

A high-angle, wide shot of a city skyline at sunset. The sky is a mix of deep blue and bright orange, with wispy white clouds. The sun is low on the horizon, creating a strong lens flare effect on the left side of the frame. The buildings are silhouetted against the bright sky, with some reflecting the golden light. The architecture is modern, with many skyscrapers and some older, more ornate buildings. The overall mood is dramatic and urban.

# ASSET RESILIENCY IN A CHANGING WORLD

## Preface

With more than 30 years of working in asset management across the Middle East, Europe and the UK, I have come to understand that organizations that possess assets require similar techniques to manage these but the issues surrounding them are almost never the same. This observation speaks profoundly about the nature of asset management, which makes it a very interesting field to work in. It pushes practitioners to always approach each case with a fresh perspective and be well-informed on the latest trends and issues that may affect, if not completely alter, the delivery of solutions.

Despite the unpredictability of asset management issues and the rapid global developments currently happening, the need for organizations to protect and realize long-term value of their assets remains constant. Whilst resiliency is the key, it can be difficult to achieve if all aspect of the assets in question are not carefully considered and relevant stakeholders are not actively involved in the process.

We have developed this document with one guiding principle in mind: there is no silver bullet to address all asset management issues; however, a consistent approach to asset management can mitigate many, if not all, issues.



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## Unlocking the long-term value of assets

According to the Institute of Asset Management, the management of assets is not new; however, the term ‘asset management’ started to be used only in the 1980s in relation to physical assets in various parts of the world.

“*In the Middle East where we have a range of assets from mature assets developed in the last 30 years to Saudi Arabia’s giga projects expected to be completed in the next few years, asset management is facing unique challenges and opportunities today.*”

Asset management is one of the few disciplines that is crucial to realize value at every stage of a project’s lifecycle, and as a result, influences long-term strategy for an asset. In some cases, a collaborative approach to asset management is not applied, which can lead to a siloed approach of working between disciplines within an organization, and potentially asset failure.

Every organization needs to develop a strong understanding of asset management and recognize the benefits of asset advisory solutions that contribute to cost saving throughout all stages of the asset portfolio lifecycle.

Asset management is not only about minimizing costs or maximizing performance, but optimizing both, keeping cost, risk, and performance of the asset.

The key to achieving this is to go beyond day-to-day operations and develop a culture that seeks continual improvement through cost-effective measures to protect the lifecycle of the asset.

Furthermore, a proactive approach is required to provide a sustainable solution for the management of assets, which should consider the following critical points: climatic conditions, funding, optimization, current issues, and digitization.

WHAT IS	WHAT IS NOT
<b>Recognizing assets have a life cycle</b> 	<b>A substitute for quality management or project management</b> 
<b>Understanding the benefits it can bring to a business</b> 	<b>An accounting exercise or only for engineers</b> 
<b>A belief that those benefits are worthwhile</b> 	<b>A purely academic discipline</b> 
<b>Clear leadership</b> 	<b>Only about maintenance</b> 

**Asset Management IS understanding good practice and IS NOT a quick fix!**

Source: The Institute of Asset Management

## Five-point focus for the Middle East

Asset management in the Middle East faces a unique situation in that many of its assets were constructed in the last 40 years. Since then, the Middle East has changed significantly as a majority of its assets are maturing, with the exception of new developments currently under construction across the GCC.



### Climatic effects in the asset management process

Some assets are designed to have expected lifespans of 50 or even up to 120 years. Research has shown that changes in weather conditions such as sun, wind, rain, humidity, and salinity have a direct impact on the lifespan of these assets. Combined with extreme weather caused by climate change, these climatic conditions now have more severe impacts on assets which leads to shorter lifespans or more frequent maintenance.

By effectively utilizing asset management, several techniques can be applied throughout the lifecycle of the asset to mitigate this risk including:

#### Developing materials specifications based on durability studies

Durability is evaluated by modeling deterioration mechanisms that affect an asset's service life under severe exposure to the Middle East's arid environment. The outcome of the durability process allows the selection of appropriate options and recommendations, which in turn will define the most cost-effective solution for the proposed durability options.

#### Establishing an Asset Management Plan (AMP)

Most organizations already know the limitations of their asset performance. However, an AMP can make a difference in terms of cost savings, optimization, and environmental benefits such energy savings. An AMP can be developed for several assets or a group of assets and can be put in place relatively quickly to benefit the organization.

### Consideration of climate change

Inspection and maintenance programs can be utilized to monitor assets where known impacts of climate change have or may have a detrimental impact on the asset performance.



### Increasing return on investments through funding

Due to the rapidly changing economic climate, funding has come to the forefront of the management of and the investment in assets. Individuals and organizations are considering their investments wisely in new assets and wish to gain the maximum return from existing ones. Given the predicted decline in global trade of between 13% and 32% in 2020 (based on WTO data), investors can consider other available options including:

#### Re-purposing

Existing assets can be reused to maximize the initial investments. Re-purposing can be anything from simply increasing floor space to completely changing a building's function. An excellent example of this is Expo 2020 Dubai, where plans are underway to transform the 4.38-square-kilometre site into an ecosystem that connects businesses in sectors like transport and logistics, travel and tourism, real estate, and education after the event is over.

#### Mothballing

Due to the economic downturn from 2007 to 2009, many organizations under financial distress mothballed their assets without undertaking future planning, resulting in many assets not being reused. Through mothballing, organizations can deactivate and preserve assets properly for use or sale in the future.

#### Prioritization

With limited funding at hand, organizations can choose to prioritize asset investments based on need, location or demand. Whether capital expenditure or operational expenditure takes priority will also depend on each organization's unique case.

#### Asset resilience

Energy efficiency and sustainability are just some of the key themes affecting assets today, which need to be carefully considered for the future. The use of new or improved technologies such as solar energy or using alternative fuels will drive budgetary changes and greater adoption for digital asset management.



## Optimizing assets for improved benefits

Organizations are constantly dealing with reaching and maintaining a balance between capital expenditure and operational expenditure that will ultimately drive changes in their total expenditure.



## Impact of COVID-19

With the outbreak of coronavirus (COVID-19) earlier this year, the effect it has had on individuals and communities including organizations and how they function in a new environment is leading to a cultural change of how we will interact in the future. From this, we can already see a shift change in projects in the region. Organizations are cautious of how projects are phased, which could lead to delays and re-purposing of their assets. Another key element to impact the region is the budgetary requirements for assets based on future demand and scrutiny of operating costs for existing projects. We still have a lot to learn about how COVID-19 will change our society.

This global health emergency is directly affecting how we manage our assets. It is, therefore, in the best interest of all parties to integrate responses to current issues in asset management through practice such as Business Continuity Planning, which will determine how assets are managed and maintained and how organizations respond to crisis in the future.



## Digitization and data improvement

The shift change in digitization and management of data will have one of the biggest positive outcomes in terms of technology advancement in the last 10 years. As COVID-19 has led us to change the way we work and interact through virtual meetings and video conferencing, the same rate of technological change is expected within Digital Asset Management.

Data is a key driver in everything we do, and as such, it is can also be one of our biggest issues, whether this relates to personal data (and the misuse of it) or data collected to make our asset management better. Data should be focused in what it is to be used for, and more importantly, it should be fit for purpose. We are finding more use for the correct data in asset management to track the performance of our assets and achieve better optimization.

Integration of data systems is becoming more common as organizations wish to see the bigger picture but still obtain value. This will ultimately lead to further automation and changes in culture, once we establish the future benefits that this can bring to the project lifecycle. When used as intended, however, data can bring positive results, such as how it is used in tracking and optimizing asset performance.

Data integration is also becoming more prevalent in many organizations and is expected to result in extensive automation and other technological changes in the future once its benefits to the project lifecycle is established.

## Applying good asset management practices

Given the developing current situation and the unique similarities for asset management across the Middle East, we have a unique opportunity to look at how we can manage our assets now and into the future from a different perspective. By applying good asset management practice as mentioned above, benefits can be realized, some quickly to help organizations recover or re-purpose their assets and to help:

 Reduce costs

 Manage risks

 Make informed asset investment decisions

 Improve

- Maintenance strategies
- Service delivery
- HSE performance
- Client satisfaction
- Communications

 Enhance reputation

How the benefits are realized depends on the specific asset management solutions that the organization wishes to undertake. Given that we face unprecedented times and taking into consideration that the Middle East is a very resilient market, the asset management initiatives undertaken, either individual projects or full implementation programs, will make a difference in driving changes that will become the norm for the future of asset management.



## Benefits outweigh challenges

Within every organization, many processes and services rely on well-functioning assets. Still, organizations remain conflicted if they should implement formal asset management solutions or not. Without one, however, asset-related challenges can easily pile up, and ultimately affect the bottom line. These challenges include:

 Siloed approach to asset management

 Higher costs and budgeting complications due to unknown asset condition

 Higher risk of asset failure

 Poor return on investment

It is important to remember that asset management is more than just asset maintenance — it is about using assets properly to deliver value and achieve business objectives. Asset management can help:

 Make informed asset investment decisions

 Get higher-management support

 Achieve sustainability goals

 Be at par with select global companies due to enhanced reputation

## Expanding Makkah's water supply for over 7 million people to the year 2050

Client: National Water Company  
Services: Asset Management

Arcadis supported National Water Company by preparing a database study of water and wastewater infrastructure assets; developing an integrated water, wastewater and treated sewage effluent master plan; and preparing a capital investment plan for 2015 to 2050. The study provided a master plan to enable future planning of water and wastewater services for over seven million people in the region as well as industrial clients to the year 2050.



**25%** data collection cost savings

**Electronic registry** of all key assets delivered

**Capital improvement plan** prioritized for future growth and development

## Transforming a public utility company into a world-class organization in Oman

Client: Public Authority for Electricity & Water Services: Asset Management

Arcadis assisted Oman's Public Authority for Electricity and Water (PAEW) to improve its overall processes for water management services and deploy new systems and procedures.

**25%** data collection cost savings

Developed requirements for implementation of **enterprise asset management system**

Delivered **country-wide asset management plan**

## Offering clients the right solutions

2020 brought unprecedented developments with long-lasting impacts that are expected to completely change the way organizations conduct business. Combined with existing issues stemming from factors such as funding, digitization and compliance, this year's recent developments in the wake of the coronavirus pandemic will put increased pressure on the effective utilization and management of assets.

Well-integrated asset management solutions can reduce, and even mitigate, these adverse impacts. Through careful assessments and active involvement from the client, asset management will not only address ongoing issues but also strengthen assets to be able to withstand changes even before they happen.

CONCERN	SOLUTIONS
 <p>Funding</p> <ul style="list-style-type: none"> <li>• Rapidly changing economic climate</li> <li>• Lack of funding</li> <li>• Budgets repurposed</li> </ul>	<ul style="list-style-type: none"> <li>• Review of asset repurposing</li> <li>• Process to mothball assets for future use</li> <li>• Re-prioritization strategy for projects or programs</li> <li>• Asset Resilience study for current and future use</li> <li>• Whole life cost model development</li> </ul>
 <p>Optimization</p> <ul style="list-style-type: none"> <li>• Asset cost and performance during lifecycle</li> <li>• Looking for asset effectiveness and efficiency</li> <li>• Future proofing of assets</li> <li>• Demand analysis of asset</li> </ul>	<ul style="list-style-type: none"> <li>• Review of operational improvements and predictive maintenance</li> <li>• Design reviews to ensure O&amp;M is considered</li> <li>• Whole life cycle technical review</li> <li>• Spare capacity reviews</li> </ul>
 <p>Digitization</p> <ul style="list-style-type: none"> <li>• Increasing complexity of assets requires more data driven solutions</li> <li>• Need for integrated asset information</li> <li>• Data management</li> <li>• Undertaking surveys quickly</li> </ul>	<ul style="list-style-type: none"> <li>• Automated Inspections using drones</li> <li>• Data collection site tools</li> <li>• Integrated AM models, incorporating BIM</li> <li>• Decision support tools for auditing, modelling (digital twins), analytics, maintenance, planning</li> </ul>
 <p>Risk Management &amp; Compliance</p> <ul style="list-style-type: none"> <li>• Availability and reliability of assets</li> <li>• Asset failures and performance</li> <li>• Compliance with regulators, cost transparency and sustainability</li> </ul>	<ul style="list-style-type: none"> <li>• Asset Risk management tool</li> <li>• Reliability planning</li> <li>• Availability models</li> <li>• Strategy updates</li> </ul>
 <p>Ageing</p> <ul style="list-style-type: none"> <li>• Asset Lifecycle Performance</li> <li>• Handback</li> <li>• Rehabilitation</li> </ul>	<ul style="list-style-type: none"> <li>• AM Strategy Development</li> <li>• AM Planning Development</li> <li>• Handover Procedures</li> <li>• Rehabilitation studies including cost models</li> </ul>

# Our approach

Built assets are essential to our lives. That is why it is equally important to establish a proper asset management plan to ensure that the level of service is not interrupted or reduced. To deliver solutions that are clear and tangible, Arcadis' approach to asset management centers on three things: client centricity, global trends and combined delivery.

## Client centricity

Successful asset management starts with understanding the client's unique situation. Knowing the clients' ways of working is as important as recognizing their needs to implement effective changes. Relevant domains within the organization also need to be involved, not only to keep them informed, but also to ensure their active participation in the entire process. Asset management solutions start failing when relevant units of the organizations do not work together.



## Influence from global trends

Even before the world became hyperconnected, changes in one part of the globe (e.g., mechanization) eventually reach other places and influence the way things are done. In recent times, information on new technologies like building information modeling (BIM) spreads quickly once they become available on the internet.

Understanding how things are evolving, both locally and around the world, helps organizations make their assets resilient to changes in areas like digitization, regulatory compliance and social responsibility. Our asset management capability focuses on understanding the magnitude of influence global trends have on clients and provides solutions designed to tackle those trends to help them future-proof their assets.

## Global trends influencing asset management



# Helping Qatar's Future City attract investments by creating an Asset Management department

Client: Lusail Real Estate Development Company on behalf of Qatari Diar  
Services: Asset Management, Business Advisory

Leveraging global expertise and best practices, Arcadis led the development of a business strategy and operating model for the newly created Asset Management department of Lusail Real Estate Development Company (LREDC) on behalf of Qatari Diar. By providing valuable data to influence decision making, Arcadis helped Qatari Diar maximize financial benefits from its assets. Arcadis also embedded a team within the client's office to share knowledge and ensure people and organizational transformation.

Developed strategy and implementation plan

Established data-driven decision making

Supported people & organizational transformation



### Combined delivery

The need for asset management solutions spans across the entire project lifecycle and affects multiple disciplines within an organization. With this understanding, Arcadis' approach to asset management combines Business Advisory, Technical Expertise and Digital Knowledge to ensure that every aspect of the problem is addressed in delivering solutions that are aligned with the International Standard for Asset Management (ISO 55000).

Our subject matter experts have achieved the highest competency level requirements based on The Institute of Asset Management, which speaks about their ability in delivering globally recognized asset management solutions.



## What we can do for you



## Arcadis digital capabilities

 Digital PMIS & collaboration portal establishment	 Digital performance management analytics tool	 Information governance capacity
 Digital stakeholder mapping & RACI development tools	 Risk-assessed digital cost & schedule	 5-step model systems development
 Digital procurement assessment & e-tendering platforms	 Integrated workflow & change performance tool	 Automated risk software & modeling capability
 BIM 360 document workflows, mark up & clash detection	 Live dashboard reporting powered by RPA & data analytics	 4D & 5D BIM for cost & schedule simulation
 Digital payment applications, workflow & CF monitoring	 Digital HSEQ tools & hazard prevention	 GIS-enabled digital material tracking & logistics monitoring
 Real-time/virtual project site tours through HoloBuilder	 Digital BIM-enabled field inspection & snagging tool	 Integrated BIM-enabled asset tagging



# ARCADIS

Arcadis is the leading global Design and Consultancy firm for natural and built assets. Applying our deep market sector insights and collective design, consultancy, engineering, project and management services we work in partnership with our clients to deliver exceptional and sustainable outcomes throughout the lifecycle of their natural and built assets. We are more than 27,000 people active in over 70 countries, who are dedicated to improving quality of life. We do so by developing innovative solutions to create livable cities, to establish a people-centric future of mobility and to transform industries.

Our history in the Middle East dates back to 1904 when we advised the Yemen authorities on developing a water supply and management strategy. Today, we have an established presence in the region through our offices in the UAE, Qatar, Saudi Arabia, Oman and Bahrain which employ 2,200 professionals. Our ability to combine our strong understanding of the local market and international expertise enables us to continue to grow our footprint and support clients in delivering projects that will improve quality of life across the region.

## CONTACT

If you would like to discuss asset management services, please get in touch:



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