



Cardno Buckland

Shaping the Future



At Cardno Buckland, we believe strongly in the benefits of partnership and teamwork. We work closely with our clients throughout each project to ensure fast decision-making and successful engineering outcomes.

With substantial knowledge, experience and an ongoing commitment to excellence in civil and structural engineering design, we deliver comprehensive and cost-effective solutions for clients around the world.

Cardno Buckland is a leading civil and structural engineering consultancy providing innovative, cost-effective design solutions to a wide range of resources sector clients in Australia and around the world.

Established in 1996 and based in Perth, Western Australia, Cardno Buckland has an impressive record of achievement and an enviable reputation for creative problem solving, meticulous attention to detail and an uncompromising commitment to design quality.

Our unique strength is our ability to provide total structural solutions that embrace every aspect of a design project. This enables a project to be constructed under one master management plan, avoiding costly and inconvenient supplementary designs and contractor arrangements.

Cardno Buckland has extensive experience in designing structures for major operational areas of the resources sector including:

- ▶ Process and refinery
- ▶ Materials handling
- ▶ Marine and offshore
- ▶ Lifting and transportation
- ▶ Industrial construction.

Our highly qualified people have the experience and skills to deliver innovative and complete structural solutions for any project.



Our experience works for you. With a decade of success in civil and structural engineering design for the resources sector, Cardno Buckland brings a wealth of experience and knowledge to every project.



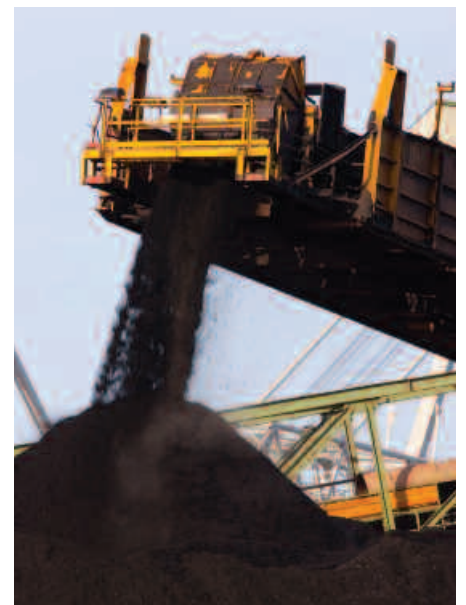
Process and refinery

Cardno Buckland has a wide range of experience and technical proficiency in designing structures associated with processing plants and refineries in the oil and gas, minerals and chemical industries.

We have designed solutions for a range of leading companies for application in the oil and gas, alumina, nickel and other process environments.

Recent design projects include:

- ▶ Tanks
- ▶ Chimneys
- ▶ Heavy process structures
- ▶ Process vessels
- ▶ Pipe racks.



Materials handling

Cardno Buckland specialises in designing structures for materials handling in quarrying and mining, including applications in the gold, iron ore, copper, lead, zinc and coal industries.

We have designed materials handling plants for a wide range of clients throughout Australia and South-East Asia. Among our current commissions are projects for copper, manganese, magnetite and iron ore plants.

Our specific areas of expertise include:

- ▶ Conveyor structures
- ▶ Crushing and screening plants
- ▶ Stockpile and storage structures
- ▶ Ball and SAG mills.

Our engineers' knowledge of current trends, legislation and environmental issues gives our clients a distinct advantage.



By forming partnerships with clients, we work to help you



Marine and offshore

Cardno Buckland provides total structural design solutions for clients operating in the marine and offshore industries. Our knowledge and experience in these areas is extensive and embraces environments adjacent to, partially in, submerged in and floating on the sea.

Our engineers have a comprehensive understanding of the international codes used in the marine and offshore industries, including codes compiled by Lloyds, Det Norske Veritas (DNV), American Petroleum Institute (API) and the American Institute of Steel Construction (AISC), and can quickly adapt to any others that apply.

In addition to specific structural design, we have full knowledge of offshore operations involving lifting, winching, equipment deployment and piling operations.

Recent structural design projects include:

- ▶ Wharves and jetties
- ▶ Grillages, skidding beams and load dispersion mats
- ▶ Vessel and barge strengthening
- ▶ Marine and sub-sea installation aids, including seabed templates
- ▶ Sea fastening for equipment transportation.

Lifting and transportation

At Cardno Buckland we have developed considerable experience in the important area of lifting and transportation within a total structural engineering solution.

Our engineers have an exceptional understanding of mobile and tracked cranes, support saddles, hydraulic trailers and a large range of lifting devices and slings.

We also understand the dynamic factors and conditions associated with moving large pieces of equipment.

Our engineers produce detailed procedures and structures to enable safe movement of heavy equipment in all applications.

Recent design projects include:

- ▶ Spreaders beams and frames
- ▶ Padears and padeyes
- ▶ Saddles and restraint systems
- ▶ Rigging systems and fittings
- ▶ Equipment strengthening for specific lift cases.

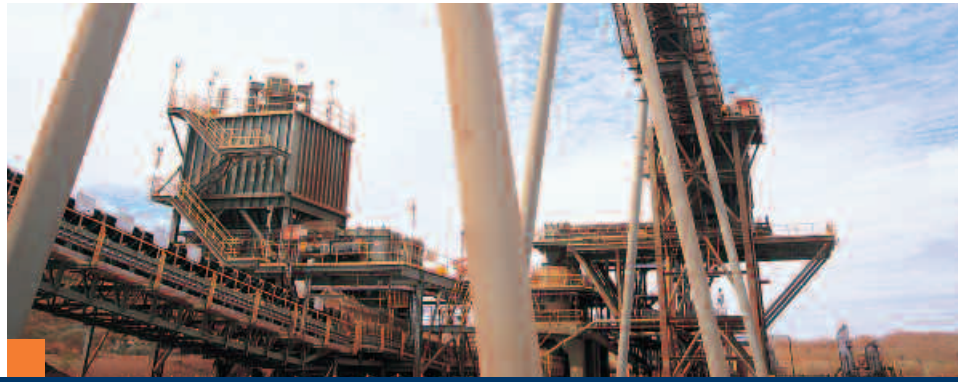
Industrial

Cardno Buckland extends its design services to a broad range of structures for various industrial applications, including site workshops, motor control consoles, control buildings and other non-process related facilities.

Recent projects have included the design and construction of:

- ▶ Site workshops and warehouses
- ▶ Motor control console and substation structures.





to succeed, to profit, to grow.

Using the knowledge and skills gained from a wide range of successfully completed commissions, we develop new and effective design solutions tailored and adapted to meet your project's specific needs.

Our experienced design and support services teams have demonstrated a proven ability to deliver effective total structural solutions for a wide variety of design challenges across all areas of resource sector operations.



About Cardno

Cardno is an integrated professional services provider, delivering specialist advice to create or improve the physical and social infrastructure that underpins communities around the globe. Our team comprises leading advisers who plan, design, manage and deliver sustainable projects and programs.





Work with us to shape the future.



Since 1996, Cardno Buckland has successfully completed a variety of design projects for many of the leading resources sector companies in Australia and overseas.

**OneSteel Magnetite Concentrator Plant
Whyalla, South Australia**

For ProMet Engineers, Cardno Buckland designed all civil and structural works for the OneSteel magnetite concentrator plant, including: stockpile, conveyors, screening plant, HPGR crusher structure, 750 t surge bin, mill structure, thickeners, tanks, pump bases and pipe racks.

**Yandi Junction South East Expansion Project
Pilbara Region, Western Australia**

Cardno Buckland provided Calibre Projects with a complete structural solution for the Yandi Junction South East Expansion Project 1500 t Surge Bin and the associated structures in the form of detailed design calculations and design drawings.

**OHTC Crane Review Project
Pilbara Region, Western Australia**

Cardno Buckland is re-certifying approximately 34 existing crane support structures for BHP Billiton Iron Ore. The work includes surveying the existing structures, conducting site and manufacturing inspections, modelling and analysis, and remedial work design. BHP Billiton Iron Ore also recently appointed Cardno Buckland to perform structural reviews of most of its accommodation facilities in the Pilbara region.



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