AtkinsRéalis

ENGINEERING RESILIENCE IN EVERY DROP

Water

CONTENTS

WHO WE ARE

We're AtkinsRéalis, a world-class engineering services and nuclear organization. We connect people, data and technology to transform the world's infrastructure and energy systems.

Together, with our industry partners and clients, and our global team of consultants, designers, engineers and project managers, we can change the world and **engineer a better future for our planet and its people.**

In this brochure you'll find a snapshot of our expertise, services and experience in Water. For further information visit: atkinsrealis.com/water

WHAT WE DO & WHY WE DO IT

Water is our planet's most precious resource, and we are here to safeguard it. The water sector has a responsibility to deliver solutions that build more resilient, prosperous, and safe communities. With global water expertise, local insight, and cross-industry experience, we offer the big-picture thinking that drives innovative solutions. Our diverse skills and experience ensure ambitious ideas, improved funding certainty, and profitable outcomes. Using advanced digital tools, we process vast data quickly, giving clients timely insights for confident decision-making.

Water projects may differ – in geography, environment, funding, and regulatory requirements – but our aim is always the same: to generate optimal outcomes for our clients while helping them consider every person and every drop.

EVERY DROP, EVERY LIFE

We treat water like the irreplaceable resource it is, engineering smart, lasting solutions that meet client needs while ensuring project profitability. Whether supporting a specific stage or managing the entire project lifecycle, we tailor our approach to each of our client's unique needs. Beyond traditional engineering, we lead in biodiversity net gain, write guidance for water companies, and advise regulators. Our expertise helps clients make investment decisions that maximize value.

DATA DRIVEN, CUSTOMER-LED

Our data-driven approach and innovative thinking ensure we understand the problem before proposing solutions. By leveraging cutting-edge digital tools, we provide clients with the right data at the right time, enabling confident decision-making. Drawing insights from across industries, including rail, roads, power & renewables, we tackle challenges with fresh perspectives, prioritizing water recovery and reuse.

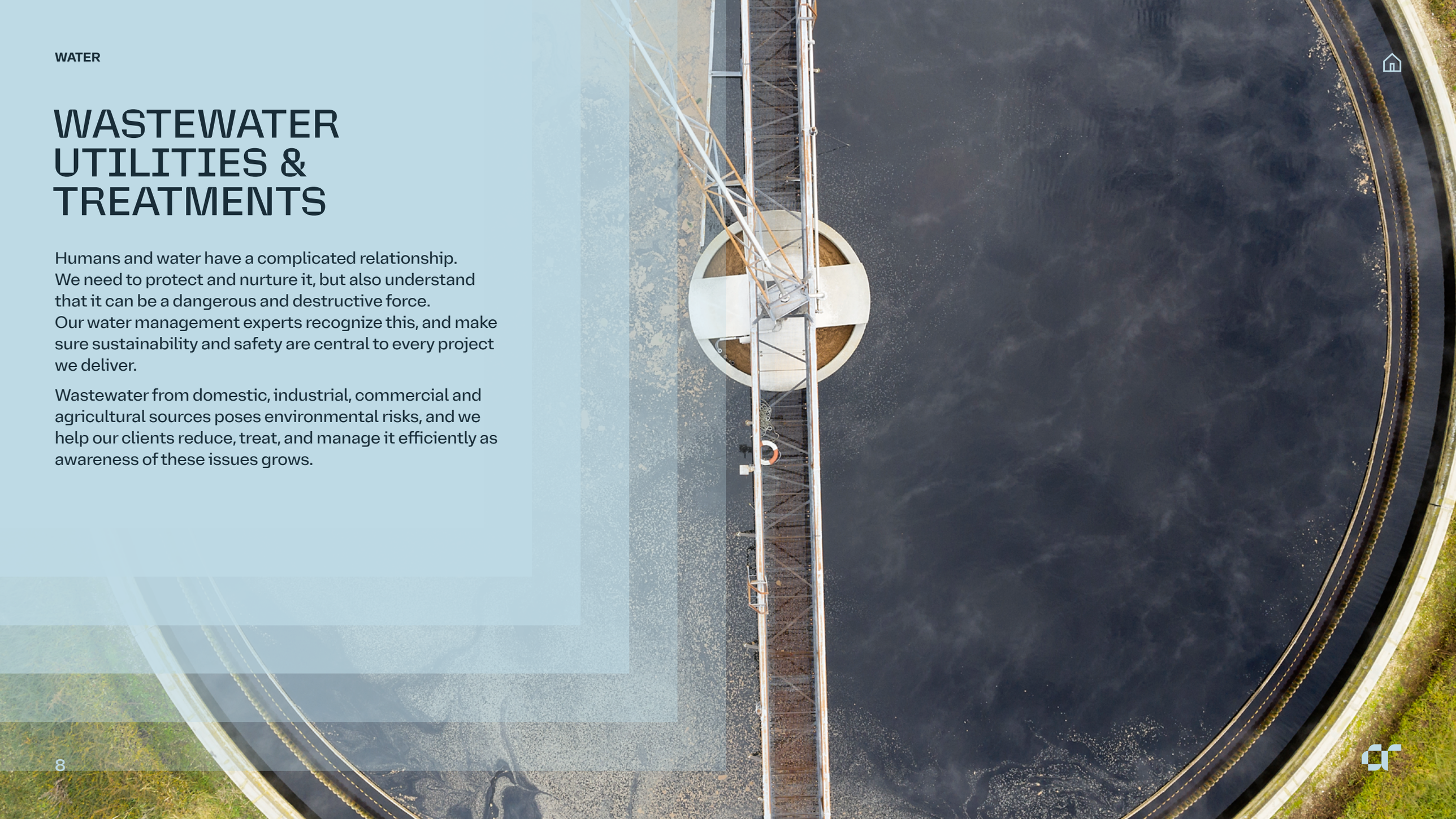
GLOBAL EXPERTISE, LOCAL INSIGHT

With global engineering and project management experience, we deliver water projects worldwide, combining global thinking with regional expertise. Many of our people have deep industry knowledge from years in the water sector, giving us unique insight. We collaborate across disciplines and industries, sharing ideas and solutions to tackle shared challenges. By anticipating industry shifts, we help our clients navigate future scenarios, always aiming for optimal outcomes that benefit our planet and its people.

WASTEWATER UTILITIES & TREATMENTS

Humans and water have a complicated relationship. We need to protect and nurture it, but also understand that it can be a dangerous and destructive force. Our water management experts recognize this, and make sure sustainability and safety are central to every project we deliver.

Wastewater from domestic, industrial, commercial and agricultural sources poses environmental risks, and we help our clients reduce, treat, and manage it efficiently as awareness of these issues grows.



ENVIRONMENT PROTECTION, REGULATION & RESILIENCE

Managing natural resources responsibly is a priority for both our clients and the planet. We assist in restoring ecosystems, incorporating sustainable features, and promoting environmentally sound practices. Our expertise and scale allow us to drive industry-wide change and provide sustainable solutions across projects.

We implement restoration and water management plans for lakes, rivers, wetlands, and habitats, while balancing urban flood control with preservation of natural waterways. Our freshwater ecology advice ensures healthy aquatic ecosystems, and we support water conservation through integrated resource planning. From desalination to pollution control, we help our clients protect watersheds and manage resources effectively.

OUR SERVICES AND CAPABILITIES

We specialize in resilient and sustainable solutions, offering expert advice and innovative strategies for complex water management issues.

Our experts provide high-quality, cost-effective services tailored to our clients' needs. We focus on water supply, treatment, environmental compliance, and infrastructure development, aiming for positive impacts through smart design and engineering excellence.

- Asset optimization
- Bioresources
- Digital Asset Management
- Environment & ecology
- Environmental & regulatory compliance
- Infrastructure design & rehabilitation
- Integrated Catchment Management (ICM)
- Integrated water resource planning
- Resilience & sustainability planning
- Stormwater management
- Sustainable Drainage Systems (SuDS)
- Transport & distribution
- Treatment, collection, disposal and sludge management
- Water resource management
- Supply & distribution

We care about the big issues facing the planet and are committed to engineering a better future for its people.

Find out more

OUR EXPERIENCE

We deliver innovative engineering solutions on projects across the globe.

Back River Wastewater Treatment Plant, US

Bringing legacy infrastructure into the digital age

Back River Wastewater Treatment Plant (WWTP) in Baltimore, US, serves a vast area with 3,100 miles of service pipes to keep local environment and waterways clean and healthy. The aging infrastructure had led to significant operational challenges, including effluent discharge issues that exceeded permit limits. This prompted the City of Baltimore to seek urgent solutions to ensure compliance and protect the environment.

In March 2022, AtkinsRéalis developed a BioWin process model to assess and optimize the plant's performance. The project faced several challenges, including political and local pressure, negative media coverage, and an unreliable legacy monitoring system. The lack of visibility into the plant's operations hindered effective decision-making and issue resolution.

Our solution involved creating a digital model and web-based interface for real-time monitoring, which was developed within two months. This innovative approach provided the City with the tools needed to swiftly assess and optimize plant performance, ensuring regulatory compliance and enhancing infrastructure resilience and efficiency

3,100 miles
Of service pipes

390 square miles
Service area

Completion date: 2022

Client: City of Baltimore

Rather than providing a single digital solution in isolation, our close relationship with our client has also allowed AtkinsRéalis to look beyond the present emergency, to provide a system that can act as a foundation for building future efficiency and resilience.

Find out more

Beckton Wastewater Treatment Works, UK

Optimizing performance with a Digital Twin

Beckton Sewage Treatment Works (STW), a heritage facility built in 1864, has been frequently upgraded to meet London's growing needs. Thames Water, managing waste for 3.5 million customers, is investing £125 million to address future demands. However, evolving technology, regulations, and climate conditions make investment decisions challenging.

Major upgrades and maintenance pose risks, including effluent emissions and fines. Beckton's historical and real-time data can provide insights into facility conditions, but Thames Water needed a solution to make this data actionable. AtkinsRéalis was tasked with exploring and implementing a digital twin to integrate and manage this data.

Our team of experts conducted a thorough assessment and developed use cases, leading to a minimum viable product (MVP) for one of Beckton's Activated Sludge Plants. The digital twin, created with Explore AI, includes performance dashboards, 3D representation, and model simulation. Delivered in July 2022, it helps predict risks, reduce energy consumption, and inform investment decisions, ensuring future resilience and efficiency.

3.5 million
Customers

£125 million
Invested

Completion date: 2022

Client: Thames Water

Collaborators: Explore AI

A unique, first-of-its kind challenge, requiring close collaboration between the modelling software vendors and our engineers and project team.

Find out more

Bridgwater Tidal Barrier, UK

A digital design solution to engineer net zero

AtkinsRéalis was commissioned by the Environment Agency (EA) to design the Bridgwater Tidal Barrier, aimed at protecting Bridgwater from tidal surge flooding until 2125. The project faced the challenge of reducing whole-life carbon emissions by 45%, in line with EA's sustainability targets. Traditional methods of calculating embodied carbon were time- consuming and often done too late in the design process.

To address this, AtkinsRéalis deployed the BIM Analytics-Carbon tool, which measures embodied carbon in real-time during the design phase. This tool allowed the team to identify and reduce the carbon impact of critical design elements, such as steel- cased reinforced concrete piles, by 70%. Overall, the team achieved a 50% reduction in the barrier's embodied carbon.

The digital twin created for the project provides performance dashboards, 3D representations, and model simulations, helping to optimize asset use, reduce energy consumption, and inform investment decisions, ensuring long-term resilience and efficiency.

50%

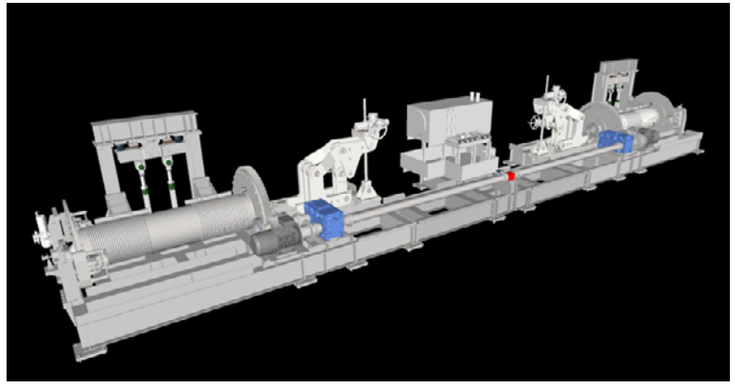
Reduction in the barrier's embodied carbon

70%

Reduction in the carbon impact of critical design elements

Completion date: Forecast 2029

Client: The Environment Agency and Somerset Council



"This tool has the potential to be a valuable addition to the Eric tool, allowing rapid and easy visualisation of carbon hotspots and significant carbon savings during the design process."
Neil Guthrie, Environment Agency Carbon Manager.

Find out more

Eastern Road Coastal Scheme, UK

Specialist cost management service for coastal protection schemes

AtkinsRéalis was appointed by Coastal Partners in 2019 to manage the commercial and cost aspects of the Portsea Island coastal flood defense scheme for Portsmouth City Council. This six-year project aims to protect over 4,000 homes and 500 businesses from a 1-in-100-year flood event by upgrading and replacing aging defenses. The project includes a 2km sea defense wall, an embankment, and the raising of an access road. The project also enhances the local environment with landscaping, wildflower planting, and improved public amenities.

Innovative features include a textured sea wall designed for inter-tidal ecology, developed in partnership with the University of Glasgow and Bournemouth University. This pioneering approach won the Coastal Management Award at the Environment Agency's 2022 Flood and Coast Awards. The project is set for completion in 2024, with ongoing landscape maintenance until 2026.

2 km

Sea defense wall

Completion date: 2024

Client: Portsmouth City Council

Collaborators: Coastal Partners

Despite COVID-19-related delays, AtkinsRéalis has effectively managed project budgets, scrutinized costs, and investigated compensation events to protect the client's interests.

Find out more

Green Blue Network Strategy for the City of Edinburgh, UK

Mapping the vision for a sustainable city

The Green Blue Network Strategy for Edinburgh is an innovative project aimed at integrating nature-based solutions to enhance the city's climate resilience and public health. AtkinsRéalis was appointed to develop this holistic strategy, leveraging our expertise in geospatial analysis and environmental planning. The project involved creating a digital geospatial platform to facilitate open and transparent information sharing among stakeholders. Our multi-disciplinary team, including flood risk and water management specialists, ecologists, and geospatial experts, used robust methodologies to ensure data quality. We conducted spatial analysis and qualitative assessments to deliver a strategic flood risk assessment, identify opportunities for sustainable water management, and map ecosystem services. Extensive stakeholder consultation was also conducted to prioritize and program 'Priority Action' sites, ensuring the project's long-term sustainability and effectiveness.

Completion date: 2022

Client: City of Edinburgh

The digital platform, using GIS, provided a baseline for the Green Blue Network, assisting planners and decision-makers.

Find out more

Harris County Flood Control District Asset Management Program, US

Reducing the impact of flooding

Following the devastation of Hurricane Harvey, Harris County sought to strengthen its flood control efforts, approving $2.5 billion in bonds for flood damage reduction projects. Over ten years, the Harris County Flood Control District plans to create or accept over 3,400 acres in stormwater detention basins and channel improvements. Understanding the impact on funding requirements, the District needed a comprehensive Asset Management Program.

AtkinsRéalis was appointed to develop this program, transforming the District's approach to operating, maintaining, and investing in flood damage reduction infrastructure. We implemented a multi-step, multi-year approach, improving asset management practices through organizational changes. Our solution follows ISO 55000 standards, emphasizing performance-driven budgeting based on asset condition and deterioration over time.

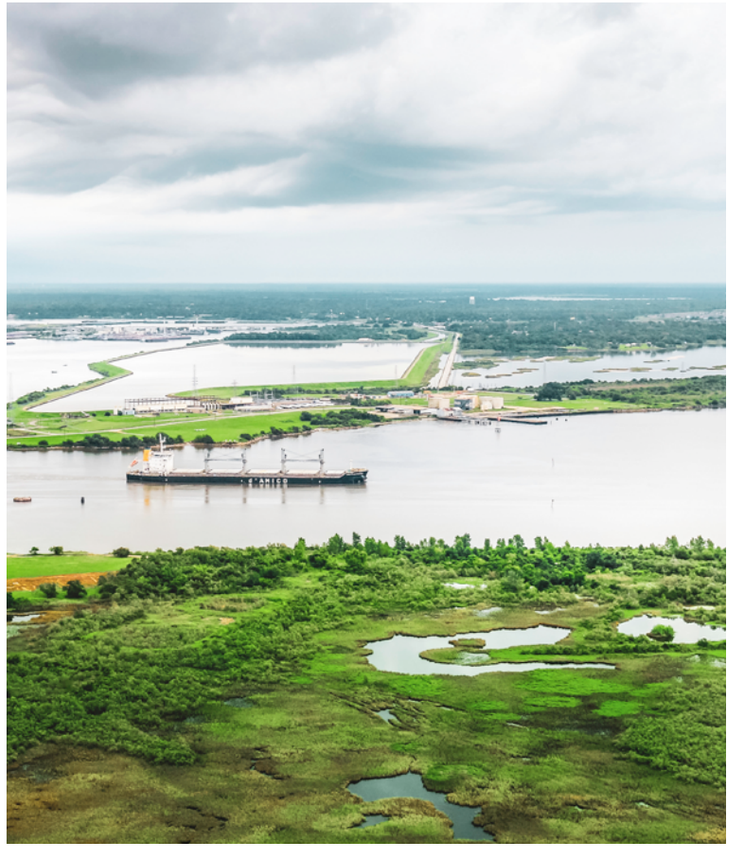
In the initial phase, we developed interim policies, an asset hierarchy, and a risk framework. Lifecycle cost modeling assessed $1.1 billion in assets over 100 years.

ISO 55000

Standards

Completion date: Ongoing

Client: Harris County Flood Control District



Future phases will deploy a Strategic Asset Management Plan, optimizing funding and ensuring sustainable flood damage reduction for Harris County residents.

Find out more

Las Vegas Valley Flood Control Masterplan, US

Leading the way in flood control innovation

Some of the most severe flash floods occur in the desert. Between 1905 and 1975, the U.S. Soil Conservation Service documented 184 distinct flood events in Clark County, Nevada, causing significant damage. The Clark County Regional Flood Control District (CCRFCD), established in 1985, is responsible for developing and implementing comprehensive flood control masterplans for the county.

AtkinsRéalis has been leading the consultant updates to the flood control masterplan for the Las Vegas Valley since 1997. These plans are reviewed every five years and continuously updated to address growth and development. The update process includes data collection, land use updates, hydrologic modeling using GIS, and maintaining a GIS geodatabase of flood control facilities.

We developed a hydrologic model for over 1,500 square miles to define accurate 100-year peak flows and volumes. Additionally, we created an Arc hydro geodatabase and a custom suite of GIS tools for continuous updates.

1,500 square miles

Hydrologic model

Completion date: Ongoing

Client: Clark County Regional Flood Control District

An automated cost estimation tool was developed for forecasting future costs and tracking infrastructure maintenance.

Find out more

Las Vegas Wash Channel Improvements, US

Engineering resilience, protecting communities

The Clark County Water Reclamation District (CCWRD) facility, the largest wastewater agency in Nevada, faced regular flooding issues that jeopardized its operations. The Las Vegas Wash channel overflowed during storms, causing costly debris cleanup and threatening the facility's access road, which also served as a makeshift grade control structure.

AtkinsRéalis addressed these challenges by developing pre-and post-project hydraulic models using 1D and 2D techniques and performing sediment transport analysis. We constructed a secondary access road and implemented additional security measures. Our team designed 1,100 feet of new utilities, including water, power, fiber-optic, and sludge lines, crossing the wash.

To reduce costs and expedite construction, we used recycled steel girders for a new 200-foot bridge over Las Vegas Wash. These efforts improved floodwater management, enhanced facility access, protected utilities, reduced maintenance, and reclaimed 40 acres of land within the CCWRD property, ensuring long-term operational stability.

1,100 feet

Of new utilities designed

Completion date: 2018

Client: Clark County Water Reclamation District

Find out more

NEOM Flood Risk Management Project, Saudi Arabia

Supporting sustainable water management

The NEOM Flood Risk Management Project is a crucial initiative under Saudi Arabia's Vision 2030, aimed at ensuring the sustainability of the NEOM city development near the Red Sea. This region faces significant flooding and drought risks, necessitating comprehensive management strategies. AtkinsRéalis was appointed to provide innovative techniques to develop Intensity-Duration-Frequency (IDF) rainfall data and Probable Maximum Precipitation (PMP) data for the NEOM region. Additionally, we created baseline flood risk data for the entire area.

Our role involves extensive hydro-geomorphological analysis and the use of geospatial techniques to assess flash flood hazards. We mapped groundwater, flood, and drought potential zones, dividing the region into 52 basins using ArcGIS software. This project ensures the safety and sustainability of NEOM by addressing both immediate and long-term environmental challenges, supporting sustainable water management and hazard forecasting. Our efforts are pivotal in safeguarding the future of this ambitious urban development.

Completion date: Ongoing

Client: NEOM Company

Find out more

Old Tampa Bay Water Quality Improvement Project, US

Transforming challenges into sustainable solutions

The Florida Department of Transportation's (FDOT) District 7 faced high costs for stormwater management in Tampa Bay. Traditional methods involved demolishing properties to build detention ponds, but FDOT needed a more innovative, cost-effective solution that also improved water quality.

AtkinsRéalis conducted an ecological feasibility study and developed a hydrodynamic model, proposing a new channel through the Courtney Campbell Causeway to restore natural circulation patterns. This approach improved water quality and seagrass restoration, equivalent to over 200 traditional detention ponds.

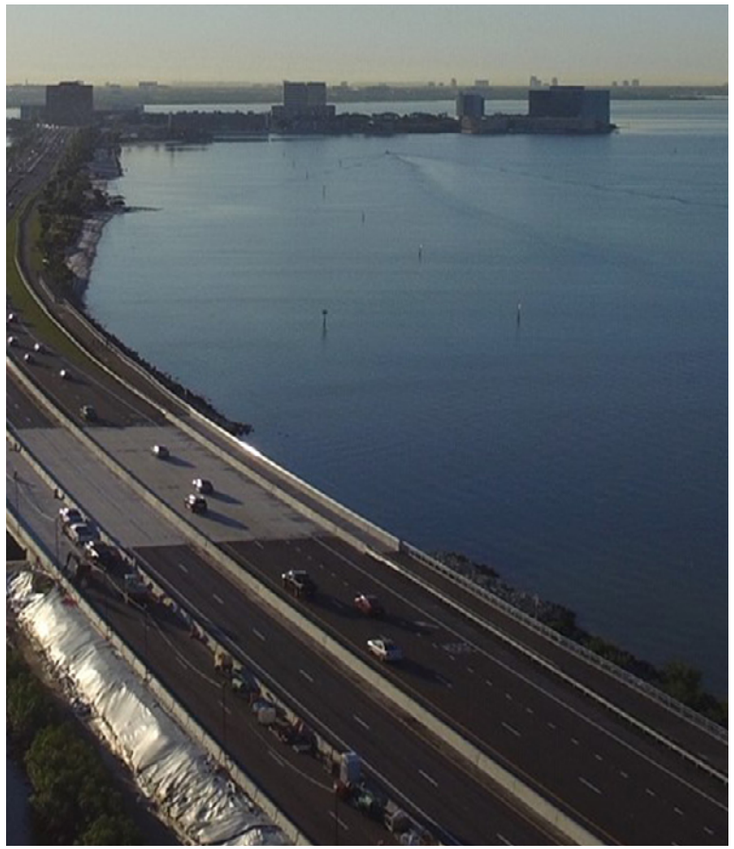
After extensive study and coordination, we established a new channel and tidal connection, reducing stagnant water time, stabilizing salinity, and lowering nitrogen levels. A comprehensive water quality monitoring system was implemented, leading to the creation of a water quality credit bank. This innovative solution offset approximately $50 million in future costs and set new standards for stormwater management.

$50 million

In future costs offset

Completion date: Ongoing

Client: Florida Department of Transportation (FDOT)



The project significantly improved water quality, reduced right-of-way requirements, and accelerated project delivery, benefiting both the environment and the community.

Find out more

River Thames Scheme (RTS), UK

Transforming flood risks into resilient solutions

The River Thames Scheme (RTS) aims to protect over 11,000 homes and 1,600 businesses in Surrey from flooding, while enhancing the economic, health, and environmental benefits of the River Thames. This integrated project promotes healthier, resilient, and sustainable communities by improving access to green spaces, sustainable travel routes, and biodiversity.

We have supported Surrey County Council since 2022, providing project management office (PMO) services, landscape design, natural capital consultancy, and planning consent support. The RTS, a project of national significance, has received approval from Defra and HM Treasury, with detailed planning, design, and consultation underway.

Our role includes enhancing PMO processes, improving team structures, and introducing best practices in project management. We handle PMO management, project health checks, risk management, quality assurance, project controls, and reporting improvements. Additionally, we are driving cultural change, supporting the Environment Agency's leadership through significant project transformation, ensuring the project's long-term success and social value.

11,000

Homes protected from flooding

Completion date: Ongoing

Client: Surrey County Council

"The River Thames Scheme demonstrates that public organizations can successfully partner to achieve more and major programs can simultaneously resolve multiple societal needs." Jack Beaumont, Associate Director at AtkinsRéalis.

Find out more

Rock Street Flood Alleviation Scheme, UK

Ensuring safety, enhancing resilience

Flooding is a significant threat to communities across Wales, and managing this risk is a critical challenge for local authorities. Neath Port Talbot County Borough Council is addressing this with the Rock Street Flood Alleviation Scheme in Glynneath, a village prone to flooding from the River Neath and other watercourses.

AtkinsRéalis is providing design support and health and safety services for this project. Our role involves ensuring a safe working environment while minimizing risks to the site team and the public. The scheme includes constructing a new flood relief culvert and intake bay to divert water during intense rainfall, and a twin box culvert bridge to reduce surface and fluvial flooding impacts.

We are leveraging our extensive experience in civil engineering and health and safety to review technical proposals and traffic management plans, raise community awareness, and ensure safe pedestrian and vehicular routes. Our efforts have already reduced flooding impacts, and the completed scheme will significantly enhance the community's resilience to flood risks.

553 homes

Will be protected

Completion date: Ongoing

Client: Neath Port Talbot County Borough Council

"This project presents significant health and safety challenges, with operations at five-meter depths in confined spaces. Risks include water pressure during excavation and heavy machinery loads. Our extensive sector experience and local knowledge ensure a safe project and community environment."
Martyn Clark, Associate Director, AtkinsRéalis.

Find out more

Southsea Coastal Scheme, UK

Ensuring safety, enhancing resilience

The Southsea Coastal Scheme is the UK's largest local authority-led coastal defense project, costing around £175 million and backed by the Environment Agency and the UK Government. It aims to reduce flooding risk for over 10,000 homes and 700 businesses along a 4.5km stretch from Old Portsmouth to Eastney. The project also includes new amenities, landscape, and public realm features to enhance the seafront.

AtkinsRéalis was appointed by Coastal Partners in 2020 to provide post-contract cost and commercial management. Our role involves cost consultancy during design development, negotiating costs for each phase, and ensuring best value for money. We scrutinize stage 2 tender submissions to agree on fair target price contracts and assess payment applications to ensure compliance with NEC contract procedures.

The project, phased across six sub-frontages, not only protects against flooding but also enhances the unique character of Southsea seafront, benefiting both locals and visitors.

£4m
Landfill cost saving through recycling materials

10,000
Homes protected from coastal flooding

700
Businesses protected from coastal flooding

Completion date: Ongoing

Owner: Portsmouth City Council

Collaborators: Coastal Partners

"AtkinsRéalis' diligent and professional approach to cost surety has been a key pillar in the ongoing success of the Southsea coastal Scheme." Chris Koster, Project Delivery Manager, Southsea Coastal Scheme.

Find out more

Spains Hall Estate Beaver Reintroduction Project, UK

Nature-based solutions to address environmental challenges

The Spains Hall Estate Beaver Reintroduction project, launched in 2019, is a pioneering initiative aimed at mitigating flooding in Finchingfield, a historic village in Northwest Essex. AtkinsRéalis has played a crucial role in the project by using advanced hydrological and ecological modeling to understand the broader impacts of the beaver activity. Our expertise helped develop a Whole Farm Reservoir approach, identifying areas on the estate where water could be naturally stored.

The project has garnered widespread local support, with the community embracing the beavers and their positive impact on the environment. The project has already yielded significant results, reducing flooding in Finchingfield and boosting local biodiversity. The success of the beaver reintroduction is encouraging interest in expanding these methods to other regions in the UK. This project exemplifies the potential of nature-based solutions in addressing environmental challenges.

2,000-acre
Farming estate

400 years
Since beavers were released in East Anglia

3 million litres
Of water created in the dams

Completion date: 2024

Client: Spains Hall Estate

Collaborators: Environment Agency, King's College London

"The project is great example of how we're able to use digital tools within a natural environment to enhance our understanding of what's happening on the ground, and use that data to better inform how we support the project."
Molly Howell, Assistant Environmental Scientist at AtkinsRéalis.

Find out more

Thames Water Technical Partner Framework, UK

The UK's largest strategic water resources program

The UK's largest strategic water resources options (SRO) program, led by Thames Water, aims to secure future water supplies for southeast England. This initiative addresses the critical challenges posed by climate change and population growth, which threaten water availability. The program includes constructing new pipelines, a wastewater re-use scheme in London, and a new reservoir at Abingdon, Oxfordshire.

AtkinsRéalis, in a joint venture with Stantec, has been appointed to this ambitious project. Our role involves providing consulting, design, engineering, environmental services, project management, planning, and stakeholder consultation. We support strategic water resource planning and environment-led design, leveraging our expertise in transportation to develop necessary infrastructure.

Our joint venture will deliver sustainable solutions, ensuring water security for millions while creating social value and environmental benefits. This project represents a significant investment in water infrastructure, aligning with our mission to engineer a better future for the planet and its people.

£300 million

Professional support services costs

Completion date: Ongoing

Client: Thames Water

Collaborators: Stantec

The UK's largest strategic water resources program will secure water supplies for millions, delivering sustainable solutions and creating lasting social and environmental benefits.

Find out more

What makes us different is the way we work, and the way we think.

Read the latest thought leadership and opinion from our experts

OUR GLOBAL MARKETS AND SERVICES

From designing entire cities to delivering nuclear power stations, we focus on areas that greatly enhance the way we are all housed, connected, powered, and protected.

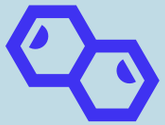
MARKETS

Our primary aim is to deliver value across high-growth, high-quality end markets in infrastructure and nuclear:

Buildings & places

Defense

Industrial



Minerals & metals

Nuclear

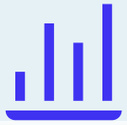
Power & renewables

Transportation

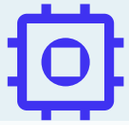
Water

SERVICES

We deploy global capabilities locally to our clients and deliver unique end-to-end services across the whole life cycle of an asset including:



Consulting, strategy & advisory



Engineering & design

Project & program management

Project delivery

Operations & maintenance

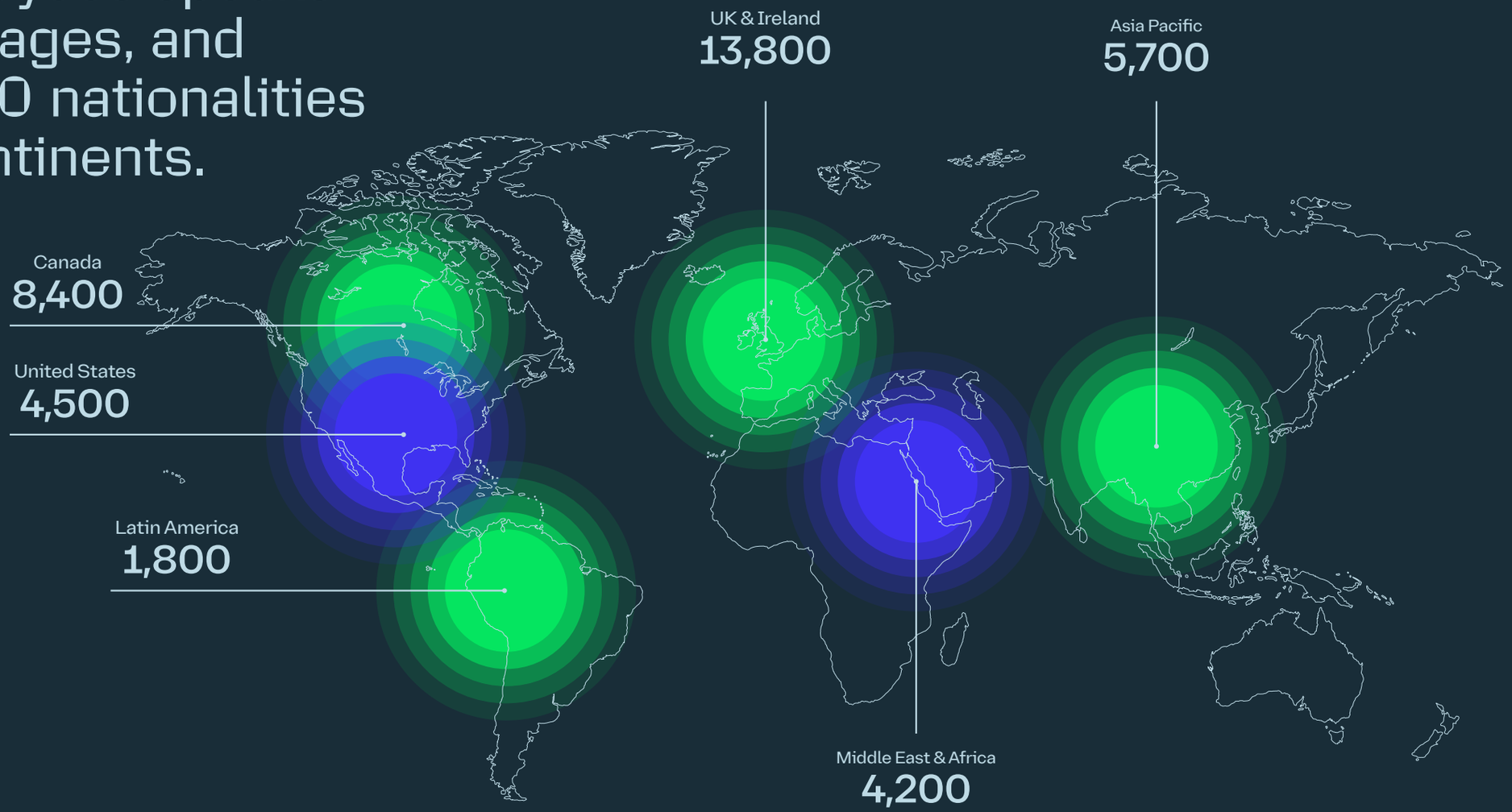
Capital

Decommissioning

Every day, we're striving to be more inclusive, more collaborative and more innovative in how we drive change. To us, different makes a difference.

Find out more

Our global team of over 38,000 employees speaks over 70 languages, and represents 130 nationalities across six continents.



OUR VALUES

Our values are the essence of our Company's identity. They represent how we act, speak and behave together, and with our clients and stakeholders.

Safety

We put safety at the heart of everything we do to safeguard our people, assets, and the environment.

Collaboration

We work together and embrace each other's unique contribution to delivering amazing results for our clients, our communities, and our planet.

Innovation

We redefine engineering by thinking boldly, proudly, and differently.

Integrity

We do the right thing, no matter what. We are accountable for our actions.

Excellence

We are proud to do our best, achieve high standards, creating environments where all can thrive.

Engineering a better future for our planet and its people.

atkinsrealis.com/water

#Water

AtkinsRéalis