



**Programme Management and Engineering  
Support Professional Consultancy Services for:  
Inner Doha Resewerage Implementation Strategy**

CIVIL PROJECT: C727

PROJECT ID : IA 10/11 D 01 G

BID #MRPSC/010/2010-2011



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# IDRIS – Laying the foundations for sustained growth of a World Class City...

Over the last decade, Qatar and the City of Doha have made remarkable strides in becoming one of the world's top venue and destination cities. Investments in the region's transportation infrastructure, the environment and economic development have resulted in Qatar advancing to the World stage of great cities, as evidenced by the award of the 2022 FIFA World Cup games to Qatar. An additional \$100 billion of infrastructure improvements have been accelerated to put the finishing touches in place for the 2022 World Cup. A critical component of these improvements is the upgrade and modernization of the area's sewerage system that will eliminate sewerage back-ups, flooding and odour problems plus optimize the TSE water quality to promote and expand TSE re-use to create a greener city without fear of odour nuisance.

The keystone project that achieves this goal is the Inner Doha Resewerage Implementation Strategy (IDRIS) project. The programme principally includes:

- A major tunnel interceptor scheme that will reduce pumping stations in the Doha South STW catchment and meet the long terms needs of the city.

So what attributes would define the ideal PMC for the IDRIS project? ASHGHAL's ideal team should include:

- **World class programme management, wastewater treatment, tunnelling, and sewer system experience**
- **Commitment to long-term partnership with Ashghal**
- **Robust depth of expert resources**
- **Proven ability to deliver projects in the Middle East**
- **Risk Management culture and approach**
- **Successful infrastructure planning and development for other "world" venue cities**

- Optimisation of treatment facilities to provide for long-term growth and reliable high quality output.

ASHGHAL is looking to retain the services of a robust world class programme management consultancy (PMC) who will be responsible for developing a 30% design and provide overall management and delivery of this vital program.

Ashgahl is expecting the selected PMC to make a long-term commitment to Qatar, bring world-class performance and to provide the framework for training Qatari Nationals. The PMC is also required to be knowledgeable and respectful of Qatar's culture and preferences.

The selected PMC must approach this project from an ownership perspective, always looking at the issues through the eyes of ASHGHAL, anticipating, identifying, and mitigating risks that could delay delivery, increase costs and impede serviceability.

## One team has come together that can provide all of these and more and that team is AECOM!

# Major Projects demonstrating Global Experience...

## Wastewater Programme Management *Boston, Mass. USA*



- Design, Program & Construction Management of two major treatment plants, 4 tunnels, & 2 deep pump stations
- Program delivered on schedule with \$2 billion savings

## Wastewater Treatment at Blue Plains *Washington D.C., USA*



- Major Advanced Wastewater Treatment Design, Program & Construction Management
- \$1 billion program with ongoing operations
- AECOM leadership in all aspects

## Tunnelling *Hong Kong, China*



- 3 Major Tunnelling Programs underneath densely populated area and deep seabed
- Material solutions for acidic, sulphate laden environment
- Control systems to minimize above/below ground disturbance
- Deep production/drop shafts

## West Ham Pump Station *West Ham, UK*



- Design & Permitting for largest flood alleviation scheme in Europe
- 15m dia. wet well/drywell, 25m deep, 500 l/s
- Complex triple aquifer geotechnical conditions

# ....with Local Know-How...

- Ashghal Location
- AECOM Office
- Veolia Office
- IBM Office
- Texas A&M



## ...and team partners to optimize solutions



Veolia’s world class leadership in the arena of wastewater operations and management, coupled with AECOM’s engineering & program management capability will yield tremendous operational benefit & life cycle cost savings.



IBM’s global smart cities delivers state-of-the-art information architecture & management for city safety, education, public health, and infrastructure. The AECOM IBM Global Partnership delivers infrastructure solutions where the “physical meets digital” for Ashghal’s benefit.



In recognition of Qatar’s desire to develop a world class sustainable society, AECOM and Texas A&M University at Qatar will partner to create opportunities for under graduate internships. University faculty and AECOM technical experts will cooperate in solving technical issues pertinent to the project. Faculty will be consulted on specific topics and AECOM experts will bring their global experience to the classroom. 3-D modelling, computational fluid dynamics, and advanced materials for corrosive conditions are just some of the areas of mutual interest that will benefit Qatar and Ashghal specifically.

# AECOM brings Experience from around the World...



1 San Francisco PUC Water System Improvement Program



7 DEP/BNR Upgrade Program, New York City, New York



1 2012 Olympic Games, London, United Kingdom



2 2008 Beijing Olympic Aquatic Park, Beijing, China



3 SCIP Treatment Wetland, Shanghai, China



4 Hong Kong Energy-from-Waste Project, Hong Kong



5 Grand Macao



2 MWRA Boston Harbor Cleanup, Boston, Massachusetts



8 Water System Capital Program, Chicago, Illinois



3 Overflow Abatement Program, Nashville, Tennessee



9 Wet Weather Compliance and CSO/SSO Program, Baltimore, Maryland



4 Blue Plains Wastewater Treatment Plant, Washington, D.C.



10 Groundwater Reduction Program, North Harris County, Texas



21 West Ham (London)



22 Tideway (London)



5 Water Pollution Control Plant Upgrade, Arlington, Virginia



11 Winnipeg WTP Project Implementation Plan, Manitoba



13 Milwaukee Metropolitan Sewerage District/Collection and Treatment System Improvements



15 Tarrant Regional Water District (Fort Worth) and Dallas Water Utilities, Texas/Integrated Water Pipeline



17 Samut Prakarn Wastewater System, Thailand



19 Melamchi Water Supply Project, Kathmandu, Nepal



6 Clean Water Program, Austin, Texas



12 CSO Long Term Control Plan Program, Akron, Ohio



14 Metropolitan Government of Nashville and Davidson County/Overflow Abatement Program



16 Hong Kong HATS



18 Republic of Trinidad & Tobago/Desalination Plants Program



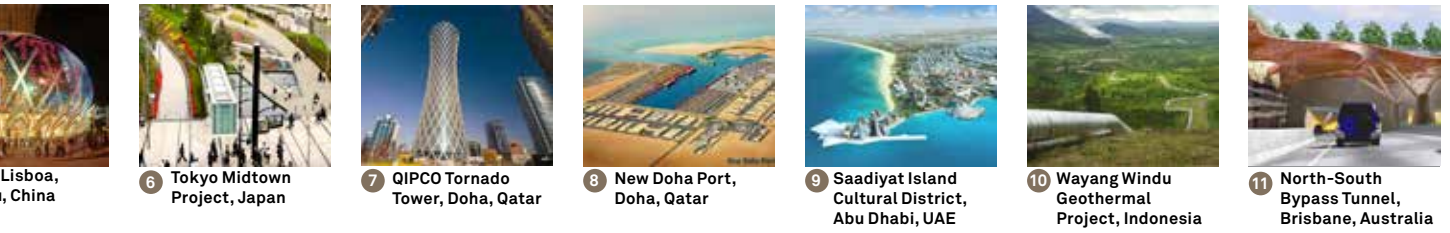
20 Shuweihat Water Transmission Scheme, Abu Dhabi, United Arab Emirates



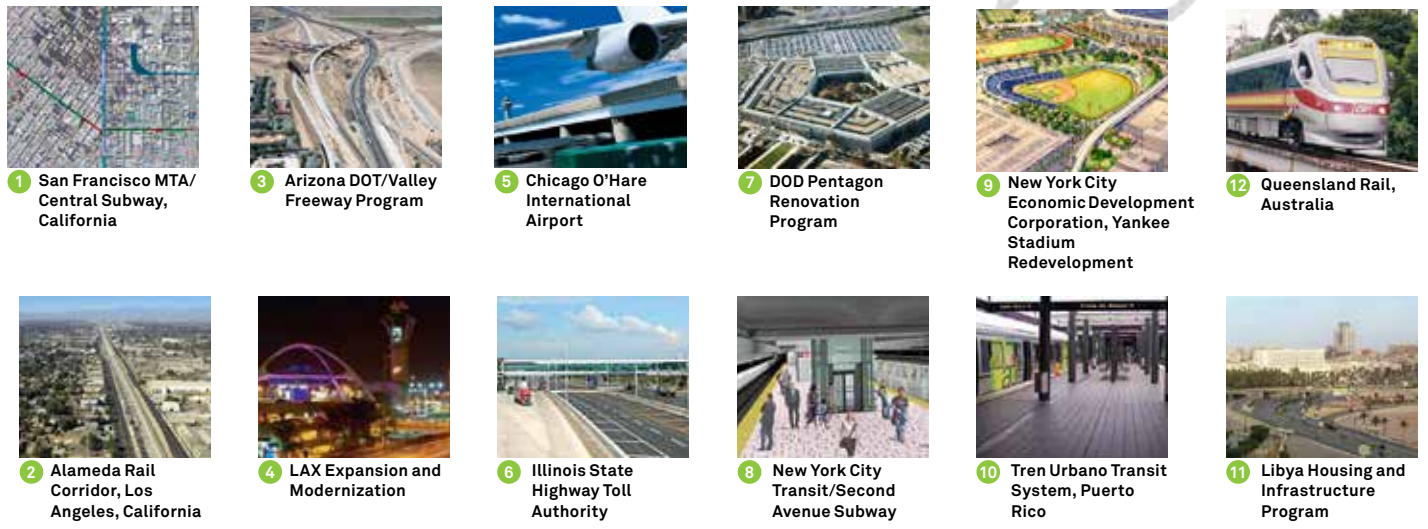
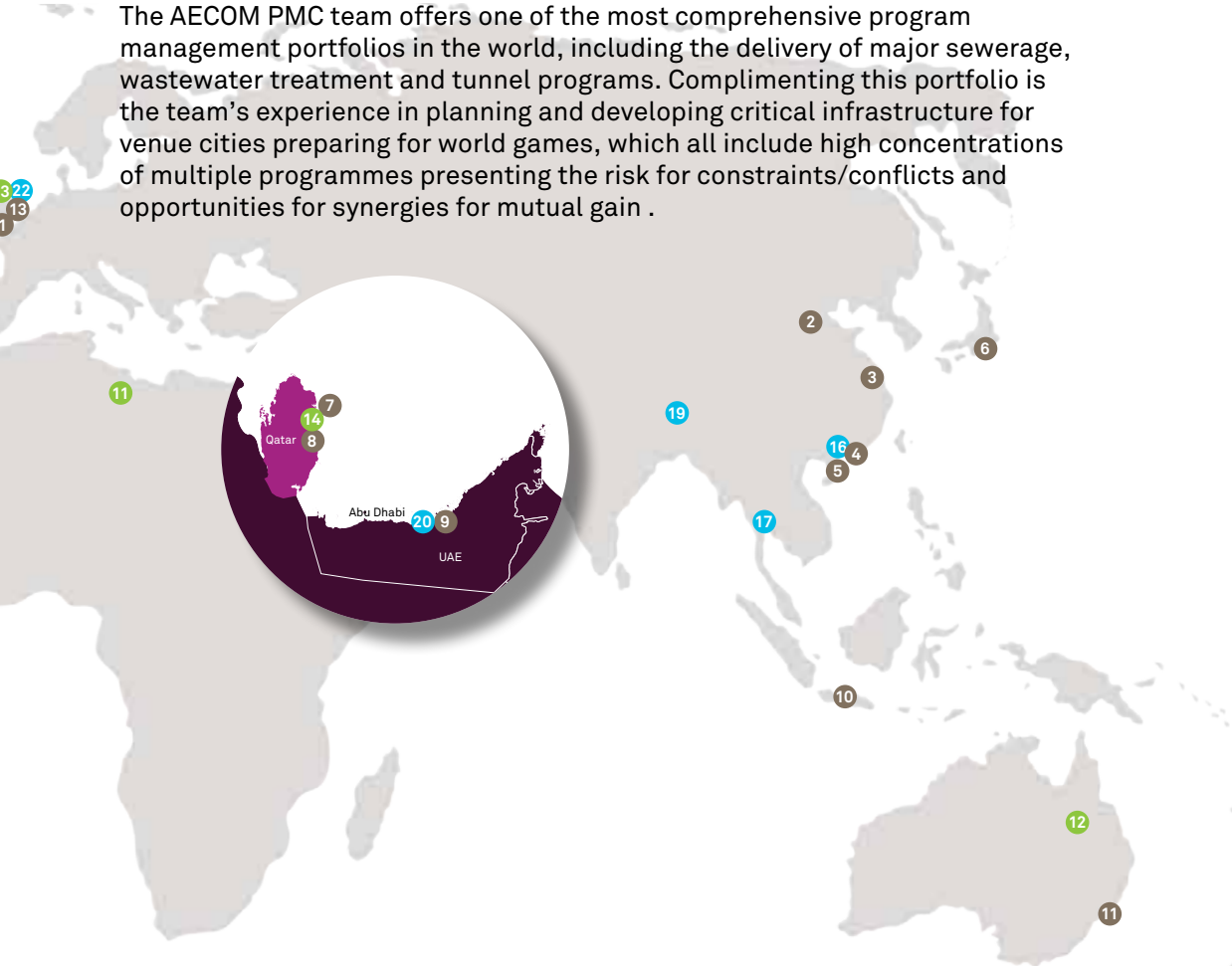
● Selected Signature Projects

● Selected Program Management Projects

# ...with Proven Project Delivery in the Middle East



The AECOM PMC team offers one of the most comprehensive program management portfolios in the world, including the delivery of major sewerage, wastewater treatment and tunnel programs. Complimenting this portfolio is the team's experience in planning and developing critical infrastructure for venue cities preparing for world games, which all include high concentrations of multiple programmes presenting the risk for constraints/conflicts and opportunities for synergies for mutual gain .



**Selected Water/Wastewater Program Management Projects**

# AECOM will address Six Key Program across all IDRIS Components...

## Key Issue #1

### Helping Qatar Realize it's Vision 2030

- ① Incorporating respect for the social fabric, the environment and sustainability in a triple bottom line approach to defining the components of an upgraded sewerage system.
- ① Through comprehensive modeling and selection of optimized collection system improvements, build the foundation for long term future growth of the city.
- ⑤ Maximizing the potential for beneficial reuse of liquid effluent (TSE) for irrigation and landscaping and solids as fertilizer and soil stabilizing agent

## Key Issue #2

### Proactive Interface with Other Major Initiatives

- ① Protecting against substantial risk of conflict with existing highway and infrastructure assets and development programs.
- ② Collaboratively managing IDRIS/ Metro conflicts within Doha city.
- ⑥ Mitigating risk through effective IDRIS, Metro and Doha Port inter-program engagement.

## Key Issue #3

### Control and Mitigate Odors

- ① Recognizing elimination of offensive odors as a priority of the program.
- ③ Developing an odor control program
- ⑤ that identifies potential odor sources,
- ⑥ odor generation mechanisms and defines an effective proven solutions to be implemented through the program.
- ② Implement design features throughout
- ③ the system that minimize the potential
- ④ for odor generation and to select
- ⑤ measures that capture and destroy rather than masking odors.





# Issues

IDRIS Components			
1	Small scale Network & Pumping Stations	4	Foul Sewerage & TSE Riser Mains
2	Tunnels & Interceptor Links	5	Now Doha South WWTW
3	Existing Doha South WWTW plus new Foul Sewer & TSE High-Lift Pumps	6	Outfall



### Key Issue #4

#### Optimize TSE Water Re-Use

- 5 Selecting wastewater treatment processes that incorporate technologies to achieve the desired high quality for TSE and mitigating risk for related odor nuisance.
- 5 Harmonizing the new TSE facilities into the TSE Water Re-Use Vision being developed as part of the Integrated Drainage Master Plan and promote demand through “Greener City” strategy.

### Key Issue #5

#### Eliminate Sewer Flooding

- 1 Using the sewer model to identify and prioritize flood prone areas for capital upgrades.
- 2 Developing optimized tunnel solutions, to increase capture of existing pumping stations, to be realized by AECOM’s world class Network & Tunneling Specialists.
- 2 Fast-track tunnel and terminal pumping station to enhance gravity transfer & storage capacity and eliminate high-risk flooding locations early.

### Key Issue #6

#### Develop Reliable & Flexible Solutions

- 1 Delivering solutions to resolve under capacity challenges during transitional phase that can be incorporated into the long term vision.
- 2 Judicial oversizing of trunk collection system to accommodate wet weather storage and allow for complete treatment prior to use as TSE or ground water recharge.
- 3 Implementing short term additional capacity upgrades at the existing South STW that can be incorporated into the long term TSE facilities.

# ...through a World Class Technical Approach

Figure 3-4. Option 1 - Base Case and Associated Sub Options



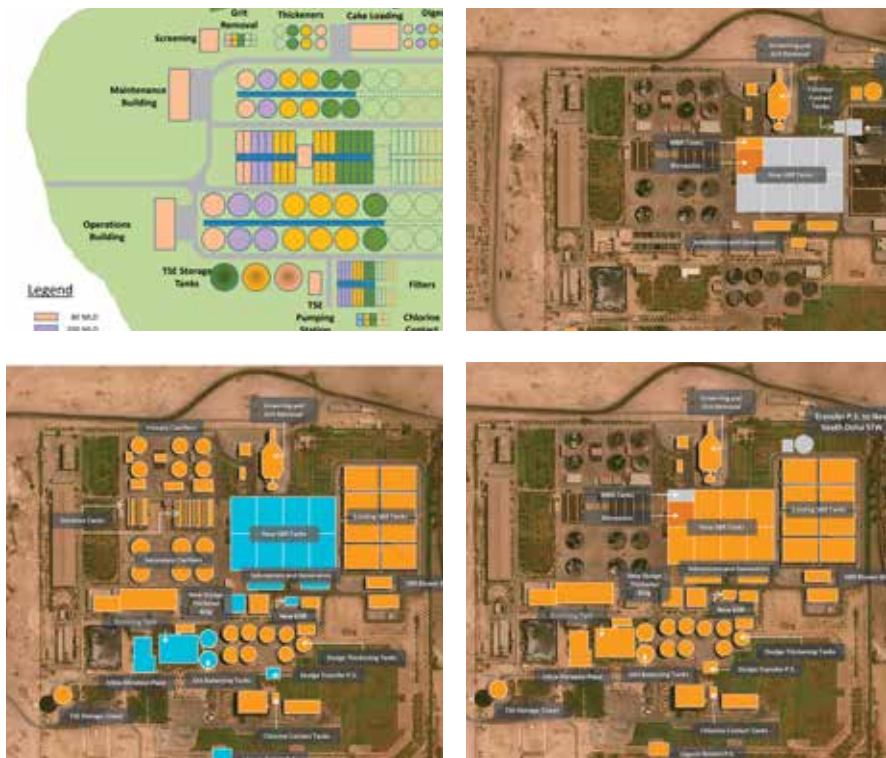
Figure 3-5. Option 2 - Twin Bored Tunnel Option



Figure 3-6. Option 3 - Minimized Length of Bored Bore Tunnel

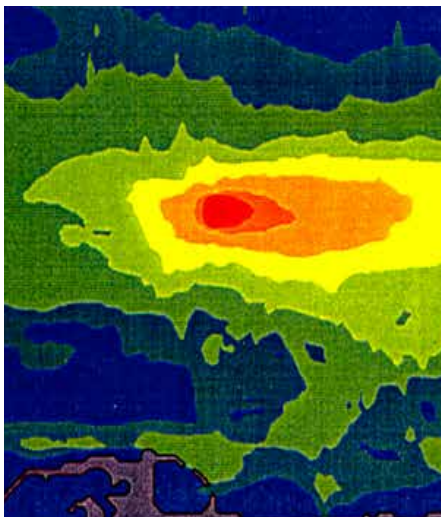
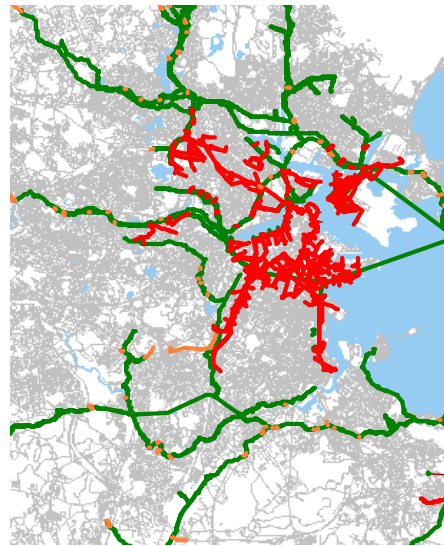


## 3 Main Tunneling Options with Sub Options to Maximize Performance while Minimizing Cost and Schedule



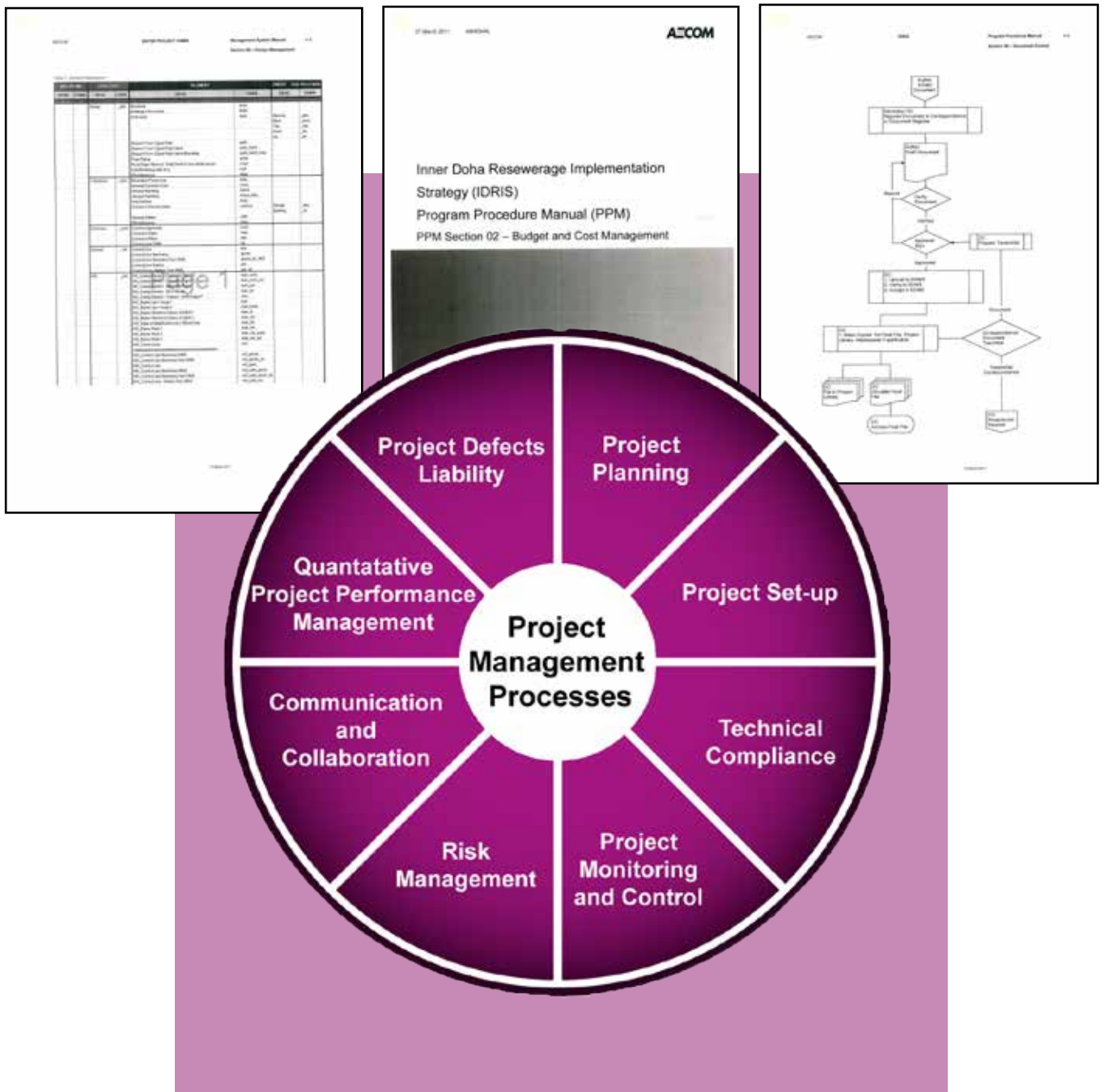
Wastewater Treatment Alternatives designed for All Key Phases including a proposed streamlined, highly operative new plant layout

Sewer system and marine outfall modeling based on previous Successful Programs in Major Global Cities, designed to optimize Ashghal's programme.



Odor Control, Material Durability, and Advanced Materials Strategies already under development by AECOM team

...all driven by a proven program management approach, tested in Doha...



# ...and led by a locally based team

**Rob Andrews**  
Executive Management Representative



- AECOM's Global Water Executive Director, with substantial major wastewater program experience
- Deliver Commitment of Global Water team to Ashghal as a top AECOM program

**Bill Mclean**  
PM Consultant Team Leader



- 30+ years of major water/wastewater programs
- Extensive Middle East experience coupled with long-term Middle East residency
- Collaborative, collegial approach to developing successful program teams

**Jake Vittands**  
Designated Executive Advisor



- 40 + year career with AECOM and legacy company Metcalf & Eddy
- Senior AECOM Executive with special responsibility for Major City Global Wastewater Programs
- Project Director for successful major Wastewater System programs including Boston, Washington & New York.

**Andrew Fitzgerald**  
Project Liaison



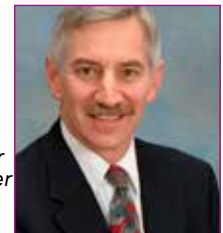
- Leading expertise in managing a wide range of stakeholders across multiple linear infrastructure projects across the Middle East including Qatar.
- Proven track record of developing and maintaining excellent relationships with internal/external parties at all levels, which is essential for the successful delivery of the IDRIS programme.
- Natural born, and culturally aware, communicator.

**Jamie Powell**  
PM Consultant Deputy Team Leader & Study Team Leader (Networks & Tunnels)



- Global Community Infrastructure Lead with 40 years of engineering management experience in all facets of municipal infrastructure.
- Leader in the formation and implementation of Municipal Infrastructure Data Standard (MIDS) for many major cities.
- Unrivalled experience in streamlining Municipal Infrastructure operations.

**Nick Cooper**  
PM Consultant Deputy Team Leader & Study Team Leader (WWTW & Pumping Stations)



- AECOM Vice President and National Wastewater Technical Practice Leader with global expertise in biological nutrient removal, membrane bioreactor systems and biosolids management.
- More than 30 years of experience, including an extensive Middle East track record, in the planning, design, and construction management of water and wastewater facilities.
- Mr. Cooper has designed more than 15 new wastewater treatment facilities and upgrades to more than 25 others.

**Robert Garner**  
Chief Engineer & MEICA Team Leader



- Extensive technical knowledge amassed over 20 years within the Water & Wastewater Industry through a variety of Consultants, Contractors and Supplier roles.
- Management of the engineering practices throughout Middle East water engineering section including the delivery of quality engineered solutions to current best practice, appropriate standards and meeting varied and complex project requirements.

**Roel Biagong**  
Planning Engineer



- Leading planner with over 20 years of programme planning experience including six years in high complex planning roles for the Doha Port and Al Waab City Development Programme in Qatar.
- Strong experience in a wide range of single point and linear infrastructure deliverables essential for the successful delivery of IDRIS.
- Technical excellence in the use of a wide range of planning and construction management software including Primavera P6 & P3, Microsoft Project, Suretrak Project Manager 3.0 and Timberline.

**Steve Woodrow**  
Tunnelling Lead



- World Class Tunneling Expert with over 18 years of experience in major tunnel design and construction including metro/rail tunnels and major utility tunnels such as Lea Valley Cable Tunnel and Tideway Tunnel.
- Strong technical knowledge covering varied highly complex ground conditions and installation techniques, including bored tunnels, segmental shaft linings and sprayed concrete solutions, thereby ensuring the delivery of optimal tunnelled solutions for complex tunnelling briefs similar to IDRIS.
- Successful track record of leading multi-discipline programme teams and operational European Tunneling Lead responsibilities.

**Norrie Pillans**  
Commercial Manager



- 35 years experience in delivering major international infrastructure programs including New Doha Port Programme
- Consistently develops high quality shared services teams which deliver excellent standards of quality to provide the foundations for program success

# ...resulting in Significant Benefits to ASHGHAL

The AECOM team clearly meets and exceeds all of ASHGHAL's selection criteria and more importantly, brings significant advantages and benefits in the areas critical to the success of the IDRIS program, as summarized in the following table.

Criteria for Success	AECOM Team Advantage	Benefit to Ashghal
Excellence in Leadership	<ul style="list-style-type: none"> <li>• Global Water Commitment through Rob Andrews and the Blue Ribbon Committee.</li> <li>• Jake Vittand's commitment to bring the best of the Boston Harbour Programme to Ashghal.</li> <li>• Program management skills matched to the delivery phasing.</li> <li>• Deputy Program Managers include our Global Leader in Infrastructure and Global Technical Practice Leader in wastewater to ensure the highest quality and a one AECOM performance.</li> </ul>	<ul style="list-style-type: none"> <li>• Assurance that the AECOM IDRIS Team will have the global support to guarantee a successful program completion.</li> </ul>
Proven World Class Delivery Team	<ul style="list-style-type: none"> <li>• World Class Global Team: Global (48%), Middle East (28%) &amp; Qatar (24%) - 95% critical mass to be based in Doha.</li> <li>• 'One AECOM Model' merging traditional PM and Engineering Services with the legacy Davis Langdon Project &amp; Cost Management Business to provide unrivalled Grade A Quantity Surveyor &amp; Program Management License holder status .</li> <li>• Strategic Partnerships with IBM "Smart Cities" &amp; Veolia to optimise processes &amp; solutions for Ashghal</li> <li>• Strong local team to address traffic, pump stations, &amp; tunnel routing, thereby minimizing impact on Doha.</li> </ul>	<ul style="list-style-type: none"> <li>• Global and local experts providing "at your doorstep" service ensures quick response to decision makers.</li> <li>• Assurance that the AECOM IDRIS Team can develop the best solutions on time and on budget.</li> </ul>
Creating Standards, Tools & Processes	<ul style="list-style-type: none"> <li>• Leader in establishing and implementing World Class Standards and Tools on major Programmes.</li> <li>• State of the Art PM Systems, Tools &amp; Processes tested in Qatar through Doha Port Programme.</li> </ul>	<ul style="list-style-type: none"> <li>• Certainty of Programme Delivery.</li> <li>• Team ready to "hit the ground running" with procedures ready for review and approval.</li> </ul>
Detailed Project	<ul style="list-style-type: none"> <li>• 'Best in Class' Odour Control &amp; Advanced Materials Strategies already under development.</li> </ul>	<ul style="list-style-type: none"> <li>• Comprehensive "technical strategy" coupled with unrivalled program management to develop excellent risk/opportunity reward scenarios.</li> </ul>

**AECOM can be trusted to provide a Top Class Service**

# AECOM's Commitment to Ashghal

*It is the Mission of AECOM to provide Qatar with the world's best technical knowledge and program management expertise that will fulfill their wants and needs at the right price. Our talented and world tested team are already problem-solving the primary and many secondary issues related to this important program. We have delivered similar programs to other dynamic twenty-first century cities, and these experiences have contributed to the generous breadth of skill and wisdom on our team. But your program is a unique one and we are eager and excited to do what we do best and create an excellent water treatment infrastructure for Qatar.*

**AECOM**

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**About AECOM**

AECOM is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government. With approximately 52,000 employees around the world, AECOM is a leader in all of the key markets that it serves. AECOM provides a blend of global reach, local knowledge, innovation, and technical excellence in delivering solutions that create, enhance and sustain the world's built, natural, and social environments. A Fortune 500 company, AECOM serves clients in more than 100 countries and had revenue of \$7.0 billion during the 12 months ended Dec. 31, 2010.

More information on AECOM and its services can be found at [www.aecom.com](http://www.aecom.com).