

**Hearing Order MH-052-2018
Board File OF-Fac-Oil-T260-2013-03 59**

**National Energy Board
Trans Mountain Expansion Project Reconsideration**

**ARGUMENT IN CHIEF
OF THE INTERVENOR GEORGIA STRAIT ALLIANCE**

January 22, 2019

1. Introduction

This is the final argument of the Georgia Strait Alliance (GSA) in the National Energy Board's reconsideration proceeding regarding the Trans Mountain Expansion Project. GSA calls on the Board to recommend rejection of the Project. Project-related marine shipping would have significant adverse environmental effects on the endangered Southern Resident Killer Whale population regardless of the proposed mitigation measures. These effects are not justified in the circumstances.

1.1 Georgia Strait Alliance

Georgia Strait Alliance (GSA) is a registered charity established in 1990. GSA focuses on protecting and restoring the marine environment and promoting the sustainability of the Georgia Strait, its adjoining waters and communities.

GSA has more than 1,400 members and over 18,000 supporters, based primarily in communities along the Georgia Strait. Many of GSA's members live and/or own property adjacent to the proposed tanker routes for the Trans Mountain Expansion Project, including Burrard Inlet, the Gulf Islands and the south coast of Vancouver Island. GSA is supported by 42 businesses that rely on the health of the Georgia Strait. These businesses include marinas, tour operators, guiding companies, and restaurant and hotel owners, among others. They would be seriously affected by a Project-related oil spill.

GSA is committed to a future for the region that includes clean water and air, healthy wild salmon runs, rich marine life and natural areas, and sustainable communities. GSA has developed deep expertise on the marine environment of the Georgia Strait, with a particular focus on species at risk and their habitat, and on oil spill response policy and impacts.

Georgia Strait Alliance participated fully as an intervenor in the reconsideration proceeding, as well as in the Board's original review of the Trans Mountain Expansion Project, and in the Ministerial Panel process which followed. GSA's primary interest in the Project is the Project's potential impacts on the marine environment and communities of the Georgia Strait. GSA is concerned about the Project's cumulative impacts from day to day operations, as well as the impacts of a Project-related spill, accident or malfunction.

1.2 Summary

Taking into account the developments since Board's May 2016 Original Report,¹ and the factors that the Board must now consider in this reconsideration proceeding, GSA submits that the Project's significant adverse environmental effects, including on the endangered Southern Resident Killer Whale population, cannot be justified in the circumstances under the *Canadian Environmental Assessment Act 2012* and the *Species at Risk Act*. In addition, GSA submits that the Project is not in the public interest and should not be approved under the *National Energy Board Act*.

¹ A77045-1 NEB - Report - Trans Mountain - Expansion Project - [OH-001-2014 Report](#).

Even taking into account the improvements associated with the federal government's 2016 Oceans Protection Plan and Trans Mountain's spill response commitments, the evidence before the Board shows that the West Coast marine oil spill response regime does not have sufficient capacity to respond adequately to a major spill of Project-related diluted bitumen. Furthermore, an effective response to a Project-related spill of any size would be all but impossible during the adverse weather and sea conditions that occur frequently within the Project marine area.

The Project would inevitably cause serious harm to BC's marine environment and coastal communities that is not outweighed by any potential benefits.

A major oil spill resulting from Project-related shipping would devastate the marine environment, coastal communities, the regional economy and BC's international image for decades to come. The risks and impacts of a Project-related marine oil spill are unacceptable.

Further, GSA believes that construction of the proposed Project would 'lock in' transportation infrastructure for diluted bitumen and other carbon intensive fossil fuels. This would impede action to reduce greenhouse gas emissions from the extraction, transportation and combustion of fossil fuels. Approval of the Project would run counter to Canada's commitment to make the transition to a low-carbon economy that is necessary for our collective health, security, and prosperity.

1.3 Outline of argument

Section 2 addresses the legal framework, including responses to Trans Mountain, and GSA's concerns about the reconsideration proceeding. Section 3 provides GSA's submissions regarding the significant adverse environmental effects of Project-related marine shipping under CEAA 2012 and SARA. Section 4 sets out GSA's comments on the Board's draft conditions. Section 5 gives comments on the Board's draft recommendations. Section 6 is a brief conclusion.

2. Legal Framework

2.1 Environmental assessment under CEAA 2012 is required

In the May 2014 Original Report, the Board found under the NEB Act that Project-related marine shipping would have significant adverse effects. However, the Original Panel improperly excluded Project-related marine shipping from the designated project under CEAA 2012. As a result of this error, the Original Panel incorrectly found 'no significant adverse environmental effects' of the Project under CEAA 2012. As a further result, the Original Panel improperly failed to comply with the requirement of paragraph 29(1)(a) CEAA 2012 that the report must set out a recommendation to the Governor in Council as to whether the significant adverse environmental effects of the designated Project are justified in the circumstances.

The Reconsideration Panel determined in its October 12, 2018 decision that Project-related marine shipping is incidental to the Project and is therefore part of the designated Project under CEAA 2012. This requires the Panel to determine the significance of adverse environmental effects of Project-related marine shipping under CEAA 2012. It also requires the Panel to make a recommendation as to whether the significant adverse environmental effects are justified in the circumstances.

In addition, the Board must comply with section 79(2) of the federal *Species at Risk Act*, which states:

79(2) The person [who is required by or under an Act of Parliament to ensure that an assessment of the environmental effects of a project is conducted, i.e., the NEB in this case] must identify the adverse effects of the project on the listed wildlife species and its critical habitat and, if the project is carried out, must ensure that measures are taken to avoid or lessen those effects and to monitor them. The measures must be taken in a way that is consistent with any applicable recovery strategy and action plans.

2.2 Responses to Trans Mountain

2.2.1 Assessment of Project-related marine shipping under CEAA 2012 has not been done

Georgia Strait Alliance submits that the environmental assessment that the Reconsideration Panel must conduct is a new assessment that was not done in the original proceeding. The assessment of Project-related marine shipping under CEAA 2012 can and should make reference to evidence on the record of the original proceeding. However, GSA strongly disagrees with Trans Mountain's argument that the Original Panel's assessment of Project-related marine shipping under the NEB Act is "functionally and legally the same as an assessment under CEAA 2012" and that it "made no difference under which Act the effects were assessed."² Trans Mountain's position here is starkly contradicted by the Federal Court of Appeal's decision in *Tsleil-Waututh*.³ The Court found that the Board failed to assess the Project-related marine shipping under CEAA 2012 (and SARA) and that this was a legal error vitiating the Governor in Council's CPCN decision.

2.2.2 No judicial notice of "need" for the designated Project

GSA disagrees with Trans Mountain's argument the Board can and should take judicial notice of various mostly unspecified events that Trans Mountain claims support a "need" for the designated Project. Such assertions should have been supported by filed evidence that would have been subject to testing by way of information requests and intervenor evidence. This is

² A97422-2 Argument-in-Chief of Trans Mountain - [A6R2D0](#), p.3.

³ *Tsleil-Waututh Nation v Canada (Attorney General)*, [2018 FCA 153](#).

particularly noteworthy given the Panel's decision to exclude the need for and socio-economic effects of the Project from the List of Issues.⁴

2.2.3 Conclusions under CEAA 2012 have not yet been made

Georgia Strait Alliance disagrees with Trans Mountain's contention that "the Board needs to determine whether any of its conclusions in [the Original Report] would be different if Project-related marine shipping was assessed under CEAA 2012 instead of the NEB Act."⁵ Trans Mountain's approach puts the cart before the horse.

In the Original Report, the Board did not make conclusions on

- (a) whether the designated project, including Project-related marine shipping, is likely to have significant adverse environmental effects after taking into account the implementation of mitigation measures,
- (b) mitigation measures not within the Board's regulatory authority, and
- (c) whether or not these significant adverse environmental effects can be justified in the circumstances, after considering mitigation measures.

These are new determinations that the Reconsideration Panel must make, and that were not made by the Original Panel.

Trans Mountain states:

"Under CEAA 2012 and the *Species at Risk Act* ("SARA"), it [the Board] may need to consider whether there are any additional mitigation measures within the legislative authority of Parliament that are technically and economically feasible to reduce any significant adverse environmental effects of the Project and any adverse effects of the Project on SARA-listed species."⁶

Georgia Strait Alliance submits that this does not go far enough in several respects. GSA says that the reconsideration panel must consider:

- (a) mitigation measures that would be implemented pursuant to conditions of NEB approval, based on new and updated evidence since the close of the record in the original proceeding,
- (b) mitigation measures that would be implemented pursuant to requirements imposed under federal authority, in addition to those imposed under the Board's authority, based on current evidence,

⁴ A96969-1 NEB Ruling No. 22 - Trans Mountain Expansion - Reconsideration - Applications for review from Living Oceans and Raincoast and TWN - [A6Q5C9](#).

⁵ [A6R2D0](#), p.2, underline added.

⁶ [A6R2D0](#), p.2, underline added.

- (c) whether, after taking into account both categories of mitigation measures, the designated project will likely have significant adverse environmental effects, and
- (d) whether such significant adverse environmental effects are justified in the circumstances under CEEA 2012 and SARA.

2.3 Concerns with the reconsideration process

Georgia Strait Alliance has a number of concerns regarding the reconsideration proceeding:

1. GSA believes that the time allocated (155 days) for the proceeding has proven insufficient for the Board to adequately complete the reconsideration required by the decision of the Federal Court of Appeal in *Tsleil-Waututh Nation*. GSA submits that this adds weight to the conclusion that the significant adverse environmental effects of Project-related marine shipping are not justified in the circumstances.
2. The Federal Court of Appeal said that Canada must re-do its Phase III consultation with Indigenous groups and that only after that consultation is completed and any accommodation made can the Project be put before the Governor in Council for approval.⁷ Georgia Strait Alliance believes that for the benefit of all concerned the Panel should explain in its final report how the reconsideration hearing process relates to Canada's consultation and accommodation with Indigenous groups regarding consideration of Project approval.
3. Georgia Strait Alliance is concerned that the Panel has not explained how it intends to handle the fact that the proponent, Trans Mountain, is now owned by the Government of Canada.
4. GSA believes the Board ought to have considered upstream and downstream effects in its environmental assessment of the designated project.
5. GSA respectfully disagrees with the Reconsideration Panel's decision to limit the designated project to Project-related marine shipping between the WMT and the 12 Nautical Mile territorial sea limit rather than the outer boundary of Canada's Exclusive Economic Zones (EEZ).
6. GSA respectfully disagrees with the Reconsideration Panel's decision to allow Trans Mountain to adopt an "indicator species based approach" to species at risk.

⁷ *Tsleil-Waututh Nation v. Canada (Attorney General)*, [2018 FCA 153](#), para.771.

3. Significant adverse environmental effects under CEAA 2012 and SARA

3.1 Introduction

Georgia Strait Alliance submits that the Reconsideration Panel should determine under CEAA 2012 and SARA that Project-related marine shipping, taking into account recommended mitigation measures, would have significant adverse effects on greenhouse gas emissions, the Southern resident killer whale population, traditional Indigenous use associated with Southern resident killer whale, and the potential effects of a large or credible worst-case spill. This follows for three reasons:

1. In the Original Report, the Board found under the NEB Act that Project-related marine shipping, after taking into account recommended mitigation measures within the Board's regulatory authority, would have significant adverse effects on these four areas of concern. Nothing in the evidence filed in the reconsideration proceeding points toward any lessening of the significance of these effects.
2. There is no evidence of any mitigation measures beyond the NEB's authority that would eliminate or reverse the significant adverse environmental effects of Project-related marine shipping on the Southern Resident Killer Whale population and other valued ecosystem components.
3. Evidence filed in the reconsideration proceeding, including GSA's evidence, discussed below, strongly supports findings of significant adverse environmental effects regarding these four areas.

Notably, Trans Mountain in its final argument does not attempt to argue that there has been any lessening of the significance of the adverse effect of Project-related marine shipping on SRKW; Indigenous traditional marine use and culture; greenhouse gas emissions; Pacific salmon and Steelhead Trout; and, the environmental effects resulting from an oil spill. Indeed, Trans Mountain acknowledges that many of the various scientific papers filed or referenced in the reconsideration proceeding "improve and update the state of knowledge regarding topics such as SRKW population status, important habitat, and relative contributions of different threats." Trans Mountain actually emphasizes that the Original Panel's significant adverse effects determination remains valid. Trans Mountain states:

"The current 2018 status of the SRKW is still endangered, the population trend is still declining, and Project-related vessels and other marine traffic will need to continue to pass through SRKW critical habitat. In addition, the cumulative levels of marine vessel traffic in the Salish Sea remain consistent with what Trans Mountain assessed in its cumulative effects assessment in the OH-001-2014 proceeding. As a result, Trans Mountain submits that none of the new and updated evidence on SRKW alters the Board's significance determination for

SRKW in the OH-001-2014 Report or its key findings that led to that determination.”⁸

Further, Trans Mountain cites with approval the Original Panel’s findings regarding the significant adverse effect of Project-related marine shipping on the SRKW population, as follows:

- “• The SRKW population has crossed a threshold where any additional adverse environmental effects would be considered significant.
- The current level of vessel traffic in the [Regional Study Area] and the predicted future increase of vessel traffic in the [Regional Study Area], even excluding the Project related marine vessels, have and would increase the pressure on the SRKW population.
- While the effects from Project-related marine vessels will be a small fraction of the total cumulative effects, the increase in marine vessels associated with the Project would further contribute to cumulative effects that are already jeopardizing the recovery of the SRKW.
- The effects associated with Project-related marine vessels will impact numerous individuals of the SRKW population in a habitat identified as critical to the recovery... Consequently, the Board finds that the operation of Project-related marine vessels is likely to result in significant adverse effects to the SRKW.
- Mortality of individuals of SARA-listed species could result in population level impacts and could jeopardize recovery. For example, the Recovery Strategy of the Northern and Southern Resident Killer Whales (*Orcinus orca*) in Canada states that while the probability of either Northern or Southern resident killer whales being exposed to an oil spill is low, the impact of such an event is potentially catastrophic.”⁹

In addition, Trans Mountain does not attempt to argue that there are, in Trans Mountain’s words, “mitigation or monitoring measures that are outside Trans Mountain’s control and the Board’s jurisdiction but within the legislative authority of Parliament that are technically and economically feasible and that would mitigate the significant adverse environmental effects or effects of Project-related marine shipping on SARA-listed species.”¹⁰

⁸ [A6R2D0](#), p.12.

⁹ [A6R2D0](#), p.10, citing [OH-001-2014 Report](#), footnotes omitted.

¹⁰ [A6R2D0](#), p.23.

3.2 Georgia Strait Alliance evidence

GSA's direct evidence¹¹ addresses post-May 2016 developments in the marine oil spill response regime applicable to Project-related marine shipping between Westridge Marine Terminal and the 12 Nautical Mile territorial sea limit. GSA's evidence stands unchallenged by information requests. A response to certain criticisms by WCMRC is provided below.

GSA's evidence establishes that these developments do not produce a world-class marine spill response regime that provides adequate capacity to respond effectively to a spill of diluted bitumen from a Project-related tanker. Specifically:

- Commitments made under the Oceans Protection Plan, together with response capacity enhancements funded by Trans Mountain, do not constitute a world-class marine spill response regime for Project-related tankers.
- Existing and promised spill response equipment is not effective for the environmental conditions experienced much of the time in the Project marine area. Recent West Coast marine spill responses, such as the *Nathan E. Stewart* incident, have been inadequate and unsatisfactory.
- There is no proof that diluted bitumen spilled from a Project-related tanker will necessarily float long enough to be recovered, rather than submerging or sinking.

3.3 The 2016 Oceans Protection Plan is inadequate

The federal Cabinet claimed that its erstwhile approval of the TMX Project was justified by the five-year Oceans Protection Plan (OPP) announced in November 2016. In addition, Trans Mountain committed to funding certain improvements to WCMRC's marine oil spill response capacity.

The GSA evidence uses the features of a world-class oil spill regime identified in the 2013 Nuka report,¹² commissioned by the Province of B.C., as a benchmark against which to assess the adequacy of the post-2016 oil spill regime applicable to Project-related marine shipping. The evidence identifies the following key deficiencies in the post-2016 oil spill regime applicable to Project-related shipping relative to world-class standards:

Prevention Elements

1. No plans to strengthen marine firefighting and salvage resources.

¹¹ A96417-2 DIRECT EVIDENCE OF THE INTERVENOR GEORGIA STRAIT ALLIANCE - [A6L510](#); A96417-3 APPENDIX A Limits to effectiveness of containment booms in the Project marine area - [A6L511](#); A96417-4 APPENDIX B - Python Scripts - [A6L512](#); A96417-5 APPENDIX C - Charts - [A6L513](#).

¹² *West Coast Spill Response Study, Volume 3: World-Class Spill Prevention, Preparedness, Response & Recovery System*, at https://www2.gov.bc.ca/assets/gov/environment/air-land-water/spills-and-environmental-emergencies/docs/westcoastspillresponse_vol3_analysis_130722.pdf.

2. No plans to review the national escort vessel regime.
3. The potential offered by proactive vessel management and changes to the Pilotage Authority Act is vulnerable to efforts to preserve business as usual.

Preparedness & Response Elements

4. The proposed risk assessment methodology does not consider low-probability/high-consequence events.
5. It is not possible to assess the WCMRC or Coast Guard contingency plans that contain the critical operational detail that would guide response to a spill in the Project marine area because these plans are not available in the public domain.
6. The planned 20,000 tonnes of enhanced WCMRC response capacity is not sufficient to respond to a true worst-case spill.
7. Lack of assessment of response limitations due to environmental conditions. The Canadian Coast Guard stated in response to an information request from GSA that it does not intend to conduct a response gap assessment.¹³
8. Lack of assessment or prescription of the amount or type of response capacity (equipment, personnel) required for a response.
9. Lack of a fair, transparent process to oversee post-spill restoration and recovery.

System Elements

10. No plans to ensure that contingency plans of all levels and held by all agencies are made available in the public domain; or to clarify how government audits industry plans.
11. Unclear if or how intentions to strengthen the Coast Guard's leadership role will resolve challenges surrounding the spiller's influence over decision-making in Unified Command.
12. No mechanism such as a Regional Citizens Advisory Council to formally involve a range of communities, stakeholders and members of the public in spill planning and preparedness
13. No provisions for federally-run unannounced drills that test all agencies involved in a spill response, or to test specific planning assumptions.
14. Reliance on public rather than industry funding to fully implement planning, response and recovery.

GSA submits that the Board should conclude that the oil spill regime applicable to the Project marine area does not meet world-class standards as defined by the 2013 Nuka report.

¹³ [A6Q5R6](#), Canadian Coast Guard Response to Georgia Strait Alliance IR 1(e).

3.4 Limits to effectiveness of containment booms in the Project marine area

GSA’s evidence compares established boom failure limits to wind speed and wave height observations, and surface current predictions, along the Project tanker route. GSA finds that routine coastal conditions in the Project marine area regularly exceed the operating limits of the containment boom in WCMRC’s inventory.

3.4.1 Boom impairment/failure for wind and waves

GSA obtained wind speed and wave height data from NOAA and Fisheries and Oceans Canada data sets for weather buoys along the Project-related tanker route at New Dungeness, Neah Bay, and La Perouse Bank. Containment boom performance limits (“impairment conditions” and “failure conditions”) were obtained from the literature: Fingas 2004, Tedeschi 1999 and Nuka Research 2015. For each weather buoy, and for 2015, 2016 and 2017, the wind and wave data was compared to the containment boom failure conditions.

The following table summarizes the 2017 results for wind and wave exceedances.

Wind speed and wave height, days of exceedance¹⁴ of containment boom impairment/failure conditions, 2017			
Condition	New Dungeness Buoy	Neah Bay Buoy	La Perouse Bank Buoy
Fingas 75% Decrease in Performance - Wave Height	0 days	9 days	37 days
Fingas 75% Decrease in Performance - Wind Speed	232 days	326 days	294 days
Tedeschi wind speed failure	100 days	119 days	139 days
Nuka response impaired	76 days	337 days	290 days
Nuka response impossible	58 days	198 days	204
Data completeness	48.59% of intervals, 275 days	98.9% of intervals, 366 days	73.16% of intervals, 304 days
Sources: NOAA, DFO, Fingas 2004, Tedeschi 1999 and Nuka Research 2015			

¹⁴ Day of exceedance is defined as a day when failure condition is reached for more than two hours.

3.4.2 Boom failure for current speed

GSA used DFO and NOAA current tables for four locations along the Project shipping route: Race Passage, two locations near Skipjack Island, and a point west of Kellett Bluff. Containment boom failure conditions for current speed were derived from Schulze and Swift and from reported limits for three types of boom: Kepner boom, Ro-Boom 2000, and Current Buster 4.

The following table shows the results.

Current speed and boom failure: Percentage of time current speed exceeds containment boom limits, four locations on Project tanker route				
Failure Type	Skipjack Island, 2 miles NNE of	Skipjack Island, 1.5 NW of	Kellet Bluff, west of	Race Passage
Highest catenary "first failure" in Schulze	64%	6%	40%	72%
Kepner boom maximum operating current	60%	4%	34%	70%
Highest diversionary "first failure" in Schulze	56%	2%	26%	65%
Gross failure in Swift	48%	0%	16%	60%
RoBoom 2000 current stability maximum	25%	0%	1%	39%
Current Buster 4 maximum current	9%	0%	0%	19%
Sources: NOAA, DFO, Desmi, NoFi, ECRC-SIMEC, Fingas 2004, Schulze 2001				

3.5 Response to WCMRC

In its response to information requests from the Province of B.C., WCMRC criticizes GSA’s evidence regarding the response gap in the Project marine area.¹⁵ WCMRC’s criticisms are under three headings: “wave statistics,” “wind threshold,” and “statistics.” None of WCMRC’s points is valid.

3.5.1 “Wave Statistics”

WCMRC claims that GSA (a) concluded incorrectly that wave height would lead to frequent impairment of spill response due to (b) incorrectly combining swell and sea state data and (c) under-assessing oil spill response effectiveness.¹⁶ Each of these criticisms is wrong.

¹⁵ [A6Q6F7](#).

¹⁶ [A6Q6F7](#), pp.6-7.

(a) The GSA evidence does not draw conclusions based on wave height alone. GSA's conclusions are based on wind speed, current, and wave height and steepness data (at several locations). Actually, GSA's evidence is that in the Project marine area wind speed is the predominant cause of boom ineffectiveness, followed by current and then waves.

WCMRC's contention that "waves would be the determining factor on oil spill response" is plainly wrong and is certainly not supported by ASTM F625. It is well accepted that response effectiveness can be impaired by wind, wave and current conditions, separately or in combination, and that the determining factor depends on the particular circumstances. Contrary to WCMRC's assertion, ASTM F625 does not purport to weigh the relative significance of wave height, current and wind speed for impairment of boom effectiveness. In fact, ASTM F625 states:

"4.4 Effective operation of oil spill control equipment depends on many factors, of which the prevailing environmental conditions are just a few. Factors such as, but not limited to, deployment techniques, level of training, personnel performance, and mechanical reliability can also affect equipment performance." [underline added]

ASTM F625 simply provides guidance for classifying water bodies for spill response, listing maximum wave heights for Calm, Protected Water, and Open Water, primarily for use as a reference for F1523 (Standard Guide for Selection of Booms in Accordance with Water Body Classifications.) ASTM F625 indicates that wave height is the primary variable for describing a body of water for spill response. It states:

"5.1 Wave height is recognized as the primary variable in describing marine environments for spill control systems. Where currents are significant, the four water body types listed in Table 1 can be modified by appending "C", as in "I-C". [underline added]

5.2 In some situations, air temperature, water temperature, or presence of debris, or a combination thereof, may significantly affect the usage of Table 1 and should be considered.

5.3 Other factors such as presence of salt water or silt, or both, should be considered if significant."

(b) GSA's evidence uses wave height and steepness data (and wind speed) for the analysis that uses the Nuka 2015 effectiveness limits, because those are the units of measurement in which the Nuka 2015 limits are defined. GSA's evidence uses wave height data for the analysis that uses the Fingas 2004 wave effectiveness limits, because wave height is the measure used by Fingas.

(c) For wind and wave height, GSA's evidence relies on four different estimates of boom impairment conditions: Fingas 2004 for wave height, Fingas 2004 for wind speed, Tedeschi 1999 for wind speed, and Nuka 2015 for wind speed and wave height. Each estimate is based

on its own assumptions, methodology and data. This is why four different estimates are used in the analysis and four separate sets of results are presented for each location and year. GSA's conclusions are based on consideration of all the results, not the results of just one estimate.

WCMRC claims that Nuka 2015 for wind and wave "under-assesses" oil spill response effectiveness. However, Trans Mountain's re-analysis¹⁷ of Nuka 2015 to remove swell from wave height data, that WCMRC relies on, produces an estimate of a 40% annual response gap at Neah Bay compared to the Nuka 2015 estimate of 52%. Both figures are estimates. Both estimates indicate a spill response gap in the Project marine area during substantial portions of the year. WCMRC's criticism does not negate GSA's conclusion that WCMRC's boom equipment in the Project marine area fails condition impairment limits for substantial periods of time.

3.5.2 "Wind Threshold"

WCMRC states that "GSA's assertion that there would be significant reduction in boom performance for winds over 4 m/s is highly overrated and unsubstantiated."¹⁸ This is incorrect on several levels.

First, 4 m/s is not a GSA assertion; it is a estimate of Fingas 2004, based on empirical observation during containment boom testing, that wind speed ≥ 4 m/s is associated with a 75% reduction in typical boom performance.

Second, GSA's conclusions are not based only on the Fingas 2004 wind speed boom impairment estimate; GSA's conclusions are based on the results from the full suite of boom impairment measures that GSA used.

Third, the Fingas 2011 estimate for boom impairment by wind speed is based on different assumptions than the Fingas 2004 estimate. GSA chose to use the Fingas 2004 estimate because it is defined quantitatively whereas the Fingas 2011 estimate is only shown in a graph.

Fourth, WCMRC's criticism mixes up booms and skimmers. The Fingas 2011 figure reproduced by WCMRC strongly confirms GSA's analytical assessment that boom performance is the weak link in spill response. Further, the Fingas 2011 figure indicates that "typical boom" performance is decreased by 75% (to 25% effectiveness) in winds slightly above 5 m/s.

3.5.3 "Statistics"

WCMRC is mistaken in its interpretation of the results that GSA presents. WCMRC complains that the Fingas wave impairment percentage plus the Fingas wind impairment percentage does not equal the Nuka wind and wave impairment figure. However, these are separate results based on separate impairment estimates. Nuka does not use the same impairment criteria as

¹⁷ B440-1-1 - Clean - 1.10 Reply to Technical Analysis of Oil Spill Response Capabilities and Limitations - [A4W3I7](#), p.20.

¹⁸ [A6Q6F7](#), p.8.

Fingas and so the results are expected to differ. This is why GSA used a suite of boom impairment estimates.

Regarding the “percentage reduction in boom performance” shown in the GSA figures, the “percentage reduction in boom performance” is for the time intervals for which data is available (shown in the first row). The number of “failure days” is not based on the percentage reduction in boom performance. Rather, as stated in the notes to the figures, “Days for each failure is when failure condition is reached for more than 2 hours of each day.”

3.6 *Nathan E Stewart incident*

Oil spill recovery depends on collecting and containing oil using containment boom. Wind, waves and currents can interfere with the effectiveness of containment booms. A significant recent West Coast example is the response to the October 2016 sinking of the tug Nathan E Stewart in Seaforth Channel near Bella Bella in Heiltsuk Nation Territory. In that case, the response operation was hampered by wind, waves and currents in the area of the sinking. The Heiltsuk report that during the first 48 hours containment booms rated for use in up to 1.5 knots of current were deployed in waters where currents were often higher. The result was ineffective booms and very little containment.¹⁹

WCMRC acknowledges that the 40-day clean-up and salvage period included “approximately 11 days (which equates to 27.5%) on which operations were suspended by Unified Command due to weather concerns.”²⁰ WCMRC adds that “On two occasions, containment boom around the Nathan E. Stewart was damaged due to wave action during stormy weather and required replacement.”²¹ The federal incident report, cited by WCMRC, found that “The pollution boom around the tug did not contain the diesel oil; approximately 110 000 L of diesel oil were not recoverable and were left in the environment.”²²

3.7 *Alternative Spill Response Measures*

Since 2016, the federal government has been moving toward the use of Alternative Response Measures such as chemical dispersants and in-situ burning, apparently because of the limited effectiveness of mechanical recovery. GSA’s evidence reviews problems associated with these techniques. In-situ burning has all of the problems of combusting fossil fuels: GHG emissions, air pollution, and toxic residues. The use of chemical dispersants in the response to the *Deepwater Horizon* disaster has been shown to cause adverse health effects on spill responders, diminished natural degradation of spilled oil, and increased toxicity of oil to aquatic

¹⁹ A96417-2 DIRECT EVIDENCE OF THE INTERVENOR GEORGIA STRAIT ALLIANCE - [A6L5I0](#)

²⁰ A97357-3 WCMRC Additional Response to Georgia Strait Alliance IR No 1.2 A96659-2 - [A6R1C4](#)

²¹ A97357-2 WCMRC Additional Response to Province of BC IR No 1.1 A96703-4 - [A6R1C3](#)

²² [Transportation Safety Board of Canada \(TSB\) Marine Investigation Report M16P0378](#), pdf p.36, cited at [A6R1C4](#).

organisms. GSA commends to the Board the expert report by Kate Logan concluding that the use of Corexit 9500 is a cause for concern with respect to marine organisms in general and critically endangered southern resident killer whales in particular.²³

Toxic contaminants are one of the three primary threats to the recovery of BC's endangered Southern Resident Killer Whale population. Inhaling a combination of the evaporated components of spilled oil and airborne chemical dispersants could pose a serious threat to killer whales, which must surface to breathe. GSA concludes that further research must be completed before chemical dispersants and in-situ burning are considered in Project-related oil spill plans.

3.7.1 Diluted Bitumen

The federal government's justification for approving TMX relies heavily on its claim that diluted bitumen (dilbit) is likely to float when spilled in the ocean, and that conventional spill response tactics will be effective at recovering spilled dilbit. The GSA evidence reviews the most recent (2018) federal status report regarding research on the topic, as well as the approach taken by the US National Academy of Sciences and the State of Washington. GSA concludes that the research does not support confidence that dilbit spilled in the Project marine area can be handled effectively with techniques designed for conventional crude oil. The studies reported by the federal government rely almost exclusively on laboratory experiments that in GSA's view cannot adequately reflect real world conditions in the Salish Sea. GSA also notes research findings that suggest that spill countermeasures may not work in the same way for dilbit as for conventional crude.

4. Comments on draft conditions

Georgia Strait Alliance has the following comments on the Board's "Draft Conditions for Comment."²⁴

First and foremost, Georgia Strait Alliance maintains that the Board should conclude that the designated Project will have significant adverse environmental effects even assuming implementation of the draft conditions. Further, GSA submits that the Board should recommend that the Governor in Council should conclude that the significant adverse environmental effects of Project-related marine shipping, taking into account mitigation measures, are not justifiable in the circumstances under CEAA 2012 and SARA. No mitigation measure will prevent Project-related marine shipping from adding significant unacceptable

²³ A96429-6 D - Expert Report of Logan - 2018 - Final - [A6L5R5](#).

²⁴ A97236-1 NEB PD No. 4 - All Parties – Trans Mountain Expansion – Reconsideration – Affidavits and written argument-in-chief, including comments on draft conditions and recommendations - [A6Q9I3](#), Appendix 2.

incremental risk of harm to the recovery or survival of the endangered Southern Resident Killer Whale population.

To be clear, GSA's position is that the Project should not be approved and would not be in the public interest even if GSA's comments on the draft conditions were adopted by the Board. The following comments are expressly "in the alternative."

1. Many of the conditions require Trans Mountain to file with the Board a certain document at least a certain number of months prior to a certain milestone. GSA is concerned that this mechanism excludes stakeholders and members of the public from important decisions. GSA recommends that each pre-filing condition should include a requirement that Trans Mountain provide public notice of the filing along with instructions on how to obtain the document(s) on the Board's website and how to file letters of comment with the Board.
2. Condition 91, "Plan for marine spill prevention and response commitments," and Condition 133, "Confirmation of marine spill prevention and response commitments," should be modified to require a spill response gap analysis and a plan for how Trans Mountain will ensure that loaded Project-related tankers do not leave Westridge Terminal Facility when weather and ocean conditions would substantially degrade spill response performance.
3. Condition 133, "Confirmation of marine spill prevention and response commitments," should be amended to require Trans Mountain to confirm an enhanced marine oil spill response regime capable of delivering a number of tonnes of capacity that is equivalent to the total tonnage of product and fuel on each outgoing tanker.
4. Condition 132, "Marine Mammal Protection Program," should not be weakened by the proposed deletion the existing clauses e) and f), which state:
 - "e) a discussion of how any relevant outcomes of the initiatives identified in c) are being or will be applied to Project-related marine vessels;
 - f) a summary of relevant initiatives that have been implemented or proposed from other national or international relevant jurisdictions to reduce effects from marine shipping on marine mammals, and an analysis or rationale for why these initiatives will or will not be incorporated into the program;"

5. Comments on draft recommendations

Georgia Strait Alliance has the following comments on the Board's "Draft Recommendations for Comment."²⁵

²⁵ A97236-1 NEB PD No. 4 [A6Q913](#), Appendix 3.

First and foremost, Georgia Strait Alliance takes the same position that it has set out above regarding the Board's draft conditions. GSA maintains that the Board should conclude that the designated Project will have significant adverse environmental effects even assuming implementation of the draft conditions or the draft recommendations. Further, GSA submits that the Board should recommend that the Governor in Council should conclude that the significant adverse environmental effects of Project-related marine shipping, taking into account mitigation measures, are not justifiable in the circumstances under CEAA 2012 and SARA. No mitigation measure will prevent Project-related marine shipping from adding significant unacceptable incremental risk of harm to the recovery or survival of the endangered Southern Resident Killer Whale population.

Regarding the 13 draft recommendations, Georgia Strait Alliance has the following comments:

1. The Board should specify that the recommendations are intended to be interpreted broadly, and that the wording is not intended to limit or weaken any existing commitments.
2. The Board should acknowledge that many of the recommendations will require substantial elaboration with public and stakeholder consultation, in addition to the requisite Indigenous consultation and accommodation.
3. Regarding Recommendation 4, to do with a Southern Strait of Georgia National Marine Conservation Area, the Board should clarify that work should proceed on other potential protected marine areas in the Salish Sea as well.
4. Regarding Recommendations 5 and 6, to do with measures to "offset" underwater noise and strike risk, the objective to reduce net impacts should be made explicit, and direct measures, not just offsets, should be included. Also, the recommendations should address quiet vessel design requirements. The federal government should be encouraged to participate actively in the appropriate initiatives and committees of the International Maritime Organization.²⁶
5. Regarding Recommendation 7, "Marine oil spill response," the recommendation should also include
 - a. spill response gap analysis,
 - b. spill response performance standards, and
 - c. examination of stranded, submerged or sunk oil.
6. Further regarding Recommendation 7, the provision for "public reporting by response organizations to promote transparency of information" should be refined to specify that all oil spill response plans are available in the public domain in their entirety, including local, operational level detail.

²⁶ A97313-1 Argument In Chief of John A. Clarkson - [A6ROE3](#), p.11.

7. In addition, Recommendation 7 should be expanded to include an independent Regional Citizens' Council for the South Coast, funded by the shipping industry. The Council would provide citizen oversight and ensure that spill preparation and response planning is accountable to local communities. A US model that could be modified for the Canadian context is the Prince William Sound Regional Citizens Advisory Council, funded by the operation of the Alyeska Pipeline.
8. Regarding Recommendation 8, "Greenhouse gases," GSA notes that "market-based measures" aimed at GHG reductions usually refers to levies (taxes), emissions trading, and offsetting. The term does not usually include government subsidies to industry, which in any event is not usually a preferred GHG policy option.

6. Conclusion

For the reasons set out above, Georgia Strait Alliance submits that the Board should determine under CEAA 2012 and SARA that the designated Project-related marine shipping, taking mitigation measures into account, will likely have significant adverse environmental effects on greenhouse gas emissions, the endangered Southern Resident Killer Whale population, traditional Indigenous use associated with the Southern Resident Killer Whale, and the potential effects of a large or credible worst-case spill. Further, Georgia Strait Alliance submits that under CEAA 2012 and SARA the Board should recommend to the Governor in Council that these significant adverse environmental effects cannot be justified in the circumstances. Finally, Georgia Strait Alliance submits that the Board should recommend that the Project is not in public interest under the NEB Act.

ALL OF WHICH IS RESPECTFULLY SUBMITTED THIS 22nd DAY OF JANUARY, 2019



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