Cardno is a professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world.

Cardno can offer a highly multidisciplinary team in its Ports and Maritime division. We have a long history of working on full range of services required for delivery and asset management of maritime wharves and berths throughout Australia and the Pacific.

We service multiple markets from small marina plan for developers right through to large scale design and construction projects for Ports. Our staff have worked on some of Australia’s largest Oil & Gas Projects.

Our maritime team comprises skills that are required in the scoping, master planning, concept, detailed, delivery and maintenance phases of port infrastructure projects. These specialist skills include use of industry specific tools and software including Full Ship Bridge Navigation Simulation, mooring analysis (e.g. “Optimoor”), cathodic protection design programs, wave and modelling programs and fender design tools developed in-house. Cardno can also offer complementary skills required for port projects such as in-house geotechnics, survey, diving, marine environmental, metocean and coastal processes studies.

The Cardno staff has completed facility and operational planning for numerous international and domestic ports and is dedicated to the development of environmentally sustainable projects. Cardno has directed dredging and land reclamation studies, prepared environmental documents and permits, and completed port and terminal master plans, equipment studies, operational analyses, design, and procurement.

Cardno’s Commitment to Zero Harm

Safety is a core value at Cardno and our Zero Harm safety program fosters an environment of clear accountability, shared responsibility, risk awareness and effective communication. Our program underpins all operations and is responsive to the needs of our clients. We are focussed on continually improving our safety culture and the management systems that reinforce our commitment to zero harm. Cardno operates an occupational health and safety management system that has been certified to AS4801 and OHSAS18001.
Recent Project Examples

**South Wharf Upgrade, VIC**
Cardno was engaged by the Port of Melbourne to undertake major upgrades and remediation to 7 No. of its major bulk wharves. The primary objective of this project was to rehabilitate South Wharf Berths 27-29 and the sheet pile wall from 24-31 in order to maintain the berths in a functional and serviceable condition.

**Half Tide Tug Harbour WSCAM Assessment, QLD**
The facility is an aging but important asset that provides critical support to berthing operations at Hay Point. Cardno undertook an advanced condition assessment, load rating, diving and physical testing in accordance with the Wharf Structures Condition Assessment Manual (WSCAM).

**Fiji Port Development, FIJI**
The 5 Year Strategic Plan (2018-2022) is a cornerstone of the overall alignment of the Port to an increasing dynamic and competitive business environment. Through the Strategic Plan, the Port will meet key challenges and leverage opportunities to achieve its goals. The Plan addresses the regulatory, physical, operational, economic, financial, environmental, and recreational requirements of the company. It forms the basis for strategic policy for effective resource utilization and efficient service delivery.

**MCF Berth Upgrade, VIC**
Cardno was engaged by Port of Melbourne to upgrade an existing cement berth to accommodate larger vessels. The project includes dredging, sheetpile retaining walls and new cone fenders. Cardno undertook optioneering, geotechnical investigations and maritime infrastructure design.

**Johor Port VTS, Malaysia**
Johor Port Berhad (Malaysia) required a vessel traffic management system, including the Port limits and anchorage areas adjacent to Singapore. The scope included preparation of a full business requirements specification including integration with other primary systems, preparation and management of tendering and full project management.

**Ichthys LNG Project, NT**
Cardno lead the environmental monitoring team of over 100 specialist personnel assessing the environmental impact of dredging operations on the Darwin marine environment as part of the $38b. Ichthys LNG Development for INPEX. Results from extensive field programs were analysed under exacting timeframes to measure environmental responses to dredging and piling activities and to initiate reactive management actions. Cardno’s in-house equipment was used for the project.
Port Botany Development, NSW
Sydney Ports Corporation (now NSW Ports) proposed to increase container berth space at Port Botany to meet expanding trade. Cardno assisted in undertaking a range of water resources and coastal engineering investigations for the EIS.

NSW Regional Ports Strategy, NSW
The NSW Department of Primary Industries required a plan to guide investment and operations of 25 regional ports and coastal infrastructure over the medium term. The strategy focus is on promoting regional economic growth, and managing and mitigating risks to the community that are associated with ports operations. The strategy is to be used to facilitate investor confidence, and provide a framework for maintaining access to, and sustainable use of, natural resources in the sea and the related coastal zone. It included detailed analyses of existing conditions and service standards, environment and heritage, economics, service delivery and risk management, and port operations.

Fremantle Current Monitoring, WA
Cardno were engaged by the Fremantle Port Authority to profile currents throughout its inner harbour. The data was used to inform shipping movements at the facility. Data was collected during field campaigns, using a vessel-mounted Acoustic Doppler Current Profiler (ADCP).

Short Rd Tug Facility, D&C, VIC
Cardno were engaged as part of a D&C contract to design two 60m long jetties. Works included mooring analysis, and design of all structural, fendering and mooring systems. As well as design of services for the facility.

Fender Rating Study, NSW
Cardno were engaged by Patricks to assess the current capacity of fender at Brotherson Dock for larger vessels. Cardno reviewed the fender capacity against three international standards and informed Patricks of the current load limitations under a range of operating conditions.

Nauru Port Development Project, Nauru
Cardno has been engaged by ADB to develop a new port for the island nation of Nauru. Cardno are currently undertaking detailed design to construct a quay wall for berthing ships together with an access causeway, demolishing and safe removal of existing and reconstructing new buildings for harbour master’s office, staff amenities, gatehouse and a plant workshop, paving the container storage area with heavy-duty industrial pavement, and a fully secured fence. Cardno have undertaken hydrodynamic analysis including wave and climate assessment, ship bridge simulation to determine appropriate berthing configurations, and will conduct physical investigations and detailed design.
Project Examples

**Shute Harbour Redevelopment**
Whitsundays Regional Council engaged Cardno to undertake a feasibility study into underutilized maritime infrastructure at Shute Harbour. The study included a variety of services and resulted in a proposed $20M redevelopment of the harbour.

**Cruise Terminal Operability Study**
The project includes a detailed Optimoor operability study to assess the feasibility of an exposed cruise terminal. The project remains confidential but if shown to be feasible it will involve a major new berthing facility and become Australia’s most prominent cruise terminal facilities.

**Car Carrier Ferry Berth**
Cardno was engaged by a government agency to assess the merits of a new car carrier ferry service. The project included a review the upgrade requirements of existing berthing structures and needs to wave attenuation and DDA compliance requirements. The project remains confidential.

**Eden Safe Harbour Project**
The NSW Government has provided $10 million for the Eden Safe Harbour project, which will provide a safer harbour for local and visiting vessels and improve the protection of existing maritime infrastructure within Snug Cove, Eden. Cardno was engaged by Waterways Construction to prepare a tender design a $6M wave screen Cardno undertook all wave and structural assessments. The tender was successful.

**Footscray Wharf**
The Footscray Wharf and Promenade Project is a $12M investment by the Maribyrnong City Council to revitalise a 500 m long section of the Maribyrnong River. Cardno’s commission includes geotechnical investigations, approvals, civil design, maritime design and design of all associated services. The concept design was developed in consultation with the Council architect. The design will incorporate floating infrastructure and fixed timber wharf infrastructure.

**Port Macquarie Wharf**
Cardno was engaged for the detailed design of 4 new maritime structures (mainly timber) at Port Macquarie Boat Harbour. The structures were proposed by Port Macquarie Hastings Council as a part of the ‘Master Plan’ for the Boat Harbour. A new wharf is to accommodate fishing and passive recreational activities and be consistent with the Port Macquarie Hastings Council Master Plan for the Boat Harbour. Cardno undertook survey, diving works, condition assessment and detailed design.
Cardno supports its clients by providing the following services

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About Cardno
Cardno is a professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage and deliver sustainable projects and community programs. Cardno is an international company listed on the Australian Securities Exchange (ASX: CDD).