

→ Europe, Middle East and Africa Overview

Shaping the Future of Coasts and Ports



moffatt & nichol



We are specialists. Our impact is in empowering our teams to push the boundaries of industry knowledge and expertise.



→ Sector Overview

Creating Resilient Ports and Coastlines

Moffatt & Nichol has a long-standing reputation for excellence in delivering engineering and consulting services to clients in the coastal, port and commercial services sectors around the world.

While each region brings its own infrastructure and investment priorities, collectively we are seeing clients looking for solutions which can be delivered as part of increasingly complex programmes of work and have a design life which provides resilience over decades.

At Moffatt & Nichol, we support our clients from the outset of a project, offering clear commercial insights and critical market analysis. This ensures that investment decisions are well-informed and strategically sound, helping to navigate complexities effectively and deliver projects that are both viable and future-proof.

Working through the project value chain, from master planning, detailed design to construction supervision, our teams come from the perspective of in-depth operational understanding of maritime infrastructure combined with a breadth of engineering excellence.

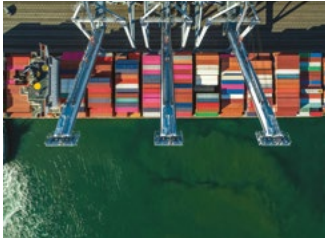
We take an innovative and holistic approach to resilience projects, driven through our Living With Water philosophy, which combines planning and engineering to improve lives and communities by looking at the root cause of issues rather than solely focusing on solving the immediate problem.





→ Our Impact

Delivering Effective Solutions



Industry Leading Expertise

Industry-leading specialists join Moffatt & Nichol to contribute to their sector's development through innovation, research and development, and digital innovation.

When sector-specific expertise is directly compared to that of larger companies, we consistently outperform expectations.



Collaborative Delivery

At Moffatt & Nichol our starting point for every project is collaboration.

Our teams understand the importance of clear communication when delivering within multiple-stakeholder networks and aligning to a range of project goals, timelines and unique requirements.

We work diligently to deliver exceptional results, on-time and on-budget.



Sustainability as Standard

Many clients now embed carbon reduction goals in business strategy, project design and construction plans.

We analyse emissions and develop carbon reduction strategies, incorporating electrification, low-carbon design, circular economy, and water quality improvement.



Resilient and Thriving Communities

Our projects support thriving communities, from coastal management protecting against flooding to port expansions boosting regional economies.

We collaborate with clients and stakeholders to achieve and share positive infrastructure outcomes.



Digital Innovation

We use simulation, emulation, and digital twins to enhance master planning through our FlexTerm software. Combined with NextPort's operational optimisation digital twin, they deliver unmatched value to clients.

Our advanced computing capabilities enable larger, high-resolution coastal models over extended periods.



→ About Us

Creative People, Practical Solutions



As a team of just two when starting out in 1945, Frank Nichol and John Moffatt fostered a philosophy which has grown into a set of values to which we remain committed:

- Attract the best practitioners.
- Work as a team.
- Earn a fair return.
- Respect employees and clients.
- Operate always with honesty, integrity, and decency.



Today, Moffatt & Nichol has more than 60 offices and 1,200 employees worldwide, with our head office in Long Beach, California. Our network across the United States now reaches into Europe, Asia, Australasia, South America and the Middle East. Our industry experts bring deep technical skill and they have completed more than 14,000 projects globally, sustaining an 80% repeat client rate.



From our core practice areas of ports, water, transportation and commercial, we innovate and progress industry best practice in areas such as resilience and artificial intelligence through research and innovation. We don't aspire to be all things to all clients, instead we leverage our niche expertise to help clients bring their vision to life.



→ Services

Expert Consultancy from Concept to Delivery

Moffatt & Nichol has established a collective of industry-leading professionals to partner with clients seeking in-depth technical expertise, sustainable and innovative solutions, and strategic advisory services. Our business is based around three core areas: water, ports, and commercial.

Water

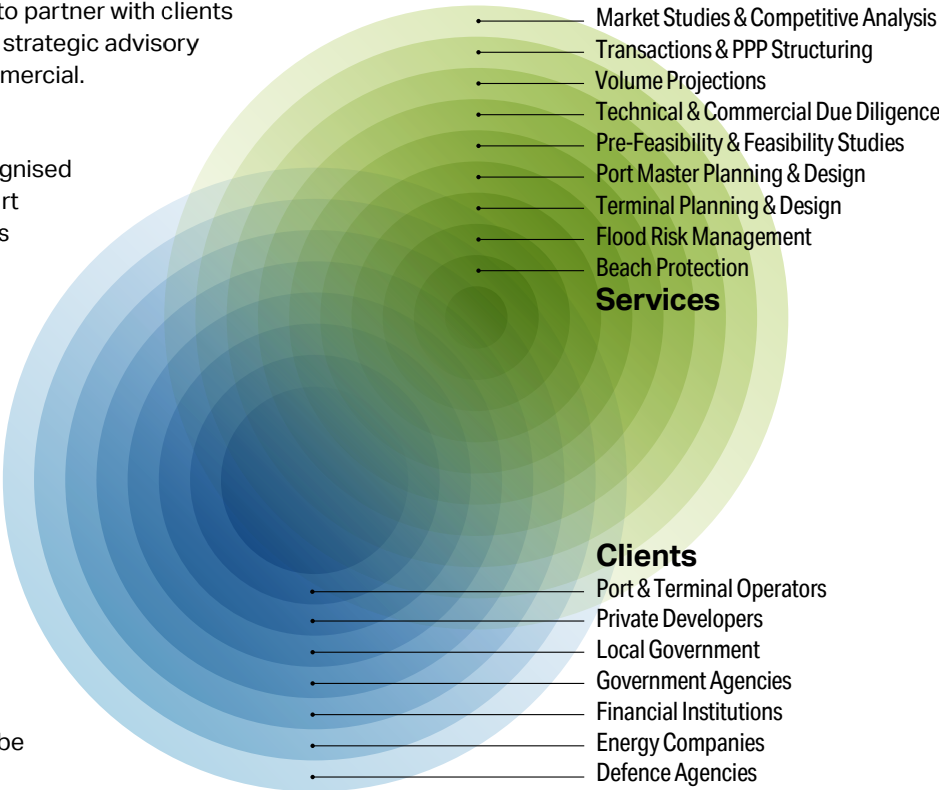
Our team of specialised engineers, planners, economists and scientists is recognised for solving complex challenges in the coastal environment using state-of-the-art technologies and practical approaches based on decades of experience across numerous projects and research commissions.

Ports

Moffatt & Nichol has a long-standing reputation for providing innovative solutions to support development and transformation of ports and marine terminals (container, bulk, general cargo, energy, cruise). Our strength in master planning and due diligence across all commodity sectors is sought by clients relying on a partner to provide both outline and in-depth design consultancy. In addition, for over seven decades we have supported diverse defence needs around the world.

Commercial

Our Commercial Advisory Group comprises a mix of economists, logistics, financial, management and operational specialists who provide the full development of cargo and transportation infrastructure projects, from initial concept and strategic planning through to creation of a viable project that can be designed, built and operated.





→ Services

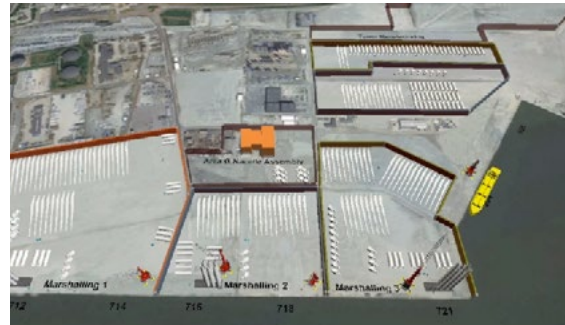
Dynamic Simulations

FlexTerm

FlexTerm is powerful 3D simulation software that provides the ability to visualise how changes may affect port facilities' capacity, operations, efficiency, and profitability.

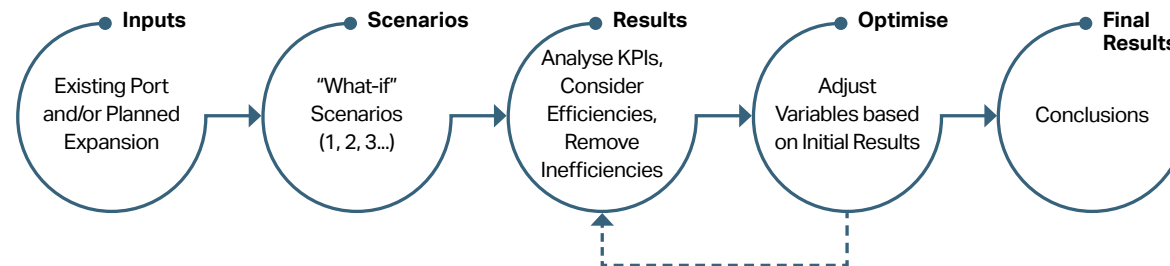
By changing the model input and variables, FlexTerm can simulate proposed operations at the port facility and compare performances of various scenarios.

The software offers both a visual (digital twin) and a report-based analysis of the terminal to identify pinch points and congestion areas during operations.



Key Benefits

- Provides platform for “what-if” scenarios to test marine terminal logistics plans
- Identifies and eliminates potential system bottlenecks and pinch points to improve efficiency and profit
- Establishes required spatial parameters for proposed projects and throughput
- Tests multiple layouts and logistics plans in low-risk environment
- Virtual optimisation of the system prior to Capex spending
- Project revenue estimation (lease terms and quay activities).



FlexTerm





→ Case Study

Port of Esbjerg

Esbjerg was the first wind port in the world to commission a digital twin that can calculate efficient methods for deploying offshore wind installations.

- FlexTerm's outputs demonstrated that the port could triple its annual shipping capacity for offshore wind installation from 1.5GW to 4.5GW within three years.
- FlexTerm was used to run what-if scenarios, so that operational efficiency and throughput could be maximised. It also established the best locations for storing wind turbine components and calculated where a deeper basin is needed.
- The team created a dynamic simulation model of the port to test different scenarios, for example when moving turbine blades, to ensure the processes were as efficient as possible.
- FlexTerm was able to map out the entire supply chain delivering the giant components. As the majority of components are being transported by water, the need to co-ordinate optimal timings for cranes, ships and so on is critical.
- The simulation also allowed for RoRo and onshore wind, container and bulk projects that take place at the port at the same time. This helped ensure that other existing port operations were able to continue usual operation.

[→ Experience](#)

Key Projects



Services: Concept design • Master plan • Market study

Dubai Harbour Marina and Cruise Port

Dubai, UAE

The Dubai Harbour is a new development by Meraas located between Jumeirah Beach Residence and Palm Jumeirah in Dubai, incorporating marinas, a cruise ship port, luxurious residential buildings, hotels, restaurants and cafes, a shopping mall, an events area, and public services.

The project features a yacht marina, zoned around the perimeter of the development, focusing on providing a significant increase to the overall berth provision in Dubai and specifically catering for larger high-end yachts, including those over 100 metres. The total berth provision in the masterplan equated to 1,145 berths, including drystack, with 40 berths for 50-plus-metre yachts. Dubai Harbour also includes a fully equipped urban port to welcome global cruise liners at a state-of-the art passenger terminal.

Moffatt & Nichol was commissioned to support the development team with the concept design, master planning, and market studies of the marina and cruise elements within the Dubai Harbour project. The feasibility study and market assessment included extensive stakeholder engagement in United Arab Emirates and consideration of demand in the region.

Dubai Harbour won the award for the World's Best New Cruise Development 2021 at the World Cruise Awards.

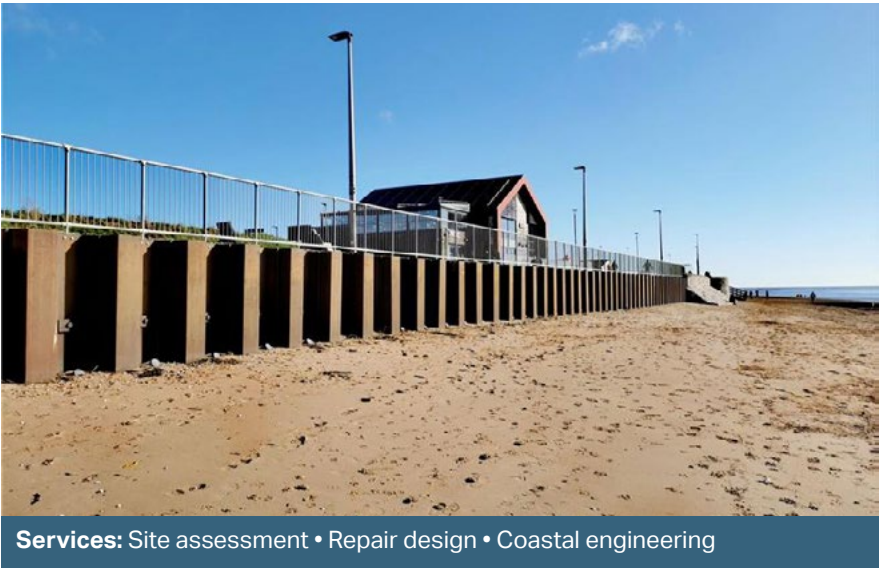
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→ Experience

Key Projects



Services: Site assessment • Repair design • Coastal engineering

Exmouth Sea Wall Urgent Services

Exmouth, UK

In October 2023, Storm Ciaran revealed a 90-metre section of the Exmouth seawall foundation, causing the wall and pavement behind it to fail, prompting the emergency closure of the promenade.

East Devon District Council, as the coast protection authority, enlisted Moffatt & Nichol to identify the failure's cause and collaborate with a local contractor to design repairs. The swift response aimed to reopen the promenade by summer 2024.

The Exmouth seafront, a gateway to the Jurassic Coast World Heritage Site, borders the Exe Estuary, a refuge for migratory birds. It serves as a hub for walking, cycling, and beach access. Originally built by the Victorians when beach levels were higher, the sea defences now face fluctuating levels and erosion.

Initial efforts included site investigations and surveys, followed by design, supervision, and public consultation. Moffatt & Nichol also engaged with regulators, supported funding applications, and prepared an economic assessment. Phase one concluded in May 2024, with an eastward extension now ongoing.

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→ Experience

Key Projects



Services: Metocean analysis • Mooring and berthing studies • Concept development support • Planning and EPC support

Shannon LNG

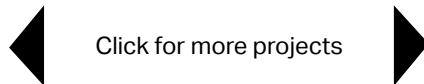
Tarbert, Ireland

Shannon Technology & Energy Park (STEP) is a new 40-hectare development in the Shannon Estuary, consisting of a power plant and a liquified natural gas (LNG) terminal. Once complete, the new terminal will import, store and regasify LNG.

New Fortress Energy appointed Moffatt & Nichol to support the planning application process and EPC procurement for the terminal, taking responsibility for the development of the marine works.

The scope involves metocean analysis, mooring and berthing studies, concept development of the access trestle and jetty head, production of the planning drawings, EPC tender package compilation and Owner's Engineer services for the EPC Contractor's Pre-FEED and bid submission.

The scheme includes a Floating Storage and Regasification Unit (FSRU), which will regasify the LNG, from where the terminal will pipe the gas to the adjacent power plant and the Irish national gas grid.

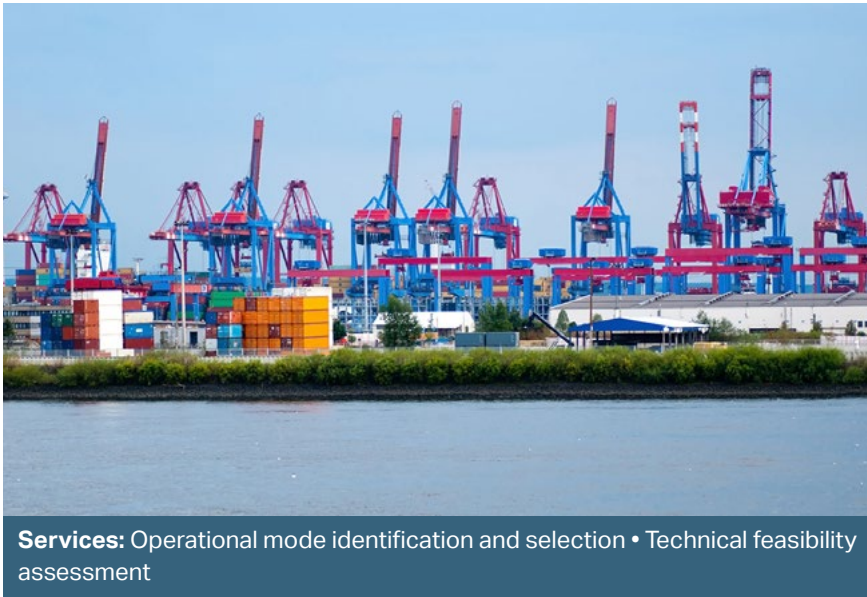


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→ Experience

Key Projects



Dunkirk Yard Densification

Dunkirk, France

Aiming to increase throughput capacity from 0.8 to 1.5 million twenty-foot equivalent units per year, the Terminal des Flandres sought to evaluate the feasibility of various potential operating modes.

Moffatt & Nichol was engaged to support decision making and planning to densify the terminal's existing yard. The project was divided in two stages, focusing first on operations, then feasibility.

The first stage of the study involved identifying and selecting the best operating mode for the facility, currently operated with reach stackers. The study considered technical and operational risks, target throughput at full development, smoothness of transition from one mode to another, and implementation phasing. Possible options were compared to assess Opex and Capex costs, emissions, and implementation schedules. Moffatt & Nichol assisted the client in arriving at its decision that the most preferable and adaptable operation mode for TdF was deemed to be the perpendicular automatic stacking crane/freerider layout.

Once the new terminal layout had been conceptualised, Moffatt & Nichol assessed the technical and economic feasibility of the new operation mode for the second stage of the study. The team assessed various terminal concept layout variants, considering productivities and related numbers of handling equipment, based on flow analysis.

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→ Experience

Key Projects



Services: Master planning • Simulation • Concept design

East Container Terminal

Nador West Port, Morocco

Moffatt & Nichol has developed a masterplan, simulation and concept design for the East Container Terminal, a greenfield development by Marsa Maroc at Nador West Port on Morocco's north coast.

The terminal features a 70-hectare rectangular platform, with a 1,520-metre quay wall, designed to accommodate the world's largest container vessels. The terminal will be developed in two phases, Phase 1 with a 720-metre quay and Phase 2 with the remaining 800-metre quay. When completed, the terminal will be jointly operated by Marsa Maroc and TIL. With an estimated capacity of 3.5 million TEU per year, East Container Terminal is set to become a key transshipment hub in the region. The commissioning of this new terminal is planned for Q4 2026, and the project has been led by Tanger Med Engineering.

Moffatt & Nichol has developed the masterplan for the terminal, considering the berth, yard, landside connection and facilities required in order to meet the capacity requirements while optimising costs and enhancing operational effectiveness.

A detailed masterplan layout was produced, with a proof-of-concept dynamic simulation study to validate the proposed layout, ensuring terminal operations and equipment could meet performance targets under peak conditions and identify any potential operational bottlenecks. From there, Moffatt & Nichol developed the concept design. We are currently commissioned for the subsequent phases of the project.

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→ Experience

Key Projects



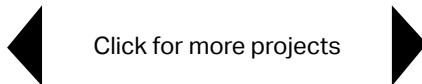
Geomorphological Advisor to EDF Energy

Dungeness and Sizewell, UK

As geomorphological advisor to EDF Energy, Moffatt & Nichol provides guidance relating to beach management at the Sizewell B and Dungeness B nuclear power stations – two of the stations with some of the most dynamic shores among EDF's power station assets.

Moffatt & Nichol team members have supported EDF since 2012 and have served as geomorphological advisors to the Dungeness and Sizewell coastal management steering groups, since 2014 and 2019, respectively. Throughout this time, the team's advisory services have also provided support on questions of broader coastal management and engineering.

This long-term and deep involvement in the coastal management of both sites has allowed the team to extend its expertise in several areas, including understanding coastal change impacts on sea defence performance, communicating effectively with steering groups and stakeholders, guiding stake holder response, and supporting owner engagement with regulators and external stakeholders. In addition to being highly regulated, these are extremely sensitive sites that attract much attention from the public and other organisations. Maintaining effective and positive communication with external parties is very important. The team's contributions have had many positive outcomes, including strengthening regulator relationships, achieving better client understanding of coastal processes, and developing long-term options.





→ Experience

Key Projects



Services: Coastal engineering • Geomorphic Assessments • Stakeholder outreach • Site assessment

UK Gravel Barriers Study

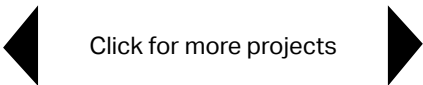
Nationwide, UK

Moffatt & Nichol is playing a key role in a four-year collaborative project funded by the Natural Environment Research Council (NERC) to improve understanding of gravel beach and barrier systems. These environments provide critical functions across the UK, including coastal erosion protection, flood defence, and support for natural habitats.

In partnership with our client and project lead, the British Geological Survey, we are developing advanced models to better understand how these systems respond to climate change, and to improve our ability to manage them effectively.

The study will encompass all gravel beaches and barriers around the UK. Using a combination of field observations and modelling, it will investigate their evolution over the past 20,000 years – a period marked by significant sea level change – and project how they might develop with climate change.

At the heart of the project is the development of a dynamic simulator, led by Moffatt & Nichol, focused on the Cley/Salthouse barrier in Norfolk. This tool will model geomorphological changes, groundwater movement, and shifts in the freshwater and saltwater marshes it protects to the year 2150. It will also help identify the most effective strategies to manage and enhance the resilience and ecological value of this system and others like it.

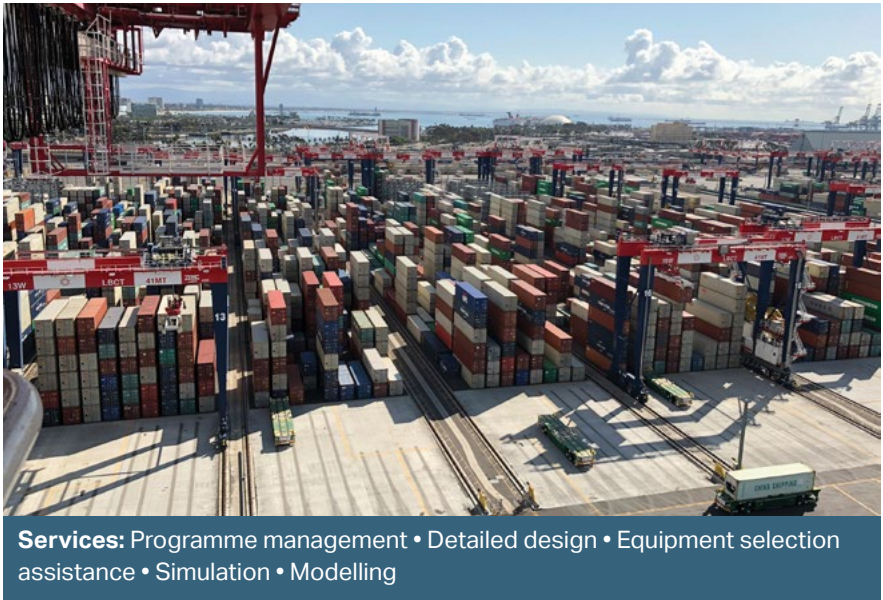


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Key Projects



Middle Harbor Redevelopment

Long Beach, California, USA

Twelve years in the making, the landmark Middle Harbor Redevelopment project has delivered the Long Beach Container Terminal (LBCT), one of the world's cleanest and most technologically advanced container terminals. The project combined two aging terminals into the first fully electric, zero-emission mega terminal in the world. Capable of handling some of the world's largest container vessels, the 325-acre terminal is supported by an expanded port-wide rail system.

The Port of Long Beach (POLB) engaged Moffatt & Nichol to provide programme management services for the project's planning and design, which included operational masterplanning and facilities planning. Moffatt & Nichol was responsible for designing the civil infrastructure, including the wharf, channel deepening, and land reclamation. Design work also included the automated container yard, semi-automated intermodal yard, heavy-duty pavement, and automated gates. Redevelopment was completed in phases to allow operations to continue during construction.

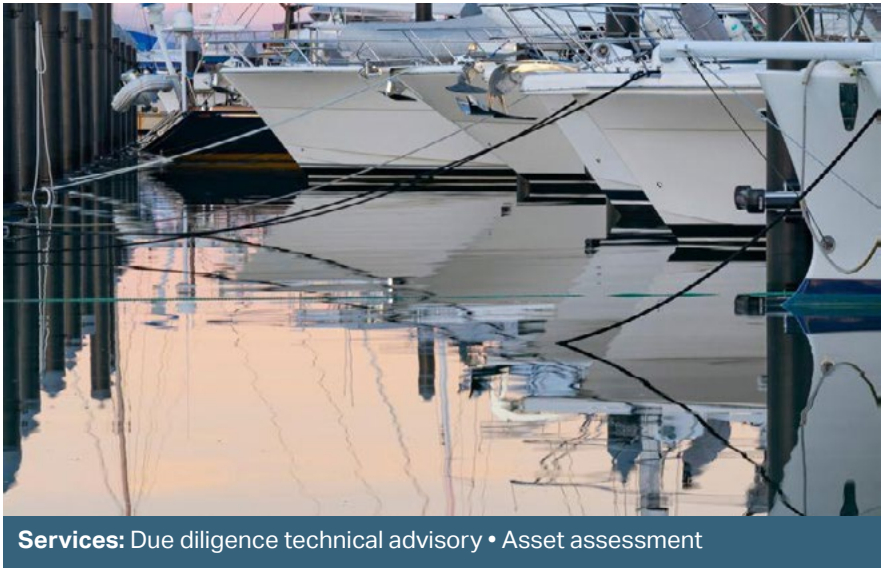
While infrastructure design was underway, terminal operator LBCT engaged Moffatt & Nichol to support in the development of equipment and terminal operations system performance specifications. Moffatt & Nichol worked closely with POLB and LBCT to fully integrate the terminal's infrastructure, operations, automated equipment, maintenance, and environmental controls.

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→ Experience

Key Projects



Services: Due diligence technical advisory • Asset assessment

Blackstone's Acquisition of Safe Harbor Marinas

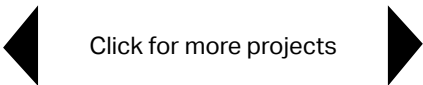
USA

Moffatt & Nichol teams advised Blackstone on one of the sector's largest transactions to date: the acquisition of Safe Harbor Marinas for US\$5.65 billion.

Our Marinas and Waterfront Destinations Group, with support from the Commercial Consulting team, advised Blackstone on the technical aspects of its due diligence – bringing our expertise and experience in planning, design, and engineering in the marina sector. One of the most critical areas of assessment for our team was looking at the marinas' resilience in the face of storm impact, as well as assessing asset condition with a specific focus on CAPEX and deferred maintenance and growth.

Our due diligence experience includes waterfront infrastructure ranging from public marinas to superyacht facilities and encompasses shipyards and the associated facilities.

Safe Harbor Marinas owns and operates 138 marines across the US and Puerto Rico.



Click for more projects



→ Experience

Key Projects



Norfolk Coastal Storm Risk Management Program

Norfolk, Virginia, USA

The Norfolk Coastal Storm Risk Management (CSRM) programme on the East Coast of the United States is being designed to defend the city against storm surges, waves, and increased tidal flooding accelerated by rising sea levels. Norfolk's population will benefit from nearly nine miles of floodwalls and levees, storm surge barriers, tide gates, pump stations, and nature-based solutions, such as living shorelines, wetlands, and subaqueous habitat restoration. It's a key part of Norfolk's comprehensive resiliency strategy, which also encompasses stormwater management, green infrastructure, beach restoration, floodplain policy and community engagement.

Moffatt & Nichol, as part of the Norfolk Resilience Partners Joint Venture (NRP JV), is responsible for the overall management of engineering and design activities within the programme. This includes a broad range of consulting, engineering, and urban design services for flood barrier systems, how flood barriers interact with neighbourhoods and the urban waterfront, floodproofing for critical facilities, and planning and design of nature-based solutions and coastal and stormwater modelling.



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