

# Water solutions in India

Leading the way in sustainable design solutions for water projects

**Mott MacDonald is a uniquely diverse global management, engineering and development consultancy. Our US\$1.7 billion business spans 140 countries with over 14,000 staff working in 12 core sectors.**

**Asia, the world's most populous continent, is one of the most water-scarce continents in the world. Reduced access to freshwater in the region is leading to impaired food production, loss of livelihood security, large-scale migration within and cross borders, and increased geopolitical tensions and instabilities. A holistic approach needs to be adopted for better water management and improved water and sanitation services in the region to help alleviate poverty and improve health. It will also meet the wider challenge of the Millennium Development Goals.**

**With over 80 years worldwide experience in every aspect of water development and management, Mott MacDonald has the skills and commitment needed to help governments, funding agencies, regulatory authorities, urban local bodies and water service providers deliver practical, cost-effective, innovative and sustainable water solutions from concept to implementation.**



**Our specialist knowledge in all aspects of water development and management help ensure sustainability of each water supply project we undertake.**

## Our services

### Studies

- Demand forecasting
- Techno-economic feasibility studies
- Financial modelling
- Tariff modelling
- Due diligence
- Technology evaluation
- Documentation/validation
- Asset management

### Design

- Preliminary/concept design
- Detail design
- Design assistance
- Civil engineering
- Structural engineering
- Process engineering
- Network modelling
- Mechanical/electrical engineering
- Independent design checking

### Planning

- Concept planning
- Master planning
- Utility planning
- Project planning and preparation
- Stakeholder consultation
- Sustainable development planning
- Land usage review
- Infrastructure development plan
- Environmental impact assessment
- Optioneering study

### Tender and bid preparation

- Tender advice
- Bid process management
- Bill of quantities/cost estimation
- Preparation of tender documents
- Bid evaluation

### Investigation/surveys

- Reconnaissance
- Site investigation
- Topographical surveys
- Geotechnical investigations

### Construction economics

- Cost estimation
- Contract advisory services
- Contract documentation
- Cost modelling
- Quantity surveying

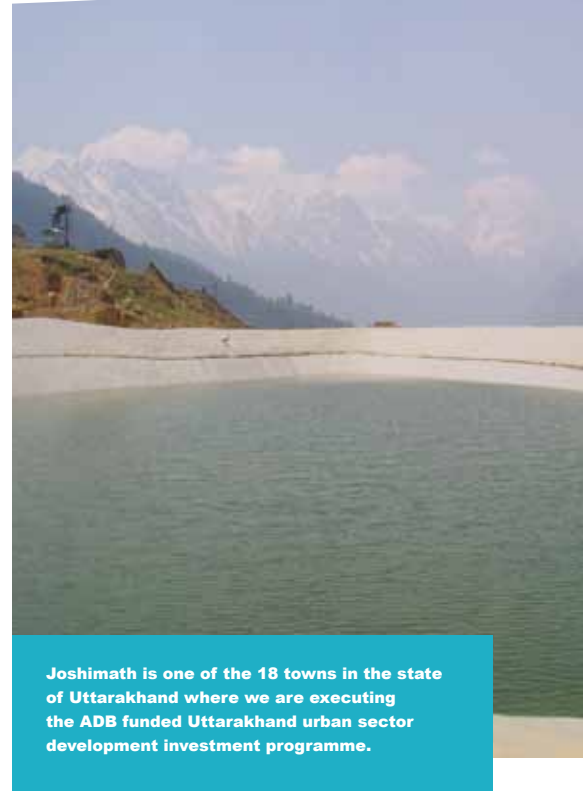
### Construction supervision/project management consultancy

- Project management
- Construction supervision
- Contractor procurement
- Monitoring and evaluation
- Programme management
- Procurement advice

## Our track record

**Water supply project phase IV, Mumbai** To meet the ever increasing demand of water supply for the city of Mumbai, we are undertaking feasibility studies covering yields, dams, floods, hydropower generation, conveyance, water treatment and storage. The water supply augmentation is carried out from Modak Sagar Dam situated on the Vaitarana River via two tunnels. A 100m deep vertical shaft is used to divert 350MGD water to the city. A 900MLD water treatment plant at Bhandup in Mumbai is further treating the water prior to supply. Our role also includes design and construction supervision/project management.

**Water supply for five coastal towns, Karnataka** Mott MacDonald-led improvements to sanitation and water management for the ADB funded Karnataka Urban Development and Coastal Environmental Management Project are improving life for over one million people in five coastal towns – Mangalore, Udipi, Ullal, Puttur and Kundapura of Karnataka. We undertook feasibility studies for dams and barrage design and rehabilitation. We conceptualised, designed, supervised, executed and assisted in commissioning four river intake structures, pumping stations and a water treatment plant. The 1412km long water distribution network comprises 29 elevated and 11 ground level service reservoirs and a 175km long water transmission main.



Joshimath is one of the 18 towns in the state of Uttarakhand where we are executing the ADB funded Uttarakhand urban sector development investment programme.



Udipi is one of the five coastal towns in Karnataka where we are improving sanitation and water management for the ADB funded Karnataka urban development and coastal environmental management project.



We assessed the financial and economic viability of the World Bank aided rural water supply and environmental sanitation project in the state of Andhra Pradesh.

**Water supply, Mysore, Karnataka** The ADB funded Karnataka Urban Infrastructure Development Project included a 150MLD water intake structure and pumping station, 50MLD water treatment plant, 12km long and 1100mm diameter transmission main, 11.5ML ground level and elevated service reservoirs and 70km long distribution network to augment the water supply for over 1 million people in the city of Mysore. Mott MacDonald undertook detail design, construction supervision and commissioning assistance for the project.

**Urban sector development investment programme, Uttarakhand** We are undertaking feasibility studies, topographical surveys, geotechnical investigations and project review for 18 towns in the state of Uttarakhand to improve water supply, sewerage systems and slums. We're also providing basic and detailed engineering, bill of quantities, rate analysis, cost estimation, bid assistance, procurement assistance and construction supervision for the ADB funded Uttarakhand Urban Sector Development Investment Programme.

### **Cauvery Stage IV Phase 1, Bangalore, Karnataka**

Mott MacDonald carried out preliminary design review, detailed design and tender documents preparation and construction supervision of Phase I which aimed to meet an additional demand of 270 million litres of water per day for Bangalore city. The project included a 10km long and 2000mm diameter raw water pipeline of 730 MLD capacity; 270 MLD capacity water treatment plant; three pumping stations, a transmission system facilitating water lifts up to 145m via 80km long and 1950mm diameter steel pipeline; 50km long and 1950mm diameter trunk pipelines and seven 217 MLD capacity water reservoirs. We were also commissioned for Phase II of the project which included a 3km open channel and 16km raw water pipeline; a 500 MLD capacity water treatment plant; 115km long and 2400mm diameter clear water transmission pipelines and three pumping stations. The project also encompasses a significant water loss reduction component as a part of the water distribution system improvements programme.

### **Municipal water pumping and storage in Bhubaneswar, Orissa**

This World Bank aided project included financial analysis; detailed tariff study and cost benefit analysis. It included economic assessment of alternative configurations, determination of peak and off-peak tariffs based on long-run marginal energy and capacity costs and alternative project options as well as preparation of sensitivity analyses. We were also involved in conducting a techno-economic feasibility study on a pilot demand side management project through the municipal water supply system.

## **Landmark global projects**

**Water supply, Karachi, Pakistan** Mott MacDonald undertook feasibility studies and preliminary designs for Phase I of the project to cater to the additional 900 MLD water requirement for the Karachi city. The River Indus water is carried from a canal located 45km away from the city. The project included a water treatment plant located at Hub, gravity filters and chlorine disinfection facilities and wash water recovery system and utilities.



Mott MacDonald is helping UK water company Anglian Water to increase and secure water supplies. At Wing Water Treatment Plant, a 90 million litres per day extension is under construction as well as a 40km pipeline.



Mott MacDonald undertook design review and delivery of water treatment and supply systems and provision of sewerage, storm water and solid waste management for Ugandan small towns water supply and sanitation project.

### **Nakorn Ratchasima water supply project, Thailand**

Mott MacDonald undertook design, commissioning assistance and construction supervision of a new 16m diameter intake structure and a water treatment plant for Nakorn Ratchasima water supply expansion project. Leading the contract management team we undertook programme monitoring and management, progress reporting, measurement, preparation of payment certificates, design reviews and approvals of subcontractors' plant and materials. We also undertook a water supply tariff study and private sector participation studies, and prepared the service agreement and tender documents for the 100MLD water treatment facilities. Our close project monitoring and sustainable solutions played a key role in timely project delivery and cost control.

**Master plan for water sector, Oman** To cater to the domestic and industrial water supplies in Oman that would minimise the municipal water supply costs and maintain traditional irrigation practices, a master plan was conceived. On the basis of seawater desalination plants we proposed large schemes for coastal and inland communities' water demands. An alternative plan maximising use of groundwater from outside the agricultural areas with desalinated seawater was also proposed. This would potentially reduce investments from £2 billion to £1.7 billion depending on groundwater investigations. The master plan also encompassed proposals for institutional development, private sector participation, tariff policy, leakage control and re-use of sewage effluent. The institutional and financial proposals aimed at the creation of independent water authorities primarily funded by their revenues.

### **Contact us**

**Ramesh Kumar**

T +91 (0)79 2657 5550

E ramesh.kumar@mottmac-india.com

To find out more see

[www.mottmac.in](http://www.mottmac.in)

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