August 26, 2019

Jocelyne Beaudet, Panel Chair;
David Levy, Panel Member; Douw Steyn, Panel Member;
c/o Cindy Parker, Panel Manager
Canadian Environmental Assessment Agency
160 Elgin Street, Ottawa, ON K1A 0H3
Sent by email to: CEAA.PanelRBT2-CommissionRBT2.ACEE@canada.ca

Dear Ms. Beaudet et al:

Subject: Closing Remarks for the Roberts Bank Terminal 2 Project

Transport Canada (TC), Environment and Climate Change Canada (ECCC), Fisheries and Oceans Canada (DFO) and the Canadian Coast Guard (CCG), and the Canadian Environmental Assessment Agency (CEAA), collectively the Federal Authorities, put forward this closing remarks submission. Thank you for the opportunity to summarize our final positions related to the potential environmental effects of the Project as it relates to our mandates and areas of technical expertise. Our collective positions are organized by topic below.

Marine Vessel Traffic

As the Review Panel is aware, the Vancouver Fraser Port Authority (VFPA) does not anticipate an increase in containership traffic in the Marine Shipping Area as a result of the proposed Roberts Bank Terminal 2 project, as described in the container traffic trends and marine forecast findings prepared by Mercator International in November 2018 (CEAR [illegible]).

Economic forecasting for global container demand and associated marine traffic comprises a number of factors and complexities that inherently involve some level of uncertainty. That said, TC is of the view that the VFPA's conclusions based on the Mercator report findings are generally consistent with our understanding of container traffic trends, as outlined in our January 30, 2019 presentation to the Review Panel (CEAR [illegible], slide 8).

The Government of Canada recognises concerns, including those raised by Indigenous groups, regarding the cumulative effects associated with marine shipping and the potential increase of marine shipping in the Salish Sea. Consistent with the principles of adaptive management, and as detailed in our various submissions and presentations to the Review Panel, the Government of Canada is committed to the continuous improvement of Canada's marine safety and security system through a number of measures and initiatives including the Oceans Protection Plan (CEAR [illegible]) and the Whales Initiative (CEAR [illegible]).

In addition, the VFPA's updated summary of Project commitments (CEAR [illegible], pg. 10-11 and Table B-3) included details on additional measures - 16 new recommendations and 6 new marine focused accommodation measures - that outline how the Government of Canada is looking beyond project specific concerns to broader issues of marine shipping within the Salish Sea. These measures, in response to the Trans Mountain Expansion Project approved in June 2019 by the Government of Canada, will be applicable within the same marine shipping route as any vessels proposed to call at the proposed RBT2 Project. Notably, these measures

include a marine birds monitoring plan, the development and implementation of a cumulative effects management plan for the Salish Sea and a long-term strategy for managing and monitoring cumulative effects. These measures and initiatives are applicable to all marine vessels and will deliver overall enhancements to the marine safety system and respond directly to marine shipping-related concerns, including those raised by Indigenous groups.

Air Emissions from Marine Vessels

Various factors can contribute to air emission projections, such as size of ships, duration at port, tier level of engines, and equipment used for loading cargo. A consideration for the air pollution emissions from marine shipping associated with the Project is the predicted rate of introduction of Tier III vessels. At the Public Hearing, the Proponent provided updated estimates for the rate of introduction of Tier III vessels likely to call at Vancouver terminals (CEAR 1846), and concluded that 54% of new vessels will be Tier III in 2035.

ECCC highlighted at the Public Hearings some potential underestimation of the NO_x and NO_2 emissions from marine vessels, given that the number of keels laid globally for Tier III vessels has been less than expected since 2016, and that the number of Tier III vessels projected for some other major Pacific terminals is lower than the proponent predicts for Roberts Bank Terminal 2 (CEAR 1795 and 1970). These complexities contribute to uncertainty around the Proponent's predictions, and ECCC remains of the view that the Proponent's predictions may underestimate NO_x and NO_2 emissions. Predictions for NO_2 from Project-related shipping are particularly important because of existing high NO_2 concentrations in the region.

In turn, this suggests that management actions may be necessary for NO_2 in the Lower Fraser Valley air zone under the national Air Quality Management System. Therefore, ECCC continues to recommend that the Proponent participate in local and regional air quality management initiatives where applicable, and take an adaptive approach to prevent Project emissions from contributing to deteriorating air quality in the local and regional area.

Shorebirds and Biofilm

ECCC presented information about the expected impacts of the project on the quality and quantity of biofilm available to migrating shorebirds in the Roberts bank area, about the likely consequences to migrating shorebirds of that decline in quantity and quality of biofilm, about the absence of equivalent other sources of biofilm that shorebirds can access, and about the current absence of options to mitigate these issues by creating or enhancing alternative sites.

The importance of biofilm at Roberts bank to migrating birds and the likely Project impacts on that biofilm

Roberts Bank is a dynamic estuarine ecosystem supporting internationally significant populations of migratory shorebirds. Foraging on biofilm at Roberts Bank provides shorebirds with a rich supply of essential fatty acids. The best available evidence indicates that fatty acids are essential nutrients for long-distance flights of shorebirds during the critical northward migration period. Predicted changes due to the Project include a substantial change in the salinity regime at Roberts Bank, particularly in those areas of highest importance to shorebirds. Average salinity is expected to decrease by 1 standard deviation in magnitude, accompanied by a reduction in the overall range of salinity by up to 10 PSU, nearly a third of the total variation. As described in ECCC's written submission (CEAR 1637) and in ECCC's response to Undertaking #29 (CEAR 1947), substantial evidence exists linking this variability to the

production of fatty acids by diatoms, both within existing literature and the Proponent's own studies (salinity trigger).

Based on ECCC's review of the scientific literature, Project-related changes to the salinity regime would impact the quality and quantity of biofilm available to shorebirds. These changes are likely to include:

- the disruption of the salinity trigger responsible for "shocking" marine-type diatoms into high fatty acid production;
- changes in community composition of diatoms in biofilm from marine to freshwater types that may produce lower amounts of fatty acids;
- an unfavorable spatial shift in the center of the distribution for biofilm towards sandier substrates where biofilm would be inaccessible for foraging Western Sandpipers due to tongue morphology; and
- a reduction in the biomass of available biofilm, resulting in lower abundance of food for shorebirds during the critical northward migration period.

Absence of mitigation options for Roberts Bank

Based on ECCC's review of the current scientific literature, including the studies undertaken by the Proponent, ECCC remains concerned that there are no practical mitigation measures available to address the potential large-scale impacts of changes to biofilm at Roberts Bank. There are no alternate sites for the construction of a large mudflat on the Fraser River estuary. All alternate sites of an equivalent size within the Fraser River estuary and delta (Sturgeon Banks and Boundary Bay) have sandier substrates and/or different hydrological regimes, and as such are not likely to be able to provide alternative sources of nutrients that could compensate for the loss or degradation of biofilm at Roberts Bank.

The Proponent's response to ECCC's written submission (CEAR 1705) cited the presence of biofilm at restored sites in Japan and California. However, the examples outlined by the Proponent do not provide evidence of the creation of new mudflats with equivalent functional values to Roberts Bank, particularly with respect to the biofilm community. None of the studies cited by the Proponent in California or Japan assessed the ability of restored habitats to provide the fatty acids (particularly polyunsaturated fatty acids) necessary for the northward migration of the Western Sandpipers and other shorebirds. For example, Kelly and Condeso (2017)[1] explicitly state that they 'did not investigate this possible factor [biofilm] in shorebird responses to tidal restoration', although this study was cited by the Proponent as evidence of biofilm use at restored sites. In addition, Hsu et al. (2011)[2] mapped chlorophyll-a (a surrogate measure of biofilm biomass) following a large-scale restoration of salt ponds in South San Francisco Bay. However, that study found that the high-density biofilm was primarily located in undisturbed sloughs and channels adjacent to the restored ponds, and not in 'restored' habitat.

[1] Kelly, J. P., & Condeso, T. E. (2017). Tidal marsh restoration stimulates the growth of winter shorebird populations in a temperate estuary. *Restoration Ecology*, 25(4), 640-649.
[2] Hsu, W. C., Kuss, A., Ketron, T., Nguyen, A., Remar, A., Newcomer, M., & Angela Detweiler, M. S. (2011). Hyperspectral biofilm classification analysis for carrying capacity of migratory birds in the South Bay salt ponds. http://www.asprs.org/pecora18/proceedings/Hsu.pdf

As previously discussed in ECCC's written submission (CEAR [redacted]), ECCC is of the view that it is not currently possible to recreate a mudflat with similar sediment characteristics and biofilm fatty acid productivity as the Roberts Bank area.

ECCC continues to conclude that predicted Project-induced changes to Roberts Bank constitute an unmitigable species-level risk to Western Sandpipers, and shorebirds more generally, and that therefore the only way to be confident of avoiding the impacts on biofilm and shorebirds from these predicted geomorphological processes is with a Project redesign.

[Other Topics as Requested by FAs]

Thank you again for the opportunity to participate in this process.

Sincerely,

[Signatory to be discussed as part of August 20th ADM Major Ports Project Steering Committee]