

## Maximise the value of your assets



### Concrete inspection for port terminal, Sharjah

As part of its ongoing maintenance and upgrade programme at Hamriyah Port in the Arabian Gulf, British Petroleum commissioned Halcrow to survey the concrete structures in its 20-year-old liquefied natural gas loading terminal, then recommend repairs and provide a method statement for the works.

We advised extensive repairs to extend the service life of the terminal, and the creation of a detailed asset register for each facility, to enable systematic inspection and repair prioritisation in the future.



### Repair and protection of cooling tower, Saudi Arabia

Our understanding and experience of both cathodic protection methods and concrete repair halted the deterioration of SABIC's sea water cooling structure at Jubail, improving its service life and enhancing its safety.

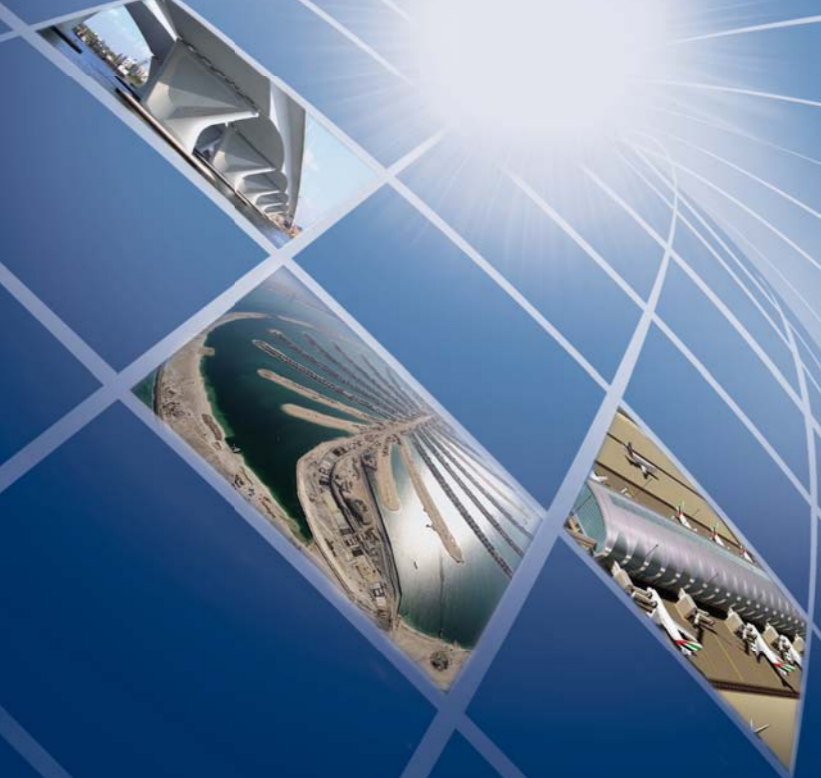
Halcrow's services included the structural design of new slab panels and the design of cathodic protection systems, as well as technical specifications for new concrete, concrete repair and cathodic protection works.



### Waterproofing for Jumeirah Island Villas, Dubai

Halcrow's investigation into leaking roofs at a number of Jumeirah Island villas, and our subsequent advice for remedial action, enabled real estate and asset management group Nakheel to eradicate leakage and regain the confidence of villa owners and tenants.

We supervised the implementation of our recommendations, which included an improvement to the villas' waterproofing system and suitable repairs. Residents were able to see a water test to prove the problem had been solved.



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**Halcrow**

# delivering value



## Maximise the value of your assets

Optimise the life and value of your assets with Halcrow's skills and experience in asset management.

We deliver cost-efficient solutions for managing, repairing and replacing the assets you own, so you can minimise risk and build your business with confidence.

Effective asset management is good business practice, linking operational, financial and technical elements in a sustainable way to deliver a complete solution.

For this, Halcrow is your perfect partner.

We cover the complete asset life cycle, from initial design to risk analysis, inspection and repair assessment, material specification, and quality assurance for new construction.

*Sustaining and improving the quality of people's lives*

- asset management
- condition surveys and investigation
- concrete technology
- corrosion management
- quality assurance

### Best practice

Our work in concrete specification takes into account the Concrete Society's *Guide to the Design of Concrete Structures in the Arabian Peninsula* and *Guide to the Construction of Reinforced Concrete in the Arabian Peninsula*.



Palm Jumeirah, Dubai

### Life-cycle costing

To assess the condition of two of its key assets – Dubai's Palm Jumeirah and Palm Jebel Ali – and the cost of their long-term management, Nakheel Infrastructure turned to Halcrow.

These artificial islands are benefitting from the first application in the Gulf of whole-life costing for asset management. Our role included developing a database and life-cycle cost model for each asset. The model delivers realistic maintenance costs, enabling the client to make cost savings by identifying preventative work and providing essential information for planning service charge levels.



Yas Island, Abu Dhabi



Al Garhoud Bridge, Dubai

### Concrete specification for Yas Island

Halcrow's expertise in materials specification and concrete design is set to benefit the Yas Island development, Abu Dhabi, including its Formula 1 racetrack, signature hotels and Ferrari Experience theme park.

Commissioned by ALDAR Properties, Halcrow has set design criteria, standards and specifications for concrete, as well as other structural materials and processes. This aims to ensure a consistent quality and minimum 50-year service life for reinforced-concrete structures throughout the 2,500ha site.

### Service life surety for the Al Garhoud Bridge

When fine vertical cracks appeared on a newly cast concrete abutment pile cap for the new Al Garhoud Bridge over Dubai Creek, the Dubai Municipality asked Halcrow to investigate and suggest repair works and some preventative measures for casting the remaining concrete structures.

To prevent early thermal cracking, our report recommended thermal modelling and a different approach to pouring concrete. As a result of our modelling, the client was reassured about the service life of the bridge and could complete construction on time.

### West Bay fire investigation, Qatar

Halcrow's assessment and recommendations for repairs following a fire in the underground car park at the Al Dana Tower in Doha ensured the damage could be rectified and the tower's construction completed.

Our investigation into fire damage of the basement structure was commissioned by Arab Loss Adjusters LLC. We then recommended structural repairs to damaged concrete members and floor areas, ensuring the structures under the main tower retained their integrity.



West Bay, Qatar



new build  
existing structures  
industrial  
residential  
commercial



Dubai International Airport, Dubai

### Quality assurance at Dubai International Airport

Part of the airport's expansion programme, Halcrow's quality assurance plan for the new third terminal provided essential guidance for the construction team.

To minimise risk to client Al Naboodah Laing O'Rourke, we set out and monitored delivery of a consistent standard for concrete and waterproofing work by the contractor on this major element of the project. Halcrow also prepared and implemented the project management plan and project procedures.