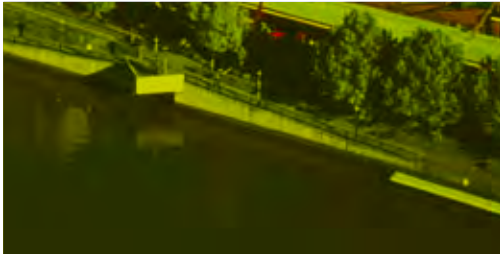
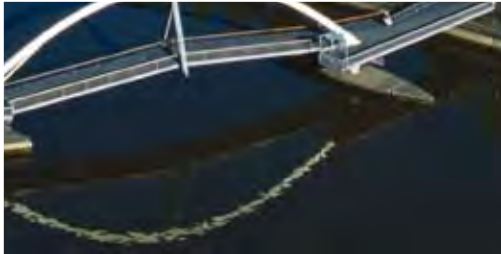


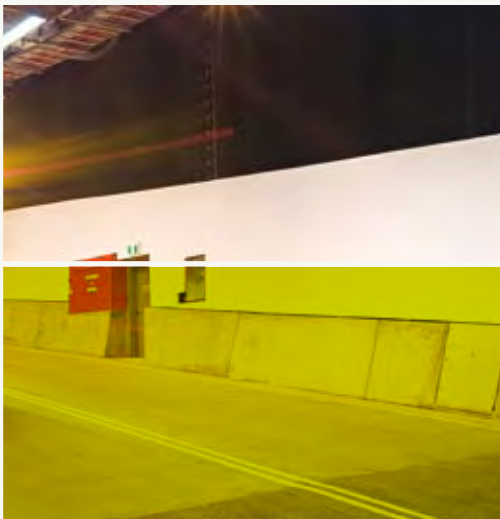
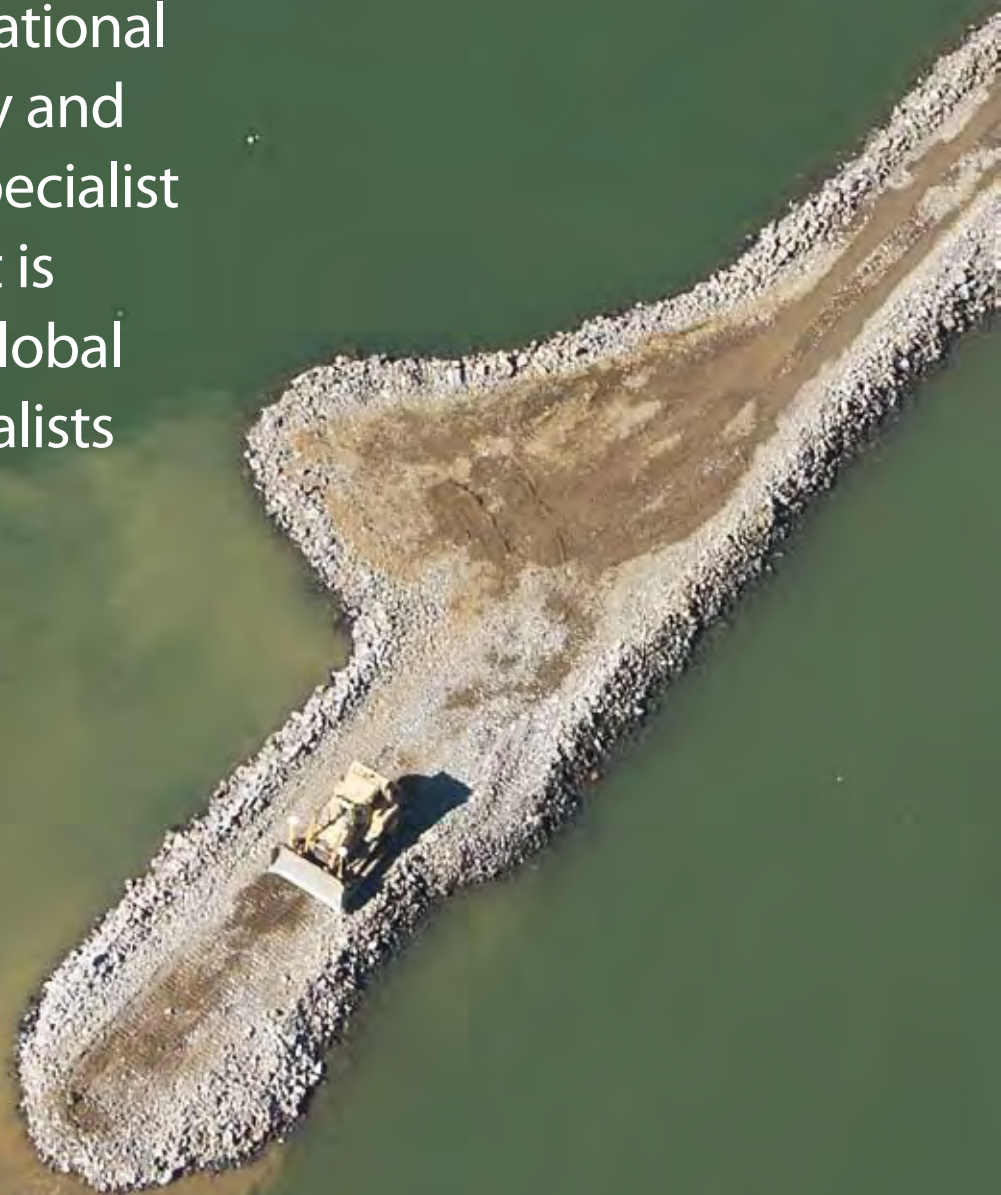
**EXTRAORDINARY OUTCOMES
THROUGH SPECIALIST KNOWLEDGE**



Coffey Geotechnics
is a Coffey International
Limited company and
part of a multi-specialist
organisation that is
connected to a global
network of specialists
beyond ground
engineering.

Coffey subsidiaries include:

- Coffey Commercial Advisory
- Coffey Environments
- Coffey Geotechnics
- Coffey Information
- Coffey Institute
- Coffey International Development
- Coffey Mining
- Coffey Projects
- Coffey Rail



MANAGING THE EARTH TO REDUCE YOUR RISK

Coffey Geotechnics is a specialist ground engineering consultancy, helping clients manage the earth.

Many of our clients understand that one of their greatest risks is in the ground. Soil, rock and water form the core foundations upon which our social and physical infrastructure is built. Specialist knowledge of these components during the early planning phases of a project through to design and construction can ensure success – whether it's a high-rise building, a road or a tunnel.

As consultants, we strive to better understand our client's risk and constraints to help address and manage the increasing complications in today's environment:

- increased cost, time and safety pressures
- the urbanisation of cities on marginal, difficult and poor land
- the demand for taller, deeper and more complicated projects.

Our people are dedicated to pushing the boundaries of professional knowledge to combine cost-effective solutions with technical excellence.

TAP INTO A GLOBAL NETWORK OF SPECIALISTS

Coffey Geotechnics has been managing the earth for 50 years and has offices in Australia, New Zealand, Canada and the United Kingdom. This means we can draw on specialists from around the world. These specialists work together to share their knowledge on a diverse range of ground conditions and provide a customised solution for each project.

Sitting at the pinnacle of this team is our Council of Senior Principals – a high-level think tank that taps into the expertise of the company's most senior professionals. Several of our senior principals are world leaders in their field and are not only engaged on projects but actively promote a culture of technical excellence.

The expertise of our specialists is also valued throughout Asia, where we continue to bring our experience to projects in countries such as Singapore, Malaysia, Vietnam, South Korea and Hong Kong.

We've forged bonds with academic communities, which provide access to current research and technology. These relationships also give our specialists the opportunity to lecture and mentor the next generation of leaders in geotechnical engineering.



OUR SERVICES

At Coffey Geotechnics, we're proud of the high level of technical excellence we achieve. Our specialists focus on the ground, striving to develop practical solutions tailored to the unique conditions of each project.

A worldwide network of expert staff means we can create time and cost-effective solutions suited to the local conditions. We deliver reliable data, relevant analysis and innovative design to reduce our clients' risk.

SITE INVESTIGATION

We develop comprehensive ground models commencing with the collection of data through desktop studies and geomorphological assessments. This work is supplemented by ground investigations; geophysics; in-situ testing; groundwater modelling; and the collection of samples for laboratory testing.

GEOTECHNICAL INTERPRETATION

Geotechnical interpretation is fundamental in understanding how engineering and construction activities will impact on a site.

This goes beyond the extrapolation of factual data to overlaying geological models as well as applying local knowledge.

The results of the geotechnical interpretation are used in tandem with each client's individual needs to provide relevant advice and tailored solutions.

ANALYSIS

Our specialists use a range of analytical techniques to identify the specific geotechnical design requirements and specifications needed for construction activities.

Advanced numerical technology such as finite element analysis and boundary element analysis is followed up by methods that check and verify our analyses to provide accurate and reliable data to clients.

Where needed, we develop new methods or modify existing analytical methods to improve the quality of the solutions we develop for our clients.

DESIGN

Geotechnical design needs to consider the properties of the ground and the impact infrastructure will have on the surface and sub-surface. Our specialists provide design services for infrastructure projects, property developments and mines. Some of the areas we specialise in geotechnical design include:

- foundations
- slopes, seismic risk and slope stabilisation
- retaining structures
- roads
- rail formations
- pavements
- dams and reservoirs
- marine and nearshore structures



ALLIANCE PARTNERSHIPS: EXTRAORDINARY OUTCOMES THROUGH SPECIALIST KNOWLEDGE

- tunnels and underground infrastructure
- quarries and landfills
- mines and tailings dams.

CONSTRUCTION ADVICE

Comprehensive construction supervision and monitoring of the project through to its completion, with ongoing quality compliance testing reduces risk.

Thorough construction monitoring also enables a design to be modified if construction is not performing to expectations, as ground conditions can be unpredictable.

Our specialist staff perform a complete range of construction monitoring services, including contract and construction supervision; compaction control; measurement of foundation performance and settlement; construction dewatering design; and quality testing.

Coffey Geotechnics is a key member of many alliances, which see clients, contractors and major consultants work together as a team to deliver complex infrastructure projects.

Working together with the alliance team in the design and development phase creates a common understanding of project objectives, potential risks are identified early, and state-of-the-art infrastructure is delivered to the community – more often than not ahead of time and budget to help deliver extraordinary outcomes. The risk and rewards are shared by all alliance participants, fostering innovation and raising industry standards.

We have already participated as a key alliance partner in nine major Australian projects, including:

Highways

- Inner Northern Busway Alliance
- Northern Hume Alliance
- Ballina Bypass Alliance
- Millstream Link Alliance
- Lawrence Hargrave Drive Alliance
- Port of Brisbane Motorway Alliance
- North West Connect Alliance

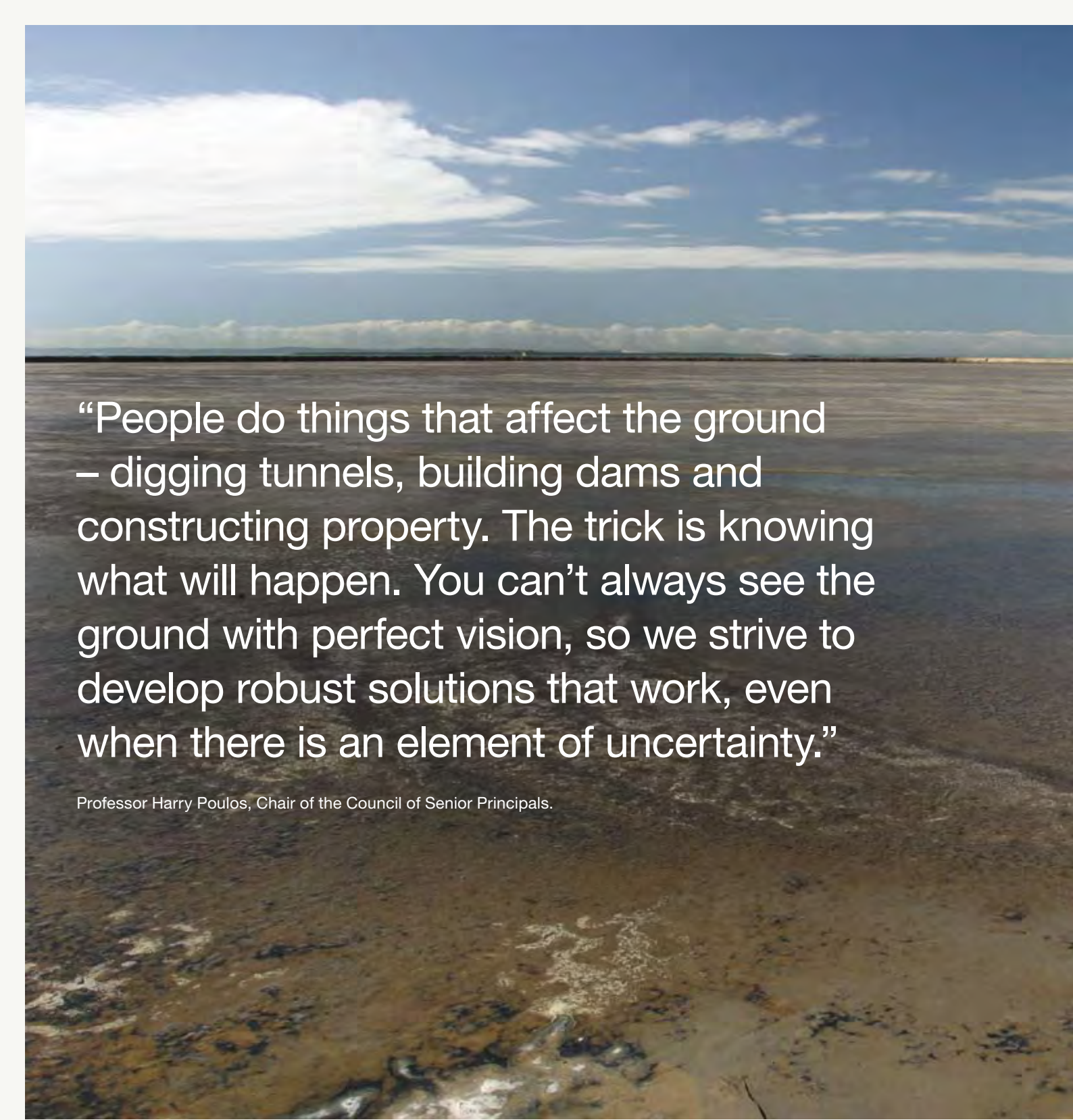
Ports

- Future Port Expansion Seawall Alliance

Dams

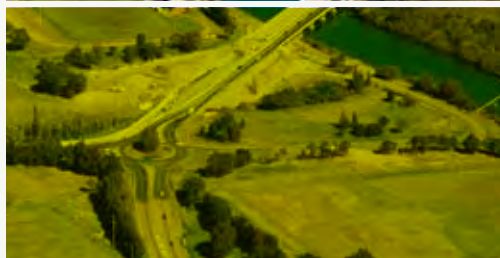
- Wivenhoe Alliance





“People do things that affect the ground – digging tunnels, building dams and constructing property. The trick is knowing what will happen. You can’t always see the ground with perfect vision, so we strive to develop robust solutions that work, even when there is an element of uncertainty.”

Professor Harry Poulos, Chair of the Council of Senior Principals.





MANAGING THE EARTH FOR INFRASTRUCTURE, MINING INFRASTRUCTURE AND PROPERTY DEVELOPMENT

Our experts provide specialist services for a range of infrastructure projects, including roads, rail, bridges, marinas and ports, dams, desalination plants, pipelines, nearshore structures such as seawalls, and underground works such as tunnels. To do this, we draw on knowledge from our specialists in:

- unstable ground conditions
- contaminated land
- terrain evaluation
- route selection and alignment
- pavements
- foundations and piles
- slopes and retaining structures
- excavations
- groundwater
- dewatering and drainage
- geophysics
- mine subsidence risk
- geomorphology.

We also manage the earth for property and land developments that include high-rise structures, commercial properties and residential properties. These projects require specialist knowledge in areas such as foundations, piling, deep excavations and subdivisions.

Our geotechnical experts develop and implement practical designs and solutions for mine infrastructure, tailings embankments, abandoned mines, mine dewatering and water supply schemes. We often work closely with Coffey Mining on large scale mine sites.



CASE STUDIES

ADVANCING INFRASTRUCTURE EXPANSION

Project: Gateway Upgrade Project

Location: Brisbane

Coffey Geotechnics has provided geotechnical design and construction services for Brisbane's Gateway Upgrade Project, which includes a bridge duplication over the Brisbane River.

On the southern section of the project, the 11km of road is primarily being widened within cuts and fills, with several new on and off ramp connections onto arterial roads.

The northern section includes new fill embankments up to 10m in height with associated connections to existing roads. This section is being constructed over soft alluvial deposits of up to 22m in thickness requiring detailed ground treatments to meet the project requirements. The project also includes the construction or modification of 29 minor bridges.

Coffey Geotechnics has brought a range of services to the project, including:

- geotechnical design for the new Gateway bridge and minor bridge foundations
- assessment of cuttings and fill embankments
- soft soil treatments, including assessment of settlement and stability
- geotechnical assessment of retaining walls
- pavement design
- temporary works designs
- construction advice relating to all of the above, including assessment of soft soil treatment performance.

ADVANCING PROGRESS IN MINING INFRASTRUCTURE

Project: Ernest Henry Mine

Location: 50km north of Cloncurry, Qld

Coffey Geotechnics has provided ongoing operational engineering and design support for the Ernest Henry Mine tailings storage facility since 2002. We are providing a final design for the tailings facility embankments and final landform, integrating the mine's operational requirements with the strategic closure plan.

Since 2002 we have worked together with Xstrata Copper to provide:

- strategic waste planning
- embankment design
- feasibility studies for future expansion of the tailings facility
- liquefaction and hydrogeology studies
- field investigation services such as drilling – to characterise sub-surface materials
- field instrumentation – to generate an ongoing stream of data on the site and its parameters
- closure studies.



ADVANCING COMMERCIAL AND RESIDENTIAL PROPERTY DEVELOPMENT

Project: Wyndham Harbour Development
Location: Werribee South, west side of Port Phillip Bay, Melbourne

Geotechnical, environmental and groundwater investigations were needed to establish the regional hydrology and assess the impact of the proposed marina on the regional groundwater aquifer. The results of these studies helped to support the client's application for the development of Wyndham Harbour.

With the assistance of Coffey Environments, a Groundwater Protection Management Plan was also developed as an assessment tool for the performance conditions of the harbour development, which includes the design and construction of a marina, residential community and parklands project.

Coffey Geotechnics has provided regular groundwater sampling, laboratory testing and hydrogeological modelling advice on the design and construction of the breakwater and excavation of up to 3.5m of clay sediments in the marina. The onshore component of the development required geotechnical design of an engineered fill platform for residential buildings, hardstand area, boat storage, as well as associated car parking, access roads and the wetlands.

Coffey Geotechnics will continue to provide regular groundwater monitoring and reporting during and post construction.

ADVANCING NEARSHORE DEVELOPMENT

Project: Ichthys Gas Field Development
Location: Maret Islands, 250km off the Kimberley coast of WA

Coffey Geotechnics managed the geotechnical investigations for the nearshore and onshore facilities at the Maret Islands – the location of onshore processing facilities for the Ichthys Gas Field. It includes gas receiving, an LNG process plant, product storage tanks and export facilities.

We also provided engineering advice on the foundation conditions for the construction of the harbour and offloading facilities, nearshore pipeline approaches and the gas processing and storage structures.

The remote location of this environmentally sensitive site raised a number of geotechnical challenges. There were large variations in water depth and the presence of very soft sediments at some locations which meant boreholes had to be drilled from a 'floating' position.

To reduce disturbance of the local fauna and flora from our onshore investigations, helicopters were required to lift the drill rig and all other equipment around the islands, an activity requiring strictly controlled OH&S procedures and training to manage the risks involved.

Coffey Geotechnics worked with Coffey Environments to deliver innovative solutions which disturbed less than 0.1% of the area – a traditional onshore drilling operation would have impacted on more than 10% of the islands.



Our global network of specialists focus exclusively on managing the earth. This ensures you receive local knowledge and expertise, even with challenging ground conditions.



Photo: samar@spectramaxima.com





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Discover more about Coffey

Coffey International Limited is a global professional services consultancy focusing on both physical and social infrastructure. We are listed on the Australian Securities Exchange (ASX:COF) and have been operating for over 50 years.



O.R. Tambo International Airport upgrade – Johannesburg, South Africa



Melbourne's Docklands – Australia's largest construction project

Specialist services from concept to completion

We use specialist knowledge to deliver extraordinary outcomes for our clients across the full lifecycle of a project, from concept to completion.

- Coffey Geotechnics
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- Coffey Projects

A world of experience

We have over 3,000 people helping clients on projects in more than 80 countries, with permanent offices throughout the Americas, Africa, Asia Pacific, Europe and the Middle East. All of our people have one thing in common: a passion to solve emerging challenges to improve the lives of communities.

Visit coffey.com today and find out more about our specialist services



Supporting the Government of Iraq's efforts to rebuild its public management system