



# Statement of Qualifications

## Port and Terminal Development

Advisory and  
Engineering Services

**WESTMAR**  
ADVISORS

## Port and Terminal Development

Westmar has a culture which seeks to challenge conventional and preconceived ideas. We have the sophisticated tools and skills necessary to provide innovative solutions to our ports and marine terminals customers.

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# Company Overview

**WESTMAR**  
ADVISORS

# Corporate Description

Westmar Advisors can trace its lineage back to the former Westmar Consultants Inc. The original Westmar Consultants was founded in 1988 by Stan Cowdell and over the course of two decades grew to be a well recognized and highly respected consulting engineering firm headquartered in North Vancouver, British Columbia, Canada. At its peak, and before its acquisition by WorleyParsons, Westmar Consultants employed over 300 people across multiple offices in the Pacific Northwest, stretching from Northern BC through to Oregon in the USA.

Three years after managing the sale of Westmar Consultants Stan Cowdell retired from a full time-role as the senior executive at WorleyParsons responsible for its Infrastructure and Environment business. In 2011 he began to lay the foundation of a new boutique advisory company in order to provide expert project management and execution support to various industrial and commercial clients and their project teams. As the demand for premium advisory services continued to increase, an opportunity to engage proven professionals that were either part of the original Westmar company or aligned to the Westmar ethos emerged and Westmar Advisors was formed.





# Corporate Description

Westmar Advisors builds upon over 40 years of experience in all aspects of project planning, design, contracting strategies, execution and control. We are proud to offer our evolved suite of advisory services in the spirit of the original Westmar, with a foundation based on the value of empowering people to reach their goals.

Westmar's advisors are respected and experienced professionals dedicated to the concept of tailored, client-centric services. Westmar is led by senior business professionals with direct experience in managing and directing large businesses and projects. Our teams include engineers that are specialists in structural and mechanical engineering, marine terminal operations, and the requirements of coastal and industrial infrastructure. Our teams also include technical and operations specialists in the fields of project management & execution, risk management, regulatory process and permitting.

**"The opportunity to do the right thing for our clients, peers, and people is a noble enterprise. Westmar Advisors continues a tradition of excellence and client-focused professional services founded on a philosophy of empowering people. We are proud of what Westmar represents."**

**Stan Cowdell**  
**Founder and Executive Director**

# Capabilities





## Marine Facilities

Westmar's project experience encompasses a large range of facilities including port and terminal infrastructure, marinas and small craft harbours, breakwaters and foreshore infrastructure. Our team has extensive experience in all aspects of marine infrastructure, including seismic design, foundations and structures in difficult ground conditions, rehabilitation work, project economics and construction management. Their expertise has been applied to all types of maritime and offshore structures, including concrete caissons, pile and deck structures, buildings and industrial structures, dredging programs and sheet pile structures.





## Ports & Terminals

Westmar Advisors provides port and terminal planning and advisory services for all types of terminals, including container, bulk, breakbulk, ro-ro and cruise terminals. Our expertise has been applied to a variety of terminal locations ranging from regions with high levels of maritime traffic and strict regulatory regimes to remote sites that have little or no infrastructure and face harsh environmental conditions. We provide tailored services, helping client's meet increasingly stringent regulatory and social requirements. Our projects include greenfield sites as well as redevelopment of existing terminals.





## Industrial Facilities

Our Industrial experience covers a wide variety of facilities spanning a range of industries. These include warehouses and storage buildings, process and materials handling structures as well as tanks and other liquids handling infrastructure.

Westmar Advisors' people have applied their expertise to a wide range of facilities including breakbulk and bulk storage, oil and gas, mining, energy, and pulp and paper.



## Bulk Materials Handling

Our experts have delivered project services and engineering support in all corners of the globe, including large capital projects in Canada, USA, Mexico, Australia, South America, UK, South Africa and the Middle East. Our materials handling expertise has been applied to a wide variety of projects including mines, marine import and export terminals, transshipment facilities, process plants and storage facilities. Our project experience encompasses a large number of material types including: aggregates, alumina, coal, grains, dry and liquid sulphur, potash, oil, glycol, coke, phosrock, cement, iron ore and mineral concentrates.





## Resource Development

From mining through to renewable energy, whatever the resource, Westmar supports its development by providing advice and services to help clients understand the economic and operational dynamics of their project. We help our clients build the business case, evaluate their approach, and formulate the strategy to successfully execute resource developments. Our services have supported a wide range of resource developments including metal and mineral mining operations, midstream and downstream oil and gas developments, and renewable energy developments including tidal energy and biofuels.



## Maritime Operations

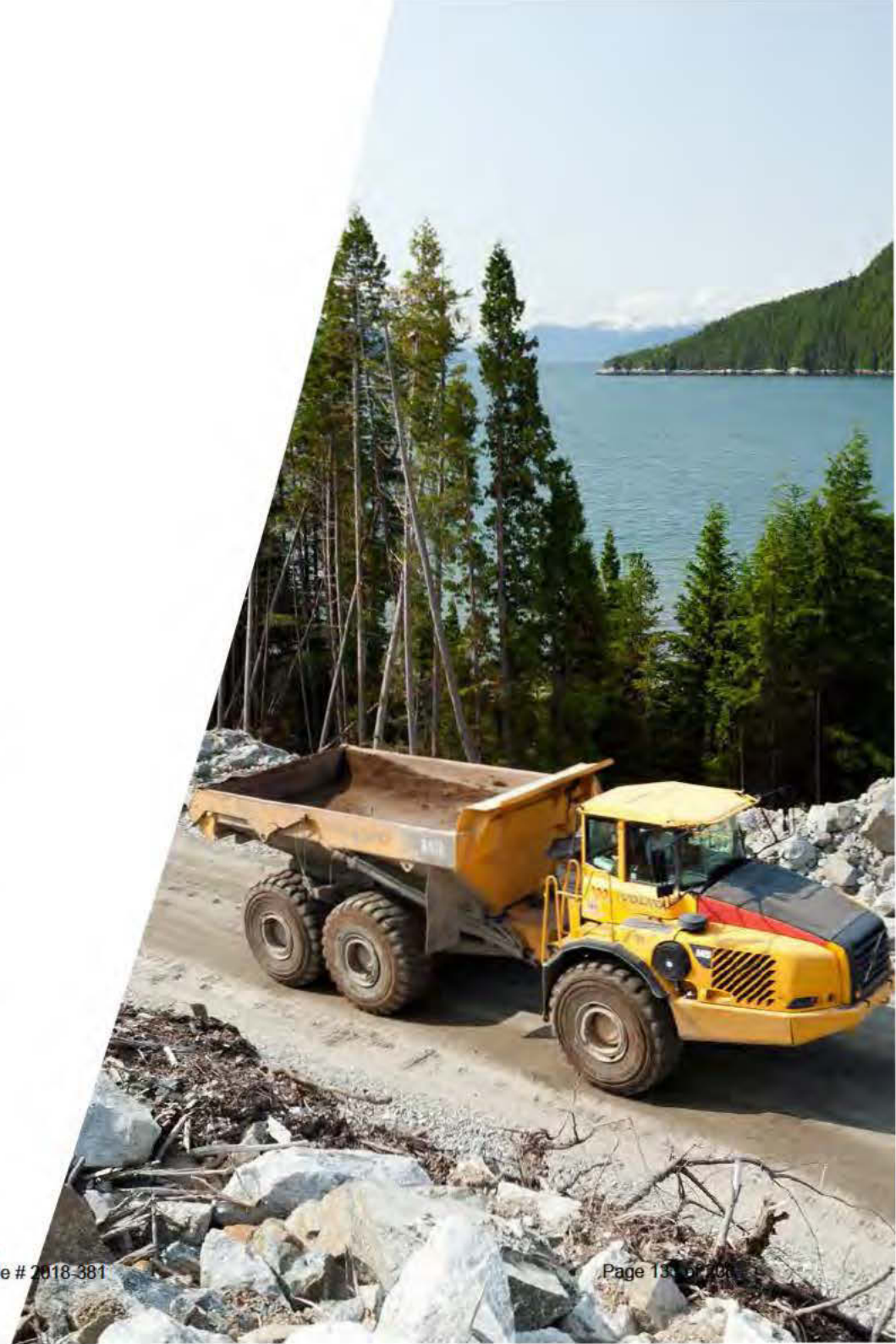
Our expertise in marine facilities and port operations is supported by broad experience covering a wide range of maritime operations in challenging coastal environments. Safe, efficient, and cost-effective maritime operations are critical to the success of projects that involve marine infrastructure and to the communities that support them. Westmar has supported a range of stakeholders in the assessment, planning, and development of maritime operations in conditions ranging from rugged, isolated shipping routes to congested, heavily developed harbours in metropolitan areas. From wave modelling and vessel dynamics to risk assessment and route selection, we help clients find the solution they need.





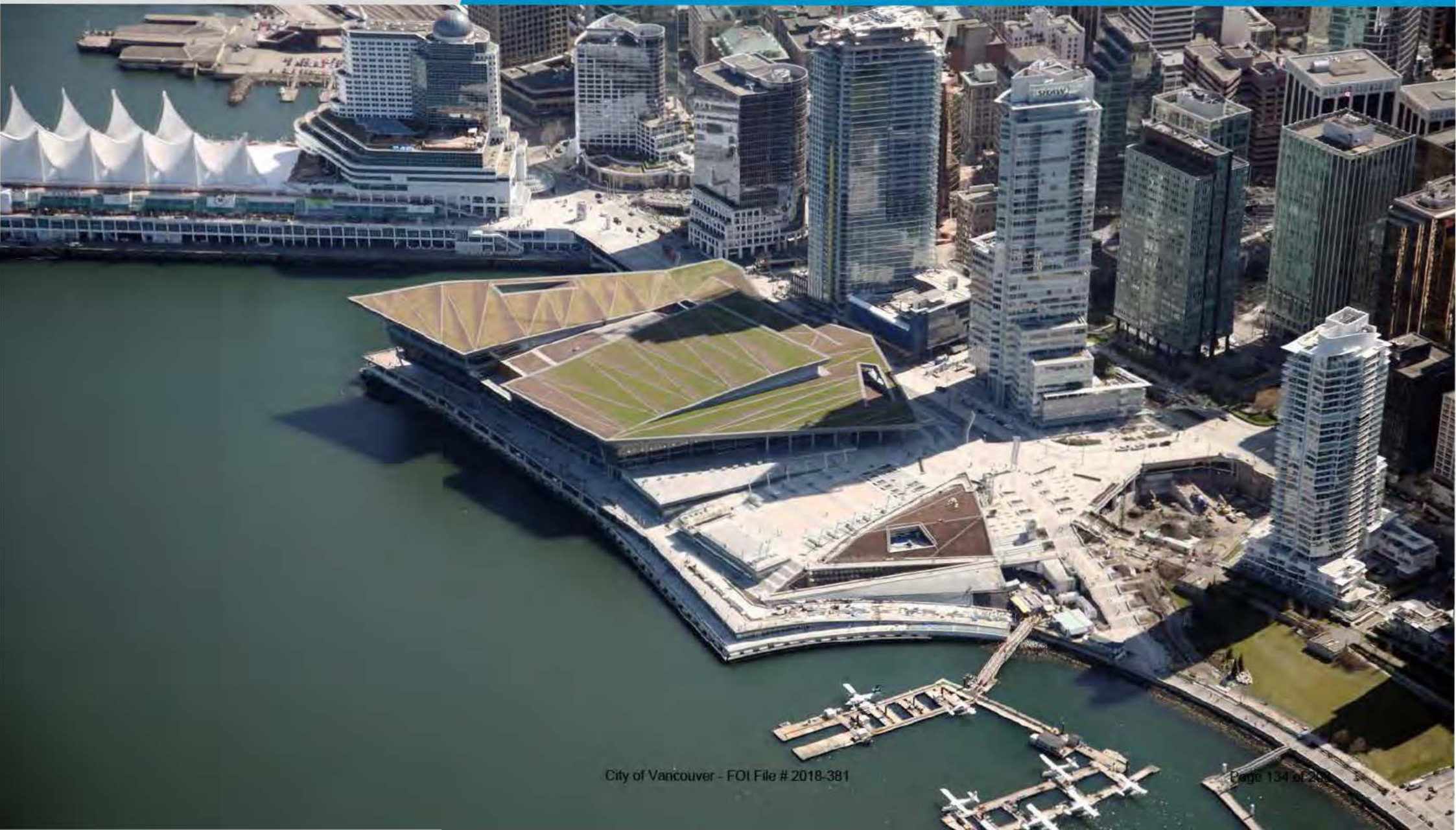
## Site Development

Westmar people have provided all manner of advisory and engineering services in site development for industrial, commercial, municipal, and public service clientele. We help clients find the right site or develop solutions to overcome challenges with site conditions. Our expertise can help clients optimize facility layouts and designs to take advantage of site characteristics or overcome limitations imposed by them. Our people have comprehensive experience and understanding of the regulatory aspects of site development as well as applied expertise in stakeholder engagement.





# Key Team Members







Office Location: Vancouver, BC

Length of Experience: 40 Years

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### **Summary**

Stan is an experienced engineering consulting business leader and manager. He founded Westmar Consultants Inc. in 1988 and over 20 years developed it into an industry leading consulting practice providing services globally to both private and public sector clients. Westmar Consultants Inc. specialized in the planning and design of port and marine terminals, public infrastructure, and mining related projects. In 2008 Stan managed the sale of Westmar Consultants to WorleyParsons, a large publicly traded firm trading on the ASX.

During the period 2008 to 2011 Stan was the Senior Vice President for WorleyParsons Canada Services Ltd., holding a variety of senior management and business development roles. Retired from WorleyParsons Canada in June 2011, Stan established Westmar Advisors Inc. to provide specialist management services to both private and public-sector clients focussing on major project evaluation and strategic project development.

# Stan Cowdell – Selected Experience

## **Dome Petroleum | Site Selection Study and Preliminary Design of Marine Facilities | Port Simpson, British Columbia**

Stan was the Project Manager for the site selection study and preliminary design of marine facilities for Dome Petroleum's West Coast LNG plant proposed for Grassy Point, BC.

## **Enbridge | Northern Gateway Peer Review | Kitimat, British Columbia**

Stan led the peer review of the marine terminal design for the NGP Terminal at Kitimat, British Columbia in advance of the final project design and budget being accepted by Management.

## **Methanex Corporation | MTBE/Methanol Terminal | Kitimat, British Columbia**

Project Manager for the EPCM delivery of a MTBE/Methanol facilities expansion, which included new tank farm, railcar unloading area, pipeline and marine loading facility.

## **BHP Billiton Canada Inc. | Export Terminal Operational Planning | British Columbia**

Stan led the completion of several studies in support of the operational planning for a new marine export terminal to be located on the West Coast of North America.

## **Nisga's Lisims Government | Marine Terminal Due Diligence | Northern British Columbia**

Review of a proposed investment opportunity comprised of a new marine dry bulk terminal within the Nisga's Lisims Government traditional lands. The feasibility study was reviewed for technical and financial feasibility.





# Daniel Leonard – Project Manager & Marine Lead



Office Location: Vancouver, BC

Length of Experience: 15 Years

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## Summary

Daniel is an experienced project manager and port and terminals engineer. He has a proven track record of assisting clients to develop feasible and economic projects both in British Columbia and globally.

Daniel has assisted numerous clients to assess the feasibility of developing oil and gas export projects in British Columbia and, if feasible, progressing them into further phases of development. Daniel leverages his strong understanding of port development, including: marine structures; geotechnical issues; environmental and non-environmental permitting; upland materials handling and process layout requirements; logistics such as rail and road access; marine navigation safety; and overall quantitative risks.

At the request of the BC Oil & Gas Commission, Daniel served as chair of the marine structures section of CSA guidelines issued in 2015 for the design requirements for marine structures associated with LNG facilities and he is currently chairing the mooring section of the CSA guidelines for the design of floating LNG and permanently moored floating storage vessels.

# Daniel Leonard – Selected Experience

## **CNOOC/Nexen | Aurora LNG Feasibility Studies | Prince Rupert Area, British Columbia**

Project Manager for the site selection and due diligence review / feasibility studies of a proposed onshore LNG export facility. The review included Lelu Island, Grassy Point, and Digby Island.

## **SK E&S | Grassy Point LNG Terminal | Grassy Point, British Columbia**

Daniel assisted SK E&S to evaluate the Grassy Point parcels that the BC Government issued as a Request for Expressions of Interest. Daniel led SK E&S's engagement with the BC Government during this process and led the submission to the BC Government.

## **ExxonMobil | WCC LNG Marine Terminal | Prince Rupert, British Columbia**

Project Manager and Lead Engineer for the concept design of 3 export berths for a proposed 30 MTPA LNG export terminal using an innovative floating berth dolphin design. Both FLNG and on-shore plant options were evaluated.

## **AltaGas Ltd. | LPG Export Terminal Pre-FEED | Prince Rupert, British Columbia**

Project Manager for the pre-FEED for a proposed 80,000 barrel per day LPG export terminal. The project is currently under construction.

## **Steelhead LNG | Kwispa LNG and Malahat LNG | Vancouver Island, British Columbia**

Project Manager for site selection and definitive feasibility studies for proposed at-shore LNG export projects located on Vancouver Island. The sites evaluated were located throughout BC.

## **Pacific Oil & Gas | Woodfibre LNG | Squamish, British Columbia**

Project Manager for site selection and definitive feasibility studies; and Marine Lead during pre-FEED for a proposed LNG export projects located Squamish, BC.





# Peter Acton - Port Development Senior Engineer



Office Location: Vancouver, BC

Length of Experience: 45 Years

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## Summary

Peter is a senior engineer with over 45 years of continuous experience in North and South America, the United Kingdom, Africa and South East Asia. He specializes in the planning, design and construction of port and maritime structures, including liquids and dry bulk, break bulk, cruise and container terminals. He served on the International Navigation Association (PIANC) Working Group for the Design of Fender Systems and the fact-finding group for the harmonization of maritime design codes.

Peter's range and depth of experience has been accrued over hundreds of large, complex marine infrastructure projects. He is highly respected by both peers and clients for his knowledge and the valued guidance he provides to project teams and owners.

# **W Peter Acton – Selected Experience**

## **Shell | LNG Canada TERMPOL | Kitimat, British Columbia**

Mr. Acton was a member of a team of marine experts including a subcontractor tasked with completing a marine navigational risk analysis. Work included preparing studies assessing the safe operation of LNG carriers in Canadian waters to and from Kitimat.

## **Methanex Corporation | Upgrade of Kitimat Terminal | Kitimat, British Columbia**

Project Manager for the evaluation of the existing berth structures, fendering upgrades and dredging to allow for the berthing of 50,000 DWT product tankers. The project included a detailed wind, wave and vessel motion analysis to determine fender reactions and mooring line loads.

## **TransCanada Pipeline Corp. | Prince Rupert Gas Transmission Pipeline | Prince Rupert, British Columbia**

Preparation of a navigation study and risk assessment for the proposed subsea gas pipeline from Nosaga Gulf to a proposed LNG terminal on Lelu Island in Prince Rupert, BC.

## **Petronas LNG | PNW LNG | Prince Rupert, British Columbia**

Marine Advisor for the FEED phase of the marine facilities for a proposed LNG terminal located on Lelu Island in Prince Rupert, BC.

## **Prince Rupert Port Authority | Fairview Container Terminal | Prince Rupert, British Columbia**

Project Director for the detailed design for the Phase 1 and 2 conversion of the Fairview Terminal to a 500,000 TEU per annum container terminal. Phase 1 includes a new 400 m berth to accommodate 12,500 TEU vessels, reconstruction of the terminal infrastructure, a new rail intermodal yard, and maintenance and administration buildings. Phase 2 expands the terminal area and adds a new berth to allow an annual throughput of 1.5 million TEU.





# **VW Peter Wong - Process Engineering / Vessel Transfer Expert**



Office Location: Vancouver, BC

Length of Experience: 45 Years

## **Summary**

Peter has over 45 years of experience in all phases of environmental and engineering beginning with feasibility studies, flow sheet development, process research and development, through detailed design, to facility start-up and commissioning. His experience and knowledge spans several industries, including: pulp and paper, mining, coal preparation, mineral processing, power generation, petrochemical, hydrocarbon processing, food and beverage processing, and advanced waste treatment and pollution prevention/control systems.

For the past 20 years, he has been involved with bulk petroleum tank farms and liquid bulk terminals in North and South America, with special emphases on conceptual / detailed engineering, commissioning, and regulatory compliance. Mr. Wong has also been retained as an expert witness for the proposed Northern Gateway marine terminal and the ancillary tank farm facilities to be located in Kitimat, British Columbia.

# Peter Wong – Selected Experience

## **AltaGas Ltd. | LPG Export Terminal Pre-FEED | Prince Rupert, British Columbia**

Process Lead for the pre-FEED for a proposed 80,000 barrel per day LPG export terminal. The project is currently under construction and will include the conversion of an existing Brownfield facility and usage of an existing marine terminal that will continue to export other products.

## **EnCana Oil and Gas Corporation | Methanex Off-Loading Facility | Kitimat, British Columbia**

Project Manager/Engineer for an expanded bulk petroleum terminal and storage facility. The project involved conversion of the existing process infrastructure to permit a change of product flow direction through the existing facilities. The new facilities incorporated the state-of-the-art closed loop vapour recovery systems, marine and railcar loading arms, and 4 km of liquid and vapour conveyance pipelines. The expanded facilities could unload a 45,000 DWT tanker and load 18 railcars simultaneously.

## **Enbridge | Northern Gateway Peer Review | Kitimat, British Columbia**

Project Engineer for the conceptual design of liquid handling and the fire protection systems at the wharf. The proposed liquid handling system included marine loading arms, and vapour recovery system while the fire protection system included foam concentrate storage tank, foam generation system, elevated monitors and hydrants.

## **Apache Corporation | Kitimat LNG Project | Kitimat, British Columbia**

Project Consultant for the review of the conceptual process designs and mechanical layouts of the proposed LNG facility in Kitimat, BC. In addition, conducted the preliminary assessment of various utility (water, wastewater, natural gas, electricity, and fire protection) requirements for two construction camps for a projected construction crew of 2,500.







Office Location: Vancouver, BC

Length of Experience: 40 Years

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## Summary

For over 40 years, Dr. Isaacson has served as a specialist consultant on a wide variety of coastal and ocean engineering projects for government agencies, major oil companies, consulting engineering companies and law firms. His work has resulted in the preparation of over 250 reports or major report sections and has earned him a reputation as a respected subject matter expert.

His expertise covers a broad spectrum of applications, including: requirements and design of marinas, breakwaters and wharves; hydraulic model tests; environmental load predictions; sedimentation studies for marinas and beaches; design wind, wave and current predictions; tsunami and hurricane risk assessments and impact studies; landslide-generated waves in reservoirs; and motion response analyses of floating structures.

Projects have been carried out both in a review capacity and a detailed engineering capacity.

# Michael Isaacson – Selected Experience

## **Tsimshian Environmental Stewardship Authority | Review of Hydrodynamic Modelling for the PNWLNG Project | Prince Rupert, British Columbia**

Michael was engaged by the Tsimshian Environmental Stewardship Authority, a partnership of the Metlakatla, Gitxaala, Kitselas, Kitsumkalum and Gitga'at Nations, to review the hydrodynamic modelling study of the potential effects of marine structures on hydrodynamics and sedimentation adjacent to and over Flores Bank, BC.

## **Canadian Standards Association | Design, Construction and Installation of Fixed Offshore Structures | Canada**

Michael has played a leadership role in the development of codes and standards for fixed offshore structures in Canada for over 30 years, including leading studies related to the performance of the Hibernia offshore oil platform on Canada's east coast.

## **Canpotex Terminals Ltd. | Seismic and Tsunami Risk Study | Prince Rupert, British Columbia**

Coastal processes lead for a study evaluating the risk of tsunami flooding at sites at Prince Rupert, BC, North Vancouver, BC, and Portland, OR.

## **Expert Panel on Science Issues Related to Oil and Gas Activities, Offshore British Columbia**

Michael was an expert advisor to the Royal Society of Canada Expert Panel on Science Issues Related to Oil and Gas Activities, Offshore British Columbia on issues related to waves, currents and tsunamis.

## **Tsunami Impacts on Moored Vessels | Kitimat, British Columbia**

Contribution to a study of the impacts of a landslide-induced tsunami on mooring lines and ship motions of moored vessels at a proposed terminal.





# **W Michael Cowdell - Project Engineer & TERMPOL Lead**



Office Location: Vancouver, BC

Length of Experience: 15 Years

## **Summary**

Michael is a professional engineer with 15 years of experience on some of the most complex infrastructure projects proposed in Canada, providing technical oversight, strategic advice and assistance with community engagement. He has a broad technical background in maritime port and terminal planning as well as the design, construction, and inspection of marine and industrial structures. He has developed a thorough understanding of the regulatory approval processes for major projects and working as part of large multi-disciplinary teams.

Through his work on Environmental Assessments and TERMPOL submissions, he has been challenged to develop procedures and policies to mitigate project risks. Mr. Cowdell is passionate about sharing knowledge with indigenous groups and the public through open and transparent engagement.

# Michael Cowdell – Selected Experience

## **Shell | LNG Canada TERMPOL | Kitimat, British Columbia**

As the Project Manager, Mr. Cowdell managed a team of marine experts including a subcontractor tasked with completing a marine navigational risk analysis. Mr. Cowdell has also been responsible for liaising with Transport Canada and the TERMPOL Review Committee and providing strategic advice to LNG Canada. Related work includes preparing studies assessing the safe operation of LNG carrier operation in Canadian waters to and from Kitimat. The team facilitated a HAZID with indigenous groups and marine experts from across North America and facilitated engagement sessions with indigenous groups in Prince Rupert, Kitimat, Kitimaat Village, and Vancouver.

## **Enbridge | Northern Gateway Pipelines – Marine Terminal | Kitimat, British Columbia**

Between 2009 and 2015, Mr. Cowdell has supported Northern Gateway by managing marine terminal and marine operations issues throughout the Project's TERMPOL Review Process and regulatory review by the Joint Review Panel, which represented the National Energy Board and Canadian Environmental Assessment Authority. Mr. Cowdell managed the response to hundreds of information requests related to marine operations and marine terminal related issues as part of Northern Gateway's Application to the NEB Joint Review Panel.

## **Chevron Canada | Refinery Wharf Modifications | Burnaby, British Columbia**

Project Manager for a feasibility study looking at improving functionality and safety on the wharf used for the loading and unloading of petrochemical products for the Chevron Refinery in Burnaby.

## **BC Ferry Services Inc. | Northern Routes Ferry Terminal | Prince Rupert, British Columbia**

Designed a new berthing dolphin for ferry terminal upgrades at Prince Rupert and Skidegate on the Queen Charlotte Islands. The berthing dolphin was designed for the new ferry Northern Adventure which has a 9,925 gross tonnage.





# Chris Anderson - Marine Operations & Regulatory Expert



Office Location: Vancouver, BC

Length of Experience: 40 Years

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## Summary

Chris is a master mariner and port planning/operations specialist with decades of proven maritime experience, including: eight years of sea-going; three years of direct port operations; two years of port construction; and 25 years of consulting experience on international port sector projects. He has been responsible for all aspects of the operational evaluation and functional planning of two major port/marine transportation projects: the container terminal and regional harbour facilities development completed in 1980 at the Port of Tanjung Priok in Indonesia; the multipurpose port development completed in 1985 at Port Mohammed Bin Qasim in Karachi, Pakistan.

His direct seagoing experience includes 6 years of worldwide trade in bulk liquid tankers, with responsibility for ship navigation and cargo handling operations.

He has been involved in the design of ship access channels and aids to navigation systems, and has substantial experience in port and marine transportation logistics worldwide.

# Chris Anderson – Selected Experience

## **Enbridge | Northern Gateway Pipelines – Marine Terminal | Kitimat, British Columbia**

Chris was employed by Enbridge as Marine Advisor for the development of a two-berth oil terminal facility and directed the marine related shipping operations, terminal engineering and environmental related studies required for the Canadian National Energy Board filing and the Transport Canada TERMPOL submission.

## **Terasen Gas | LNG Ship Navigation | British Columbia**

Specialist consultant providing technical evaluation of the viability of LNG ship navigation to a proposed new terminal facility in a confined Canadian West Coast inlet.

## **Prince Rupert Port Authority | Container Berth Assessment | Prince Rupert, British Columbia**

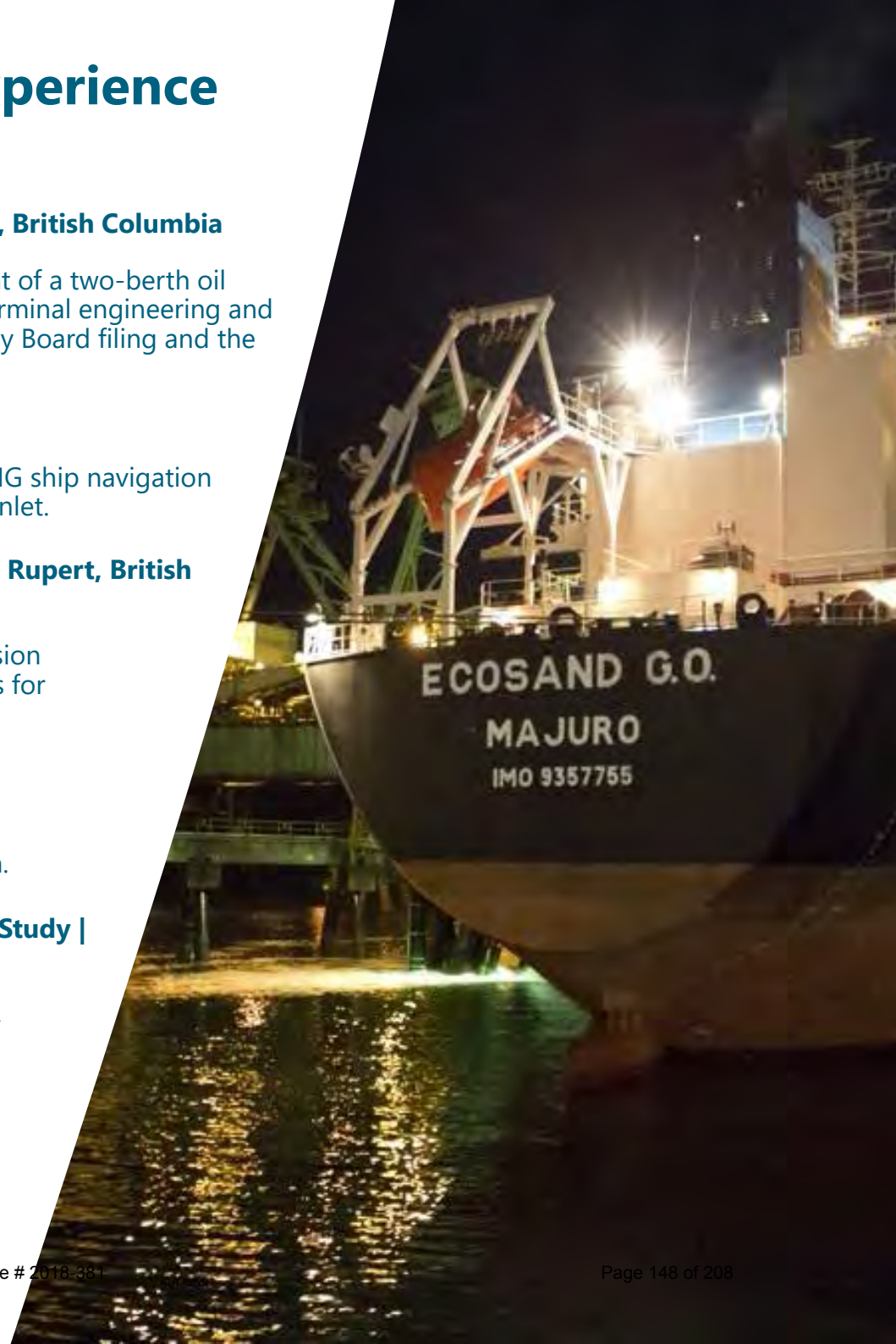
Specialist consultant providing assessment of the impact of port expansion development on ship safety in transit, berthing and mooring operations for facilities expansion at the Port of Prince Rupert.

## **Inco | Shipping Regulations | Worldwide**

Specialist consultant providing an assessment of the impact of shipping regulations (SOLAS, MARPOL, the CSA etc.) on ship and terminal design.

## **Puerto Rico Harbor Authority | Port Redevelopment & Navigation Study | Puerto Rico**

Port consultant assessing the requirements for alternative port facilities, and the impact on ship navigation transits within San Juan harbour to accommodate redevelopment of existing commercial ship berths.





# Steve Scalzo - Tug Operations Expert



Office Location: Seattle, WA

Length of Experience: 40 Years

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## Summary

Steve is the former Chief Operating Officer of Foss Marine Holdings, Inc. Steve joined Foss Maritime, a subsidiary of Foss Marine Holdings, in 1975. In his career at Foss Maritime, he held a variety of positions including Port Captain, General Manager of Marine Operations, and Senior Vice President of Operations. Steve assumed the position of President and CEO of Foss Maritime in 1999.

He is a graduate of the United States Merchant Marine Academy and received a Master's degree in Law and Commerce from Gonzaga University. Steve is a past member of the Marine Board of the National Research Council and he is active in international, national and local public policy, legislative and regulatory issues affecting marine transportation safety, including service as past chairman of the U.S. Coast Guard Towing Safety Advisory Committee and the State of Washington Puget Sound Marine Safety Committee. Steve has also served as the Chairman of the American Waterway Operators, the tug & barge industry national trade association. Steve is currently a Board member of the Coast Guard Foundation, and the Executive Committee of the National Academies' Transportation Research Board.



Office Location: Vancouver, BC

Length of Experience: 40 Years

### Summary

Captain Read is a marine terminal executive with over 40 years experience as a senior manager of stevedoring operations and common user, multi purpose marine terminal facilities located at ports on Canada's West Coast. His expertise includes the planning and technical evaluation of port projects at the feasibility, development and operational levels. This includes evaluating the efficiency of cargo handling systems at the conceptual stage of the development of port facilities, defining operational, equipment and system requirements, assessing infra structure requirements, evaluating cargo traffic characteristics and structuring management, staffing and organizational requirements for the efficient operation of port facilities.

For ten years, Captain Read was the General Manager of Fairview Terminal in Prince Rupert, the largest multi-purpose forest products terminal located in the Port of Prince Rupert and the northern region of Canada's west-coast.

Captain Read was also General Manager of Cargo Operations for Canadian Stevedoring Co. Ltd. and led the daily operations at the company's nineteen ports located on Canada's West Coast.



# Selected Experience





# W Selected Experience



## **BHP Billiton Canada Inc. - Potash Export Terminal Independent Review and Operational Planning**

Westmar completed a Peer Review and Capital Effectiveness Assessment of the FEL 3 level study for a \$750 M USD (approx.) Potash export terminal. The assignment included; assistance with terminal design concepts, contracting strategy, capital cost estimates and execution plan and schedule.

Westmar also completed several studies in support of the operational planning for a new marine export terminal to be located on the West Coast of North America. Issues examined included industrial relations, automation, logistic chain management systems, labour costs in different jurisdictions and evaluation of technical trade-off studies completed by the design engineering consultant.



## **Northern Gateway Pipelines (Enbridge) – Kitimat Marine Terminal Independent Review and Owner's Engineering**

Westmar completed a Peer Review of the marine terminal design for the NGP Terminal at Kitimat, British Columbia in advance of the final project design and budget being accepted by Management.

Westmar's experts also participated in the project as: expert witness on the NEB Joint Review Panel's Engineering and Marine Transportation panels; and design review of the marine components of the proposed Kitimat terminal and preparation of the TERMPOL submission. The work included co-ordination of the marine components of the NEB filing.



## **Nisga's Lisims Government – Independent Review of Northern BC Dry Bulk Terminal**

Westmar completed a review of a proposed investment opportunity comprised of a new marine dry bulk terminal within the Nisga's Lisims Government traditional lands, which is located in northern British Columbia along the coast near the border with Alaska.

The marine dry bulk terminal was reviewed for technical and financial feasibility, including marine navigation, structural adequacy for the design criteria such as vessel size and seismic performance.



# W Selected Experience



## **Ridley Terminals Inc. – Terminal Expansion Planning**

Westmar is currently engaged by Ridley Terminals to support ongoing expansion plans covering a number of products including both dry bulk and liquid bulk. The work includes engaging with PRPA, CN, and other parties that are planning developments on Ridley Island.

Westmar's team has supported Ridley Terminals for over 35 years going back to the original construction of the terminal. Recently, our team members assisted Ridley Terminals to engage with AltaGas to create the ongoing LPG export expansion.



## **Vale Technology Development Canada Limited – Long harbour Hydrometallurgical Processing Plant**

Westmar was engaged as part of a team of other specialists to complete an assessment of the execution status of the Long harbour Hydrometallurgical Processing Plant project, a multi-billion dollar capital project at approximately the 50% complete stage.

The assessment was focused on identifying project risks, estimating the remaining construction period and the total expected project cost.



## **EMR Capital – Independent Review of Logistics for Northern BC Mine**

In support of a potential capital investment, Westmar was engaged by ERM capital to conduct an independent review and assessment of the feasibility, risk and cost of the transportation logistics for a new gold/lead/zinc mine located in a remote area of northern British Columbia.





"We are dedicated to providing our clients with the very best in advisory services. Clients and their projects face many challenges and we know from experience the value that a reliable, trusted advisory services provider can deliver. Our mission is to empower our clients and see them succeed. We look forward to each challenge and treat our client's objectives as our own."

Michael Cowdell, MEng, PEng  
President  
Westmar Advisors  
[mcowdell@westmaradvisors.com](mailto:mcowdell@westmaradvisors.com)



## **Appendix C: Standard Terms and Conditions**

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# Westmar Advisors Inc.

## Standard Terms of Engagement

Date: June 29, 2018

Harbour Green Dock - Enforcement Options

Client: Board of Parks & Recreation

Address: 2099 Beach Avenue, Vancouver, BC V6G 1Z4

s.21(1)



s.21(1)

**Signatures:**

**Client**

**Westmar Advisors Inc.**

Per: \_\_\_\_\_

Per: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

(CDN/2018-03-14)

From: ["Daniel Leonard" <dleonard@westmaradvisors.com>](mailto:dleonard@westmaradvisors.com)

To: ["Nayeri, Ali" <Ali.Nayeri@vancouver.ca>](mailto:Ali.Nayeri@vancouver.ca)

Date: 7/3/2018 5:06:19 PM

Subject: RE: Harbour Green Dock - Enforcement Options

Thanks, Ali.

Peter is based in Victoria and so we could potentially have a kick-off meeting by phone in order to speed things along. Both Peter and I have visited the site before and you were kind enough to allow my to view the facility inside the gates in April.

It would be great if we could discuss at a meeting what the City's other marine facilities are doing with respect to enforcement and whether we should reference any of these practices in our memo.

Regards,  
Daniel

**Daniel Leonard, P.Eng.**

Vice President

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**From:** Nayeri, Ali <Ali.Nayeri@vancouver.ca>

**Sent:** July 3, 2018 4:31 PM

**To:** Daniel Leonard <dleonard@westmaradvisors.com>

**Cc:** Muntasir, Sardar <Sardar.Muntasir@vancouver.ca>; Michael Cowdell <mcowdell@westmaradvisors.com>

**Subject:** RE: Harbour Green Dock - Enforcement Options

Hi Daniel,

I've received approval to proceed with this. Our procurement group will be in touch shortly to set up the PO. However, given the time constraints, I wanted to ask you get started right away. Let me know when is the earliest time you are available for a meeting and I can try and set something up. We have put up fencing which make access a bit harder, but if you think there is value to a site visit, we could meet there.

Many thanks,  
Ali

---

**From:** Daniel Leonard [<mailto:dleonard@westmaradvisors.com>]

**Sent:** Friday, June 29, 2018 1:24 PM

**To:** Nayeri, Ali

**Cc:** Muntasir, Sardar; Michael Cowdell

**Subject:** RE: Harbour Green Dock - Enforcement Options

Hello Ali,

Thank you for your email and your call yesterday.

Please find attached our proposal to complete the requested options assessment. Please do not hesitate to contact me



should you have any questions or require additional information or clarification.

Regards,  
Daniel

**Daniel Leonard, P.Eng.**

Vice President

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**From:** Nayeri, Ali <[Ali.Nayeri@vancouver.ca](mailto:Ali.Nayeri@vancouver.ca)>

**Sent:** June 27, 2018 5:02 PM

**To:** Mike Warren <[mwarren@iccmarine.com](mailto:mwarren@iccmarine.com)>; Daniel Leonard <[dleonard@westmaradvisors.com](mailto:dleonard@westmaradvisors.com)>

**Cc:** Muntasir, Sardar <[Sardar.Muntasir@vancouver.ca](mailto:Sardar.Muntasir@vancouver.ca)>

**Subject:** Harbour Green Dock - Enforcement Options

Hi Mike and Daniel,

s.13(1)

We know that there were design issues with the dock that were exacerbated by the unauthorized uses of the dock by large commercial vessels. One of the concerns raised was that we could go through the exercise of repairing and doing the upgrades that you had proposed, only to end up in a similar situation if we continue to have unauthorized vessels operating/berthing at this location. That is why we have been asked to look into options and costs associated for enforcement. We think that we have two options:

s.13(1)

I was wondering if you have any experience with designing/implementing either option and if you can think of any solutions that would be feasible for this site. We are especially interested in a design solutions that do not require additional manpower and only minor changes to the dock. The idea is to give the board an idea of if recreational enforcement is possible/feasible and what it could potentially look like.

We hope that with this information we can get a clear direction for the design and retrofit of the dock this summer.

Many thanks,  
Ali

**Ali Nayeri | Park Development | Board of Parks & Recreation**

2099 Beach Avenue, Vancouver, BC V6G 1Z4

Tel: 604-257-8461 | Cell: 604-353-1896

Email: [ali.nayeri@vancouver.ca](mailto:ali.nayeri@vancouver.ca)

From: "[Nayeri, Ali](mailto:Ali.Nayeri@vancouver.ca)" <Ali.Nayeri@vancouver.ca>  
To: "[Wilton, Shauna](mailto:shauna.wilton@vancouver.ca)" <shauna.wilton@vancouver.ca>  
Date: 8/25/2017 9:41:21 AM  
Subject: RE: Harbour Green Dock - Evaluation for commercial operation

Hi Shauna,

I spoke with our consultant and they are going to complete the inspection by the end of day today. Once the inspection is complete, he is going to prepare an email with the preliminary results and highlight any safety concerns. The formal report will follow towards the end of next week. I hope this timeline works.

Regards,  
Ali

---

**From:** Wilton, Shauna  
**Sent:** Friday, August 25, 2017 8:25 AM  
**To:** Nayeri, Ali  
**Cc:** Araujo, Sev; Mack, Tiina  
**Subject:** FW: Harbour Green Dock - Evaluation for commercial operation  
**Importance:** High

Hi Ali,

Just to correct something in the email below, the operator is ceasing operations Aug 31<sup>st</sup> and we are getting a ton of public pressure so I need an answer ASAP, well before the 31<sup>st</sup>. I don't want us to give the operator permission to extend beyond that date and then find out it's not safe and have to rescind that.

Thanks,  
Shauna

---

**From:** Araujo, Sev  
**Sent:** Thursday, August 24, 2017 6:30 PM  
**To:** Wilton, Shauna  
**Subject:** FW: Harbour Green Dock - Evaluation for commercial operation

FYI

**Sev Araujo**  
**Manager, Commercial Operations**  
Vancouver Park Board, City of Vancouver  
o. 604 257 8436 / f. 604 257 8427  
Email: [Sev.Araujo@vancouver.ca](mailto:Sev.Araujo@vancouver.ca)

---

**From:** Nayeri, Ali  
**Sent:** Thursday, August 24, 2017 10:57 AM  
**To:** Mike Hanson  
**Cc:** Mack, Tiina; Augustine, Ray; Araujo, Sev; Normann, Howard  
**Subject:** RE: Harbour Green Dock - Evaluation for commercial operation

That's great Mike.  
Let's proceed and get the inspection underway. I've sent you the vessel and service information in a separate email. I sent you the as-built drawings yesterday afternoon as well.  
Thanks for making the resources available on a short notice.  
Regards,  
Ali



**From:** Mike Hanson [<mailto:hansonm@ae.ca>]  
**Sent:** Thursday, August 24, 2017 10:54 AM  
**To:** Nayeri, Ali  
**Cc:** Mack, Tiina; Augustine, Ray; Araujo, Sev; Normann, Howard  
**Subject:** Re: Harbour Green Dock - Evaluation for commercial operation

Hi Ali,

We can complete a high level review of the ferry loading compared to the original design specifications as part of the s.21(1)

Mike

On Aug 24, 2017, at 10:42 AM, Nayeri, Ali <[Ali.Nayeri@vancouver.ca](mailto:Ali.Nayeri@vancouver.ca)> wrote:

Hi Mike,

Would the report provide an opinion on short term operational safety for the ferry operation? We will have vessel and max passenger loads for each of the scheduled 3 drop off and 3 pickups/day in next couple of days. We have told the operator that we will get back to them by August 31 on any issues with their continued operation, so we would appreciate your help on this.

Regards,  
Ali

---

**From:** Mike Hanson [<mailto:hansonm@ae.ca>]  
**Sent:** Wednesday, August 23, 2017 4:07 PM  
**To:** Nayeri, Ali  
**Cc:** Mack, Tiina; Augustine, Ray  
**Subject:** Re: Harbour Green Dock - Evaluation for commercial operation

Hi Ali,

As discussed we can complete an inspection of the harbour green dock and summary letter for s.21(1)

The letter would include a summary of our findings, repair recommendations with costs, and safety concerns.

I have not had a chance to discuss costs for further analysis and review of the original design with my supervisor yet, however I'm hoping to get these costs to you within the next week.

I will also try to get a formal scope change put together soon.

Let me know if this is acceptable. As mentioned I'm off for two weeks however I can have another colleague inspect the structure either tomorrow or Friday.

Regards,  
Mike

On Aug 23, 2017, at 11:58 AM, Nayeri, Ali <[Ali.Nayeri@vancouver.ca](mailto:Ali.Nayeri@vancouver.ca)> wrote:

Hi Mike,

There has been some unauthorized commercial usage of the Harbour Green dock. We are trying to deal with this, but there is concern about liability even though the operators are not authorized by the Park Board.

Furthermore, in the medium-term, we would like to be able to allow commercial operators to apply for a permit and use the docks, if possible.

That is why, we've been asked to revisit the Harbour Green Dock to determine if the dock in its current state is safe for (1) access by the public and (2) use by commercial ferry services. Our structures and fabrication group has done some repairs to the dock since the last inspection, so we would want to re-inspect and revise the list of repairs as well. The report should also include what is needed in both work and costs to make it safe for commercial operators.

Our senior management want the assessment and the draft report by the end of next week. Would you be able to draft a change order and forward it to me today?

Regards,  
Ali

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From: ["Mack, Tiina" <tiina.mack@vancouver.ca>](mailto:tiina.mack@vancouver.ca)  
To: ["Araujo, Sev" <Sev.Araujo@vancouver.ca>](mailto:Sev.Araujo@vancouver.ca)  
Date: 6/12/2018 3:01:35 PM  
Subject: s.13(1)

No need to apologize: but beware the GM's office!

---

**From:** Araujo, Sev  
**Sent:** Tuesday, June 12, 2018 3:00 PM  
**To:** Mack, Tiina  
**Cc:** Nayeri, Ali  
**Subject:** s.13(1)

I am so far behind.

I won't have final draft done until tomorrow am

I am sorry

**Sev Araujo**  
**Manager, Commercial Operations**  
Vancouver Park Board, City of Vancouver  
o. 604 257 8436 / f. 604 257 8427  
Email: [Sev.Araujo@vancouver.ca](mailto:Sev.Araujo@vancouver.ca)

---

**From:** Mack, Tiina  
**Sent:** Tuesday, June 12, 2018 1:31 PM  
**To:** Araujo, Sev  
**Cc:** Nayeri, Ali  
**Subject:** s.13(1)

Hi Sev,

s.13(1)

Thanks Sev

Tiina

---

**From:** Nayeri, Ali  
**Sent:** Monday, June 11, 2018 5:55 PM  
**To:** Mack, Tiina  
**Subject:** s.13(1)

Hi Tiina

s.13(1)

Thanks,





From: ["Wilton, Shauna" <Shauna.Wilton@vancouver.ca>](mailto:Shauna.Wilton@vancouver.ca)  
To: ["Chan, Cheryl" <Cheryl.Chan@vancouver.ca>](mailto:Cheryl.Chan@vancouver.ca)  
["Mack, Tiina" <tiina.mack@vancouver.ca>](mailto:tiina.mack@vancouver.ca)  
Date: 6/25/2018 8:31:54 AM  
Subject: s.13(1)

Thanks Cheryl. Tiina and Sev have the plan and I will touch base when I'm back.

Have a great week all!  
Shauna

-----Original Message-----

From: Chan, Cheryl  
Sent: Saturday, June 23, 2018 8:50 AM  
To: Mack, Tiina  
Cc: Nayeri, Ali; Hutch, Dave; Araujo, Sev; Wilton, Shauna  
Subject: s.13(1)

Hi all,

s.13(1)

Thanks,  
c.

~~~~~  
Cheryl Chan  
Office of the General Manager  
Vancouver Park Board

2099 Beach Avenue  
Vancouver, BC V6G 1Z4  
t: 604.257.8451 m: 604.313.0629  
e: Cheryl.Chan@vancouver.ca

On Jun 22, 2018, at 8:40 PM, Mack, Tiina <tiina.mack@vancouver.ca> wrote:

Hi Ali and also Dave

s.13(1)

We will need you Ali, to represent Park Dev that night!

s.13(1)

Thanks Ali and Dave let's talk Tuesday.

Tiina

Sent from my iPhone

> On Jun 22, 2018, at 5:03 PM, Nayeri, Ali <Ali.Nayeri@vancouver.ca> wrote:

>

> Hi Tiina and Sev,

>

s.13(1)

>

> I hope the date and time works.

>

> Thanks,

> Ali

>

> <meeting.ics>

From: ["Nayeri, Ali" <Ali.Nayeri@vancouver.ca>](mailto:Ali.Nayeri@vancouver.ca)

To: ["Mike Warren" <mwarren@iccmarine.com>](mailto:mwarren@iccmarine.com)

Date: 6/6/2018 7:24:59 PM

Subject: RE: Harbour Green Dock Repair Project - Current Status?

Hi Mike,

Thanks for the message. We are still in the process of evaluating our options and seeking input from our board on the direction they would like to take with this structure.

I will let you know as soon as a decision is made about the next steps.

Thanks,  
Ali

---

**From:** Mike Warren [mailto:mwarren@iccmarine.com]

**Sent:** Monday, May 28, 2018 11:12 AM

**To:** Nayeri, Ali

**Subject:** Harbour Green Dock Repair Project - Current Status?

Ali,

Just a short note to ask what the current status is on the Harbour Green Dock project?

Regards  
Mike

Mike Warren

Business Development Manager



**ICC Marine Services Ltd.**

16 Fawcett Road, Suite 102

Coquitlam, BC Canada V3K 6X9

Office: 604.527.2446

Fax: 604.527.8894

Cell: 778.833.1171

[mwarren@iccmarine.com](mailto:mwarren@iccmarine.com)

[www.iccmarine.com](http://www.iccmarine.com)



From: ["Mack, Tiina" <tiina.mack@vancouver.ca>](mailto:tiina.mack@vancouver.ca)  
To: ["Nayeri, Ali" <Ali.Nayeri@vancouver.ca>](mailto:Ali.Nayeri@vancouver.ca)  
Date: 6/7/2018 4:38:49 PM  
Subject: RE: Harbour Green Dock

Sounds good thanks – I'm not in tomorrow, so no rush

---

**From:** Nayeri, Ali  
**Sent:** Thursday, June 07, 2018 4:27 PM  
**To:** Mack, Tiina  
**Subject:** RE: Harbour Green Dock

Hi Tiina,

I didn't use our standard template for the presentation, so I was planning to migrate the presentation into our board presentation template later this afternoon. I will send you the link to that presentation so that you can get it in the order that is appropriate.

Thanks,  
Ali

---

**From:** Mack, Tiina  
**Sent:** Thursday, June 07, 2018 4:23 PM  
**To:** Nayeri, Ali  
**Subject:** RE: Harbour Green Dock

Hi Ali,

Please can you send me the link to the presentation file location? I can start turning it into a Board presentation on Monday.

Thank you

Tiina

---

**From:** Nayeri, Ali  
**Sent:** Wednesday, June 06, 2018 3:03 PM  
**To:** Storer, Paul  
**Cc:** Araujo, Sev; Mack, Tiina  
**Subject:** RE: Harbour Green Dock

Hi Paul,

Thanks for getting in touch with us. Please find attached a presentation we had prepared that provides a bit of background on the dock and the current issues.

We have a couple of report that I would be happy to share if you would like to review the details.

Best regards,  
Ali

---

**From:** Storer, Paul  
**Sent:** Tuesday, June 05, 2018 7:59 AM  
**To:** Araujo, Sev; Mack, Tiina; Nayeri, Ali  
**Subject:** RE: Harbour Green Dock

Great – thanks. Any info would be helpful.

Cheers,

Paul

---

**From:** Araujo, Sev  
**Sent:** Monday, June 04, 2018 9:34 PM  
**To:** Storer, Paul; Mack, Tiina; Nayeri, Ali  
**Subject:** Re: Harbour Green Dock

s.13(1)

s.13(1)

s.13(1)

s.13(1)

Sev

Please excuse the brevity of this email, it is being sent from my iPhone

On Jun 4, 2018, at 8:37 PM, Storer, Paul <[paul.storer@vancouver.ca](mailto:paul.storer@vancouver.ca)> wrote:

Hi Sev,

Jerry wants to have a discussion about what to do (and who does it) with Harbour Green Dock. Do you have any technical info about the issues?

Thanks,

Paul

Paul Storer P.Eng.  
Manager of Transportation Design | City of Vancouver  
p: 604 873 7693  
m: 604 763 5619  
[paul.storer@vancouver.ca](mailto:paul.storer@vancouver.ca)



From: "[Nayeri, Ali](mailto:Ali.Nayeri@vancouver.ca)" <[Ali.Nayeri@vancouver.ca](mailto:Ali.Nayeri@vancouver.ca)>  
To: "[Mike Hanson](mailto:hansonm@ae.ca)" <[hansonm@ae.ca](mailto:hansonm@ae.ca)>  
Date: 8/25/2017 5:22:31 PM  
Subject: RE: Harbour Green Park - Pier inspection: safety hazards

Thanks Mike for making yourself available.

Justin will be coordinating the repairs. I don't think there will be any questions about the repairs but if there are concerns, they will reach out to your colleagues.

I will discuss the mooring wells issue with Tiina and our commercial operations colleagues. We are now more confident that the many issues and repairs that we've had to do have some connection to the commercial operation here. So we will definitely want to have some analysis completed if this operation is completed so that we make robust retrofits that can accommodate this type of use and traffic. We will likely have to think about some signage as well to tell user how to moor their vessels and protect the dock.

Regards,  
Ali

---

**From:** Mike Hanson [<mailto:hansonm@ae.ca>]  
**Sent:** Friday, August 25, 2017 3:54 PM  
**To:** Nayeri, Ali  
**Subject:** Re: Harbour Green Park - Pier inspection: safety hazards

The safety defects should be straight forward, however we should discuss how you would like to proceed with the mooring well and concrete float repairs when your back as these are more complex and would require some engineering design

Mike

On Aug 25, 2017, at 3:48 PM, Nayeri, Ali <[Ali.Nayeri@vancouver.ca](mailto:Ali.Nayeri@vancouver.ca)> wrote:

Hi Mike,

Would you be able to forward us the photographs referenced in Natalya's email.

At first glance it seems the issues that have been identified do not involve complicated fixes and are probably within the scope of work that our in-house operation staff can handle. I would appreciate it if you could let us know if you think any of the deficiencies involves a potentially more complex repair process.

I will be away next week, so my colleague Justin Dykstra has kindly agreed to coordinate the completion and reporting of the assessment. He is copied on this message. You can also reach him at 604-257-8403.

Regards,  
Ali

---

**From:** Mike Hanson [<mailto:hansonm@ae.ca>]  
**Sent:** Friday, August 25, 2017 3:12 PM  
**To:** Nayeri, Ali  
**Cc:** Natalya Kucherenko; Niall McPherson  
**Subject:** Fwd: Harbour Green Park - Pier inspection: safety hazards

Hi Ali,

Please find a brief summary of the safety concerns below

Give me a call if you would like to discuss. As a minimum I would address the falling hazard from the pier cap



immediately, which could be as simple as removing the displaced cap for the time being.

In general our inspectors noted that boats are causing a lot of damage, and that the floats, curbs and mooring wells have become considerably worse since our last inspection in 2016.

Regards  
Mike

Begin forwarded message:

**From:** "Natalya Kucherenko" <[kucherenkon@ae.ca](mailto:kucherenkon@ae.ca)>  
**To:** "Mike Hanson" <[hansonm@ae.ca](mailto:hansonm@ae.ca)>  
**Subject:** Harbour Green Park - Pier inspection: safety hazards

Hi,

AE completed a detailed inspection of Harbour Green Park Pier on August 24, 2017 and there several potential safety concerns that we would like to address immediately prior issuing the complete report.

1. The railing on the east side of the dock has a missing top handrail and also has fractured midrail section (ref. photos 1 and 2 in attachment)
- The railing on the west side of the dock has a broken/disconnected post (ref. photos 3 and 4)
- One mooring pile located in the middle of the dock has a displaced and disconnected pilecap steel plate that can cause potential falling hazard to pedestrians walking though the dock (ref. photo 5) .
- Broken and displaced 2m timber curb is noted on the dock. The rest of the curb is also damaged at several locations that can be as the result of the different size boats mooring directly to the curb and not to the mooring cleats. Several boats were documented to be moored to the curb during 1.5 h long inspection (ref. photos 6 and 7).

The work items listed above require immediate attention as they are identified as the potential safety hazards to frequent dock user's.

We will further identify the repair items and summarize them in our report that will be issued to CoV next week.

Should you have any questions or require any further information, please do not hesitate to contact me.

Regards,  
Natalya

**Natalya Kucherenko, M.Eng., EIT**  
Bridge Engineer  
Associated Engineering (B.C.) Ltd.  
Suite 300 - 4940 Canada Way, Burnaby, BC V5G 4M5  
Tel: 604.293.1411 Direct: 236.317.2327

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**We're Moving! Please note that after August 26, 2017, we'll be moving to #500 - 2889 East 12th Avenue, Vancouver. Our main switchboard number will remain the same.**

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<image006.jpg>

<image007.jpg>

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From: ["Foster, Ian" <Ian.Foster@vancouver.ca>](mailto:Ian.Foster@vancouver.ca)

To: ["Araujo, Sev" <Sev.Araujo@vancouver.ca>](mailto:Sev.Araujo@vancouver.ca)

["Nayeri, Ali" <Ali.Nayeri@vancouver.ca>](mailto:Ali.Nayeri@vancouver.ca)

Date: 8/28/2017 6:32:42 AM

Subject: RE: Harbour Green Park - Pier inspection: safety hazards

Good Morning , I have created the work order to make noted repairs ( as shown in attached pictures ) as I was on site last week and noted them, we should have the rails repaired and back in place by Tuesday / Wednesday

-----Original Message-----

From: Araujo, Sev

Sent: Friday, August 25, 2017 9:04 PM

To: Nayeri, Ali

Cc: Wilton, Shauna; Mack, Tiina; Dykstra, Justin; Augustine, Ray; Foster, Ian; Horne, Tom; Normann, Howard

Subject: Re: Harbour Green Park - Pier inspection: safety hazards

Thank you Ali. Leisure user or commercial I'm happy issues id'd are being addressed.

The 5 ton vessels for the commuter service are taking a toll on the piling and docks and I'm happy to participate in those conversations

Again thank you

Sev

Please excuse the brevity of this email, it is being sent from my iPhone

> On Aug 25, 2017, at 5:26 PM, Nayeri, Ali <Ali.Nayeri@vancouver.ca> wrote:

>

> Hi Sev,

>

> Sorry for resending this, but I realized that I did not see the photos embedded inside the email below. I also wanted to copy everyone so we all have the same information.

>

> I think we can complete the immediate repairs next week. Justin will talk to Tom and Ian to coordinate these repairs. We will need to have more conversation on additional repairs/modifications that are needed to upgrade the dock to allow for commercial operations so that we are not continuously having to repair it.

>

> I hope this meets your immediate needs in terms of safety assessment.

>

> Best regards,

> Ali

>

> From: Mike Hanson [mailto:hansonm@ae.ca]

> Sent: Friday, August 25, 2017 3:12 PM

> To: Nayeri, Ali



> Cc: Natalya Kucherenko; Niall McPherson

> Subject: Fwd: Harbour Green Park - Pier inspection: safety hazards

>

> Hi Ali,

>

> Please find a brief summary of the safety concerns below

>

> Give me a call if you would like to discuss. As a minimum I would address the falling hazard from the pier cap immediately, which could be as simple as removing the displaced cap for the time being.

>

> In general our inspectors noted that boats are causing a lot of damage, and that the floats, curbs and mooring wells have become considerably worse since our last inspection in 2016.

>

> Regards

> Mike

>

>

> Begin forwarded message:

> From: "Natalya Kucherenko"

> <kucherenkon@ae.ca<mailto:kucherenkon@ae.ca>>

> To: "Mike Hanson" <hansonm@ae.ca<mailto:hansonm@ae.ca>>

> Subject: Harbour Green Park - Pier inspection: safety hazards Hi,

>

> AE completed a detailed inspection of Harbour Green Park Pier on August 24, 2017 and there several potential safety concerns that we would like to address immediately prior issuing the complete report.

>

> 1. The railing on the east side of the dock has a missing top

> handrail and also has fractured midrail section (ref. photos 1 and 2

> in attachment) 2. The railing on the west side of the dock has a broken/disconnected post (ref. photos 3 and 4) 3. One mooring pile located in the middle of the dock has a displaced and disconnected pilecap steel plate that can cause potential falling hazard to pedestrians walking though the dock (ref. photo 5) .

> 4. Broken and displaced 2m timber curb is noted on the dock. The rest of the curb is also damaged at several locations that can be as the result of the different size boats mooring directly to the curb and not to the mooring cleats. Several boats were documented to be moored to the curb during 1.5 h long inspection (ref. photos 6 and 7).

> The work items listed above require immediate attention as they are identified as the potential safety hazards to frequent dock user's.

>

> We will further identify the repair items and summarize them in our report that will be issued to CoV next week.

>

> Should you have any questions or require any further information, please do not hesitate to contact me.

>

> Regards,

> Natalya

>

> Natalya Kucherenko, M.Eng., EIT  
> Bridge Engineer  
> Associated Engineering (B.C.) Ltd.  
> Suite 300 - 4940 Canada Way, Burnaby, BC V5G 4M5  
> Tel: 604.293.1411 Direct: 236.317.2327  
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subject=Unsubscribe+from+AE+-+CASL> at any time.  
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> We're Moving! Please note that after August 26, 2017, we'll be moving  
> to  
> #500 - 2889 East 12th Avenue, Vancouver. Our main switchboard number will remain the same.  
>  
>  
> [cid:C796B447-F487-491C-BFB1-FCED9CDE6748]  
> [cid:424BCE5C-C00B-4ED3-A7AE-338AC0F9B11D]  
> [cid:73F3702C-64A1-4A89-8834-A2DA0CDE9E25]  
> [cid:91766768-CE07-46F2-9555-A2851D7044F3]  
> [cid:D3680342-64A2-42BF-831C-A6D0FBAD5F0C]  
> [cid:B9FEB453-6AE4-4A38-BF10-C526B1A22D4F]  
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From: ["Mack, Tiina" <tiina.mack@vancouver.ca>](mailto:tiina.mack@vancouver.ca)  
To: ["Nayeri, Ali" <ali.nayeri@vancouver.ca>](mailto:ali.nayeri@vancouver.ca)  
Date: 5/28/2018 1:19:38 PM  
Subject: RE: Harbour Green Park Dock

Thank for following up on this Ali, I think we have done all we can.

Hopefully Ian and the rangers can keep an eye on this and make repairs to the fencing and signage in place until we have further direction

Cheers

Tiina

---

**From:** Nayeri, Ali  
**Sent:** Friday, May 25, 2018 7:35 PM  
**To:** Araujo, Sev  
**Cc:** Jung, Jenny; Collins, Tim; Koop, Donald; Mack, Tiina  
**Subject:** RE: Harbour Green Park Dock

Hi Sev,

I was going to send you a couple of my own photos of the fences yesterday evening but never got around to it.

Ian was not able to do anything else on the water side to keep people from accessing the dock, so we had not option but to put up higher fencing at the entrances. Someone had tried to even remove this fence on Wed/Thu. So now the panels are chained together and to the entry fence for additional security. I hope that is okay.

Thanks,  
Ali

---

**From:** Araujo, Sev  
**Sent:** Friday, May 25, 2018 5:15 PM  
**To:** Nayeri, Ali  
**Cc:** Jung, Jenny; Collins, Tim; Koop, Donald  
**Subject:** FW: Harbour Green Park Dock

Ali FYI

**Sev Araujo**  
**Manager, Commercial Operations**  
Vancouver Park Board, City of Vancouver  
o. 604 257 8436 / f. 604 257 8427  
Email: [Sev.Araujo@vancouver.ca](mailto:Sev.Araujo@vancouver.ca)

---

**From:** Collins, Tim  
**Sent:** Friday, May 25, 2018 4:43 PM  
**To:** Araujo, Sev  
**Subject:** Fwd: Harbour Green Park Dock

See the email stream below

Sent from my iPhone

Begin forwarded message:

**From:** "Jung, Jenny" <[jenny.jung@vancouver.ca](mailto:jenny.jung@vancouver.ca)>  
**To:** "Collins, Tim" <[Tim.Collins@vancouver.ca](mailto:Tim.Collins@vancouver.ca)>  
**Subject:** FW: Harbour Green Park Dock

Is the fencing going to remain until July 1?

---

**From:** Dodich, Frank  
**Sent:** Friday, May 25, 2018 3:11 PM  
**To:** Jung, Jenny  
**Cc:** Koop, Donald  
**Subject:** Harbour Green Park Dock

Hi Jenny,

I was by Harbour Green Park and saw that the wharf now has fencing around the gates/ramps (see attached photos).

Is this fencing set to stay in place on July 1? If so we do not require the signs from the sign shop.

If the fencing is set to stay then it will have to be adjusted and secured with tie wraps as the steel wire poses a hazard to the public as it has been installed.

Please advise so we can cancel the sign order.

Frank

**Frank Dodich | Manager, Special Event Public Safety**  
FASE | Engineering Services | City of Vancouver  
t. [604.257.8748](tel:604.257.8748) | c. [604.404.0334](tel:604.404.0334)  
[frank.dodich@vancouver.ca](mailto:frank.dodich@vancouver.ca)





From: ["Horne, Tom" <Tom.Horne@vancouver.ca>](mailto:Tom.Horne@vancouver.ca)

To: ["Nayeri, Ali" <Ali.Nayeri@vancouver.ca>](mailto:Ali.Nayeri@vancouver.ca)

Date: 9/22/2017 11:09:23 AM

Subject: RE: Use of Harbour Green dock for commercial activity temporarily

Hi Ali,

After reviewing this report I have several concerns about the repairs that are required. We are simply not set up with the correct equipment to carry out most of these repairs suggested. The boat and plane traffic in this area cause too much large wave action to do these repairs safely. In my opinion a marine repair company with the proper barge and crane to stabilize this float and ramps is required to do this work safely and efficiently. This barge would take the brunt of the wave action while stabilizing the float as the work is being done making for a much safer work environment. The mooring cleats that are broken can't be changed by my Carpenters as the through bolts are nudded way under the water line at the bottom of the float and simply can't be undone to change the broken cleats without a diver. The missing bullrail can't be replaced until the back and forth slack on the pilings is fixed because the rubber mats contact these bullrails knocking them loose/ off. Until the back and forth slack is fixed on the pilings the metal brackets will continue to pull out of these concrete floats. The metal fabrication and welding is the responsibility of the Structures and Fabrication shop so I will leave the comments about that work to Ian Foster.

**Thank you,**  
**Tom Horne**  
**City of Vancouver**  
**REFM Carpentry Superintendent**  
**Office: 604-257-8524**  
**Cell: 604-842-0194**

---

**From:** Nayeri, Ali

**Sent:** Wednesday, September 20, 2017 6:44 PM

**To:** Foster, Ian; Horne, Tom

**Cc:** Augustine, Ray; Mack, Tiina; Normann, Howard; Araujo, Sev; Dykstra, Justin

**Subject:** FW: Use of Harbour Green dock for commercial activity temporarily

Hi Ian and Tom,

I just wanted to thank you and Justin for fixing the issues that were identified by AE for the Harbour Green Dock.

AE has issued a draft of their inspection report (attached). I went to the dock yesterday to check the issues up close. Most of these have been addressed, but there are a few things still outstanding. There are a couple of critical issues that need to be addressed urgently, but I am not sure if we can do them in-house and how we can pay for them:

- ☐ Two pile brackets (Pile P6 and P9) will require replacement since the anchor bolts have come loose and the brackets have been heavily damaged. I have attached a video of conditions at P6 as well as two pictures from P9.
- ☐ Most of the mooring wells (P1, P3, P6, P7, P8, P9, P10, and P11) have one or more UHMW pads and timber rubrails missing. These need to be replaced urgently to prevent further damage to the concrete floats (see condition at P11).
- ☐ More mooring cleats are needed since all vessels just use the bullrail.
- ☐ AE has noted that lifting safety ladders must be installed at max. 30 m distances.
- ☐ AE has also noted that life rings, complete with stand and throw rope need to be provided at three locations along the dock.

I have marked up the issues that are not yet addressed on AE's report. I understand that a larger discussion needs to happen before we can take care of the more major items.



Kind regards,  
Ali

PS: apologies to Tiina and Sev for resending you the video. You can delete that attachment from the message.

---

**From:** Mike Hanson [<mailto:hansonm@ae.ca>]  
**Sent:** Friday, September 15, 2017 3:27 PM  
**To:** Araujo, Sev; Nayeri, Ali  
**Subject:** RE: Use of Harbour Green dock for commercial activity temporarily

Hi Sev, Ali,

Please find our report attached, let me know if you have any questions or concerns

Regards,  
Mike

---

**From:** Araujo, Sev [<mailto:Sev.Araujo@vancouver.ca>]  
**Sent:** Monday, August 28, 2017 5:56 PM  
**To:** Mike Hanson <[hansonm@ae.ca](mailto:hansonm@ae.ca)>  
**Subject:** RE: Use of Harbour Green dock for commercial activity temporarily

Excellent. Thanks again

**Sev Araujo**  
**Manager, Commercial Operations**  
Vancouver Park Board, City of Vancouver  
o. 604 257 8436 / f. 604 257 8427  
Email: [Sev.Araujo@vancouver.ca](mailto:Sev.Araujo@vancouver.ca)

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**From:** Mike Hanson [<mailto:hansonm@ae.ca>]  
**Sent:** Monday, August 28, 2017 4:35 PM  
**To:** Araujo, Sev  
**Subject:** Re: Use of Harbour Green dock for commercial activity temporarily

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Mike

On Aug 28, 2017, at 4:16 PM, Araujo, Sev <[Sev.Araujo@vancouver.ca](mailto:Sev.Araujo@vancouver.ca)> wrote:

Ps: just to confirm, the ramps were also inspected?

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**From:** Mike Hanson [<mailto:hansonm@ae.ca>]  
**Sent:** Monday, August 28, 2017 4:09 PM  
**To:** Araujo, Sev  
**Cc:** Natalya Kucherenko; Wilton, Shauna; Mack, Tiina; Dykstra, Justin; Augustine, Ray; Foster, Ian; Horne, Tom; Nayeri, Ali  
**Subject:** Re: Use of Harbour Green dock for commercial activity temporarily



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27' long, beam is 9', registered at 10,000lbs  
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docks, loads/unload up to 12 people, 6x/day per day

Thank you

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**Cc:** Wilton, Shauna; Mack, Tiina; Dykstra, Justin; Augustine, Ray; Foster, Ian; Horne, Tom  
**Subject:** FW: Harbour Green Park - Pier inspection: safety hazards

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I hope this meets your immediate needs in terms of safety assessment.

Best regards,  
Ali

**From:** Mike Hanson [<mailto:hansonm@ae.ca>]  
**Sent:** Friday, August 25, 2017 3:12 PM  
**To:** Nayeri, Ali  
**Cc:** Natalya Kucherenko; Niall McPherson  
**Subject:** Fwd: Harbour Green Park - Pier inspection: safety hazards

Hi Ali,

Please find a brief summary of the safety concerns below

Give me a call if you would like to discuss. As a minimum I would address the falling hazard from the pier cap immediately, which could be as simple as removing the displaced cap for the time being.

In general our inspectors noted that boats are causing a lot of damage, and that the floats, curbs and mooring wells have become considerably worse since our last inspection in 2016.

Regards  
Mike

Begin forwarded message:

**From:** "Natalya Kucherenko" <>  
**To:** "Mike Hanson" <[hansonm@ae.ca](mailto:hansonm@ae.ca)>  
**Subject:** Harbour Green Park - Pier inspection: safety hazards

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1. The railing on the east side of the dock has a missing top handrail and also has fractured midrail section (ref. photos 1 and 2 in attachment)
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The work items listed above require immediate attention as they are identified as the potential safety hazards to frequent dock user's.

We will further identify the repair items and summarize them in our report that will be issued to CoV next week.

Should you have any questions or require any further information, please do not hesitate to contact me.

Regards,  
Natalya

**Natalya Kucherenko, M.Eng., EIT**  
Bridge Engineer  
Associated Engineering (B.C.) Ltd.  
Suite 300 - 4940 Canada Way, Burnaby, BC V5G 4M5  
Tel: 604.293.1411 Direct: 236.317.2327

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From: "Nayeri, Ali" <Ali.Nayeri@vancouver.ca>

To: "Araujo, Sev" <sev.araujo@vancouver.ca>

Date: 9/19/2017 5:10:54 PM

Subject: RE: Use of Harbour Green dock for commercial activity temporarily

Attachments: Pile\_P6.MOV

Hi Sev,

I was at Harbour Green dock earlier today to check on the status of the repairs and confirm a couple of items that were included in AE's final inspection report. While I was there I saw a massive vessel approach the dock, which caused quite a bit of movement in the floats. I took a video showing how the floats were moving and banging against the mooring piles. A couple of minutes later, the vessel was within a foot of the floats and trying to dock. I started filming it and after a couple of minutes, it pulled away. I am not sure what was the point of this exercise. I can only assume that they were testing their approach for the future. I don't know if this vessel has permission but I suspect these types of activities are the reason the dock is in such a rough shape. I imagine that operations will continue to try and maintain the dock, but I think it is a losing battle since no amount of inspection and maintenance is going to help unless the dock is completely redesigned to accommodate these types of vessels.

AE has identified two other safety issues: (1) installation of lifting safety ladders every 30 m and (2) providing life rings with stand and throw ropes at three locations. I would imagine this is critical if we intend to continue with commercial uses of the dock.

I will forward the report to Ian and Tom so that they can address the remaining issues.

Regards,  
Ali

---

**From:** Mike Hanson [mailto:hansonm@ae.ca]

**Sent:** Friday, September 15, 2017 3:27 PM

**To:** Araujo, Sev; Nayeri, Ali

**Subject:** RE: Use of Harbour Green dock for commercial activity temporarily

Hi Sev, Ali,

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Regards,  
Mike

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**From:** Araujo, Sev [mailto:Sev.Araujo@vancouver.ca]

**Sent:** Monday, August 28, 2017 5:56 PM

**To:** Mike Hanson <hansonm@ae.ca>

**Subject:** RE: Use of Harbour Green dock for commercial activity temporarily

Excellent. Thanks again

**Sev Araujo**

**Manager, Commercial Operations**

Vancouver Park Board, City of Vancouver

o. 604 257 8436 / f. 604 257 8427

Email: [Sev.Araujo@vancouver.ca](mailto:Sev.Araujo@vancouver.ca)

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**Sent:** Monday, August 28, 2017 4:35 PM

**To:** Araujo, Sev

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Yes that's correct, no issues other than the odd loose deck grate bolt

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Ps: just to confirm, the ramps were also inspected?

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docks, loads/unload up to 12 people, 6x/day per day

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**To:** Araujo, Sev  
**Cc:** Wilton, Shauna; Mack, Tiina; Dykstra, Justin; Augustine, Ray; Foster, Ian; Horne, Tom  
**Subject:** FW: Harbour Green Park - Pier inspection: safety hazards

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Mike

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To: ["Araujo, Sev" <Sev.Araujo@vancouver.ca>](mailto:Sev.Araujo@vancouver.ca)

["Nayeri, Ali" <Ali.Nayeri@vancouver.ca>](mailto:Ali.Nayeri@vancouver.ca)

Date: 9/15/2017 3:27:00 PM

Subject: RE: Use of Harbour Green dock for commercial activity temporarily

Attachments: ltr\_van\_insp\_harbour\_green\_dock\_20170914\_nk.pdf

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Associated Engineering (B.C.) Ltd.  
Suite 300 - 4940 Canada Way, Burnaby, BC V5G 4M5  
Tel: 604.293.1411 Direct: 236.317.2327



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September 12, 2017  
File: 20162282.00.E.05.00

Ali Nayeri

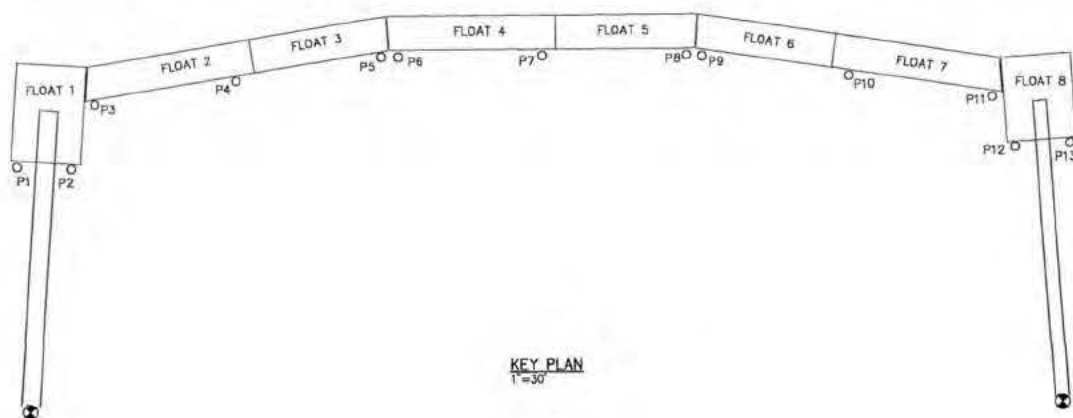
City of Vancouver  
453 West 12th Avenue  
Vancouver, BC V5Y 1V4

**Re: DETAILED INSPECTION OF HARBOUR GREEN DOCK**

Dear Ms. Nayeri:

The **Vancouver Board of Parks and Recreation** (Park Board) retained **Associated Engineering (AE)** to perform a detailed inspection of Harbour Green Dock. The dock was inspected by **Natalya Kucherenko, EIT**, and **Niall McPherson, EIT** on August 24th, 2017. This report presents the results of our inspection and assessment of the structure.

The dock is located at the Harbour Green Park and is comprised of eight precast concrete floats, secured in place with steel pipe piles and brackets. Each float secured in one or two locations and moves independently. The rubber fender blocks installed at the interface between floats protect the floats from the potential damage from adjacent floats. The dock is accessible via two independent aluminum truss ramps. It is our understanding that the dock is used by both commercial and recreational vessels, and intended for short-term mooring.



**Figure 1**  
**Harbour Green Dock – Key Plan**



Based on our inspection, the dock is in poor condition with numerous safety related issues and structural deficiencies. Table 1 summarizes all observed safety related issues and provides recommendations for



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repair. We recommend that any safety related issues are addressed immediately to limit any public liability exposure.

**Table 1**  
**Safety Related Issues**

| Location                  | Defect / Recommendation   | Photo                                                                                |
|---------------------------|---------------------------|--------------------------------------------------------------------------------------|
| 1.1 East Railing, Float 8 | Missing top handrail      |   |
|                           | Fractured midrail section |  |





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| Location            | Defect / Recommendation                                                                                                                                                                                   | Photo                                                                               |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                     | Loose bolts at the north base plate                                                                                                                                                                       |   |
|                     | <b>Recommendation:</b> Replace or repair railing section.                                                                                                                                                 |                                                                                     |
| 1.2 Mooring pile P8 | The disconnected and displaced steel plate pile-cap presents a potential falling hazard to pedestrians                                                                                                    |  |
|                     | <b>Recommendation:</b> Remove the plate to address immediate risk, reattach when time permits. Check pile cap welds on remaining piles. Remove/ repair any loose plates or plates with compromised welds. |                                                                                     |



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| Location                     | Defect / Recommendation                                  | Photo                                                                                |
|------------------------------|----------------------------------------------------------|--------------------------------------------------------------------------------------|
| 1.3 West Railing,<br>Float 1 | Broken and disconnected post                             |    |
|                              |                                                          |   |
|                              | <b>Recommendation:</b> Repair broken section of railing. |                                                                                      |
| 1.4 Bullrail,<br>Floats 2-7  | Broken and displaced 2m long section of timber bullrail  |  |






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| Location | Defect / Recommendation                                                                                                                                                                                  | Photo                                                                                |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|          | Bullrail is in poor condition and has missing washers in multiple locations, and damaged sections along its length                                                                                       |    |
|          | Missing washer (typical)                                                                                                                                                                                 |   |
|          | Damage to bullrail appears to be primarily caused by vessels mooring directly to the bull rail and not to the mooring cleats. Several boats were observed mooring to the bullrail during the inspection. |  |






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| Location                            | Defect / Recommendation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Photo                                                                              |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|                                     | Sections of bullrail that were removed during transition rubber pads replacement works                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| 1.5 Floats, Public safety equipment | <p><b>Recommendation:</b> Replace missing or broken sections of the bullrail, repair damaged sections. Consider adding signage to encourage mooring to cleats, rather than to bullrails.</p> <p>Safety ladders were not installed as per original design drawings. We recommend the Park Board consider making the following safety improvements:</p> <ul style="list-style-type: none"><li>• Install lifting safety ladders such that the maximum water distance between ladders is 30 m. The lifting ladders shall be free of the water when lifted and extend 1m minimum below the water surface when deployed. They shall be suitable for inadvertent swimmers to access the ladder and egress the water. The bull rail openings should be reconfigured to allow access to the float from the safety ladders.</li><li>• Life Rings: Safety life rings complete with stand and throw rope shall be provided at three locations along the main dock walkway.</li></ul> |                                                                                    |

In addition to the safety related defects we also observed numerous structural deficiencies that should be repaired. We recommend that Park Board addressed these structural deficiencies within 12 month to limit further deterioration that will result from the damaged or missing components.

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**Table 2  
Structural Deficiencies**

| Location             | Defect / Recommendation                                    | Photo                                                                                |
|----------------------|------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 2.1 Pile P9, Float 6 | Connection of steel bracket to concrete float 6 has failed |    |
|                      | Bolts have sheared                                         |   |
|                      | Bracket is fractured                                       |  |







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| Location          | Defect / Recommendation                                                                                                                                                                                                                                                                                                                                   | Photo                                                                                |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                   | <b>Recommendation:</b> Replace bracket as per original design. Float 6 has secured in place only to Pile 9; to prevent severe damage to the float 6 and adjacent floats 5 and 7 due to uncontrolled movement we recommend the bracket to be replaced within 12 month period.                                                                              |                                                                                      |
| 2.2 Floats 1 to 8 | 2 inch UHMW (Ultra-high molecular weight polyethylene) pads and timber rubrails in locations of the mooring wells are heavily worn or have failed. As the result, continuous contact of the piles to the float causing damage to the side face of the concrete floats. Further damage to the concrete may compromise the float structure                  |   |
|                   | Pile rubbing against the concrete float                                                                                                                                                                                                                                                                                                                   |  |
|                   | <b>Recommendation:</b> Replace and/or reinstall UHMW pads and timber rubrails where necessary. These sacrificial pads shall be checked on an annual basis and replaced as required. Alternatively, consider redesigning mooring brackets to more robust so they can better withstand cyclic movement of the floats and limit uncontrolled float movement. |                                                                                      |





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| Location           | Defect / Recommendation                                                                                                                                                                                                                                                                                          | Photo                                                                                |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 2.3 Floats 4 and 5 | Two failed mooring cleats                                                                                                                                                                                                                                                                                        |    |
|                    | <b>Recommendation:</b> Replace two mooring cleats. To prevent further damage to mooring cleats and bullrail, we recommend to install warning signs suggesting an allowable range of vessels with specified length and Dead Weight Tonnage (DWT) to use the dock, and forbidding mooring directly to the bullrail |                                                                                      |
| 2.4 Pile P6        | Loose bolts and one missing nut and washer on the connection of steel bracket around pile P6 to concrete float                                                                                                                                                                                                   |  |
|                    | <b>Recommendation:</b> Replace existing nuts with locknuts to prevent them from falling off the bolts caused by the cyclic nature of the float movement.                                                                                                                                                         |                                                                                      |



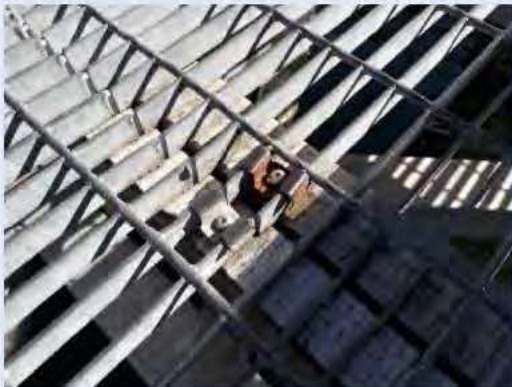


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| Location                                                                         | Defect / Recommendation                                                                               | Photo                                                                              |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| 2.5 East and West Ramps                                                          | One loose grating clip on the east ramp and four loose and one missing grating clips on the west ramp |  |
| Recommendation: Install missing clip and tighten all loose clips on the grating. |                                                                                                       |                                                                                    |

September 12, 2017  
Ali Nayeri  
City of Vancouver  
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We trust this letter provides sufficient information for the City's maintenance and planning decisions. Should you have any further questions or concerns please don't hesitate to contact us.

Yours truly,

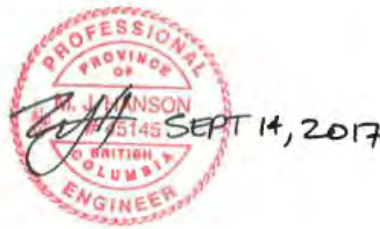
Prepared by:



Natalya Kuchernko, EIT  
Structural Engineer

NK/MK/mc

Reviewed by



Mike Hanson, P.Eng.  
Project Manager



From: ["Foster, Ian" <Ian.Foster@vancouver.ca>](mailto:Ian.Foster@vancouver.ca)

To: ["Nayeri, Ali" <Ali.Nayeri@vancouver.ca>](mailto:Ali.Nayeri@vancouver.ca)

Date: 9/28/2017 7:33:39 PM

Subject: Re: Use of Harbour Green dock for commercial activity temporarily

I am off until Monday I can get some costs to you then

Sent from my iPhone

On Sep 28, 2017, at 5:29 PM, Nayeri, Ali <[Ali.Nayeri@vancouver.ca](mailto:Ali.Nayeri@vancouver.ca)> wrote:

Hi Ian and Tom,

I just wanted to send a quick replay to say thanks for all the work you've done on this. We realize that the remaining issues are outside our expertise and we are looking at outside contractors to help us with it (if we can find the funding).

Would you be able to let me know what would be involved (time and cost) for the safety ladders and life rings?

Thanks,  
Ali

---

**From:** Foster, Ian

**Sent:** Friday, September 22, 2017 11:13 AM

**To:** Nayeri, Ali; Horne, Tom

**Cc:** Augustine, Ray; Mack, Tiina; Normann, Howard; Araujo, Sev; Dykstra, Justin

**Subject:** RE: Use of Harbour Green dock for commercial activity temporarily

Structures / Fabrication have review the issues noted below and the major work regarding the pile brackets ( P6 and P9 ) as well as the mooring wells (P1, P3, P6, P7, P8, P9, P10, and P11) that need UHMW replacement will need to have specific equipment ( ie Lifting Barge ) to perform these tasks in a safe and timely manner therefore I feel it must be handled by an outside contractor who is equipped as well as trained in these repairs. I am sure the safety ladders as well as installing life ring stands with ropes and life rings is something we can do the installation part for you .

Ian Foster

---

**From:** Nayeri, Ali

**Sent:** Wednesday, September 20, 2017 6:44 PM

**To:** Foster, Ian; Horne, Tom

**Cc:** Augustine, Ray; Mack, Tiina; Normann, Howard; Araujo, Sev; Dykstra, Justin

**Subject:** FW: Use of Harbour Green dock for commercial activity temporarily

Hi Ian and Tom,

I just wanted to thank you and Justin for fixing the issues that were identified by AE for the Harbour Green Dock.

AE has issued a draft of their inspection report (attached). I went to the dock yesterday to check the issues up close. Most of these have been addressed, but there are a few things still outstanding. There are a couple of critical issues that need to be addressed urgently, but I am not sure if we can do them in-house and how we can pay for them:

- Two pile brackets (Pile P6 and P9) will require replacement since the anchor bolts have come loose and the brackets have been heavily damaged. I have attached a video of conditions at P6 as well as two pictures from P9.
- Most of the mooring wells (P1, P3, P6, P7, P8, P9, P10, and P11) have one or more UHMW pads and timber rubrails missing. These need to be replaced urgently to prevent further damage to the concrete floats (see

condition at P11).

- More mooring cleats are needed since all vessels just use the bullrail.
- AE has noted that lifting safety ladders must be installed at max. 30 m distances.
- AE has also noted that life rings, complete with stand and throw rope need to be provided at three locations along the dock.

I have marked up the issues that are not yet addressed on AE's report. I understand that a larger discussion needs to happen before we can take care of the more major items.

Kind regards,  
Ali

PS: apologies to Tiina and Sev for resending you the video. You can delete that attachment from the message.

---

**From:** Mike Hanson [<mailto:hansonm@ae.ca>]  
**Sent:** Friday, September 15, 2017 3:27 PM  
**To:** Araujo, Sev; Nayeri, Ali  
**Subject:** RE: Use of Harbour Green dock for commercial activity temporarily

Hi Sev, Ali,

Please find our report attached, let me know if you have any questions or concerns

Regards,  
Mike

---

**From:** Araujo, Sev [<mailto:Sev.Araujo@vancouver.ca>]  
**Sent:** Monday, August 28, 2017 5:56 PM  
**To:** Mike Hanson <[hansonm@ae.ca](mailto:hansonm@ae.ca)>  
**Subject:** RE: Use of Harbour Green dock for commercial activity temporarily

Excellent. Thanks again

**Sev Araujo**  
**Manager, Commercial Operations**  
Vancouver Park Board, City of Vancouver  
o. 604 257 8436 / f. 604 257 8427  
Email: [Sev.Araujo@vancouver.ca](mailto:Sev.Araujo@vancouver.ca)

---

**From:** Mike Hanson [<mailto:hansonm@ae.ca>]  
**Sent:** Monday, August 28, 2017 4:35 PM  
**To:** Araujo, Sev  
**Subject:** Re: Use of Harbour Green dock for commercial activity temporarily

Yes that's correct, no issues other than the odd loose deck grate bolt

Mike

On Aug 28, 2017, at 4:16 PM, Araujo, Sev <[Sev.Araujo@vancouver.ca](mailto:Sev.Araujo@vancouver.ca)> wrote:

Ps: just to confirm, the ramps were also inspected?

**Sev Araujo**  
**Manager, Commercial Operations**  
Vancouver Park Board, City of Vancouver  
o. 604 257 8436 / f. 604 257 8427  
Email: [Sev.Araujo@vancouver.ca](mailto:Sev.Araujo@vancouver.ca)



---

**From:** Mike Hanson [<mailto:hansonm@ae.ca>]

**Sent:** Monday, August 28, 2017 4:09 PM

**To:** Araujo, Sev

**Cc:** Natalya Kucherenko; Wilton, Shauna; Mack, Tiina; Dykstra, Justin; Augustine, Ray; Foster, Ian; Horne, Tom; Nayeri, Ali

**Subject:** Re: Use of Harbour Green dock for commercial activity temporarily

Hi Sev,

We checked the information provided for the commercial vessel against the design drawing specifications and can confirm that the dock can accommodate such vessel.

However, you are correct that unless repairs are made to the mooring wells, there will be continuing deterioration to the dock.

Additionally, we noticed that vessels are using the timber curbs as mooring points, rather than the cleats. This is the most likely cause of the damage to the curbs.

We will have our summary letter and recommendations to you shortly which will outline all of the defects observed last week.

Regards

Mike

On Aug 28, 2017, at 12:06 PM, Araujo, Sev <[Sev.Araujo@vancouver.ca](mailto:Sev.Araujo@vancouver.ca)> wrote:

Hi Mike,

Ali is away and the issues we are dealing with are time sensitive. I understand that if we pursue commercial activity on these docks on an ongoing basis upgrades will be required. Having said this, can you confirm if the immediate repairs identified are completed hopefully this week, from a functional and engineering perspective, will the docks accommodate for the short term (3-6 months) a vessel that is

27' long, beam is 9', registered at 10,000lbs  
and  
docks, loads/unload up to 12 people, 6x/day per day

Thank you

**Sev Araujo**

**Manager, Commercial Operations**

Vancouver Park Board, City of Vancouver

o. 604 257 8436 / f. 604 257 8427

Email: [Sev.Araujo@vancouver.ca](mailto:Sev.Araujo@vancouver.ca)

---

**From:** Nayeri, Ali

**Sent:** Friday, August 25, 2017 5:26 PM

**To:** Araujo, Sev

**Cc:** Wilton, Shauna; Mack, Tiina; Dykstra, Justin; Augustine, Ray; Foster, Ian; Horne, Tom

**Subject:** FW: Harbour Green Park - Pier inspection: safety hazards

Hi Sev,

Sorry for resending this, but I realized that I did not see the photos embedded inside the email below. I also wanted to copy everyone so we all have the same information.

I think we can complete the immediate repairs next week. Justin will talk to Tom and Ian to coordinate

these repairs. We will need to have more conversation on additional repairs/modifications that are needed to upgrade the dock to allow for commercial operations so that we are not continuously having to repair it.

I hope this meets your immediate needs in terms of safety assessment.

Best regards,  
Ali

---

**From:** Mike Hanson [<mailto:hansonm@ae.ca>]  
**Sent:** Friday, August 25, 2017 3:12 PM  
**To:** Nayeri, Ali  
**Cc:** Natalya Kucherenko; Niall McPherson  
**Subject:** Fwd: Harbour Green Park - Pier inspection: safety hazards

Hi Ali,

Please find a brief summary of the safety concerns below

Give me a call if you would like to discuss. As a minimum I would address the falling hazard from the pier cap immediately, which could be as simple as removing the displaced cap for the time being.

In general our inspectors noted that boats are causing a lot of damage, and that the floats, curbs and mooring wells have become considerably worse since our last inspection in 2016.

Regards  
Mike

Begin forwarded message:

**From:** "Natalya Kucherenko" <>  
**To:** "Mike Hanson" <[hansonm@ae.ca](mailto:hansonm@ae.ca)>  
**Subject:** Harbour Green Park - Pier inspection: safety hazards

Hi,

AE completed a detailed inspection of Harbour Green Park Pier on August 24, 2017 and there several potential safety concerns that we would like to address immediately prior issuing the complete report.

- The railing on the east side of the dock has a missing top handrail and also has fractured midrail section (ref. photos 1 and 2 in attachment)
- The railing on the west side of the dock has a broken/disconnected post (ref. photos 3 and 4)
- One mooring pile located in the middle of the dock has a displaced and disconnected pilecap steel plate that can cause potential falling hazard to pedestrians walking though the dock (ref. photo 5) .
- Broken and displaced 2m timber curb is noted on the dock. The rest of the curb is also damaged at several locations that can be as the result of the different size boats mooring directly to the curb and not to the mooring cleats. Several boats were documented to be moored to the curb during 1.5 h long inspection (ref. photos 6 and 7).  
The work items listed above require immediate attention as they are identified as the potential safety hazards to frequent dock user's.

We will further identify the repair items and summarize them in our report that will be issued to CoV next week.

Should you have any questions or require any further information, please do not hesitate to contact me.

Regards,  
Natalya



**Natalya Kucherenko, M.Eng., EIT**  
Bridge Engineer  
**Associated Engineering (B.C.) Ltd.**  
Suite 300 - 4940 Canada Way, Burnaby, BC V5G 4M5  
Tel: 604.293.1411 Direct: 236.317.2327

You may [unsubscribe from Associated's electronic communications](#) at any time.

**We're Moving! Please note that after August 26, 2017, we'll be moving to  
#500 - 2889 East 12th Avenue, Vancouver. Our main switchboard number will remain the same.**

<image001.jpg>

<image002.jpg>

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<image007.jpg>

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From: ["Park Board GM's Office" <pbgmo@vancouver.ca>](mailto:pbgmo@vancouver.ca)

To: ["PB Commissioners" <PBCommissioners@vancouver.ca>](mailto:PBCommissioners@vancouver.ca)

Date: 8/11/2017 2:08:06 PM

Subject: Water Taxi/Ferry Service at Harbour Green Dock (Coal Harbour Marina) - Board Briefing Memo

Attachments: PB - GMO - Water Taxi-Ferry Service at Harbour Green Dock (Coal Harbour Marina) - Board Briefing Memo - 2017-08-11.pdf

Dear Commissioners,

On June 28, 2017, we received a complaint from a member of the public questioning why the Park Board was allowing commercial activity on the Harbour Green Dock when posted signage states "No Commercial Vessels Permitted, Transient Pleasure Craft Only".

As a result, staff discovered the following commercial activity off the Harbour Green Dock:

- 1) [Pacific Ferries](#) offers two (2) schedule daily departures (Monday thru Friday) and daily tours from May 15 - September 15.
- 2) [Bowen Land and Sea Taxi](#) offers three (3) daily drop offs and three (3) daily departures from the Harbour Green Dock, with weekend service from Granville Island.

Neither operator has an active agreement with the Park Board to operate their business from the dock, nor a business licence to operate within the City of Vancouver. As such, both operators were contacted and were advised how their current operations conflict with Park Board by-laws and have resulted in the review of potential liability issues.

Staff recommended the operators submit a business proposal to the Park Board, and until that time, asked the operators to identify a reasonable timeline for when they would be able to temporarily cease their commercial operations off the Harbour Green dock. Additionally, staff are consulting with Risk Management and Legal to determine if there are any interim measures the operators could put in place to address potential liability issues, in order to support continued provision of their water taxi/ferry commuter services at this location until a more formal proposal can be brought to the Board for consideration.

For your reference, the Board has previously considered using the Harbour Green dock for commuter services. In December 2009, the [Park Board approved a 12-month trial period for Coastal Link Ferries](#) (now known as Pacific Ferries) to operate a commuter passenger ferry service between Bowen Island and the Harbour Green dock. At that time, the fee charged was \$500/month for a total of \$6,000. As noted in the staff report, the Park Board was also in discussions with another operator to offer a similar service from the dock, but were waiting to receive a formal proposal. At the conclusion of the trial period in 2011, the operator did not renew the agreement. In recent discussions with Pacific Ferries they admitted that they have been operating from the dock for the last three (3) years without approval.

It should also be noted that our recent Park Bridges and Marine Structures inspection report has identified \$150K in required maintenance and capital investment in the Harbour Green Dock. In 2005, City of Vancouver entered into an agreement with False Creek Ferries and Aqua Bus to operate a water taxi service within False Creek from seven (7) public docks. Each operator pays an annual fee of \$41,900 to help cover maintenance and capital expenditures associated with the docks. The Aquatic Center and Stamps Landing docks are owned and managed by the City of Vancouver, but under the jurisdiction of the Park Board. As a result of the master agreement, the Park Board's global budget was increased by \$8,000 annually.

We will continue to work with both operators to address short-term and long-term issues. In the interim, please feel free to contact me directly should you have any questions on this matter.

Regards,

Malcolm Bromley  
General Manager - Vancouver Board of Parks and Recreation





August 11, 2017

MEMO TO : Park Board Commissioners

FROM : Malcolm Bromley  
General Manager, Vancouver Board of Parks and Recreation

SUBJECT : **Water Taxi/Ferry Service at Harbour Green Dock (Coal Harbour Marina)**

---

Dear Commissioners,

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Dock. In 2005, City of Vancouver entered into an agreement with False Creek Ferries and Aqua Bus to operate a water taxi service within False Creek from seven (7) public docks. Each operator pays an annual fee of \$41,900 to help cover maintenance and capital expenditures associated with the docks. The Aquatic Center and Stamps Landing docks are owned and managed by the City of Vancouver, but under the jurisdiction of the Park Board. As a result of the master agreement, the Park Board's global budget was increased by \$8,000 annually.

We will continue to work with both operators to address short-term and long-term issues. In the interim, please feel free to contact me directly should you have any questions on this matter.

Regards,

A handwritten signature in black ink, reading "Malcolm Bromley".

Malcolm Bromley  
General Manager - Vancouver Board of Parks and Recreation

/sa/clc

Copy: PB Senior Management  
PB Commercial Operations  
PB Business Services  
PB Communications