Ports & Terminals Capability Statement

Engineering & Professional Services

HATCH

The Port Authority of New York & New Jersey Master Plan

"Our Port Master Plan Project was a complex undertaking for a very complex public agency. We have nothing but the highest praise for the entire Hatch organization and their professional approach. Creating a master plan requires a very hands-on and detailed look as to "what is under the hood" of your organization and the overall business climate.

We value the thoughtful and comprehensive approach that Hatch took. As noted in the survey, we were very pleased with Hatch at the front end of the project and equally pleased at the back-end."

Sam Ruda
Director of PANYNJ Port Department

Hatch has been executing major port and marine terminal planning, design, procurement and construction management services across the globe for over 30 years. We leverage the extensive experience from projects such as the Port Authority of New York & New Jersey Master Plan to deliver premium facilities and services.

Our capability and expertise spans the globe and includes rail, road, dry bulk, container, break-bulk, crude oil, LNG and auto operations. Our teams routinely apply strategic thinking and high-level concept analysis to achieve early identification of best client outcomes, where analysis of a broad range of options is required to challenge the status quo, and provide clients with a clear path forward.

Our team recently completed the award-winning Long-Range Master Plan for The Port Authority of New York and New Jersey (PANYNJ), highlighting our ability to deliver complex studies. The project involved the development of a 30 year expansion and future-use plan for the six maritime facilities of PANYNJ, spread over 3,000 acres of land. Key value drivers included maximising and diversifying land use, increasing operational efficiency, and identifying innovative revenue opportunities.

We deployed Multi Criteria Analysis (MCA) to qualitatively assess a broad range of potential planning options, and applied Benefit Cost analysis techniques to identify preferred investment alternatives.

The final outcome of the Master Plan study involved a Hatch recommendation to focus the majority of future investment of the PANYNJ in the Port Jersey area, East of the historic focus area of Port Newark.
A recommendation that challenged the current thinking of the client and stakeholders alike, but sets the port up for future expandability, resilience to both climate and business risks, and relieves capacity challenges associated with the congested Kill Van Kull waterway.

Contacts

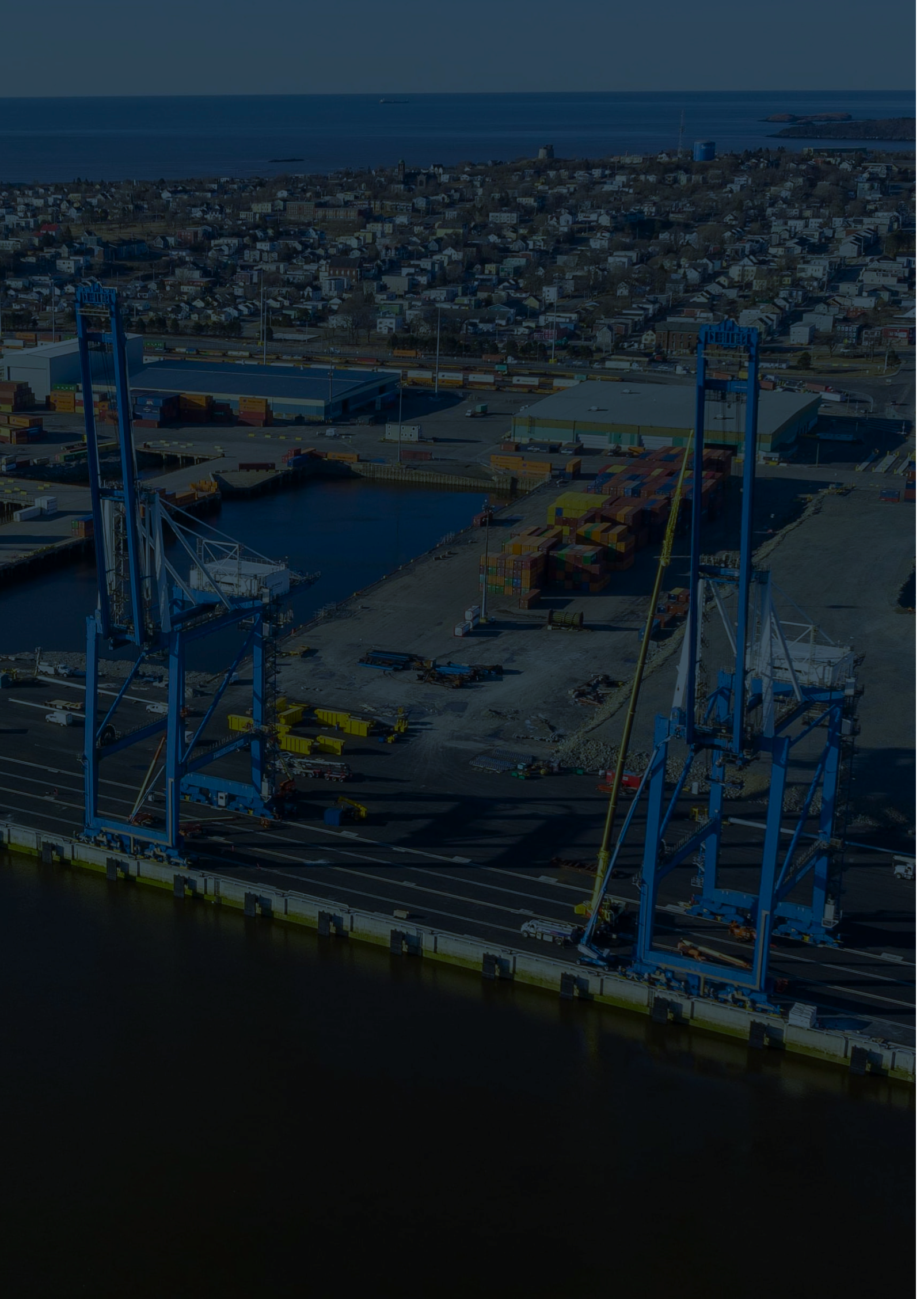
Contact Person

Damon Jericho
Global Director, Ports & Terminals
Brooklyn, NY, United States
Tel: +1 332 255 6040 **Mob:** +1 862 216 8440
Email: damon.jericho@hatch.com

Andrew Catto
Director – Ports and Terminals, Australia - Asia
61 Petrie Terrace
Brisbane QLD 4000 Australia
Tel: +61 (7) 3166 7210 **Mob:** +61 438 525 728
Email: andrew.catto @hatch.com

Werner Gous
Ports & Marine Lead
Abu Dhabi, United Arab Emirates
Tel: +27 21 013 4948
Email: werner.gous@hatch.com

Sara Fumagalli-Hui
Director, Marine Bulk Material Handling
Terminal Development
Vancouver, Canada
Tel: +1 604 639 1152
Email: sara.fumagalli-hui@hatch.com



Executive Summary

Ports are the heart of the global economy, facilitating the movement of over 90% of world trade.

Hatch understands that the ports sector today faces complex challenges on multiple fronts: growth, efficiency demands, digitisation and automation, ageing infrastructure, lack of investment, competition, security, regulation, and climate change. To address these effectively we offer a comprehensive and innovative approach to problem solving combined with subject expertise, and our ports practice professionals have a world of experience that can help you deliver all aspects of your project from Strategic Master Planning, engineering, digital roadmaps, commissioning and operational improvement.

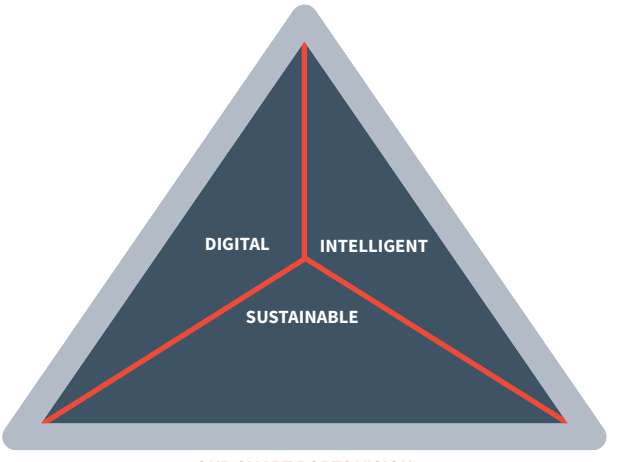
Hatch is a global multidisciplinary company with over six decades of business and technical experience in the infrastructure, mining and energy sectors. Focusing on core values of safety, quality, innovation and sustainability, our global network of 10,000 professionals work with our clients to safely and effectively deliver projects. Whatever our clients envision, our team can plan, design and build.

To support our clients in striving for the highest standards, we have the unique ability to integrate global best practice, national experience and expert knowledge to be your trusted adviser.

Core to our value proposition is a team that features:

- **Global reach** through subject matter experts who will bring a vast array of lessons learnt and industry knowledge that will maximise value. Our ports and terminals specialists with deep subject matter expertise in terminal operations and port infrastructure collaborate with colleagues from across our organization, allowing us to bring best practices and lessons learned from other industries to solve our clients' most pressing challenges of today including climate change resiliency, automation, electrification and use/handling of alternative fuels.
- **A partnership model** to complement our Team, including working relationships with specialist providers, which we will leverage depending on the level of engagement and assignment requirements.
- **A Smart Ports mindset** that delivers project excellence and ports that thrive through Intelligent Digital systems and Sustainable design.

We look forward to the opportunity to work with you in delivering projects of the highest calibre.



OUR SMART PORTS VISION

Hatch Track Record & Relevant Experience

Signifies countries where Hatch has executed projects

Hatch offices

Exemplar Projects

1 Long Range Master Plan – Port Authority of New York and New Jersey

The Port Authority of New York and New Jersey (PANYNJ) selected Hatch to provide port planning services to develop a Long-Range Master Plan for PANYNJ Port Facilities in the metropolitan area. Current land uses and facility operations throughout the Port vary widely and include conventional cargo handling (containers, bulk, break-bulk, and auto), cruise and ferry terminals, intermodal yards, warehousing and distribution centers, and open land. The project involves the development of a 30-Year Master Plan, aimed to maximise and diversify land use, increase operational efficiency, and identify innovative revenue opportunities at the various PANYNJ port facilities.

2 Southport Marine Terminal Development

Container Terminal Planning – Philadelphia Regional Port Authority

The Philadelphia Regional Port Authority (PRPA) enlisted Hatch (lead in JV) to provide technical advisory services including due diligence, port planning, economic analysis, and design to develop an existing land parcel into the Southport Marine Terminal Complex, an industrial and commercial maritime facility located in southeastern Philadelphia, PA.

3 Operational and Strategic Advisory – British Port Holding Company

Hatch developed a new basis for business planning and shareholder value increase for a port holding company with 5 ports. Reviews were conducted which examined the financial and operational issues relating to the full spectrum of port related services in both large and small ports. The Scope included ship related services – including agencies, pilotage, towage and bunkering; port related services – dredging, facilities provision and maintenance, utility supply, property development and management; and cargo services – stevedoring, storage and handling, freight forwarding, warehousing and distribution. The operator's activities were then compared to those of its competitors and new developments such as inter-modal freight handling were examined. As a result the client refocused its businesses and expanded geographically.

4 Masterplan and Green Port Strategy 2020 – Port of Aberdeen

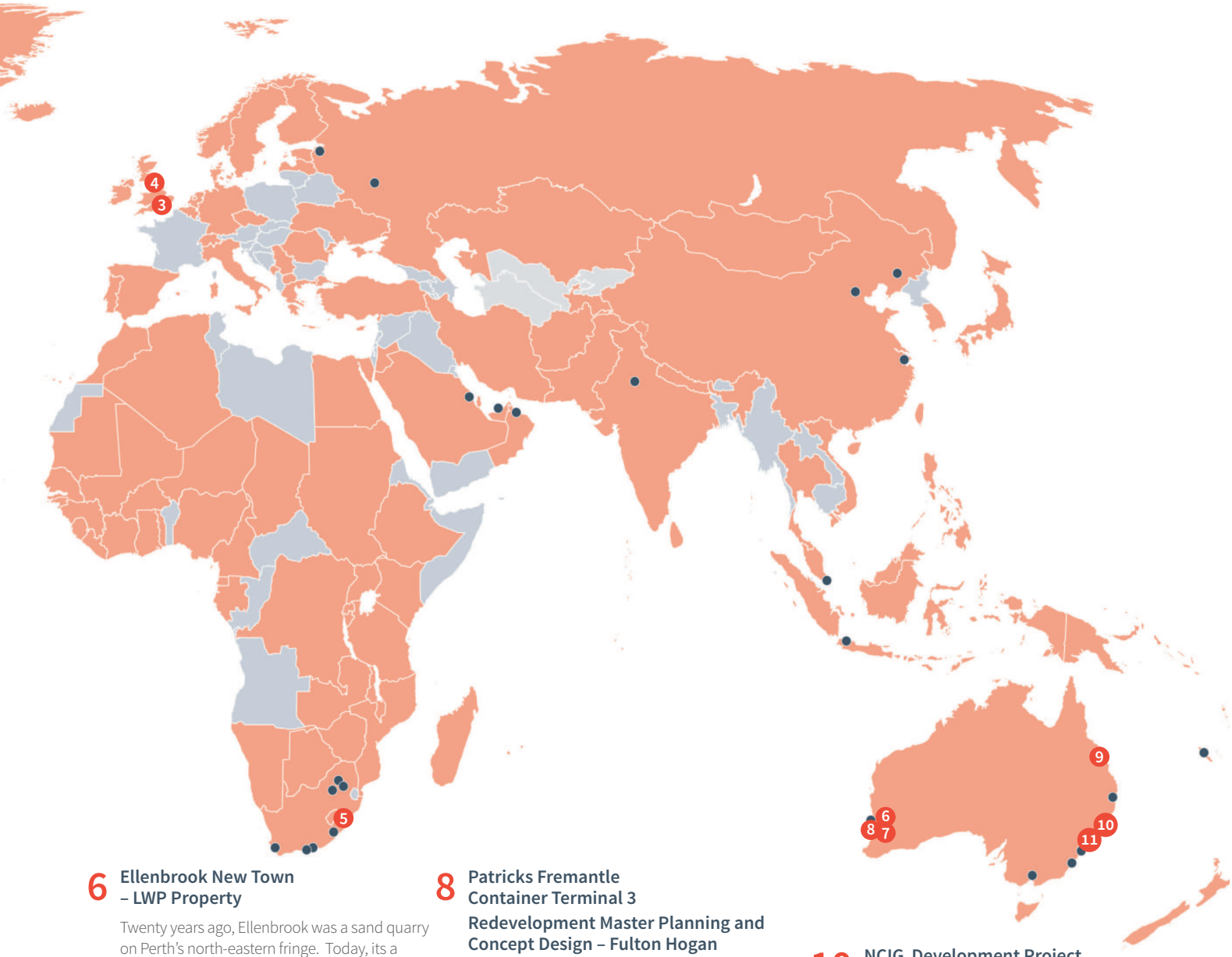
Aberdeen Harbour is almost 900 years old and is the most important energy ports in the UK. With the Port starting a new phase in its commercial and physical development, Hatch provided economic inputs to a spatial masterplan and led a new Green Port Strategy to futureproof the port's growth.

5 Logistics Master Planning – Transnet - Port of Durban

Hatch (in JV as lead) was the EPCM contractor appointed to design and deliver the road, rail and port infrastructure needed for Transnet's expansion programme. The assignment involved delivering operational infrastructure responses to forecast demand; and translating the identified operational and infrastructure needs into spatial requirements within the Port boundaries and interfaces points.

Demonstrated Capability

PORT ENGINEERING
MARINE ENGINEERING
DIGITAL
ASSET MANAGEMENT
ENERGY SYSTEMS
LOGISTICS
SUSTAINABILITY
ECONOMICS
LAND USE
STRATEGIC ADVICE
ENVIRONMENT
SOCIAL



6 Ellenbrook New Town – LWP Property

Twenty years ago, Ellenbrook was a sand quarry on Perth's north-eastern fringe. Today, its a community of 30,000 people and Australia's most awarded urban development project, including the 2015 International FIABCI Award for World's Best Master-planned Community.

This extraordinary achievement was driven by a commitment to the vision for Ellenbrook, which was formulated with Hatch RobertsDay and has been guiding the creation of a self-contained new town for the project's life. This longevity of this vision has ultimately transformed the 1,200ha site into a new community of 10,500 homes in eight walkable villages supporting a vibrant town centre, creating over 8,000 local jobs.

7 South Perth Place + Design Report / Activity Centre Masterplan (City of South Perth) – LWP Property

Hatch RobertsDay led a place-making and strategic planning project to develop a new city south of Perth. The Project entailed comprehensive engagement and community-led planning, addressing controversies and community anger over prior planning through technical input, ambitious urban design, density and built form outcomes, and production of comprehensive vision to establish mutual agreement and rebuild trust.

8 Patricks Fremantle Container Terminal 3 Redevelopment Master Planning and Concept Design – Fulton Hogan

Fulton Hogan appointed Hatch (in JV) to carry out master planning and concept design works of the new Terminal 3, including all container handling and non-process infrastructure.

The project included demolition of; existing workshop, administration buildings and existing infrastructure. The container yard would be reconfigured to suit the new container handling equipment and new facilities to be developed include; RTG container yard, a workshop, administration building, automated entry and exit gates, electrical infrastructure, reefer towers and ICT services.

9 Rock Seawall Detailed Design and Assessment Program – BMA Hay Point Coal Terminal

BMA engaged Hatch (with JV partner) to design the original seawall structure to protect the shore front and reclamation from sea conditions. In addition, recently Hatch was engaged to develop an inspection program and conduct an assessment of of the rock wall structure.

10 NCIG Development Project – Newcastle Infrastructure Group

Hatch (in JV) prepared concept, prefeasibility and detailed feasibility studies and provided full EPCM services for Stages 1, 2AA and 2F development of the A$2.6 billion greenfield export facility.

11 Western Sydney Aerotropolis – Western Parkland City Authority

Hatch RobertsDay are leading an international team to master plan Greater Sydney's third city centre and new heart of Western Sydney: the Western Sydney Aerotropolis City Centre. The 200ha City Centre will be the global green gateway to Sydney from the new Western Sydney International Airport, a 24/7 bustling metropolis connected globally, locally and digitally. Centred on a new Metro station and the edge of Thompson's Creek, it is envisaged to become the world's greenest parkland city with circular water system, carbon neutrality, a centre of excellence for innovation and surpassing global benchmarks for tree canopy, equity, wellness, urbanity and mobility.

Port Engineering

Hatch are specialists in port and marine terminal development and planning across diverse capacity, situational, environmental, equipment, and road/rail interface variations. Our Port Engineering services range from the development of conceptual options that outline operating capacity alternatives and financial performance through to design of physical infrastructure and project delivery. Modelling and simulation capabilities can confirm the operational efficiencies and throughput capacities for various types of port and marine terminals. We specialise in integrating maritime and surface transportation systems in global gateway regions to coordinate land-use, transportation and logistics system development strategies.

Hatch's multi-disciplinary approach allows our design and operational professionals to collaborate in pursuit of optimum solutions for terminals, road, rail and power within ports. The continuous improvement of supply chains and port terminals require evolution of both the infrastructure and operational methodology, particularly as automation and digitisation becomes more prevalent. Terminal and supply chain automation offers many potential benefits in the pursuit of competitive advantage, and Hatch understands that realisation of objectives must be built on the platform of Port Engineering.

Hatch is also committed to building Port facilities in line with World Ports Sustainability Program guidance.

AFFORDABLE & CLEAN ENERGY

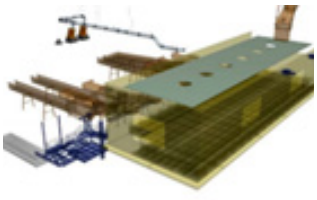
DECENT WORK & ECONOMIC GROWTH

INDUSTRY, INNOVATION & INFRASTRUCTURE

RESPONSIBLE CONSUMPTION & PRODUCTION

Port Infrastructure & Terminal design

Hatch has designed and executed ports and terminals projects across the world. Our approach considers financial, operational and transitional factors that deliver value for our clients.



Digital Project Delivery

Hatch delivers digital assets, not just physical ones. From the design documentation and drawings through to digital twins of physical assets.

Our Digital Project Delivery approach provides significant benefits in cost, precision and resources.

Modelling & Simulation

Hatch can provide insight into complex evaluations and scenarios, using fit-for-purpose techniques from mathematical and dynamic modelling through to complex simulations and digital twins.

Power Systems

Power systems have been a core competency of Hatch since 1924. Hatch can integrate terminal infrastructure, asset management, and energy optimisation into a cohesive grid design, including renewable generation, storage, control and distribution.

Relevant experience: Port of Los Angeles, Pier 300 Modernization Master Planning, California, USA; Port of Long Beach, Middle Harbor Automated Container Terminal Operational and Capacity Review, California, USA; Port of New York and New Jersey Long-Range Strategic Master Planning, Port Authority of New York and New Jersey, NYNY, USA; Study on Australian Port Planning and Performance Evaluation, Ports of Sydney and Melbourne, Australia.

Relevant experience: Cross River Rail Project, Brisbane. Hatch has Project experience in over 150 countries with US$50+ billion of projects & assignments under management.

Relevant experience: Port of Los Angeles, Pier 300 Modernisation (terminal operations and capacity analyses) Port of Long Beach Land Use Master Planning (capacity modelling and analysis) Port of Halifax Master Planning (terminal and port-wide operational and capacity analysis)

Relevant experience: Hybrid Power Microgrid (EPCM), Glencore Raglan Mine (incl. wind & hydrogen); Clean Energy Study, Port Authority of New York and New Jersey; Port MiniGrid Study, Arawak Port Development: Nassau, Bahama.

DEMONSTRATED CAPABILITY

MARINE ENGINEERING

PORT ENGINEERING

Centerm Expansion & South Shore Access

Projects Port Engineering

Hatch was the prime design consultant for the Centerm Expansion Project (CEP) and the South Shore Access Project (SSAP) in Vancouver (done concurrently).

Client Objectives

The Centerm Expansion Project and South Shore Access Project are being built to help meet anticipated near-term demand for containers shipped through the Port of Vancouver, increasing the Centerm container capacity by 2/3rds and providing the associated logistics infrastructure required.

Hatch solution/services:

Hatch was the prime design consultant for the Centennial Expansion Partners Design-Build JV team for the tender design phase of the on-terminal (CEP) and off-terminal (SSAP) scope.

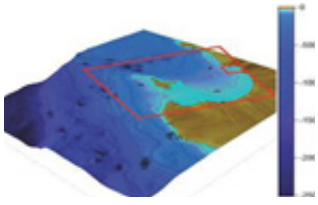
Outcome/highlights:

- Increase maximum design capacity from 900,000 to 1.5 million TEUs, while only increasing the terminal footprint by 15 percent
- Leverage local knowledge and well-established working relationships with key stakeholders
- High profile project in a highly-urbanised environment
- Over 2.8 Km of or roadwork design, in some areas in two levels modifications of existing roads, intersections and interchanges.
- Turbo roundabout design
- Extensive utility relocations and traffic management

Marine Engineering

Marine Engineering is fundamental to any port fulfilling its core purpose, and true expertise is required to deliver functional outcomes whilst meeting the challenges of climate change, environmental management and social improvement.

Hatch understands the complexity in fulfilling the functional requirements of a port development from site selection and master planning to the design and construction of wharves, piers, coastal structures and terminal infrastructure. We offer the complete range of marine engineering services, which leverages both our local and global capabilities to ensure our Clients benefit from lessons learnt and world's best practices.



Coastal Engineering,
including dredging & breakwaters

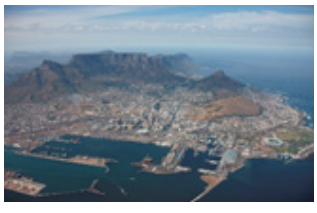
With state-of-the-art analysis methods and design tools, we're your partner. We deliver innovative, cost-effective, and constructable projects. Our coastal engineers have expertise in all of the following areas – wind and wave climate analysis, vessel hydrodynamics and berthing, sediment assessment, hydraulic modelling, navigation simulation, site investigation planning, coastal protection, breakwater design, and dredging design.

Relevant experience: BMA Hay Point Terminal reclamation and breakwater design, NCIG Project dredging and reclamation works, Centerm Expansion Project.

Marine Structures

Successful ports depend on a variety of marine structures, including piers, bulkheads, coffer cells, revetments and approach structures. You can trust us with all of your marine structural requirements, including above-water and underwater inspection supervision, coastal process modelling and wave forces analysis, mooring and berthing analysis, marine structural design and construction cost estimating.

Relevant experience: Patricks Fremantle Container Terminal 3 master planning and concept design, Saint John Harbour Expansion, and Wiggns Island Coal Terminal.



Operability Assessments

It's always imperative to consider the entire logistics-supply corridor. Our unique approach draws on our in-depth expertise and well-rounded knowledge of commodity production and logistics supply chains. Using fit-for-purpose analytic and modelling techniques, we are able to undertake operability assessments that examine multiple factors including planned capital/operational budgetary targets.

Relevant experience: Transet Durban Container Terminal, Richard Bay Multi-purpose and Dry Bulk Terminals, BHP WAIO.

Hatch has in-house optimisation and modelling tools, and partnerships with other industry specialists as required.

DEMONSTRATED CAPABILITY

MARINE ENGINEERING

PORT ENGINEERING

Hay Point Coal Terminal

Rock Seawall Detailed Design & Assessment Program

BMA engaged Hatch (with JV partner) to design the original seawall structure to protect and the shore front and reclamation from sea conditions. In addition, recently Hatch was engaged to develop an inspection program and conduct an assessment of the rock wall structure.

Client Objectives

BMA Hay Point Coal Terminal required detail design services of a rock seawall to protect the shore front and 10 hectare reclamation that Hatch (in JV) designed and provided technical support during the construction phase. In 2020, BMA required an engineering assessment and the development of an inspection program for the rock seawall to assist their ongoing maintenance requirements.

Hatch solution/services

Hatch's scope of services included:

- Detail design of the reclamation and rock seawall, including construction phase support.
- Developing a scope of work for an annual visual inspection and 6-yearly inspections.
- Perform the annual inspection for 2020, including reporting the findings.
- Assist BMA with prioritising the remediation works and maintenance design requirements.

Outcome/highlights

Detailed investigation into sourcing local materials that were fit of purpose for the reclamation and rock seawall. Hatch delivered the works on time and on budget. We worked collaboratively with our BMA representative to develop a 'fit-for-purpose' JSA to ensure that the onsite works were planned and performed safely. Hatch identified a number of areas that will require remediation works and will assist HPT with design and delivery services.

Client: BMA

Project duration:
Original Design – 2009 - 2015
Assessment - September 2020 - November 2020

NCIG Coal Export Terminal

NCIG Development Project

Hatch (in JV) prepared concept, prefeasibility and detailed feasibility studies and provided full EPCM services for Stages 1, 2AA and 2F development of the A$2.6 billion greenfield export facility.

Client Objectives

NCIG's objective was to develop a greenfield export terminal to support the Hunter Valley logistics chain. The Project was executed in multiple phases from 2009 to 2015 to deliver an ultimate throughput capacity of 66Mtpa.

Hatch solution/services

Hatch (in JV) has carried out all front-end studies on this project from its inception (concept, prefeasibility and feasibility) and provided full EPCM services for each stage of the terminal. The team overcame significant challenges including difficult geotechnical conditions on site, and a challenging dredging program requiring complex interfaces with BHP Billiton and Port Waratah Coal Services.

Outcome/highlights

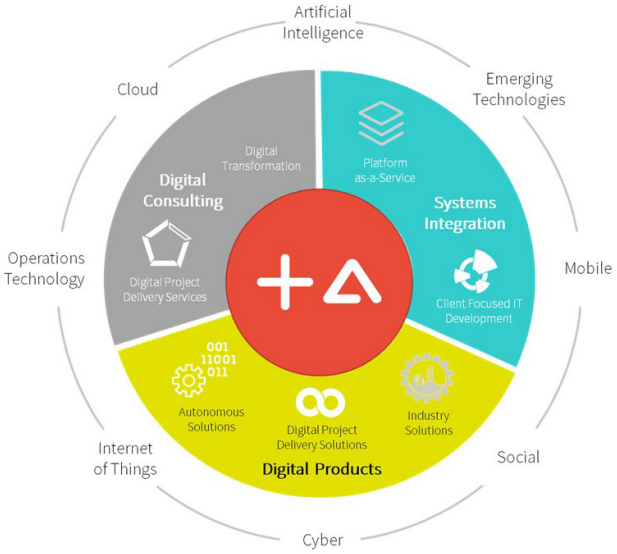
- Multi-award winning Project – Bulk Handling Facility of the year, multiple safety awards, multiple Engineers Australia excellence awards.
- The Project was executed ahead of schedule and below budget for all of the development stages.
- Hatch delivered a complex dredging design and execution scope, which included dredging of 5.3Mm3 (removal, handling and disposal) and 2.8Mm3 of engineering fill placement for the reclamation.
- Design and delivery of all process and non-process infrastructure – conveyors, rail mounted machines, fire / process / potable water systems, wharf, trestle / jetty structures, maritime design, etc.
- Hatch supported the Project development from the conceptual phase through to handover.

Client: Newcastle Infrastructure Group

Project duration:
2009 - 2015

Automation Technology

Hatch Digital helps clients unlock the business value of emerging technologies. We provide clients with a full suite of digital services and digital products covering digital strategy, user experience, engineering, optimisation, and implementation across mobile, web and technical systems.
In modern industry the pace of digital technology evolution is relentless. New technologies, new business and the requirement to change, means there is a continual need to evolve your business and operation. As we enter the new era of 'Smart Ports', we are reminded that Hatch is a mature option in a world of start-up. Our 20+ years of digital experience talk to our depth of understanding and our ability to be agile in the face of change.



Automation Consulting

Our consulting teams collaborate with clients to identify value improvement opportunities and further work with client teams to map out a logical, practical journey map to evolve your business to the next level of digital maturity.

System Integration

The velocity and quantity of data being created is unprecedented; however, making sense of the data and gathering a real understanding of "what the data is saying" remains a challenge. Hatch is able to aid in the development of platforms and tools and also to support longer term 'as-a-Service' to help you create valuable knowledge on the performance of your operations. APM Terminals Project M QA Advisory and Simulator Development (Ship to Shore Crane, Gate)

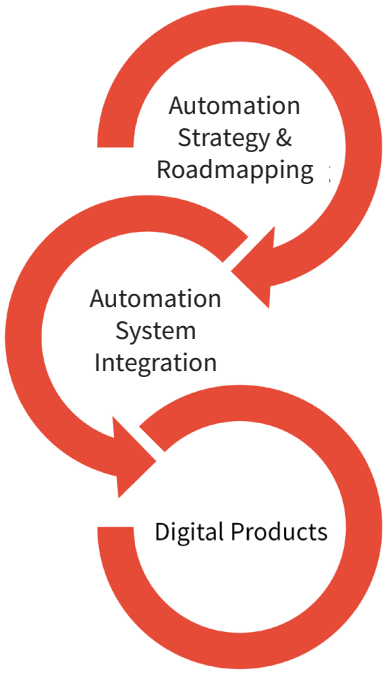
Digital Products

The modern operational environment is becoming increasingly integrated and automated and as a result the need for equipment to talk to other equipment, machines that are able to learn and emergence of artificial and augmented intelligence has never been greater. Hatch has created a range of solutions that can support the accelerated development of your digital operations.

Technology and Automation

Hatch has been helping companies achieve improved safety, productivity and efficiency for more than 60 years. We will leverage this knowledge and experience to develop and implement tailored automation systems that meet your operation's specific needs.

Our expertise covers a broad range of application and industries, from basic control to complete integration and optimisation of your facility. With more than 500 engineers and technicians dedicated to automation globally, we are able to complete successfully the most demanding projects. Our broad range of services and our flexibility allows us to handle projects of any size and complexity, from basic engineering and programming to commissioning and start-up.



Relevant experience: BHP - Technology development for Digital Project Execution, Transnet - National Rail System IOC design and implementation, TraPac LA - Automated terminal, Salta Dandenong South Inland Port - Digital Automation Consulting and Crane Engineerring

Relevant experience: BHP Maintenance Centre of Excellence, ARTC predictive rail maintenance system, TraPac Terminal automation, Ports of Auckland Terminal Operating System Advisory Services, APM Terminals Project M QA Advisory and Simulator Development (Ship to Shore Crane, Gate)

Relevant experience: Electricity Provider – ISO 55000 compliant Predictive Asset Management for fleet, multiple, Hatch Dredge automation, Digital Value Chain software, HxO optimisation tools, simulation and modelling software.

TraPac Automation

Since 2016, Hatch has been providing advisory and consulting services at the TraPac terminal at the Port of Los Angeles. Our work has successfully introduced concepts and approaches from other industries to help achieve TraPac's goals.

Client Objectives

TraPac is one of the first fully automated container terminals established in North America and required systems and tools to improve in-depth analysis and operational efficiency.

Hatch solution/services:

Data management of terminal operational and maintenance systems, implementation of data historians, rail planning systems, emulation, simulation, QA and testing services.

Outcome/highlights:

- The new data-centric environment is driving a shift in culture and helping TraPac meet its goals for the future. Having the right tools and the right data available together in a central location allows quick analysis, insights, and timely issue-resolution.
- Improved operational efficiency. Cycle times in the wide-span rail-mounted gantry cranes were reduced by 10 percent with the automated on-dock rail.
- Expedited root-cause analyses. The root cause of a rail-mounted gantry crane's spreader issues in the automated on-dock rail were identified in hours rather than weeks.
- Improved maintenance compliance. Predictive maintenance schedules are now one-hundred percent on target.

Asset Management

Ports and terminals are a collection of physical assets that represent significant capital investment. We bring best practices, tactical tools and deep expertise to develop tailored solutions that extend asset life, reduce TCO, and improve productivity across a broad range of fixed assets.
Hatch uses a proprietary approach combining operational experience, ISO 55000 compliant processes, equipment and production process know how, organisational enablement, behaviour focus, leading edge digital solutions, and end-to-end delivery support to ensure your asset management systems are best-practice.

We believe most businesses operating in asset intensive industries are leaving large amounts of value on the table due to sub-optimal practices and we know we are uniquely qualified to help such clients achieve the exponential returns possible by making Asset Intelligence a core competency.

Life Cycle Philosophy

To disrupt a reactive culture and move to a place where optimised decisions are made consistently and systematically requires a transformation. Hatch's life cycle asset management approach uniquely combines capabilities in organisational change, technical know-how, analytics, tools, processes and behaviours to achieve and sustain higher returns year on year.

Capital Planning

Based on best practice asset management, beyond the requirements of ISO 55000, capital planning addresses asset actions over short, medium and long time horizons. We source and analyse data-driven inputs including service delivery priorities, asset health, growth, stakeholder needs, technological and environmental change, resource constraints and corporate objectives across the asset base. Hatch knows how to up-skill your organisation and install the business processes and tools to rapidly generate leading asset management plans.

Digital Systems

Build high quality, standardised and comprehensive master data and then embed it with automation, processes and people skills. Hatch's experience will set the master data foundation for efficient planning and work execution, strategy management, operational readiness, advanced analytics - breaking down silos and transforming practice.

Asset Intelligence

Technology has reached a point where Predictive Maintenance (PdM) is not only a reality, but is fast becoming a basic requirement for asset intensive industry. Understanding your position on the digital asset management maturity scale is the first step towards increasing business value by simultaneously reducing downtime, risk and cost. Hatch's asset intelligence model combines asset and maintenance management expertise, with systems integration, data sciences , equipment and process technical knowledge, and advisory management to deliver scalable PdM solutions.

Reliability Enhancement and Defect Elimination

All equipment is designed and manufactured with a genetic code that determines how it will perform and how long it will last. Defects are introduced when design conditions are not preserved such as over-limit operating duty and lack of precision maintenance. Hatch uses a proven, systemic and proactive method and leading experts to identify, monitor and remove defects and their root causes from your equipment. The result is a step-change in your asset strategies and the people that drive them.

FAARMS

Facility and Assets Risk Management System

- 250+ clients around the world
- FAARMS is Hatch's own asset integrity methodology and data management tool
- FAARMS stores the data for all assets in one location and provides consistency and repeatability for inspections
- Provides increased asset integrity assurance through visibility and improved understanding of asset health
- Preset criteria for background content ensure that inspection data is consistent across both inspectors and assets
- Ability to perform re-audits of previous inspections and provide trends of asset

FAARMS applications for data capture in field

Australian Rail Track Corporation (ARTC) – Asset Management Strategy

Newcastle, NSW

"I was impressed with Hatch's extent of understanding maintenance, management of rail infrastructure and their approach to transition our business to a more effective asset management strategy."

Andrew Betts, General Manager Asset Delivery, Hunter Valley, ARTC.

Mobile Asset Management Transformation

Electricity Distributor - Australia

3500 specialized mobile assets servicing Australia's largest electricity network in remote, harsh environments

Client Objectives

Improved outsourced Asset and Maintenance Management of vehicle fleet to enhance safety, performance and cost outcomes.

Hatch solution/services:

- Diagnostic
- Asset Lifecycle Management Application (LCMA)
- Organisational design and sizing
- Work management processes and SOPs
- Organisational enablement and change management support
- Scoping and Implementation of In-Vehicle Management Syste

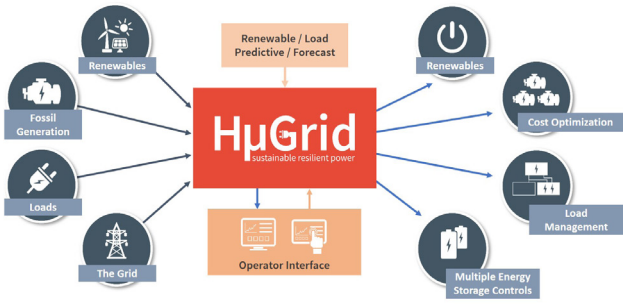
Outcome/highlights:

- Improved safety and operational performance
- Reduced exposure to legal and other business risks
- Savings of circa $9M annually
- Increased asset availability and utilisation
- Alignment with ISO 55000
- Increased maintenance quality and responsiveness

Energy Systems

Hatch's power team has nearly a century of experience in the development, design, construction management, and operations and maintenance support for traditional gas, diesel, nuclear, and hydro power plants to modern renewable, geothermal, electric, and hydrogen generation systems. Our global transmission and distribution system expertise includes system planning, conceptual and national & regional energy planning, to integrated modern complex wind-solar-diesel-storage microgrid systems to provide system resiliency, reliability, and stable power quality to industrial, municipal, and infrastructure clients of all sizes in over 150 countries.

Energy solutions for the decades ahead will increasing rely on clean, sustainable sources generated locally with increasing self-reliance. Hatch's experience with (near) zero emission solutions allow for flexible growth due to increasing business demands and loads from electrification while embarking on the energy transition integration with business planning and operations.



Micro-grid power systems

For clients operating in locations prone to significant climate events, in geographies with weak power grid, in remote or islanded environments, or in sectors where power outages of any duration seriously impact business continuity, electrical self-reliance may be an economically viable option. Hatch's concept to commissioning experience can support your early strategies and busies case developments through the system design, equipment selection, and construction, to final commissioning and functional optimisation tuning. Hatch's proprietary microgrid controller technology can be deployed, where multiple storage technologies, intermittent generation sources, and challenging reliability and power quality targets must be achieved.

Hybrid Power Systems

A hybrid power system typically combines renewable power sources, a fleet of fossil fuel generators, and energy storage. It uses a microgrid controller to strategically dispatch energy production assets, meeting the load by ensuring the stability of the grid.

Hybrid power systems can handle the on-and-off contingencies, manage the integration of large amounts of renewable power, and ensure that power is reliably maintained. Our systems are designed with storage, microgrid controllers, and backup generators. They have automatic mechanisms for frequency control and voltage support, so the demand for power is always met without interruptions. You get reliable power, as green and cost-effective as conditions allow. Anywhere. Anytime.

DEMONSTRATED CAPABILITY

ENERGY SYSTEMS

Clean Energy Community Microgrid, City of Berkeley

The Berkeley Energy Assurance Transformation explored the opportunities for dense urban cities to utilise solar and energy storage to share power across multiple facilities. During normal conditions the system would utilise these resources as a way to better regulate day-to-day energy supply, and in the case of a power outage, the system could “island” from the main utility and provide clean backup power for critical buildings.

Client Objectives

Feasibility study for a Clean Energy Microgrid Community (CEMC) that advances energy reliability, increases energy efficiency, and improves access to clean energy for public and private facilities in a dense urban context.

Hatch solution/services:

- Energy model & microgrid optimisation
- Capital costs analysis
- Revenue streams & savings review
- Financial & operation risk mitigation
- Identify sources of funding, financing & incentives

Raglan Mine Integrated Energy

Hatch was a key player in finding the right energy mix for Glencore’s Raglan Mine.

Client Objectives

Reduce energy costs, reliance on diesel fuel, and greenhouse gas emissions on a remote mining project.

Hatch solution/services:

Designed and implemented the Hatch Microgrid (HµGrid), which monitors demand for wind power and supply variations, and economically dispatches the charger and discharge from energy storage units to smooth out wind power variations and displace diesel generation.

Outcome/highlights:

- 2019 Mercuriades Award of Excellence in sustainability development strategy.
- First-of-its-kind project.
- Engineering and construction was fast-tracked to be completed within the short Arctic summer construction window; the project was completed within budget.
- Successfully worked with the power plant operators who operate both gensets and wind power in order to maintain the grid stability.
- 18,000 site hours with zero lost-time injuries.

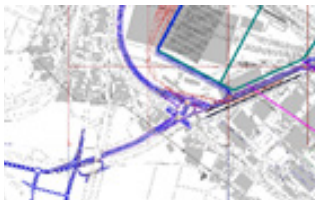
DEMONSTRATED CAPABILITY

ENERGY SYSTEMS

Logistics

There are few things that reliably predict the lifestyle, safety, and economic viability of a Port so well as the logistics networks that connect and interconnect it. Reliable, efficient, safe and sustainable transport infrastructure is key to supporting the economic health and growth of any Port. We offer a full range of road and rail engineering services backed by decades of experience, and a track record of delivering large scale projects across the globe. Our Ports team have experience in terminals throughout the world, with practical experience as operators and owner's engineers including design, commissioning and operational support services for several automated facilities.

As a world-class infrastructure design firm, Hatch deploys expertise from around the world to solve technically challenging projects and deliver a cross functional approach to complex logistics problems. Our Team has extensive experience in traffic engineering, demand modelling, logistics system integration, finance, civil engineering and digital infrastructure. Our solutions are purpose driven and integrate innovation to deliver value to our clients. We have experts that are developing and engineering future technologies for the transport infrastructure industry, such as hyperloop, autonomous vehicles, micro-transit, integrated logistics value chains, digitisation, electrification, etc.



Road Engineering

Hatch delivers civil and traffic engineering demand modelling, economics, social science, finance, engineering, and digital.

Rail engineering

We have technical experts in all disciplines of railway engineering and project implementation. Rail is key to unlocking congestion, maintaining efficient movement of goods, and exploring opportunities for sustainable and 'green' supply chains.

Port & Supply Chain Operations

Hatch's port team combine operational experience and technical know-how via domain knowledge of equipment, technology, software, process, landside and waterside interface, safety, commercial and sector legislation.

Relevant experience: Transport Master Pan (Port of Durban), Western Roads Upgrades (VIC - civil and structural design), Brisbane Cross River Rail (civil design – road, stations, pedestrians); Monash Freeway Upgrade (tender design), Metro Tunnel Project (Independent Reviewer).

Relevant experience: Nearly a century of extensive experience in all aspects of rail engineering, including: Newcastle Light Rail (Planning & Simulation), Sydney Rail Digital (Rail engineering), New York Transit (engineering, power, modelling).

Relevant experience: TraPac terminal, Port of LA (Owner's engineers / operational advisory), APMT Pier 400 (Advisory / QA team for terminal automation), Patrick Terminals (Advisory)

DEMONSTRATED CAPABILITY

LOGISTICS

PORT ENGINEERING

Port of Durban

Logistic Master Planning

Hatch (in JV as lead) was the EPCM contractor appointed to design and deliver the road, rail and port infrastructure needed for Transnet's expansion programme. The assignment involved delivering operational infrastructure responses to forecast demand and translating the identified operational and infrastructure needs into spatial requirements within the Port boundaries and interface points.

Client Objectives

Transnet wanted to expand the ports and freight networks throughout South Africa over a 15 year period starting in 2006. The ambitious US $12 Billion program was essential for the nation's continued economic growth, especially with growing cargo movement becoming constrained by insufficient port and rail capacity.

Hatch solution/services:

- A master plan for the accommodation of containers, bulk liquids, automobiles, fresh produce and break-bulk commodities - exploring operational accommodation options, transport infrastructure needs and bulk services requirements.
- Assessing the impact of increased terminal operations on traffic flows and designing the transport infrastructure to satisfy the logistics needs of the port without compromising the mobility needs of citizens.
- Hatch, through the HMG JV, was also responsible for the execution of most of the larger "mega" projects undertaken by Transnet.

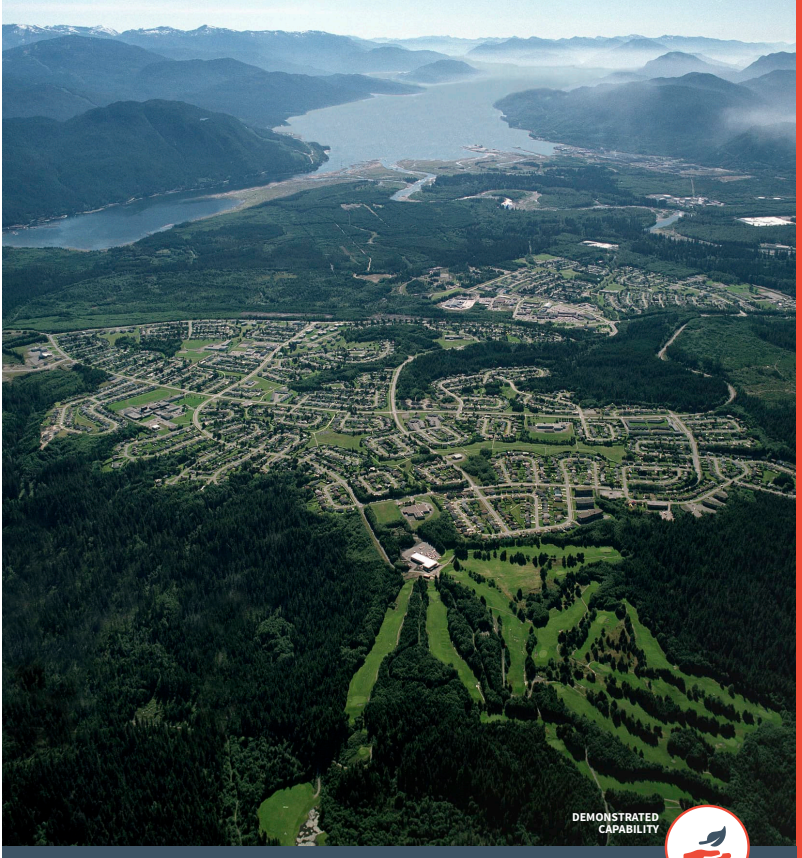
Outcome/highlights:

- Key inputs and assitance in the development of the National Infrastructure Plan to 2036.
- 1,277 contracts let and managed with no major contractual issues
- Provision of world-benchmarked processes and practices
- Procurement governance established and operational

Client: Transnet

Sustainability

We recognise that sustainability requires the optimisation of environmental, social and economic outcomes. This ensures ecosystems are maintained, communities thrive, and society prospers, now and in the future. Sustainability is at the core of how we deliver value to our clients as a socially responsible company. Linking sustainability objectives with development outcomes supports strategic decision-making, especially for long-term projects that may potentially face regulatory changes. Hatch's sustainability methodology also looks beyond a project's capital expenses to examine opportunities for innovative changes in management or design, leading to improvements in operating efficiencies and value-added solutions. Our Hatch Climate Change and Sustainable Development practice assesses the impact of technological advancement. We help clients assess the risks and abatement opportunities of operating in a carbon-constrained environment by employing our knowledge of global trends and an understanding of both process- and energy-related greenhouse gas emissions. Our philosophy of 'mitigation by design' emphasises our belief that triple bottom line outcomes (social, environmental and economic) are not only attainable, but a pre-requisite to build a sustainable future.



DEMONSTRATED CAPABILITY

SUSTAINABILITY

Carbon footprint for ports

The carbon footprint report has been prepared by Hatch for the Inter-American Development Bank for the purpose of assisting the Client with a review of the greenhouse gas emissions footprint of a proposed port development in Ecuador.

Client Objectives

The client aimed to quantify the potential for GHG emissions from a new ports development, and benchmark the development against global initiatives for climate change.

Hatch solution/services:

Hatch completed the following activities:

- Literature review: Presents a systematic review of the literature related to the calculation of carbon footprints for ports and proposes a methodology for the assessment of the carbon footprints of the Ports of Posorja and Guayaquil.
- Analysis of Ecuador's climate policy context and international protocols for climate change.
- Case studies presentation for other similar port facilities: Reviews the carbon inventory approach taken by nine other ports in North America, South America and Asia.
- GHG emissions inventory for existing Guayaquil port and future Posorja port for different scenarios (2019, 2029 and 2035).
- Mitigation scenarios to reduce carbon footprints.

Client: Inter-American Development Bank

Waste Management Plan towards Zero

Waste Circular Economy and Sustainability

Hatch was engaged to develop a community led Waste Management Plan with a focus on waste reduction (Zero Waste).

Client Objectives

The District wishes to extend the life of the local landfill, through waste reduction. In 2016, there were high profile proposed Industrial development projects which could essentially double the community's population, within a very short time. To significantly reduce Kitimat's waste, the District wanted to develop a new "Waste Management Plan" and join the many communities across Canada with the goal of "Zero Waste".

Hatch solution/services:

Hatch was engaged to develop a community led Waste Management Plan with a focus on waste reduction (Zero Waste). The Management Plan consisted of:

- Study to characterise the waste being brought to the landfill and determine a baseline inventory.
- Analysis was performed on study findings.
- Process maps were used to identify community waste streams.
- Community Outreach Campaign. "Information gathered from the study and analysis were shared with the community through material developed for the outreach campaign.
- Meaningful Dialogue with Community Members. The outreach material was used to facilitate and engage in dialogue with community members.
- Community findings shared with Community Working Group. Community findings were collected, analysed and shared with a community working group, made up of different community leaders who are actively involved in Waste Management.
- Plan established with Community Working Group. Through consultation with the community working group a Waste Management Plan was established.
- Waste Management Plan approved. The Plan was presented and approved by Kitimat City Council autumn 2017.

DEMONSTRATED CAPABILITY

SUSTAINABILITY

COMMERCIAL

Economics

All modern economies are powered by international trade, and Hatch understand the vital role ports play in the economic future of their hinterland. Ongoing investment to build and maintain world-class facilities must be built on comprehensive and accurate strategies, with a clear understanding of market and technology trends. Hatch brings an extensive wealth of experience in considering the multiple factors related to supply chain operations, property and land value analysis, sustainability and policy needed to inform land-use planning and decision making.

The Hatch Urban Solutions team have undertaken many and varied assignments concerned with economics analysis and assessment of Ports. These assignments encompass a range of speciality areas, including:

- Port Investment Strategies and Masterplans - aiming to improve competitive performance though long-term prioritised and phased investment.
- Port Trade and Business Analysis - highlighting key trends in current performance in different port trades, cargoes and commodities.
- Wider Market and Trade Analysis - understanding wider economic, social, political and technological trends which impact upon port operations and performance.
- Real estate and development advice – providing insight into property market trends and demand assessments to reposition port land.
- Green Port Strategy – providing a comprehensive strategy to enable ports to tackle their own emissions while also enabling the decarbonising of shipping and furthering the zero carbon agenda.
- Innovation Strategy-establishing new port related innovation networks looking at emerging technologies and sectors including new shipping fuels, decommissioning, and circular economy.
- Partnerships and Collaboration – helping Port work more effectively with external stakeholders such as city and regional authorities and planning and highways departments to achieve growth and sustainability goals.

We also have direct experience in the core requirements listed within the ROI request, including:

Transport Economics

Understanding the supply and demand for transport infrastructure, costs associated with congestion and funding and financial modelling.

Relevant experience: Industrial Down Stream Industrial Plan for Jazan Economic City & Port Cluster KSA

Business Case Expertise

Understanding capacity, sector growth, future growth forecasting and return on investment.

Relevant experience: Economic Plan for the Industrial South Wales Ports of Swansea and Port Talbot

Wider Economic Benefits

Assessing the local and wider regional economic impact of ports and their operations including jobs and GDP as well as economic review of the hinterland economy to enable Ports to identify and respond new or emerging trade opportunities.

Relevant experience: Manufacturing and Property Analysis for the South Wales Industrial Ports Masterplans and Pearl River Delta Study including new (export use) Waterfront Districts.

Port of Swansea

The Hatch strategy positioned Port of Swansea as a demand led, diversified industrial port.

Analysis highlighted that there was over capacity in the industrial port sector in South Wales based on forecast growth in industrial sectors regionally and nationally. Clearly positioning the Port at the forefront of renewables activity in the UK- with opportunity for R&D, associated manufacturing and visitor economy was a major opportunity while maintaining a demand-led industrial plan. Former industrial quaysides no longer in use represented a major opportunity for creating new waterfront mixed use development given the strong proximity to Swansea City centre and the excellent transport links.

Port Talbot - South Wales

The Hatch economic strategy positioned Port Talbot as a Strategic Industrial & Energy Port – crucial to UK economy post-BREXIT.

Port Talbot had a clear strategic role and a strong established identity serving the steel works. There was a deep-water terminal, established road and rail connections and considerable land. The Port was capable of handling much larger vessels with the right investment in place. There was also an immediate opportunity to create a steel exporting facility alongside opportunities for energy and renewables underpinned by strong connectivity, technology & logistics, special economic zone status. The Hatch strategy set out and how the resurgence of Welsh manufacturing presented a clear opportunity to develop port centric manufacturing and distribution at scale at Port Talbot, alongside an energy cluster.

Port of Aberdeen Masterplan and Green Port Strategy 2020

Aberdeen harbour is almost 900 years old and is the most important energy ports in the UK. With the Port starting a new phase in its commercial and physical development, Hatch provided economic inputs to a spatial masterplan and led a new Green Port Strategy to futureproof the port's growth.

The Hatch evidence base and strategy provides a compelling case for change for Aberdeen to remain one of the UK's principle ports to 2050 and beyond. Hatch analysed relevant intelligence and policy insights for those sectors which form a significant part of the Port of Aberdeen's current business or which have the potential to underpin future growth, alongside detailed forecasts for the energy sector (including renewables).

Hatch worked alongside the Aberdeen Harbour Board to produce a series of separate outputs, including:

- An **economic vision and evidence base** to underpin the port masterplan which positioned the Port of Aberdeen at the forefront of the national energy transition agenda in North East Scotland and set a long-term economic vision.
- A **Green Port Strategy** setting out the route to becoming the UK's most important offshore renewables hub at the vanguard of the electrification and decarbonisation of the shipping agenda.
- **Freeport analysis** to underpin the region's freeport aspirations and in particular to understand the potential impact on existing port strategy and the economy of the region.

The work included a detailed analysis of port trade metrics and the port's offer around ferries and cruises post COVID, and resulted in a series of demand-led actions for the port in the short, medium and long term.

Client Reference Contact: Matt North, Chief Operations Officer Aberdeen Harbour Board

Land Use

Population and economic growth inevitably place pressure on critical port infrastructure and freight and logistics connections, and effective responses to these factors must strengthen the livability of our cities and ensure our way of life is maintained and enhanced. The location, design and broader logistical network associated with Ports are of regional significance and shape the future direction of our cities and towns throughout their life.

Hatch RobertsDay is a multi-disciplinary practice that has a reputation as an industry leader in the fields of town planning, urban design, placemaking and community engagement. We have been working on complex, city shaping projects across Australia and internationally for over 25 years. Key projects that demonstrate this experience include our flagship new town Ellenbrook, the industrial re-visioning of Claisebrook, and more recently the precinct planning and alignment studies associated with Morley to Ellenbrook Railway extension, strategic planning and urban design input into the Ipswich to Springfield Public Transport Corridor, the planning and design of the Western Sydney Aerotropolis, urban design inputs into the Gold Coast Airport masterplan, and the CLARA consortium bid to design a series of contemporary smart cities connected via high-speed rail infrastructure between Sydney, Canberra and Melbourne.

This level of experience is supplement by wide ranging commercial and industrial park experience including Kwinana Industrial Estate, Bibra Lake Amcor redevelopment, Forrestdale Business Park, Port Kennedy Business Park, Neerabup Industrial Estate, Henderson Marine Precinct, Oakajee Port and Industrial Estate, Glebe Island and White Bay Port and previous portfolio work for Bunnings and BP.

This depth of experience provides the team with extensive knowledge across the core areas of competencies that we believe will be necessary to deliver the land use requirements associated with the Port of Brisbane, including:

Port Planning and Visioning

Implementation of zoning requirements, port installations reserves, associated industrial land and primary regional roads reservations, as well as port precinct masterplanning.

Logistics and Freight Planning

The planning and logical layout of surrounding precincts to ensure optimised operational efficiency, diversity of land uses and maximising business and employment opportunities.

Employment Lands Planning

Leveraging the investment in the port to create opportunities for industrial land that benefits from the ports strategic transport infrastructure and location.

Industrial Re-Visioning

The movement of the port use areas over time creates unique opportunities to reposition and reconsider the strategic role of land into the future.

Relevant experience: New York + New Jersey Port Master Plan, Fremantle's Victoria Quay Masterplan, Oakajee Industrial Area + Deep Water Port, Glebe Island,White Bay and Rozelle Bay port facilities.

Relevant experience: Bew Base Brendale logistics hub designed for Aldi and the super retail group in Queensland.

Relevant experience: Kemps Creek Master Plan on behalf of Frasers + Altis and portfolio work for Aventus, Harvey Norman and Goodman.

Relevant experience: Extensive experience across Australia, including existing master-planning associated with Victoria Quay.

Western Sydney Aerotropolis (NSW)

Hatch RobertsDay are leading an international team to master plan Greater Sydney's third city centre and new heart of Western Sydney: the Western Sydney Aerotropolis City Centre. The 200ha City Centre will be the global green gateway to Sydney from the new Western Sydney International Airport, a 24/7 bustling metropolis connected globally, locally and digitally. Centred on a new Metro station and the edge of Thompson's Creek, it is envisaged to become the world's greenest parkland city with circular water system, carbon neutrality, a centre of excellence for innovation and surpassing global benchmarks for tree canopy, equity, wellness, urbanity and mobility.

The city centre is intended to attract globally significant industries and knowledge intensive jobs to contribute to a strong trade, logistics, education, science, innovation and advanced manufacturing economy. A key part of the Hatch RobertsDay value proposition is to create a strong place identity and distinctiveness to attract industry, residents and visitors in a globally competitive environment. Designing with Country is a fundamental influence to celebrate our unique Australian identity while also interweaving the diverse ethnicities of Western Sydney to create a rich cultural experience for the global community.

Client
Western Parkland City Authority

Area
200ha

Date
2020-current

Collaborations
MVRDV, Turner, Turf, Flux, Elton, Root Partnerships

Strategic Advice

The evolution of a Port within its existing urban setting, its transport and logistical connections and relationship with the hinterland, and the rapidly changing technical environment create a series of challenges and opportunities that need to be addressed. Key to the future of any port is the management of public sentiment, aligning project stakeholders, fostering community support and encouraging private investment - all whilst implementing the changes needed for growth, competitive advantage and advances in technology.

Hatch acknowledges the unique challenges and scrutiny associated with the delivery of critical infrastructure projects. We have extensive background in managing high profile, politically sensitive projects of state and regional significance, and use our place-led approach to focus thinking to create a strong project vision that resonates with all key project stakeholders and deliver projects that generate value for the community and our clients.

Our core services of strategic advice, engagement, strategic planning and communications help us to become trusted advisors to our clients, playing a central role in coordinating and managing project teams, and providing ongoing advice. This is demonstrated through our long-term involvement in key projects including Ellenbrook New Town (25 years), Jindee (20 years) and ongoing roles in city shaping scale of projects for major government clients, including new railway lines and stations, port infrastructure and airport developments.

Our diverse project portfolio of complex community, cultural and city shaping challenges demonstrates effective engagement strategies, strong communication skills and deep technical and community knowledge. We are also highly adept at-risk management and have a strong track record of working alongside clients, government and the community.

Communications & Engagement

Providing strategic advice relating to communications and messaging to ensure a well-defined public benefit story and engagement strategies to align all key project stakeholders and influencers.

Strategic Planning

Formulating a vision and delivery principles to ensure strategic objectives are met and are central to the project strategy and execution of Westport's mandate.

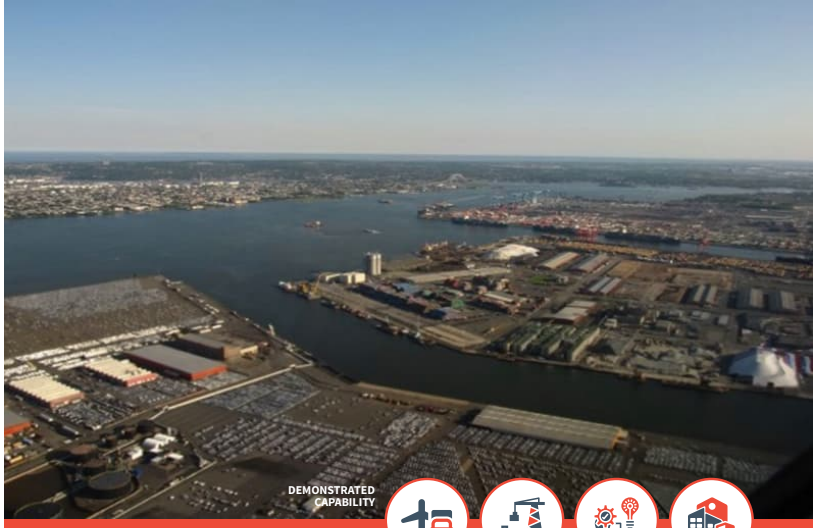
Program Management and Reporting, including Change & Risk Management

Hatch's Advisory practice has approximately 150 professionals worldwide, who provide tailored management consulting services to our Clients. The 'noble purpose' of our Advisory practice to identify the hidden value embedded in our Client's assets, organisations and technology; and to unlock the enablers required to unleash this full potential. Most of our advisory practitioners are seasoned professionals with Tier 1 consulting experience (McKinsey, Bain, BCG, EY etc.) combined with relevant line management experience (more than 10 years). In terms of functional areas, our advisory practice brings world class expertise in organisation design, change management, risk management and program management.

Relevant experience: Hatch RobertsDay have led engagement strategies and coordinated over fifty 3-5 day Planning Design Forums across Australia, New Zealand and the Middle East, including high profile local projects such as South Perth Peninsula, Subiaco Pavilion and Yanchep Lagoon.

Relevant experience: Extensive experience in the formulation of visions for strategic development projects that project longevity and direction to the project, including the case study opposite outlining our role in Ellenbrook New Town.

Relevant experience: Recent advisory engagements include a comprehensive organisation design and change management program for a large power utility in Australia, a complex program management engagement for a steel mill in the middle East which was associated with a large technology driven business improvement initiative and a broad corporate critical risk management review and organisation design (with change management) for a Tier one iron ore producer.



DEMONSTRATED CAPABILITY

LOGISTICS | PORT ENGINEERING | STRATEGIC ADVICE | COMMERCIAL

Port of New York & New Jersey

The Port Authority of New York and New Jersey (PANYNJ) engaged Hatch to deliver their 30-Year strategic Master Plan and Hatch Urban Solutions to provide strategic advice and stakeholder engagement services to ensure alignment of key project partners.

The primary objective of the brief was to maximise and diversify land use, increase port efficiency, and identify innovative revenue opportunities at the various PANYNJ facilities.

As part of the formation of the plan, Hatch Urban Solutions developed a stakeholder Engagement Plan, which included the identification of host-community residents and representatives, federal agencies, planning associations, and shipping industry representatives that had significant interest levels in the formation and implementation of the masterplan.

A Stakeholder Outreach programme was then undertaken, which included strategic engagement with federal, state, and local officials and agencies, industry representatives, and community groups, including focus group facilitation. Ongoing strategic advice was provided to ensure the feedback received was represented within the masterplan, and ensure its alignment with key expectations and sensitive issues.

A range of innovative services were also undertaken, which included a detailed review of relevant historic cargo throughput, future cargo projections, on-port and non-maritime land use, as well as environmental and transportation related issues. Data from these studies was then used to conduct a cargo market analysis and capacity assessment to estimate timing and criticality of capacity shortfalls on-port and within the surrounding rail and road network.

Client: Port Authority of New York and New Jersey

Date: Oct 2016 - Feb 2018

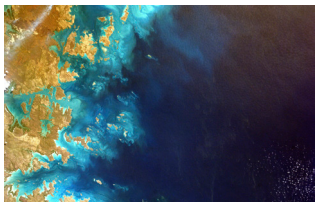
Environment

Hatch's Environmental Services Group delivers sustainability by integrating environmental, social and economic considerations throughout the project life cycle. Our team provides world-class services in environmental assessment and management. Hatch and our clients are driven to ensure that projects are delivered with minimal impact to the environment and community surrounding our work sites. In fact, we strive to leave conditions better than when we arrived. At the core of our strategy is an integrated and holistic approach to project planning that drives responsible business investment and social performance by ensuring environmental and social needs are considered throughout the engineering design and execution process.

Environmental Impact Assessment Process

To ensure 'fit for purpose' ESIA and permitting outcomes, our global team of government relations and regulatory analysts, biologists, technical modellers and social practitioners partners with Australian experts, blending international best practices and standards with local knowledge, expertise and relationships.

Relevant experience: Anaklia Port Project, Nyrstar Cellhouse Expansion EIS, Impact assessment for Pot Line Expansion for Emirates Global Aluminium, Bahrain LNG Environmental and Social Action Plan Project, Gitchi Animki Project, Mozambique LNG Project, full ESIA for the Reseau Electrique metropolitan, Quebec. Browse FLNG Development.



Contaminated Sites

Hatch can assist with the identification of land contamination and land remediation associated with environmental requirements. For the development and completion of drilling and sampling programs, we work with local expertise. We can identify and estimate the costs associated with environmental rehabilitation and reclamation by mapping and quantifying contaminated sites. These tasks must be supported by Environmental Risk, Safety and Liability management and regulatory compliance.

Relevant experience: Nyrstar Cellhouse Expansion Project, Lac Gueret Mine Project, Phase II ESA for Urban Redevelopment Authority of Pittsburgh, Confidential Client – contaminated land management, Contaminated and remediation of industrial sites for closure.

Coastal processes and remediation

Hatch has in-house capabilities to support high level coastal engineering and conduct dredging management. We also engage with dredging specialists as required to manage the unique marine and social sensitives associated with each development.

Relevant experience: Hatch Projects: NCIG Development Project, Wiggins Island Coal Export Terminal, Tujuh Bukit Copper / Gold Port Development.

DEMONSTRATED CAPABILITY

ENVIRONMENT

Anaklia Deep Sea Port Project

Environmental Impact Assessment

The proposed Anaklia Deep Sea Port project is located within an Investment Area in Anaklia on the Black Sea coast of the Samegrelo – Zemo Svaneti Region of Georgia.

Client Objectives

The Government of Georgia awarded Anaklia Development Consortium LLC (ADC) a concession to design, construct and operate the port which would provide handling and storage of container and dry bulk cargos. Hatch provided support to ADC for the updating of the existing ESIA Report for the Anaklia Deep Sea Port Project, to meet international lender standards.

Hatch solution/services:

Hatch was responsible for completing a gap analysis and providing ESIA Management to ADC.

Tasks for the gap analysis involved collation and review of available data and reports completed on the Project, followed by the production of a summary report outlining the areas of compliance and non-compliance with the Project environmental design standards (Equator Principles III, IFC Performance Standards, EBRD Performance Requirements etc.).

Following the gap analysis, Hatch managed the update of the ESIA starting with a review of the updated ESIA chapters and related documentation, and providing strategic and technical advice to the existing ESIA consultants where appropriate.

Client: Port of Vancouver and DP World

Mozambique LNG Project

Environmental Management during Construction

The Mozambique Liquefied Natural Gas (LNG) Fields have been under exploration and development for more than a decade. CCS JV (a JV between McDermott, Saipem and Chiyoda) is the appointed EPC contractor for the development and is responsible for the construction of the LNG plant facilities and civil infrastructure, which includes some shared facilities to be used by future developers who have been awarded extraction licenses.

Client Objectives

The Mozambique LNG Project is a two-train, nominal 6.44 MTPA per train, LNG facility using APCI liquefaction technology. Hydrocarbon condensate, separated from the feed, is processed and exported separately. The facility will be constructed at Afungi, a remote coastal location in the Cabo Delgado province of Mozambique and early construction activities commenced in the third quarter of 2019.

Hatch solution/services:

Hatch was appointed to assist the EPC contractor (CCS JV) with monitoring of construction activities under the following activities:

- Environmental Project Management
- Monitoring of activities during construction for the EPC contractor
    - Advise and assist in compilation of various management and monitoring procedures and plans
    - Logging and trending of environmental monitoring data and reporting
- Environmental Monitoring for the following activities:
    - Air emissions and GHG Management
    - Noise and Vibration Management
    - Pollution Prevention and Hazardous Material Management
    - Water Resources and Wastewater Management
    - Ecology Management and Monitoring (Terrestrial and Marine)
    - Soil erosion, reinstatement and landscape management
    - Raw materials and aggregate management
    - Wetland Management and monitoring
    - Shoreline management and monitoring
    - Dredging Management and monitoring
    - Waste Management
    - Cultural Heritage Management

Client: CCS JV (a JV between McDermott, Saipem and Chiyoda)

DEMONSTRATED CAPABILITY

ENVIRONMENT

Social

Ports are critical infrastructure for our economy and fundamental anchors that influence the way our cities evolve and function. Their location and design have significant 'off-site' implications associated with road and rail networks that impact the amenity of surrounding land uses and communities. It is therefore essential that ports and their associated infrastructure are conceptualised with an understanding of both their economic and social roles, rather than being viewed as simply a collection of infrastructure. This understanding is fundamental when assessing the location and design of ports as well as the communication of social value, which is recognised as critically important to the achievement and maintenance of 'Social License'.

Hatch understands that social factors are closely linked to sustainability and the concepts of a commercial venture operating for a triple bottom line –profit, people and planet. We strive to seek synergies with the community and to solve collective problems in and outside the port. In this regard, we also understand that the UN Sustainable Development Goals are a single and indivisible orientation for the sustainable development of ports, and have used this framework in a wide variety of previous port assignments to frame the achievement of win-win outcomes for the community.

To manage the competing requirements of a wide variety of stakeholders, we also offer demonstrated experience in managing high profile, politically controversial projects of state and regional significance. We have the local intelligence to understand the unique indigenous and marine significance of port locations, the technical ability to model the potential impacts of the port and are astute negotiators and facilitators to broker resolutions that have strong community support.

We have demonstrated experience in the follow core aspects:

Marine and Terrestrial

Understanding environmental, social and cultural value and interpreting this input to achieve both economic growth and conservation outcomes.

Relevant experience: Gorgon Project, Western Australia, Australia. NCIG Development Project, NSW, Australia. DBCT7X Project, Queensland, Australia.

In addition, to the Port Project nominated above, we have conducted multiple large scale mining and infrastructure projects around the world for decades, with multiple social, environmental and cultural touchpoints.

Noise, odour, dust, hazardous goods, traffic and interface with community/residential

Providing robust science to support decision making and ensuring this data can be used effectively in the communication of decision-making processes to the community.

Relevant experience: Gorgon Project, Western Australia, Australia. NCIG Development Project, NSW, Australia. DBCT7X Project, Queensland, Australia.

Social Licence

Undertaking transparent, inclusive and collaborative decision making approaches to achieve stakeholder buy-in, alignment to a shared vision and communicate value to key interest groups.

Relevant experience: South Perth Place Masterplan, Port of NYNJ Masterplan. Transnet Master Plan (Durban).

GOOD HEALTH & WELL-BEING
QUALITY EDUCATION
DECENT WORK & ECONOMIC GROWTH
CLEAN WATER & SANITISATION
AFFORDABLE & CLEAN ENERGY
RESPONSIBLE CONSUMPTION & PRODUCTION
LIFE BELOW WATER
LIFE ON LAND
PARTNERSHIPS FOR THE GOALS

Gorgon Project
Barrow Island, WA

The Chevron-operated Gorgon project is one of the world's largest natural gas projects and the largest single resource development in Australia. Hatch, as a member of Kellogg JV Gorgon (KJVG), was contracted by Chevron Australia to undertake both pre-FEED and FEED studies, as well as EPCM services.

Hatch solution/services:

- Project and execution planning; including development and implementation of the project execution strategy; project and construction management; modularisation and construction sequencing; environmental compliance and monitoring; interface management; and safety and quality management
- Balance of plant infrastructure engineering; including plant layout and optimisation; marine and jetty; utilities and water treatment; early works and civil/ structural; pioneering facilities; and temporary and permanent buildings
- Procurement, supply and logistics; including planning and execution; fabrication yard quality assurance; transportation and freight management; materials handling; quarantine management and inspection services; supply base and warehousing; waste management; and contract administration.

Outcome/highlights:

- Hatch provided key personnel and input for the development of the modularisation strategy for the project, and is currently providing quality management and site-based supervision of the modularisation yard activities along with associated logistical and transportation planning. A world-class modular-construction strategy was developed to minimise impact on the island during the construction phase. The project utilises several fabrication yards across South East Asia and Australia to support approximately 270,000 tons of LNG modules, the largest being over 6,300 tons.
- Significant procurement, supply, quarantine and logistics challenges exist as a result of the construction occurring on the Barrow Island nature reserve. Hatch has made significant contributions to the management of these challenges.
- Leading environmental and quarantine procedures are in place to protect the indigenous flora and fauna on Barrow Island. Hatch participated in the development of a comprehensive project quarantine management plan to manage all quarantine aspects and inspection requirements across the entire project supply chain.

Client: Chevron Australia (Operator)

DEMONSTRATED CAPABILITY

MARINE ENGINEERING | LOGISTICS | PORT ENGINEERING | SOCIAL

DEMONSTRATED CAPABILITY

SOCIAL

South Perth Place + Design Report

Activity Centre Masterplan

Client Objectives

- A number of high scale developments had prompted widespread anger, frustration and polarised views about future growth within the community. A structured campaign against further development was driven by well-resourced, influential and highly motivated residents.
- Our multi-disciplinary team managed the risks and influenced the outcome through guided conversations focused on 'livability and lifestyle' and supported by technical studies that provided a scientific basis to the discussion. This enabled the team to shift the focus away from a single problem (height) to a broader conversation about the future potential of the South Perth Peninsula.
- The process engaged with a wide variety of stakeholders in a meaningful and balanced manner, to challenge polarised views and discuss issues in a constructive way. By investing in this process, Hatch RobertsDay forged bridges and rebuilt a level of trust that had been eroded over time.
- The project team ultimately developed a renewed vision and subsequently the Activity Centre Plan, that embraced taller, slimmer towers and improved landscaping, accessibility and community amenity outcomes that received strong community support and has been adopted by Council.

Relevance

- Comprehensive engagement and community-led planning.
- Addressing controversies and community anger over prior planning through technical input.
- Ambitious urban design, density and built form outcomes.
- Production of comprehensive vision to establish mutual agreement and rebuild trust.

Client: City of South Perth

About Hatch

Hatch is an employee-owned, multidisciplinary professional services firm that delivers a comprehensive array of technical and strategic services, including consulting, information technology, engineering, process development, and project and construction management to the Mining, Metallurgical, Energy, and Infrastructure sectors.

Hatch has served clients for over six decades with corporate roots extending over 100 years and has project experience in more than 150 countries around the world.