ROYAL VANCOUVER YACHT CLUB: CONSTRUCTION STAGING UPDATE: CONSTRUCTION OF “K” FLOAT AND POTENTIAL INTERFERENCES TO NAVIGATION

TECHNICAL MEMORANDUM

To: Marcel Gelein (VFPA), Sean Baxter (VFPA), Dave Hart (VFPA), Elizabeth Harris (NPP)  
From: Russ Tyson

cc: Chris Barnett (RVYC Asset Manager), Norm Allyn (CMO), Rob Muller (Jarelco)  
Date: November 25, 2018

Subject: Construction Staging Plan  
Project No: 2018-15

Royal Vancouver Yacht Club Coal Harbour Marina Expansion Project

The Royal Vancouver Yacht Club (RVYC) has proposed to the Vancouver Fraser Port Authority (Port Authority) and the Navigation Protection Program (NPP) of Transport Canada (TC) a project to expand the existing RVYC Marina, in Coal Harbour, to increase the number of slips in the marina by 46. To do so, a reconfiguration of the existing marina is required. The reconfiguration significantly improves the current layout and meets best practices for marina layout designs, making it more functional and operational, and an overall improvement to the navigational environment.

The area proposed for the lease expansion is 8,553 sq. m (92,058 sq. ft.) based on the available water lot area outside of the new navigational channel design that includes two designated rowing lanes each 13.5 m in width designed to international rowing standards.


The Marina is sited within Coal Harbour immediately west of Deadman’s Island, east of the Vancouver Rowing Club (VRC) and south of Stanley Park. The diagram below sets out the current and proposed water lot. The navigational channel was designed in conjunction with the port authority in 2016. It includes for the first time two designated rowing lanes as well as a navigational channel based on the Permanent Association of Waterborne Transport (PIANC) Approach Channel Guidelines (2014).
We estimate construction will start in December 2020 and finish in 2022. Special steps will be taken to minimize disruption to neighbours. Specifically, it is noted that the construction of the concrete docks and boat sheds will be undertaken off-site and assembled on-site, although pile driving, and pile removal will be required.

The current number of slips in the marina is 326 and is to be expanded by 46 slips, totaling 372 slips. Today 192 boat sheds reside in the marina, 37 of which will be replaced (same design, size etc.), resulting in the same number of boat sheds post project construction.

Project Construction and Marina Assembly: Overview

It is noted that the majority of construction associated with this project, that has potential to create community nuisance effects (e.g. noise, dust, odour, light) will be undertaken off site (e.g. construction of concrete docks and boat sheds) and assembled (e.g. bolted together) on site. The construction of the boat sheds (being constructed at CCY Marine (refer to Appendix H of the Project Description for design details) and the concrete docks (being constructed at International Marine and Floating Systems (IMFS) (refer to Appendix G of the project description for design details), limit potential disturbances to local marine stakeholders within Coal Harbour site during assembly.

The majority of on site works pertain to the placing of the docks and placement of the new boat sheds. The key construction activity impacting the area is the pile driving required on site to reconfigure the marina to meet existing marina design standards.
The Construction Environmental Management Plan (CEMP) highlights that the concrete docks and the boat sheds will be constructed at the manufacturer and then barged to Coal Harbour, based on a just in time delivery to reduce assembly time. Design of both the boat sheds and the concreate docks is familiar to both the RVYC and the port authority, as similar and recently approved works by the port authority to replace both docks and seven boat sheds have been approved (port authority Project Permit 2011-018). The same designs and process for installation have been used for this project.

The location of both manufacturers (CCY Marine and IMFS) are on the Fraser River, illustrated below, and the routes to access the site are noted (refer to CEMP).

Forrest Marine has been retained to provide tug support to transfer the docks and boat sheds to site for assembly. Scheduling of activities, specifically barging the prefabricated docks (complete with predesigned conduits for electrical mechanical and water hook up) and boat sheds will be based on a just in time delivery approach to prevent additional equipment being stored in the basin. Removal of materials, boat sheds will be co-ordinated with the delivery of the new docks and boat sheds, and disposed of accordingly at various recycling facilities.

Detailed scheduling cannot be undertaken at this level of study and will be responsibility of the selected contractor. A marine communication plan will be in pace to inform stakeholders and users of such activities and transits.
Construction Staging Overview

The Port Authority and the Navigation Protection Program (NPP) of Transport Canada (TC), as part of the review and permitting process, requested RVYC to provide additional detail regarding the proposed construction (more like assembly) activities associated with the proposed Coal Harbour Marina expansion project, noting specifically the construction of “K” float. The construction of which, has the greatest potential to interfere with navigation and marine operations within Coal Harbour, whereas the other stages are internal to the existing marina. Internal discussions with RVYC members are on-going regarding internal redistribution of slips and RVYC plan to use out stations to provide temporary moorage and to take advantage of the summer boating season, when vessels are not moored at the home moorage. RVYC will be facilitating such arrangements and related activities to accommodate members.

As identified in the Project Description document, a Preliminary Eight Stage Phasing Plan was outlined for consideration. While a general contractor has yet to be selected for the project, the eight phased program illustrates the intended approach to undertake the three main project construction/assembly activities:

1. Removal of piles and driving of new piles
2. Removal of old docks and replacement of new docks (constructed off site)
3. Removal of old boat sheds and replacement of new boat sheds (constructed off site)

It is important to note that of the eight phases of project development (which may change slightly based on the contractor’s approach) Phase 1 of the program represents the key phase that has the potential to impact marine stakeholders and users of Coal Harbour. Construction staging for Phase 1 is focused upon in this review. The key external users potentially impacted because of Phase 1 works (identified within our Consultation Plan) include:

- Vancouver Rowing Club
- Westin Bayshore Marina
- Harbour Cruises

As presented below (refer to construction staging exhibits) all activities and marine equipment anticipated to be utilized (e.g. removal of piles, pile driving and placement of concrete docks) for Phase 1 will be fully contained within the proposed lease expansion area and will not impact the navigational channel or the northern rowing channel. To further mitigate navigational concerns the pile driving equipment and the storage barge for piles will be sited to the north of the channel near the existing marina lease, thereby fully avoiding the potential intrusion into either the rowing lanes or the navigational channel, noted on the exhibit below.
Construction of “K” Float

The project’s potential to interfere with navigation during the construction of “K” float represents the key area of focus due to its proximity to the proposed rowing channels and the navigational channel. The remaining stages of construction represent internalized redistribution of member vessels and do not impact other stakeholders’ ongoing marine operations. RVYC has contacted two contractors whom have provided insight regarding the types of equipment that would be required. The exhibits below illustrate the proposed positioning of the actual barges (presented to scale) in relation to the works being undertaken. It is noted that the extent of construction equipment will include a pile driving rig, a barge for piles and a third barge (potentially) to move the concrete floats into place. There may be opportunities to limit this activity via the use of a small tug used to manoeuvre the docks into place however, that will be a contractor decision.

The first exhibit highlights the following:

- All construction equipment and activities will be sited within the proposed lease expansion area and occur outside of the navigational channel and rowing lanes;
- The marine equipment includes a standard 13 m by 32 m barge from which pile driving will occur, a support barge of 15 m by 52 m to store piles and or floats (potentially);
- We have included a third barge (not currently required) pending clarification of the docks can be brought with the barge supporting the pile transport, and
• Phase 1, at the current time is scheduled to be complete all at once, however in anticipation that the contractor selected may want to undertake construction of the “K” float in two phases to accommodate internal circulation of vessels. Regardless the anticipated timeline in total for the construction of “K” float is 30 working days (six (6) weeks).

The remaining exhibits briefly illustrate how the equipment would be located within the lease expansion area to enable the works to be undertaken. As noted, the selected contractor will be responsible for the actual scheduling of the said works; this preliminary outline confirms its feasibility from an assembly perspective. The detailed schedule drawings illustrate the sequential construction nature of “K” float illustrating how the various equipment will be moved to accommodate driving of piles and placement of docks.
Marine Communication Plan

RVYC will prepare a Marine Communication Plan (MCP) to outline marine protocols within Coal Harbour to limit potential conflicts between marine users during this time. The MCP will be a condition of approval of this project and will be the responsibility of the selected contractor.

A MCP and Marine Communication Group (MCG) will need to be established to inform marine users of related marine activities potentially infringing upon mariners right to navigate. To do so an MCP will be a requirement of the preferred contractor. A MCG will be established to implement the MCP.

The standard components of MCP include:

- Purpose and Scope
- Project Description
- Construction Scheduling and Phasing
- Tug Assist
- Notice to Mariners and Notices to Shipping
- Recreational user posting requirements
- Marine Construction Contractors
• Marine Construction Methods and Related Equipment
• Radio Communications/Aids to Navigation

The Project will implement communications through its MCG. This will be established to inform marine users, aboriginal groups and recreational users of construction and demolition activities that may interfere with navigation through the Project site. Meetings will occur throughout construction and demolition work phases to manage information flow between marine users and the contractors. Meetings will be held monthly unless otherwise stipulated by users. Issuance of weekly notices to shipping, that provide mariners information regarding construction activities that may interfere with navigation, will be issued weekly.