
British Columbia Ferry Services Inc.

Supplemental Filing with the
British Columbia Ferries Commissioner

Pursuant to
Order 19-02 and 19-02A

For the
Major Capital Expenditure for
Four Island Class Vessels and One Salish Class Vessel
Pursuant to Section 55 (2) of the *Coastal Ferry Act*

September 4, 2019



Note: In this copy of the Application, information of a confidential and commercially-sensitive nature has been redacted.

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Section 1 - Introduction

On November 5, 2018, British Columbia Ferry Services Inc. (“BC Ferries” or the “Company”) submitted an application (the “Application”) under section 55(2) of the *Coastal Ferry Act* (the “Act”) seeking the British Columbia Ferries Commissioner’s (the “Commissioner”) approval of a proposed major capital expenditure for the procurement of four new Island class vessels, one new Salish class vessel and incremental terminal improvements which will enable the retirement of three Bowen class vessels, the *Powell River Queen* (built in 1965), the *Bowen Queen* (built in 1965), and the *Mayne Queen* (built in 1965) (the “Project”).

On January 7, 2019, the British Columbia Ferry Commission (the “Commission”) issued Order 19-02 approving the Application with conditions. Concurrently, the Commission set a maximum amount of capital expenditure for the Project (the “Cost Cap”) in confidential Order 19-02A.

Since receiving the Commissioner’s Orders, BC Ferries has continued with the procurement process for the acquisition of the vessels as described in the Application. Separate Requests for Proposals (“RFP”) were issued for the construction of four Island call vessels and for the construction of the Salish class vessel in November and December 2018, respectively. The pricing received through the RFPs is higher and the time to complete contract negotiations has been longer than was anticipated at the time of the Application. The Company has also taken the opportunity to revise other elements of the capital budget for the Project to reflect current information. As a result of these developments, an adjustment to the Cost Cap will be required in order for BC Ferries to proceed with the Project.

The Project was included in the Company’s 12-year capital plans submitted to the Commissioner for performance term four (April 1, 2016 – March 31, 2020) and performance term five (April 1, 2020 – March 31, 2024) (“PT5”). The Company will manage the Project within the expenditure limit of its capital plan through deferrals of and/or scope reductions in other capital projects. As a result, there is no forecast impact of the cost increase of the Project on the price cap.

The higher forecast cost has not changed BC Ferries’ views on the merits of proceeding with the Project. The Company continues to believe that the Project will help ensure continued safe, reliable and efficient operations. It will also enable BC Ferries’ to advance further in the adoption of clean technology, and meet the terms of the Coastal Ferry Services Contract (the “Contract”) and the service needs of the customers and communities it serves.

The Project reflects input received from community and stakeholder engagement processes, and encompasses planning and procurement processes designed to ensure cost-effective delivery of all Project components. The Project will be prudently managed and, when complete, will benefit South and

North Gulf island communities and all British Columbians with new vessels that will connect the communities and customers to the people and places in their lives.

BC Ferries is of the view that the Project continues to satisfy the requirements of section 55 of the Act. The new vessels will align with the Company's strategic intent to renew the fleet in a systematic manner, and they are expected to enhance the customer experience, while reducing the environmental impact of the service and generating efficiencies in safety and operations.

In summary, BC Ferries seeks an order permitting it to proceed with the Project based on a revised forecast total cost for the Project of \$<> million, of which \$<> million is for capital expenditures (inclusive of interest during construction ("IDC")) and \$<> million is for operating costs.

As this filing is part and parcel of the original Application process, it should be considered in conjunction with the details filed as part of that Application. This filing focusses principally on the differences that have resulted from the results of the RFP processes. In particular, this filing provides updated analysis based on the RFP results that demonstrates that the Project continues to be reasonable, affordable, prudent, and in the public interest.

Section 2 - Background

2.1 Application Overview

BC Ferries intends to invest in the procurement of four new Island class vessels, one new Salish class vessel and incremental terminal improvements which will enable the retirement of three Bowen class vessels, the *Powell River Queen*, the *Bowen Queen*, and the *Mayne Queen*. The Salish class vessel will be deployed on Route 5/5A connecting Swartz Bay and the Southern Gulf Islands, while the Island class vessels will be deployed on Route 19 connecting Nanaimo Harbour and Gabriola Island and Route 23 connecting Campbell River and Quadra Island, with two vessels assigned to each route.

As described in the Application, the Project will deliver new Island and Salish class vessels that are essentially identical to those that are already a part of or that will soon be joining BC Ferries' fleet. The procurement of these vessels aligns with the Company's long term strategy to consolidate vessels into specific classes and reduce the current number of classes from seventeen to five or fewer in the future.

2.2 Project Objectives

2.2.1 Strategic Planning

As outlined in the Application, BC Ferries has a detailed and comprehensive long-range vessel planning process. It starts with a corporate Strategic Plan which reflects the Company's vision of being trusted and valued, and its mission to connect communities and customers to people and places important in their lives. The Company's Fleet Master Plan translates the broad direction of the Strategic Plan into specific strategies, policies, design directives, and tactics for the development of the fleet that will help the Company progress towards its strategic goals. The Fleet Master Plan sets out BC Ferries' strategy to transition the fleet from one that has many unique vessels to one that has vessels with high physical and operational commonality.

The Company's corporate strategic drivers as set out in the Strategic Plan provide a foundation for the objectives underlying the fleet renewal program:

i. Operational Excellence

- Achieve a high-quality customer experience while supporting fare affordability;
- Achieve deployment flexibility within the service area; and
- Promote interoperability within the fleet.

ii. Financial Sustainability

- Design vessels with the lowest practicable operating and life cycle cost through the optimization of fuel consumption and labour costs;
- Assess program build opportunities for prudent and sustainable fleet investments; and
- Achieve standardization across vessels, including components, procedures and equipment.

iii. Employee Engagement

- Ensure safe, efficient and productive vessel working conditions.

iv. Environmental and Social Governance

- Balance the needs of the service and the Company's impact on the environment; and
- Consider the differing needs of local communities.

v. Innovation and Continuous Improvement

- Optimize life cycle costs and seek improved operational efficiency; and
- Build vessels for a long life to extract maximum value and flexibility.

The Company's corporate strategic drivers were fundamental to the approach proposed for the Island class and Salish class vessels, and specifically for the replacements of the *Powell River Queen*, *Bowen Queen* and *Mayne Queen*.

2.2.2 Standardization

As described in the Application, a key objective of BC Ferries' fleet renewal program is to achieve efficiencies through a strategy of vessel class standardization that delivers better service, provides resiliency of operations and reduces crewing, training and supply chain costs. Standardization is the broad term used to describe the methodology by which the number of unique configurations for vessels and terminals is minimized.

The advantages of standardization cross the spectrum of corporate activities, including engineering, procurement, quality assurance, inventory, maintenance, training and operations. In particular, reducing the degree of fleet diversity brings significant benefits, including the prospect of significant savings in asset acquisition and other capital costs as efficiencies (such as volume discounts, reduced engineering design work and workplace production efficiencies) are realized through a series-build program. In addition, standardization results in improved operational efficiencies and cost savings, including reduced crew training costs from standardized bridge, engine room and accommodation layouts, and lower maintenance and

inventory costs through more commonality of parts and critical spares. It supports interoperability and resilience across a variety of routes, lowering redeployment costs such as training, management effort, technical support and berth fits. It also enhances employee familiarity with vessel assets and enables scheduling flexibility, since vessel assets can be better managed if their capabilities are the same. Further, standardization helps ensure seamless and efficient emergency deployments in cases of unforeseen fleet operational issues. It also enhances operational safety as a greater number of employees in the fleet will operate across fewer classes of vessels.

Finally, standardization enables greater consistency of service and service expectations across routes, as relief vessels are more likely to be identical and provide an identical level of service to the community. Higher customer and community satisfaction is expected to result.

The financial benefits of standardization can only be quantified in the longer term, but are accepted in many sectors, including automotive, airlines and bus systems.¹ It will take considerable time, experience and data gathering to yield and quantify the financial benefits envisaged.

2.2.2 An Investment in the Public's Interest

The Project has been developed with a view to ensuring that the planned investment aligns with the public's interest in a safe, reliable and affordable ferry system that is environmentally sustainable. This is discussed in more detail below.

Efficiency and Affordability

As noted in the Application, BC Ferries' customers expect the Company to operate efficiently and invest prudently in assets and infrastructure, so that the fares they pay are put to the highest and best use. In support of this, the Project will ensure efficiency and affordability, including by reducing upward pressure on fares, through:

- The acquisition of additional Island and Salish class vessels that support the move towards greater standardization and interoperability of the fleet. This results in lower through-life costs through lowered maintenance costs, lowered training costs, lowered inventory costs and greater operational efficiency for the ferry system overall. The planned acquisition of

¹ For example, a review of BC Transit recommended that it should develop a bus fleet standardization plan, noting that standardization is expected to lead to efficiencies and decreased costs due to simplified and reduced parts inventories, simplified work and training for mechanics, and reduced driver training time. See the *Review of BC Transit*, November 2015, at <https://www2.gov.bc.ca/assets/gov/british-columbians-our-governments/services-policies-for-government/internal-corporate-services/internal-audits/bc-transit-review.pdf>. In addition, as noted in the Application, standardization and interoperability of vessels and terminals were recognized as desirable policy objectives to optimize the efficiency of the fleet and to achieve cost savings in the Commissioner's report of January 24, 2012 entitled *Review of the Coastal Ferry Act*.

smaller Island class vessels also reduces the extent of required terminal modifications on Routes 19 and 23 and their associated capital costs; and

- Careful project and contract management, including proactive risk management and oversight of vessel construction to ensure the delivery of a quality product.

Improving Safety

Safety is BC Ferries' highest value and this Project reflects the Company's continued focus on ensuring the safety of the Company's employees and all those who sail with it by:

- Ensuring the vessels and the service provided meet all safety and other regulatory requirements;
- Increasing crew familiarity through the use of standardized vessels as a greater number of employees in the fleet will operate across fewer classes of vessels; and
- Addressing traffic congestion and community impacts on the road networks surrounding the terminals on Routes 19 and 23, by using smaller vessels operating more frequently on each route thereby reducing the volume of traffic discharged into the community on each arrival.

Providing Reliable and Resilient Service

BC Ferries understands that the services it provides must be customer and community centred. Customers and communities depend on BC Ferries to provide reliable and resilient service, and to connect them to people and places important in their lives. The Project supports this objective through:

- Vessel standardization that enables flexibility in vessel deployments, which in turn increases reliability of services for the customers and communities that BC Ferries serves;
- Replacement of aged vessels, which contributes to reliability by reducing the risk of unplanned service interruptions; and
- Increased capacity and reduced frequency of overloads on both route 5/5A through the introduction of a larger Salish vessel, and routes 19 and 23 through the use on each of two Island class vessels which enables scalable capacity for each route.

Satisfying Community Preferences

BC Ferries' vision is to become trusted and valued by those it serves. This trust is achieved, in part, by having sincere and meaningful engagement with coastal communities to ensure they have a voice in the decisions that affect them. The Project will increase the passenger and vehicle carrying capacity on the routes receiving new vessels, and will meet the expressed and clear preference of the communities served by the new vessels, as follows:

- Using two-vessel service on routes 19 and 23, which adds flexibility for vessel deployment throughout the operational day to ensure sufficient capacity to meet demand, enable faster loading and discharge, facilitate better on-time performance, and enable continued service

in the event of a vessel outage. A sample schedule for the Island class routes is provided below:

One Larger Vessel		Two Smaller Vessels	
FROM ISLAND	TO ISLAND	FROM ISLAND	TO ISLAND
6:10 am	6:30 am	6:10 am	6:30 am
7:00 am	7:30 am	7:00 am	7:00 am
8:00 am	8:30 am	7:30 am	7:30 am
9:00 am	9:30 am	8:00 am	8:00 am
10:00 am	10:30 am	8:30 am	8:30 am
11:00 am	11:30 am	9:00 am	9:00 am
12:00 pm	12:30 pm	9:30 am	9:30 am
1:00 pm	1:30 pm	10:00 am	10:00 am
2:00 pm	2:30 pm	10:30 am	10:30 am
3:00 pm	3:30 pm	11:00 am	11:00 am
4:00 pm	4:30 pm	11:30 am	11:30 am
5:00 pm	5:30 pm	12:00 pm	12:00 pm
6:00 pm	6:30 pm	12:30 pm	12:30 pm
7:00 pm	7:30 pm	1:00 pm	1:00 pm
8:00 pm	8:30 pm	1:30 pm	1:30 pm
9:15 pm	9:45 pm	2:00 pm	2:00 pm
10:15 pm	10:45 pm	2:30 pm	2:30 pm
		3:00 pm	3:00 pm
		3:30 pm	3:30 pm
		4:00 pm	4:00 pm
		4:30 pm	4:30 pm
		5:00 pm	5:00 pm
		5:30 pm	5:30 pm
		6:00 pm	6:30 pm
		7:00 pm	7:30 pm
		8:00 pm	8:30 pm
		9:15 pm	9:45 pm
		10:15 pm	10:45 pm

Sample schedules only. To be adjusted for service levels, crossing times, school runs, fuel and sewage and safety drills.

As noted in the Application, about 73 percent of the over 1,400 participants for the Gabriola Island and Quadra Island engagement (routes 19 and 23) indicated a strong preference for two smaller ships with higher frequency sailings; and

- Introducing a Salish class vessel on Route 5/5A, as its design is amenable to the route profile with its longer voyage lengths, and includes other benefits, including more customer amenities that are commensurate with the trip duration. In due course, BC Ferries will undertake further public and stakeholder engagement will focus on familiarizing participants with the design and the attributes of the vessel, and schedule changes related to the introduction of the new vessel and redeployment of the *Queen of Cumberland*. These efforts

will include seeking community feedback on what schedules best meet the needs of the communities served by Route 5/5A.

Improving Universal Accessibility

BC Ferries builds its new ferries with barrier-free transportation in mind. The new Island class and Salish class vessels are designed to support universal accessibility through the incorporation of barrier-free passenger access within their vessel arrangements.

Enhancing Environmental Stewardship

BC Ferries operates in one of the most pristine environments in the world and understands its responsibility to protect the natural beauty of the coastal waters travelled by its vessels.

The Project supports the Company’s efforts to reduce its environmental footprint by lowering emissions and implementing clean marine technology. The Salish class vessel will utilize liquefied natural gas (“LNG”) which substantially outperforms vessels fueled with the Company’s alternative fuel source, ultra-low sulfur diesel (“diesel”) in reduced emissions and fuel costs. This is illustrated by the following table which shows values of kilograms of carbon dioxide (CO₂) equivalent emitted per round trip by a Salish class vessel relative to a comparably sized vessel, the recently retired *Queen of Burnaby*:

Vessel Fuel	<i>Queen of Burnaby</i> 95 diesel /5 biodiesel (kilogram CO ₂ equivalent per round trip)	<i>Salish</i> LNG plus diesel pilot
Net Vessel Operation (i.e., the emissions from sailing the vessel)	6,064.8	3,670.2
Total (i.e., the emissions during the total lifecycle of fuel, inclusive of storage, transport, etc.)	8,071.5	4,207.4

A reduction of approximately 2,395 kilograms of CO₂ per round trip (net vessel operation) is achieved by sailing a Salish class vessel compared to the *Queen of Burnaby*. If equated to, for example, 1,200 round trips per year, this roughly approximates to a yearly reduction of 2,874 tonnes of CO₂. Similarly, 3,864 kilograms less CO₂ is produced by a Salish class vessel per round trip during the total fuel lifecycle compared to the *Queen of Burnaby*, approximating a yearly CO₂ reduction of 4,637 tonnes.

The reduction in CO₂ emissions varies from about 20-25 percent with LNG and hybrid diesel-electric options, to 100 percent with pure-electric operation. BC Ferries anticipates that some

type of further carbon reduction regime will be considered for implementation within the quarter-life of these vessels.

The Island class vessels were conceived to serve short, high-frequency routes that could support future conversion to all-electric propulsion, which could drastically reduce carbon emissions over the life of the vessel. As noted in the Application, implementing full electric battery operation most cost-effectively will require the development of some shore infrastructure in the form of rapid charging installations at the berth, a method to deliver shore electrical energy to the vessel, and an interface with BC Hydro. For these reasons, the exact timeline for conversion to all-electric propulsion is difficult to confirm, but currently might be considered during the quarter-life upgrade if the technical conditions and business case warrant. Discussions with BC Hydro in regard to this matter are under way, including network capacity, terminal infrastructure requirements, and options for terminal energy storage. The outcome of these discussions will inform the further internal analysis that will be required to confirm the feasibility of and timing for transitioning to full electric operation. A further consideration is that BC Hydro is moving to a Carbon Emission Reduction Strategy, whereby they will support projects (such as electrification of BC Ferries' berths) if a net benefit to carbon emissions can be demonstrated. This may involve incentives, or joint venture projects to obtain federal and other funding. BC Ferries will continue to explore these funding possibilities.

Other environmental benefits of the new vessels, also discussed in the Application, can be found in Appendix "A".

2.3 Summary

BC Ferries believes that there are significant benefits with proceeding to acquire four additional Island class vessels and an additional Salish class vessel to address the pending retirements of the *Mayne Queen*, *Bowen Queen*, and *Powell River Queen*. As described in the Application and summarized above, the Company has a long-range vessel planning process that is focused on transitioning the fleet from many unique vessels to ones that have high physical and operational commonality. The envisaged size, configuration, and deployment of the Island class and Salish class vessels is intended to enhance the customer experience and support community needs, while ensuring that all regulatory, operating and contractual requirements will be met effectively, efficiently and in a manner that demonstrates the Company's commitment to innovation, environmental stewardship and the sustainability of the ferry system. The Project will enable the Company to make further advances in efficient and effective service delivery, which will help to reduce costs which keeps fares affordable going forward.

Section 3 - Procurement and Schedule Update

3.1 Overview

BC Ferries' Application preceded the completion of the procurement processes for the new Island class and Salish class vessels. As a result, at the time of Application, it was envisaged that a further filing with the Commissioner may be required. The procurement processes have resulted in higher pricing for the vessels and this outcome forms the underlying basis of this filing. The timeline to complete the procurement processes has also been longer than anticipated in the Application, which has necessitated an extension of the Project schedule.

3.2 Procurement Process

As described in the Application, the vessel procurements are being managed under separate processes and contracts – one for the single Salish class vessel, and the other for the four Island class vessels. Although managed separately, both procurements are running in parallel, following the standard major procurement model process described in the Application. The status of both procurements is summarized below.

3.2.1. Requests for Expressions of Interest (“RFEOI”)

RFEOIs for the construction of the four proposed Island class vessels and the single Salish class vessel were separately issued to leading shipyards in Canada and around the world on July 26, 2018. A principal objective of the RFEOIs was to identify shipyard interest and available capacity to undertake the proposed Island and Salish class vessel projects within the timeframe envisaged. Expressions of interest in participating in the tendering process were received from 22 shipyards and prime contractors for the Island class vessels and 16 shipyards for the Salish class vessel. All respondents proceeded to the Request for Pre-Qualification (“RFPQ”) stage.

3.2.2. Requests for Pre-Qualification (“RFPQ”)

Separate RFPQs for the Island class and Salish class vessels were issued August 17, 2018 to the shipyards that responded to the applicable RFEOI. Both RFPQs closed September 7, 2018 and pre-qualification proposals were received from 18 shipyards for the Island class vessels, and 12 for the Salish class vessel. An internal BC Ferries team comprised of senior technical and operational staff evaluated the proposals for the separate RFPQs based upon a set of identical, weighted criteria, and a short list of preferred shipyards was selected for participation in the applicable RFP for the Island class and Salish class vessels.

3.2.3. Requests for Proposals (“RFP”)

RFPs were issued on November 9, 2018 to the five shipyards shortlisted from the RFPQ process for the Salish class vessel and also on December 3, 2018 to the nine shipyards short-listed for

the Island class vessels. An internal BC Ferries team comprised of senior technical and operational staff reviewed and evaluated the proposals received, and finalist shipyards were selected for negotiations.

Proposals for the four Island class vessels were received from three shipyards. Of those, two were selected for further negotiation, following which the preferred proponent was selected for contract negotiations.

Proposals for the Salish class vessel were received from three proponents, and one was selected for contract negotiations.

3.2.4. Contract Negotiations

The Company commenced non-binding contract negotiations with the preferred proponents for the Island class and Salish class vessels on March 14, 2019 and January 30, 2019, respectively.

BC Ferries has concluded contract negotiations with the proponent for the Island class vessels and intends to award the contract upon approval of the requested adjustment in the Cost Cap for the Project by the Commissioner.

The contract negotiations with the proponent for the Salish class vessel are in progress.

3.3 Project Schedule

The Company indicated in the Application that the timelines and milestone dates for the Project were tentative and could differ based on the results of the procurement processes. While the proponents did meet the original procurement schedules, the timeline to complete contract negotiations with the preferred proponents has been longer than anticipated and an extension in the overall Project schedule is required.

The revised schedules are set out in the table below. The new in-service dates for the four Island and one Salish class vessels are predicated on the contracts being awarded in September 2019. Should the contract awards be delayed, the in service dates would need to be further revised following additional negotiations with the preferred proponents. This could potentially impact the cost of vessels and the cost of maintenance required to keep the existing Bowen class vessels in operation until the replacement vessels can be brought into service.

Revised Schedules:

Powell River Queen Replacement: Island Class Vessels #1 / #2

	Contract Award	Construction		Delivery, Training, Integration	In-Service
		Start	Finish		
Application	Winter 2018/2019	Spring 2019	Fall 2020	Fall 2020	Spring 2021
Current	Fall 2019	Winter 2019	Fall 2021	Fall 2021	Winter 2021/2022

Bowen Queen Replacement: Island Class Vessels #3 / #4

	Contract Award	Construction		Delivery, Training, Integration	In-Service
		Start	Finish		
Application	Winter 2018/2019	Winter 2019	Spring 2021	Spring 2021	Winter 2021
Current	Fall 2019	Summer 2020	Spring 2022	Spring 2022	Summer 2022

Mayne Queen Replacement: Salish Class Vessel

	Contract Award	Construction		Delivery, Training, Integration	In-Service
		Start	Finish		
Application	Winter 2018/2019	Spring 2019	Spring 2021	Spring 2021	Fall 2021
Current	Fall 2019	Winter 2019/2020	Fall 2021	Fall 2021	Winter 2021/2022

Section 4 – Project Cost Update

4.1 Overview

Having advanced in the procurement process for the Salish and Island class vessels, BC Ferries has determined that the forecast cost of the Project now exceeds the Cost Cap set by the Commissioner by Order 19-02A. BC Ferries has considered scope reductions as a means to offset the forecast increase in the cost of the Project, but is of the view that no material reductions can be made without compromising the achievement of the objectives of the Project and, accordingly, no changes to the original scope of the Project are proposed. The Company will accommodate the increased cost of the Project within its 12-year capital plan through deferrals of and/or scope reductions in other projects.

4.2 Project Cost Update

The forecast cost of the Project is higher than the Cost Cap set by the Commissioner due primarily to the pricing received for the vessels from the shipyards being higher than forecast at the time of the Application. The variance in the forecast cost of the Project to that previously approved by the Commissioner is set out in the table below.

Project			
	Application	Current Forecast	Variance
Total Project Expenditure (including IDC)	\$<> Million	\$<> Million	\$<> Million
45-Year NPV	-\$721.9 Million	-\$764.2 Million	-\$42.3 Million

4.2.1. Contributing Factors to the Increase in Project Cost

4.2.1.1. Capital Cost

Vessels

The capital cost estimate for the Salish class vessel included in the Application was based partly on non-binding indicative shipyard quotes and assumed a cost for the Salish class vessel that was greater than the original three vessels of the class. For the four Island class vessels, BC Ferries forecast that the cost of future vessels in this class would be lower than the average cost per ship of the first two Island class vessels contracted and currently under construction. The assumed reduction was based on additional multi-build discounts, project overhead efficiencies due to the higher number of ships, and a partial offset based on inflation.

However, for both the Salish class vessel and the four Island class vessels, pricing negotiated with the proponents is higher than anticipated at the time of Application. This is attributed to higher labour costs and supplier pricing, as well as unfavourable foreign exchange rates. Certain other capital costs related to the construction of the vessels as reflected in the Application have also been revised upward to align with the construction schedules for the vessels provided by the shipyards and to incorporate specific costs reflective of the location of the proponents.

As a partial offset to the higher Project costs, the level of contingency funding for the construction of the vessels has been reduced to reflect that the vessel designs are now complete, the vessel prices, including change orders and delivery, have now been confirmed through negotiation, and there is now a lower risk on currency fluctuation.

Shore-side Upgrades

In order for the Salish class vessel to operate on Route 5, the berth at Swartz Bay terminal will require modification to allow the deeper draft vessel to berth safely. For the Island class vessels to operate on Routes 19 and 23, two separate tie-up berths are required to berth the second Island class vessel on each route. The incremental capital cost, with contingency, is included in the Project budget, and has not changed from the original Application.

Interest During Construction

The increase in the Project's capital cost, extended schedule and certain contract terms for the vessels results in higher IDC for the Project than was forecast in the Application.

4.2.1.2. Maintenance Cost

The extension of the schedule for the Project will require the Company to continue to operate the Bowen class vessels longer than was envisaged in the Application. This is expected to result in additional maintenance cost.

The *Bowen Queen* will likely need to undergo a refit to enable it to be relicensed to continue to operate until the vessels that will replace it are in service in summer 2022. As well, additional maintenance of the *Powell River Queen* is expected to be required based on the revised Project schedule. These incremental costs are included in the financial (net present value ("NPV")) analysis of the Project. Additional maintenance cost may be incurred if the schedule slips further. Some of the incremental cost will be offset by delays in the required annual maintenance of the new vessels due to the extension of the Project schedule, and cost savings are also expected to be realized by delayed hiring and training of crew for the new vessels.

Where possible, vessel redeployments will be used to minimize the incremental maintenance cost for the Bowen class vessels, however that may be challenging to accomplish. Various

strategies and options in this regard are currently under consideration and will continue to be explored as the Project timelines are solidified through the contract award process.

4.2.1.3. Ongoing Operating Cost

There are no material changes to the annual ongoing operating cost to that presented in the Application. The timing of when the annual ongoing operating cost for the new vessels begins has, however, been updated to reflect the revised in-service dates for the vessels.

4.3 Impact on Price Caps

The preliminary increase in the price cap set by the Commissioner for PT5 reflects BC Ferries' 12-year capital plan. The Company will seek to accommodate the increased capital cost of the Project within its 12-year capital plan through deferrals of and/or scope reductions in other projects. As such, the forecast cost increase in the Project is not expected to have any impact on the PT5 price cap.

4.4 Scenarios for Reducing Capital Expenditures

BC Ferries understands the importance of affordability of this Project both to the Company and ultimately, to its customers. As noted in the Application, BC Ferries believes there are only limited opportunities to reduce capital expenditures for the recommended option without substantial scope reductions that would negatively impact the Company's move toward fleet standardization, with a commensurate reduction in efficiencies. For example, BC Ferries considered substituting equipment suppliers with less expensive options, however this was not pursued because it does not satisfy the corporate strategic vision of standardized vessels within classes. However, suppliers with large increases in price were approached individually by the shipyards to negotiate more favourable subcontracts.

BC Ferries has explored options with the proponents to reduce shipyard contract prices and through negotiations has achieved some reductions in pricing from the original proposals received. For example, the Company achieved savings in the method of ship delivery for the Island class vessels. Originally, the intent was that the new vessels would be delivered by a semi-submersible heavy lift vessel, similar to the plan for the Island class vessels currently being built. However, to reduce costs, it was determined that it will be possible to have a specialized delivery company deliver the vessels on their own keel, under the shipyard's risk and insurance profile. This is the same delivery method used for the Salish class vessels already delivered to the Company, as well as for the Spirit class vessels that recently underwent their mid-life upgrades. BC Ferries has ensured that the risks presented by this delivery method are mitigated, as delivery will remain the responsibility of the shipyard.

As a result of the fixed design scope and external influences of labour rates, foreign exchanges rates and increased supplier pricing, it is not possible to reduce contract prices for the Salish class and Island class vessels sufficiently to enable performance of the Project within the Cost Cap approved by the Commissioner. There are no other obvious opportunities to reduce the proposed capital expenditure. Accordingly, the Company believes it is prudent to proceed with the Project with the scope as originally contemplated in the Application.

Section 5 –Options Analysis Update

5.1 Overview

The following options were presented in the Application:

- Option 1: Life extend the three existing vessels for 10 years and then replace them with four Island class vessels and one Salish class vessel;
- Option 2: Replace the two existing vessels on Routes 19 and 23 with two Shuttle class vessels and the existing vessel on Route 5 with one Salish class vessel; and
- Option 3: Replace the two existing vessels on Routes 19 and 23 with four Island class vessels and the existing vessel on Route 5 with one Salish class vessel.

Option 3 – a mix of Island class and a Salish class vessel – was BC Ferries’ preferred option and by Order 19-02, the Commissioner approved this option. BC Ferries has updated the financial analysis of the three options presented in the Application and continues to believe that Option 3 best serves the needs of its customers on Routes 19 and 23, and on Route 5/5A. As noted in the Application, this option aligns the appropriate vessel with the given route’s characteristics, provides the potential to generate operational efficiencies, appropriately addresses the travel needs of BC Ferries’ customers and the communities it serves, advances the Company’s commitment to environmental stewardship and ensures the service level requirements of the Contract are safely and reliably met. Overall, the Company believes the investments envisaged in Option 3 are in the public’s interest.

5.2 Updated Financial Analysis

The updated financial analysis of the three options presented in the Application is summarized in the table below.

The updated analysis reflects the pricing for the Salish class and Island class vessels negotiated with the preferred proponents in the RFP processes for the Project. Updated pricing is not available for Shuttle class vessels (Option 2) as the approved option did not involve them. For comparative purposes, the pricing for the Shuttle class vessels has been increased commensurate with the higher pricing for the Salish and Island class vessels negotiated as part of the Project. In the base case (Option 2 (a)), the price of the Shuttle class vessels has been increased by a percentage proportional to the increase in the negotiated pricing for the Island class vessels, while in the alternate case (Option 2 (b)), the price has been increased by a percentage proportional to the increase in the negotiated pricing for the Salish class vessel.

Option 2(a), which uses the pricing increases in the Island class vessels as the benchmark, aligns most closely with the Company's pricing expectations for the Shuttle class. The Island class vessels are viewed as being similar in overall design concept to, though smaller than, the Shuttle class vessels. Furthermore the Shuttle class is notional and therefore requires a full design, engineering and regulatory effort to develop a vessel that would meet the new specifications. Such effort is substantial and would contribute significantly to the cost baseline for the Shuttle class. Conversely the Island and Salish class vessels are already fully designed and approved for production, which then precludes the significant cost for engineering, production planning and regulatory approval costs.

	Application		Current Forecast		Change in NPV
	Total Project Expenditure (including IDC)	45-Year NPV	Total Project Expenditure (including IDC)	45-Year NPV	
Option 1: Life extend existing Vessels for 10 years and replace	\$ < > Million	-\$663.2 Million	\$ < > Million	-\$685.9 Million	-\$22.8 Million
Option 2: Replace with two Shuttle class vessels and one Salish class vessel:					
2(a) Base Case (Island class Benchmark)	\$ < > Million	-\$690.7 Million	\$ < > Million	-\$731.3 Million	-\$40.6 Million
2(b) Alternate Case (Salish class Benchmark)	\$ < > Million	-\$690.7 Million	\$ < > Million	-\$713.0 Million	-\$22.3 Million
Option 3: Replace with four Island class vessels and one Salish class vessel	\$ < > Million	-\$721.9 Million	\$ < > Million	-\$764.2 Million	-\$42.3 Million

The updated financial analysis reflects higher upfront capital costs for the Island, Salish and Shuttle class vessels, and the future costs for the life-extension option. Consequently the NPV for all options is less favourable than forecast at the time of the Application.

While the NPV for Option 1 continues to be the most favourable, and the gap in the NPV amounts between Option 1 and Options 2 and 3 has broadened, the Company continues to believe that Option 1 is not desirable. As explained in the Application, the life extension option (Option 1) carries elevated risk of service disruptions due to non-functional machinery or environmental, safety, and/or regulatory issues. Cost estimates for the life extensions include a high degree of uncertainty, particularly with regard to asbestos and lead-based paint abatement and steel

renewals. Some factors suggest that significant risk would remain after life extension of premature asset failure such that the full 10 years may not be realized. As well, fleet standardization, and corresponding benefits, and resolutions of congestion issues on Routes 19 and 23 would not be realized on a timely basis.

While Option 3 continues to have a greater negative NPV than Option 2, the Company believes that the advantages presented in the Application of Option 3 over Option 2 continue to support it as the preferred option.

Section 6 - Risk Mitigation Update

6.1 Overview

The Company has a rigorous process in place to identify, monitor and address the risks of the Project. A detailed risk matrix and methodology for the project has been developed as part of Project planning.

In the Application, BC Ferries identified the following key risks associated with the Project:

- Financial Risks;
- Design Risks;
- Construction and Delivery Risks; and
- Operational and Deployment Risks.

The following provides an update to the risks identified in the Application and also addresses procurement risks.

6.2 Risk Update

6.2.1 Financial Risks:

Price Escalation

The Application described how a Project contingency of 10 percent was planned to address unforeseen cost pressures. Subsequently, the RFP processes proved this level of contingency to be insufficient. As noted above, the Company has explored options for reducing capital expenditure (see Section 4.4), however believes that further cost reductions, through reduction in scope or other strategies, are limited for the preferred option.

BC Ferries has addressed the risk of additional price escalation by negotiating fixed firm price contracts in Canadian dollars, with scope based on the first of class vessels. These measures provide price certainty with fully defined scope. Due to the fact that the vessels are of already established classes, the risk of change orders is low and would be driven directly from changes in transportation regulations. The Company has reduced the level of contingency for vessel construction to reflect these and other factors and is confident that the level of contingency now included in the Project budget overall is sufficient to address any such arisings.

Currency

BC Ferries has addressed currency risks by negotiating fixed firm price contracts in Canadian dollars. Unfavourable currency fluctuations between submission of this filing and contract award will be accommodated within the contingency in the Project budget.

Affordability

In the context of managing risk, “affordability” is defined as the ability of BC Ferries to undertake the Project while adhering to its debt covenants. As noted in the Application, the Company has in place a financing plan that ensures that the capital expenditures can be accommodated within the constraints of its key lending agreements. As described above (see Section 4.3), BC Ferries intends to ensure that the revised Project budget and schedule has no impact on the price cap by deferring and/or de-scoping other projects in the 12-year capital plan.

Financing

Consistent with the Application, BC Ferries intends to finance the Project, along with other forecast expenditures in its 12-year capital plan, through a combination of cash flow generated from operations, draws on its credit facility and/or the issuance of additional debt.

6.2.2 Design Risks

The design rights to both the Salish class and Island class vessels are held by BC Ferries. The preferred proponents will be required to conduct a design check of the package(s) provided, and the design risks will be contractually transferred to them.

The preferred proponents will be required to maintain design and production drawings to ensure vessel standardization and the proponents have agreed to retain all original suppliers as set out in the technical specifications. Additionally, the proponents will use the most recently built vessel of each class as the baseline reference to ensure they are identical.

Vessel design and performance criteria are already proven for Salish class vessels by over two years of operation. Recently, the first of the two new Island class vessels under construction successfully completed dock trials and, as a result, BC Ferries expects design and performance risks for the Island class vessels will be low.

6.2.3 Timeline Risks

As noted in the Application, the Project reflects the need to replace the Bowen class vessels expeditiously due to their age and condition. Delays in the introduction of the new vessels would put the Company at risk of not being able to meet its service level requirements under the Contract and could result in significant operational implications. The Company will continue to mitigate these operational risks through short term life extensions and ongoing maintenance. Further delays to the schedule would increase the risk of service interruptions due to asset failure (see Operational and Deployment Risks below).

6.2.4 Construction and Delivery Risks

The Application identified the following construction and delivery risks:

- Project management;
- Cost escalation;
- Performance risk;
- Insurance;
- Delivery; and
- Shore-side infrastructure.

Generally, BC Ferries' approach to the management of these risks remains as described in the Application.

BC Ferries notes it has a strong project management structure in place to oversee the Project and has negotiated favourable contracts with the preferred proponents, based on previous shipyard contracts (with modifications), effectively reducing the cost escalation risk for change orders. The shipyards will be producing vessels identical to the baseline references, and BC Ferries will continue to provide on-site management through experienced and qualified acceptance teams familiar with the vessel design and operational characteristics. As noted above, the vessels will be delivered on their own keel by an experienced delivery company, and delivery will remain the responsibility of the shipyard. Such deliveries have been conducted with positive results by various shipyards for BC Ferries' previous shipbuilding projects, including the first three Salish class vessels, at the shipyard's offered cost, risk and insurance.

The required upgrades to shore-side infrastructure to accommodate the Salish class vessel on Route 5/5A and the Island class vessels on Routes 19 and 23 have been documented by BC Ferries' terminal engineering department and are under development. The processes to obtain the various regulatory permits, approvals and agreements that will be required to undertake the upgrades, as described in the Application, are also underway. The Company believes that the Project schedule adequately reflects the expected time to address these matters and will continue to actively manage them to ensure timely resolution of any issues that may arise.

6.2.5 Operational and Deployment Risks

In the Application, BC Ferries discussed the following operational and deployment risks:

- Defects;
- Crew levels;
- Crew resourcing;
- Training; and
- Refit relief.

Generally, BC Ferries' approach to the management of these risks remains as described in the Application. Introducing identical vessels into the BC Ferries inventory and operations is expected to be without major issues since operational training and logistical matters have already been fully developed and successfully implemented in original builds of each class of vessel. In addition, defects for the new vessels are expected to be a lower risk as the ship designs are proven by the original builds and traditional warranty provisions have been included in the shipyard contracts. Additionally, the shipyards will appoint local warranty agents to act on their behalf to resolve outstanding claims resulting in more time efficient resolutions.

BC Ferries notes that there are additional operational and deployment risks arising from the in-service delays for the new vessels and the extended use of the existing Bowen class vessels. These risks are mitigated by reviewing and updating the maintenance requirements of the vessels to ensure that they continue to provide reliable service until they can be replaced. The Company will monitor and review transitional deployment plans through the Project build and into the introduction of the new vessels in to service to ensure the quality provision of service on these routes, including planning for any service disruptions.

6.2.6. Procurement Risks

As contract negotiations with the preferred proponent for the Salish class vessel are ongoing, there is a risk that the Company could be unable to reach an agreement on the final contract terms with the preferred proponent. BC Ferries will work to mitigate this risk by continuing to engage with the preferred proponent and to ensure that all contract terms are successfully achieved.

Section 7 – Conclusion and Order Sought

BC Ferries respectfully requests that the Commissioner issue an order supplemental to Order 19-02A approving a major capital expenditure for the procurement of four new Island class vessels, one new Salish class vessel and incremental terminal improvements of up to \$<> million, inclusive of IDC and operating costs of up to \$<> million, for a total expenditure for the Project of up to \$<> million.

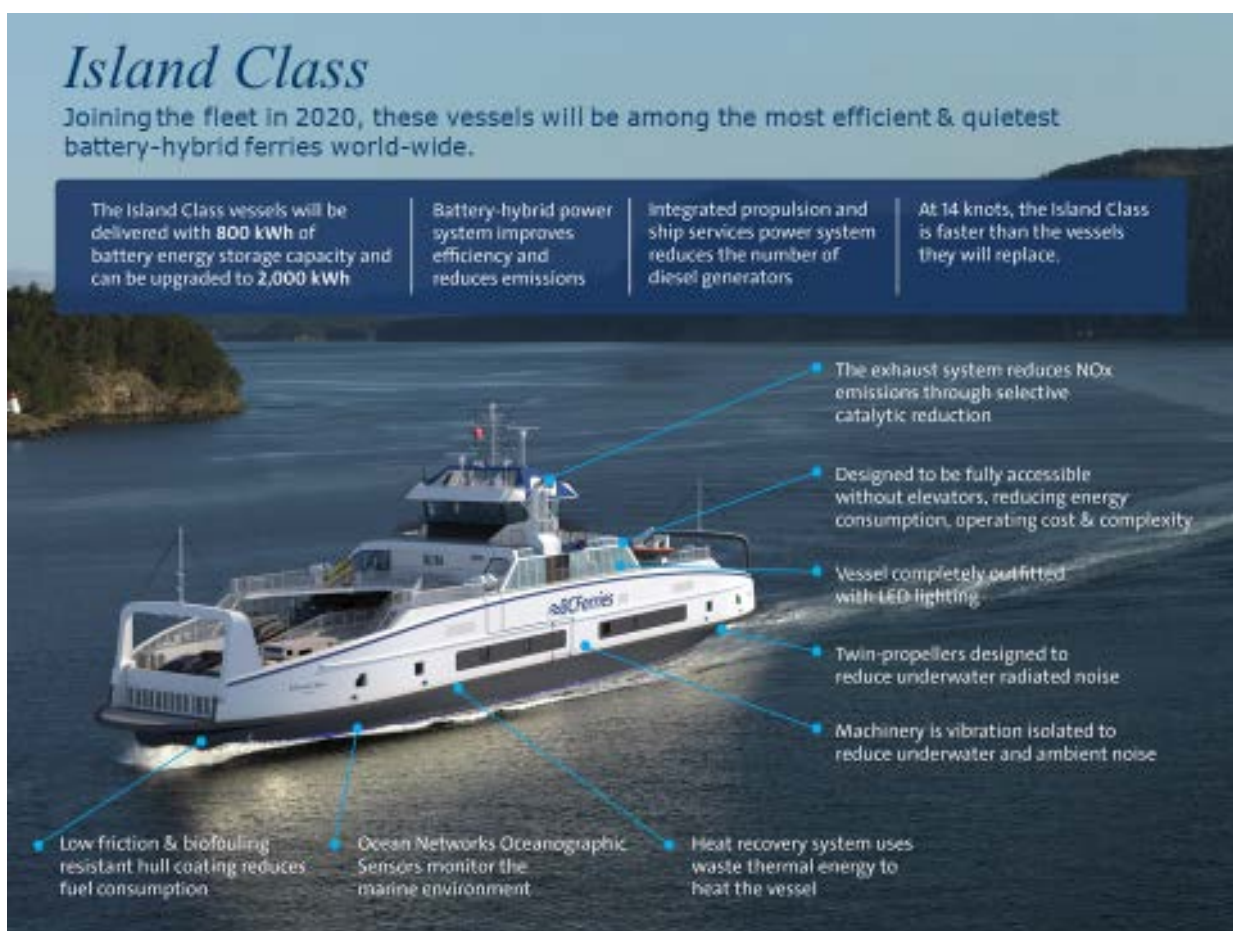
BC Ferries submits that the proposed capital expenditure is reasonable, affordable and prudent, and is in the public's interest. The Project will be managed within the expenditure limit of the Company's 12-year capital plan and will ensure continued safe, reliable and efficient operations that meet the requirements of the Contract. The Project will enable BC Ferries to continue to advance in the adoption of clean technology and will help ensure that the service needs of customers and communities are met for years to come.

Appendix A: Environmental Attributes of the New Vessels

BC Ferries takes seriously its role as a steward of safe, reliable, efficient and sustainable marine transportation. As outlined in the Application, the Company believes that the new vessels will have many positive environmental attributes, which have been summarized below:

A. Island Class Vessels

Figure A-1 highlights some of the environmental attributes of the Island class vessels:



Other attributes of Island class vessels in support of environmental stewardship include the following:

- A low wake wash hull form and a low friction and biofouling resistant hull coating that eliminates the need for an ablative or sluffing antifouling coating; hence there is no leaching of copper and/or biocide compounds;
- All systems are designed for low energy consumption and cleanest practical environmental performance;

- All black/grey water is disposed of ashore in accordance with environmental policies and none discharged overboard; and
- Shore power connections are used during layovers and after daily operational service.

B. Salish Class Vessels

Figure A-2 highlights some of the environmental attributes of the Salish class vessels:



Other attributes of Salish class vessels in support of environmental stewardship include the following:

- LNG-fueled, significantly reducing sulphur (SO_x) and nitrous oxide (NO_x) emissions, as well as particulates and CO₂;
- Low wake wash hull form and low friction hull coating to reduce fuel consumption;

- All black/grey water disposed of ashore in accordance with environmental policies and none will be discharged overboard;
- Electrical propulsion system (two electrical propulsion motors) allowing greater efficiency of main engine generators;
- Reverts to shore power connection during layovers and after daily operational service; and
- While not currently fitted with stored energy (battery) systems, the potential exists to be retrofitted to a hybrid LNG/battery configuration if/when conditions and the business case warrant.