P&M Consultants Pty Ltd


WELCOME TO MELBOURNE

Our Service Offering

P&M Consultants provide complete end-to-end port and maritime infrastructure solutions that facilitate efficient maritime trade. Drawing on the many years of local and international experience of our directors, we apply specialist and innovative thinking to plan, design, engineer and project manage all forms of maritime infrastructure particularly passenger and freight related infrastructure that maximises port connectivity, operational efficiency and safety.

Our integrated ports and maritime capability spans the intermodal connectivity, energy, environmental, government and private sectors and allows us to work across local and international markets to deliver projects safely and successfully. By applying simulation and emulation capabilities that cover the total transport chain, our specialists consider project impacts to the environment and local communities while balancing the economic and commercial interests of our clients. We work collaboratively and in a partnering relationship with our clients and provide personalized and tailored solutions.

We provide services for ports of all types and related facilities including:

- Bulk liquids terminals
- Dry bulk terminals
- Container terminals
- Multi-purpose and general cargo terminals
- Ro-Ro terminals
- Passenger, cruise and ferry terminals
- Materials offloading facilities
- Ship building and repair facilities

Specifically, our services include:

- Port demand forecasting, capacity assessment, risk management, due diligence and analysis for shipping and policy matters
- Mooring analysis using proprietary software
- Structural assessment and design
- Port greening, carbon footprint and sustainability
- Port planning including strategic planning, land use planning, port master plans, site selection, terminal planning and operations planning and simulation
- Port design including dredging and reclamation, marine structures, harbours and channels, terminals and pavements, building and services, landside logistics and materials handling
- Port construction including procurement, project and program management and construction management
- Port operations including operational improvements for port and terminal operations and landside logistics, automation options, benchmarking and capacity optimisation
- Port maintenance including asset management, advanced materials technology, durability planning and dredging
- Coastal engineering including hydrodynamic studies and sediment transport, wave transformation and tidal processes, coastal protection, climate change and dredging studies.

Key P&M Director Project Experience

Feasibility Studies and Master Planning

Port planning project experience includes the Port of Melbourne (Webb Dock, Swanson Dock, Yarraville), Port of Hastings, Port of Townsville, QLD, Port of Darwin, NT, Port of Lae and Port Moresby, PNG, Port of Lyttleton, NZ, Port at Samalaju and Port of Tanjung Pelepas, Malaysia and Kwai Chung Container Terminal, Hong Kong. The projects include those in which P&M Directors played key roles during earlier stages of their careers.

PORT OF HASTINGS - PORT PLANNING AND ENGINEERING, Victoria (AECOM)

Planning and engineering studies to world class, competitive and sustainable port with a minimum capacity of 9 million TEU by 2060. Scope of services included concept designs to inform referral process and preliminary designs to support preliminary cost estimates, environmental assessments, business case studies and development staging.

Development included dredging for channel widening and extension and turning basin, reclamation and ground treatment, scoping of geotechnical investigations, seawalls, quay structures for 15 berths, heavy duty pavements, services and other container terminal facilities, intermodal facilities, road and rail connections and port backup land.

LAE PORT MASTER PLAN AND DEMAND FORECAST, Papua New Guinea (AECOM)

The study included trade forecast, shipping study, berth demand and port capacity assessment, discrete event simulations, terminal planning and preparation of staged development plan, port master plan, port land use and cost estimates.

In addition a siltation study and dredging assessment was undertaken to estimate maintenance dredging requirements.

The facilities included container terminals, liquid bulk berth, and dry bulk berth.

LAE AND PORT MORESBY PORT MASTER PLANS, Papua New Guinea (AECOM)

Planning study to guide port development at PNG's two key ports at a time of significant national growth in the minerals and energy industry. Evaluation of the existing port facilities and operations at Port Moresby in the context of future trade demand to ascertain the optimum manner to grow these ports to meet this demand over the next 20 years. The assignment required an understanding of the existing facilities and operations, physical and operational constraints, potential capacity and future trade growth, which indicated the trigger points for future expansion and relocation.

LYTTELTON PORT OF CHRISTCHURCH REINSTATEMENT & DEVELOPMENT PLAN, New Zealand (AECOM)

Review of reinstatement and development plan for the Lyttelton Port of Christchurch following the 2011 earthquakes. The study included validating of the planning principles and direction and planning for post-Panamax container vessels and preparing development options for the next 10 years.

Key P&M Director Project Experience

Port Development and Planning

PREPARATION OF MASTER PLAN AND FUNCTIONAL AND PRELIMINARY DESIGN FOR WEBB DOCK PRECINCT DEVELOPMENT, Melbourne (KBR)

Functional and preliminary designs were prepared to meet the master plan for development the precinct in stages to 2035, which include international container terminal, terminals for car carriers and berths for RORO and breakbulk trans-Tasman cargo. The study included environmental and planning advice, assessment of throughput capacity for the berths and terminals, investigating a wide range of operational modes to provide flexibility, in particular intermodal links and port connectivity.

SOUTH EAST TSING YI FEASIBILITY STUDY, Hong Kong (AECOM)

Feasibility study for Container Terminal No. 9 and associated backup and industrial development, Hong Kong. Development involved 60ha container terminal with 4 berths for post-Panamax vessels and 1.6million TEUs per annum, wharf for public cargo working area, marine basin and breakwater for reprovisioning of existing marine industrial facilities and 60ha of port back up area for container storage, vehicle parking and access roads. Services included navigation and marine impact assessments, channel realignment and navigation dredging.

MOTUKEA PORT MASTER PLAN, Port Moresby, Papua New Guinea (AECOM)

Motukea port development master plan indicating the staged development of berth and terminal facilities based on shipping trends, throughput forecasts and range of operational scenarios. Modelling allowed for a range of growth projections from conservative to optimistic to ensure the master plan would cater for all scenarios. Financial modelling was undertaken to confirm the long term viability and cost effectiveness of the port master plan.

PORT OF HASTINGS STAGE ONE SCOPING, Victoria (AECOM)

Planning study involving over 20 technical investigations for the Port of Hastings Corporation including Port Planning and Design, Terminal Operations and Planning, Green Port Sustainability Review, Ports Best Practice Operations, Dredging and Reclamation Methods Assessment, Risk Management Framework and Capital Cost Estimation.

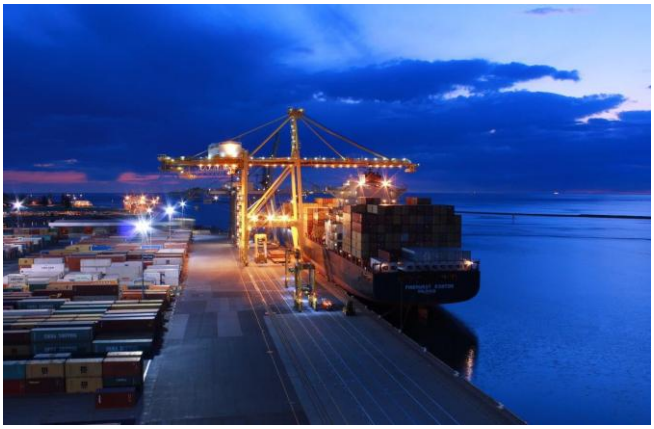
Key P&M Director Project Experience

Port Development and Planning

PRE-FEASIBILITY & FEASIBILITY STUDY FOR TANJUNG PO DEEP SEA PORT, Sarawak, East Malaysia (AECOM)

Site Selection Study and Master Plan for a Deep Sea Port for container, bulk and break-bulk trade to 2050. The project included initial site selection study, preparation of trade forecast, berth demand and throughput analysis, preparation of port master plan and assessment of land requirement, assessment of equipment and infrastructure requirements. The master plan is for the staged development of the Port to 2050 and includes 2 km of wharf. The estimated cost for the first stage development is $150 M.

PORT ADELAIDE CONTAINER TERMINAL, South Australia (AECOM)



Feasibility Study and preliminary design of the Outer Harbour Berth 5 for Port Adelaide Container Terminal in South Australia. The study included options review, berth optimisation, terminal area assessment, cost estimation and multi-criteria assessment

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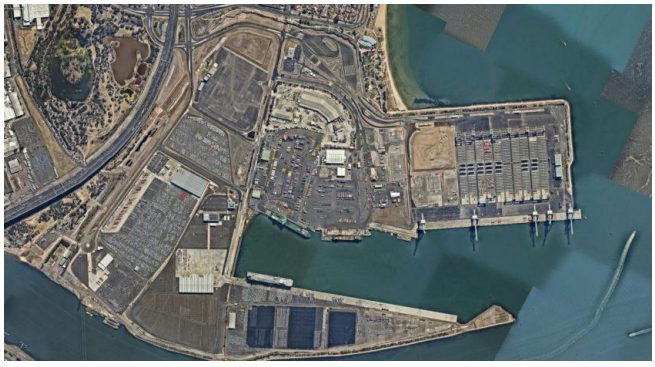
WESTGATE CONTAINER TERMINAL, Melbourne (AECOM & KBR)

Feasibility study and preliminary engineering design for a new 500,000TEU/annum container terminal in the Port of Melbourne. The proposed terminal included two Post-Panamax berths using a wharf length of 700 metres and an alongside depth of 15 metres, and a 40 ha back-up area.

Subsequently appointed technical advisor to the Melbourne Port Corporation to assist with the preparation of tender documentation and review of tenders for the proposed Westgate International Container Terminal.

VICTORIA INTERNATIONAL CONTAINER TERMINAL, Melbourne (AECOM)



Investigating options and preparing concept designs and cost estimates for the expansion of Webb Dock East Berth 4 to the north to accommodate post-Panamax container vessels up to 10,000 TEU capacity

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Key P&M Director Project Experience

Container Terminals

Container terminal planning and design experience includes all varieties of terminal operating equipment and diverse wharf forms to suit project specific requirements, conditions and constraints. Projects include Webb Dock and East and West Swanson Dock terminals, Melbourne, Manila Berth 6, Philippines, Container Terminal 9, Hong Kong and Second Chennai Container Terminal, India.

BENTLEY CHEMPLAX REDEVELOPMENT, Melbourne (AECOM)

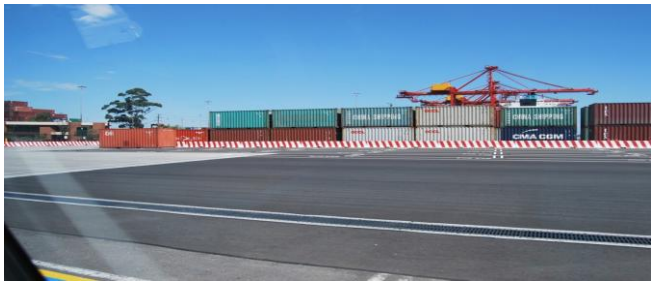
Redevelopment of chemical storage depot and integration with DP World Melbourne's West Swanson Terminal to support the introduction of new automated stacking cranes (ASC).

Works included ground treatment, heavy duty pavements, piling and footings for ASC and container ground beams, civil works including stormwater and services, including high and low voltage power, fire services and lighting. Services included geotechnical and contamination site surveys, terminal master planning, concept and preliminary designs and construction cost estimates, approval submissions, detailed designs and tender documentation.

EAST AND WEST SWANSON TERMINAL CONDITION ASSESSMENTS, Melbourne (AECOM & KBR)

Condition assessment and recommendations for maintenance and repair of one of Australia's major container terminals. Services included detailed site investigation using half-cell potential, resistivity, electrical continuity, cover-meter, and delamination testing. Performance-based specification documents for concrete repair, cathodic protection of reinforced concrete elements, testing requirements during remediation and strengthening and coating of extensive sections of steel piling, were prepared based on site inspection findings. Cost estimates of recommended works, together with service life prediction, were also provided. The works enabled Port of Melbourne Corporation to facilitate safer operation and prolonged service life of Berth 1 East and West at Swanson Dock.

WEST SWANSON INTERMODAL TERMINAL, Melbourne (AECOM)



Redevelopment for entry/exit, truck marshalling and straddle exchange areas to the east end of DP World Melbourne's West Swanson Intermodal Terminal (WSIT) on the north side of Coode Road to help optimise operations. The proposed layout is part of DPW's master plan, which in the longer term will require the integration of a significant portion of Coode Road into their West Swanson Terminal and rationalisation of their container stacks. The scope of works included management of contaminated material, civil works, heavy duty pavements, post tensioned slabs, grading, drainage, gatehouse, substation, lighting and services within the project area. The scope of services included terminal planning, concept design, detailed design, tender and contract documents, construction cost estimates, programming, staging of works, traffic management, tendering services, approvals and superintendence including technical supervision of the works and technical support.

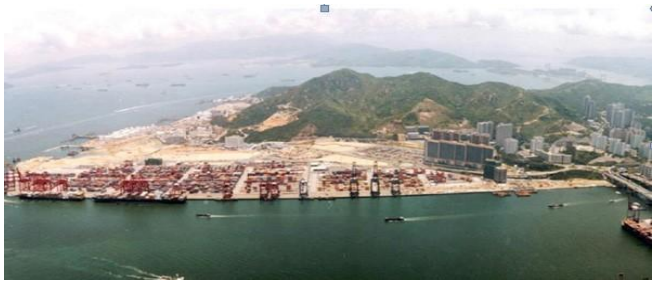
NEW DOHA PORT PROJECT, Qatar (AECOM)

Program management services for the New Doha Port Project in Qatar. Undertaken by the government of Qatar, the US$7-billion port project is currently the world's largest "greenfield" port-development project spanning over 26km2. Executed in three separate phases, with a dredged channel depth of 17 meters, the port provides access to the world's largest seagoing vessels. The New Doha Port is expected to meet Qatar's trade growth needs for the next 25+ years and commenced operations in December 2016.

Key P&M Director Project Experience

Container Terminals

CONTAINER TERMINAL 9, Tsing Yi, Hong Kong (AECOM)



Container Terminal No. 9 comprises a six-berth container terminal at South East Tsing Yi together with 68 hectares of back-up area for Government use, of which approximately 30 hectares is on existing land. Development within the terminal includes the berth structures, six high container stack areas, runways for rubber tyred gantries, lighting towers, electrical substations, toilet blocks, paving, drainage, sewerage and services. Services included terminal planning, preliminary and detailed design, tender documentation, tender services, contract documents and construction supervision.

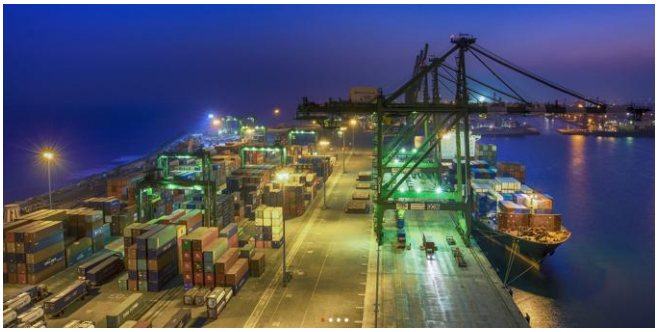
CRISTOBAL CONTAINER TERMINAL, Panama (AECOM)

Tender design for turnkey development involving detailed design and documentation of berth structure and terminal area extension and upgrade for container vessels up to 200,000tonnes displacement. Scope of works included wharf demolition, new 350m long quay structure and mooring dolphin, navigation dredging including berth pocket, reclamation, ground treatment, seawalls, scour protection and heavy-duty pavements, light towers and services. Design incorporated appropriate measures for seismic loading.

TENDER DESIGN FOR WEBB DOCK REDEVELOPMENT, Melbourne (AECOM)

Preparation of the D&C tender design for extension and upgrade of the existing wharf to accommodate post-Panamax container ships and construction of new 900m wharf for autotrade and general cargo ships, dredging of channels, turning basin and berth pocket, reclamation, utility services, fendering and scour protection. The designs included piled structures, bulkhead structures and structures on controlled modulus columns for the Port of Melbourne Corporation.

SECOND CHENNAI CONTAINER TERMINAL, India (AECOM)



Planning, investigations, detailed design, tender documentation, prequalification and tender services for 900m long container berth and terminal area including intermodal facilities and rail link. Works included navigation dredging, reclamation, ground treatment, heavy duty pavements, civil works, electrical and other services, lighting and terminal buildings

Key P&M Director Project Experience

LNG, Liquid Bulk and Dry Bulk Terminals

GORGON LNG PROJECT MOF, Barrow Island, WA (KBR)

The project comprises design and installation of the LNG plant as well as the maritime facilities for this $8 billion project. The early phase works included the materials offloading facility (MOF) for offloading all plant, equipment and materials for construction of the LNG plant, and include a roll-on roll-off berth, wharves for module carriers and heavy lift ships, berths for tugs and small craft, an 1800 m causeway and navigation aids. On completion of the plant, the facility will be used for all maritime transport.

LAE PORT TANKER BERTH, Papua New Guinea (AECOM)

Preliminary and detailed design of a 40,000DWT fuel tanker berth including platform, berthing and mooring dolphins, access trestle and causeway. Facility designed for a wide range of oil tankers from 90m to 180m Loa. Design featured pile arrangements to cater for calcareous ground conditions and limitations on geotechnical strength characteristic of Lae Port.

LAE TIDAL BASIN BULK LIQUID BERTH, Papua New Guinea (AECOM)

Detailed design of liquid bulk jetty for vessels ranging from 20,000DWT and 150m LOA up to 60,000DWT and 215m LOA. Works included loading platform, access jetty, berthing dolphins, mooring dolphins, catwalks, pipeline corridor and culvert crossing, and provision for control building and parking. Design features extensive use of precasting for cost effectiveness and durability and provided for local modifications to existing seawall revetment to allow for piling.

TANGGUH LNG, Indonesia (AECOM)

Detailed berthing assessment and static and dynamic mooring analysis to support the detailed design of new LNG berth to duplicate the existing facility for LNG and Condensate vessels. A total of 12No. design vessels were evaluated ranging between 16k tonnes displacement and 130m length overall to 129k tonnes displacement and 300m length overall. Services included detailed assessments and reporting, mooring line arrangement plans, 3D geometric checks on potential mooring line clashes with fenders and a passing vessel assessment.

Key P&M Director Project Experience

LNG, Liquid Bulk and Dry Bulk Terminals

PENGERANG PETROLEUM PRODUCTS BERTH, Malaysia (AECOM)

Detailed mooring analysis and review of QRH capacity requirements and geometric review of QRH functionality requirements for multi berth petroleum products berths for bulk liquid vessels ranging between 5k DWT and 105m length overall to 325k DWT and 333m length overall. Services included review of previous design and mooring assessments, consultation with stakeholders, site inspection, review of terminal berthing procedure and damage reports. Recommendations were made for changes to mooring system which included double, triple and quadruple hook units. This included recommendations for QRH unit replacement, reconfiguration and augmentation and implementation and staging of the QRH upgrade works to avoid ongoing operational issues and equipment breakage.

DRY BULK WHARF REHABILITATION, Groote Eylandt, Northern Territory, Australia (KBR)

An initial condition assessment of the Groote Eylandt Mining Company's wharf facility servicing its manganese mine. This was followed by a detailed structural assessment of the facility and the preparation of a strategy for its future asset management and maintenance and design rehabilitation and repairs to provide a further service life of 5, 10, 15 or 30 years.

BIALA PALM OIL TANKER BERTH, West New Britain, Papua New Guinea (AECOM)

Preliminary and detailed design and documentation of palm oil tanker berth at Bialla, including main platform, berthing and mooring dolphins, catwalks, approach trestle, causeway, storage area, lighting and navigation structures. Facility was designed for palm oil tanker vessels up to 40,000DWT and general cargo vessels up to 15,000DWT in response to damage to the existing general cargo wharf from an earthquake in 1985. Services included tendering assessment and full-time construction supervision.

PORT BONYTHON, South Australia (AECOM)

Tender design of Port Bonython Jetty and landside infrastructure for export of iron ore at the North end of Spencer Gulf. The marine facilities included a 2.7km long jetty, steel platform and berthing and mooring dolphins to cater for 18.3m draft 290m long 213,000tonne displacement cape sized iron ore carriers and a separate barging facility for 10,000DWT vessels for initial staged operations. Other infrastructure included a rail extension, material storage buildings, conveyors, transition structures and ship loaders. Services involved data review, site visits, gap analysis, scoping of geotechnical and survey requirements, joint inspections of similar facilities, berthing and mooring assessments and wharf and jetty design.

Key P&M Director Project Experience

Defence Related Marine Facilities

POINT WILSON JETTY UPGRADE, Victoria (AECOM)

Design and documentation services supporting the rehabilitation and upgrade of the 2.3km long Point Wilson Jetty for Department of Defence. A broad range of services included hydrodynamic modelling, mooring and berthing analysis, under-keel clearance assessment, met-ocean and coastal processes, marine ecology, condition assessment and materials engineering, geotechnical assessment and services engineering. The Point Wilson jetty is of national strategic importance facilitating the importation, temporary storage and distribution of explosive ordnance. The primary project objective was to economically return the facility to operational status to cater for explosive ordnance vessels up to 150m and the 231m long RAN Landing Helicopter Dock (LHD) vessels which were fabricated in Spain and Williamstown. The RAN currently operates two Canberra Class LHDs which are multipurpose amphibious assault ships.

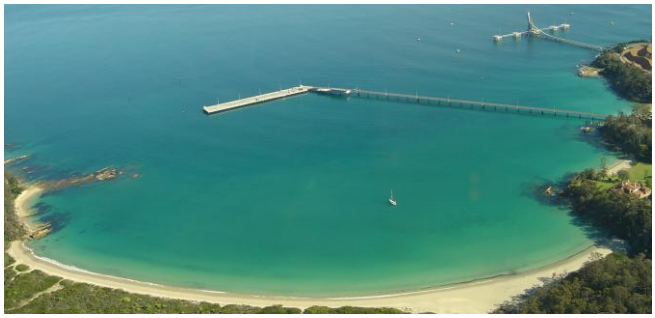
GARDEN ISLAND, Sydney, NSW (AECOM)

Detailed mooring analysis and structural design review of wharf upgrading for visitation and home-porting by two Landing Helicopter Dock (LHD) vessels at Garden Island Fleet Base East 1 and Fleet Base East 2 to 3. Upgrade included additional bollards along the wharf and storm bollards. Storm bollards were strategically positioned behind the wharf on new piled foundations.

NELSON PIER UPGRADE, Williamstown, Victoria (AECOM)

Design of the Nelson Pier Upgrade for the fit out of two Landing Helicopter Dock (LHD) vessels. Scope of services included design and tender documentation including maritime structures, durability as well as technical advice and construction phase services. Upgrade works involved a caisson mooring dolphin, mooring system, fender system, impressed current cathodic protection system and mechanical and electrical systems pier for an extended period.

TWOFOLD BAY, Eden NSW (KBR)



Detailed design, documentation, technical support and construction surveillance for multi purpose wharf and access road at Twofold Bay and associated navigation and dredging for turning basin. Facility comprises a 200m long by 30m wide wharf at the end of a 650m long by 7m wide two way roadway jetty, an amenities building, gatehouse and associated services. The wharf features multiple fender systems to cater for navy vessels including submarines and for cargo vessels up to 32,000DWT. The facility was designed both as a navy munitions facility and for multi purpose commercial uses which have included primarily log exports however the faility has also been used for cruise ship visit.

Key P&M Director's Experience

Reclamation, Seawalls and Coastal Engineering

INTEGRATED SHORELINE MANAGEMENT PLAN FOR MIRI DIVISION, Sarawak, Malaysia (KBR)

This study was undertaken, with Jurutera Minsar, to prepare shoreline management plan for 145 km of Miri shoreline for the Department of Irrigation and Drainage, Malaysia

PORT MORESBY PORT RECLAMATION, Papua New Guinea (AECOM)

Planning and preliminary design and cost estimates of dredging, reclamation, seawalls and quay structures for the extension of Port Moresby container terminal. Scope of works included 3 container berths consisting of a piled deck structure and retaining wall, one roll-on and roll off ramp, reclamation of approximately 10 hectares, pavements for container storage and handling, services and drainage.

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WAN CHAI RECLAMATION, Hong Kong (AECOM)

Reclamation of 6.7ha and 1.1km of seawalls for Wan Chai Phase 1 for the extension of the Hong Kong Exhibition and Convention Centre. Services included detailed design and documentation of vertical and sloping seawalls, 7 No. cooling water pumping stations, public landing steps, 2 storey passenger ferry pier and temporary floating pier. Project was fast tracked to be completed June 1997 for Hong Kong handover to China. Seawalls were designed to be constructed independently of reclamation to meet the tight program. Precasting was also used extensively on the seawalls, pump station and ferry piers for durability and to speed up construction.

SUNNY BAY RECLAMATION, Hong Kong (AECOM)

Design and documentation of reclamation and seawall for Sunny Bay Reclamation including 10 ha of reclamation and ground treatment. Reclamation was required to support the public transport interchange to Hong Kong Disney Theme Park.

Key P&M Director's Experience

Cruise Shipping, ROPAX & RORO Terminals

We have extensive hands on experience in the planning and design of international cruise, ROPAX and RORO terminals.

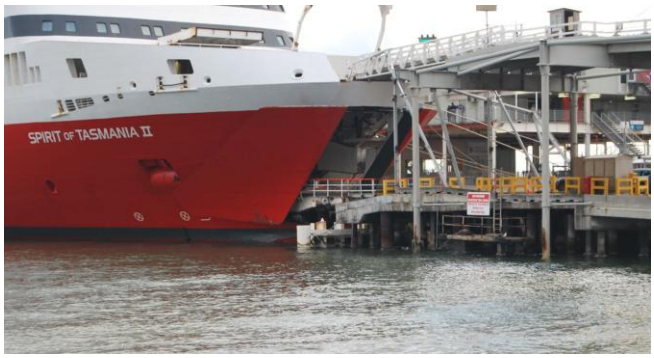
VICTORIAN CRUISE AND DOMESTIC FERRY PASSENGER CAPACITY PROJECT, Melbourne (AECOM)

Feasibility study and business case of redevelopment of Station Pier for future growth in cruise ship and domestic ferry services to support funding applications. The project objective was to enable Victoria to maintain and grow its share of the national and international cruise ship market whilst catering for the projected growth in domestic ferry passenger demand.

DEVONPORT ROPAX FERRY TERMINAL REDEVELOPMENT, Tasmania (AECOM)

Feasibility study on redevelopment of existing ROPAX terminal for larger vessel including dredging, reconstruction of assess ramps, access roadways and terminal vehicle marshalling.

OPTIONS FOR EXPANDING STATION PIER EAST FERRY TERMINAL, Melbourne (AECOM)



Feasibility study on options for potential expansion of the current freight transit facility and ferry berth at Station Pier to meet projected increase in throughput. Assessment involved the development of concept designs for short term options to accommodate an additional Spirit of Tasmania Ro-Ro ferry on the east side of Station Pier and options for simultaneous berthing of GTSuperfast III class fast ROPAX ferry and 30,000-45,000GT Ice Class ferries to meet TT Line's future requirements. Services included layout planning, traffic study, mooring analysis for the vessels together with the Pacific Jewel passenger cruise vessel, structural analysis, additional bollard and fender requirements, dual level vehicle ramp assessments and preliminary cost estimate and construction program for the upgrade works.

CORIO QUAY SOUTH ROPAX FERRY SERVICE CONCEPT DESIGN AND COST ESTIMATE, Geelong (AECOM)

ROPAX terminal planning, preliminary design, programming and costing for relocation of existing terminal operations including berth upgrade, berthing and mooring system structures, ramps and elevated roadway structures, pavements for traffic circulation, marshalling areas and entry exits, drainage, grading and services.

Key P&M Director's Experience

Cruise Shipping, ROPAX & RORO Terminals

KAI TAK CRUISE DEVELOPMENT, Hong Kong (AECOM)

Feasibility study, preliminary design and reference design for the Kai Tak Cruise Terminal on the westside of the Kai Tak runway. Development involved a dedicated cruise facility with 850m of piled quay deck for two berths and associated services catering for mega-cruise ships with 5,400 passengers and 360m length overall. Services included planning for the terminal building, passenger boarding bridges and leading a government delegation on a fact-finding overseas visit to cruise terminal facilities in Japan, Italy and Spain. Services also included navigation assessment and berthing and mooring assessments.

APEC CRUISE FACILITY UPGRADE, Port Moresby, Papua New Guinea (AECOM)

Reference design for upgrading existing Main Wharf and Berth 4A, Port Moresby to cater for Carnival Cruise Line ships that were to be berthed for the Asia-Pacific Economic Cooperation (APEC) forum in November 2018. Services included site inspection, berthing and mooring assessments, structural design and capacity rating, designs for new berthing dolphins, land mooring structures and new fendering and mooring bollards and technical advice to PNGPCL during construction.

CAIRNS WHARF 1-6 UPGRADE FOR CRUISE SHIPS, QLD (AECOM)

Mooring analysis of cruise ships to be moored at the upgraded Cairns Wharf 1-6 for Ports North. The mooring assessment used proprietary software Optimoor to indicate approximate mooring line and bollard loads and fender reactions for Spirit Class and Voyager Class cruise ships with Loa of up to 294m and 311m respectively taking into account local exposure to winds, currents and waves. Scope of works included piled berthing and mooring dolphins to cater for cruise ship loading under agreed limiting environmental conditions.

ALOTAU CRUISE FACILITY VISITATION, Papua New Guinea (AECOM)

Detailed design and documentation for the upgrade of the Overseas Berth in Alotau to cater for the planned resumption of cruise visits up to 290m Loa in October 2013. Design included strengthening of the existing berth, new breasting dolphin and mooring structures along the foreshore.

The key objective of this project was to increase berth availability to cruise vessels whilst maintaining the ability to operate and receive other overseas and coastal cargoes at the port during and after construction.

The design featured the provision of 3 berthing points to cater for the design range of cruise ships together with existing general cargo and liquid bulk vessels.

Key P&M Director Project Experience

Miscellaneous Port Projects

Our experience covers a wide spectrum of ports and maritime projects including quay structure crane load assessments, navigation aids, temporary construction wharves, boat shelters, ship repair facilities and ferry service assessments.

PORT PHILLIP BYPASS CHANNEL BEACONS, Melbourne (AECOM)

Detailed design, tender documentation and technical support during construction for mono-pile beacon structures to delineate the By-pass channel and Southern Channel.

TAI O BOAT SHELTER BREAKWATER, Lantau Island, Hong Kong (AECOM)

Planning , detailed design, documentation and technical support during the construction phase for the restoration and reconstruction of the historic Tai O seawall, provision of a new promenade with boat landing steps, enhancement of mangrove planting area and tidal exchange provisions through the seawall, rock armour breakwater for fishing and recreation boat anchorage and navigation aids. Project featured a high level of consultation with the local village community and interest groups to best reflect the requirements of both local residents and visitors.

LTB INTERNATIONAL CONTAINER TERMINAL – OPTIONS FOR STS CRANE, Lae, Papua New Guinea

The terminal operator SPICT proposes to procure new STS cranes and required structural assessment of the wharf to determine the maximum allowable crane load. Scope of services included review existing design, structural assessment for limit states and seismic loading conditions including other wharf operational loads, to determine the maximum allowable crane wheel configuration and loading, and liaise with the operator to choose the best STS crane for the facility

VICTORIA DOCK SLIPWAY CONDITION AND STRUCTURAL ASSESSMENT, Melbourne (AECOM)

Condition assessment and structural assessment of the existing Victoria Dock Slipway to assess the extent of permissible section losses in critical elements including piles, beams, bracing and rails. This assessment included a review of the original calculations and cradle configurations assumed for the slipway system and records of repairs and partial reconstruction arising from previous cases of overloading.

Key P&M Director Project Experience

Miscellaneous Port Projects

STRUCTURAL ASSESSMENT FOR NEW STS CRANE OFFLOADING, Melbourne (AECOM)

Structural assessment of the existing wharf structure at Swanson Dock East Berth 4 at the Port of Melbourne for proposed crane offloading operation of two new ZPMC quay cranes CM08 and CM09. The new ZPMC crane were off-loaded from the vessel to the wharf over a temporary rail system which bridged over the cantilever section of the wharf without imposing any loading from the berth cope line to the centre of waterside crane rail during offloading. The cranes were then jacked up off the deck to allow bogeys to be rotated onto the existing crane rails and moved into position for commissioning.

QUEENSLAND CURTIS ISLAND LNG (QCLNG) PROJECT – CONSTRUCTION DOCK VERIFICATION, QLD (AECOM)

Design verification for the Queensland Curtis Island LNG Project included the aggregate wharf comprising a steel tubular piled bulkhead wall with tie back anchors, a steel tubular piled retaining wall for Ro-Ro ferry dock and a passenger gangway to the construction dock ferry terminal at Curtis Island. Services also included design verification of passenger gangway to construction dock ferry terminal.

BROTHERSON DOCK STS CRANE MOVE USING SELF-PROPELLED MODULAR TRANSPORTER, Port Botany, NSW (AECOM)

Structural assessment of the existing wharf structure and the pavement which will be traversed as part of a proposed STS crane relocation operation using a Self-Propelled Modular Transporter (SPMT) to move the quay crane 1 from Brotherson Dock wharf to the adjacent yard at the Port of Botany. The existing wharf is a gravity structure and was built in 1979. The stability and structural adequacy of the counterfort wall structure was checked for jacking up of the crane on the trailers and the crane movement across the wharf at controlled speed and wind conditions.

COWES STONY POINT FERRY SERVICE FEASIBILITY ASSESSMENT AND BUSINESS CASE, Victoria (AECOM)

Assessment and planning of maritime aspects to support business case of a Cowes to Stony Point Car Ferry Service to provide the missing link for a globally competitive, continuous coastal touring route that links Victoria's iconic tourism regions of the Great Ocean Road, Mornington Peninsula, Phillip Island and broader Gippsland region.

The preferred option includeD a new car ferry terminal at Stony Point and Cowes, the later situated immediately to the west of Mussel Rocks.

DIRECTOR'S PROFILE

Venket Naidu

MANAGING DIRECTOR

Venket has approximately 40 years' experience in port and maritime civil engineering, specialising in planning and design of ports and maritime structures and infrastructure, managing major port projects and studies. He has worked on the planning, design, documentation, construction supervision and management of a wide range of ports, harbours and marine facilities in Australia, New Zealand, the Pacific, South-East Asia and the Middle–East. Venket has been Design Manager, Lead Maritime Engineer, Project Manager or Project Director for Defence, AusAID, Asian Development Bank and other major port projects over the past 20 years. He was the Port Specialist and Project Manager for preparation of the master plan, functional and preliminary design for the Redevelopment of the Webb Dock Precinct to 2035, and responsible for preparing of Masterplan and preliminary design for the Similajau Port Project in East Malaysia to handle dry-bulk, containers and general cargo (estimated to cost over $1.5b).

In addition Venket has been the Lead Maritime Engineer and Project Director for the rehabilitation and upgrade of the commercial wharves of the Port of Melbourne to extend the useful life of the structures by thirty years.

He was also the technical Advisor to the Port of Melbourne Corporation for the tender and construction phases of these wharf projects, which was completed in 2009, addressing the particular challenges of this project relating to constructability in an operating environment.

Andrew McArthur

DIRECTOR

Andrew is a maritime engineer with over 38 years of professional experience in Australasia, UK, Middle East, Southeast Asia and Central America with over 35 years involvement in planning, design and construction supervision of coastal and maritime facilities. This has included a broad range of projects including feasibility studies, port master planning and designs of container terminals, break bulk, dry bulk and bulk liquid facilities, cruise terminals, passenger and vehicular ferry terminals, Ro-Ro facilities and Defence facilities. Andrew also has extensive experience in projects involving dredging and reclamation, ground treatment, civil works and pavements, piers, vertical and sloping seawalls, breakwaters, navigation channels and anchorages. He also has specialist skills in marine structures, berthing and mooring assessments, marine impact assessments, vehicular impact protection and ship impact protection.

Andrew has played key roles in a wide range of major maritime development projects including Container Terminal No.9, Kai Tak Cruise Terminal, Infrastructure for Penny's Bay for the Hong Kong Disney Theme Park and Wan Chai Reclamation and Ferry Pier (Hong Kong), Second Chennai Container Terminal (India), Lae Port Tanker Berth, Berth 2 Reconstruction and Bialla Palm Oil Tanker Berth (PNG); Tangguh LNG Terminal (Indonesia); and Port of Hastings Container Terminal, Bentley Chemplax Redevelopment, Point Wilson Jetty Rehabilitation, Nelson Pier Upgrade, Swanson Dock Rehabilitation and Upgrade and Webb Dock Berth 2 Upgrade (Australia).

Nandana Millawitiya

DIRECTOR

Nandana is the Director (Design) in Melbourne based P&M Consultants Pty Ltd. Previously, he was an Associate Director in the Ports and Marine group of AECOM and prior to that he was Senior Engineer of Kellogg Brown & Root Pty Ltd, Melbourne. He possesses more than twenty-six years' experience in civil, structural, ports and maritime, and geotechnical engineering working with multinational engineering consultancies and construction companies in several countries.

His experience includes financial management, project management, construction supervision, structural analysis, design and detailing of reinforced concrete, steel, timber and aluminum structures, condition assessments and structural assessments. He has led and designed numerous maritime structures including wharves, jetties, dolphins, platforms, retaining walls, shore protection, mooring and berthing structures. Additionally, he has designed and supervised residential, commercial and industrial buildings as well as supporting structures for petrochemical plants. He also has extensive experience in maritime construction supervision, soil investigation, ground instrumentation, earthworks, dredging and reclamation working in major near-shore reclamation projects.

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