

# SUSTAINABILITY CAPABILITY STATEMENT

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WHO WE ARE

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We are **engineers, scientists** and **consultants** who place trust in the power of **design to create a better future.**

At its best, **good design** can regenerate communities, protect natural environments, connect people across vast distances; **it can provide new energy solutions and create buildings that people feel happy to be in.**

We strive to put the best of ourselves in every solution we deliver. **We do this as a matter of professional pride, but also because it is our design philosophy to always make room for the human experience.** Ultimately, we measure our success by how well people and communities are served by what we have done.



# WHO WE ARE

We are a global practice of engineers, designers and consultants who share a commitment to excellence in everything we do.

## Our Approach

We take a **fully integrated multidisciplinary approach** to our work. Bespoke teams are assembled from across the whole group on a project by project basis, ensuring the right expertise is brought to bear on each individual project. Such a deep level of collaboration across disciplines demands clear communication. We recognise the **importance of conveying technical information** clearly both within our own teams and to clients and stakeholders in order to **empower effective decision making**.

## Culture

Ramboll has won numerous awards for **design innovation and excellence**. We have a reputation as innovators because we are willing to question assumptions in the interests of **creating more practical, sustainable and economic designs**. A genuine passion for engineering informs everything we do. We apply the same rigour and enthusiasm to the design of a waste water management strategy as we do to a single façade connection detail. In whatever we do we aim to produce relevant, **sustainable solutions** that serve people and communities over the long term.

## Heritage

Ramboll was founded in Denmark in 1945 and quickly grew to become **one of the most influential Scandinavian consultancies**. Our history embraces some of the **most recognisable projects in the world** including the Øresund Crossing, the Great Belt Bridge, BBC Broadcasting House, the Ferrari World Theme Park and the Royal Danish Opera House.

The Ramboll Middle East practice was established in 1999 and has won numerous awards for its innovative work throughout the region.

## Services

We provide multidisciplinary services in the areas of **Buildings, Transport, Environment, Energy, Oil & Gas and Management Consultancy**. Our expertise embraces the whole life cycle of a project from strategy and masterplanning in the early stages to the **delivery of precise technical sustainable solutions and supervision of construction**. Sustainability is the core of our business that drives our integrated and multidisciplinary services — **our discipline coverage is detailed and comprehensive**.

## Delivery

With offices around the world, Ramboll is well placed to bring **global technical expertise** to bear in unique local contexts. Whether we are building an airport in India, a wind farm in Wales or a library in Kazakhstan, we **unite the leading scientific thinking** of the day with a hands-on knowledge of the region. This 'global knowledge, local partner' delivery model is a cornerstone of our philosophy.

## Locations

Ramboll has a total of **200 offices** in Europe, Asia, the Middle East, India and Russia. Our Middle Eastern team of specialists draw on the united global expertise of the practice, delivering industry-leading solutions through our Abu Dhabi, Dubai, Fujairah, Doha, Riyadh and Jeddah offices.

*'Sustainability is the main agenda today, when delivering the cities of tomorrow.'*

Hans Henrik Bech, Managing Director

# SUSTAINABILITY

Sustainability has many definitions. At Ramboll, we use the UN's holistic definition of sustainable development. We do not see buildings as isolated sustainable systems - we see them as part of neighbourhoods and cities.



## A good business

Sustainable solutions were once additional investment reserved for the most idealistic of developers. Today's soaring energy prices make sustainable solutions good business for everyone. The investment in low energy housing is repaid by savings in energy use over the lifetime of the houses. Sustainable design shows responsible behaviour and is becoming "the license to operate".

- Passive solar design
- High building performance
- Efficient HVAC systems and lighting
- Thermal mass
- Natural Ventilation
- Photovoltaics
- Solar thermal
- Ground source heat pumps
- Free cooling from near water sources
- Wind turbines integrated into the building
- Combined heat and power systems

## Sustainability features

At Ramboll, we see it as our mission to promote economically, environmentally and socially sustainable designs. For each project, we aim to incorporate the sustainable design features most appropriate to each specific site. This includes passive and energy efficiency measures, followed by identifying the most feasible low carbon and renewable energy technologies.

When required, we make sure buildings are certified according to international standards and organizations such as:

- The US LEED system
- The Abu Dhabi Estidama Pearl Rating System
- The Qatar QSAS/GSAS Rating system
- The UK and International BREEAM rating system

# ENERGY STRATEGY AND PLANNING

The making of a strategy and plan for the production, transmission, distribution and use of energy is the starting point for efficient energy management at all levels - from companies to local authorities and government.



Ramboll's capabilities in energy strategy and planning span the entire energy chain from production to end-use. We assist public as well as private sector clients, including municipalities, utilities, central agencies, IFIs, developers and industries to prepare energy strategies and action plans.

## Our services include:

- Strategic energy plans
- Urban energy master plans
- Policy analyses
- Energy efficiency mapping and analyses
- Advice on energy legislation
- Feasibility studies
- Project proposals
- Micro and macro scale energy planning

In line with political and legislative initiatives, and the increasing focus on and awareness of our climate, it has for many municipalities become a focus area to prepare energy strategies to ensure that every step necessary is taken to reduce the energy consumption and the total CO<sub>2</sub> emission in the most cost-effective way.

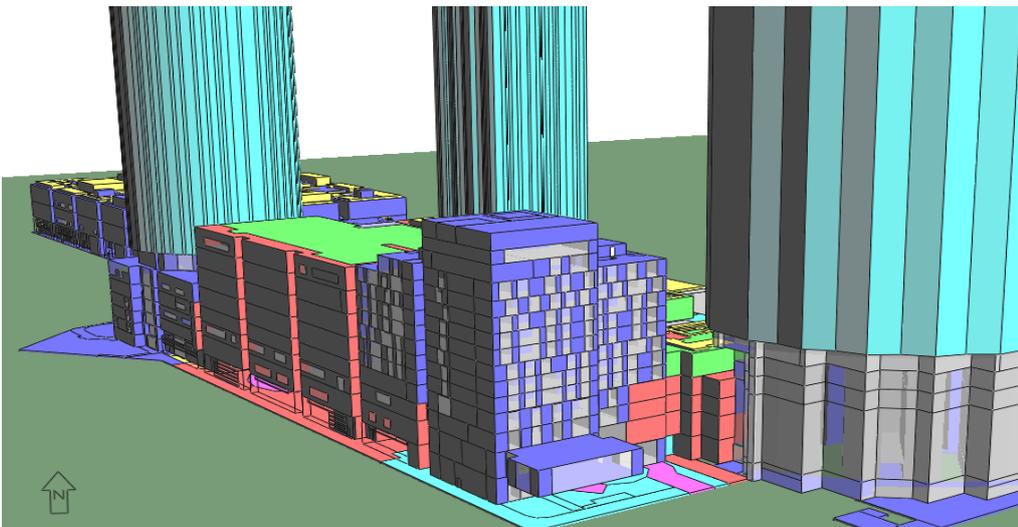
These strategies are designed in close co-operation with energy suppliers and large energy consumers.

These strategies include all relevant activities in the municipality and a forecast of the energy balance on the territory of the municipality, including use of resources and CO<sub>2</sub> emissions.

Our aim is to serve our clients' demands in the best way by anchoring our planning services in the relevant service areas. This ensures that our planners will develop realistic and applicable plans in close contact with the designers who implement the plans.

# ENERGY MODELING/ENERGY EFFICIENT DESIGN

Energy modeling involves simulation of building operation based on real time data and weather conditions; the model will determine the building performance and provide estimated energy consumption data to compare against energy use benchmarks/baselines.



Optimizing the building performance rely on many variables. This exercise can only be evaluated through energy modeling. Energy modeling helps in making informed decisions on modifications related to energy reduction.

A 3D energy model is built using state of the art Integrated Environmental Solutions (IES) virtual environment software, which has the capability to include almost every potential energy load on the building and estimate the savings when compared with a defined base building.

From the results of the simulation, diversified totals of cooling loads can be estimated and hence representing critical plant size and capital costs.

Reduction of these loads can bring significant cost savings. Breakdown of energy requirements indicated principal causal factors, thus identifying potential cost saving areas by reducing requirements.

Detailed energy report entailing

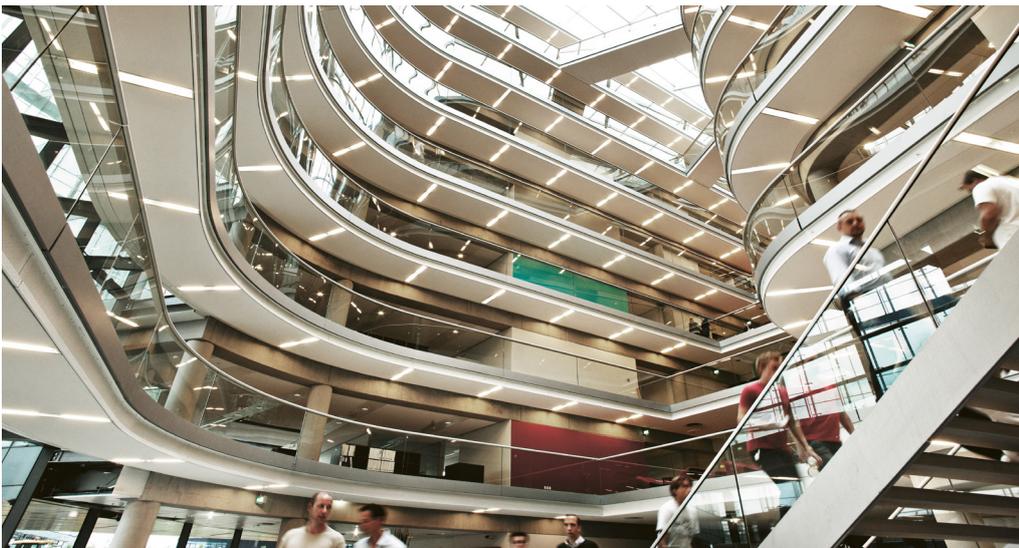
- Annual energy demand simulated hourly
- Heat gains from the envelope and occupant
- Breakdown of energy loads for lighting, cooling and equipment

Using the energy model, the team can also perform simple payback analysis and life cycle cost analysis which can assist the design team in justifying sustainable design inclusions such as optimizing the glazing performance, the level of envelope insulation and improving HVAC system performance.

The energy model will model the proposed low carbon or renewable energy technology and evaluate the energy and CO<sub>2</sub> savings.

# BUILDING LIFE CYCLE ASSESSMENT/DESIGN

The environmental impacts and carbon emissions associated with the building and construction sectors are at the centre of climate change debate.



As a result demand is increasing from both the public and private sectors for low carbon design buildings. Terms such as 'embodied energy' and 'embodied carbon footprint' are becoming well known.

Life Cycle Assessment (LCA) is an effective vehicle to analyze the cumulative environmental impacts of a building resulting from all lifecycle stages. From the initial raw materials to the end of life, LCA evaluates holistic environmental consequences of a building such as embodied energy, carbon emissions, air/water/soil pollution impacts, and human health impacts.

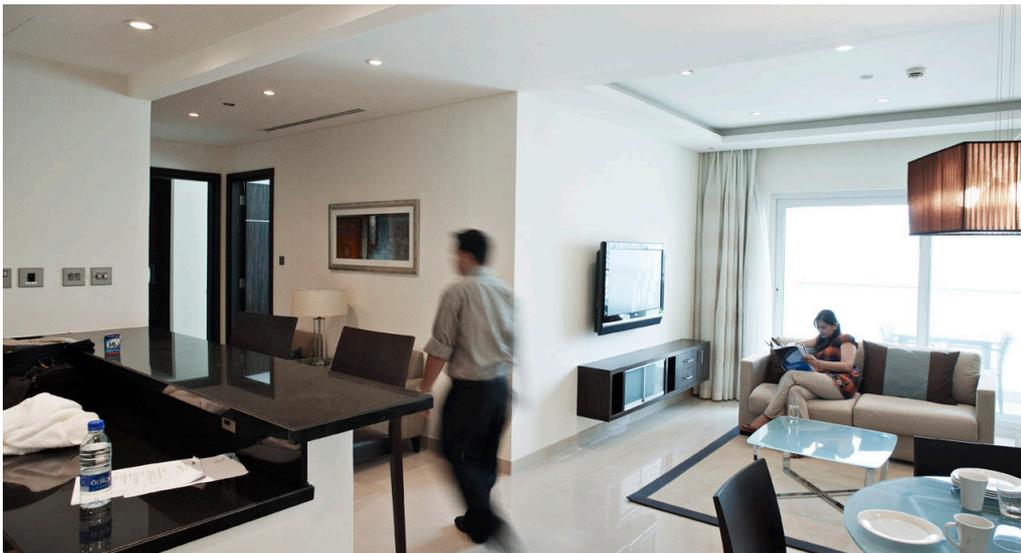
The results of LCA are utilized to announce the environmental performance of a building, or to identify inefficiencies or potential problems with design and construction.

## Benefits

- Ascertain the level of carbon emissions to identify carbon reduction potential
- Provide holistic design for environment (DfE) approach
- Market the environmental performance of a product against competitors
- Satisfy requests from customers, investors, and the public
- In line with Corporate Social Responsibility (CSR) principles
- Deliver low carbon footprint and sustainable building environment

# INDOOR ENVIRONMENTAL DESIGN

Indoor environmental quality refers to the quality of the internal conditions within the built environment.



To design for good indoor environment quality, a multitude of factors need to be considered, some of which include:

- Ventilation rates
- Indoor temperatures
- Relative humidity
- Presence of contaminants
- Amount of daylight and views
- Glare control
- Fresh air ventilation optimization
- Predicted mean vote assessment
- Indoor conditions simulation
- Daylight modelling
- Glare assessment and reduction
- Acoustics design to ensure acoustic privacy and comfort
- Indoor air quality measurement and testing
- Indoor contaminant mitigation during design
- Provision of a high-performance luminous environment through the careful integration of natural and artificial light sources
- Preliminary Computational Fluid Dynamics (CFD) for indoor air flow.

The quality of the indoor environment can significantly impact building occupants. Quality indoor environments can lead to:

- Increased occupant satisfaction
- Enhanced performance/productivity
- Reduced absenteeism
- Marketing advantage
- Reduced liability
- Lower operations and maintenance costs

Ramboll adopts a holistic and integrated approach to indoor environmental quality, and can provide advice / assistance in the following areas:

With a workforce of nearly 10,000 employees around the globe, Ramboll has the technical expertise and necessary computing resources to utilize tools such as Computational Fluid Dynamics (CFD) to carry out indoor environment design.

Detailed energy modelling, daylight and glare analysis, and CFD studies provide clients with valuable insights and information into complex situations that may be difficult or costly to obtain otherwise.

# DISTRICT COOLING AND DISTRICT HEATING

In hot, urban climates, city-wide district cooling systems are key to the cost-effective use of chilled water. Likewise, district heating systems can deliver heating to buildings in cold, urban climates



As cities aim to be carbon neutral, District Cooling and Heating systems become more important than ever. Ramboll is among the world's leading consultancies for the planning, implementation and operation of these city-wide systems. Our district cooling and heating departments work closely together with our departments for waste-to-energy, Combined Heat and Power (CHP) and renewable energy to provide optimal use of cooling and heating sources.

## District heating water

A city-wide, low-temperature district heating system is key to a low-carbon city. The system is cost-effective and can use carbon neutral heat sources, such as that from CHP plants with heat accumulators, waste-to-energy plants, geothermal plants, biomass boilers, large-scale heat pumps and large-scale solar heating plants. Even for small settlements, district heating with thermal storage can be a key component towards cost effective carbon neutral development.

Ramboll is a leading engineering consultancy in district heating with more than 40 years of experience in Denmark and in more than 19 other countries. Our services include all stages of planning, design, operation, maintenance

and management, and include technical, institutional, legal as well as economic aspects of the work. Our international market for these services has been growing, due to increasing concern over climate change.

## District heating steam and super-heated water

A special system for district heating, based on super-heated water or steam, is used mainly for industrial processes, but also in certain cities and hospitals. Ramboll has 40 years of experience with these systems, including the design of pipe systems with a proven lifetime of more than 50 years. We also have experience transforming these systems into more efficient, low-temperature systems.

## District cooling

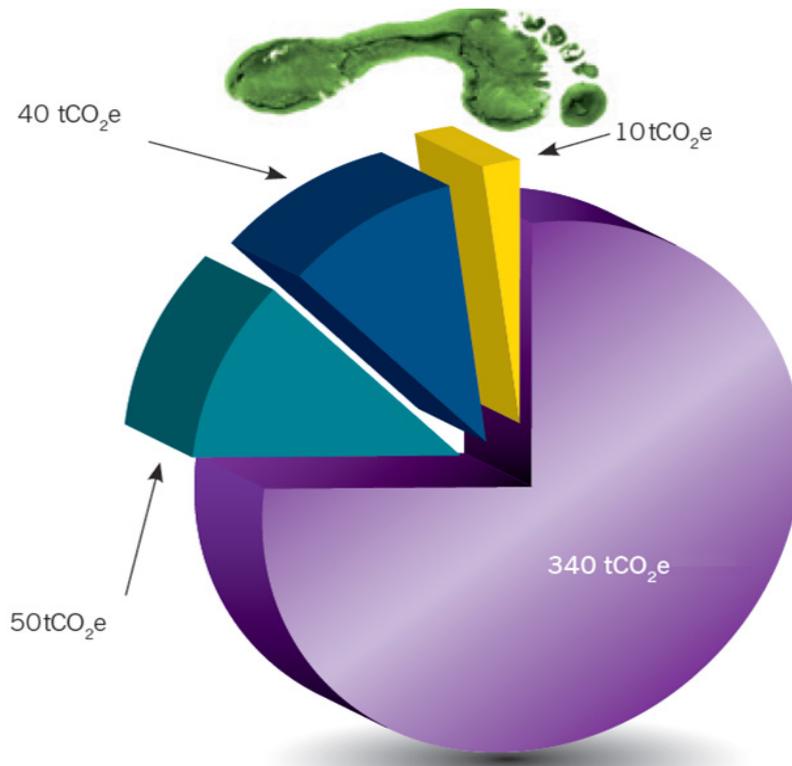
Decentralised chillers in district cooling systems can often be replaced by less expensive systems that use cold seawater, groundwater or carbon-free thermal energy. Our experience in district cooling includes chilled water storage, district cooling absorption chillers and centralised cooling plants.

## Heating installations in buildings

The efficiency of a city-wide heating system depends on its integration with low-temperature heating systems in buildings. We provide our customers with expertise in the design and operation of all facilities in the system, including building installations.

# CARBON MANAGEMENT

There is an increasing focus on energy efficiency and carbon emission reduction to businesses. Ramboll's Carbon Management services provide solutions for projects and businesses to proactively cope with growing carbon risks.



## Carbon Accounting

Ramboll has developed numerous carbon calculators and accounts for various projects as well as organisations. Carbon accounts assist clients in identifying main sources of carbon emissions as a first step to building effective management systems and whole life strategies for their reduction. We provide carbon accounts services for a large variety of construction sectors and clients to provide best value.

Ramboll also provides Carbon Management services. Carbon Management integrates a strategic framework for managing and reducing carbon footprint of a project or an existing business.

## Carbon Audit

The carbon accounts resulting from our carbon tools and calculators, which we develop in house, facilitate our carbon assessment and audit process and the greatest carbon impact areas could be identified and targeted for carbon reduction. Carbon Management methodology and plans will be tailored to each business case to keep in line with the project's/company's goals and strategy.

The accounting methodology, auditing procedure, and carbon management systems are flexible and can be adapted to project/industry specific situations. Our approach is in line with internationally recognized methods and guidelines such as the Greenhouse Gas Protocol (GHZ Protocol).

# CLIMATE CHANGE ADAPTATION

Climate Change can no longer be ignored, as it is already happening around the world. The last ten years were the hottest decade ever recorded. Climate change is possibly the greatest challenge facing humanity. Any species, ecosystems, landscapes and communities unable to adapt to change are under threat.



With the actual facts we are currently experiencing, most of scientists believe that climate change is happening as a result of the increasing concentrations of greenhouse gases (Gags) and in particular CO<sub>2</sub>e. However, no matter how successful efforts to reduce GHG gas emissions are, climate models indicate a changing climate for at least the next 40 - 50 years. Historic weather records will no longer be a reliable guide for future business planning and new risks need to be appraised and planned for.

## Climate change risk model

At Ramboll we assist projects, organisations and governmental authorities to generate a specific climate change risk model for project/location specific business and develop the appropriate adaptive responses through:

- Adaptation workshops - understanding specific vulnerabilities and risks
- Developing an adaptation strategy
- Developing adaptation responses to increase resilience to a changing climate

# ESTIDAMA SERVICES

Estidama is an aspiration, a desire to achieve a sustainable way of life. The assessment is currently tailored for UAE, Abu Dhabi Emirate.



Plan Abu Dhabi 2030 has a clear course for sustainable urban growth and development. Abu Dhabi Urban Planning Council (UPC) has developed a sustainability Program called Estidama in accordance with this plan.

## Pearl Design System

The Pearl Design System is a set of standards and rating methods, uniquely tailor made to the climate of the region. It broadly includes the following seven categories:

- Integrated Design Process
- Natural Systems
- Livable Buildings
- Precious Water
- Resourceful Energy
- Steward Materials
- Innovating Practice

The Pearl rating system is used to confirm proposed project design and strategies are consistent with Estidama goals. There are three types of Pearl rating systems including: the Pearl Building Rating System (PBRs), Pearl Villas Rating System (PVRS) and Pearl Community Rating System (PCRS).

For PBRs the scoring level is as follows:

- 1 Pearl All Mandatory credits
- 2 Pearl +60 points
- 3 Pearl +85 points
- 4 Pearl +115 points
- 5 Pearl +140 points

## Our Services

We provide consultancy services for: Estidama review and process, development review process, energy modeling, shading analysis and lifecycle analysis based on Estidama requirements. Our Estidama projects range from hotel resorts, villas and commercial buildings. We have carried out Estidama assessments for community based developments using the community rating system.

## Engagement

Ramboll sustainability team has established a strong relationship with the Abu Dhabi Urban Planning Council, who are managing the Estidama process. We have been active in the review and progress of Estidama building regulations and as such are contributing to the new tool in the region.

# LEED SERVICES

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System, was developed by United States Green Building Council (USGBC) and currently managed by the Green Building Certification (GBCI). LEED provides a suite of standards for environmentally sustainable construction.



## OUR SERVICES

- LEED consultancy
- LEED concepts
- LEED assessment & supervision
- LEED for new construction
- LEED for Core & Shell
- LEED for commercial interiors
- LEED for existing buildings
- LEED for neighbourhood development
- LEED for Homes

In LEED 2009 there are 100 possible base points plus an additional 6 points for Innovation in Design and 4 points for Regional Priority. Buildings can qualify for four levels of certification:

- Certified - 40-49 points
- Silver - 50-59 points
- Gold - 60-79 points
- Platinum - 80 points and above

The projects are reviewed under six main categories:

- Sustainable Sites (26 Points)
- Water Efficiency (10 Points)
- Energy & Atmosphere (35 Points)
- Materials & Resources (14 Points)
- Indoor Environmental Quality (15 Points)
- Innovation & Design Process (6 Points)
- Regional Priority ( 4 points - NA outside US)

LEED certified buildings are supposed to use resources more efficiently when compared to conventional buildings which are simply built to code. LEED

certified buildings often provide healthier work and living environments, which contributes to higher productivity and improved employee health and comfort. The USGBC has compiled a long list of benefits of implementing a LEED strategy which ranges from improving air and water quality to reducing solid waste, benefiting owners, occupiers, and society as a whole.

## Energy Modeling

LEED requires energy modeling to assess the energy use of a building and to quantify the savings attributable to the proposed design. Energy modeling optimizes the building design and allows the design team to prioritize investment in the strategies that will have the greatest effect on the building's energy use.

LEED requires energy modeling if any of the 19 points possible under Energy & Atmosphere Credit 1, for optimizing energy performance, are to be attained. Energy modeling is a continuous process that gets more detailed and refined as the design process progresses.

# QSAS/GSAS SERVICES

The Qatar Sustainability Assessment System (QSAS), currently renamed to Global Sustainability Assessment System (GSAS), developed by Gulf Organization of Research & Development (GORD) in collaboration with the University of Pennsylvania in USA. QSAS/GSAS aims to create a sustainable built environment appropriate and applicable to meet the local and regional requirements.



## QSAS/GSAS Categories

Unlike other Building Rating Systems, QSAS/GSAS assessment is a performance based, relying on quantitative measurements evaluated by many calculators to determine the score of different credits, grouped under eight categories:

- Urban Connectivity
- Site
- Energy
- Water
- Materials
- Indoor Environment
- Cultural & Economics
- Management & Operations

## QSAS/GSAS Score and Rating

The QSAS/GSAS rating is a 'Star' rating system with 'one Star' represents the minimum rating, and 'six Stars' is the outstanding level for the highest rating. The number of Stars depends on the overall points achieved from assessing all credits.

## Our Approach

QSAS/GSAS rating system is relatively new in the region and we had the experience of going through the teething problems of the development stages from the start of the QSAS rating system till the latest version of GSAS. We have excellent relationship with GORD and our work has been selected by GORD as exemplary to be demonstrated and published to guide other Consultants. This bespeaks our core understand of the QSAS/GSAS rating system and our determination to do excellent work.

Our QSAS/GSAS services covers wide range of developments types, including GSAS Typologies for different Buildings, GSAS District for large scale and masterplanning developments, and complex assessments for sophisticated buildings such as air-conditioned Stadia.

# PROJECTS



# SUSTAINABLE PROJECT THE CHANGE INITIATIVE (TCI)

The Change Initiative building in Dubai, one of Ramboll's Engineering Services sustainability projects, has recently achieved the highest LEED Platinum rating in the world from the US Green Building Council

Securing 107 out of 110 available credits has made the Change Initiative building the most sustainable building globally under the LEED Commercial Interiors (LEED CI) rating system. The Change Initiative is a non-profit organisation that provides environmentally healthy solutions and products, and has incorporated environmental considerations into all aspects of their 4,000 m<sup>2</sup> head office, from the roofing and energy-efficient lighting to the water system.

## A cost effective sustainable result

Ramboll was appointed to offer mechanical, electrical plumbing and LEED services via sub consultancy agreements through HoK, the lead architect and consultant on the project. The Change Initiative, was determined to ensure that the building would achieve 100% sustainable solutions, and subsequently sought to attain a LEED Commercial Interiors platinum rating.

Our mechanical, electrical, and plumbing design teams along with the fire engineering and sustainability teams embarked upon a mission to ensure that the most cost effective sustainable solutions were offered to our valued client. In order to achieve these particular targets and to ensure the most cost effective recommendations for the customer, the team evaluated each and every possible solution available.

## Reducing electrical consumption

The project also incorporated LED light fittings, which have significantly reduced electrical consumption whilst the building envelope was maximised with respect to U-values and air tightness all contributing towards achieving LEED Platinum.

The varying solutions were each considered for the project specifically in relation to the capital cost along with the running costs. The team developed a series of pay-back-period calculations to justify the installation of each technology for the building.

### Location

Al Barsha, Dubai

### Client

TCI

### Architect

HOK

### Engineering Services

MEP Services

Sustainability services

Fire & life safety

Achieved the Highest LEED Platinum rating in the world from the US Green Building Council

MEP Middle East Awards 2012 Sustainable GCC Project of the Year Award



### IMAGE

The Change Initiative - front facade. Image courtesy of TCI

## The world's number one sustainable building is also cost effective

### Worth knowing about the LEED rating system

Leadership in Energy and Environmental Design (LEED), developed by the U.S. Green Building Council (USGBC), consists of a suite of rating systems for the design, construction and operation of high performance green buildings, homes and neighborhoods that are designed, constructed, maintained and operated for improved environmental and human health performance.

Over 44,000 projects are currently participating in commercial and institutional LEED rating systems, comprising over 8 million square feet of construction space in all 50 states and 120 countries.

### About the Change Initiative

The Change Initiative is a one stop destination specialising in solutions that reduce human impacts on the environment and promote sustainable development.

Based in Dubai, it is the first enterprise of its type anywhere in the world and aspires to be a global brand name in the sustainability space, providing a single platform for solutions that touch lives.



**IMAGE**  
The Change Initiative - Exterior. Image courtesy of TCI

# ADEC KINDERGARTENS, ABU DHABI

Estidama 2 Pearl Rating for 6 Kindergartens in the Emirate of Abu Dhabi, UAE

Abu Dhabi Education Council (ADEC) intended to develop a set of kindergartens in the Emirate of Abu Dhabi as part of its Abu Dhabi Future School Program.

Each Kindergarten has a built-up area of approximately 5,100sqm and is divided into approximately 16 classrooms, a library, breakout area, exterior playgrounds and a service block.

Ramboll has been commissioned by Dewan Architects to provide Estidama and Sustainability Consultancy for the KGs and also Environmental Assessment for compliance with Estidama requirements.

The project target was a 2 Pearl rating under the Abu Dhabi Green Building rating - Estidama Pearl Rating System. Among others, the project has implemented a number of sustainable strategies such as energy efficient design, efficient lighting, water efficient landscape and high efficiency water fixtures. Outdoor thermal comfort is ensured by the wide implementation of green areas and shading devices.

Each of the 6 kindergartens has been approved by UPC under the Estidama Pearl Rating System for a 2 Pearl rating.

## Location

Abu Dhabi, UAE

## Client

ADEC / Dewan Architects

## Architect

Dewan Architects

## Engineering Services

Sustainability services (Pearl Qualified Professionals - PQP)  
Environmental services

## IMAGE:

ADEC Kindergarten aerial view  
courtesy of Dewan



# ECO-ARISH

A combination of structural and sustainability innovation created a building that fits perfectly into its environment

Social responsibility is an integral part of Ramboll’s fundamentals. This means we strive to ensure our services contribute to sustainable development that benefits people and communities around the world. We aim to minimise environmental impact whenever we can.

Eco-Arish is a proposed accommodation facility for the Abu Dhabi Authority for Culture and Heritage (ADACH) staff restoring old forts in Liwa Oasis. Our aim was to deliver a self-sustaining design solution, with no carbon emissions.

This project will be the first contemporary building using date palm tree and stems (Arish) as building materials, a method that has challenged our structural engineers.

Our team has identified and thoroughly tested a structural design that ensures these natural building materials meet international building standards.

In addition to using local materials, the facility is designed to be self sufficient in energy and water.

Our sustainability experts proposed several renewable technologies ensuring this, such as a solar pumping system, a solar desalination plant providing water, a solar energy system providing electricity and an air tank to store surplus energy. Any waste generated will either be recycled or consumed on-site, with no need for any landfill.

Upon completion, our sustainability team is carrying out a study of the performance of solar panels in sandy, desert conditions.



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**Location**

Liwa, Abu Dhabi, UAE

**Client**

ADACH

**Architect**

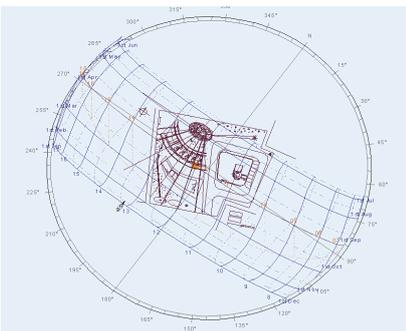
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**Engineering Services**

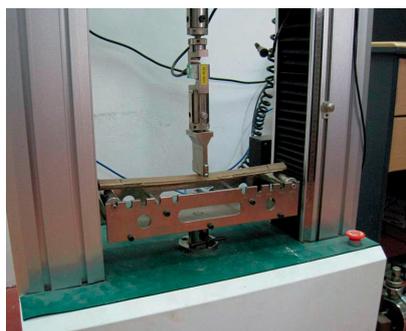
- Structural engineering
- Sustainability services
- Building services

**IMAGES**

- 01 Eco-Arish
- 02 Sunpath,
- 03 Testing of palm stems,
- 04 Green meter measuring solar panel performance



02



03



04

# THE ATRIUM

Landmark 70-storey ‘twin’ building designed with ambitious sustainability criteria

The Atrium is a landmark project located in a prime location in the Dubai waterfront development. The project comprises two 70-storey towers which merge at the 49th floor.

### Sustainable design

Ramboll undertook multidisciplinary engineering services, including consultancy to achieve a LEED Gold rating, and detailed energy modelling for the project.

Numerous sustainable design initiatives were included in the project design to meet the stringent LEED requirements.

Photovoltaic panels were located on the podium level and vertically on the balconies of the building to generate electricity for onsite usage. A special solar ‘crown’ was designed for the upper 50 metres of the building which included banks of solar panels behind the glazing to generate hot water, while maintaining the aesthetics of the building. High performance glazing was utilized to reduce the heat gain significantly through the curtain wall façade.

Condensation recycling systems provided a portion of the water for irrigating landscape areas for plants that require little water.

### Location

Dubai Waterfront, Dubai, UAE

### Client

Sunland Group

### Architect

Pickard Chilton International

### Engineering Services

Structural engineering  
Building services  
Fire & life safety  
Sustainability services

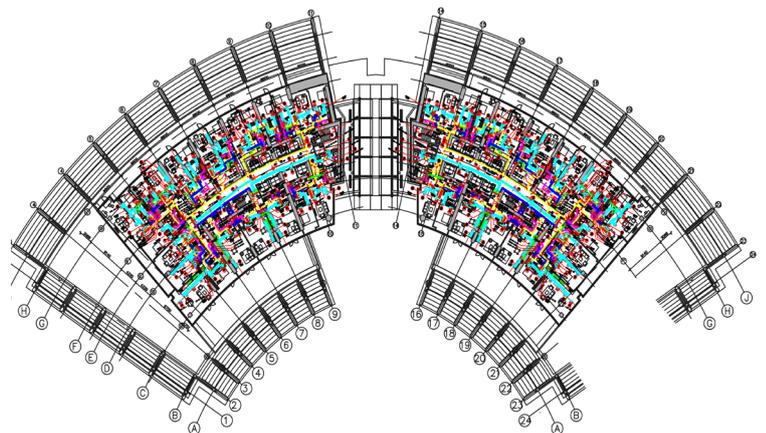


01

### IMAGES

01 The Atrium, courtesy of Pickard Chilton

02 Building services plan



02

# AL FALAH NEIGHBOURHOOD DEVELOPMENT

## Sustainable self contained community

The Al Falah Neighbourhood Development is a self contained community comprising two main components - the town centre and five residential villages.

Within the town centre lies the commercial district where residents living within the community may work and relax. Within the town centre are office blocks, hotels and a large shopping mall with multiple open green spaces for the use of the residents and the general public.

The five residential villages are identical in terms of space planning. There is a village centre, school and play areas within each village. The aim of the space masterplan is to provide easy access to everyday amenities.

In addition, the green outdoor spaces, numerous footpath and bicycle paths provide residents with the option of outdoor activities within the community.

Each building within the community has been designed with the focus on water and energy consumption. The project is striving to achieve LEED certification for the Shopping Centre in the Town Centre and the neighbourhood as a whole.

### Features

- LEED NC for Shopping Centre
- LEED Neighbourhood for whole development
- Bicycle Paths

### Location

Al Fala, Abu Dhabi, UAE

### Client

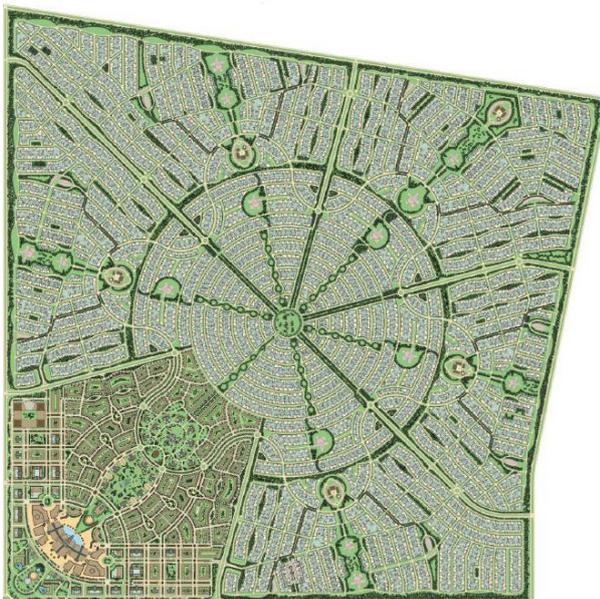
Aldar

### Architect

GHM

### Engineering Services

Sustainability services



### IMAGES

Al Falah  
Neighbourhood  
Development



# COMMUNITY VILLAS

## The Community Villas Residential Development, Reem Island, Abu Dhabi

The RSP villa project in Abu Dhabi is a distinctive residential quarter within Najmat on Reem Island, which pays respect to the surrounding site context and constraints. The development comprises a series of 42 luxury “sea villas” that complement the sea palaces on the opposite shore. The stylish, highend villas are architecturally distinctive and will be set discretely behind a unifying boundary wall positioned within a consistent public realm, characterized by luscious green surroundings. The villas are two storey with a mixture of 3, 4 and 5 bedroom types. The grounds include stunning water features and landscaping and incorporate a clubhouse with gym, swimming pool and amenities. The total gross floor area for this new project is in excess of 12,000sqm.

Ramboll has been engaged by the architect RSP Mena to provide building services design and Estidama consultancy for the development. Ramboll will fully design one prototype unit for each of the major categories of villas and replicate the prototype design for remaining units.

As the project is located in Abu Dhabi, it needs to comply with minimum Estidama requirements, equivalent to a 1 Pearl Rating under the Estidama Pearl Villa Rating System. With our help the client would like to enhance on this and is considering pursuing a 3 Pearl Rating.

As well as providing building services design, Ramboll is also responsible for incorporating sustainability principles and strategies into the project; to meet Estidama requirements and to produce a more energy efficient, resource conscious and sustainable solution. Our team will help this forward thinking development achieve a smaller carbon footprint and ensure it has less overall impact on the environment.

**Location**

Naimat, Reem Island, Abu Dhabi, UAE

**Client**

Reem Developers

**Architect**

RSP Mena

**Engineering Services**

Building services  
Sustainability services



IMAGE  
Community Villas

# DOHA MARINA MALL

## Provision of engineering services for retail and leisure facility

Marina Mall is a 180,000sqm retail and leisure facility in the Lusail development on the east coast of Qatar. The mall includes over 70,000sqm leasable retail over three main levels, as well as a hypermarket within the basement. It will also house cinemas, family entertainment centre, restaurants with terraces overlooking the marina and spa facilities.

The design is inspired by natural forms created when water and land meet. Five interconnected retail 'islands' link the mall to a body of water that runs through the centre of the scheme. Water guides the visitor through the mall, leading to and from the marina, while internal waterfalls connect the different levels. Spaces between the five pebble-shaped islands will be landscaped.

The project is aiming for 5 stars under QSAS, Qatar's sustainability rating tool. To integrate all engineering services precisely within the structure, BIM was embraced by the Project Team to deliver a 3D solution using REVIT. This provided the client with a powerful design, collaboration and management tool to ensure the optimal design is achieved during the design process through construction drawings and maintained post completion and into occupancy.

### Location

Doha, Qatar

### Architect/Client

HOK

### Owner/Developer

Mazaya Qatar Real Estate Development Co., QSC

### Development Manager

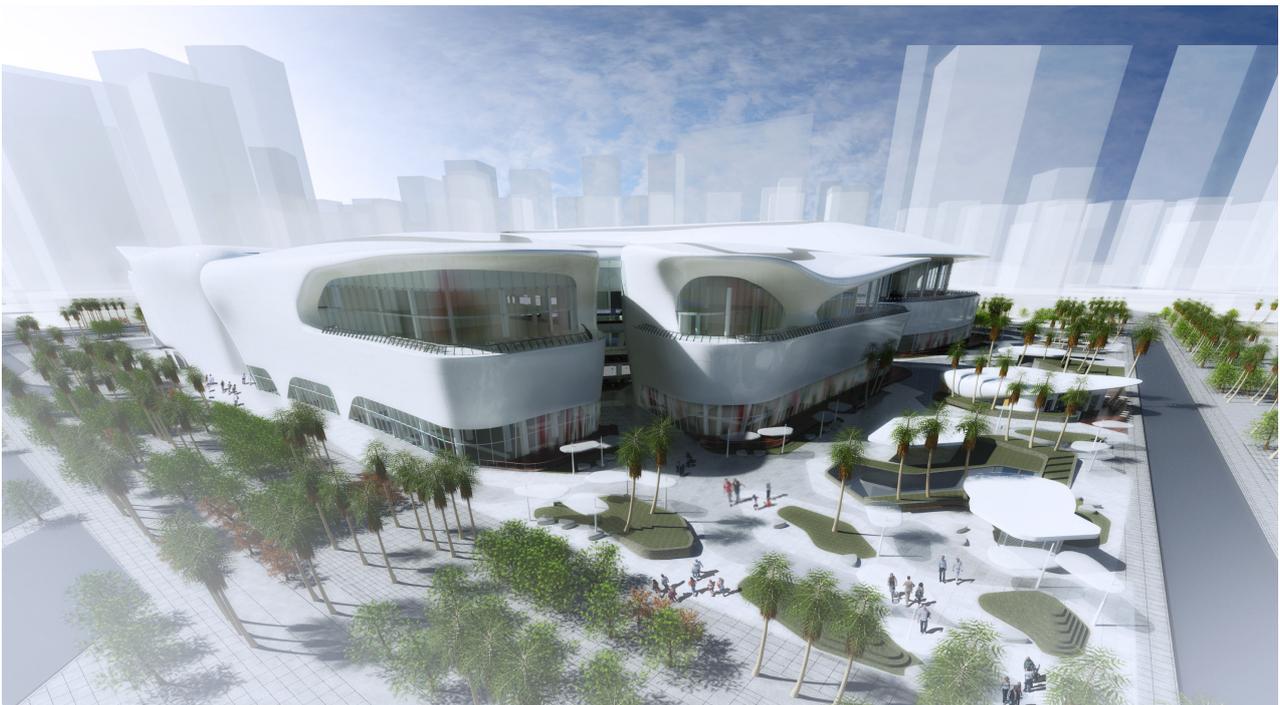
Mazaya Real Estate Development Co., KSC

### Engineering Services

Lead Structural Consultant  
Structural engineering  
Building services  
Infrastructure  
Fire & life safety  
Façade maintenance  
Transport planning  
Waste management  
QSAS  
Acoustics

### IMAGE

Doha Marina Mall, courtesy of HOK architects



# ABU DHABI EDUCATION COUNCIL HEADQUARTERS, ABU DHABI

World class educational facilities for employees and students

Abu Dhabi Education Council (ADEC) wishes to construct a new headquarters in Abu Dhabi, UAE and requires masterplanning and consultancy design services for the new HQ Building.

The proposed project is in response to continuous attention and direction by the City of Abu Dhabi to improve educational facilities and provide world class facilities and accommodation for students and staff.

The size of the plot for masterplanning is over 2000,000sqm of which 270,000sqm is designated to the HQ Building. The project duration is estimated at 6 months with 16

months site supervision. Ramboll is ideally situated to complete the engineering consultancy and was awarded the project based on its reputation and range of services offered.

Ramboll will also employ specialist sub-consultants for wind tunnel, vertical transportation, acoustics, security, audiovisual, telecommunications and GIS.

Ramboll is pleased to support ADEC with their vision to provide world class educational facilities and to help improve the standard of education within the UAE.

## Location

Abu Dhabi, UAE

## Client

ADEC

## Architect

3D Reid

## Engineering Services

Structural engineering  
Building services  
Fire & life safety  
Sustainability services  
Environmental services  
Infrastructure  
Traffic engineering

## IMAGE:

ADEC Headquarters concept design stage courtesy of 3D Reid



# CENTRAL MARKET

## Revolutionary redevelopment in central Abu Dhabi

Central Market is a large mixed use development comprising several different usage areas, including traditional style souks, new retail areas, and three towers of office, residential and 5 star hotel use. The development is under construction in downtown Abu Dhabi, and will incorporate a large 'bridge' section over the current Khalifa street.

Ramboll has been appointed the Sustainability consultant on this project with the aim of achieving various LEED ratings (silver, accredited, etc) for individual development areas.

The project incorporates many innovative sustainable solutions, such as roof-mounted PV panels and a wall-mounted solar hot water system on

the tower facades, to reduce energy consumption. The design incorporates a significant amount of garden area on the podium rooftops to reduce the local heat island effect.

### Features

- LEED and ESTIMADA ratings
- Multiple ratings
- Fast tract program



### Location

Abu Dhabi, UAE

### Client

Aldar Properties

### Architect

Fosters + Partners

### Engineering Services

Sustainability services

# GREECE ON THE WORLD ISLANDS

A sustainable reclaimed island off the coast of Dubai

A few miles off the coast of Dubai is The World, continents of man-made islands resembling land masses around the globe. Ramboll sustainability team has been assigned the challenge of making the Greece Island 'green'.

Greece is a high density island about 4km away from the Dubai Jumeirah coastline. The project consists of a boutique hotel with 66 residences.

Our sustainability team has been involved since the early stages of the development and are working closely with the design team and master developer. The project has been carefully designed to minimize its environmental impacts by identifying environmental risks and implementing mitigation measures. As a result, good sustainable practices and strategies are being incorporated into the design of the project, which will reduce energy and water consumption of the project. The project targets to be LEED Silver certified on completion.

The development will have more than 5% of its energy generated from renewable sources on the island itself. It will supply for the domestic hot water from solar thermal systems. Recyclable waste will be collected and sent to a recycling facility on shore.

## Features

- LEED Silver rating
- More than 5% renewable energy
- Solar DHW
- Waste recycling



01



02

## Location

The World, Dubai, UAE

## Client

Nakheel

## Architect

Architetti Associati

## Engineering Services

Sustainability services

## IMAGES

01 Villas and pools courtesy of Architetti Associati

02 Greece resort

# LANDMARK TOWER

The tallest and defining building of Dubai Maritime City, Landmark Tower is a new mixed use development designed in the shape of a billowing sail and standing at the apex of city's headland location

With views of the Gulf, the coastline, and Dubai, Landmark Tower is the first ever purpose-built maritime center in the world. As an international hub for maritime business, Landmark will provide a luxury hotel, office, and retail services.

## Uniting design with sustainability

Ramboll was appointed as both sustainability consultant and facades engineer on this project. Working together, these teams found a solution that preserved the architectural features that are central to the building's character while also achieving a demanding LEED Gold Rating.

Our teams designed a series of nine light tubes tunneled into the podium, significantly reducing the artificial lighting requirements of the building. These tubes reflect light down into the nine floors of underground car parking during day time, while reflecting light up from the car parks to provide lighting on the podium levels at night. In an innovative twist, they also provide structural support for the large podium.

Our specialist facades team designed the building's skin to allow the slanting lines of the interior structural columns to be visible from the exterior, essential to keeping the architectural vision of the building, while ensuring the internal environment was not

compromised as a result. A special coating has been developed for the glass making up the majority of the façade, while the bays in front of the columns are transparent and uncoated. Our façade engineers have been deeply involved in the process of finding the right type of glass and coating to minimize cooling loads.

Our façades team played a further role in the signature look of the building, designing the huge central glass wall that upon completion will give the appearance of a waterfall cascading down its seaward aspect. This key feature will be emphasized by a water-effect lighting scheme to be built into the façade. To ensure the building secured a LEED Gold Rating, our sustainability team also incorporated renewable energy into the building's design, in this case through solar panels to heat water, installed at the podium level.

As a result of these design features, and a strict adherence to other LEED criteria, the building will use 20-25% less energy than other similar buildings upon completion



### Location

Dubai Maritime City,  
Dubai, UAE

### Client

Dubai Maritime City

### Architect

Nikken Sekkei

### Engineering Services

Fire & life safety  
Facade engineering  
Sustainability services

# BAHRAINI ISLAND RESORT

A five-star resort retreat development on the Abu Dhabi coast.

Bahraini Island is located just off Abu Dhabi, and is the perfect location for a five star resort retreat. Ramboll were commissioned to provide Estidama services to the resort development, which included one central hotel building and more than 30 surrounding villas of varying sizes.

The development is amongst the first to adopt Estidama and includes numerous sustainable features, such as tents over the villas acting as shading devices, and providing energy star rated appliances across the entire site. The development is also providing native vegetation to feed and attract the Oryx herd on the island within the development to help educate the visitors about local wildlife.

Ramboll's sustainability advice to the masterplan is helping the project achieve a pearl rating, no small feat considering the expanse of the development. Our coordination of a the new Estidama tool has helped the project to meet sustainable goals in a challenging environment.

#### Location

Abu Dhabi

#### Client

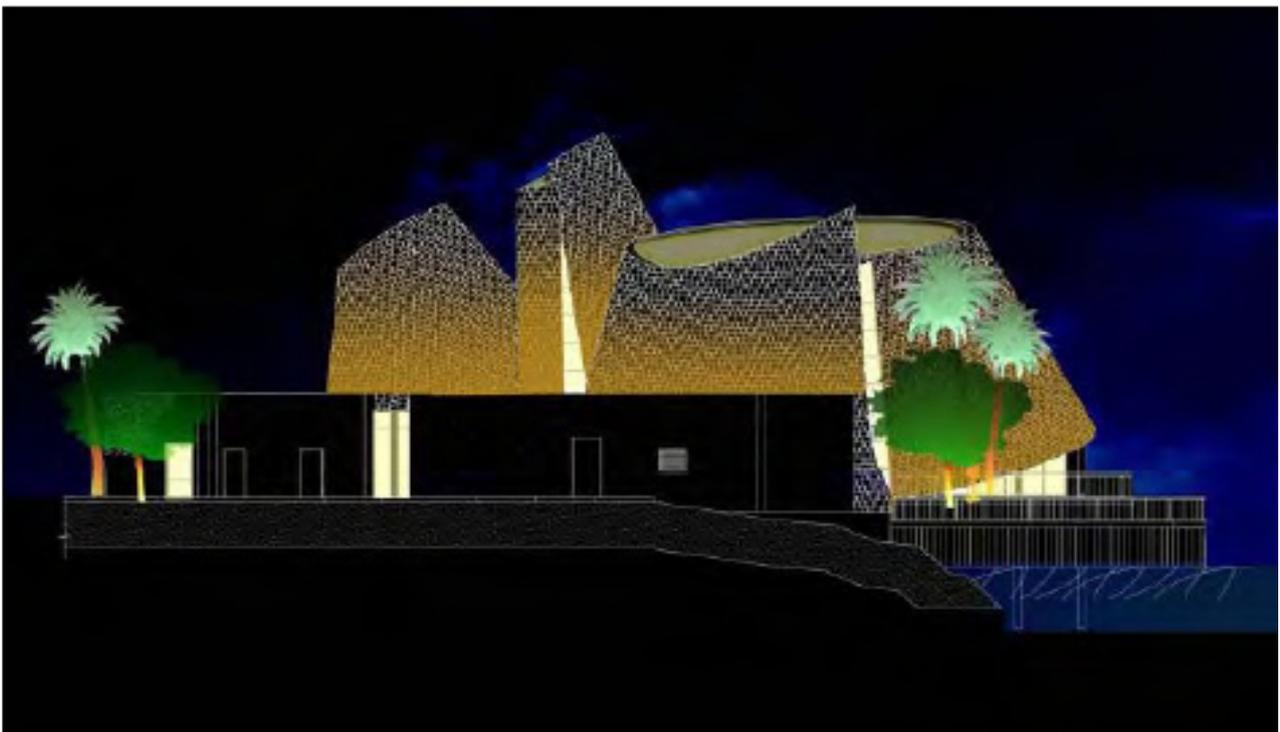
Dewan Architects

#### Architect

Dewan Architects

#### Engineering Services

Sustainability services



# FORTUNATO

An affordable, self-sustained development in Jumeirah Village

A Mediterranean style gated community, Fortunato is a five storey hexagonally shaped apartment building with two three storey townhouse structures. Parking is provided below ground covering an area of 16,000sqm.

Our teams were challenged to work within an established framework with a very short design programme. Pre-sold apartment layouts required our structural team to develop innovative and efficient load paths to accommodate the existing design.

The complex hexagonal shape of the development tested our engineers in finding locations for movement joints, as well as designing to accommodate the extensive landscaping and pool area.

Our sustainability team applied sustainable principles and energy efficient design techniques to the development, making it a comfortable and healthy place to live.

## Location

Jumeirah Village, Dubai, UAE

## Client

Al Tajir

## Architect

U+A

## Engineering Services

Structural engineering  
Building services  
Fire & life safety  
Sustainability services

## IMAGE

Fotunato  
courtesy of U+A Architects



# BRITISH COUNCIL OFFICES - DUBAI

The groundbreaking design for this project stores cool air in rocks, has re-used construction waste and is adding to new data for sustainability research

An exciting collaboration between our structural, building services and sustainability teams, the complex consists of multi-purpose office and meeting rooms.

## Storing cool air

The design incorporates a passive 'rock store' feature, an underground cavity with rocks placed within it, used to cool the buildings by 'storing' the cooler night time air.

At night, the rocks within the store are cooled down. In the day, these cool rocks act as passive cooling devices. Outside air passes through the rock store and is cooled before entering a fresh air conditioning unit. This way, the air temperature entering the unit is lower than the ambient outside air temperature, reducing the load on the cooling coil and reducing costs. Temperatures through the cooling coil are expected to be reduced by eight or nine degrees centigrade.

## Adding value to rubble

To store this cooling energy requires materials with a high ability to retain the cool air stored in them. The knowledge gained in previous, similar projects was used to great effect, with the use of spherical objects proving better at transferring heat from the air than tubes.



### Location

Dubai

### Client

British Council

### Architect

Group Consult International

### Engineering Services

Structural engineering  
Building services  
Sustainability services

### IMAGE

British Council Offices

# ABU DHABI PLAZA - ASTANA

## Multi-disciplinary mixed use facility in Kazakhstan

The Abu Dhabi government is collaborating with the Kazakshstan Government to develop Abu Dhabi Plaza, a large mixed use facility which will be located in Astana, Kazakhstan.

The key components of the project are a signature 75-storey tower, a 28-storey office, a 4 star hotel and a large mixed use podium.

The total built up area of the project is approximately 375,000sqm and the design program duration is scheduled for 12 months.

The design of the project will encompass a design review, schematic design, design development and construction documentation.

Ramboll are providing Aldar with a multidisciplinary service including structural engineering, civil engineering & infrastructure, traffic consultancy, fire & life safety, façade consultancy, acoustics, sustainability services and waste management.

The flagship 75-storey mixed use office/residential tower and the 28-storey office building have been designed with a reinforced concrete core combined with a composite steel floor system. These have been provided to span the 12m clear spans required to meet the project brief. The steel beams will span between the reinforced concrete core and the composite columns on the perimeter. The steel system has been adopted to keep the self-weight of the structure to a minimum and therefore ensuring the foundation and column sizes are kept to a minimum.

### Location

Astana, Kazakhstan

### Client

Aldar

### Architect

HKR Architects

### Engineering Services

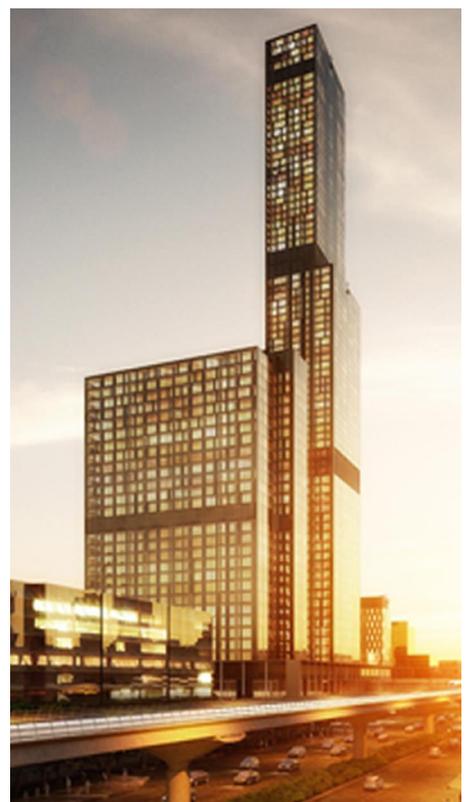
Structural engineering  
Civil engineering & infrastructure  
Fire & life safety  
Sustainability services  
Waste management  
Traffic consultancy  
Facade consultancy  
Acoustics

### IMAGES

01 Abu Dhabi Plaza Astana  
02 Concept design stage courtesy of HKR Architects



01



02

# KING ABDULLAH PETROLEUM STUDIES AND RESEARCH CENTRE

Ramboll is advising on one of the first LEED Platinum developments in the Middle East

King Abdullah Petroleum Studies & Research Center (KAPSARC) is a community development comprising a research centre, community facilities and single family residential buildings in the Kingdom of Saudi Arabia.

The community facilities, with seven buildings, are pursuing LEED Platinum under the LEED NC for Multiple Buildings, making it one of the first developments targeting this rating in the Middle East. In addition, the single family residential development of 200 residential buildings is targeting a Platinum rating under the LEED for Homes, the first project to attempt this outside of North America.

The project adopts sustainable design and construction practices from the concept stage to achieve the Platinum certification and to reduce the carbon footprint of the project from a life cycle perspective. The project introduces multiple on-site renewable energy systems and water saving strategies. In addition, the project limits site disturbance through considerate design and the implementation of a construction activities management plan. The project also promotes biodiversity through ecology rehabilitation.

## Location

Riyadh, Saudi Arabia

## Client

Saudi Aramco

## Architect

HOK

## Engineering Services

Sustainability services

## IMAGES

KAPSARC community centre and residential buildings, courtesy of Zaha Hadid



# KAPSARC HOMES

Saudi Aramco wish to build a worldclass petroleum study and research centre and residential community as part of an R&D initiative.

The King Abdullah Petroleum Studies and Research Centre (KAPSARC) is to be developed on a site of approximately 200Ha and is located between Riyadh and King Khalid International Airport, Saudi Arabia

The project will comprise research and educational facilities, as well as community facilities and residential dwellings for many of the staff and students at the centre. One of the centre's key design criteria is sustainability and high targets have been set by the client. The project has been designed taking into account numerous LEED credits and the aim is to achieve a LEED Platinum green building development rating.

Ramboll are providing specialist support to SK Engineering - Saudi Aramco's contractor for this project. Ramboll will provide construction assistance over a 24 month period to achieve the LEED construction credits within the contractor's scope of works. Ramboll's scope of works is focused around developing an energy efficient building design and providing energy saving solutions and includes:

- LEED Training
- LEED Action Plan
- LEED Construction Practice Plan
- Material Tracking/Verification
- LEED Progress Report
- Site Supervision
- LEED Submission

**Location**

Riyadh, KSA

**Client**

Saudi Aramco

**Architect**

HOK, Scado

**Engineering Services**

Sustainability services



01

**IMAGES**

01 KAPSARC

02 Place of worship

03 Aerial view of the iconic center



02



03

# KING FAISAL SPECIALIST HOSPITAL AND RESEARCH CENTRE, KSA

Ramboll provided a sustainability review during the masterplanning stage of this project to help our client achieve LEED Accreditation

Our client desired to introduce sustainable design into the King Faisal Specialist Hospital & Research Centre, Jeddah, Kingdom of Saudi Arabia. The total built up area is approximately 100,000sqm.

We provided a sustainability review during the masterplanning stage of this project to help our client achieve LEED Accreditation.

Our holistic approach to design and operation was valued during the early stage of the project.

We focused on improving the energy and environmental performance of the design, which was viewed as the most effective way of achieving LEED accreditation. We also undertook high level energy modelling as part of the exercise. This helped with the design, and also ensured that the architect understood the impact of his design decisions during further design stages. rating.

Following the masterplanning process, the project is continuing to pursue LEED rating based on the recommendations made by Ramboll.

## Location

Jeddah, Kingdom of Saudi Arabia

## Client

King Faisal Specialist Hospital and Research Centre

## Engineering Services

Sustainability services



## IMAGE

King Faisal Specialist Hospital and Research Centre, KSA

## SALALAH VILLAS, OMAN

Project Salalah is a world class resort destination on a 424 hectare site in Salalah, Oman.

The development will be a mixed use development built over a number of phases and packages including approximately 32,000sqm of built up area comprising 41 cliff edge villas, which Ramboll has been contracted to design.

Having worked on similar types of projects, Ramboll has the proven knowledge and experience to offer engineering services for this project. Engaged by GHM, Ramboll will provide MEP and sustainability engineering services in support of this project.

Our design philosophy for this project will revolve around sustainability and functionality. A sustainably designed scheme will have a much lower lifetime cost than a standard development, and can also lead to higher demand from prospective owners and tenants. As this development

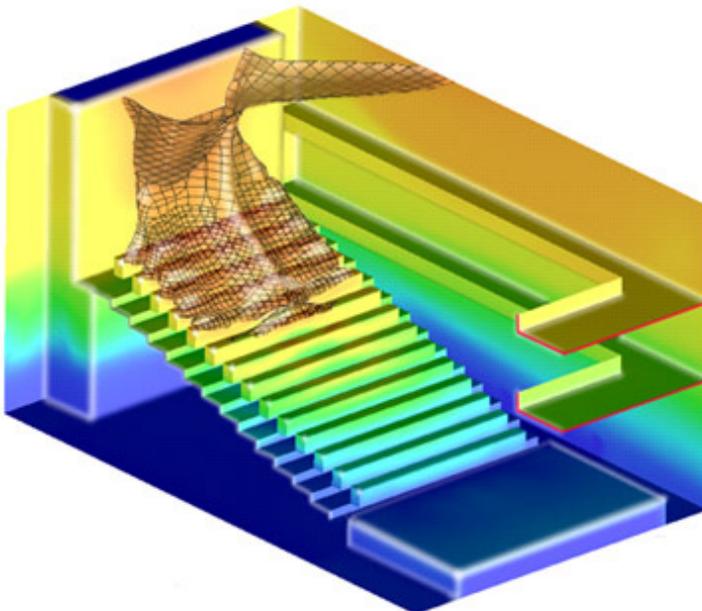
includes a sustainable masterplan strategy, sustainable initiatives included on the project can be more easily achieved through the buildings contributing to the 'larger picture' scheme.

Ramboll proposes systems to reduce the energy and water usage of the development and takes into account social considerations such as comfort and occupant satisfaction which are crucial to the development. We are proposing that the project conduct detailed wind analysis studies to better understand the ventilation supply and heat island effect build up which all relate to occupant comfort.

From an environmental perspective, the carbon production of the development will also be minimized.

Ramboll will provide the following services:

- Civil engineering
- Mechanical services
- Electrical services
- Plumbing
- Fire protection/control
- Vertical transportation
- Acoustics
- Sustainability
- Site supervision / design compliance



### Location

Salalah, Oman

### Client

Omninvest

### Architect

GHM

### Engineering Services

Building services  
Sustainability

# KHALIFA UNIVERSITY EXTENSION PHASE 1

Multidisciplinary services for 120,000 sqm extension

The Khalifa University Extension Phase 1 Project will add an additional area of 120,000 sqm to the existing 34,500 sqm of the current campus.

The University will serve a total of 3,000 students and 762 faculty and staff, when completed. The new campus will include Abu Dhabi's first Medical School, an integrated Engineering College and Research & Development Facilities.

This new extension will also provide students with world-class facilities like an Auditorium, Students Centre and Sports Centre. The University intends to enlarge their current Discovery Centre to 2,000 sqm to encourage public involvement in Science & Technology.

Ramboll Middle East is providing the following services: civil engineering, structural engineering, geotechnical engineering, infrastructure, MEP, façades, sustainability, waste management, environmental, traffic and local consultancy.

**Location**

Abu Dhabi, UAE

**Client**

Khalifa University

**Architect**

RSP

**Project Budget**

7.8 million AED

**Engineering Services**

- Civil engineering
- Structural engineering
- Geotechnical engineering
- Infrastructure
- MEP
- Façades
- Sustainability
- Fire & life safety
- Waste management
- Environmental
- Traffic
- Local consultancy



# GOLF COMMUNITY AT EDUCATION CITY, QATAR

124 hectare multi-use development

The Golf Course Community at Education city will be a part of the Education City development which comprises elite universities, several academic and training facilities and Qatar Science and Technology Park.

The Development will be located on a 124 Ha site. It is envisioned as a low rise, community with a mix of villas and townhouses integrated with the main 18-hole golf course and its facilities such as the golf academy, a training 9-hole golf course, a club house, tennis courts and swimming pools.

Ramboll is providing multidisciplinary services to develop a low rise, low/medium density, gated and fenced community incorporating the following objectives:

- The design of the golf course and academy will be in line with PGA standards and USGA design guidelines
- Design of all buildings will be fulfilling LEED/Sustainability certification requirements
- The development should represent international best practice and enable the staging of international golf tournaments
- Implementation of sustainable solutions where possible

## Location

Doha, Qatar

## Client

National Investment Corporation

## Period

2011-2013

## Engineering Services

Environmental services  
Sustainability services  
Structural engineering  
Infrastructure engineering  
MEP engineering  
Landscape architecture  
Architecture  
Design management  
Design Co-ordination

## IMAGE

Golf Course Community at Education City



# MAF TOWER 1

7,200 sqm, corporate office fit-out for Majid Al Futtaim Group

AF Tower 1 is a corporate office building housing various departments of Majid Al Futtaim Group. It comprises ground floor and 10 levels of office space and forms part of the Diera City Centre development, Dubai, UAE.

The project involved the refurbishment of level 7, 8, 9 and 10, main entrance, lift lobbies and toilets. The aim was to create a modern corporate image while incorporating sustainable principles and strategies to improve energy efficiency and create a more comfortable working environment.

The total fitout area was 7,200 sqm split into 5,100 sqm of office space and 2,100 sqm of landlords area.

Ramboll's scope of works was for the full MEP fitout of level 7, 8, 9 and 10 as well as modifications to the services in the main entrance, lift lobbies and toilets on each floor. It also included vertical transportation and fire strategy.

In addition to this, Ramboll was commissioned as the LEED consultant for the project with the aim of achieving a LEED gold rating for commercial interiors.

**Location**

Dubai, UAE

**Client**

Majid Al Futtaim

**Architect**

EDP

**Period**

July 2012- December 2013

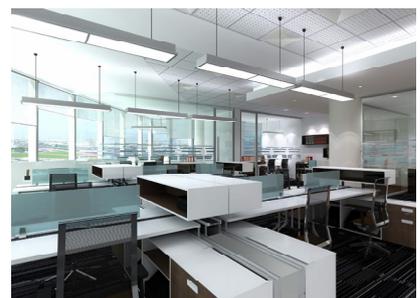
**Engineering Services**

MEP

Sustainability

Fire & life safety

Site supervision



# AL RAJHI BANK

## Multidisciplinary engineering services for this prestigious global bank

Founded in 1957, our client is one of the largest Islamic banks in the world.

Ramboll has been commissioned to provide multidisciplinary engineering services to support the building of a new corporate head office in Riyadh.

The bank's corporate head office building will comprise 4 basement levels, ground, and 36 office levels and is located on the main King Fahad road in Riyadh city.

The building is designed for a single user and is purely a commercial building with 3 levels of amenities, including a business center, restaurants and prayer hall floors for the occupants.

The building is also severed with a separate 2 storey Services block and an 11 level parking block. The total plot size is 10,246 sqm and the total built up area of the project is 121,445 sqm.

Ramboll is providing the following multidisciplinary services:

- MEP
- Facades
- Vertical transportation
- Environmental engineering
- Traffic
- Sustainability



### Location

Riyadh, KSA

### Client

Al Rajhi

### Architect

RSP

### Engineering Services

MEP

Facades

Vertical transportation

Environmental engineering

Traffic

Sustainability



# RECENT AWARDS & MARKETS



# RECENT AWARDS

Over the years we have won hundreds of awards recognising excellence across all our services. Listed below are a few highlights of recent achievements.

01 MEP Middle East Awards 2013  
**Specialist MEP Consultant of the Year**



02 MEP Middle East Awards 2012  
**Sustainable GCC Project of the Year Award:** The Change Initiative, Dubai

03 GCC Construction Week Qatar Awards 2012  
**GCC Engineer of the Year:** Andrew Darlington - Doha Marina Mall, Qatar Project



04 GCC Construction Week Awards 2010  
**GCC Tower Project of the Year 2010:** Shining Towers, Abu Dhabi

05 GCC Construction Week Awards 2009  
**GCC Engineering Consultancy of the Year:** Eco-Arish, Liwa Oasis, Abu Dhabi



06 Concrete Association of Finland:  
**The Concrete Structure of the Year 2012, 1st prize** for Seinajoki Public Library

07 Ground Engineering Award:  
**Consulting Firm of the Year 2012:** BBC Broadcasting House W1 and Ferrari World Theme Park, Abu Dhabi



08 Civic Trust Award 2012,  
**National Panel Special Award** for the The Hepworth Wakefield, UK



09 **Steel Construction Award, Sweden 2011:** for Ryaverkets waste water treatment plant in Gothenburg.

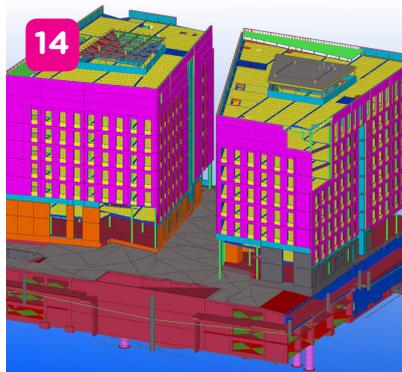


10 RICS South West Award 2012, **Project of the Year and Building Conservation Award** Tyntesfield restoration works ReDesigning the Terrace competition, winner



12 **European Award for Steel Bridges, 2012:** Acrobaten (footbridge at Oslo Central Station)

13 BREEAM Award 2012: **Education Project of the Year 2012** for Ashmount Primary School and Bowlers Nursery, Crouch Hill Park



14 Tekla Oyj: **Tekla Global BIM Award 2011, 1st Prize** for Skanska Finnish Headquarters, Hensilki

15 RICS South East Regional Awards — **Project of the Year 2011 Building Awards Public Building Project of the Year runner-up 2011 ICE South East — Engineering Excellence Award — Sustainability and Community Benefit 2011:** Aylesbury Waterside Theatre



16 Ramboll is among the **top 3 buildings designers** in Europe (source: ENR)

# BUILDINGS

Ramboll has worked on some of the most recognisable buildings in the Middle East and abroad.

From the iconic Shining Towers to the massive Ferrari World Theme Park, the new Cleveland Clinic to the exclusive Yas and Rotana Hotels: our engineers have **made their mark** on some of the most **forward-thinking buildings** in the world today.

We offer a **full range of engineering services** from structural, façade and fire engineering to building services, geotechnical, infrastructure and acoustics. Central to our approach is the return to first principles on each and every design problem we face. We test and re-test our assumptions, constantly challenging ourselves to create more relevant designs that serve our clients and their communities well.

We aim to **integrate our designs** across disciplines from an early stage. Our work on the Ferrari World Theme Park in Abu Dhabi is a good example of this. The Theme Park project was driven by its fast track design and construction programme. Using our network of teams and offices in both the UK and UAE, we developed a flexible approach to the engineering that enabled us to meet the programme level, where the Ferrari-themed attractions are located. Columns are set matching the challenges. Under the roof, we engineered three concrete frame levels; the undercroft at ground

level, a mezzanine and the plaza piling grid below. This supporting structure takes the weight of the 19 separate steel frame buildings that house the rides.

Our building services engineers worked with both the shell and core and theme park architects to ensure that all the systems could function together for different purposes, from the strict tolerance demand on electrical supply for rides to providing comfortable conditions for attractions and large value circulation areas.

One roller coaster is F1-style and uses a winch to slingshot the cars similar to craft launch systems. The second is GT-style. Each coaster has a steel and concrete framed station building consisting of an observation deck, load/unload platform, queue corridor, maintenance structure and overhead gantry crane. Ramboll designed the coaster foundations and buildings, integrated services and high voltage design, and the perimeter and maintenance roads.

At a time when the construction industry is facing immense challenges, we bring an **enthusiasm for the pure invention of engineering** coupled with a long-standing reputation for unlocking project potential when no one else can.

## OUR SERVICES

- Acoustics
- Building physics
- Building services
- Digital design
- Electrical engineering
- Facade engineering
- Facilities management
- Fire & safety
- Ground engineering
- Lighting design
- Mechanical engineering
- Refurbishment
- Structural engineering
- Survey
- Sustainability services
- Technical due diligence



*'From a supervisory perspective, James Cubitt & Partners worked very closely with Ramboll on the Shining Towers project. The project was delivered successfully and enabled Ramboll to showcase their ability to deliver innovative and complex solutions. Ramboll's highly skilled team provided multidisciplinary services to execute this project and their engineering expertise was evident in their response to the numerous structural challenges we faced.'*

Marcin Kowalski, Senior Site Architect,  
James Cubitt & Partners

SHINING TOWERS,  
ABU DHABI

photography — H+H

# ENVIRONMENT

Ramboll's 1,000 environmental specialists produce bespoke solutions that help clients integrate sound environmental practice while achieving their project aims.

In an increasingly complex regulatory and ethical culture, we offer clear guidance on how to **deliver projects that are in harmony with their environment.**

Water supply mapping, climate change adaptation, flood risk assessment, waste resource management and environmental impact studies: our work is diverse and often innovative.

Whatever the context, we provide the expertise necessary to support our clients to navigate the full spectrum of environmental risks with confidence, protecting the value of their assets.

We advise our clients in all stages of projects from acquisition and feasibility to planning during construction, site operation and aftercare. With our in-house expertise available all over the world, we are capable of handling all specialist services without the need for outsourcing. This way we are able to offer a fully integrated project team, whose understanding of project opportunities and constraints is deeply rooted in experience.

**We communicate our scientific findings clearly,** and can advise on the legislative, commercial and social implications of our analysis.

Known in the industry for our **problem-solving approach**, we excel at unlocking project potential despite obstacles that others consider to be insurmountable.

Shiebat Watah is a national housing community development in Al Ain, UAE. An existing historic landfill site was located adjacent to the plot boundary, which dated back 20 years. The site was only brought to the attention of the municipality and our client after we conducted a topographical survey and ground investigation.

Ramboll's Environmental team carried out further investigations due to concerns about the risk to human health. Our engineers and scientists developed a plan that would analyze the level and impact any contaminants may pose on future users of the site. Soil and water tests were undertaken and showed no signs of hazardous material specifically leachates. We proposed an immediate and long term action plan which included an environmental monitoring system and a detailed stability assessment.

## OUR SERVICES

- Air quality
- Climate change
- Environmental Due Diligence
- Environmental impact assessment - EIA
- Environmental management
- Health & occupational safety
- Industrial environment
- Land use planning & development
- Noise
- Soil & groundwater
- Strategic environmental assessment - SEA
- Waste
- Waste water
- Water resources management
- Water supply



*'An environmental study that brought an intermix of environmental opportunities and constraints made this study one of our greatest challenges. We were able to see a wide range of local fauna while conducting the site surveys, an element I would hope to see in all our future studies.'*

Shiebat Al Watah, Al Ain

Dr. Wael Khalil, Associate Director, Environmental Services

# TRANSPORT

Ramboll is associated with some of the most respected, fully integrated infrastructure and transportation projects in the world.

Scotland's Forth Replacement Crossing, the Fehmarn Belt Tunnel linking Denmark to Germany, St. Petersburg's Pulkovo Airport – Ramboll's recent list of transport projects includes some of the **biggest, most challenging schemes** currently being developed. With a rich history in delivering complex infrastructure schemes, we are well placed to advise clients on all aspects of a development, from feasibility and planning to construction and long-term maintenance.

We have engineered highways, ports, railways, bridges and airports all over the world. **Our projects have set records** (the Øresund Crossing: the longest road and rail bridge in Europe; the Fehmarn Belt: the longest submerged tunnel in the world). We have also bridged vast distances, supported the growth of sustainable communities, and created iconic structures.

Whilst we have the broad expertise necessary to plan and design projects at the mega-scale, **attention to detail** is central to our ethos. Ramboll can offer the client a complete service from concept design to asset management.

Assessment and a programmed maintenance regime of large civil assets such as bridges has been proven to prolong the life of the asset.

The majority of our projects in the Middle East are multidisciplinary. During the design phase of the Yas Island Development in Abu Dhabi, we



demonstrated our capability to deliver innovative design solutions. Not only for the iconic Ferrari building, but for the other elements of the built environment, such as Yas Links Golf Course and the highway to Yas Marina.

The specific areas of design carried out by the Abu Dhabi Transportation team included; highway design – geometric design, pavement, lighting, road signs and lines, storm water drainage and safety barriers. Services design - potable water, sewerage, district cooling, power and gas.

The Abu Dhabi office was able to demonstrate the capability to deliver multidisciplinary value engineered design solutions linking all elements of this world class development.

The team also provided geotechnical expertise relating to the design of dewatering solutions and foundations for structures and road pavement designs.

Ramboll, working closely with the main contractor and client, developed an innovative retaining solution for the prestigious Sowwah Island Development in Abu Dhabi. The team, on this EPC contract, was able to successfully deliver a diaphragm marine retaining wall solution, with a cast in situ fascia to meet programme and budgetary requirements.

## OUR SERVICES

- Acoustics & noise
- Aviation
- Bridge engineering
- Ground engineering
- Infrastructure Asset Management
- Landscape architecture
- Masterplanning & urban development
- Ports & marine structures
- Project & construction management
- Rail engineering
- Risk and safety
- Road & motorway engineering
- Transport planning, traffic engineering and traffic safety
- Tunnel engineering

FEHMARN BELT FIXED LINK

*'Balfour Beatty and Ramboll have shared a very successful relationship in the UK for many years. This successful relationship has continued within the Middle East with Dutco Balfour Beatty, specifically within the UAE and most recently in Qatar. We have teamed up to bid for some of the largest projects yet to be awarded in this region. We envisage the relationship of Ramboll and Dutco Balfour Beatty to be as successful in the future as it has been in the past.'*

Joe Farmer, Business Development Manager, Dutco Balfour Beatty

# ENERGY

## Ramboll has vast experience in the planning, design and implementation of renewable energy solutions.

Our international team of energy and climate specialists provides expertise on the full spectrum of renewable technologies including solar, district heating, CHP, waste-to-energy and wind. Our consultancy unites **the best of global knowledge** in the renewable energy field with a practical understanding of how regulatory culture varies from one region to another. We are well placed to advise clients on all aspects of a project from planning through to engineering design and long term maintenance.

Our roots in the energy market run deep. Ramboll was there in the early history of offshore wind. **We developed the first monopile design** for offshore oil rigs — an incredible feat of optimisation when you consider the extraordinary length of these piles, located far out at sea, and the multiple loading pressures they withstand. Our approach was later used as a model for the design of monopile offshore wind turbines. Now more than **50% of the world's offshore turbines** rise from foundations engineered by Ramboll.

We are keenly interested in the possibilities tidal stream power generation has to offer. Long-term experience has taught us that the success of any new energy technology depends on the delivery of economic structures that can be easily installed. **We were recently selected** by Tidal Generation Ltd. to engineer its first 10MW tidal turbine test array because of our established track record for creating innovative solutions that **unlock the marine environment**.

In other areas, too, **we lead the way**. Our experience in **waste-to-energy is unparalleled**. We have planned, procured and supervised the implementation of more than 60 waste-to-energy plants and retrofits in 30 countries around the world.

At a time when energy security is at the top of the political agenda we offer an intelligent consultancy, **tested by years of hands-on experience**, in which both private and public sector clients can place their trust.

### OUR SERVICES

- Biogas
- Biomass
- District heating
- Energy efficiency
- Energy strategy and planning
- Geothermal
- Hydro, tidal and wave
- On and offshore wind
- Solar
- Thermal power
- Waste-to-energy



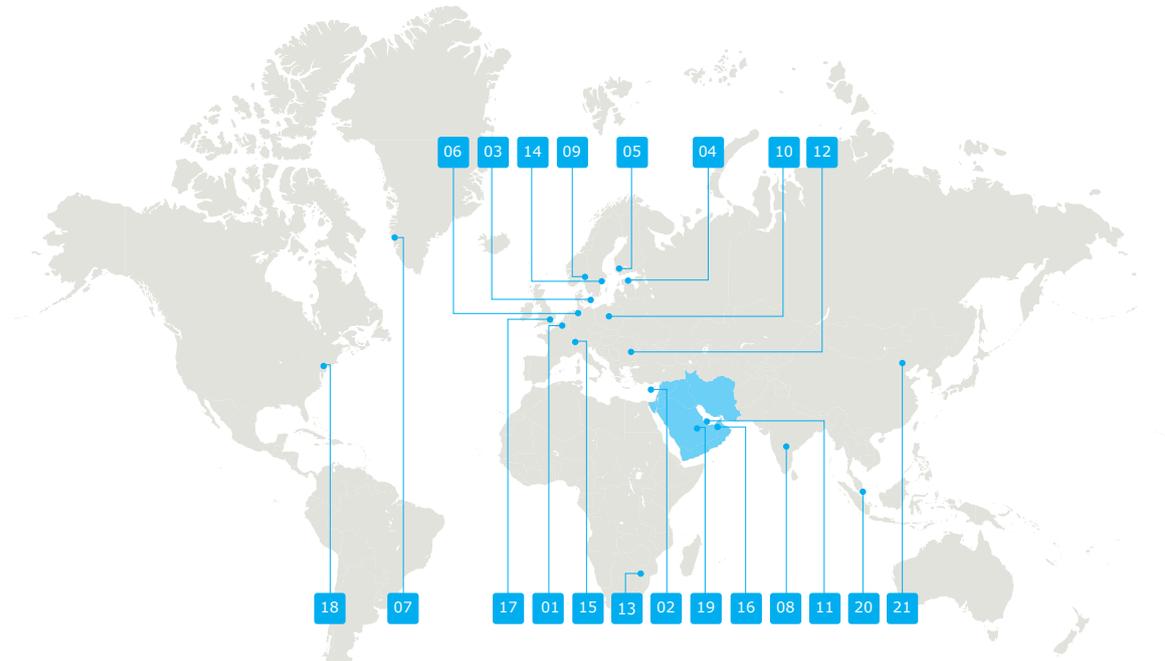
*'Ramboll assisted us all the way from idea to reality. Now they are providing ongoing technical advice during the operations phase.'*

Alan Blain, Project Director, Isle of Man Government  
(Isle of Man Waste-to-Energy Facility)

BURBO BANK OFFSHORE  
WIND FARM, UK

photography — Siemens, AG.  
Energy Sector

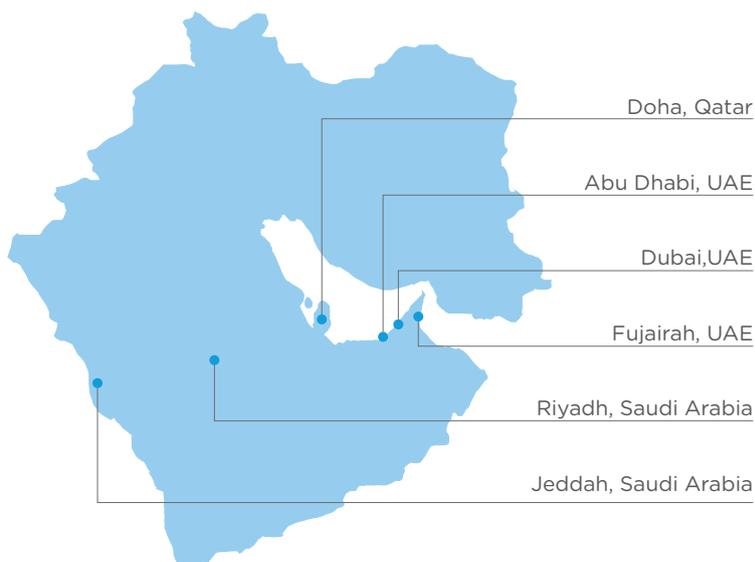
# HEAD OFFICE LOCATIONS



## Middle East Offices

For a full list of our Middle East office addresses, please visit our website [www.ramboll-mea.com](http://www.ramboll-mea.com)

E-mail: [info@ramboll.ae](mailto:info@ramboll.ae)



- 01 BELGIUM, Brussels. 02 CYPRUS, Episkopi. 03 DENMARK, Copenhagen. 04 ESTONIA, Tallinn. 05 FINLAND, Helsinki.  
 06 GERMANY, Hamburg. 07 GREENLAND, Nuuk. 08 INDIA, Hyderabad. 09 NORWAY, Oslo. 10 POLAND, Warsaw.  
 11 QATAR, Doha. 12 ROMANIA, Bucharest. 13 SOUTH AFRICA, Pretoria. 14 SWEDEN, Stockholm. 15 SWITZERLAND, Zurich.  
 16 UAE, Dubai. 17 UK, London. 18 USA, New York. 19 SAUDI ARABIA, Riyadh. 20 SINGAPORE, Singapore. 21 CHINA, Beijing.



