British Columbia Ferry Services Inc.

Application to the
British Columbia Ferries Commissioner

Pursuant to
Section 55(2) of the *Coastal Ferry Act*

For the
Major Terminal Efficiency Project

May 31, 2023

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

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Executive Summary

British Columbia Ferry Services Inc. ("BC Ferries" or "the Company") proposes to invest $< > million in the Major Terminal Efficiency Initiative ("MTE" or the "Project") to provide an efficient, digital and contactless customer experience, supported by a centralized terminal operating model, for the Company's five major terminals: Duke Point, Tsawwassen, Horseshoe Bay, Departure Bay and Swartz Bay.

BC Ferries is seeing a return to typical traffic levels since the downturn during the COVID-19 pandemic < >. The current decentralized and manual processes, capabilities and resource models used to operate the major terminals were established decades ago and are no longer adequate to maintain operational service and meet customer expectations. Without change, the Company's major terminals will not be adaptable for the future and will not be able to realize efficiencies, resulting in increasing costs and heightened business risks.

MTE will provide digital express lane service to foot passengers and vehicle traffic, positioning the major terminals for the future. Customers arriving at terminals by foot or vehicle will experience reduced ticketing and reservation redemption wait times. Reserved vehicle passengers will be able to check-in using express lane ticket booths. After redeeming their reservation, foot passengers will scan their boarding passes at the fare gates and proceed to the departure berths to prepare for embarkation.

The scope of the Project includes the following:

- A new Terminal Planning and Management Information System that includes a central and flexible dashboard view of all terminals, and that will provide new capabilities for foot passenger management, contractor and visitor management, and vehicle traffic management;
- Improvements to terminal foot passenger management in the form of upgraded kiosks, fare gates, boarding pass validators, software and integration to BC Ferries systems;
- Improved terminal vehicle traffic management, providing an express lane check-in for reserved customers including pre-gate vehicle identification using license plate recognition and vehicle measurement and classification, and ticket booth technologies enhancements; and
- Terminal facilities and signage changes to support these new capabilities.

The Project will draw upon the experiences of other terminal and port operators globally, and leverage industry-proven established solutions and best practices already in widespread use. It

will implement the major terminal improvements in a phased manner, minimizing operational interruptions and mitigating negative impacts on service to the public. In its preliminary phase, the Project has defined a set of new business processes, supported by a Terminal Operations Technology Vision incorporating enhancements to the foot passenger and vehicle traffic management at the terminal arrival and ticketing areas. MTE will then be implemented incrementally over four years in two phases, providing opportunities for performance evaluation of the Project and solution, and allowing for regular reassessment of investments and budget adjustments.

BC Ferries is an essential transportation link that connects coastal communities and facilitates the movement of people, goods and services. MTE drives required transformational changes, while enabling effective and timely analysis of operational metrics to support future investment requirements. Overall, MTE is reasonably required, affordable and prudent. It will enable BC Ferries to prepare for the future and to improve its services performance, brand reputation and overall position within the communities it serves. It is a business-driven, operationally focused initiative which seeks to address urgent and chronic issues that are negatively affecting critical major terminal services. Accordingly, the Project is in the public interest.

Section 1: Introduction

1.1 Application Purpose

The purpose of this Application is to obtain the approval of the British Columbia Ferries Commissioner (the "Commissioner") for the Project in accordance with section 55 of the *Coastal Ferry Act* (the "Act").

Specifically, section 55(2) of the Act requires BC Ferries to obtain the Commissioner's approval before incurring a major capital expenditure. Under section 55(5), a major capital expenditure is defined as one that:

> *"…meets the criteria (a) established by the Commissioner from time to time, and (b) most recently provided by the Commissioner to the ferry operator".*

By Order 19-03, dated January 25, 2019, the Commissioner determined that for the purposes of section 55(5):

> *"2. Any capital expenditure for new terminals, terminal upgrades, information technology systems or other non-vessel capital expenditures ("Non-Vessel Expenditure") is a major capital expenditure if the expenditure exceeds $25 million, inclusive of non-vessel related component programs and interest during construction;"*[1]

In accordance with section 55(2) and Order 19-03, BC Ferries seeks the Commissioner's approval for a major capital expenditure of $< > million, inclusive of $< > million in interest during construction ("IDC") and supplemental Project operating expenditures of $< > million.

BC Ferries notes that the legislative requirement to seek approval of the proposed capital expenditure necessitates the submission of this application before the implementation phase procurement processes for the Project are complete. With the processes yet to be finalized, there is a risk that certain assumptions BC Ferries has made in this application may require subsequent amendment, with a commensurate change in the projected capital expenditures for the Project.

[1] *Order 19-03: In the Matter of Section 55 and Section 67 of the Coastal Ferry Act, and Establishment of the Criteria for a Major Capital Expenditure*, January 25, 2019

1.2 Application Overview

For the last six decades, BC Ferries has provided an essential service by transporting vehicles and passengers along coastal British Columbia. The Company's network of 47 terminals, which serve 25 routes, is integral to this coastal ferry service, and of these terminals the busiest are the five serving the major routes connecting the Lower Mainland of British Columbia with Vancouver Island ("the major terminals;" see the maps at Appendix B):

- **Tsawwassen** connects with **Swartz Bay** (Route 1) and **Duke Point** (Route 30), as well as the Southern Gulf Islands (Route 9);
- **Swartz Bay** also connects to Salt Spring Island and the Southern Gulf Islands (Routes 4 and 5); and
- **Horseshoe Bay** connects with **Departure Bay** (Route 2), as well as Bowen Island and the Sunshine Coast (Routes 3 and 8).[2]

Throughout BC Ferries' existence, its major terminals have successfully adapted to meet changes in the province's traffic patterns, population growth and customer needs. However, BC Ferries now functions with a manually-intensive major terminal operating model supported by inflexible and aging technology, and faces additional and significant constraints on its operating resources for more efficient, contactless and digital services. In essence, a combination of business challenges and technology realities are directly affecting the ability of the major terminals to operate at their required levels of efficiency and reliability.

The Company has examined its core business processes within the major terminals, and believes that the existing major terminal operating model has reached its maximum service capability. The Project seeks to simplify the current major terminal operating model, supported by a solution to improve foot passenger and vehicle traffic management processing at the major terminals. The Project will include the following components:

- Improvements to foot passenger management in the form of upgraded kiosks, fare gates, passenger validators, software and integration to BC Ferries systems;

[2] Langdale also serves a major route (Route 3) but is not included in this Project.

- Improved terminal vehicle traffic management incorporating pre-gate vehicle identification using license plate recognition and vehicle measurement, classification, and ticket booth technologies enhancements;
- A Terminal Planning and Management Information System ("TPMIS") to integrate these new capabilities and incorporate them into a centralized management and control view across all terminals; and
- Terminal facilities and signage to support these new capabilities.

1.3 Organization of Application

This Application is organized as follows:

- Section 2 – Current Environment reviews the current operating model at the major terminals;
- Section 3 – Project Overview provides an overview of the scope, timeline, benefits and approach of the Project;
- Section 4 – Financial Analysis summarizes the options and financial analysis, along with the recommended option;
- Section 5 – Procurement and Risk, outlines the procurement approach for the Project and the risk assessment and mitigation; and
- Section 6 – Conclusion.

The Commissioner has provided BC Ferries with guidelines for applications under section 55(2) of the Act.[3] Appendix A itemizes the specific section 55 questions in these guidelines, and indicates where in this submission they have been answered. The section 55 questions are also shown in *grey italics* in the section in which they are answered.

[3] *Guidelines for British Columbia Ferry Services Inc. for Applications under Section 55 of the Coastal Ferry Act*, December 30, 2019.

Section 2: Current Environment

2.1 Current Terminals

BC Ferries is an independent company providing ferry services on the west coast of British Columbia in accordance with the requirements of the Coastal Ferry Services Contract ("Contract") with the Province of British Columbia. The Company provides frequent year-round marine transportation service with 37 vessels, operating on 25 routes out of 47 terminals spread over 1,600 kilometres of coastline. In Fiscal 2022, BC Ferries carried 8.5 million vehicles and 17.9 million passengers on 82,742.5 round trips.

The Company has a vision of being trusted and valued, and its mission is to connect communities and customers to the people and places important in their lives. Integral to this, BC Ferries understands its responsibility to act in the public interest by providing safe, reliable, efficient, affordable and sustainable marine transportation, as well as its important role in maintaining the quality of life of people who live, work and visit British Columbia. BC Ferries is a significant contributor to the provincial economy, an enabler of commerce for coastal communities, and a vital connection on which coastal communities rely.

All of BC Ferries' terminals are essential to carrying out this mandate, with the major terminals carrying the most traffic: Duke Point ("DUK"), Tsawwassen ("TSA"), Horseshoe Bay ("HSB"), Departure Bay ("NAN") and Swartz Bay ("SWB"). These terminals are complex operational environments that use aging and inflexible technology, with staffed vehicle and passenger ticket booths and kiosks. The major terminals' operating model currently relies upon manually-intensive processes.

Foot Passenger Manual Check-In and Embarkation Process

In the current terminal operating model, all foot passengers traveling through the major terminals purchase tickets or redeem bookings by interacting with ticket agents or using kiosks. While foot passengers have the option to obtain their tickets for travel at the major terminals using foot passenger kiosks, ticket agents are available and process about 65 percent of foot passenger transactions. Foot passengers must go to ticket agents for:

- Fares requiring validation (e.g., senior or student), employee travel, payment with cash and any BC Ferries internal card payments (except Experience™ cards); or
- Modifications to their reservation.

Printed boarding passes are provided to the foot passengers, who wait for their sailing in waiting rooms and then hand their tickets to terminal attendants at time of embarkation. Ticket agents and terminal attendants also monitor entry to the terminal to ensure only fare paying customers and terminal visitors are entering the fare paid zone.

Manual Processes for Lane Management

Customers in vehicles arriving at the ticket booths at the major terminals interact with a ticket agent to purchase a ticket for the next available sailing or redeem their bookings. Ticket agents often exit their booth to manually measure larger vehicles' length (particularly commercial vehicles), which puts them at risk of injury from moving vehicles and from slips, trips and falls.

The terminal vehicle traffic lane assignments are configured manually at the beginning of each day, and adjusted over the course of the day, by a terminal tower operator using a custom-developed application called the Traffic Analysis System ("TAS"). In its lane management role, TAS provides the terminal point of sale ("POS") system with lane assignments.

TAS assigns a lane number to the customer's ticket for travel once payment is successfully processed or the booking is redeemed. The lane number (provided on the printed ticket) informs the customer where to park their vehicle in the staging area to await boarding. TAS tracks passenger counts to ensure the passenger limit is not exceeded, and vehicle capacity for every sailing based on a standard length of an under height vehicle.[4]

Tower operators monitor the vehicle traffic in the staging area to ensure vehicles have entered the correct lane, and to look for fare evaders. They monitor capacity as it is updated in TAS, to provide an estimate of sailing waits for show and go traffic. Prior to

[4] Vessel capacity is calculated on the basis of automobile equivalents ("AEQs"). An AEQ represents the amount of vessel capacity occupied by a particular vehicle type, expressed as the number of under height vehicles it displaces (e.g. a bus which displaces three under height vehicles – or cars – would have an AEQ of three).

boarding, tower operators inform the terminal traffic attendants the load order for the lanes.

When the vessel is ready for embarkation, terminal attendants direct traffic in the lanes to the vessel, where deck staff direct the vehicles as they board. The vessel's loading officer communicates with the terminal attendants when additional vehicles can be boarded, and tower operators update the results in TAS. A vehicle counter is positioned on the ramps leading up to the vessel to count the number of vehicles on the upper deck, which is manually entered into TAS.

Manual Processes for Major Terminal Visitors

"Visitors" include individuals escorting passengers (for example minors or people requiring assistance) through the major terminal but who are not travelling themselves; contractors and vendors working at the terminals; and employees from other points of assembly within BC Ferries. Visitors, including those escorting passengers, must sign in with a terminal customer service agent, and while in the terminal, must satisfy the compliance requirement of displaying visible identification as a visitor. This identification may take the form of a decal (for a passenger escort) contractor or vendor pass, or employee pass. Visitors are required to sign out before they leave the terminal.

Visitor tracking is a manual process. Mandatory prerequisites for access to the major terminals, such as site orientation for contractors on terminal construction projects or performing maintenance, are recorded in a database but still require manual verification by a BC Ferries employee.

Visitor management processes are not able to account for all exception cases. Visitors do not always sign out, or immediately leave the terminal after they complete their task.
< >

Terminal Applications

The applications supporting these major terminal processes provide only limited operational and situational awareness. Ticket agents, terminal attendants and deck staff do not have access to the information in TAS; tower operators do not have accurate vehicle measurements to effectively manage the traffic and prepare for loading; and terminal managers do not have a holistic view of the operations in real-time. Furthermore, the decentralized architecture of the terminal systems restricts the corporate-level operational view to each individual terminal, limiting access to valuable information such as sailing waits and final sailing capacity at other terminals to assist with traffic predictions and terminal planning.

2.2 Business Challenges and Drivers

What is driving the capital expenditure?

Why is the proposed capital expenditure required now and what are the consequences of delay or if the application is rejected?

Have there been service disruptions due to inadequacy of the existing capital asset?

The key challenges faced by the Company with respect to the major terminals can be categorized as:

1. Employee experience and workforce;
2. Customer expectations and experience;
3. Digitalization impacts and reliance upon legacy technology; and
4. Operational challenges.

These challenges represent the main drivers of the Project.

1. Employee Experience and Workforce

At the major terminals, BC Ferries' Terminal Operations department is experiencing the impacts of multiple converging labour factors making it imperative to find more effective ways to work with fewer available employees. Employee overtime and days of rest (sick days) are trending upwards at the five major terminals.

The first factor is an aging workforce. The average age of terminal staff is 48: 16 percent of terminal-based regular employees are eligible for retirement now, with an additional 23 percent and being ready to retire by completion of the Phase 1 of the Project, and another 10 percent by Phase 2 (October 2024 and 2027, respectively). In essence, this means that 49 percent of the Terminal Operations workforce will become eligible to retire by the completion of the Project.[5]

The second factor is the employee experience – for both newly recruited employees and those with long tenure. Certain roles, in particular ticket agents, can be highly complex, due to the large number of legacy, exception-based and manual processes. Training is multifaceted and heavily weighted towards learning the large number of manual processes and exception scenarios in handling fares and payment types. These intensive manual processes discourage current and new employees, resulting in attrition of

[5] Figures are as of October, 2022 and reflect the Company's terminal workforce generally. Based on retirement eligibility from the provincial standard for government employees (normal retirement age for all Public Service Pension Plan members is 65, and the earliest retirement age is 55).

recruits in the course of initial training, and making it difficult to hire and retain employees for Terminal Operations roles. Meanwhile, employees are experiencing burnout and poor morale because of overtime incurred from staffing shortages related to the tight labour market, retirements and departures, and the difficulties in retaining employees

Employees have identified the following concerns:[6]

- The tools given employees (particularly customer-facing ones) are insufficient: '*The worst part of the Ticket Agent's job are the tools they have to work with.*' The technology within Terminal Operations that provides data relevant to customers (e.g., delays, incidents and congestion) are often inaccurate and are not 'real-time';

- Employee safety and well-being is being impacted as customer frustrations have increased due to inadequate information and travel assurance for prepaid reservations, bottlenecks at ticket booths, lack of contactless processing, and extended delays / wait times; and

- There are concerns about staff risk of injury when performing manual functions (such as measuring vehicles and directing traffic), especially in inclement weather.

2. Customer Expectations and Experience

Have there been complaints from the public, or other stakeholders, about the existing capital asset?

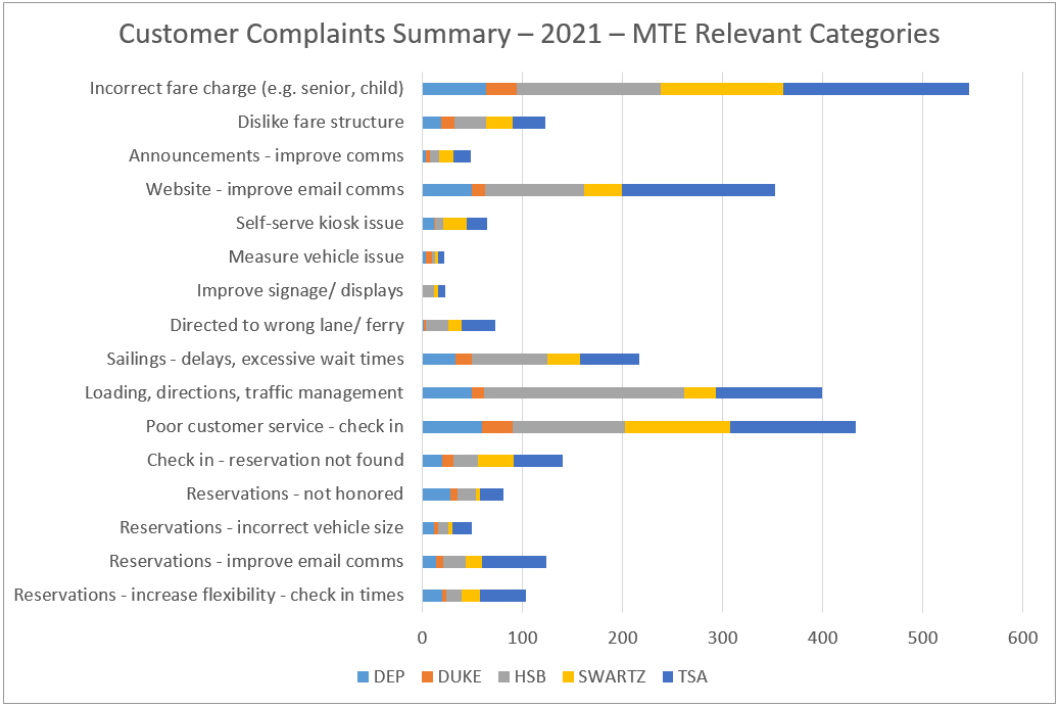
The Company received 12,881 customer complaints for 2021. Of the total number received 9,947 (28 percent) of those complaints were related to the major terminals that will be addressed as part of the Project. (Departure Bay 1,252; Duke Point 604; Horseshoe Bay 2,696; Swartz Bay 1,924 and Tsawwassen 3,471).

[6] To better understand the operational pain points, workshops were conducted in August 2021 across various departments. Participation was primarily from Terminal Operations leadership and staff, but Corporate Affairs, People & Culture, Strategy & Community Engagement, Marketing & Customer Experience, Shipbuilding & Innovation, Commercial Services, Finance and Information Technology were also represented.

TABLE 2-1: TOP SEVEN MTE RELEVANT COMPLAINT CATEGORIES PER TERMINAL

Category	NAN	DUK	HSB	SWB	TSA
Incorrect fare charge	•	•	•	•	•
Customer service – check in	•	•	•	•	•
Sailings – delays / excessive wait times	•	•	•	•	•
Communication consistency (website versus at terminal)	•	•	•	•	•
Loading, directions, traffic management	•	•	•	•	•
Dislike fare structure		•			
Reservations – improve email communications					•

TABLE 2-2: CUSTOMER COMPLAINTS SUMMARY



The customer experience at the major terminals, whether travelling as a foot passenger or by vehicle, is being negatively impacted by long wait lines for ticket purchasing and redemption, and slow-functioning systems and manual processing. Meanwhile, customers have increased expectations with service levels and the efficiency of travel, often based upon their experience with other transportation systems. For example, in the airline industry, the transition between reservations, ticketing, check-in

(redemption) and boarding has become contactless, mobile enabled and self-service, with more real-time information available on personal devices in real-time.

How are the needs of commercial traffic being considered and accommodated?

In essence, global trends towards digital interfaces for commerce and travel have highlighted the disconnect between BC Ferries' online pre-travel planning and reservation capabilities and the terminal onsite manual processing, limited real-time information available and long wait times to check in upon arrival. Commercial traffic volumes at BC Ferries also have increased significantly because of the growth in home delivery due to online commerce. The COVID-19 pandemic further accelerated pre-existing public demand for both contactless digital transactions in travel, and improved efficiencies when interacting with commercial organizations.

3. Digitalization impacts and reliance upon legacy technology

BC Ferries has made significant investments in digitally enabling reservations and other services, through major upgrades to its website and the introduction of a mobile application. These investments support an expanded customer experience driven by market trends towards digitalization of the travel and consumer spaces.

However, as noted above, the efficiencies and benefits experienced by customers as they begin their BC Ferries journey online are not matched or aligned during the major terminal experience due to the manual processing of the ticket redemption (check-in) and embarkation (passenger count) requirements, leading to further manual workarounds and customer frustration. For example:

- With the Company's new revenue management fare model, enabled by the new digital technology, increased reservation allocations bring traffic to the terminal closer to sailing times, creating traffic surges and congestion, which often negatively impacts local communities and transportation routes. Back-ups into the intersections at Departure Bay and Duke Point, for example, cause local traffic disruptions with potential impacts to safety, block access to terminals, and require contractors to manage traffic congestion at increased cost.

- A foot passenger with a pre-paid ticket often assumes it is a boarding pass and at the terminal misses the intermediate step of redeeming it through a ticket agent or at a kiosk before proceeding to the berth to board. At the time of embarkation, employees collecting boarding passes must decide whether to send the customer back to the booth to complete the redemption step, near the sailing cut-off time, or to allow the customer to travel and manually add them to the passenger count for the sailing.

These challenges are compounded by the legacy technology and equipment used by the major terminals. All existing terminal foot passenger ticketing kiosks are at end of life and must be upgraded or replaced whether this Project proceeds or not. In addition, the collection of software applications that currently supports critical operations at terminals is composed of legacy systems, either in need of upgrades or at the end of their life. They are heavily customized, complex and lack technical documentation. They have been developed internally and enhanced over decades – in some cases – to meet the specific business and operating requirements of the terminals.

As a result, neither the older equipment nor the legacy technology can accommodate the additional functionality or operational requirements now required by the major terminals.

4. Operational Challenges

Have future changes to mix of traffic serviced by the terminal been contemplated?

Is the terminal capacity sufficient for future demand and mix of traffic?

Have there been service disruptions due to inadequacy of the existing capital asset?

BC Ferries is seeing a return to typical traffic levels since the COVID-19 pandemic:

TABLE 2-3: AUTOMOBILE EQUIVALENTS CARRIED THROUGH THE MAJOR TERMINALS (FISCAL YEAR)

ROUTE	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
1	2,283,655	2,366,308	2,406,711	2,369,436	1,557,909	2,094,653
2	1,331,416	1,374,158	1,360,274	1,334,158	838,402	1,256,731
3	1,287,152	1,339,812	1,342,572	1,301,507	1,081,426	1,294,686
4	327,583	344,311	360,114	357,288	296,226	349,596
5	275,026	284,960	292,896	299,626	270,612	322,378
8	514,336	546,658	571,350	569,463	512,617	596,877
9	172,620	195,708	204,926	217,944	161,471	218,542
30	971,795	1,010,662	1,023,857	1,015,464	911,202	996,911

TABLE 2-4: PASSENGERS CARRIED THROUGH THE MAJOR TERMINALS (FISCAL YEAR)

ROUTE	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
1	6,065,602	6,348,722	6,409,243	6,124,234	2,578,221	4,239,155
2	3,381,076	3,483,563	3,424,759	3,298,151	1,669,054	2,657,186
3	2,636,308	2,726,825	2,728,376	2,631,102	1,797,894	2,284,998
4	651,111	674,471	684,090	662,431	462,546	567,613
5	484,266	495,755	496,842	501,219	396,767	486,980
8	1,165,891	1,236,556	1,299,592	1,281,422	924,639	1,143,492
9	472,655	531,612	543,799	565,051	350,010	490,544
30	1,587,196	1,699,176	1,717,629	1,652,801	1,158,810	1,447,392

The rate of change faced by Terminal Operations has increased, with heightened customer and employee expectations for real-time information to support their decision-making, new regulatory requirements and global trends in transportation. These challenges and changes include the following:

- With increasing levels of traffic, delays caused by sorting reserved and non-reserved vehicles at entry to terminals result in longer wait times to enter the terminal and to redeem bookings. In addition to customer frustrations, traffic control outside the terminals has associated costs.

- Related to this, there has been an increase in the number of commercial vehicles that Terminal Operations must process, with increased transaction items (validation, ticketing and dangerous goods declaration).

- Once within the terminals, the increased volumes of traffic must be processed in established intervals. Various factors have placed upward pressures on the major terminal teams to discharge and load vessels within historical allotted on-time performance targets. For example, vessel in-dock times and schedules have essentially been unchanged for decades but BC Ferries now has much larger ships on the major routes.

- This is reflected in declining vessel turn around time performance on various routes at the major terminals:

TABLE 2-5: PERCENTAGE OF SAILINGS MEETING TURNAROUND TIME TARGETS

TERMINAL	ROUTE	TARGET (Minutes)	2016-17 Average	2017-18 Average	2018-19 Average	2019-20 Average	2020-21 Average	2021-22 Average	2022-23 Average
Tsawwassen	1	24	77	78	77	74	82	69	52
Tsawwassen	9/9a	50	84	92	96	96	93	96	92
Tsawwassen	30	27	83	87	86	82	87	80	69
Swartz Bay	1	24	81	77	73	78	86	76	70
Swartz Bay	4	20	91	96	96	95	98	95	96
Swartz Bay	5/5a	20	85	86	83	85	84	83	81
Departure Bay	2	25	96	92	91	92	92*	85	81
Horseshoe Bay	2	26/30	96	94	95	95	93*	91	88
Horseshoe Bay	3	21/30	96	90	93	95	93	90	89
Horseshoe Bay	8	45243	95	94	92	92	95	87	82
Duke Point	30	30	90	90	92	96	93	90	84

** 10 month average.*
See Appendix D for a graphical representation.

New processes and procedures have been added to both shipboard and terminal operations, further impacting vessel turn-around time. These include improved bridge resource management (critical safety procedures to ensure the safe completion of the vessel's voyage), new conservation initiatives such as pumping ashore vessel waste and new safety procedures associated with LNG fueling. As

passenger numbers increase, and with the introduction of enhanced catering and retail offerings, there are commensurate pressures on turn-around time associated with the loading of vessel supplies and stores. New processes for garbage and recycling on larger vessels are another factor.

With potential vessel delays, on-time performance is affected and vessel fuel costs rise.

- The ability to manage traffic growth, including processing traffic both at point of sale and within the terminal, will be challenged by continued pressures on staffing and in the labour market. This is exacerbated by maintaining a complex manual intensive operating model (processes and procedures) with increasingly challenging transaction exceptions and training.

- In addition, legacy hardware (current end of life terminal kiosks, for example) and information systems (e.g., TAS) present a high risk and impact of failure, a high cost of support and maintenance. These systems, and associated legacy business processes, continue to be manually intensive and unable to support efficient operations, particularly with new business needs such as increased commercial traffic, increased reservations allocations, and the movement towards BC Ferries customer profile accounts.

- The legacy systems support the current model where BC Ferries' terminals have traditionally operated in relatively autonomous siloes. They have limited situational awareness, decentralized terminal management, manual traffic prediction and planning, and insufficient reporting capabilities. This impedes operational and situational awareness where information is needed in real-time, spanning the full spectrum of operations and across all major terminals. It also prevents sharing that information with customers in a timely way and in a meaningful format.

- Combined with this, changing traffic patterns, new regulations and compliance requirements are driving the need for more operational and situational awareness on the part of terminal and operations staff. The amount of dispersed data in sources across all functional silos and the vessels, terminal-based sensors, and back-end information technology systems continues to grow with limited ability to manage or make sense of that data for operational or planning processes.

These operational challenges and changes continue to grow along with the demand for increased efficiency, flexibility and scalability, and more real-time information. Terminal Operations processes and tools simply do not supply sufficient information to the front-line, support staff, supervisory, management or executive staff.

Section 3: Project Overview

3.1 Introduction

BC Ferries has initiated the Project to improve foot passenger and vehicle traffic management processing at the five major terminals. The expected benefits include improving the customer experience, expanding the situational awareness of terminal staff, and empowering employees across the Company to access relevant real-time information for decision-making. MTE is structured into phases, with progression contingent upon approvals of milestones. Each milestone provides BC Ferries with an opportunity to assess that the outcomes achieved provide the expected benefits.

BC Ferries intends to transition towards a centralized platform that will enable consolidated views and management of BC Ferries operations and management across all terminals. Out of necessity, the Company will seek a balance between a continued transactional check-in processes provided by front-line employees, supported by new operational digital solutions. This will be achieved using a combination of industry-standard foot passenger and traffic management solutions and simplifying, where possible, BC Ferries' business processes, to solve the pressing business problems and be able to accommodate and continue to scale to meet the increasing demands for service.

The Project is reasonably required to address the shortfalls in the current major terminal operating model, to address customer and employee needs, and to prepare the Company for the future. BC Ferries' Board of Directors has approved the project and management has prioritized it as a strategic initiative within the overall capital portfolio.

3.2 The New Customer Experience

Customers arriving at major terminals can expect to see the following changes:

Foot Passengers

Foot passengers will arrive at the terminal and proceed to the designated foot passenger area. In this stage of their journey, they would have the option to interact with a new and updated kiosk. The updated indoor and outdoor kiosks will have greater functionality resulting in advanced customer self-service capabilities:

- In addition to purchasing tickets, the onsite redemption process at the kiosks will provide printed and electronic boarding passes to both reserved and non-reserved passengers.

- However, reserved passengers who redeem their tickets in advance of arriving at the terminal (via mobile app or website) will no longer need to redeem their ticket at a kiosk and can scan their boarding pass directly at the fare gates, thus reducing the check-in queues at the kiosks and ticket booths.

- After 'scanning' through the fare gate, passengers will proceed through the fare paid zone to a departure berth. When embarking, passengers will scan their boarding pass at a validator at the berth. This will ensure an improved passenger count.

As a result of these changes, customers arriving at terminals will experience reduced ticketing and redemption wait times, and a contactless journey for foot travel provided by enhanced terminal operational equipment. Using fare gates to control physical access to the fare paid zone provides a digital check to support employees monitoring the embarkation process and terminal access.

Vehicle Passengers

Vehicle passengers approaching the terminal will drive through a 'pre-gate' to identify and gather information about their vehicle and ticketing status.

- The pre-gate vehicle classification system will measure the vehicle dimensions. This will enable terminal staff to stay safely within their booths instead of exiting them to measure the vehicles.

- The pre-gate will also read the vehicle license plate, using an Automated Number Plate Recognition Camera ("ANPR"), and identify and retrieve any reservation for that vehicle.

Drivers with a reservation that is recognized by the system will be directed to an express booth. Drivers without a reservation, or if the reservation is not recognized, will be directed by electronic signage to a staffed booth. At the express booth, customers will need to confirm details and then will be granted access to the terminal traffic staging area.

A benefit of express ticket booths will be a reduction of the queues experienced by reserved customers outside the terminal, by improving the vehicle transaction time to 10 seconds (or less) from the average today of 30-40 seconds. In turn, this will allow reserved customers to check in closer than the current 30 to 60 minutes prior to the scheduled sailing time.

Terminal employees will have handheld devices to support them in vehicle management activities, including passenger count verifications, safety and dangerous good checks, and directing traffic for boarding.

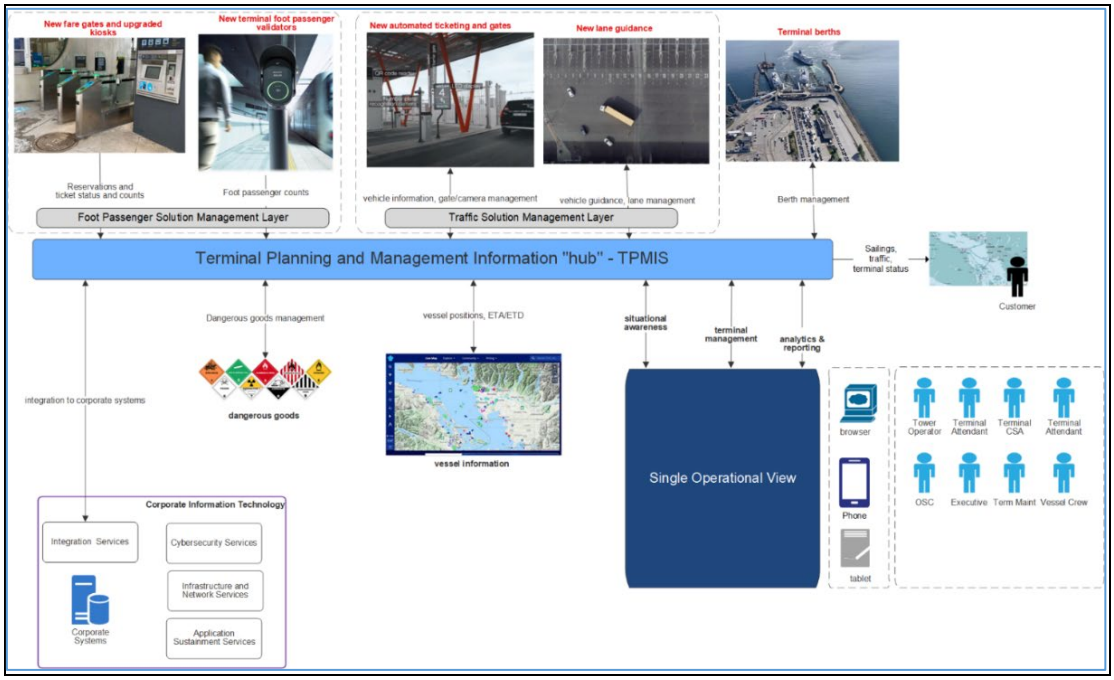
3.2 Operations Technology Vision

Does the proposed capital expenditure show due consideration for the future?

Were new technologies or innovations contemplated? If so, why are they considered necessary?

The Project proposes to implement a set of far-reaching business process changes across the major terminals. Underpinning those new and modified processes are technology supported-capabilities that are required to provide efficiency and customer service benefits. Figure 3-1 depicts the Terminal Operations Technology Vision, grouped into two sets of capabilities: new processing capabilities and service improvements; and centralized management and a single operational view:

FIGURE 3-1: OPERATIONS TECHNOLOGY VISION



New Processing Capabilities and Service Improvements

Do the terminal improvements align with the concept of asset standardization?

The flexible, adaptable and scalable solutions comprising the Project scope have been assessed for their ability to support anticipated future changes in customer preferences,

traffic composition and terminal operating models. The MTE solutions proposed will be standardized, compatible and applicable to the operating models at the terminals, addressing a variety of process bottlenecks with capabilities that the major – and eventually minor – terminals can draw upon.

The processing capabilities and service improvements envisioned include the following:

- High speed fare gates at the major terminals, providing new efficient payment capabilities and improved security for fare paid zones;
- Upgraded foot passenger kiosks with improved ticketing, reservation redemption and management;
- Foot passenger ticket validators at the point of embarkation at berths, where passengers will scan their boarding pass before boarding the vessel, providing improved passenger counts and safety;
- Pre-gate vehicle identification system, providing automatic retrieval of customer reservations by license plate that can be used to direct vehicles to express lanes or staffed booths;
- Lane guidance into the terminal areas through digital signage and other status indicators.

Centralized Management and a Single Operational View

The centralized management system is envisioned as including the following:

- At the core, a Terminal Planning and Management Information System ("TPMIS") will integrate all of the new foot passenger and vehicle traffic management processing capabilities and service improvements, providing a single management interface for Terminal Operations. The TPMIS also consolidates all of the data generated by the terminal infrastructure and operations into an interface that can be configured specifically with views to operational roles (for example tower operators, terminal traffic attendants, ticket booth attendants and the Operations Security Centre). This system will provide Terminal Operations with a single operational view of all major terminals across the BC Ferries system;
- Integration with corporate applications to enable reservations redemption, and retrieval of customer information;

- Enhanced capabilities for dangerous goods management, vessel information (e.g., position and estimated time of arrival and departure), and the ship to shore interface for berth management;
- Ability to provide more accurate and timely information to customers; and
- Replacement and retirement of a number of existing legacy systems currently used by the terminals.

While the solutions depicted in the operations technology vision are new to BC Ferries, they are already used in ferry terminals, ports and mass transit systems globally. These purpose-built solutions have been developed over decades by technology firms competing for business in the transportation and logistics and shipping spaces, and continuously enhanced by input from their customers. Their use would permit BC Ferries not only to align with current standards and practices in processing foot passenger and vehicle traffic, but also to meet customer service expectations related to modern transportation. The use of proven solutions places BC Ferries in a balanced position of improving service levels while not risking radical innovation or being a leading adopter of technology and process changes.

BC Ferries intends to participate in and benefit from these global communities of innovation, by procuring vendor-configurable and mature software as a solution ("SaaS") services, instead of relying upon heavily-customized software development, expensive capital upgrades and extensive ongoing support and sustainment. This is discussed further in section 5.2.1.

3.3 Operational Digital Technology Approach

The digital technologies being proposed fall into two categories: operational technology ("OT") and information technology ("IT").

Operational Technology

Operational technology manages and controls an organization's functions in the physical world. OT is less 'visible' than IT because it is part of the equipment found in terminals and on vessels. BC Ferries' OT systems monitor and control infrastructure that interacts with the operational environment. Because of their criticality, OT solutions must be designed, deployed and sustained in accordance with business and operational needs, and they must meet engineering system standards. Examples within the major terminals include the control systems for ramps and wastewater treatment facilities.

The proposed solutions will implement a significantly expanded OT footprint at the major terminals in the form of pre-gate vehicle identification and classification system, foot passenger kiosks and automated access gates, ANPR cameras and lane guidance.

Information Technology

Information technology includes computer, software, networks and processes supporting the creation, use and distribution of an organization's data or information.

OT naturally increases criticality of core IT services (for example, the availability of networks that support digital services). Control functions that impact the physical world have to be supported by robust end-to-end systems to satisfy operational service levels.

3.4 Project Scope

After global market and industry research, the Company has determined that the functionality and capability required to centralize the operational model has already been proven and deployed by ferry operators through modular and flexible approaches using SaaS solutions. Based on the Operations Technology Vision, the Project scope consists of the following work streams:

1. A TPMIS solution providing a centralized, real-time management platform, a holistic view of terminal and customer status, and the ability to manage and monitor terminal traffic (vehicle and foot passengers).

2. Integration of selected existing corporate and Terminal Operations solutions into the platform, inclusive of those that have been internally developed and those provided by vendors that have been customized for BC Ferries. These solutions both hold key data sources, such as booking information, and provide key capabilities such as point of sale transactions.

3. Foot passenger management ("FPM") and contractor visitor management ("CVM") processing enhancements in the form of fare gates, ticket validators for passengers at embarkation points, improved customer communication using terminal digital signage, enhanced ticketing kiosks (inside and outside major terminal buildings) and improved management of terminal visitors.

4. Vehicle traffic management ("VTM") processing improvements including pre-gate processing of unique vehicle identifiers through ANPR, measuring vehicles using vehicle classification systems ("VCS") and weigh-in-motion ("WIM") technologies, and sorting vehicles by using digital signage to direct them to

express lanes (if they have reservations) or to staffed booths. Access to major terminal areas will be controlled by vehicle barriers and by digital signage for communication with customers.

The benefits of these work streams are discussed in the next section.

The scope of technology and services to deliver these new capabilities are collectively described as the "MTE Solutions." These solutions will be assessed for functional and technical fit to requirements, processing performance, scalability, reliability and availability, capital and operating cost, and integration capabilities. The experiences of other organizations using them will also be considered as references.

3.5 Project Benefits

Overall, the Project is expected to improve customer and employee experience through modern digital solutions, and it will improve efficiency of processing people and vehicles. It will:

- Reduce deployment and sustainment complexity, effort and cost;
- Allow BC Ferries to leverage existing market solutions that are continuously updated, helping the Company to stay relevant, quick to adapt and keep up with industry progress;
- Enable BC Ferries, through modularity, to select only those sets of capabilities required at each major terminal while maintaining a centralized platform for consistency and continuity through scalable future expansion;
- Facilitate easy migration between vendors (hardware and software);
- Through standardization, enable employee cross-location training and provide them with opportunities to relocate and / or support multiple terminals effectively;
- Support the development of an adaptable and sustainable operating model for the challenges terminals face today and in the future, by ensuring that business processes are de-complexed and easy to follow and that the envisioned technical solutions meet the criteria of flexibility, scalability (horizontal and vertical), availability and reliability; and
- Improve the operations of the major terminals by establishing a flexible and adaptable foundation that can meet the very diverse day-to-day demands of customers, Terminal Operations and related business units with a continuous

growth and improvement approach. For example, the use of vehicle classification measurement data to develop optimized loading plans will decrease delays during loading for vehicles 'top up' to complete a full vehicle load. This will improve on-time performance metrics.

This standardized, modular and scalable approach permits an immediate focus on providing benefits of digitalization to customers and employees, while deploying optimal core changes to terminal operational services.

Modernizing Terminal Operations Processes

The Project will enable BC Ferries to participate in, and benefit from, global communities of innovation by vendor-configurable and mature SaaS services, instead of relying upon heavily-customized software and legacy systems. The Company will shift from custom application development to configurable cloud solutions and a centralized platform (TPMIS). These more robust solutions will enable Terminal Operations and BC Ferries management to assess terminal health in real-time and to manage ever-changing internal and external constraints and conditions.

The benefits of TPMIS and the new OT and IT solutions are contingent upon business process change and rationalization within the Company. BC Ferries is not implementing a "like for like" set of solutions based on the current operating model. It intends to simplify processes that are considered legacy or vestigial, so as to realize the full benefits from standardized technology and to avoid significant customization.

The Company expects that this will result in reduced complexity for front line employees, terminal leadership and backend-supporting departments, and that it will support the delivery of a seamless, end-to-end, digitally enabled customer and employee experience. It will also enable improved access to real-time data, improved service performance and enhanced brand reputation, leading to better customer satisfaction and improved overall standing for the Company within the coastal communities served by the major terminals.

That said, the Company also expects there will be some gaps between what is provided by the OT and IT solutions 'out of the box;' and what its process requirements are, driven by specific operating requirements such compliance with Transport Canada regulations (localization) or processes arising out of the physical geography of terminals, employee or customer safety, etc. In these areas, where out of the box solutions are not available, customization would be considered.

Intermodal Connectivity

How does the proposed capital expenditure support the government approved long term vision for the future of coastal ferry services?

BC Ferries is working with the Ministry of Transportation and Infrastructure, BC Transit and TransLink to explore and champion actions to better integrate services between ferries and transit providers, and to make interregional, multi-modal travel easier to plan and navigate. The focus is on improving the user experience between transit and ferries and other modes including active transportation to support a mode shift away from vehicles.

A shared goal across these agencies is to support transit growth and reduce the need to travel by vehicle. Better integration of these services will ensure passengers experience more seamless travel and assist with lowering greenhouse gas emissions, provide more affordable transportation options and reduce traffic congestion.

The Project's goal to improve the foot passenger travel experience aligns and supports BC Ferries' work with transit agencies to improve the experience for passengers traveling by bus and other forms of active transportation through the transportation network.

Improved Experience for Foot Passengers and Contractors

The OT and IT solutions, inclusive of FPM and CVM, will position BC Ferries to accommodate ongoing market trends and customer expectations towards digitalization of their journey using 'contactless' technologies for recognizing reservations (on mobile device or printed materials), for processing tickets or mobile devices / payment cards at fare gates, and for making customers' and contractors' journey through terminals more seamless. In turn, terminals will use these solutions for counting passengers, managing contractors and enabling increased usage of back-end processes of reservation and customer management.

Improved Vehicle Traffic Management Experience

Have changes to the type and size of vessels operating out of the terminal been contemplated?

The OT and IT solutions proposed for VTM will be flexible and scalable to manage changes to the composition of traffic and to manage traffic on approach to the ticket booth and within the terminals. Reserved traffic will be identified through ANPR, and processed quickly by routing to express lanes. Exception cases or manual processing validations (dangerous goods for example) will be shifted to staffed booths where 'show 'n' go' arrivals (non-reserved traffic) and other transactions are handled.

All vehicle booths at the major terminals will be capable of either being staffed for manual processing, or not staffed for express lane processing, allowing for flexibility in

adjusting to peak volumes and in handling large volumes of reserved vehicles. BC Ferries intends to balance the staffed and express lanes to ensure customers will have a choice (contactless or staffed) during their terminal experience.

Have future changes to mix of traffic serviced by the terminal been contemplated?

Have changes to the type and size of vessels operating out of the terminal been contemplated?

New capabilities (signage) will guide vehicles after they have been processed at the ticket booths. Once inside the terminals, the TPMIS will provide enhanced capabilities to manage traffic as needed (e.g., optimizing lane assignments) and based on evolving traffic characteristics and composition (e.g., drop trailers and commercial traffic, bicycles, electric vehicles requiring specialized information on location, dangerous goods). The traffic management solution also will be expected to scale to accommodate the traffic requirements of newer or larger vessels. The TPMIS will have configurable load and deck plans that could be customized by vessel class, and other capabilities to accommodate changes in vessel types / layouts. Further, the solution provides a baseline against which current and future traffic (foot and vehicle) throughput impacts can be measured.

Greenhouse Gas Emissions

Does the capital expenditure contribute to reduction in GHG emissions?

Although the Project is expected to lead to reduced vehicle idle times and to improved vessel turnaround times, it is not expected to have a material impact on greenhouse gas ("GHG") emissions reductions. Customer vehicle idling emissions are not measured nor accounted for within BC Ferries' GHG emission inventories.

Additionally, there will be non-material changes in terminal energy efficiency (GJ/m2) relative to "status quo" terminal energy consumption.

3.6 Project Preliminary Work

BC Ferries has conducted significant preliminary work (known as the Project's pre-implementation phase), including:

- Incorporating customer and employee experience considerations;
- Analyzing and documenting Terminal Operations' current business processes, and assessing the Project's business challenges and drivers;
- Performing market research and reviewing established industry solutions; and

- Developing an initial technology architecture vision and organizational change management approach.

These planning activities were supported by a series of procurement exercises in the form of requests for proposals ("RFPs") (for FPM and for the development of a vision for VTM), and requests for information ("RFIs") (to gather information about potential solutions and vendors.) The initial envisioned scope was focused on improvements to the foot passenger management process. However, following business analysis undertaken by the Project team with participation of Terminal Operations, it was determined that the business problems faced by the Company affected all of the aspects of major terminals. This analysis indicated – given the interconnected nature of Terminal Operations staffing, processes and systems – that the Project scope should also include vehicle traffic management, visitor management, facilities and infrastructure changes, and terminal information and operational technologies.

Early procurement activities are discussed in more detail in section 5.1.

3.7 Project Implementation Approach

What are the impacts of the proposed capital expenditure on the local community and other stakeholders?

The Project will be organized into a two phased deployment over four years and across the five major terminals, to reduce risk and associated budget exposure. The two phases will be a progressive and modular implementation of the Operations Technology Vision (see Figure 3-1: Operations Technology Vision). The phased approach provides opportunities for regular reassessment of investments and budget adjustments, if required, and it mitigates business risk by adopting a holistic approach across the Company:

- **Phase 1** provides the foundational builds for the three work streams (TPMIS, FPM and VTM) and deploys these solutions at selected major terminals.

  FPM will be deployed at Tsawwassen, the VTM solution at Duke Point, and the TPMIS across both terminals. This will allow the Company to assess the effectiveness of technologies and process changes, and the applicability of solutions to the other major terminals. The capabilities of the new FPM solution can be evaluated at Tsawwassen, a high volume multi-route terminal with sufficient foot traffic. Meanwhile, the VTM solution will be deployed at Duke Point because it is a low volume single route terminal, ensuring minimal operational impact while providing adequate transactional processing to assess performance and benefits of the solution and make adjustments as required.

Phase 1 mitigates the technology and integration risk and concludes with an evaluation phase that allows for assessment and confirmation of expected outcomes, and an opportunity to adjust and refine prior to the expansion at other major terminals.

- **Phase 2** involves incorporating the learnings, efficiencies and refinements from Phase 1 and extending the solutions to the other major terminals - VTM at Tsawwassen, FPM at Duke Point, and all aspects (VTM, FPM and TPMIS) at Departure Bay, Swartz Bay and Horseshoe Bay. This second phase also provides BC Ferries with an opportunity to tailor capabilities to particular terminals or terminal groupings.

These phases are conceptualized below:

FIGURE 3-2: TERMINAL PLANNING AND MANAGEMENT INFORMATION SYSTEM (TPMIS)

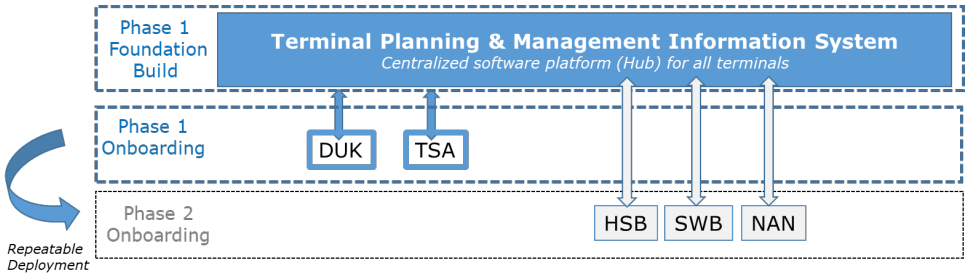


FIGURE 3-3: FOOT PASSENGER MANAGEMENT (FPM) & CONTRACTOR VISITOR MANAGEMENT (CVM)

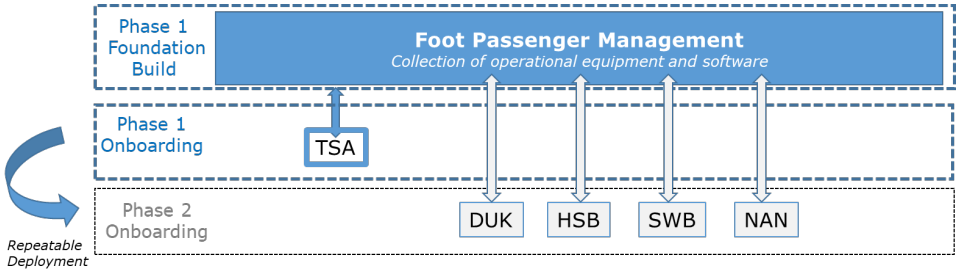
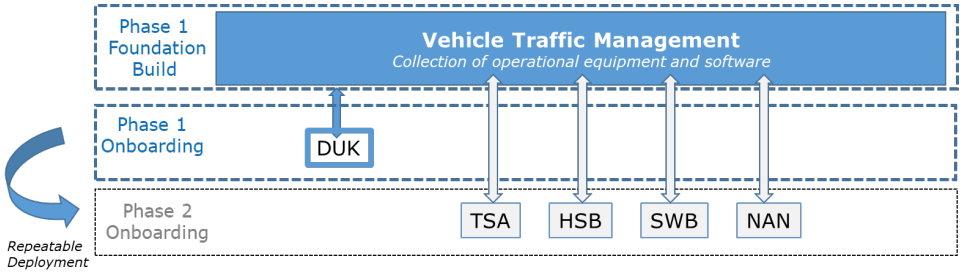


FIGURE 3-4: VEHICLE TRAFFIC MANAGEMENT (VTM)

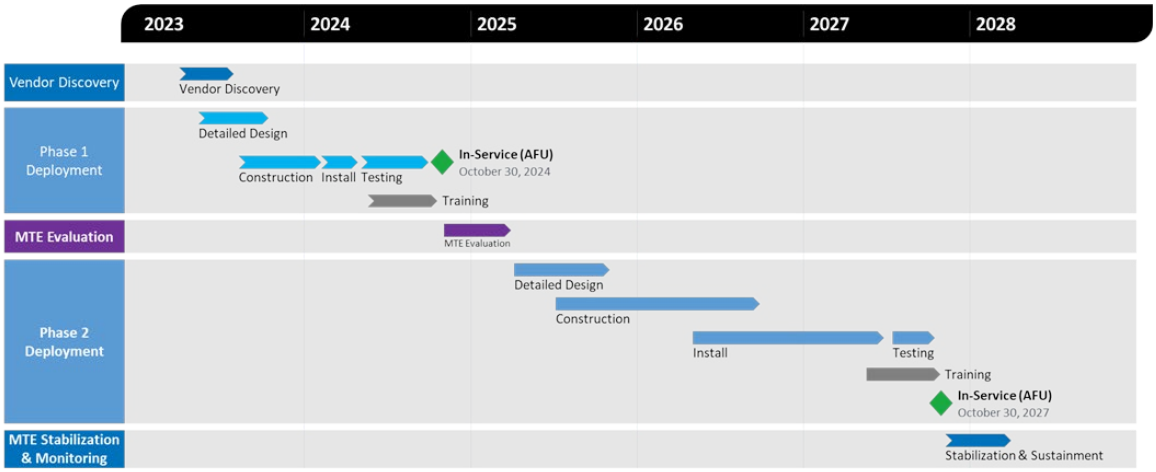


3.8 Implementation Timeline and In-Service Dates

What is the expected in-service date? How was it determined? How confident is BC Ferries of the in-service date?

The implementation of the Project will be planned, executed, and controlled on a timeline divided into the phasing indicated below:

FIGURE 3-5: PROJECT PHASING TIMELINE



The Project will deploy by location and solution work stream (FVM, VTM and TPMIS) iteratively. Detailed release plans will revised continually through the design phase and during deployment.

3.8.1 Phase 1: Project Milestones

Project milestones are provided below:

TABLE 3-1: PROJECT MILESTONES

Milestone Baseline	Start Date	End Date
Terminal Operating Model – Process and Procedure Review Workshops	5-Feb-23	30-Jun-23
Vendor Discovery	22-May-23	30-Aug-23
Configuration Setup	5-Sep-23	25-Apr-24
BCF Integration Development	5-Sep-23	9-Feb-24
IT Data Center Infra Setup	9-Oct-23	26-Jan-24
Procure Components (PO)		Aug -23
Trade & Maintenance Plan	8-May-23	30-Jun-23
Building Modification & Cabling	12-Jun-23	24-Nov-23
Sourcing (Shipping)	19-Jun-23	4-Dec-23
IT Terminal Infra setup (servers)	8-Jan-24	9-Feb-24
Install On-site Modular Components	15-Jan-24	29-Mar-24
Foot Integration (SW)	3-Oct-23	26-Apr-24
Foot Solution - QA Testing	1-Apr-24	3-May-24
Procure Components (PO)		13-Jun-23
Engineer Design and Plan	3-Mar-23	31-Jul-23
Construction Material Sourcing	29-May-23	22-Sep-23
Sourcing Components (shipping)	3-Jul-23	25-Jan-24
IT Terminal Infra Setup (servers)	8-Jan-24	9-Feb-24
Construction Install & Cabling	5-Oct 23	26-Feb-24
Install on-site Modular Components	5-Feb-24	25-Apr-24
Traffic Integration (SW)	3-Oct-23	25-Apr-24
Traffic Solution - QA Testing	29-Apr-24	31-May-24
End-To-End Test Cycle & Operational Readiness Assessment and Acceptance	6-May-24	26-Sep-24
OCM Employee Relations (Strategy)	5-Jun-22	11-Dec-24
GO LIVE - MTE Phase 1- AFU		30-Oct-24
Project Specialized Support Structure – Front Line	8-Oct-24	8-Jan-25
Continuous Refinement (iterative 3-week release cycles)	13-Jan-25	28-Feb-25
Handoff To Operations (PTO)	3-Mar-25	28-Mar-25
Repeatable Deployment Approach Validation and Change Updates	6-Jan-25	14-Mar-25

3.8.2 Phase 2: Framework Milestones

Framework milestone baseline dates are provided below:

TABLE 3-2: FRAMEWORK MILESTONES

Milestone Baseline	Start date	End date
Terminal Planning for Modular Configuration TSA, DUK, HSB, SWB and NAN	Apr-25	Aug-25
Terminal Repeatable Deployment Strategy	May-25	Sep-25
Detailed Design	Apr-25	Oct-25
Traffic and People Flow - Studies	Jun-25	Oct-25
Procurement Hardware Components Traffic / Foot	Jun-25	Sep-25
Constructions	May-25	Jun-26
Software Configuration & Integration Development	May-26	Mar-27
Installation of All Hardware Components at Terminals	May-26	Jul-27
Quality Testing	Jul-27	Sep-27
Project Launch Training	May-27	Oct-27
GO LIVE - MTE Phase 2		Oct-27
Stabilization and Monitoring & Closure	Nov-27	Mar-28

To maintain the schedule and ensure operations are impacted as minimally as possible at the major terminals, BC Ferries has scheduled activities to:

- Maintain direct and regular communication with the BC Ferry and Marine Workers' Union ("Union");
- Implement a communication plan internally and externally to ensure regular and timely updates are provided to gather feedback and address and concerns early within the Company;
- Complete construction activities at the appropriate time of year, particularly with consideration to the terminal peak and blackout periods; and
- Deliver modular components as ready to adopt early iterative releases and deployments.

BC Ferries will also:

- Develop and communicate a Project schedule with critical milestones to internal and external stakeholders;

- Engage and conduct early and regular pre-planning status for all procurement and supply chain requirements; and
- Adopt an early organizational change management and quality assurance strategy to identify, manage and successfully deliver critical change impacts throughout the Project duration (see next section).

3.9 Organizational Change Management

The Company is aware there is a direct correlation between Project success and effective organizational change management ("OCM"), and has developed an OCM strategy for MTE. OCM best practices that have been adopted include:

Mobilized, active and visible executive Project owner and sponsor

MTE Project Owner – Executive Director Terminal Operations

MTE Project Sponsor – Vice President & Chief Information Officer, Information Technology

The Project sponsor and owner build and maintain a coalition of support for the Project by engaging with executive management (vice presidents). They also attend Project-related meetings with front line managers (example Regional Managers), engage with other senior leaders and communicate regularly with impacted stakeholders, such as Fleet Operations, Marketing & Customer Experience, Corporate Communications, Information Technology, the Union and Labour Relations / People & Culture to ensure Project support and access to resources from respective areas.

Use a structured OCM approach

Provide detail on completed and/or planned consultations with affected customers, stakeholders and communities.

The core Project team includes an organizational change management specialist, who will work closely with stakeholders as part of the MTE Core Project team to execute and monitor progress of the plan. Successful organizational change management will be achieved through the following activities:

TABLE 3-3: ORGANIZATIONAL CHANGE MANAGEMENT ACTIVITIES

Prepare for Change	**Manage & Monitor Change through project work streams and phases**			**Reinforce/ Sustain Change**
Assess & Plan	Leadership Alignment	Communication Engagement & Change Impacts	Competency Building/ Training	Reinforce Change
Assess high level change impact & risk	Identify Change Champions/ Agents (Change Team)	Develop & deliver communications	Understand competency/ skill/ training needs	Understand needs for additional training and/ or support
Assess stakeholders	Assess needs of Change Champions/ Agents	Engage stakeholders	Determine training resources	Develop Reinforcement Plan (by measuring outcomes & identifying improvements)
Assess organizational readiness	Orient Change Champions/ Agents to OCM & role	Monitor movement along the adoption curve (ADKAR)	Develop Training Plan	Align recognition practices
Develop OCM Strategy	Develop Change Champion/ Agent Support Plan	Monitor communications & engagement effectiveness	Deliver training	Incorporate new expectations into performance management process
Develop Communications & Stakeholder Engagement Plans	Monitor & support Change Champions & Agents	Identify change impacts & mitigation strategies	Monitor training effectiveness	Celebrate accomplishments

The Project intends to develop the following plans in support of OCM:

- Communications Plan (internal and external);
- Stakeholder Engagement Plan;
- Change Impact Plan;
- Employee Relations Plan; and
- Training Plan.

Change Agent and Champion Network

Employee engagement and participation will be a top contributor for success of the Project. Effective OCM drives employee adoption and usage, which in turn generates organizational results and outcomes. In turn, the primary and most impactful way the Project will be engaging frontline staff is through a change agent and champion network ("change network"). The change network, already being formed, is comprised of select individuals from the business who will help champion the change. Members of the change network will serve as an extension of the Project team and OCM resources to help prepare the business for MTE implementation.

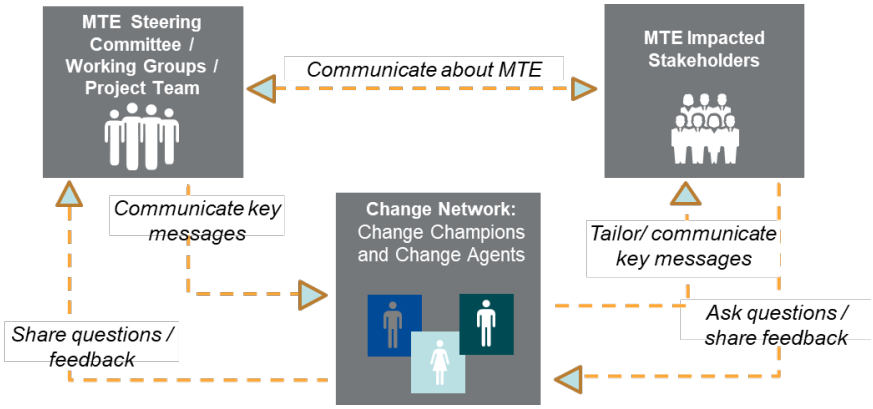
The purpose of the change network is to:

- Build accountability and ownership by empowering change champions and agents to gather feedback from all levels of impacted stakeholders;
- Promote understanding of MTE with front-line resources to assist employees in dealing with uncertainty and ambiguity as the Project progresses;
- Advocate positive change through two-way communication that is required to change behaviors and attitudes; and
- Mitigate potential risks related to adoption and change through early identification of problems and organizational resistance.

The Project also intends to keep employees informed about the organizational changes been brought by MTE through regular communications and updates.

Engage, Support & Integrate with Management and Leadership

OCM interactions may be viewed in the chart below:



Change for Customers

The Company is aware that to ensure implementation success, external stakeholders – including private and commercial customers – must be aware of the changes brought by MTE. The public is a key stakeholder and is part of the Project's communications and stakeholder engagement plans.

Government Liaison and Pacific Northwest Ferry Forum

BC Ferries has briefed the Ministry of Transportation and Infrastructure's Marine Branch and communications teams with respect to the status of the Project, as it progressed through procurement activities. In addition, a substantive briefing was provided at the Pacific Northwest Ferry Forum.

3.10 Project Governance

BC Ferries has an established project governance framework. This framework provides a disciplined approach for identifying, approving, managing, reporting and delivering projects. It defines key roles and provides principles and guidelines for project governance through the phases of the project / benefits lifecycle. The framework will help to ensure that the Project meets BC Ferries' functional and business needs and is delivered as effectively and efficiently as possible.

The Project is designated as a Class A project and is overseen by a steering committee that reviews the Project's progress through monthly meetings. The steering committee is listed below:

TABLE 3-4: STEERING COMMITTEE

Project Owner	Executive Director, Terminal Operations
Project Sponsor	Vice President & Chief Information Officer, Information Technology
Voting Members	Vice President & Chief Operating Officer, Operations Vice President, Marketing & Customer Experience, Marketing & Customer Experience Vice President, Strategy & Community Engagement, Strategy & Community Engagement Director, Operations & Security Centre, Operations & Security Centre Director, IT Strategy & Enterprise Architecture
Non-Voting Members	Executive Director, Safety, Health & Environment, Safety, Health & Environment Executive Director, Fleet Operations, Fleet Operations Executive Director, Labour Relations, Employee Relations Executive Director, Internal Audit, Internal Audit Executive Director, Communication and Engagement Director, Employee Relations, Employee Relations Director, Corporate Planning, Treasury Director, IT Projects Director, Terminal Construction, Terminal Engineering General Manager, Commercial Services, Commercial Services Manager, Project Governance, Finance - Corporate Planning
Project Team	Senior MTE Program Manager Organizational Change Management Specialist Senior Business Analyst, Treasury Solution Architect, OT / IT Strategy & Architecture IT Project Coordinator

The Project also has the following internal reporting:

- Quarterly Project update reports to the BC Ferries Board of Directors' Capital Projects Committee; and
- Monthly internal corporate progress reports that detail the financial status of the Project.

In addition, the Project has appropriate risk management controls (see section 5 for further details), and will comply with all of the Company's supply chain and procurement policies and procedures.

3.11 Core Project Team

MTE requires a specialized combination of project labour with proven operational technology, organizational change management, and business transformational experience. A Core Project Team will manage the work streams (TPMIS, FPM and VTM) as a unified program to maintain overall Project integrity. A high degree of collaboration will be ensured through continuous alignment of people, process and technology perspectives. This specialized contracted core Project team consists of program / Project management, organizational change management, OT / IT solution architecture, technology consultants, quality assurance and testing, business / system analysis and industry subject matter experts.

3.12 Alignment to Corporate Planning

BC Ferries connects and supports communities by bringing people together, meeting customer needs, and building and strengthening the provincial economy. An important part of the Company's business is to plan for the future while being innovative, efficient, environmentally responsible and responsive to the ever-changing social and business climate.

The Project aligns with the Company's strategic goals with associated key benefits:

- Customer and Community Centred – MTE will reduce ticketing and reservation redemption wait times by more efficiently processing customers and vehicles, and will address customer expectations for a consistent and contactless digital experience;
- Focused on Core Operations – the Project supports operational resiliency and efficiencies with centralized and standardized technologies and business processes, enabling better visibility of customers and traffic in real-time, and

allowing for management and prompt flow of people, goods and services while reducing operational risks associated with the current manually intensive terminal operating model;

- Supporting our Employees – MTE will implement modern technology that reduces complexity for the front line employees, terminal leadership and backend-supporting departments, while mitigating safety risks with current processes;
- Manage our Company well – the Project implements a simplified, sustainable and digital terminal operating model, enabling operational savings and with positive net present value ("NPV") through 15 years; and
- Pursue Climate Change Initiatives – The Project will help to mitigate the Company's environmental impact by through reduced vehicle idle times, although this will be non-measurable.

BC Ferries' four corporate master plans – Customer Experience Master Plan, Information Technology Master Plan, Terminal Network Master Plan and Fleet Master Plan – align with the Company's overall Strategic Plan and translate its broad direction into specific goals, policies and design directives to provide guidance for future capital investments. Together, the master plans provide direction to enable predictable and consistent decision making for BC Ferries' asset investments. The vision from these master plans is captured in long-range asset planning and the Company's capital plan for fleet, terminal and information technology investments.

The Project is aligned with the following plans:

Terminal Network Master Plan

This plan defines the goals and policies to support a terminal system that is optimized for efficient, effective and sustainable operation. BC Ferries seeks opportunities to optimize operating and capital costs, increase system reliability, and support business development and innovation. Terminal improvements will emphasize safety, environmental stewardship, efficiency and customer experience.

The Project aligns with the objectives in the Terminal Network Master Plan by supporting simplicity, efficiency, integration, scalability and flexibility, intermodal connectivity and a focus on customers.

Information Technology Master Plan

This plan's goals support ensuring that a solution's design provides customers with an efficient, frictionless experience, and that employees have the modern technology to support their work and improve their morale and satisfaction. The Project aligns with this by proposing solutions that improve the customer's journey through the terminal with an efficient, reduced contact experience, and by providing employees with the data, information and applications needed to perform their duties. Further, this plan includes:

- The goal of creating digital ecosystems, made up of reusable components and adaptable to business changes: The Project aligns with this by proposing solutions that are adaptable and flexible to future business needs, and modularized to be capable of deployment at a variety of terminals with different operating requirements.

- The goal of supporting operational effectiveness and safety through technology investments: The Project aligns with this by proposing solutions that are deployed to meet the business's operational requirements, while being continuously updated and providing opportunities for improvements.

These goals are further supported through the IT Strategic Plan's subsidiary cloud strategy. The Project aligns with this strategy's preference for cloud-based SaaS services, and cloud supported information technology.

Customer Experience Master Plan (CEMP)

The Digital Customer Experience Strategy ("DCX") is a major input for the BC Ferries 2023 Customer Experience Master Plan ("CEMP"), which is the guiding vision for meeting the goal of being a customer and community-centred organization.

The DCX Strategy contains the digital vision, strategy, objectives, major themes, features, preliminary roadmap and key performance indicators that are to be considered by BC Ferries in the coming years to help achieve the CEMP end-to-end customer journey vision and experience. It envisions an end-to-end digital customer experience along the various stages of the customer journey, bridging several current and future related capital projects.

The MTE Project aligns with the customer experience master plan and specifically the digital customer experience strategies contained within it. The Project will realize improvements in the flow of customers, vehicles and goods through the terminals using new digital contactless technologies.

Section 4: Financial Analysis

4.1 Options Analysis

Does the proposed capital expenditure indicate a wise use of resources?

Does the proposed capital expenditure demonstrate good judgment, based on wisdom, experience and good sense?

BC Ferries considered several different approaches and options during business case development. The options that were prioritized were progressive, scalable and modular, in order to provide efficient outcomes while ensuring immediate benefits to customers and employees. The following three being considered the most viable:

Option 1: End of Life Upgrades (not recommended)

This option involves a refresh of existing end of life ticketing kiosks for foot passenger travel and deployment of a centralized software platform (TPMIS) to replace custom-developed and end of life terminal applications. It would not address current operational challenges, as described in the sections above. Terminal Operations would continue with a complex operating model (processes and procedures), with limited ability to handle traffic surges, meet traffic growth and address issues related to vessel turnaround time and fuel costs. In addition, the Company would continue to fall behind in providing digital enabled services to meet customer travel expectations.

Option 2: Customer and Employee Digital Enablement (recommended)

With enhanced terminal operational equipment and new processing capabilities and service improvements, customers will experience reduced ticketing and reservation redemption wait times, and a frictionless journey for both foot and vehicle travel. Employees will work within a simplified operating model, with improved real-time visibility into the status of customers and traffic. Custom-developed terminal applications will be migrated to a configurable industry-standard solution (TPMIS) enabling a central and flexible dashboard view of all terminals. This option establishes a roadmap for transformation by providing a supporting platform and new processes, positioning Terminal Operations to be flexible, scalable, and adaptable to meet the evolving business challenges.

The Company supports this option as it would best serve the operational needs of the Company and its employees, while meeting customer expectations.

Option 3: Complete Terminal Digital Enablement (not recommended)

This option is a progressive elaboration of the items identified in Option 2 with the expansion of operational equipment, including more efficient loading and lane guidance. The Company is not considering this option because BC Ferries lacks the organizational capacity to simultaneously incorporate the scale and magnitude of the changes proposed, and ensuring customer behavioural changes, while accommodating the broader impact and disruption to Terminal Operations from construction activities.

4.2 Project Capital and Operating Expenditures

What are the total estimated capital expenditures by year by option?

Does BC Ferries intend to capitalize any of its own internal costs with respect to the capital expenditure?

What is the estimated IDC?

Are financing costs included in the cost estimate between first payment to the supplier and the in-service date?

Table 4-1 summarizes the total Project budget (upfront capital and operating expenditures) and 15-year NPV for each option:

TABLE 4-1: OPTIONS ANALYSIS SUMMARY ($MILLIONS)

	Option 1: End of Life Upgrades	**Option 2: Customer and Employee Digital Enablement (Recommended)**	**Option 3: Complete Terminal Digital Enablement**
Project Expenditures			
Capital	< >	< >	< >
Operating	< >	< >	< >
Total managed budget	< >	< >	< >
IDC on recommended option		< >	
Total budget with IDC		< >	
15-year NPV	< >	< >	< >

Notes:

1. IDC costs are not included in the managed budget but will form part of the final capitalized cost of the Project per International Financial Reporting Standards ("IFRS"). They are estimated for each option to reflect approximate financing costs on outstanding cumulative cash flows until respective assets are recognized as available for use per IFRS.

2. BC Ferries does not anticipate a need for specific borrowing for this Project and will finance it in line with all capital projects with cash flow from operations by drawing on credit facilities and / or by issuing bonds in the capital markets. Credit facilities include term bank debt, revolving bank lines of credit, publicly issued and privately placed debt securities, commercial paper, medium-term notes, interest rate and currency swaps and other hedging instruments.

Option 2: Customer and Employee Digital Enablement (recommended)

The total Project budget request for the recommended option (Option 2) is $< > million, inclusive of $< > million IDC. Project capital expenditures primarily consist of operational equipment and technology infrastructure, terminal facilities upgrades, engineering design and construction, and specialized contracted labour and installation. Internal costs including labour for specialized areas such as terminal operations, engineering and construction, corporate security, and information technology are also capitalized, in accordance with internal financial policies and IFRS. Project operating expenditures include execution costs that cannot be capitalized, such as end-user training.

Table 4-2 summarizes the managed Project budget for Option 2 including the two phases and Project contingency. The Project contingency amount is < > percent of the base cost including the cost estimate contingency calculator (see section 4.4) and the identified financial risk exposure.

TABLE 4-2: MANAGED PROJECT BUDGET ($MILLIONS)

	Capital	Operating	Total
Pre-Implementation Subtotal	< >	< >	< >
Phase 1 Budget	< >	< >	< >
Phase 1 Contingency (< > percent)	< >	< >	< >
Phase 1 Budget Subtotal	< >	< >	< >
Phase 2 Budget	< >	< >	< >
Phase 2 Contingency (< > percent)	< >	< >	< >
Phase 2 Budget Subtotal	< >	< >	< >
Phase 1 & 2 (before Contingency)	< >	< >	< >
Phase 1 & 2 Contingency	< >	< >	< >
Phase 1 & 2 Total Budget	< >	< >	< >
Total Managed Budget (Pre-implementation + Phase 1 & 2)	< >	< >	< >

The up front cost is more than offset by expected net annual operating savings, resulting in a positive 15-year NPV as indicated in Table 4-1.

Other Options

Option 1 is focussed on addressing end of life technologies within terminals, with a minimum set of application replacements. Unlike preferred Option 2, Option 1 does not realize the ongoing operational and financial benefits with respect to revenue and labour savings and therefore yields a net unfavourable NPV.

By comparison, the difference in the total budgets between Options 2 and 3 arises from the latter's inclusion of digital loading and offloading capabilities and additional terminal construction development requirements within terminal staging areas. Option 2's narrower scope also excludes the cost of lane status sensors, traffic lights for loading, wayfinding between lanes and berths, a bike / kayak lane for processing customers outdoors, and an expanded portfolio of recommended application replacements and integration candidates to further enhance dashboards for use at the major terminals. While Option 3 reflects an expanded scope, the estimated ongoing financial benefits associated with this scope do not offset the incremental up front cost, resulting in a less favourable NPV than Option 2.

4.3 Project Cost Methodology

Is there an allowance in the estimate for inflation from the date of acceptance of a proposal to the completion date (escalation clause)?

Various procurement processes (RFI, RFP and RFQ) were conducted during the early procurement phase to obtain a variety of cost estimates and to understand market standards. Pricing risk exposure was included in the early Project cost estimates in October 2022 to capture market risk and uncertainty (e.g., inflation). The MTE Solutions RFP requested that the vendors' responses and estimates remain valid for 300 days (i.e., their quotes are valid until November 2023). Project engineering and construction costs were obtained early from external services engagement and further refined as part of the Duke Point preliminary engineering and construction RFP. The Project team has extensive knowledge in cost estimating programs of this size and complexity and applied subject matter expertise throughout the process.

BC Ferries calculated the Project labour, organizational change management, cross department impacts, subject matter expertise and quality assurance costs required to support the solution design and deployment using standard external contractor market rates, decreasing the risk of internal resource availability constraints.

The Project cost estimates are divided into the following categories:

Operational Equipment and Technology Infrastructure

The technology hardware and equipment purchases / installation for the vehicle and terminal solutions represent approximately $< > million (or < > percent) of the total Phase 1 and Phase 2 capital budgets of $< > million before contingency. A combination of global inflation and depreciation of the Canadian dollar against the Euro and USD may affect equipment pricing. < >

The technology hardware and equipment is based on a preliminary architecture vision and concept design that has identified the incremental server and other technology hardware that will be required at BC Ferries' data centers and at each major terminal location. Equipment will be procured through competitive RFP processes and a multi-year pricing schedule, subject to volume discounts, will be negotiated. For equipment purchases, there are three alternatives, or combinations thereof, being considered as part of the planned RFP:

1. TPMIS vendor provides an all-inclusive solution including all equipment and software;

2. An OT integrator, separate from the TPMIS software vendor, provides some or all equipment;[7] or

3. BC Ferries purchases some or all equipment.

BC Ferries does not anticipate making a decision on the alternatives until after vendor discovery in summer 2023.

Terminal Facilities and Construction

Construction activities represent approximately $< > million (or < > percent) of the $< > million Phase 1 and 2 Project capital estimates before contingency. The largest portion of the construction estimate is the supply and installation of pre-gate gantries to enable the cameras, VCS, ANPR and weigh-in motion solutions on approach to the ticket booths. For the traffic management side, preliminary design and costing for the Phase 1 Duke Point solution has been completed by an external engineering firm and this has been used to scale up estimates for the traffic management solution at other major terminal locations.

Building modifications are anticipated to be minimal and will accommodate the introduction of new cabling requirements for the indoor / outdoor ticketing kiosks, fare gates and validators. These modifications will prepare the facilities for the equipment vendors or integrator to undertake the installation. A terminal facility survey has been planned early in the phases of the Project to conduct detailed onsite assessment of the terminals infrastructure and asset health. As the design work progresses for both the foot passenger building renovation at Tsawwassen and the traffic management solution

[7] Integrators bring together different solution components (hardware and software) and ensure their compatibility and interoperability

at Duke Point, cost estimates will be firmed up for those specific construction activities in Phase 1 as well as the subsequent terminal construction work in Phase 2.

Project and Vendor Labour

Project Labour: The remainder of the budget is allocated to Project and vendor labour. This Project requires a combination of specialized core Project team labour with proven operational technology, organizational change management, quality assurance, technology enablement, and business transformational experience. The MTE core Project team will manage the work streams as a unified program (see section 3.11). The Project core team labour cost is heavily tied to an assumed "burn rate".

The labour estimates for the BC Ferries custom developed integration work were provided by the IT integration team, based on preliminary design knowledge of the identified BC Ferries systems and information gathered.

Vendor Labour: The TPMIS platform is a service provided by a vendor or partner. The estimates are currently aligned to vendor quotes provided during the procurement processes to date. Estimates for labour to set up the TPMIS will be validated following the vendor discovery phase.

The division of effort between the vendor and BC Ferries will be determined during the detailed design process and implementation contracting phase. The key vendors' labour costs will be linked to schedule performance.

4.4 Contingency

The total Project contingency allocation is < > percent of Project estimates. Project contingency was divided into two components – estimate uncertainty and financial risk exposure:

Estimate Uncertainty

The estimate uncertainty component was calculated using a combination of cost item estimate ranges: mean, standard deviation, normal distribution and Pearson-Tukey Method (Johnson modification). First, the estimated low, best estimate and estimated high was estimated for each high level cost item. Then, using the Pearson-Tukey Method, the mean (expected value) and standard deviation was calculated for each cost item:

TABLE 4-3: MEAN AND STANDARD DEVIATION FOR HIGH LEVEL COST ITEMS ($MILLIONS)

Cost Item	Estimated Low (5% chance of occurrence)	Best Estimate	Estimated High (5% chance of occurrence)	Expected Value (Mean)	Standard Deviation
Compliance	< >	< >	< >	< >	< >
Construction	< >	< >	< >	< >	< >
Project Labour	< >	< >	< >	< >	< >
Technology Labour	< >	< >	< >	< >	< >
Vendor (SaaS)	< >	< >	< >	< >	< >
Hardware Infrastructure	< >	< >	< >	< >	< >
TOTAL	< >	< >	< >	< >	< >[8]

Based on the above table, the base cost estimate is $< > million, the total expected value (P50) is $< >million and the total standard deviation is $< >million. The following table has been produced using Z-scores for a normal distribution and the total expected value / standard deviation:

TABLE 4-4: CONTINGENCY FOR DIFFERENT CONFIDENCE LEVELS

Confidence of not exceeding budget	Z-score (for normal distribution)	Project Budget ($millions)	Contingency ($millions)	Contingency Percentage of Base Cost
< >	< >	< >	< >	< >
< >	< >	< >	< >	< >
< >	< >	< >	< >	< >
< >	< >	< >	< >	< >
< >	< >	< >	< >	< >
< >	< >	< >	< >	< >
< >	< >	< >	< >	< >
< >	< >	< >	< >	< >
< >	< >	< >	< >	< >
< >	< >	< >	< >	< >
< >	< >	< >	< >	< >

This is articulated in the graph below:

[8] Total standard deviation = $\sqrt{\sum(standard\ deviation\ of\ each\ cost\ item)^2}$

FIGURE 4-1: GRAPHICAL DEPICTION OF PROJECT BUDGET VERSUS CONFIDENCE LEVEL ($MILLIONS)

< table redacted >

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Risk Exposure

The Project has utilized BC Ferries' risk exposure methodology to identify, classify and plan a management approach for risks. As risks are often realized in later stages of a project, BC Ferries has structured the Project phasing to provide early visibility of high probability and impact risks, and incorporate mitigation plans into the budget and schedule. Section 5 includes an overview of the key risks to the Project, together with planned mitigation strategies and associated mitigation plans.

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4.5 Ongoing Operating Implications

Vessels and Terminals: Does the vessel/terminal design have any impact on labour costs? If so, how?

What are the estimated maintenance costs for each option? Where there are large differences, please explain.

How were the capital, operating and maintenance cost estimates derived? Entirely with BC Ferries' staff or was there an external review?

What is the revenue impact?

The net annual operating implications for each option are presented below:

[Continued next page]

TABLE 4-6: NET ANNUAL OPERATING IMPLICATIONS ($MILLIONS)

	Option 1: End of Life Upgrades	Option 2: Customer and Employee Digital Enablement (Recommended)	Option 3: Complete Terminal Digital Enablement
Incremental Revenue	< >	< >	< >
Incremental Annual Savings			
Terminal Labour	< >	< >	< >
Traffic Control & Training	< >	< >	< >
Total Incremental Savings	< >	< >	< >
Incremental Annual Costs			
Sustainment and Support	< >	< >	< >
Subscription	< >	< >	< >
Total Incremental Costs	< >	< >	< >
Net Incremental Revenue, Savings, and Costs	< >	< >	< >

Note: Figures reflect the annual average from Fiscal 2029 through Fiscal 2037

With Option 2, BC Ferries will realize a net annual operating labour savings of approximately $< > million by transforming and modernizing Terminal Operations and the customer experience. The vehicle measurement accuracy introduced with the Project is assumed to result in approximately $< > million recovery of foregone revenue annually due to undercharging under the current process and system. Savings and revenue are partly offset by increased cost for technology sustainment and subscription services.

Option 2's incremental operating savings, costs, and revenue will be realized gradually with completion of each phase:

- Phase 1 net annual operating benefit of $< > million; and
- Phase 2 net annual operating benefit of $< > million.

Further details regarding net annual operating benefits associated with Option 2 are included in Appendix F.

Under Option 3, approximately $< > million in additional Terminal Operations labour savings above Option 2 is assumed due to improvements in staging and loading vehicles onto vessels. Other ongoing implications (revenue traffic control, training / recruitment, and technology support and subscription costs) are consistent with Option 2.

In contrast, the post-implementation operating implications for Option 1 consist of incremental costs for sustainment of new TPMIS and hardware. No incremental revenue or operating cost savings are anticipated as this option assumes terminals operate largely as they do today.

4.6 Lifecycle Costing

Is the net present value analysis done on a lifecycle basis for relevant comparison of options?

What is the rationale for the discount rate used?

Does the proposed capital expenditure provide good value, at a moderate and fair price? Is it affordable?

BC Ferries performed a lifecycle NPV analysis that compared the three options based on upfront Project costs, increased revenue, and incremental operating costs and savings discussed in the previous sections. See Table 4-1 for the 15-year NPV analysis results for all options.

The NPV analysis also took into account two other cash flow implications within the 15-year lifecycle:

- Equipment renewal: The total spend of $< > million within the lifecycle analysis under Option 2 reflects end of life replacement of assets such as servers, network switches, cameras, signage, etc. Under Options 1 and 3, the cost of renewal equipment within the lifecycle is $< > million and $< > million, respectively.

  < >

- Cost avoidance savings: Renewal of legacy equipment and systems will not be required with the introduction of new equipment and systems. Cost avoidance includes renewal of ticketing kiosks, turnstiles, and systems for traffic and vehicle classification. Under Options 2 and 3, the value of cost avoidance modeled in the lifecycle analysis is $< > million.

  Under Option 1, the cost avoidance is $< > million. The difference of approximately $< > million in comparison to Options 2 and 3 is attributable to renewal of the vehicle classification system and some terminal hardware that cannot be avoided under Option 1 due to the scope.

  The value of cost avoidance is based on internal estimates.

To complete the NPV, BC Ferries included the following assumptions:

- 15 year NPV period is used (ending in Fiscal 2037), which captures approximately 10 years of operations following available for use of Phase 2;
- A 7 percent discount rate that is based on approximate current borrowing costs plus a risk premium;
- Revenue, labour, and non-labour all include an annual 2 percent annual inflation rate increase.

4.7 Sensitivity Testing

The lifecycle analysis for the recommended Option reflects a positive 15-year NPV of $< > million. BC Ferries tested the sensitivity of the discount rate, as well as changes to up front and ongoing cash flows assumed in the analysis.

Discount Rate

If the discount rate assumed in the analysis is changed to < > percent (from 7 percent), there is a $< > million increase to the positive NPV under Option 2. Conversely, a 2 percent increase to the discount rate would reduce the NPV by the same amount. All other things equal, the NPV would remain positive up to a discount rate of approximately < > percent.

Up Front and Ongoing Cash Flows

Tables 4-6 and 4-7 summarize the sensitivity test results for 10 and 20 percent changes to up front and ongoing cash flows assumed in the NPV, respectively:

TABLE 4-6: SENSITIVITY TEST – 10 PERCENT

Option-2 Sensitivity Test - 10%				
Change	**Increase %**	**NPV (M)**	**Decrease %**	**NPV (M)**
Changes in Project Costs				
Project Capital Costs	10%	< >	-10%	< >
Changes in On-going Expenditures				
Labour Expenses	10%	< >	-10%	< >
Non-Labour Expenses	10%	< >	-10%	< >
Equipment Renewal	10%	< >	-10%	< >
Changes in On-going Revenues & Savings				
VCS Revenue	10%	< >	-10%	< >
Labour Savings	10%	< >	-10%	< >
Non-Labour Savings	10%	< >	-10%	< >
Capital Cost Avoidance	10%	< >	-10%	< >

TABLE 4-7: SENSITIVITY TEST – 20 PERCENT

Option-2 Sensitivity Test - 20%				
Change	**Increase %**	**NPV (M)**	**Decrease %**	**NPV (M)**
Changes in Project Costs				
Project Capital Costs	20%	< >	-20%	< >
Changes in On-going Expenditures				
Labour Expenses	20%	< >	-20%	< >
Non-Labour Expenses	20%	< >	-20%	< >
Equipment Renewal	20%	< >	-20%	< >
Changes in On-going Revenues & Savings				
VCS Revenue	20%	< >	-20%	< >
Labour Savings	20%	< >	-20%	< >
Non-Labour Savings	20%	< >	-20%	< >
Capital Cost Avoidance	20%	< >	-20%	< >

The sensitivity analysis identified two key areas that could significantly affect the Project's NPV results: < >

< >

4.8 Scenarios for Reducing Capital Expenditures

What would have to be sacrificed to reduce total costs by 10%, and by 20%?

In line with Project's themes of adaptability, flexibility and modularity, the Project's budget can be managed and controlled to make appropriate adjustments (increases or decreases) during the Project life cycle. As discussed further at section 5.3, each work stream (TPMIS, FPM and VTM) can be decoupled from the others with the exception of the foundational builds. However, decoupling the work streams will necessitate a reassessment of the Project's financial benefits.

4.9 Capital Planning

How has this capital expenditure project been prioritized relative to other capital expenditure projects within the long-term capital plan?

Is the proposed capital expenditure provided for in a board approved capital plan?

Is the total cost different in any respect from what was approved in the capital plan?

Does the scope of the proposed capital expenditure differ in any respect from what was approved in the latest capital plan approved by the Board?

BC Ferries' Board of Directors has approved the Project and management have prioritized it as a strategic initiative within the overall capital portfolio. The Project was included in the PT6 12 year Capital Plan (see section 4.10) and was highlighted as an efficiency improvement strategy within the PT6 Submission.

The most recent 12 year Capital Plan endorsed by the Board of Directors in February 2023 included a $< > million capital placeholder (before IDC) with spend spanning through the end of Fiscal 2028. The placeholder was reflective of the scope included in this application. An updated 12 year Capital Plan is pending approval by the Board of Directors in June 2023, and includes a $< > million capital placeholder (before IDC) consistent with this request.

4.10 Price Cap Implications of Preferred Option

Is the total cost different in any respect from what was indicated in the BC Ferries' last submission to the Commissioner for price cap setting purposes?

What is the estimated impact of the proposed capital expenditure on future price caps assuming no change in non-passenger related revenues?

Has it been demonstrated that the proposed capital expenditure would not reasonably be considered excessive?

BC Ferries' submission to the Commissioner for price-cap-setting purposes for PT6 was submitted in September 2022, followed by a supplemental filing in March 2023. The PT6 12-year Capital Plan in the supplemental filing included a $< > million placeholder for the Project with cash flows occurring in Performance Term Five through to the end of PT6, which reflected a scope consistent with the recommended option in this application.

Upon Project completion, with all other things held constant, BC Ferries' analysis indicates a decrease of -0.033 percent per annum to required average annual regulated tariff revenue over the 12 years from Fiscal 2025 through Fiscal 2037. Starting in PT6 through Fiscal 2032 (the end of Performance Term 7) an annual price cap increase of approximately 0.063 percent will be required. Following Fiscal 2032, and for the

remaining life of the Major Terminal Efficiency assets through Fiscal 2037, price cap needs will decrease by approximately -0.090 percent per annum as post-implementation operating savings persist.

Overall, the Company views the Project as reasonably priced, affordable and not excessive. The forecast positive NPV through 15 years coincides with a small net reduction in the upward pressure on price caps.

Section 5: Procurement & Risk Strategy

What are the procurement options and process?

5.1 Procurement Options and Strategy

BC Ferries has structured procurement for the Project to permit the selection of different combinations of integrators, hardware suppliers and software suppliers. The Company may directly engage equipment and software vendors, or it may have an integrator work with the vendors to supply their products.

Early procurement and market analysis activities have included the following:

- Summer 2021: An initial high-level market survey of vendors, inclusive of their solutions that enable efficiencies in passenger and cargo ports and terminals. This provided BC Ferries with an overview of how similar organizations solved business problems related to capacity and changing traffic patterns.
- December 2021: An FPM RFI, soliciting information from vendors about potential efficient, contactless and digitally-enabled solutions (fare gates, enhanced kiosks and foot passenger validators) to improve the foot passenger customer experience.
- March 2022: A VTM RFP for consulting services to develop a vision for VTM and operations management processes. A three month consulting engagement was awarded to a firm with proven experience in incorporating VTM solutions into terminal operations at a Smart Port [9] recognized terminal, and for other customers globally.
- April 2022: An FPM RFP to gather more information from the market. This RFP was closed without an award of contract, due to a refactoring of Project scope but provided valuable information to BC Ferries, which was incorporated into the Project's technology vision and to-be business process development.

Design Phase

BC Ferries has awarded design contracts to provide a mechanism for the successful vendors and contractors to provide innovative and cost-saving input to the design

[9] A Smart Port is a port that uses automation and innovative technologies including artificial intelligence, big data, Internet of Things and blockchain to improve its performance. See https://www.porttechnology.org/news/what-is-a-smart-port/.

phase.[10] These engagements will advance the Project's technical due diligence and design, and the accuracy of the Project's overall OT and construction cost estimates.

During the MTE Solutions early procurement processes that included individual competitive public bids for each of the three work streams (TPMIS, FPM and VTM), it was concluded that the desired operational outcomes and strategic position for the Project would be achieved by aligning the MTE Solutions scope and the procurement approach with a holistic end-to-end view of the solution during the design and discovery phases. The MTE Solutions are a collection of services and infrastructure that can be contracted individually or as an integrated service provided by a single vendor. BC Ferries retains the flexibility to control and decide the contracting landscape and clear expectations have been set with potential proponents for Phases 1 and 2.

Design procurement activities included the following:

- A MTE Solutions RFP (March 2023) to identify proponents for consideration in three contractual milestones (Vendor Discovery, Phase 1 and Phase 2)
- A Duke Terminal Engineering RFP (April 2023) for design services for site infrastructure at the Duke Point ferry terminal required for the Project.

Implementation and Construction Phase

BC Ferries intends to engage vendors and suppliers using contracting approaches that provide the best value, most favorable outcomes and least risk within the program.

For example, the Company will consider design-bid-build contracts, which involve engaging a design consultant to deliver complete design documents ready for tendering and then soliciting fixed-price bids from vendors and contractors to perform the work. Design consultants and vendors or contractors bear no contractual obligation to each other. Design-bid-build contracts are a good choice for projects that are budget sensitive and likely to require ongoing support and sustainment services directly with BC Ferries.

The advantages of design-bid-build contracts include:

- BC Ferries maintains control over the design. The design and project requirements can therefore be revised throughout the design phase, although too many revisions will delay the overall schedule;

[10] The Project followed BC Ferries' established procurement policies, which require competitive public bids for scopes of work greater than $75,000.

- The design and project requirements are completely defined before vendor and construction contracts are awarded. This reduces the risk of design or requirement changes occurring after implementation is awarded;
- BC Ferries will retain the flexibility, financial off-ramps and controlled evaluations and assessments throughout the project to maintain flexibility, modularity and scalability to ensure specific terminal needs and challenges will be delivered
- BC Ferries will maintain a centralized quality assurance program and testing practices during the project to mitigate the integration risk with the corporate ecosystem.
- BC Ferries maintains the control to change or pace the program iteratively by location, work stream or solution components with ease.

The disadvantages of design-bid-build contracts include:

- BC Ferries maintains the risks associated with the completeness of the design documents;
- Compatibility and alignment in standards or complexity between vendors or contractors could underbid a component in the project, which can lead to conflicts and poor performance during implementation and construction.

These implementation procurement activities proposed include the following:

- Phase 1 (Implementation) - foundational builds and equipment components for the three work streams (TPMIS, FPM and VTM), deploying these solutions at selected major terminals.
- Phase 2 (Implementation) – incorporates the learnings, efficiencies and refinements from Phase 1 and extends the solutions to the other major terminals.

The movement to this milestone will be contingent upon required regulatory approval processes, successful completion of the previous phase and entry into contracts with the successful proponents.

5.2 Procurement Approach and Engagement

Is the proposed IT/OT solution custom made or 'off the shelf'? If custom built, why was it chosen?

5.2.1 Software as a Service ("SaaS")

The technology core of the solution is the TPMIS and will be delivered as software as a service ("SaaS").[11]

The Project is proposing to enter into a partnership with a SaaS vendor to capture the following benefits of SaaS, in alignment with BC Ferries' cloud strategy:

- Deployment time and effort is minimized and largely focused on configuration of the service to meet requirements;
- The amount of capital expenditure associated with large information technology projects is reduced for initial deployment, as well as during ongoing refresh / upgrade cycles;
- The Company is not responsible for development and substantial sustainment activities, and does not have to maintain the in-house resources with the necessary skillset;
- SaaS is continuously enhanced by the vendor, as they adjust to changing market demands and incorporate customer feedback into their product in alignment with best practices and industry standards; and
- The SaaS platform often provides standardized methods for integration into other systems, allowing customers to incorporate these capabilities with minimal customization.

5.2.4 SaaS Configuration versus Customization

BC Ferries seeks to adopt an established SaaS solution for foot passenger, vehicle traffic, and Terminal Operations management. BC Ferries will evaluate and align its business processes and operating model with best practices and industry standards to realize the full potential of initial SaaS deployments, future cost effective improvements, and ongoing sustainment benefits.

[11] The vendor provides functional capabilities as a hosted service, accessible over the internet, priced on a transactional or subscription model.

The SaaS solution will need to be configurable to meet BC Ferries' specific organizational and business needs, as well as major terminal operational, geographical and physical requirements.[12] The Company has developed a detailed list of requirements against which a list of candidate solutions can be evaluated.

The Project's strategy is to minimize customization.[13] Configurable solutions have a cost-benefit advantage over heavily customized systems. However, customization will be required to integrate corporate applications and systems to support data requirements and end-to-end solution processing (for example at the point of sale and within BC Ferries' reservation application).

The candidate solutions are used by other similar organizations which will align BC Ferries with industry standards and best practices.

5.3 Risk Strategy and Mitigation

Describe any major risks that could affect the project's success.

Describe mitigation strategies for major risks that have been identified.

What are the major risks? Have they been taken into account in the NPV analysis?

Adaptability, Flexibility and Modularity

The Project has been planned to be adaptable, flexible and modular. Consistent with this, wherever possible the risk profile, potential impacts, and response strategies (shared, assign, retained) within each work stream can be decoupled from the others. More precisely, if certain risks become realized, they will have a local impact within that work stream with potentially only limited impact on the overall Project timeline, capital budget or expected outcomes. Examples of this include:

- Supply chain risks – if the availability of equipment specific to the FPM work stream, such as fare gates, is negatively impacted by supply chain constraints, this will not affect the VTM or TPMIS work streams.
- Terminal building construction – similarly, terminal infrastructure risks are specific to the VTM work stream and would not affect FPM or TPMIS deployment.

[12] Configuration is the process of adapting a technical solution to the business characteristics of a customer, usually by adjusting settings or parameters in software.
[13] Custom software development is the process of designing, developing and maintaining software for a specific functionality within an organization.

Risk Mitigation Planning

A key aspect of the Project's risk mitigation approach is to provide early visibility into the uncertainty within a number of areas and provide an intentional opportunity to assess, evaluate and obtain approvals to address those risks before further investments are expended. These risks have mitigation plans associated with them, and the execution of those plans has been incorporated into the Project budget, scope and timeline estimates. The mitigation plans for these key risk areas include:

- *Mitigation Plan 1 – Vendor Discovery* (technical analysis and validation of design) is used to further deepen the understanding of the technical debt identified in the preliminary phase.[14] The implications of that debt for the Project scope are known earlier, with a commensurate improved understanding of the costs and resources required to address that debt as part of the TPMIS deployment and integration with BC Ferries systems.

- *Mitigation Plan 2 – Early engagement and dedicated OCM resources* will enable the Project to actively plan and manage organizational change for internal and external stakeholders, thereby decreasing any resistance to the change. Those change plans will be fully integrated within the Project management plan so that emerging risks can be identified, monitored and managed, with OCM activities added and / or adapted to mitigate them as needed

- *Mitigation Plan 3 – Quality management* will be undertaken early and continually in the Project to mitigate a broad spectrum of operational, technological, business continuity and resourcing risks. This enables the MTE team to learn quicker and more effectively, which leads to no surprises or unknowns at later Project stages. The involvement of Quality Assurance gives the entire Project team's deliverables a thorough quality check and removes confirmation bias.

Risk Identification and Mitigation Plans

The Project has utilized BC Ferries' risk exposure methodology to identify, classify and plan a management approach for risks, as described below. < >

[14] Technical debt is the implied cost incurred when businesses do not fix problems that will affect them in the future. Accruing technical debt causes existing problems to get worse over time. The longer debt builds up, the more costly it becomes to rectify. See https://www.techtarget.com/whatis/definition/technical-debt.

- ***Terminal Facilities Condition***

  Risk Description: The major terminal facilities require more remediation and / or construction than estimated. Specifically, the Project's assumptions about technology assets, facilities conditions, infrastructure (power distribution, networking), and / or health (e.g., hazardous materials) at the terminals are incorrect with implications for Project scope, cost or schedule.

  Risk Management Strategy and Measures: The Company has already completed the initial terminal assessments during Project planning. In addition, to gather sufficient up-front information about the condition of terminals' facilities and infrastructure, BC Ferries will undertake detailed terminal facilities surveys and assessments during the Project's preliminary phase and leverage similar assessments done by other in-flight BC Ferries terminal operations and information technology projects. These mitigation measures will provide the Project team with sufficient information to adjust design work to address any other deficiencies or issues found.

  Mitigation Plan: This risk will be included in Mitigated Plan 1 – Vendor Discovery.

- ***Technical Debt***

  Risk Description: The Project does not have sufficient information to uncover technical debt and to plan an approach to address it. Technology debt could include technology compromises (including software bugs, workarounds, absent or insufficient documentation, persistence of legacy code over the course of upgrades, etc.) made previously by the Company in its complex, highly integrated applications environment and may require rework for the Project to continue or for systems implementation. It is possible that integrating to core applications that may have significant technical debt may result in delays and adjustments to the Project's scope from systems analysis, impact assessments, systems implementation, quality assessment, testing activities and additional and unplanned use cases.

  Risk Management Strategy and Measures: Scope and schedule risks will be mitigated by performing a vendor discovery phase to provide early significant systems and business analysis of BC Ferries' applications that are in scope for integration and replacement, and to define a data architecture for the MTE Solutions. The Project will also introduce the quality assurance function very early to shadow system / business analysis, and to plan for end-to-end alignment of all components / systems. Lastly, and most significantly, the vendor discovery phase will help to determine integration complexity *before* selection of the solution and the investments associated with Phase 1.

Mitigation Plan This risk will be included in Mitigated Plan 1- Vendor Discovery and Mitigation Plan 3 – Quality Management.

- ***Customer Resistance***

  Risk Description: A consequential number of customers reject terminal efficiencies improvements and digitalization. This could occur, for example, from negative customer reaction to changes to major terminals foot passenger or vehicle traffic management processes, or from changes to fare structures that affect specific groups. If realized this risk would impact the scope of the Project after the first phase.

  Risk Management Strategy and Measures: BC Ferries will monitor this risk and work closely to align the Project with the organization's digital customer experience roadmap to provide content and communications to the travelling public about Project developments as required. The Project will also review feedback and material from focus groups, as well as complaints and updates from the front line as new capabilities are implemented incrementally and in a phased fashion, commensurate with the Project timeline.

  Mitigation Plan: This risk will be included in Mitigation Plan 2 – Early OCM Engagement.

- ***Employee / Organizational Resistance to Process Change***

  Risk Description: Employees do not accept the change necessary to make MTE successful. Employees resist simplification and operating process changes or default to a "that's how we always have done it" mindset.

  Risk Management Strategy and Measures: This risk will be mitigated by the application of a well-defined organizational change management strategy and activities to manage the necessary process and procedures changes across all departments. This includes maintaining communications planning and engagement with Employee Relations on when to share information and with whom.

  Mitigation Plan: This risk will be included in Mitigation Plan 2: Early OCM Engagement.

- ***Privacy***

  Risk Description: The Project proposes to implement a broad set of VTM efficiency improvements at the major terminals. The ability to use license plates as unique identifiers for vehicles, with associated ANPR technology allowing it to be read without human intervention, is essential for enabling improvements to vehicle traffic

processing. Although the Company is undertaking appropriate privacy reviews and implementing necessary measures, the risk is that customers resist the implementation of ANPR and / or the Information and Privacy Commissioner may order BC Ferries to cease using ANPR as planned if they find it inconsistent with privacy requirements in the *Freedom of Information and Protection of Privacy Act*. This would seriously undermine the viability of the Project.

Risk Management Strategy and Measures: The Company will continue with the rigorous privacy and security reviews (including necessary privacy impact assessments and security threat and risk assessments) to identify compliance issues, to implement privacy by design, and to identify and mitigate privacy risks. In addition, BC Ferries will engage the Office of the Information and Privacy Commissioner to help to reduce the compliance risk.

- ***Supply Chain***

  Risk Description: Lack of equipment and infrastructure availability due to global supply chain constraints and disruptions introduces significant delays (while hardware is back ordered or alternative suppliers found) impacting the Project schedule.

  Risk Management Strategy and Measures: This risk will be mitigated by the Project team on a number of different dimensions: first, BC Ferries has established clear guidelines and expectations with proponents during the procurement process; second, the Company will retain full contracting flexibility to engage vendors directly, through vendor partnership channels or formally through parallel procurement practices with multiple equipment manufacturers and suppliers; third BC Ferries will engage with vendors early to build relationships, confirming and reserving inventory stock and constantly monitoring anticipated order timelines; and finally, where possible the Company will pursue multiple supplier / vendor relationships to ensure there alternative, or optimal, options in terms of equipment and infrastructure availability.

  Mitigation Plan: This risk will be included in Mitigation Plan 1 – Vendor Discovery.

- ***Inflation***

  Risk Description: There are two risks in the current inflationary environment. The first is that the planned expenditures (particularly equipment and infrastructure) and the planned cash flows to support them are impacted by inflation that reduce the purchasing power of money committed earlier in the Project. The second (and related) risk is that inflation reduces the expected value of the assets and

improvements being made by the Project. In both cases there is a cost uncertainty aspect risk.

Risk Management Strategy and Measures: The first inflationary risk is being mitigated by the inclusion of an inflation factor (starting in calendar 2023) in the Project's cost model (see section 4.3). The second is being monitored through constant assessment of the impact of inflation on Project costs and benefits, and has been mitigated somewhat by a conservative benefits calculation. < >

- ***Currency***

  Risk Description: Equipment priced in foreign currencies fluctuates with exchange rates, introducing additional cost to the Project.

  Risk Management Strategy and Measures: BC Ferries will mitigate this risk by requiring vendors to price equipment in Canadian dollars.

- ***Labour Availability***

  Risk Description: The required business and technical resources (employees and contractors) are unavailable. Contending priorities, operational necessity and market competition for key skills reduces the availability of Project resources at critical points, impacting schedule and scope. The Project has to backfill and / or pay higher market rates to obtain the required skills and experience.

  Risk Management Strategy and Measures: The Project secures the necessary human resources through contracts, while securing executive support to treat the Project as a priority initiative, ensuring employee retention and focus.

- ***Operational Readiness & Service Stability***

  Will the capital expenditure project affect BC Ferries operations? If so what is the impact on operations?

  Risk Description: The Project's implementation activities, such as construction / terminal changes, adding new infrastructure, parallel operations of new systems and process changes, result in interruptions to or impairment of foot passenger and vehicle traffic processing at terminals.

  Risk Management Strategy and Measures: The Project will perform significant "off-site" or lab-side testing, system integration system testing ("SIT"), factory-acceptance testing ("FAT"), site-acceptance testing ("SAT") and phased cut-overs. Construction work will be undertaken at appropriate times and on isolated portions of terminals. Non-disruptive facilities modifications plans will be developed in

collaboration with contractors, engineering and architecture firms, Terminal Maintenance / Engineering teams and Operations.

Mitigation Plan: This risk will be included in Mitigation Plan 3 – Early Quality Management.

Section 6: Conclusion

Is the proposed project reasonably required?

Is the proposed capital expenditure considered to be in the public interest?

In accordance with section 55(2) of the Act, BC Ferries requests the Commissioner's approval for a major capital expenditure for Major Terminal Efficiency Initiative of up to $< > million, inclusive of $< > million in IDC and supplemental Project operating expenditures of up to $< > million.

BC Ferries submits that this capital expenditure is reasonable and affordable, and is not excessive. MTE will help the Company to comply with the obligations of the Contract by meeting the challenges of maintaining critical services at its major terminals, enabling adaptation to the changing composition of traffic and addressing new customer demands driven by digitalization. Further, the Project is supported by a significant market research, extensive analysis of current systems and business processes, broad internal stakeholder discussions, and consultations with firms and organizations that have undertaken similar projects. Financial analysis indicates the proposed option, meeting the business requirements of the Company, has a positive NPV through 15 years and will result in a small net reduction in the upward pressure on price caps. In addition, the Project is consistent with BC Ferries' twelve year capital plan.

The Project is also prudent. It has been structured to help address risks through a phased and modular implementation, and it has undergone a comprehensive risk identification and management assessment process. Governance, project management methodology and organizational change management have been established according to best practices and in line with this initiative's transformational aspects and cross-departmental scope.

Overall, BC Ferries submits the Project is in the public interest. It will enable reliable and safe service, and it will improve the customer experience and support employees in the performance of their duties.

Appendix A: Section 55 Question Cross Reference

The following table itemizes the Schedule 55 questions, and indicates where in this document they have been answered:

	MTE Section 55 - Question Cross Reference	Answer Location
1.	Is the proposed project reasonably required?	Section 6
2.	Does the proposed capital expenditure demonstrate good judgment, based on wisdom, experience and good sense?	Section 4.1
3.	Does the proposed capital expenditure indicate a wise use of resources?	Section 4.1
4.	Does the proposed capital expenditure show due consideration for the future?	Section 3.2
5.	How does the proposed capital expenditure support the government approved long term vision for the future of coastal ferry services?	Section 3.5
6.	What is driving the capital expenditure (e.g. replacement, expansion, upgrade, regulatory requirements, and reduction in GHG emissions)?	Section 2.2
7.	How has this capital expenditure project been prioritized relative to other capital expenditure projects within the long-term capital plan?	Section 4.7
8.	Why is the proposed capital expenditure required now and what are the consequences of delay or if the application is rejected?	Section 2.2
9.	Is the proposed capital expenditure in the public interest? Specifically, does the capital expenditure ensure, or enhance, a ferry service that remains safe, reliable and affordable?	Section 6
10.	Have there been complaints from the public, or other stakeholders, about the existing capital asset?	Section 2.2
11.	Is the proposed capital expenditure considered to be in the public interest?	Section 6
12.	How does the capital expenditure affect customers?	Section 3.2 Section 3.5
13.	How are the needs of cyclists and foot passengers being considered and accommodated?	Section 3.2
14.	What are the impacts of the proposed capital expenditure on the local community and other stakeholders?	Section 3.7
15.	Provide detail on completed and/or planned consultations with affected customers, stakeholders and communities.	Section 3.9
16.	New Vessel and Terminal: Will there be improved access for disabled/mobility challenged passengers?	N/A
17.	Have there been service disruptions due to inadequacy of the existing capital asset?	Section 2.2
18.	Have smaller vessels been considered to reduce terminal capital?	N/A
19.	Have future changes to mix of traffic serviced by the terminal been contemplated?	Section 2.2
20.	Have changes to the type and size of vessels operating out of the terminal been contemplated?	Section 3.5
21.	Vessels and Terminals: Does the vessel/terminal design have any impact on labour costs? If so, how?	Section 4.5 (Appendix F)

	MTE Section 55 - Question Cross Reference	Answer Location
22.	Vessels and Terminals: Have "ancillary services", including catering and retail concessions, been considered? If so, provide estimates of the incremental operating costs to provide the ancillary services and the incremental revenue expected to be generate	N/A
23.	How are the needs of commercial traffic being considered and accommodated?	Section 2.2
24.	Terminal: Is the terminal capacity sufficient for future demand and mix of traffic?	Section 2.2
25.	New Vessel and Terminal: What methodology has been used to determine future demand?	Section 1.0
26.	New Vessel and Terminal: What passenger amenities will be provided, and why are they considered appropriate?	N/A
27.	Terminal: Will the facility accommodate passenger-only ferries, water taxis and/or barge operations?	N/A
28.	Terminal: Will there be any improvements to ferry/traffic marshalling?	Section 3.4
29.	Vessel and Terminal: Will there be any improvements to loading, unloading and turnarounds?	Section 3.4
30.	Will the capital expenditure project affect BC Ferries operations? If so what is the impact on operations?	Section 5.3
31.	Will the project result in a more efficient and/or reduction in overall energy usage?	N/A
32.	Will alternative energy sources be used?	N/A
33.	Does the capital expenditure contribute to reduction in GHG emissions?	Section 3.5
34.	Terminal: What are the impacts on local traffic patterns?	Section 3.2
35.	Do the terminal improvements align with the concept of asset standardization?	Section 3.2
36.	What options other than IT solutions were considered?	N/A
37.	Is the proposed IT solution custom made or 'off the shelf'? If custom built, why was it chosen?	Section 5.2
38.	Is the proposed capital expenditure consistent with the Coastal Ferry Services contract?	Section 2
39.	Terminal: Have the connection to transit and other transportation options been considered? If not why not?	Section 3.5
40.	Has the provincial government been apprised of or consulted on the proposed capital expenditure? Provide details.	Section 3.9
41.	How does the proposed capital expenditure support the provincial government's approved long-term vision for coastal ferry services?	Section 2
42.	What sources of expertise and experience have been relied upon in deciding to proceed with this capital expenditure?	Section 3.11, 5.2
43.	Were new technologies or innovations contemplated? If so, why are they considered necessary?	Section 3.2
44.	Terminals: Will BC Ferries be sub-contracting or entering into partnerships with other entities to provide services and infrastructure at the terminal (e.g. parking, catering, retail)?	N/A
45.	What are the major risks? Have they been taken into account in the NPV analysis?	Section 5.3

	MTE Section 55 - Question Cross Reference	Answer Location
46.	IT Projects: Is there a project plan and appropriate governance in place?	Section 3.8
47.	What is the expected in-service date? How was it determined? How confident is BC Ferries of the in-service date?	Section 3.8
48.	What are the consequences of a delay in the in-service or deployment date?	Section 2.2
49.	What is Plan B if the project is delayed?	Section 2.2
50.	Does the proposed project include significant features that are innovative or untried?	Section 3.2
51.	Describe any major risks that could affect the project's success.	Section 5.3
52.	Describe mitigation strategies for major risks that have been identified.	Section 5.3
53.	What are the procurement options and process?	Section 5
54.	What are the procurement risks and how will they be mitigated?	Section 5.3
55.	Has it been demonstrated that the proposed capital expenditure would not reasonably be considered excessive?	Section 4.10 Section 6
56.	Does the proposed capital expenditure provide good value, at a moderate and fair price? Is it affordable?	Section 4.6, 4.10
57.	Is the proposed capital expenditure provided for in a board approved capital plan?	Section 4.9
58.	i) Is the total cost different in any respect from what was approved in the capital plan?	Section 4.9
59.	ii) Is the total cost different in any respect from what was indicated in the BC Ferries' last submission to the Commissioner for price cap setting purposes?	Section 4.10
60.	iii) Does the scope of the proposed capital expenditure differ in any respect from what was approved in the latest capital plan approved by the Board?	Section 4.9
61.	What are the total estimated capital expenditures by year by option?	Section 4.2, Supplemental Material
62.	What is the estimated IDC?	Section 4.2
63.	What are the estimated operating costs for each option?	Section 4.5
64.	What are the estimated maintenance costs for each option? Where there are large differences, please explain.	Section 4.5
65.	How were the capital, operating and maintenance cost estimates derived? Entirely with BC Ferries' staff or was there an external review?	Section 4.5
66.	Does BC Ferries intend to capitalize any of its own internal costs with respect to the capital expenditure?	Section 4.2
67.	What is the revenue impact?	Section 4.5
68.	Are financing costs included in the cost estimate between first payment to the supplier and the in-service date?	Section 4.2
69.	Is there an allowance in the estimate for inflation from the date of acceptance of a proposal to the completion date (escalation clause)?	Section 4.3, 4.4
70.	Is the net present value analysis done on a lifecycle basis for relevant comparison of options?	Section 4.6
71.	What is the rationale for the discount rate used?	Section 4.6

	MTE Section 55 - Question Cross Reference	Answer Location
72.	Has a sensitivity analysis been done on key assumptions, such as costs, revenues, discount rate, timing and inflation?	Section 4.7
73.	What would have to be sacrificed to reduce total costs by 10%, and by 20%?	Section 4.8

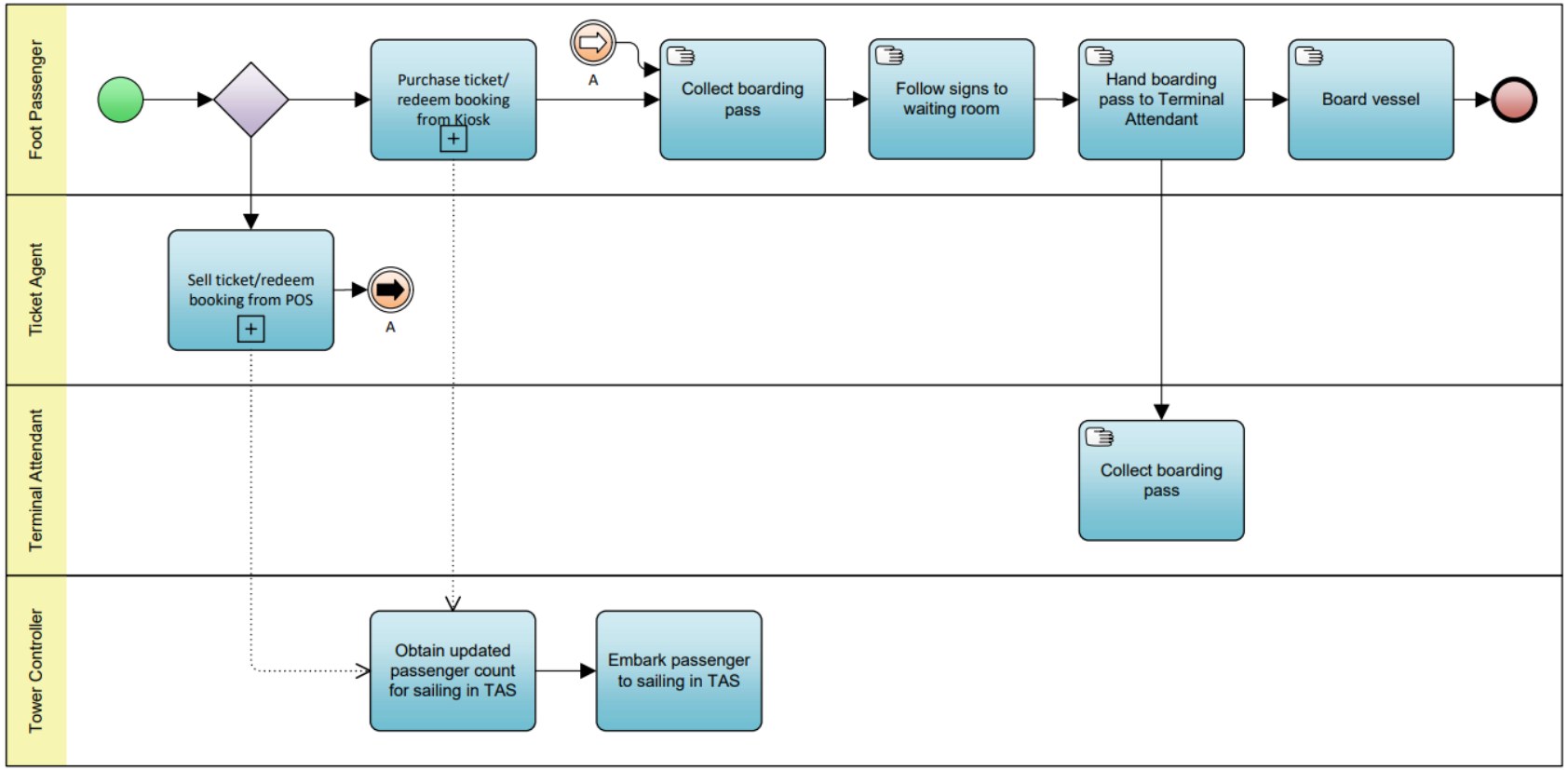
Appendix B: Major Terminals


Southern Gulf Islands Route Map
NANAIMO
Nanaimo Harbour
Gabriola Island
VANCOUVER
Ladysmith
Thetis Island
Chemainus
Penelakut Island
Vesuvius
Crofton
Duncan
Long Harbour
Salt Spring Island
Tsawwassen
Galiano Island
Fulford Harbour
Mayne Island
Pender Island
Mill Bay
Swartz Bay
Brentwood Bay
Saturna Island
VICTORIA


Sunshine Coast Route Map
Courtenay/Comox
Westview
Little River
Powell River
Saltery Bay
Earls Cove
Port Alberni
Qualicum Beach
Texada Island
Langdale
Horseshoe Bay
Departure Bay
Gibsons
Bowen Island
NANAIMO
Nanaimo Harbour
Gabriola Island
Duke Point
VANCOUVER
Ladysmith
Chemainus
Thetis Island
Penelakut Island
Duncan
Galiano Island
Tsawwassen
VANCOUVER ISLAND
Saltspring Island
Mayne Island
Mill Bay
Pender Island
Swartz Bay
Saturna Island
Brentwood Bay
CANADA
Port Renfrew
VICTORIA
U.S.A.

Appendix C: Foot Passenger (FPM) and Vehicle Traffic Management (VTM) Current State Process Diagrams

FPM Current State



VTM Current State

< chart redacted >

Appendix D: Major Terminals Turnaround Times