Energy teams plan to work on electrification assets including HME battery electric fast charging facilities and in-pit power reticulation to HME plug-in assets. In addition, our Civil and Geotechnical teams are confirming the proposed laydown areas of the assets across Fortescue's sites.

Energy Management Plan – Iron Ore Mine

Client: Undisclosed

A leading mining company in WA engaged us to develop an accurate energy and power demand forecast for an iron ore mine site.

At the core of any sound decision making regarding energy is a Solid Energy Management Plan with accurate forecasts tied to relevant process data.

To complete this plan, BGER took into consideration several proposed major plant and equipment upgrades. Our work enabled the client to better manage energy contracts, identify opportunities for demand side management and alternative energy supply technologies.

Our Energy team reviewed the existing energy forecast, LoM Plan, the PPA, obtained whole-of-site metered power demand data, and collaborated closely with the client's teams. This information was collated, analysed and integrated into a refined power demand and energy forecast.

This Energy Plan has increased the accuracy of the forecast and ensures alignment with the LoM.

Our client is now well positioned to make informed decisions on future plant upgrades, demand side management opportunities as well as on site generation and optimisation of third-party supply contracts

IGO Cosmos Nickel Mine Concept

Client: IGO Limited

Our team was engaged to provide quality services, civil engineering, and site-based construction support for the Odysseus Underground Mine.

Currently being developed by IGO Limited, the mine is located at the Cosmos Nickel Project, 30 kilometres from Leinster, in WA.

Once it is in production, the mine will deliver high-quality nickel concentrates to the global market. It is also among the few nickel sulphide projects that will enter production to meet the rising demand for nickel used in Electric Vehicle (EV) batteries.

We leveraged our expertise in risk management, quality frameworks, compliance processes, and investigative techniques to enable IGO Limited to eliminate harm, reduce risk and achieve organisational quality outcomes. Our teams undertook an extensive Quality Assurance and Quality Control (QA/QC) review and provided a framework to IGO for implementation.

On the ground, our civil engineering professionals were involved in developing the LV and HV access road design for the NPI area. We also supplied secondment personnel to fulfil superintendent, project engineering and quality management roles.

Image: IGO Cosmos Nickel Mine, Western Australia. Image is courtesy of IGO Limited.





Image: Savage River Iron Ore Mine, Tasmania.

Preliminary Engineering Study – Savage River Iron Ore Mine

Client: Grange Resources Limited

Grange Resources owns and operates one of Australia's largest integrated iron ore mining and pellet production business.

The Savage River magnetite iron ore mine, 100 kilometres southwest of the city of Burnie in Tasmania, produces some of the highest iron-concentrated magnetite in the country with minimal impurities.

BGER Queensland has been engaged to deliver the Preliminary Engineering Study as part of the transition of the Savage River Magnetite Iron Ore Mine from above to below ground.

Our team is undertaking all mechanical, electrical, and structural engineering study elements for the underground crushing and tramp removal system with a key focus on minimising open voids underground due to challenging ground conditions.

Hydrology and Waterways Study for Mine Road Upgrade

Client: Pilbara Minerals

Pilbara Minerals Limited engaged BGER to undertake a hydrology and waterways assessment of the Pilgangoora Mine Site and Wodgina Mine Access Road, including the conceptual design of floodway crossings.

Following the conceptual design phase, our Geotechnical and Civil teams have been working in a joint effort with Pilbara Minerals to progress detailed design and site investigations for the delivery of the road upgrade project.

The Pilgangoora Mine consists of two processing plants, the Pilgan Plant located on the northern side of the Pilgangoora area, which produces a spodumene concentrate and a tantalite concentrate, and the Ngungaju Plant, located to the south, which produces a spodumene concentrate.

The Wodgina Access Road to the Pilgangoora Mine Site is situated between Port Hedland and Mulga Downs in WA's Pilbara Region. The road is currently unsealed and extends approximately 24 kilometres from Great Northern Highway, where a new intersection will be required.

The design scope involves upgrading 24 kilometres of the Wodgina Road to a sealed road to facilitate increased haulage capacity via super quad road trains. This includes 11 major floodway crossings, 12 kilometres of site access and haul roads, and a new intersection at Great Northern Highway.

Our involvement initially commenced in December 2022, with completion expected in November 2023.

When complete, the road upgrade will improve the efficiency and safety of transporting critical minerals to Port Hedland to meet the increased demand for resources to enable the global transformation toward clean energy and a sustainable future.

Detailed Design for ROM 4 Crushing Station 5

Client: Roy Hill

Our team completed the detailed design of the ROM 4 Crushing Station 5 Facility at the Roy Hill Iron Ore Mine.

Located in the Pilbara region of WA, the ROM 4 Project is part of an expansion of the mine.

The detailed design of the ROM 4 Crushing Station 5 Facility is an evolution of the ROM 3 Crushing Station which was designed by BGER in 2020. This latter facility is currently producing ore at capacities well over the design nameplate.

The ROM 4 Facility has an upgraded annual capacity of 34.1mtpa and has been designed to cater for larger haul trucks. Structurally, the design is based on similar integrated supporting structures to the ROM 3 Facility. However, it has been evolved to utilise modularised large 'building blocks' similar to the ship building industry.

The modules have been designed to achieve compressed fabrication and construction programmes with a substantial reduction achieved in on-site man hours.

ROM 4 Crushing Station 5 at the Roy Hill Mine, Western Australia.

Tertiary Hydrocyclones Energy Study and LCA

Client: Undisclosed

A global mining giant engaged us to undertake a decarbonisation study to demonstrate reduced operating costs, reduced risk and reduced CO₂ impacts of all scenarios.

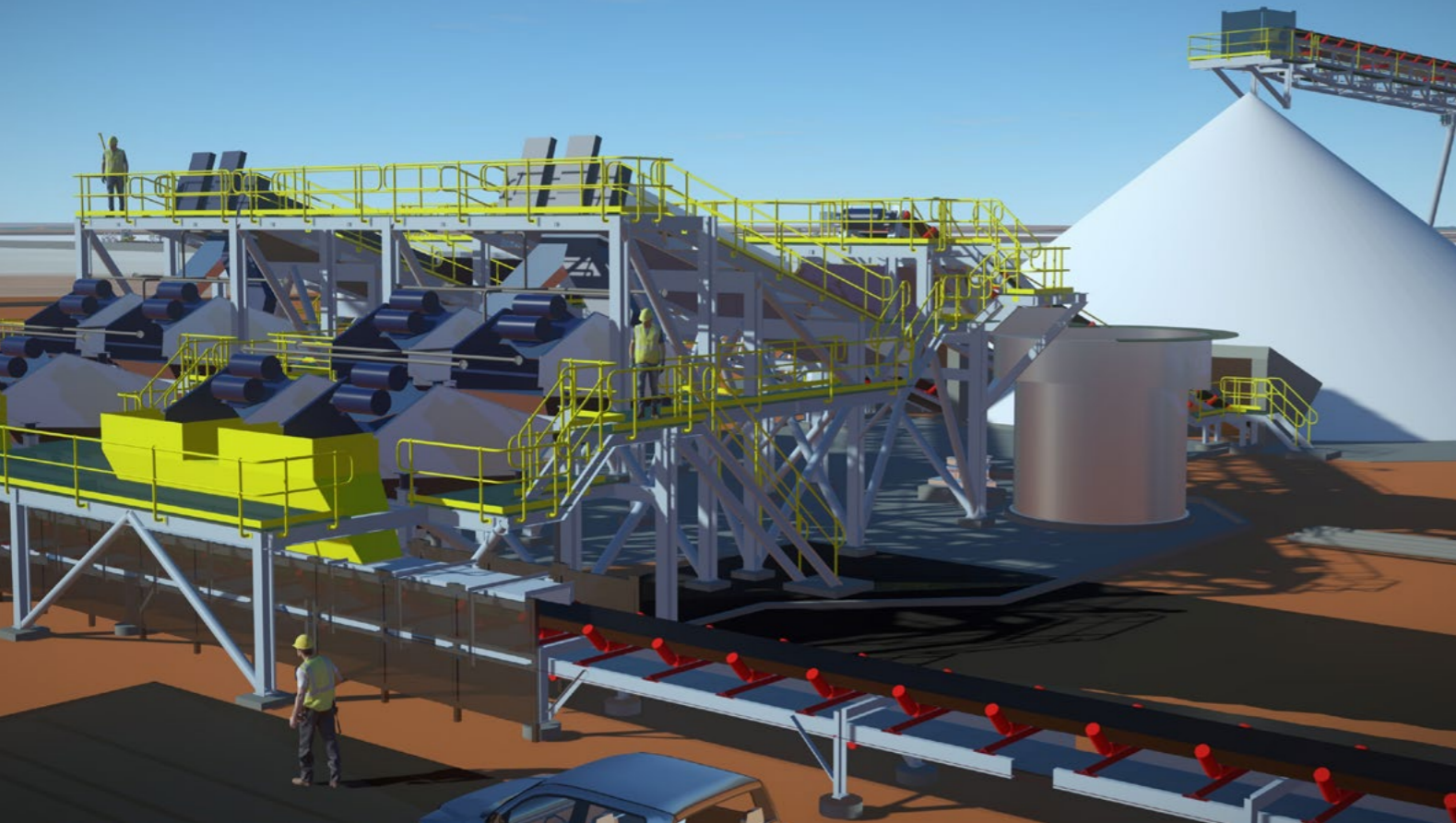
Our client sought to expand an existing minerals processing plant with the addition of Tertiary Hydrocyclones (THC), to improve fines recovery and high-grade Saleable Ore Product (SOP) production.

BGER conducted a LCA that modelled the lifetime emissions associated with the project. We also undertook an energy assessment to determine opportunities for operational energy reduction and Demand Side Management (DSM).

Our Net Zero in Design approach was integrated throughout the project life cycle to identify decarbonisation opportunities and ensure our client achieved its targets as efficiently as possible.

The Energy Study and LCA explored the most energy efficient and most significant carbon saving options, enabling our client to address Scope 1 and 2 emissions in its ESG agenda.





Stanley Point 3 Port Expansion

Client: Roy Hill

We have undertaken a concept engineering study to determine optimal solutions for magnetite handling from within the Ridley Development Envelope at Port Hedland, and into the Stanley Point 3 shiploading circuit.

Located in the Pilbara, Stanley Point 3 is part of the Port of Hedland, the largest bulk commodities port in the world.

To support the long-term strategic planning of its existing mine and port infrastructure, Roy Hill has commenced the detailed design phase of the proposed Stanley Point 3 Port Expansion Project to increase the current export capacity from 60-64 Mtpa to 102 Mtpa.

As part of this study, our team provided a detailed assessment of the options identified and developed feasible conveying and transport routes.

Our team also undertook a high-level assessment of the proposed SP3 assets and proposed mitigation measures to prevent issues relating to handling the higher-density product.

In addition to this project, we have completed two other engagements for Stanley Point 3: a Feasibility Study for the Port Expansion which incorporated sufficient engineering definition (15 per cent) to support a Class 4 cost estimate for a base case integrated stockyard and a split yard solution, and an Energy and Power Feasibility Study to determine the overall power and energy demand for the new infrastructure.

Ashburton Salt Feasibility Study

Image: Ashburton Salt Project, Western Australia.

Client: K+S Salt Australia

We have completed the Full Detailed Feasibility Study for a new solar salt production and export facility in Western Australia.

K+S Salt Australia Pty Ltd (K+S) is seeking approval for the construction of the Ashburton Solar Salt project located 40 km southwest of Onslow.

The proposed facility is situated across existing coastal salt flats at the top of the Exmouth Gulf on a greenfield site, and is ideally positioned for solar salt evaporation and production. Once completed, the project will generate 4.7 million tonnes per annum of high-purity salt.

Work delivered by BGER included designing all components of the project including the seawater intake, transfer pump stations, salt concentration ponds, salt crystallisers, brine transfer systems, salt wash plant, stockyards and reclaim circuit, NPI facility, overland conveyor, and a new trans-shipment port marine facility.

As part of the study, we also assessed the capital cost and project implementation schedule and developed the project execution strategy. Our team also undertook Value Improvement Practice (VIP) activities to identify capital cost savings.

Hydrogen Refuelling Station

Client: Fortescue Future Industries (FFI)

We have played a key role in Fortescue's push to use hydrogen to decarbonise its operations.

Our Energy Innovation team has provided the detailed design of the supporting ancillary infrastructure to ensure the efficient construction, operation and maintenance of a hydrogen generating plant and distribution system for fueling a new fleet of hydrogen buses at Fortescue's Christmas Creek Mine.

The works will provide suitable infrastructure to integrate specialist vendor supplied equipment into a bus re-fueling facility, providing exceptional maintenance and operational access.

Mulga Downs Tailings Storage Facility

Client: HanRoy

HanRoy sought our advice for site selection of its TSF taking into consideration Traditional Owner sites of significance, environmental wetland receptors and mine planning scenarios.

Dam break studies were undertaken to ensure residue was not likely to reach and impact environmentally significant wetlands.

This project involved the assessment and selection of a preferred site and disposal option after consideration of operational, environmental and heritage constraints.

Our team designed the main embankments with consideration for the use of mining equipment only with limited or no access to heavy civil construction equipment using dirty waste rock material for the main embankment.





Hope Downs 4 PC Upgrade

Client: Rio Tinto

We have been instrumental in developing an innovative solution to resolve vibration risk.

BGER completed the detailed design, including shop detailing, construction support and commissioning support, of the solution we developed during the feasibility study at Marandaroo PC to resolve structural dynamics. The design optimisation significantly reduced electrical scope when compared to the feasibility study.

Our team also provided access to the model in a virtual reality environment giving both Rio Tinto and its construction contractor the ability to prepare for shutdown work in a fully immersive environment. This resulted in the contractor being able to better plan its work, and minimise the risk of issues during construction and commissioning.

Vibration at Hope Downs 4 were identified as a class IV risk. BGER's solution incorporated offering up a large concrete and steel isolation frame to the underside of the existing floor and mounting it on air springs. This innovation simplified a complex dynamic problem.

Overall, the project was completed under budget and on schedule.

Image: Hope Downs 4
PC Upgrade, Western
Australia.

Green Ammonia Project

An undisclosed proponent is bringing to market a world-class green ammonia project, in Western Australia. The project will include the ammonia plant, a multi-user port, renewable energy systems (wind and solar), a desalination facility and the associated NPI.

The proponent is responding to the increasing demand for green ammonia, specifically from Korea and Japan.

BGER is providing stakeholder consultation and cultural heritage management capabilities (among others), for the proposed 750,000-tonne per annum green ammonia plant.

In recognition of the value of early engagement, the initial phase of stakeholder consultation and cultural heritage

management included Traditional Owners, Aboriginal Prescribed Body Corporates (PBCs) and development corporations, local government and regional business and community leaders.

Upon completion of the Section 91, the secondary phase of stakeholder consultation and cultural heritage management will be undertaken.

Executive Leadership Team



Craig Bloxham Managing Director and Co-Founder

Craig is responsible for managing, growing and diversifying the business to drive improved financial performance, robust corporate governance and positive health, safety and community outcomes.

Craig leverages his considerable experience in leading major infrastructure projects to fulfil the company's growth and ESG ambitions. He was the Delivery Director for the \$10 billion Roy Hill iron ore project, in the Pilbara region of Western Australia (WA). He also served as the Project Director – Infrastructure for this mega-scale Greenfields development, managing all the early works packages for the aerodrome, access roads, bulk earthworks, utilities (power, water and backbone communications) and NPI facilities.

Tony Comerford Technical Director and Co-Founder

With more than 35 years' experience, Tony manages the technical delivery of projects for BGER's clients, in the fast-paced Resources, Energy and Industrial sectors.

Tony sets the technical and engineering standards for client engagements, which spans conceptual design, detailed design, documentation, project management, construction management and commissioning of complex, multidisciplinary Greenfield and Brownfield projects. He draws on this experience coupled with his expertise in metals processing and refining, chemical plants, port facilities and industrial operations, to deliver tangible and measurable value to clients.

Joe Allen Director, Operations and Director, Resources

Joe oversees the operations of BGER and spearheads the company's work in the Resources sector.

With up to 20 years' experience, spanning traditional commodities and critical and rare earth minerals, Joe is a seasoned professional who has undertaken design, construction management and operation of mineral processing plants, power generation systems and infrastructure, for some of the world's largest Resources companies.

Joe's specialised skills encompass concept studies, layout development and precise capital cost estimates across the entire project life cycle. He excels in coordinating the interface between engineering and project execution. And, he has recently led the development of several lithium and renewable energy projects, including a world-class green steel hub and various hydrogen initiatives.

Gavin Wearne Regional Director, East Coast and Director, Ports & Marine

Gavin is responsible for the growth of BGER's East Coast operations as well as our well-regarded Ports and Marine practice, managing a large team of clever and committed professionals.

Dedicated to solving complex challenges for our clients, Gavin leverages his rich and diverse capabilities in the planning, design and construction management of port facilities, marine infrastructure and coastal works. With more than 20 years' experience in the maritime industry, Gavin's technical competencies lie in ocean and coastal engineering, and in numerical modelling, physical modelling, metocean criteria determination, full bridge ship handling simulation, mooring analysis and coastal protection structures design.

He has led several multidisciplinary feasibility studies for port export facilities including the West Pilbara Iron Ore Project, Balla Balla Infrastructure Project and Stanley Point Berth 3 Port Expansion.

Doug Tapper Director, Energy

Doug leads BGER's growing Energy business and is motivated by helping clients to transition to a new energy future. He has 25 years of experience in delivering strategic and technical advice across engineering and to help finance projects.

Playing a key role in applying our Net Zero in Design™ approach, Doug helps clients navigate the fast-changing technology and regulatory environment, to provide clear strategies to reach net zero. His vast experience covers the areas of gas and diesel-fired generation, cogeneration, islanded generation, conventional thermal plant and more recently in renewable technologies and large-scale energy storage.

He has spent most of his career working in the Energy and Infrastructure sectors, with a focus on project management and has substantial technical and commercial expertise.

Jason Fong Director, Geotechnical

Jason leads BGER's growing Ground Engineering practice, including developing and delivering fit-for-purpose technical solutions for clients in the Resources, Energy and Industrial sectors.

With a career spanning more than 30 years – across Australia, Indonesia and Singapore – Jason is an experienced geotechnical engineer. He is skilled at developing business strategies, leading multidisciplinary teams and managing projects for some of the world's leading mining, minerals, oil & gas, and industrial companies, as well as working with utility providers and defence organisations.

Jason is highly sought after for his expertise in ground engineering and for his ability to collaborate with a diverse range of industry specialists in strategic asset management, water supply and water resources, GIS, tailing storage facilities, mine closure and rehabilitation, and community and stakeholder engagement, including First Nations.

Executive Leadership Team



Phil Jefferys **Director, Development**

Phil is a highly skilled executive who has been employed by BGER since 2022, his expertise spans engineering, design, project delivery, strategy, studies and project development, as well as Indigenous procurement/contracting.

He is a seasoned engineer with some 20 years' experience gained from Australia, Asia, Africa and South America. Prior to joining BGER, he held senior roles at BHP, SinoSteel Midwest Corporation, Boston Consulting Group, GEM Consulting and Worley.

In his role as the Director, Development he is responsible for helping to shape the Company's approach to working with proponents to bring green steel and critical minerals to market, as well as for leading the Advisory business, contributing to organisational development, strategic business development, and teaming with others to nurture and grow BGER's market share with our key clients.

Bianca Taylor **General Manager, People & Culture**

Bianca is responsible for leading BGER's People & Culture corporate function. She has more than a decade of experience in the Oil & Gas and Resources sectors, and is motivated by creating accepting, inclusive workplaces that are rewarding for all.

Since joining BGER in 2021, Bianca has been focused on talent acquisition and management, and learning and development programs, to help drive growth and rewarding employee engagement.

Jamie Little **General Manager, Commercial**

Jamie brings more than 20 years' experience in managing the commercial aspects of projects and operations gained from the Resources, Energy and Industrial sectors. He specialises in engineering, procurement and construction management (EPCM) engagements, contract negotiations, project controls, insurance, supply chain management, governance, operational efficiency and measurable project success.

His experience encompasses robust commercial management of energy, operations and maintenance (O&M), sustaining capital and non-process infrastructure (NPI) projects.

Jamie is highly skilled in strategic planning, budgeting, forecasting and project finance, as well as working with disparate sets of data to build holistic business tools to help inform decision making.

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BG&E Resources is a multidisciplinary engineering, design, project delivery and advisory consultancy, providing technical solutions for clients in the Resources, Energy and Industrial sectors. We are majority owned by our employees, who are united by our purpose – together, we embrace innovation to solve complex problems, for today and future generations.

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CAPACITY
COMMITMENT

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