



CLIENTS | PEOPLE | PERFORMANCE

# MATERIALS TECHNOLOGY GROUP



GHD IS AN INTERNATIONAL PROFESSIONAL SERVICES COMPANY. OUR PEOPLE DELIVER INNOVATIVE SOLUTIONS BY COMBINING TECHNICAL SKILL AND EXPERIENCE WITH AN UNDERSTANDING OF OUR CLIENTS' OBJECTIVES AND ASPIRATIONS.

GHD's Materials Technology Group has internationally recognised materials technology experience.

### MATERIALS TECHNOLOGY DEFINED

GHD's Materials Technology group aims to apply state-of-the-art knowledge of the behaviour of materials in combination with analytical capabilities and engineering judgement to provide cost-effective independent professional advice on:

- ▶ Design and specification of materials appropriate for their intended service life, environment and loads
- ▶ Engineering management to achieve the design life of structures/plant and their construction materials
- ▶ Engineering of remedial measures for deteriorated structures appropriate to their operating requirements and intended future service life

Our team strives to advance GHD's knowledge by research and development and maintain technical capabilities that meet the changing needs of our clients.

### DIAGNOSIS INVESTIGATION AND REMEDIAL ENGINEERING

Our goal is to deliver the lowest life cycle cost repair and maintenance strategies to our clients.

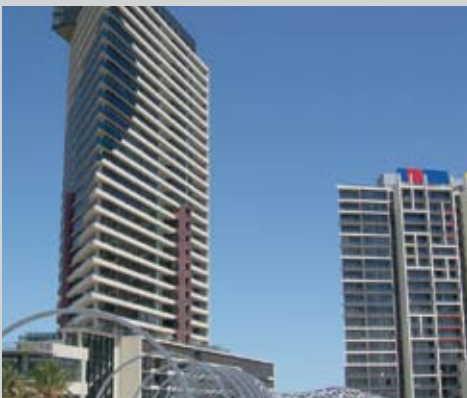
GHD personnel are experienced in investigation, repair assessment, remedial inspection, project management and asset management auditing of thousands of structures/plant worldwide. Our approach includes:

- ▶ Most recent non-destructive testing techniques
- ▶ Analysis and diagnosis techniques using our own software to predict future materials deterioration and remaining service life
- ▶ Repair alternatives chosen are at the forefront of remedial solutions development, including electrochemical techniques for reinforced concrete structures such as cathodic protection and realkalisation
- ▶ Audit of many repaired structures/plant giving reassessment back into the investigation and repair process

### CORROSION ENGINEERING

We are a corrosion engineering consultant providing a complete range of corrosion services including:

- ▶ Materials selection and the development of corrosion protection strategies and specifications
- ▶ Design and commissioning of cathodic protection, corrosion prevention, corrosion monitoring and stray current mitigation
- ▶ Corrosion rate assessments and inhibitor/biocide evaluation in process systems



Durability design, construction trouble shooting and condition audits of buildings



Marine structures investigation, repair (including CP), corrosion monitoring and maintenance audits



Industrial structures investigation and repair



- ▶ Coatings evaluation, selection, and specification
- ▶ Surveys of existing facilities including corrosion audits, stray current investigations, coating defect surveys, and monitoring/maintenance/audit of cathodic protection and corrosion monitoring systems

### DURABILITY ASSURANCE

We advise owners, designers and contractors in determining objectives for achieving durability. We undertake assessments of potential deterioration of materials throughout the intended service life, in their specific exposure environments and applied design loads. This commonly involves:

- ▶ An appraisal of the deterioration mechanisms that will affect the various materials during the service life
- ▶ Identify the critical elements with respect to durability
- ▶ Determine how the selected design will achieve the durability objectives of identified critical elements
- ▶ Post construction inspection and maintenance program required to achieve the durability objectives
- ▶ Durability plans to document the findings throughout the construction processes of tender, preliminary design, detailed design, construction and completed project
- ▶ Response on requests and audits during construction
- ▶ Asset management audits throughout the service life to achieve lowest whole-of-life cost

### CONSTRUCTION MATERIALS TECHNOLOGY

GHD's broad range of materials technology skills benefit clients by recommending appropriate use of materials for the intended application. We have experience in all levels of materials selection for applications including:

- ▶ Product development and concept design
- ▶ Raw materials evaluation and approval before use
- ▶ Preparation of technical specifications or method statements
- ▶ Practical installation assessment
- ▶ Site trials design and evaluation
- ▶ QA/QC relevant to achieve technical compliance
- ▶ Trouble shooting materials problems, non-compliance and disputes

We collaborate with laboratory facilities to develop test programs to evaluate the performance of materials in specific applications.

### MATERIALS TESTING AND RESEARCH

GHD collaborates with laboratory facilities at the forefront of applied research in our materials fields, allowing our clients to benefit from a unique combination of state-of-the-art knowledge and practical engineering skills.

GHD is one of Australia's leading private sector materials testing and research authorities supporting the Asia-Pacific and Middle East regions, with an international reputation for excellence.



CP audit of platforms, pipelines, mooring, floating production and storage



Water structures maintenance investigation, repair and maintenance audits



Civil infrastructure durability design and materials technology on call support

## SAFETY

Inherent in our values is our commitment to safety. It is our priority to provide a healthy and safe working environment for our people and contractors.

## GHD MATERIALS TECHNOLOGY SERVICES

- ▶ Diagnosis investigation and remedial engineering
- ▶ Corrosion engineering
- ▶ Durability assurance
- ▶ Construction materials technology
- ▶ Materials testing and research

## COMPLEMENTARY SERVICES

- ▶ Asset management
- ▶ Climate change assessment
- ▶ Maintenance management
- ▶ Sustainable construction
- ▶ Structural design
- ▶ Facade design
- ▶ Project management



## ABOUT GHD

GHD is an international professional services company. Our people deliver innovative solutions by combining technical skill and experience with an understanding of our clients' objectives and aspirations.

With more than 6000 people in a network of 100-plus offices throughout Australia, New Zealand, Asia, the Middle East, the Americas and Europe, we serve clients in the global market sectors of infrastructure, mining and industry, defence, property and buildings and the environment.

Central to our clients' prosperity and GHD's success are forward-thinking engineers, architects, planners, scientists, drafters, project managers, economists and supporting staff. Our people embrace the core values that have sustained the company since inception – **Teamwork, Respect and Integrity.**

Established in 1928, GHD is ranked as one of the world's leading engineering, architecture and consultancy firms. We are dedicated to our clients and their stakeholders, to being a responsible corporate citizen and to improving the quality of life around the world.

We contribute to the goals of sustainable development and are committed to managing the social, economic and environmental impacts of our operations and assisting our clients to manage theirs in the provision of our technical consulting services. We recognise innovation as the key to realising this objective.

As a member of the World Business Council for Sustainable Development (WBCSD), GHD actively participates in the public debate on the role business has to play in managing climate change, energy, development and ecosystems.

GHD operates under a Practice Quality Management System that is certified to AS/NZS ISO 9001:2000 and our Environmental Management System (EMS) is accredited to international standard ISO 14001 by NATA Certification Services International (NCSI).

For more information, visit [www.ghd.com.au](http://www.ghd.com.au)



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