

Seabed Pipeline Route Denied by Project Board

April 25, 2017

The Core Area Liquid Waste Management Committee (CALWMC) appears to have accepted the Stantec 6 page letter (March 13, 2017) citing reasons why CALWMC is not prepared to consider the seabed pipeline proposal. The 6 pages enumerate 6 points:

1. **Permitting:** While it is acknowledged permitting will be necessary (just as it will be for a land based route along Dallas Road: Migratory Bird Sanctuary, endangered species etc.) Stantec used as a reason not to consider the seabed proposal the disruption that would be caused to eelgrass beds. There are no known eelgrass beds along the proposed seabed route. In addition, Stantec's concern over the presumed lengthy permitting process is perhaps based on the amount of time taken to obtain a permit for the McLoughlin Outfall. The McLoughlin Outfall is a discharge facility and because it discharges in to the environment, it has a much more significant impact on the environment than a closed forcemain. Stantec may be unduly pessimistic, alluding to a potentially lengthy bureaucratic permitting process (EIA, DFO) without knowing what a timeline would be. The Nanaimo Outfall which was successfully completed in 2016 took less than 6 months to fully permit. The key shoreline crossings at Clover Pt and McLoughlin Pt where delays might be anticipated, could be considerably shortened because of the existing approvals.
2. **Protection from Wave-Action (and Currents):** A simple analogy with the installation of other seabed pipelines (eg. the Nanaimo Outfall) shows that proper ballasting and securing of a seabed pipeline is common practice and can be completed cost effectively and efficiently. Stantec has failed to present solid engineering reasons for their concerns. Wave and current effects can be quickly simulated and used in engineering design. There is nothing unique or alarming about conditions along the proposed route. We have referenced all available data sources and the wave conditions cited in the Stantec rebuttal have never been recorded in the subject area whereas 90 m wave lengths (as cited) are not uncommon at the western entrance to the Juan de Fuca Straits from the effect of Pacific Ocean swells 100 kms to the west. The Stantec reference does not address local conditions. Wave and current data modellers through the Department of Engineering at the University of Victoria (West Coast Wave Initiative – WCWI) and Dynamic Systems Analysis (DSA) are available at short notice to engage and collaborate.
3. **Ship anchors:** The proposed route is north and well outside shipping lanes. According to a marine construction contractor consulted to discuss potential problems which may arise from the emergency deployment of ships anchors, rip rapping, trenching and berm construction could fully protect a seabed pipeline over the short distance crossing the entrance to the outer harbour. While this might add marginally to the cost of a seabed pipeline, the additional engineering costs are probably a fraction of what will be required to successfully construct a land-based route on geotechnically vulnerable parts of Dallas Road.
4. **Location of a fault line:** The Stantec reference to the Geological Survey of Canada document authored by Dr. Barrie *et al* is misinterpreted and is unnecessarily alarmist in terms of inferring a 95 to 150 cm vertical displacement along a fault 50 kms to the east of Victoria. From my discussions with Dr. Barrie, an inferred fault in the Victoria area shown in the publication, likely occurs to the south of the proposed subsea pipeline route. The exact location of this fault, if it

exists, will be the subject of a 3-line seismic survey planned for later this year. It is unfortunate that Stantec did not discuss the seabed proposal with Dr. Barrie at the Geological Survey of Canada, whereupon Stantec would have found support for the seabed proposal in preference to the Dallas Road trenching on the basis of anticipated seismicity. The concern is less to do with displacements along a fault as opposed to ground motions propagated from an earthquake where the focus of the earthquake will likely be in the Victoria area. Literature suggests that constrained trenched land-based pipelines are more susceptible to rupture from surface ground waves than loosely constrained seabed pipelines: Kershenbaum, *et al.*, 1998 "Subsea Pipeline Behaviour Under Seismic Impact". Proc. 8th International Offshore and Polar Engineering Conference.

5. **Repair and maintenance:** Discussions held with an experienced marine construction and barge equipment contractor have indicated that a proposed seabed pipeline in a water depth of approximately 35 metres would not lead to operational access problems. Certainly the Stantec reference to the Comox Valley Regional District pipeline on Balmoral Beach is completely inappropriate. The Comox pipeline failure and subsequent issues associated with its repair are entirely related to the pipeline being located along the foreshore. This has no bearing on the proposed seabed pipeline located in a water depth of 35 metres. A rupture in any forcemain would likely be a serious event: a rupture in a 48" forcemain located in a trench along Dallas Road would have equally if not more dire consequences than a release from a seabed pipeline.
6. **Cost implications:** *"Based on our high-level estimate of the capital costs we are confident that Mr. Gunton's sea bed pipeline proposal would be more expensive to construct and maintain than the land-based option approved by the CRD Board as part of the Core Area Wastewater Treatment Project. - Stantec"*. This quote is troubling in that we have repeatedly requested capital cost details from CRD. Stantec's statement as quoted implies that they have cost data on which to make the comparison and yet they have not released the data. In order to obtain an independent opinion, discussions were recently held with a major local marine construction and barging company experienced in laying pipelines on the seabed. The contracting company considers itself to be qualified to construct a seabed forcemain based on successfully completing a seabed pipeline project on time and on budget in the Nanaimo area. From these discussions, it is estimated that the project could be completed within 6 months and for approximately double the cost of the Nanaimo Outfall. Unlike the Nanaimo Outfall, a CRD seabed forcemain would not require diffusers nor would it require the use of construction techniques used in deep water because of the shallower water depths planned for the route. Other construction concerns were also discussed but none would preclude a seabed route. A rough estimate of double the Nanaimo costs would be a first order estimate and therefore a cost of \$30+/- million for the entire seabed route is a number which could be used for comparison purposes with a land-based route. CRD has not published a cost estimate for the Dallas trenching but an estimate of \$36+/- million for the Harbour Drilling- Tunnelling has been published. This would suggest that the Stantec higher capital cost rationale for not pursuing the seabed route is not valid and in fact, there is a strong likelihood that a seabed pipeline would result in savings of tens of millions of dollars.

The CALWMC appears prepared to accept the six Stantec points without further discussion and considers the matter closed. Mayor Helps and City of Victoria Council have not yet responded to the

request for a City co-sponsored forum of independent technical subject experts to review conveyance alternatives and specifically the six points of concern discussed above. There are very real risks associated with trenching along the Dallas Bluffs, along the sea wall, drilling and tunnelling a challenging harbour crossing, as well as the risks of future exposure and rupture of the pipeline along the land route through slope failure and the significant disruption associated with two years of land-based construction. Additionally, potential capital cost savings have not been explored.

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