BCFerries Detailed Business Case

Date to CPBC	November 30, 2010	Project #	
Route	21	Budget Year	2011/12
Project Title	New Minor Vessel - Cable Ferry	Requested Capital Budget (without IDC)	s. 17
Project Description	Procure a cable ferry for service on Route 21, and associated terminal conversions at Buckley Bay and Denman West	Requested IDC	
		Total Capital Budget	
Driver	Corporate Initiative	Pre-Implementation (incl. in total budget)	
Asset Component	Vessel, Terminal	Asset Type	
Project Classification	A	Write-Off	

Project Owner	Corrine Storey / Jamie Marshall	Project Manager	Alex Izett	Project Sponsor	Mike Corrigan	Project Analyst	Kelly Wheeler

OVERVIEW

As a result of the Cable Ferry Feasibility Study that commenced in March 2008, it has been determined that it is operationally and financially feasible to replace the conventional ferry service on Route 21 (Buckley Bay – Denman Island) with a cable ferry service. s. 17 s. 17 This is due to capital cost reductions resulting from the consequential vessel redeployments (mainly *Tenaka*-related expenditures) and operational cost savings (crew, fuel, and maintenance) that will be realized over 40 years.

The capital costs directly associated with the implementation phase of the integrated cable ferry project total s. 17 (excluding IDC) and consist of:

- Design & build one cable ferry
- Convert Buckley Bay terminal to enable a cable ferry to dock; and,
- Convert Denman West terminal to enable a cable ferry to dock (Note: project was moved forward from 2014/15 in the 2010/11 – 6 Year Capital Plan).

This project was included in the capital forecast provided within the (September 2010) PT3 submission document. The cost of the original project was identified for s. 17. The cost of the original project identified in the 2010/11 Six Year Capital Plan was $26.1 million.

Was Project included in 10/11 – 6 Year Capital Plan?		**Y**	
Variance	**Scope**	**Budget**	**Schedule**
Change	N	Y (increase)	Y
Nature of Change	N/A	s. 17	Deferred (1 yrs)

s. 17 **CASH FLOW SCHEDULE (WITHOUT IDC)**

Previous Funding	2011/12	2012/13	2013/14	2014/15	2015/16	Future Years	Total

s. 22, s. 17

Nov 16/10
Nov 15/10
Date

s. 22
Project Manager

12/11/10
Date

11.17.10
Date

s. 22, s. 17

10/5/11
Date

President

Oct 11/11
Date

PROJECT DETAILS/SCOPE

- Procure a 50-AEQ cable ferry vessel, including cables and winches, for service on Route 21.
- Convert the terminal at Buckley Bay to enable the cable ferry to dock. The existing berth at Buckley Bay will be retained for at least one year of cable ferry operation before decommissioning.
- Covert the terminal at Denman West to enable the cable ferry to dock. Note that the Denman West terminal was scheduled to be replaced in 2014/15 before it was moved forward as part of the cable ferry project. The modifications to be completed for the cable ferry project will include expansion of the vehicle holding compound, which was included in the Denman West Master Plan.
- Master Plans at both Buckley Bay and Denman West terminals have been completed, but with no consideration of the Cable Ferry service.

PROJECT HISTORY AND RATIONALE

The British Columbia Ferry Commissioner requested that BC Ferries consider whether cable ferry technology could be adopted on any of its minor routes. In addition to having lower capital costs than conventional ferries, there is the potential for operating cost savings, particularly through lower crewing levels and reduced fuel consumption. Furthermore, cable ferries can be less harmful to the environment as they consume significantly less fuel and present lower risk for harmful emissions into the air and water. In response to the Commissioner's request, in March 2008 BC Ferries commissioned a feasibility study (Project #90639) to determine which routes could be suitable for cable ferry service, and whether cable ferry service is a better option than conventional based on capital and operating costs and operational requirements.

In British Columbia, cable ferries have been employed in the interior but not on coastal routes. A challenge in applying the technology to existing BC Ferries routes is the transit distance. Research has not found a coastal cable ferry route in excess of 0.5 nautical miles (0.9 km), while the shortest BC Ferries routes are 1.2 nm. However, advances in material science and cable design could make longer cable ferry routes feasible. Given their short distances, Routes 21 (Buckley Bay – Denman Island) and 22 (Denman Island – Hornby Island) were identified as potentially the most promising routes for cable ferries. All other routes were excluded due to length, operating conditions, and/or marine traffic. Early in the feasibility study, Route 22 was eliminated from consideration due to the relatively severe wind and wave climate in Lambert Channel that indicated a high risk of service disruption.

The feasibility study has determined that it is both operationally and financially feasible to replace the conventional ferry service on Route 21 with a cable ferry. The operational environment in Baynes Sound, the waterway between Buckley Bay and Denman Island, has been determined to be conducive to the safe and reliable operation of a cable ferry. Financially, the cable ferry will enable BC Ferries to realize significant capital and operating cost savings (detailed below).

An extensive environmental assessment (EA) investigating the potential environmental impact of the cable ferry was completed in 2010 for an application under the Canadian Environmental Assessment Act (CEAA). The EA concluded that not only will the cable ferry not have adverse environmental impacts, it is expected to have positive environmental impacts due to reduced fuel consumption, lower air and water emissions, reduced waste generation, and reduced noise. The CEAA application is scheduled to be submitted to Department of Fisheries and Oceans (DFO) in December 2010. In addition, BC Ferries has conducted extensive stakeholder consultations with First Nations groups, customers of Routes 21 and 22, Baynes Sound user groups, and regulatory agencies such as Transport Canada and DFO.

The feasibility work has been completed under a separate capital project (#90639). This Detailed Business Case relates to the implementation phase of the cable ferry capital project and will be

conducted under a separate project number TBD. The remaining work under the feasibility study, including obtaining all of the necessary environmental approvals and completing an Alternative Service Delivery process, will be completed under the feasibility project. The project (#90639) is fully funded to complete the remaining scope items.

Capital Cost Savings - Quinitsa Redeployment

As a result of deploying a cable ferry on Route 21, the *Quinitsa,* the current vessel serving the route, will be redeployed to Route 22, which is currently served by the *Kahloke*. Deploying the *Quinitsa* to Route 22 will enable the redeployment of the *Tachek* to Route 24 (Quadra Island – Cortez Island) and will allow the *Tenaka* to be retired without the need to procure a replacement. s. 17 The *Kahloke* will become a full time relief vessel.

[redacted]

Cable Ferry Redeployment Implications

The following table summarizes the potential redeployment implications as a result of the deployment of the cable ferry on Route 21:

Cable Ferry - Redeployment Implications					
Route	**Current Vessel**	**New Vessel**	**Effective Year**	**Relief Vessel**	**Relief Cycle**
12	Mill Bay	Klitsa	2012	None	N/A
18	North Island Princess	New 35 AEQ NC2	2017	Tachek/QQII	Summer
20	Kuper	Kuper	No Change	Kahloke	Winter
21	Quinitsa	Cable Ferry	2013	Tug & Barge	TBD
22	Kahloke	Quinitsa	2013	Kahloke	Summer
24	Tenaka	Tachek	2013	QQII/Kahloke	Summer
25	Quadra Queen II	Quadra Queen II	No Change	Kahloke/Quinitsa	Summer

The relief vessel scenario must account for the fact that the primary minor relief vessel, *Kahloke*, is a Sheltered Waters vessel. As indicated in the table, refit relief on Routes 18 and 24 will require multiple vessel re-deployments. This is explained in more detail in the description of the NPV options.

Operating Cost Savings

The deployment of a cable ferry on Route 21 is projected to result in significant operating cost savings in three major areas: crew, fuel, and refit & maintenance. The following section details the assumptions involved with the cable ferry operating costs:

1. Crew

Currently on Route 21 the crew complement on the *Quinitsa* is six, while on Route 22 the crew complement on the *Kahloke* is five, for a total of 11 crew (per watch) on the two routes. The cable ferry deployed on Route 21 is expected to have a crew of three, and with the redeployment of the *Quinitsa* to Route 22, the combined crew on the two routes is expected to be reduced to nine (per watch). In addition, there are savings associated with lower crew tickets. There is also the potential to reduce the crew of the *Quinitsa* to five (with a Licence of 150) after it is redeployed to Route 22. However, the NPV analysis does not include the potential for a further crew reduction.

The crew level on the cable ferry is based on an internal analysis conducted by BC Ferries, along with observations of existing cable ferry operations. Confirmation on the final safe manning level for the cable ferry will only be determined after crew proficiency drills have been conducted prior to the vessel going into service.

s. 17

2. Fuel

Given that the cable ferry is more efficient than a conventional ferry and requires significantly less power for propulsion, it is expected that it will consume less than half the fuel consumed by the *Quinitsa*. The savings will be partially offset by the redeployment of the *Quinitsa* to Route 22, as it consumes slightly more fuel than the *Kahloke*. A fuel cost of $0.8145 per litre has been assumed for the 40-year NPV analysis with no escalation. As the price of fuel increases, the fuel cost savings will increase.

While the business case assumes that the cable ferry drive system will be diesel powered, the project represents a significant opportunity to pilot alternative power sources with a further reduction in fuel cost as well as a further reduction in emissions. There is scope to adopt "off-the-shelf" LNG engines developed for the trucking industry; and an opportunity to incorporate batteries or other stored energy technology to provide either auxiliary or prime motive power. These will be evaluated using a conventional diesel drive as the baseline as part of this project.

3. Refit & Maintenance

Given the simple construction and propulsion system (i.e., no RADs or propellers) of the cable ferry, it is expected to have significantly lower refit & maintenance costs as compared to the *Quinitsa*. For the purposes of the NPV analysis, the cable ferry is assumed to follow the standard minor vessel '1 in 4-year' refit cycle. However, Engineering is investigating the feasibility of a '1 in 5' or even a '1 in 10-year' refit cycle.

STRATEGIC/OPERATIONAL OBJECTIVES AND REQUIREMENTS

This project adheres to the Corporate Strategic Plan by supporting the following strategic objectives and business plan goals:

Strategic Objectives:

1. "Ensure a safe, secure and environmentally responsible marine transportation system"
2. "Maximize enterprise value"

Business Plan Goals:

1. "Operational Reliability – To continuously improve the operational reliability of vessels, terminals and facilities"
2. "Continuous Improvement – To be better at everything we do"
3. "Financial Integrity – To achieve key financial targets, ensuring that sufficient capital and retained earnings are available to revitalize our fleet, facilities and infrastructure, while minimizing fare escalation"

IDENTIFICATION AND ANALYSIS OF ALTERNATIVES (OPTIONS)

Option Summary Table

The following table illustrates the results of the NPV analysis (Appendix 3 provides the detailed NPV):

	Total Option Cost	Net Present Value	NPV Ranking	NPV Diff fr. Option 1
Option 1: Status Quo – Current Conventional Ferry Service	[redacted]			
Option 2: Cable Ferry on Route 21; Quinitsa on Route 22 Year-Round, Tenaka Retired				
Option 3: Alternative Service Delivery (TBD)		TBD	TBD	TBD

s. 17

Option 1: Status Quo - Current Conventional Ferry Service

s. 17 [redacted]

Financial Implications

s. 17 [redacted]

Non-Financial Implications

- Safety: N/A
- Operations: N/A
- Labour: N/A
- Customer Service: N/A
- Environmental: N/A
- Other: N/A

Option 2: Cable Ferry Service on Route 21; Quinitsa on Route 22 Year-Round, Tenaka Retired

This option involves procuring a cable ferry for service on Route 21, along with converting the terminals at Buckley Bay and Denman West to dock the cable ferry. The *Quinitsa* will be redeployed to Route 22, the *Tachek* redeployed to Route 24, and the *Tenaka* retired. The *Kahloke* will become a dedicated relief vessel for Routes 20, 22, and 25.

While this is the optimal financial option based on the NPV analysis, a major operational factor to consider is that the *Kahloke* will have to be deployed to Route 25 for refit relief three times per

every four year period. Alternatively, it may be more effective to move the *Quinitsa* to Route 25 with *Kahloke* operating on Route 22 for the duration of refit relief. Either vessel must deploy to Route 25 as this route is classed for Sheltered Waters vessels, and is necessary:

1. To relieve the *Quadra Queen II* (QQII) when it goes into refit (once per four years);
2. When the QQII is deployed to Route 24 to relieve the *Tachek* (twice in five years); and
3. When the QQII is deployed to Route 18 to:
    a. Relieve the *North Island Princess* (once before it retires);
    b. Relieve the new Route 18 vessel if the status quo replacement occurs on that route.

Thus it is anticipated that the *Kahloke* (or alternatively *Quinitsa* with *Kahloke* on Route 22) would relieve the QQ II on Route 25 (a Sheltered Waters route) to free the QQ II to operate on the Near Coastal 2 Routes (18 or 24) as well as accommodate its own refit cycle. As part of the current life extension project on the QQII, it is being configured for Near Coastal 2 service and will be certified when required. This may require a decision from the Marine Technical Review Board if the Sheltered Waters refit cycle is to be maintained. The number of vessel re-deployments adds a burden to the familiarization program, which may be assisted with simulator training. Given the frequency of refit relief, it may be simpler to develop the service plan with the *Kahloke* (or *Quinitsa*) as the Summer vessel on Route 25, and the QQII as the Winter ship, similar to the current service on Route 22.

Financial Implications

s. 17

Non-Financial Implications

- Safety: N/A
- Operations: N/A
- Labour: Crew reductions on Route 21, relocation of POA to Buckley Bay
- Customer Service: N/A
- Environmental: Lower CO2/NOx/SOx emissions through reduced fuel consumption; pilot the use of alternative fuel (LNG) or power (batteries); no propeller noise
- Other: N/A

Option 3: Alternative Service Delivery (ASD) Option

Currently, no ASD option has been identified. However, at a date TBD, a Request for Proposals will be issued for potential Alternative Service Providers to bid on providing cable ferry service on Route 21. In the event that an ASD proponent is found to be able to provide the service in a more cost effective manner than BC Ferries, Option 3 would then become the preferred option. As indicated above, the Alternative Service Delivery process will be completed under the Cable Ferry Feasibility Project.

Optimal Financial Option (e.g., NPV, ROI, Payback)

Option 2 is the optimal financial option, as it has the least negative NPV.

s. 17 ***Project Owner's Recommended Option***

[redacted]

Service Fee/Tariff Structure/Five Year Capital Plan:

s. 17 [redacted]

CAPITAL BUDGET IMPLICATIONS

PROJECT CAPITAL EXPENDITURES	Implementation (not including HST)	HST (12%)	Total
Project Capital Budget			
Detailed Design/Engineering Approvals/Permits, etc.			
Project Management & Support Infrastruture			
Cable Ferry			
Construction			
Owner-Supplied Materials (cables, winches, etc.)			
Delivery Voyage/Tests & Trials/Training			
Buckley Bay Modifications			
Pontoon Construction			
Ramp/Steelwork Fabrication			
Civil Works/Marine Structures			
Denman Island West Modifications			
Pontoon Construction			
Ramp/Steelwork Fabrication			
Civil Works/Marine Structures			
Compound Expansion			
Sub-Total Capital			
Contingency (10%)			
HST Input Tax Credit (if applicable) (negative $)			
Total Capital Budget before IDC			
Interest During Construction (IDC)			
Total Capital Budget including IDC			

s. 17

INCREMENTAL FINANCIAL IMPLICATIONS (BASED ON CAPITAL COSTS WITH IDC)

FINANCIAL IMPLICATIONS	Business Area	GL Type	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Revenue Impact	S. 17							
Revenue Increases (Negative Number)								
Revenue Decreases (Positive Number)								
Total Revenue								
Operating Expenditure Impact								
Operating Savings								
Operating Savings - Labour								
Operating Savings - Non-Labour								
Total Operating Savings								
Operating Expenditures								
Operating Increase - Labour								
Operating Increase - Non-Labour								
Property Tax Implications								
Total Operating Expenditures								
Net Operating Exp. Impact								
Net Operating Impact (Rev & Exp)								
Capital Impact								
Cost of Capital								
Amortization								
Write-Offs (Positive Number)								
Total Capital								
Total Financial Impact								

Amortization = Capital Cost of Asset/Economic Life

Useful Life of Asset (Years)	S.	
Cost of Capital		
Capital Cost of Asset *		*Including taxes, contingency, and IDC

Write-Offs

s. 17

[redacted]

SCHEDULE

Start Date	July 1, 2011	In-Service Date	June 1, 2013	Closeout Date	September 30, 2013

Milestones & Key Dates

Milestone	Scheduled Due Date	Notes
NWPA/ILMB Approvals	Winter 2010	Included in Feasibility Project
Detailed Business Case	December 2010	
ASP Process	Jan - Sept 2011	Included in Feasibility Project
Design & Tendering	July - Dec 2011	Implementation Project
Construction (Vessel & Terminals)	Jan 2012 – March 2013	Implementation Project
Test/Trials & Crew Training	April – May 2013	Implementation Project
In-Service	June 2013	Implementation Project

Is this capital project expected to involve multiple assets that will be brought into service at differing points in time? No

PERSONAL INFORMATION PROTECTION ACT (PIPA)

Does this project involve the collection and/or handling of customer or employee personal information? Yes – related to potential employee relocation.

PURCHASING / INVENTORY IMPLICATIONS

Identify below if the recommended option is expected to have any of the following implications to inventory:

- Draw on existing inventory: No
- Additions to existing inventory (spare parts, etc.): Yes
- Obsolescence of existing inventory: TBD
- Impact on Inventory Costs (storage, etc.) No
- Has Supply Chain Management been consulted in regards to the above? Yes

Provide details on any Inventory Implications in the table below:

Item s. 17	Dollar Value	Draw/Addition/ or Obsolescence	Included in Project Budget?	Item Location
Spare Cable	[redacted]	Addition	Yes	Richmond

ENVIRONMENTAL IMPLICATIONS/ CONSIDERATIONS

Replacing the conventional ferry service on Route 21 with a cable ferry is expected to result in a number of environmental benefits such as reduced fuel consumption, lower air and water emissions, reduced waste generation, and reduced noise.

Environmental Impact Issue	Yes /No	If Yes, Pos/Neg	Quantifiable/ non-quantifiable
Natural resources/energy usage (e.g. water, hydro, fuel)	Yes	Pos	Quantifiable
Emission of air pollutants (e.g. GHG, VOC, NOx)	Yes	Pos	Quantifiable
Waste generation (e.g. garbage, sewage, oily waters)	Yes	Pos and Neg	Quantifiable
Chemicals usage	Yes	Pos	Quantifiable
Increase of equipment's life span			
Natural environment (shoreline, waterways, vegetation habitat)	Yes	Pos and Neg	Non-quantifiable
Ground and storm water quality			
Noise	Yes	Pos	Non-quantifiable
Light	No		
Other	No		

Has the Environmental Department been consulted in regards to the above? Yes

Issue 1: Fuel consumption – as the cable ferry will have fewer and smaller engines than the *Quinitsa*, it is estimated that it will consume 122,000 fewer litres on an annual basis which will have a net positive impact to overall GHG emissions. The CO2 equivalent of 122,000 litres of fuel is 332,596.4 kg of CO2.

Issue 2: Waste generation – there will be waste generated throughout this project. Proper waste disposal practices will be adhered to in accordance with the Environmental Management Act and local bylaws and regulations.

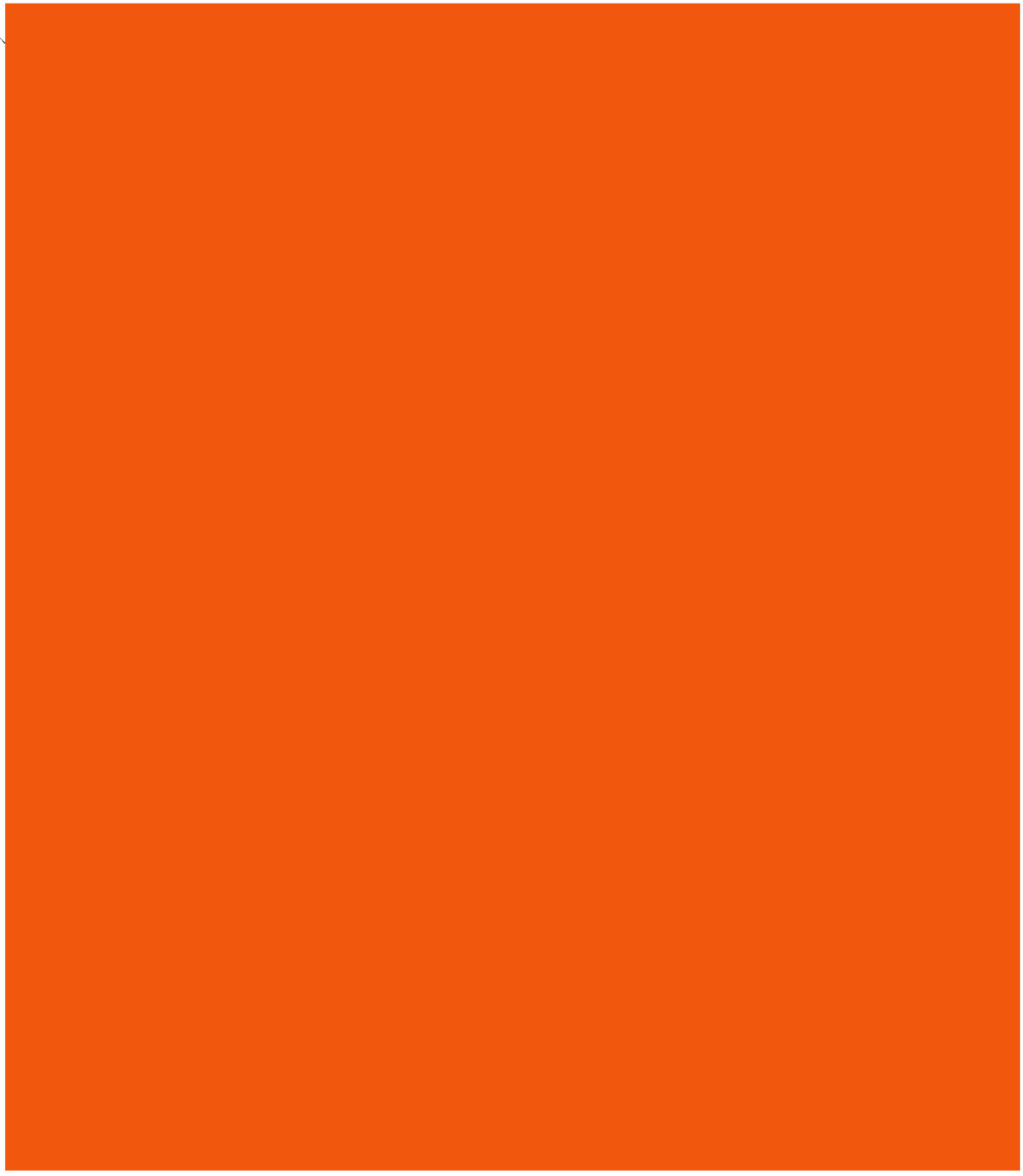
Issue 3: Chemical usage – fewer chemicals will be required to treat jacket water.

Issue 4: Natural environment – there will be minimal impact to the marine floor bed due to cable scouring. Habitat compensation will be a requirement and generally compensation is allocated at 1.5 times the actual affect.

Issue 5: Noise – it is expected that the cable ferry will produce less noise than a conventional ferry. This issue is quantifiable if levels were measured before and after implementation.

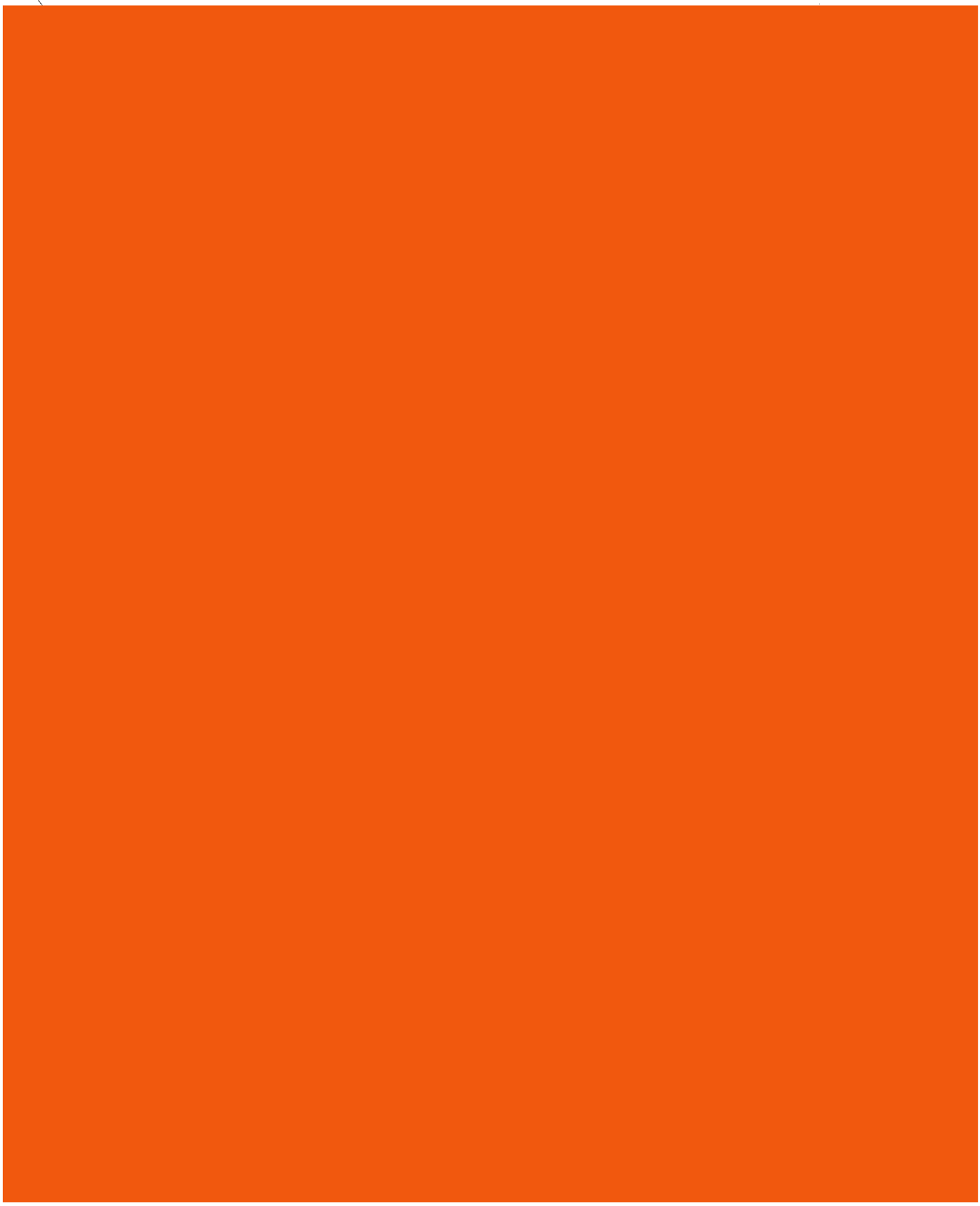
s. 17

APPENDIX 1 - EXPENDITURE CLASSIFICATION CHECKLIST



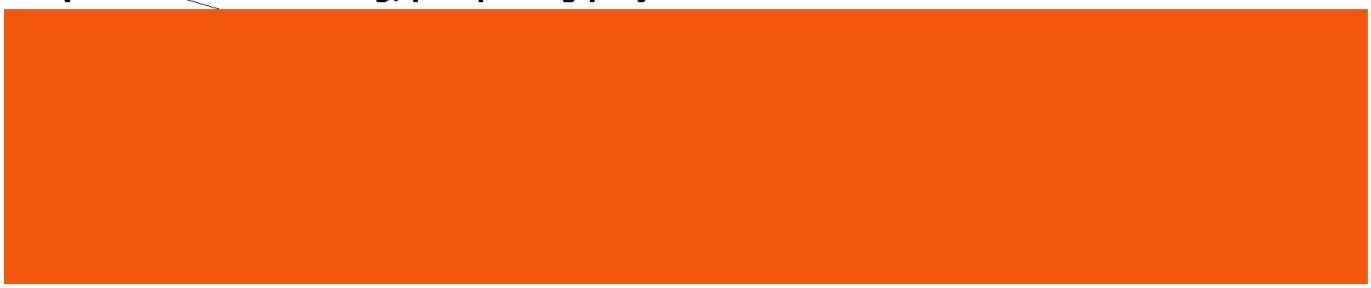
s. 17

EXPENDITURE, DEFERRAL AND OTHER RISK FACTORS/UNCERTAINTIES & RISK MITIGATION AND COST CONTAINMENT STRATEGIES



s. 17

Implications of deferring/postponing project:



APPENDIX 2 - ESTIMATED MONTHLY CASH FLOW

$	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Totals
Prior Years													
2011/12													
2012/13													
2013/14													
2014/15													
2015/16													
2016/17													
2017/18													
TOTAL													

* *Does not include IDC*

s. 17

APPENDIX 3 - NET PRESENT VALUE ANALYSIS

s. 17

Option 1: Status Quo – Current Conventional Ferry Service
40-Year NPV

APPENDIX 3 - NET PRESENT VALUE ANALYSIS

Option 2: Cable Ferry on Route 21; Quinitsa on Route 22 Year-Round, Tenaka Retired
40-Year NPV

s. 17

BCFerries Project Amendment Form

Date to CPBC	April 3, 2014	Budget Year	2015
Route	21	Project Number	90876
Project Title	New Minor Vessel – Cable Ferry	Capital Budget Operating Budget	[redacted] s. 17
Risk Class	A	**Total Project Budget**	
Driver	Corporate Initiative	IDC	
Sponsor	Jamie Marshall	**Total Project Budget (inc. IDC)**	
Owner	Jeff Joyce / Jeff West	Requested Pre-Imp (CapEx)	
Manager	David Tolman	Feasibility/Research Funds (OpEx)	
Analyst	Tanja Bullock	Write-off (if applicable)	

REQUEST FOR AMENDMENT:

	Change Requested?	Details
SCOPE	Yes	• Additional system design • Install additional CCTV cameras and security infrastructure • Additional security and on site monitoring • Supply and install additional Cable Equipment • Construct and install additional berth structures
SCHEDULE	Yes	Amended to reflect an Available for Use date of June 1, 2015 and a Closeout date of March 31, 2016.
BUDGET	Yes	Increase of s. 17 (including IDC) to reflect additional scope, costs, and extended project schedule.

JUSTIFICATION FOR AMENDMENT:

The finalized design of the complete integrated Cable Ferry system is more complex and costly than the original concept. Stringent operational and environmental criteria have meant a higher requirement for safety and more efficient maintenance to be incorporated into the design. This includes new cable change-out and tensioning equipment and additional pontoon mooring dolphins.

Additional security, lighting, and CCTV monitoring will be required to mitigate a potential increase in security risk during construction, and for vessel operations.

The requirement for a Section 55 application resulted in a three month delay in the project schedule.

Cash Flow s. 17	Previous Funding	2014	2015	2016	Total
Project Capital Expenditure	[redacted]				
Project Operating Expenditure					
Total Project (before IDC)					

PREVIOUS AMENDMENTS? NO

s. 22, s. 17 [redacted]

s. 22, s. 17

MAR 26 /2014
Date

26 Mar '14
Date

April 3/14
Date

[redacted]

Date

26 Mar '14
Date

4.7.14
Date

SCOPE

Approved Project Scope

- Procure a 50-AEQ cable ferry, including cables and winches, for service on Route 21
- Convert the terminal and install new marine structures with pontoon at Buckley Bay to enable a cable ferry to dock.
- Convert the terminal and install new marine structures with pontoon at Denman West to enable a cable ferry to dock. Modifications include expansion of the vehicle holding compound.

Revised Project Scope

The revised project scope includes the above scope as well as the following:

- Upgrade security and CCTV monitoring systems
- Additional site monitoring and security
- Supply and install additional cable tensioning and change-out equipment

Rationale for Amendment to Scope

s. 15, s. 13

[redacted]

Long-term maintenance plans involved utilizing a contractor to support the yearly change-out of the drive cable and subsequent rotation/replacement of one of the guide cables. As the required change-out equipment is no longer readily available locally, and in order to mitigate the risk of service disruption due to equipment and/or contractor availability, it is now recommended that this equipment be procured, operated, maintained, and stored by BC Ferries.

BCFerries Project Amendment Form

Date to CPBC	April 3, 2014	Budget Year	2015
Route	21	Project Number	90876
Project Title	New Minor Vessel – Cable Ferry	Capital Budget	s. 17
		Operating Budget	
Risk Class	A	**Total Project Budget**	
Driver	Corporate Initiative	IDC	
Sponsor	Jamie Marshall	**Total Project Budget (inc. IDC)**	
Owner	Jeff Joyce / Jeff West	Requested Pre-Imp (CapEx)	
Manager	David Tolman	Feasibility/Research Funds (OpEx)	
Analyst	Tanja Bullock	Write-off (if applicable)	

REQUEST FOR AMENDMENT:

	Change Requested?	Details
SCOPE	Yes	• Additional system design • Install additional CCTV cameras and security infrastructure • Additional security and on site monitoring • Supply and install additional Cable Equipment • Construct and install additional berth structures
SCHEDULE	Yes	Amended to reflect an Available for Use date of June 1, 2015 and a Closeout date of March 31, 2016.
BUDGET	Yes	Increase of s. 17 (including IDC) to reflect additional scope, costs, and extended project schedule.

JUSTIFICATION FOR AMENDMENT:

The finalized design of the complete integrated Cable Ferry system is more complex and costly than the original concept. Stringent operational and environmental criteria have meant a higher requirement for safety and more efficient maintenance to be incorporated into the design. This includes new cable change-out and tensioning equipment and additional pontoon mooring dolphins.

Additional security, lighting, and CCTV monitoring will be required to mitigate a potential increase in security risk during construction, and for vessel operations.

The requirement for a Section 55 application resulted in a three month delay in the project schedule.

Cash Flow s. 17	Previous Funding	2014	2015	2016	Total
Project Capital Expenditure					
Project Operating Expenditure					
Total Project (before IDC)					

PREVIOUS AMENDMENTS? NO

s. 22 [redacted]

MAR 26/2014
Date

s. 22 [redacted]
Project Owner

March 26/14
Date

Project Sponsor

Date

Supported/Not Supported

Project Owner

Date

Approved/Not Approved

Chair, CPBC

Date

President

Date

SCOPE

Approved Project Scope

- Procure a 50-AEQ cable ferry, including cables and winches, for service on Route 21
- Convert the terminal and install new marine structures with pontoon at Buckley Bay to enable a cable ferry to dock.
- Convert the terminal and install new marine structures with pontoon at Denman West to enable a cable ferry to dock. Modifications include expansion of the vehicle holding compound.

Revised Project Scope

The revised project scope includes the above scope as well as the following:

- Upgrade security and CCTV monitoring systems
- Additional site monitoring and security
- Supply and install additional cable tensioning and change-out equipment

Rationale for Amendment to Scope s. 13, s. 15

Long-term maintenance plans involved utilizing a contractor to support the yearly change-out of the drive cable and subsequent rotation/replacement of one of the guide cables. As the required change-out equipment is no longer readily available locally, and in order to mitigate the risk of service disruption due to equipment and/or contractor availability, it is now recommended that this equipment be procured, operated, maintained, and stored by BC Ferries.

s. 17

BUDGET

PROJECT BUDGET	Originally Approved Budget[1]	Legally Committed[2]	Incremental Budget Change	Revised Budget	Total Variance (%)
Project Capital Budget					
Pre-Implementation Costs					
Regulatory					
Feasibility - project 90639					
Imprementation Costs					
Detailed Design / Engineering Approvals/ Permits					
Project Management & Support Infrastruture					
IT & Security					
CF IT & Security					
BB Term IT & Security					
DW Term IT & Security					
Security and Site Supervision					
Cable Ferry					
Construction					
Owner-Supplied Materials (cables, winches, etc.)					
Delivery Voyage					
Buckley Bay Modifications					
Pontoon Construction					
Ramp/Steelwork Fabrication					
Civil Works/Marine Structures					
Denman Island West Modifications					
Pontoon Construction					
Ramp/Steelwork Fabrication					
Civil Works/Marine Structures					
Compound Expansion					
Testing & Trials					
Testing & Trials					
Extended Trial Period Costs					
Sub-Total Capital					
Contingency *(reduced from 10% to 5%)*					
Total Capital Budget before IDC					
Interest During Construction (IDC)					
Total Capital Budget including IDC					
Project Operating Budget					
Research & Feasibility Costs (Business Case)					
Training - End User Training					
Crew Severance and Relocation[3]					
Total Operating Budget					
Total Project Budget before IDC					
Interest During Construction (IDC)					
Total Project Budget including IDC					

[redacted]

[1] Originally Approved Budget includes the transfer of the budget from the approved project #90639

[2] Legally committed includes actuals to date plus committed costs

[3] Crew Severance and Relocation costs were identified in the detailed business case and Section 55 submission but were not previously included in the detailed budget table.

Rationale for Amendment to Budget

In addition to the costs associated with the increased project scope as identified above, several other factors led to the increase in the project budget. The cost of the cable ferry has increased due to further definition of the vessel concept and design, requiring additional engineering development. The design of the cabling system is more complicated, requiring further engineering design and a more expensive cabling system. As well, the contract award was delayed due to the requirement to submit an application to the BC Ferry Commissioner under Section 55. This resulted in the inability to award the contract and therefore lock down a contract price within the 90 day period stated in the RFP. During the Commissioner review period, the price of steel increased, the Canadian dollar weakened against the United States dollar, and the workforce the shipyard had planned to transition from the current new builds to the cable ferry could no longer be retained, driving the total cost up.

The terminal modifications also increased in price as a more sophisticated anchoring system has been designed and two additional pontoon mooring dolphins are required for each terminal. As well, the ramp designs have been modified to two-lane ramps, from the original one-lane ramp concept, increasing ramp construction costs.

The budget has also been increased for additional regulatory costs related to environmental monitoring and permitting during the construction period. As well, as a risk mitigation strategy, a consultant has been hired to develop a contingency plan in the event that First Nations artifacts are found, which would have a direct impact on the project schedule.

There is now a three-month testing, trials, and training plan, which has led to an increase in costs over the original business case.

INCREMENTAL FINANCIAL IMPLICATIONS

Approved Financial Implications

FINANCIAL IMPLICATIONS s. 17	Business Area	GL Type	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Revenue Impact								
Revenue Increases (Negative Number)								
Revenue Decreases (Positive Number)								
Total Revenue								
Operating Expenditure Impact								
Operating Savings								
Operating Savings - Labour								
Operating Savings - Non-Labour								
Total Operating Savings								
Operating Expenditures								
Operating Increase - Labour								
Operating Increase - Non-Labour								
Property Tax Implications								
Total Operating Expenditures								
Net Operating Exp. Impact								
Net Operating Impact (Rev & Exp)								
Capital Impact								
Cost of Capital								
Amortization								
Write-Offs (Positive Number)								
Total Capital								
Total Financial Impact								

[redacted]

Amortization = Capital Cost of Asset/Economic Life

s. 17

Useful Life of Asset (Years)
Cost of Capital
Capital Cost of Asset *

*Including taxes, contingency, and IDC

Revised Financial Implications

FINANCIAL IMPLICATIONS	Business Area	GL Type	2015	2016	2017	2018	2019	2020
Revenue Impact								
Revenue Increases (Negative Numbe			s. 17					
Revenue Decreases								
Total Revenue								
Project Operating Expenditures (Research + Training + Asset Retirement + Communications + Marketing + Warranty + Other)			s. 17					
Operating Increase - Labour								
Operating Increase - Non-Labour								
Total Project Operating Exp.								
Post Implementation Operating Expenditure Impact			s. 17					
Operating Savings (Negative Numbers)								
Operating Savings - Crew								
Operating Savings - R&M								
Operating Savings - Fuel								
Total Operating Savings								
Operating Expenditures								
Operating Increase - Labour								
Operating Increase - Non Labour								
Property Tax Implications								
Total Operating Expenditures								
Total Post Imp. Operating Exp.								
Total Operating Expenditures								
Capital Impact								
Cost of Capital								
Amortization								
Write-Offs								
Total Capital								
Total Financial Impact								

Useful Life of Asset (Years)	s. 17	
Cost of Capital		
Capital Cost of Asset *		*Including taxes, contingency, and IDC

Rationale for Amendment to Financial Implications: (Other than Capital Cost Amortization)
Cost of Capital has changed from 7.45% when the original Business Case was written to 7.00%. With the scheduled Available for Use date being pushed out 2 years amortization will now begin in fiscal 2016.

SCHEDULE

	Originally Approved Schedule	Requested Schedule
Start Date	November 2011	November 2011
Available for Use Date	June 1, 2013	June 1, 2015
End Date	June 2013	March 31, 2016

Rationale for Amendment to Schedule:
Schedule change is due to delays in acquiring full project approval, developing integrated system design, and acquiring final regulatory approvals

BUSINESS CASE IMPLICATIONS

s. 17 [redacted]

Updated NPV analysis:

s. 17, s. 13

	Total Project Cost (incl. IDC)	40-Year Net Present Value	NPV Ranking	NPV Advantage
Option 1: Route 21 Conventional Ferry Service	[redacted]			
Option 2: Route 21 Cable Ferry Service (Section 55)				
Option 2: Route 21 Cable Ferry Service (March PAF)				

This updated NPV analysis compares the NPV using the Section 55 budget and the PAF requested budget. Both options for the Cable Ferry take into account the revised Available for Use date of June 1, 2015.

RISK FACTOR IMPLICATIONS

Schedule delays directly increase budgetary risk due to additional project administration and IDC costs.

s. 17, s. 13 [redacted]

Schedule risk is reduced due to the availability of the *Quinitsa* as a relief vessel until April 2016.

The schedule delays have had a direct effect on budget risk. This has been taken into account in calculating the current budget factoring in IDC and additional project administration costs. The new value is included in this document and Board/Commissioner Approval has been acquired based on a worst case scenario budget of s. 17 This does not change the risk classification of the project.

Refer to the original Business Case for identified project risks.

PROJECT SAFETY PLAN

No changes to the safety plan are anticipated.

APPENDIX 1

Approved Monthly Cash Flow
(not including IDC)

s. 17

Revised Monthly Cash Flow
(not including IDC)

s. 17