

Rasmussen, Shauna

From: Doyle, Joanne
Sent: January 03, 2023 9:06 AM
To: Paterson, Bruce
Cc: Simpson, Peter
Subject: RE: Komo Gway
Attachments: BSC Future Review - Update to Ops

Hi Bruce,

Thanks for sharing the file on the capacity calculation between the two sizes of vessel. One of the levers that we will be interested in understanding more about is what the potential is to shorten the transit time from the estimated 12 min to something like 8 or 9 min. Transit time plus the in-port calculation that will come from the feedback from fleet and terminal ops will help to develop a sailing schedule for the larger capacity vessel and then allow for an estimation of the # of RT's possible during the operating period where service connects with Rte 22. Peter sent out some pre-read material for a terminal meeting that is scheduled for Thursday – I have attached the email for your information.

Thanks,
Joanne

Joanne Doyle
Manager, Fleet Strategic Planning
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From: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Sent: December 29, 2022 9:59 AM
To: Simpson, Peter <Peter.Simpson@bcferries.com>; Adams, James <James.Adams@bcferries.com>; Terry Wright <terry.wright@ipsconsulting.ca>; Jones, Stephen <Stephen.Jones@bcferries.com>; Elliott, Scott <scott.elliott@bcferries.com>; Doyle, Joanne <Joanne.Doyle@bcferries.com>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>
Subject: RE: Komo Gway

Attached is the XL file I referenced during the call. The tab "Sked" has a simple table comparing the vehicle movements per round trip (AEQ/RT) between the existing 45 AEQ BSC and the expanded 64 AEQ BSC. The underlying assumption is that the ferry can keep the schedule to keep the specified number of round trips, up to 24 RTs/day. It can also be used to address the incremental capacity/# of RTs added; I have highlighted some of these lines.

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
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From: Simpson, Peter <Peter.Simpson@bcferries.com>
Sent: December 29, 2022 8:26 AM
To: Adams, James <James.Adams@bcferries.com>; Terry Wright <terry.wright@ipsconsulting.ca>; Jones, Stephen <Stephen.Jones@bcferries.com>; Elliott, Scott <scott.elliott@bcferries.com>; Doyle, Joanne <Joanne.Doyle@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>
Subject: RE: Komo Gway

Attached is agenda and updated document

-----Original Appointment-----

From: Simpson, Peter
Sent: November 25, 2022 1:30 PM
To: Simpson, Peter; Adams, James; Terry Wright; Jones, Stephen; Elliott, Scott; Doyle, Joanne; Paterson, Bruce; Hancyk, Lesley
Subject: Komo Gway
When: December 29, 2022 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: webex

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Rasmussen, Shauna

From: Simpson, Peter
Sent: December 30, 2022 11:37 AM
To: Lucia, Melanie; Johnston, Darren; Raduta, Captain Claudiu; Caldwell, Megan; Doyle, Joanne
Cc: Terry Wright
Subject: BSC Future Review - Update to Ops
Attachments: ROUTE 21 – Schedule Analysis.pptx

For the meeting next week on Jan 6, we will brief you on work being done to assess and inform the Executive on Route 21 wrt service and capital plans.

Also, in addition to the update, we need Ops assistance in gaining insight into a key operational metric.

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The attached presentation will guide our discussion on getting to that evaluation, please read prior to the meeting. Call either myself or Joanne in advance of the meeting for any clarification.

Claudiu/Darren – I did not include Andy Weigold for the meeting, so if you want him or another operator to participate, let me know and I will add to the meeting.

Finally, this work is somewhat confidential and sensitive, so please treat all information accordingly.

Thanks

Peter

Peter Simpson
Director, Fleet Operations Strategy
Strategy and Community Engagement
British Columbia Ferry Services Inc.
Suite 500, 1321 Blansard Street, Victoria, BC
T: 250.978.1163 **C:** [REDACTED]
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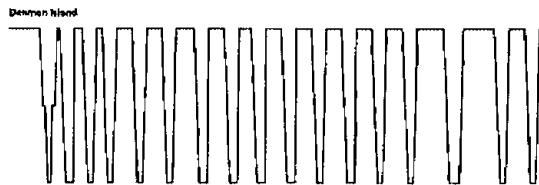
ROUTE 21 – Schedule Analysis

IN-PORT & TRANSIT REVIEW



ROUTE 21 BASE SERVICE - PEAK

- Up to 17 RT's scheduled
- Historically MAX daily RT's (with shuttling) 22 RT's
- Base schedule has additional time built in schedule mainly at Denman West
- Currently, vessel is crossing slower than anticipated increasing the crossing time, which limits the amount of additional RT's that can be accommodated in shuttle mode



BASE SERVICE					
			Crossing 0:10		
Arrive Denman	In-port	Depart Denman	Arrive BB	In-port	Depart BB
6:30	0:10	7:00	6:50	0:10	7:00
7:30	0:10	7:30	7:30	0:10	7:40
7:50	0:10	8:00	8:10	0:10	8:20
8:30	0:10	8:40	8:50	0:10	9:00
9:10	0:10	9:40	9:50	0:10	10:00
10:10	0:10	10:40	10:50	0:10	11:00
11:10	0:10	11:45	11:55	0:10	12:05
12:15	0:10	12:45	12:55	0:10	13:05
13:15	0:10	13:40	13:50	0:10	14:00
14:10	0:10	14:40	14:50	0:10	15:00
15:10	0:10	15:40	15:50	0:10	16:00
16:10	0:10	16:40	16:50	0:10	17:00
17:10	0:10	17:40	17:50	0:10	18:00
18:30	0:10	18:40	18:30	0:10	18:40
19:30	0:10	19:40	19:10	0:10	19:20
20:40	0:10	21:40	20:10	0:10	20:20
22:10	0:10	22:40	21:50	0:10	22:00
23:10	0:10		22:50	0:10	23:00

⏏ Report with additional time, meal breaks, shift change, additional time in schedule to support shuttling when busy

METHODS TO CALCULATE IN-PORT

Option 1 – Historical Data

- Use traffic data to identify the Average AEQ loaded/unload per minute across peak season by terminal

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Option 2 – Previous Traffic Study Methodology

- Calculate the in-port times and subsequent impact to schedule based on the number of vehicles (AEQ) and foot passengers being loaded/unloaded – based on distinct activities and time measurements from previous traffic studies.

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OPTION 2 - CALCULATION IN-PORT TIME

Previous studies yielded the following methods for calculating in-port time

METHOD/ACTIVITY	Method 1 (seconds)	Method 2 (seconds)	Method 3 (seconds)	Method 4 (seconds)	Activity	Value
Prep to load (seconds)	60.75	23.25	31.83	106.83	unloading	3.5
Pedestrian Loading Rate (seconds)	1.75	1.75	1.5	1.5	loading (to threshold)	7
Vehicle Loading Rate (seconds)	6.77	4.57	6.04	5.8	slowest loading	10
Prep to Depart (seconds)	102	121	145	145	Clearances	180
Prep to Unload (seconds)	60	105	83	83		
Prep to unload Pedestrian (seconds)	60.1	23.25	31.83	106.83		
Pedestrian unloading Rate (seconds)	2.4	1.75	1.5	1.5		
Vehicle unloading Rate (seconds)	3.77	3.32	2.32	3.53		
Ticket processing time (seconds)	37	37	40	40		

This information, once modified to better align with Buckley Bay & Denman west layouts, can be used to estimate changes needed to the schedule to accommodate a larger vessel operating on the route

OVERVIEW – INFORMING TRANSIT TIME

- Analysis of the vessel design requirements to support needed transit time, identified through the service analysis:
 - Terminal/Fleet Operations identifies in-port time needed for larger vessel, at peak
 - Acceleration & deceleration
 - Hull Coating to reduce fouling
 - Repowering of vessel (with sufficient margin to maintain transit time with hull fouling)



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REQUEST – INFORM IN PORT CALCULATION

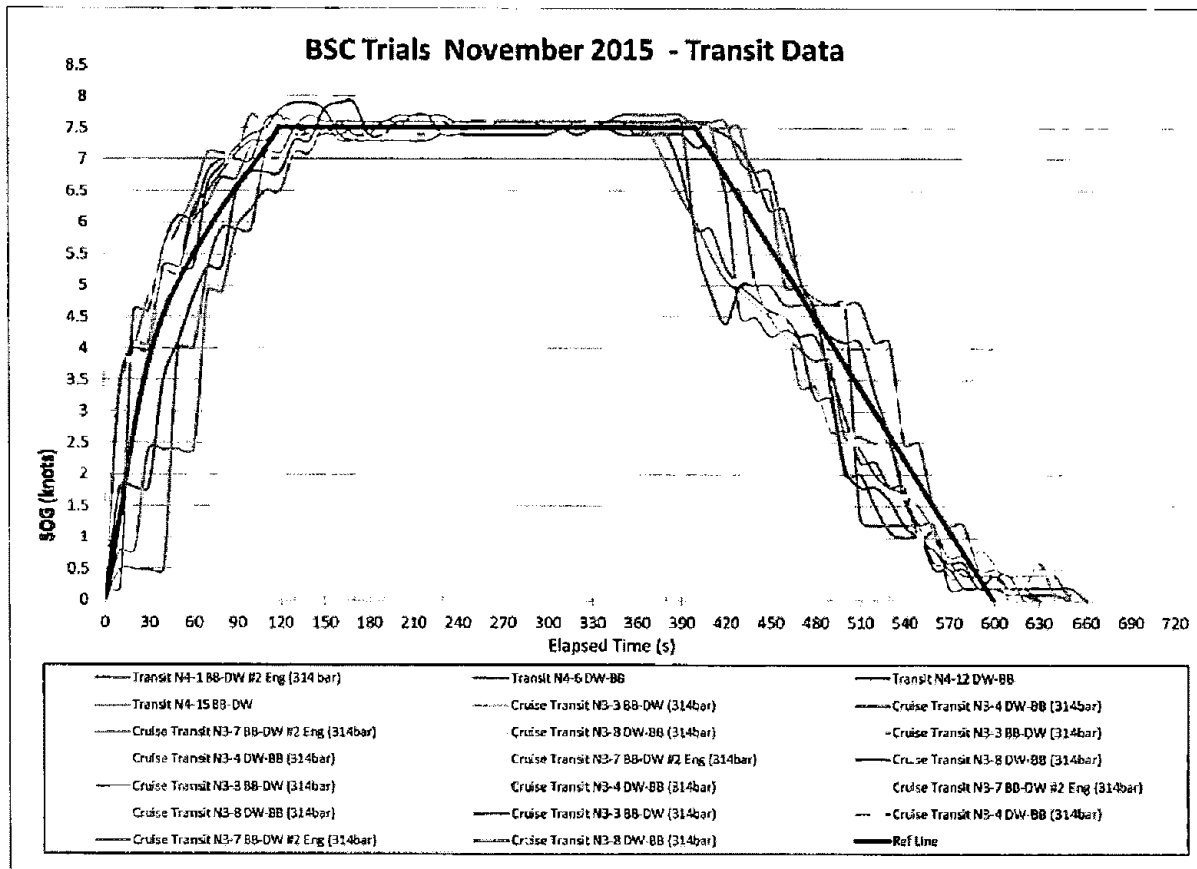
- Terminal Operations to consider these four terminals in relation to Buckley Bay and Denman West and modify as required the duration for each activity based on operational knowledge

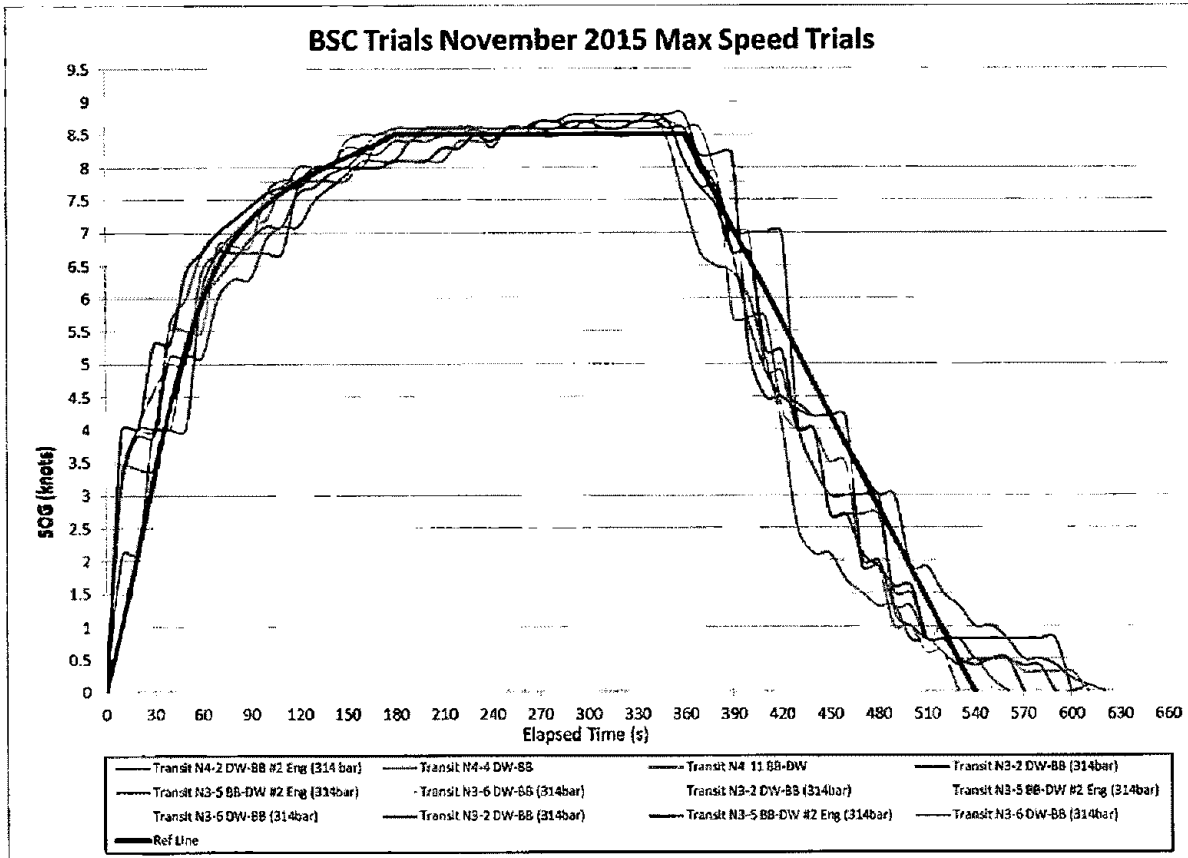
Buckley Bay					Denman West				
Activity	Est 1	Est 2	Est 3	Est 4	Activity	Est 1	Est 2	Est 3	Est 4
Prep to load (seconds)	69.75	23.25	31.83	106.63	Prep to load (seconds)	60.75	23.25	31.83	106.63
Pedestrian Loading Rate (seconds)	1.75	1.75	1.5	1.5	Pedestrian Loading Rate (seconds)	1.75	1.75	1.5	1.5
Vehicle Loading Rate (seconds)	6.77	4.57	6.04	5.8	Vehicle Loading Rate (seconds)	6.77	4.57	6.04	5.8
Prep to Depart (seconds)	102	121	145	145	Prep to Depart (seconds)	102	121	145	145
Prep to Unload (seconds)	60	105	83	83	Prep to Unload (seconds)	60	105	83	83
Prep to unload Pedestrian (seconds)	60.1	23.25	31.83	106.63	Prep to unload Pedestrian (seconds)	60.1	23.25	31.83	106.63
Pedestrian unloading Rate (seconds)	2.4	1.75	1.5	1.5	Pedestrian unloading Rate (seconds)	2.4	1.75	1.5	1.5
Vehicle unloading Rate (seconds)	3.77	3.21	2.22	2.51	Vehicle unloading Rate (seconds)	3.77	3.21	2.22	2.51
Ticket processing time (seconds)	37	37	40	40	Ticket processing time (seconds)	37	37	40	40
					Unloading				
					Loading (to threshold)				
					slowest loading				
					Clearances				
Total Passengers - 95th percentile	128	128	128	128	Total Passengers - 95th percentile	119	119	119	119
Foot Passengers - % of Total Pass	6	6	6	6	Foot Passengers - % of Total Pass	6	6	6	6
AEQ	64	64	64	64	AEQ	64	64	64	64
Total seconds	902	794	864	1054	Total seconds	870	715	826	900
Minutes (In-port)	15	13	14	18	Minutes (In-port)	15	12	14	15
Directional Split (off load)	45%	45%	45%	45%	Directional Split (off load)	45%	45%	45%	45%
Average of five estimates (minutes)	15				Average of five estimates (minutes)	14			
					Total AEQ				
					AEQ (to Threshold)				
					Threshold remaining AEQ				
					Total seconds				
					Minutes (In-port)				

5

From: Paterson, Bruce
To: Doyle, Joanne
Cc: Simpson, Peter
Subject: RE: Komo Gway
Date: January 04, 2023 9:56:58 PM
Attachments: [Trio Capacity Analysis.xlsx](#)
[image002.png](#)
[image004.png](#)
[image009.png](#)

I won't be on the call tomorrow afternoon, but I reviewed the trials data we have on the BSC when it first entered service that should help with the service modeling. I fit simple curves to the speed/time data we collected during the 2015 sea trials for the transit condition (7.5 knots) and max speed (8.5 knots); the trials were conducted with a clean hull and an active hydraulic brake (later decommissioned).





	Transit Ref. Data		Max Ref. Data	
	Time	V	Time	V
Acceleration Phase Start	0	0	0	0
Acceleration Phase Transition	40	4.5	70	6.5
Acceleration Phase End	120	7.5	180	8.5
Transit Phase Start	120	7.5	180	8.5
Transit Phase End	400	7.5	360	8.5
Deceleration Start	400	7.5	360	8.5
Deceleration End	600	0	540	0

On trials, with the conditions as indicated, a transit at 7.5 knots was completed in 10 minutes, and the transit time at maximum speed was 9 minutes. This indicates that we don't need to dramatically increase the speed of the BSC if we want to target a 9 minute crossing during the shuttle season.

s. 13

I hope this helps.

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 Fax: (250) 978-1166
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Subject: RE: Komo Gway

Attached is agenda and updated document

-----Original Appointment-----

From: Simpson, Peter
Sent: November 25, 2022 1:30 PM
To: Simpson, Peter; Adams, James; Terry Wright; Jones, Stephen; Elliott, Scott; Doyle, Joanne; Paterson, Bruce; Hancyk, Lesley
Subject: Komo Gway
When: December 29, 2022 9:00 AM-10:00 AM (UTC-08:00) Pacific Time (US & Canada).
Where: webex

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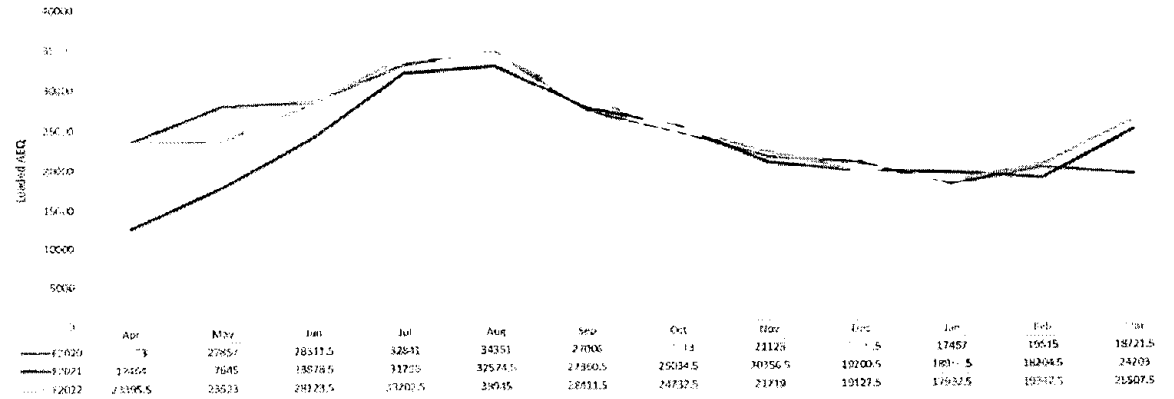
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Vessel Capacity Analysis

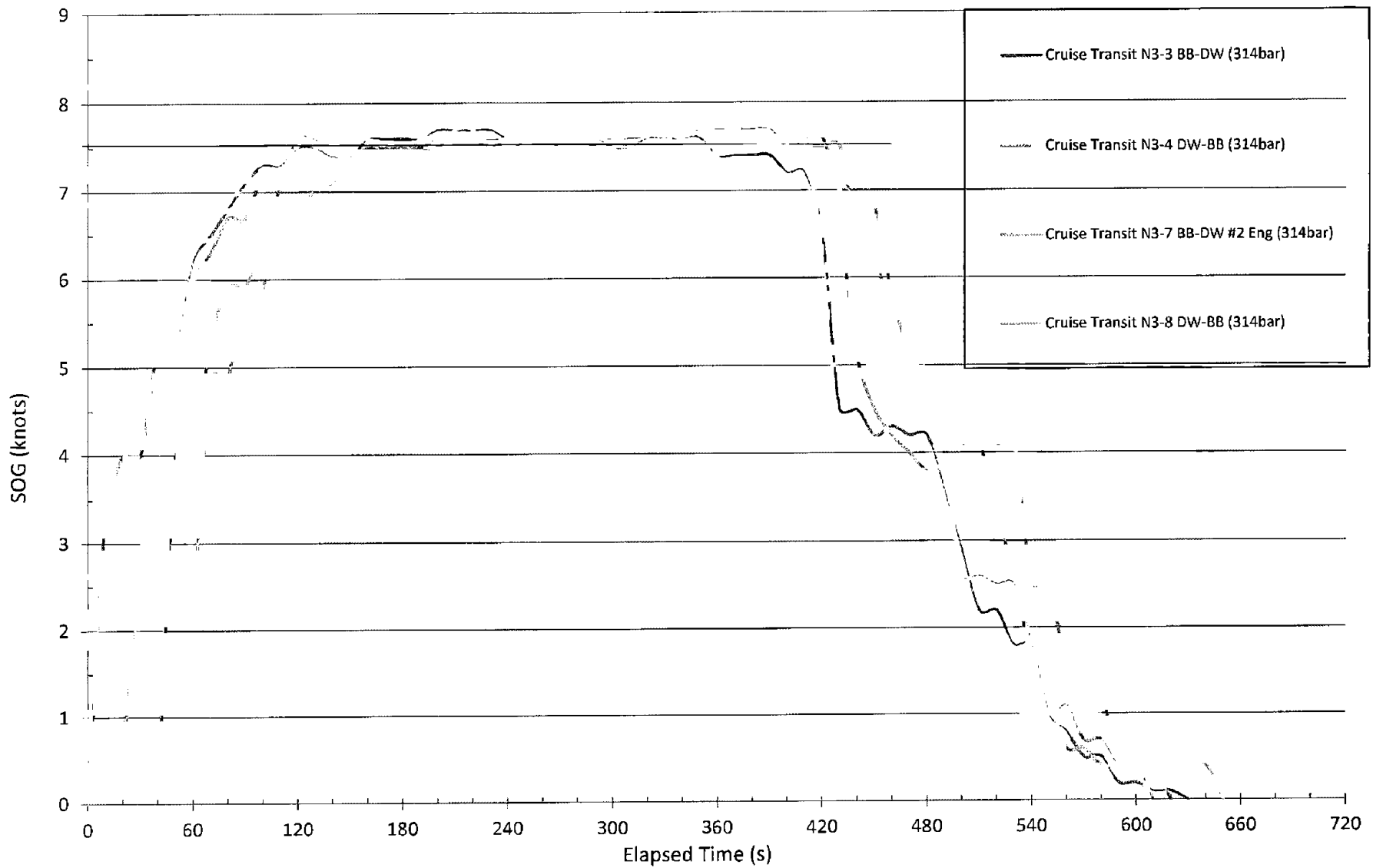
		Increment		42%	
		Existing	Expanded	dAEQ	
Vessel AEq		45	64	19	
# RTs	AEQ	AEQ	dAEQ		30% Capacity Increase
1	90	128	38	117	
2	180	256	76	234	
3	270	384	114	351	
4	360	512	152	468	Increment of 4 RTs per day
5	450	640	190	585	
6	540	768	228	702	
7	630	896	266	819	
8	720	1024	304	936	Increment of 8 RTs per day
9	810	1152	342	1053	
10	900	1280	380	1170	Increment of 10 RTs per day
11	990	1408	418	1287	
12	1080	1536	456	1404	
13	1170	1664	494	1521	
14	1260	1792	532	1638	
15	1350	1920	570	1755	30% Capacity Increase
16	1440	2048	608	1872	
17	1530	2176	646	1989	
18	1620	2304	684	2106	
19	1710	2432	722	2223	10% Capacity Increase
20	1800	2560	760	2340	
21	1890	2688	798	2457	
22	1980	2816	836	2574	30% Capacity Increase
23	2070	2944	874	2691	
24	2160	3072	912	2808	

Loaded AEq by Month



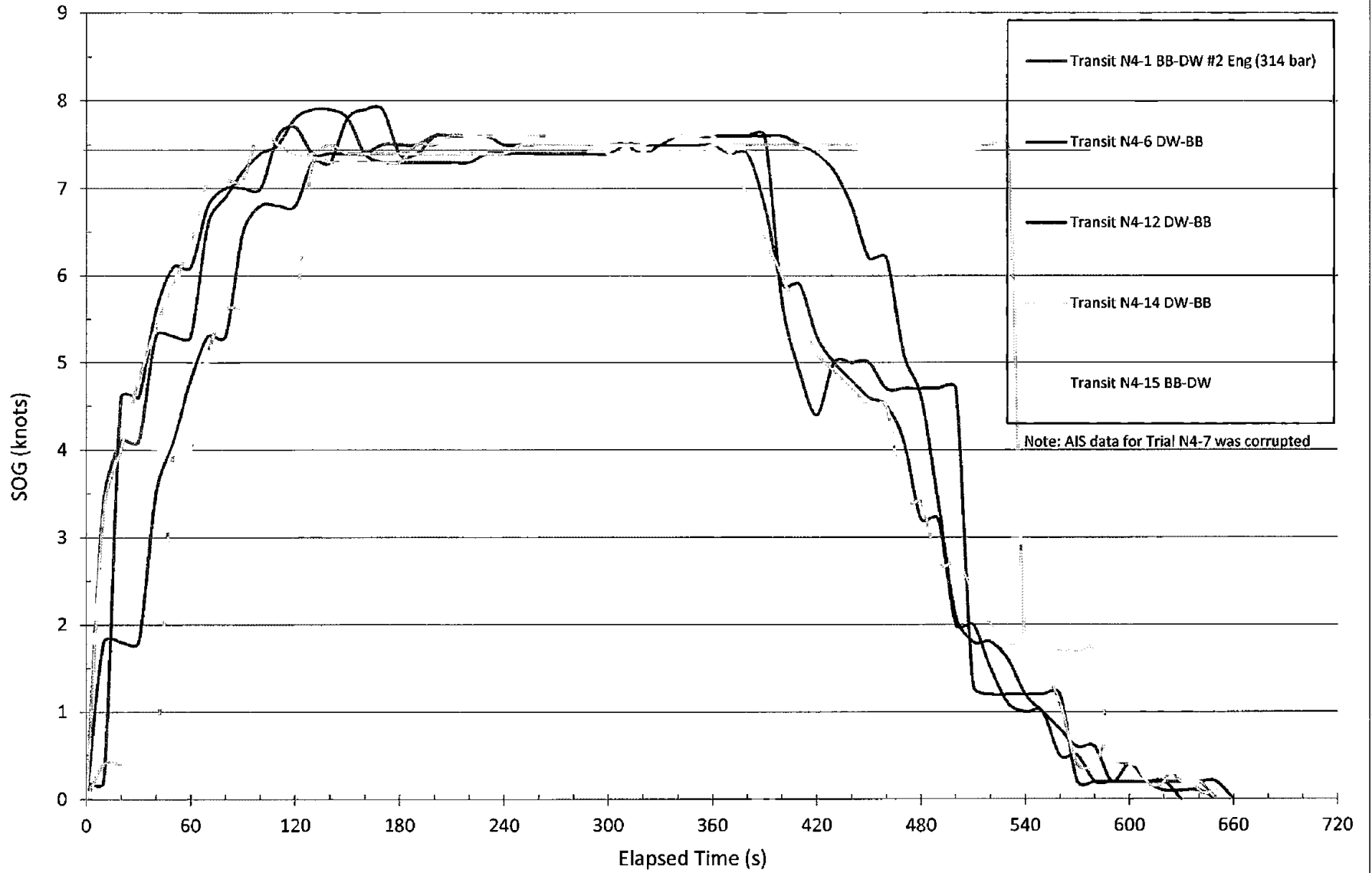
BSC Trials 3 November 2015

Light Condition - 314 bar trials



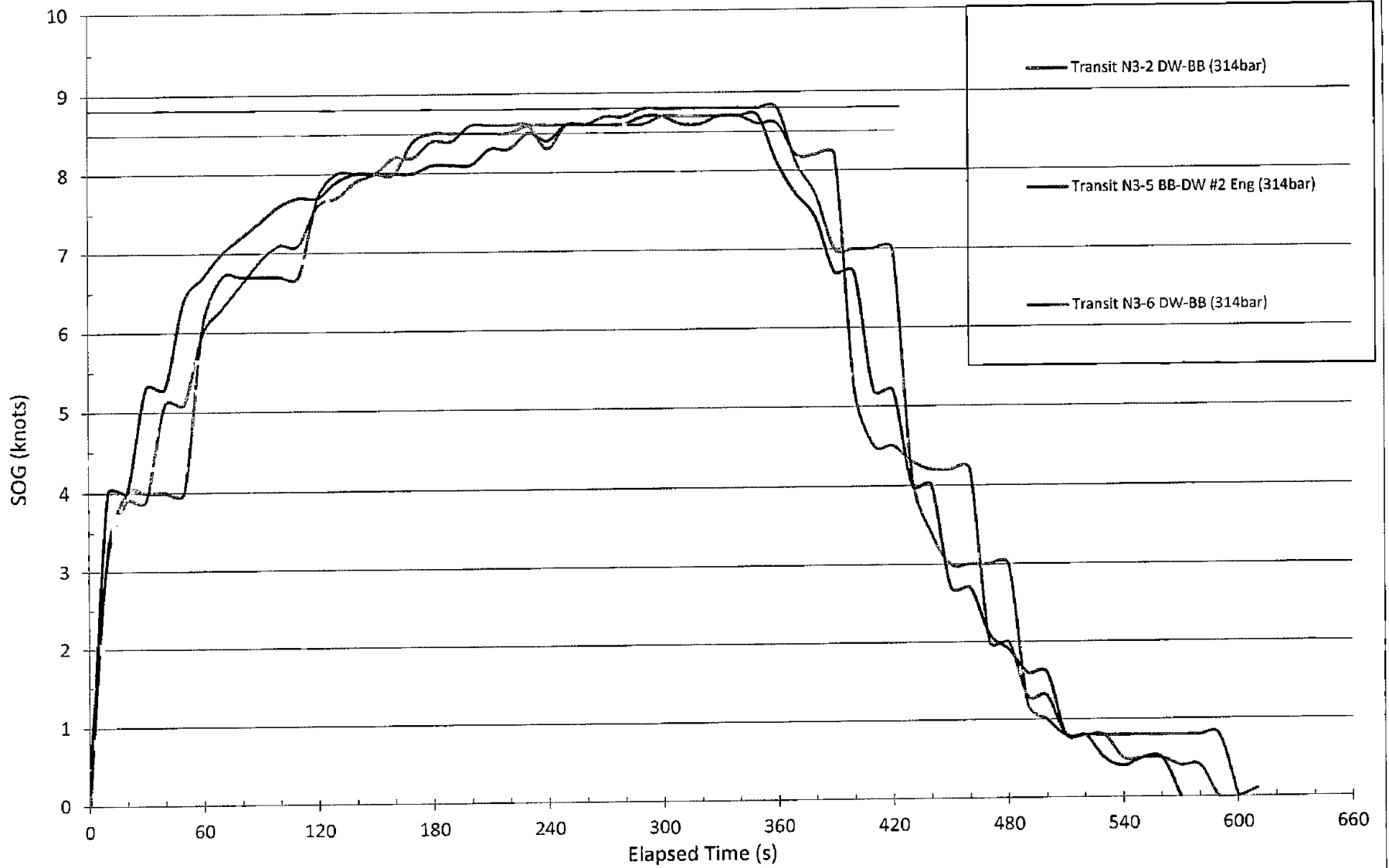
BSC Trials 4 November 2015

Light Condition - 314 bar



BSC Trials 3 November 2015

Light Condition - 314 bar trials



Target Crossing Time (minutes) = 9 Ref. AW - 3 round-tr
 Target In-dock Time (minutes) = 12 Ref. AW - The target
 - This equat

28 (pre-ticket) 61 (holding)		Buckley Bay				
METHOD/ACTIVITY	61	Nanaimo Harbour	Descenzo Bay	Campbell River	Quathiaski Cove	Buckley Bay
Prep to load (seconds)	60.75	25.25	31.83	106.83		unload
Pedestrian Loading Rate (seconds)	1.75	1.75	1.5	1.5		loadin
Vehicle Loading Rate (seconds)	6.77	4.57	6.04	5.8		slowes
Prep to Depart (seconds)	102	121	145	145		Clearai
Prep to Unload (seconds)	60	105	83	83		
Prep to unload Pedestrian (seconds)	60.1	23.25	31.83	106.83		
Pedestrian unLoading Rate (seconds)	2.4	1.75	1.5	1.5		
Vehicle unloading Rate (seconds)	3.77	3.32	2.32	3.53		
Ticket processing time (seconds)	37	37	40	40		
Total Passengers - xth percentile	128	128	128	128		Total A
Foot Passengers - x% of Total Pass	6	6	6	6		AEQ (tc
AEQ	64	64	64	64		Thresh
Total seconds	962	794	884	1054		Total s
Minutes (in-port)	16	13	15	18		Minute
Directional %Full (off load)	45%	45%	45%	45%		
Average of five estimates (minutes)	15					

METHOD/ACTIVITY	Nanaimo Harbour
Prep to load (seconds)	60.75
Pedestrian Loading Rate (seconds)	1.75
Vehicle Loading Rate (seconds)	6.77
Prep to Depart (seconds)	102
Prep to Unload (seconds)	60
Prep to unload Pedestrian (seconds)	60.1
Pedestrian unLoading Rate (seconds)	2.4
Vehicle unloading Rate (seconds)	3.77

Ticket processing time (seconds)

	Transit Ref. Data		Max Ref. Data	
	Time	V	Time	V
Acceleration Phase Start	0	0	0	0
Acceleration Phase Transition	40	4.5	70	6.5
Acceleration Phase End	120	7.5	180	8.5
Transit Phase Start	120	7.5	180	8.5
Transit Phase End	400	7.5	360	8.5
Deceleration Start	400	7.5	360	8.5
Deceleration End	600	0	540	0

ips every 2 hours or 1.5 departures per hour for ~40% increase
 vehicle through-put metric is therefore 384 AEQ round-trip sailings in 2 hours.
 es to “192 AEQ round-trip per hour” or “96 AEQ to DW per hour”

		51 (road) 57 (holding)			
		108			
	SGI	METHOD/ACTIVITY	Nanaimo Harbour	Descanso Bay	Campbell River
loading	3.5	Prep to load (seconds)	60.75	23.25	31.83
loading (to threshold)	7	Pedestrian Loading Rate (seconds)	1.75	1.75	1.5
slowest loading	10	Vehicle Loading Rate (seconds)	6.77	4.57	6.04
Clearances	180	Prep to Depart (seconds)	102	121	145
		Prep to Unload (seconds)	60	105	83
		Prep to unload Pedestrian (seconds)	60.1	23.25	31.83
		Pedestrian unloading Rate (seconds)	2.4	1.75	1.5
		Vehicle unloading Rate (seconds)*	4.5	4.5	4.5
		Ticket processing time (seconds)			
AEQ	64	Total Passengers - xth percentile	119	119	119
(to Threshold)	54	Foot Passengers - x% of Total Pass	6	6	6
AEQ remaining	10	AEQ	64	64	64
seconds	758	Total seconds	870	715	826
minutes (in-port)	13	Minutes (in-port)	15	12	14
	45%	Directional %Full (off load)	45%	45%	45%
		Average of five estimates (minutes)	14		

Nanaimo Harbour	Descanso Bay	Campbell River	Quathiaski Cove		SGI
60.75	23.25	31.83	106.83	unloading	3.5
1.75	1.75	1.5	1.5	loading (to threshold)	7
6.77	4.57	6.04	5.8	slowest loading	10
102	121	145	145	Clearances	180
60	105	83	83		
60.1	23.25	31.83	106.83		
2.4	1.75	1.5	1.5		
77	3.32	2.32	3.53		

..
37

37

40

40

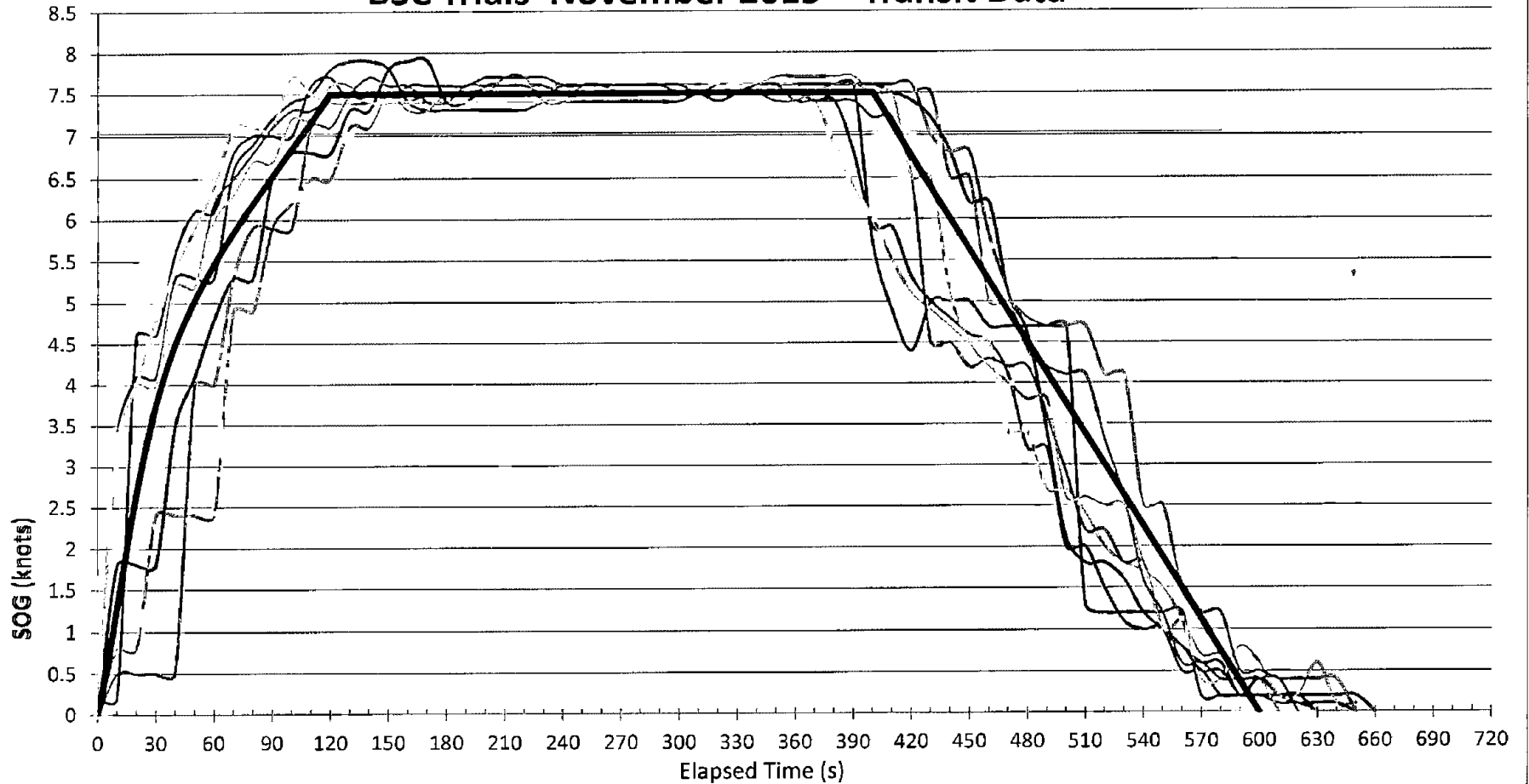
Denman West

Quathiaski Cove	Denman West	SGI
106.83	unloading	3.5
1.5	loading (to threshold)	7
5.8	slowest loading	10
145	Clearances	180
83		
106.83		
1.5		
4.5	4.5	
119	Total AEQ	64
6	AEQ (to Threshold)	54
64	Threshold remaining AEQ	10
960	Total seconds	758
16	Minutes (in-port)	13
45%		45%



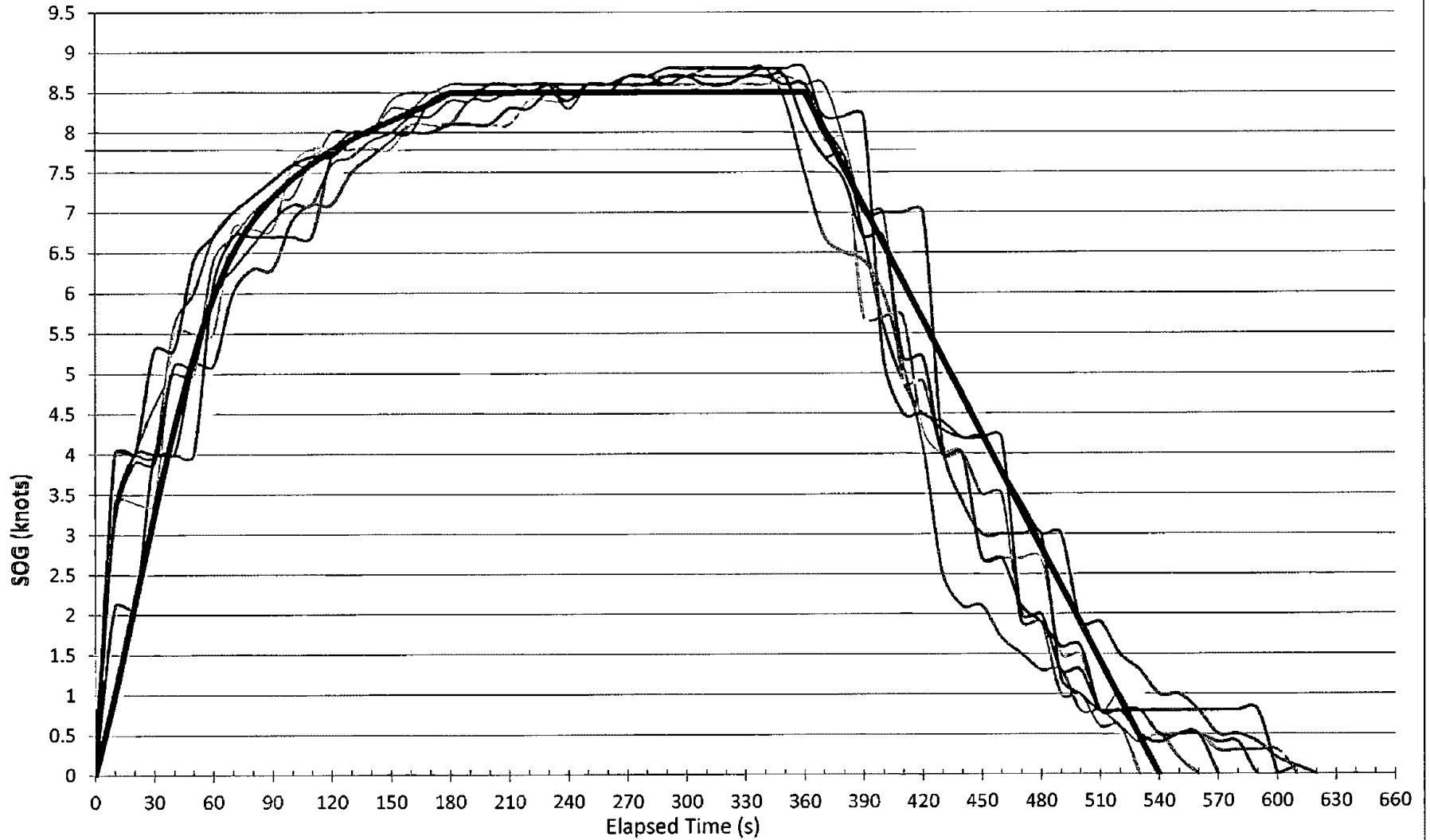
)

BSC Trials November 2015 - Transit Data



— Transit N4-1 BB-DW #2 Eng (314 bar)	— Transit N4-6 DW-BB	— Transit N4-12 DW-BB
· Transit N4-15 BB-DW	····· Cruise Transit N3-3 BB-DW (314bar)	— Cruise Transit N3-4 DW-BB (314bar)
- - - Cruise Transit N3-7 BB-DW #2 Eng (314bar)	····· Cruise Transit N3-8 DW-BB (314bar)	- - - Cruise Transit N3-3 BB-DW (314bar)
— Cruise Transit N3-4 DW-BB (314bar)	— Cruise Transit N3-7 BB-DW #2 Eng (314bar)	····· Cruise Transit N3-8 DW-BB (314bar)
- - - Cruise Transit N3-3 BB-DW (314bar)	— Cruise Transit N3-4 DW-BB (314bar)	— Cruise Transit N3-7 BB-DW #2 Eng (314bar)
— Cruise Transit N3-8 DW-BB (314bar)	— Cruise Transit N3-3 BB-DW (314bar)	— Cruise Transit N3-4 DW-BB (314bar)
····· Cruise Transit N3-7 BB-DW #2 Eng (314bar)	— Cruise Transit N3-8 DW-BB (314bar)	— Ref Line

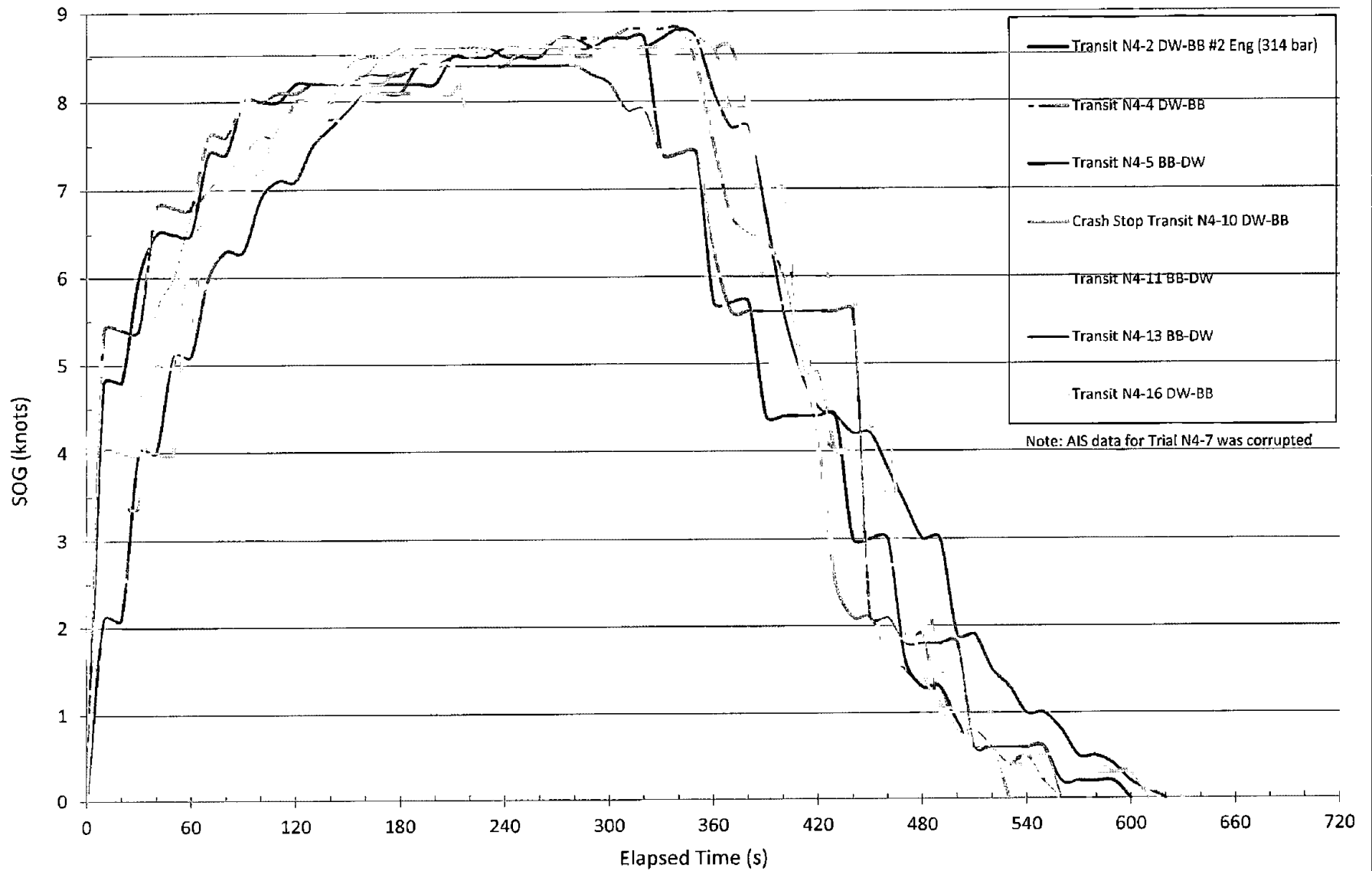
BSC Trials November 2015 Max Speed Trials



- | | | | |
|---------------------------------------|-------------------------------|--------------------------------------|--------------------------------------|
| — Transit N4-2 DW-BB #2 Eng (314 bar) | — Transit N4-4 DW-BB | — Transit N4-11 BB-DW | — Transit N3-2 DW-BB (314bar) |
| — Transit N3-5 BB-DW #2 Eng (314bar) | — Transit N3-6 DW-BB (314bar) | — Transit N3-2 DW-BB (314bar) | — Transit N3-5 BB-DW #2 Eng (314bar) |
| — Transit N3-6 DW-BB (314bar) | — Transit N3-2 DW-BB (314bar) | — Transit N3-5 BB-DW #2 Eng (314bar) | — Transit N3-6 DW-BB (314bar) |
| — Ref Line | | | |

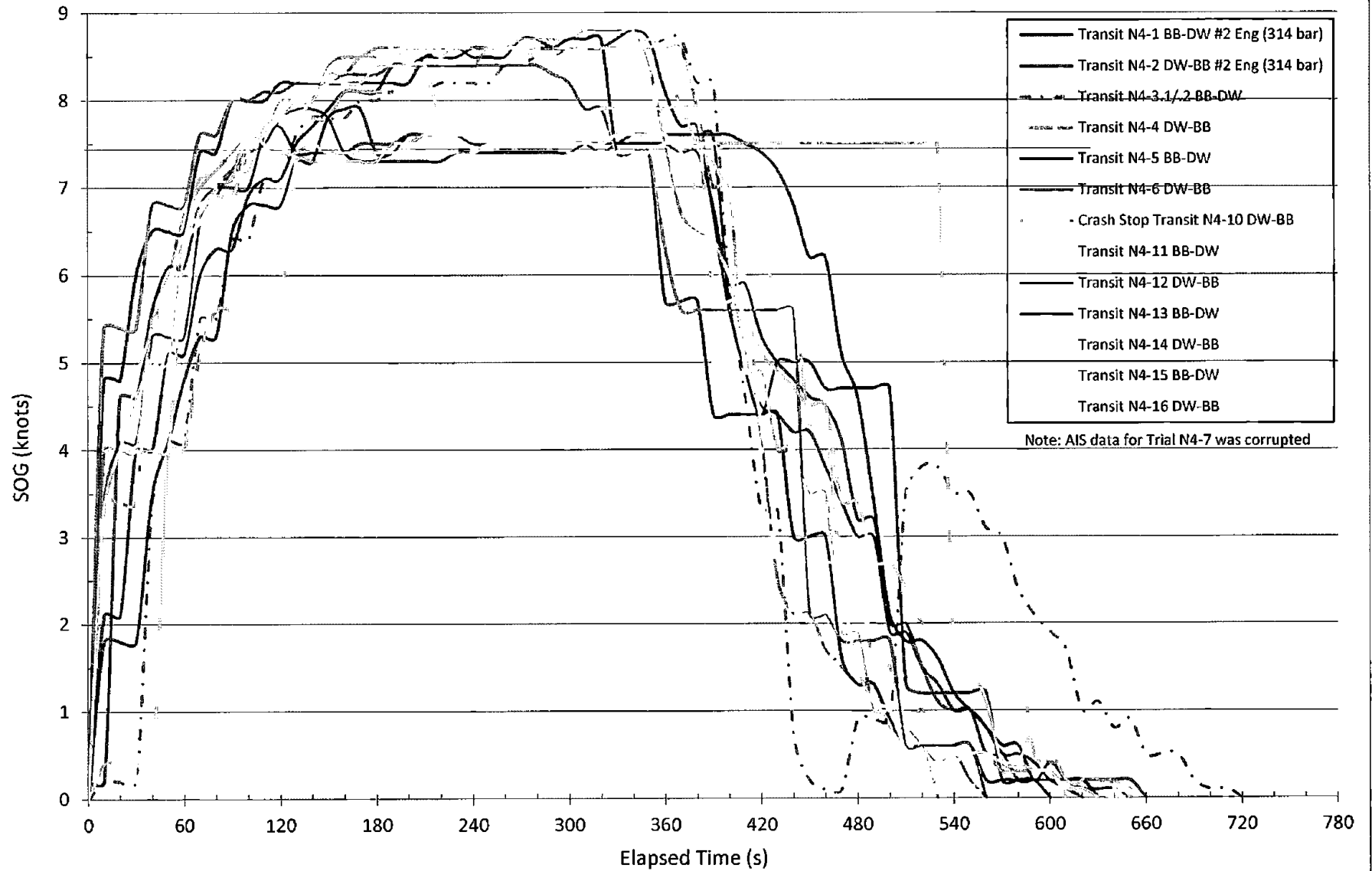
BSC Trials 4 November 2015

Light Condition - 314 bar



BSC Trials 4 November 2015

Light Condition - 314 bar



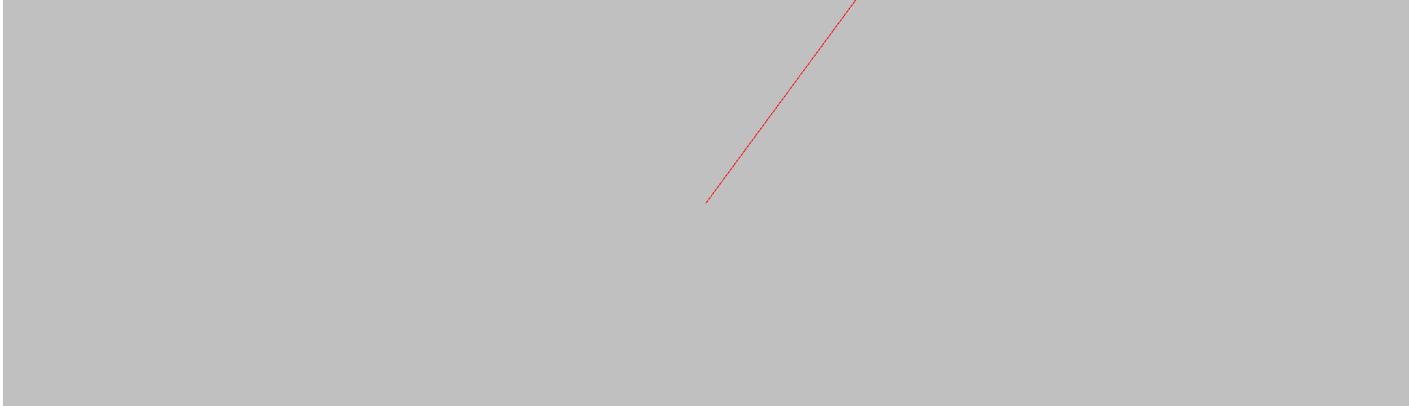
Rasmussen, Shauna

From: Hancyk, Lesley
Sent: January 04, 2023 3:15 PM
To: Elliott, Scott
Subject: Komo Gway notes

Hi Scott,

As we were going through numbers just had a few updates:

s. 13, s. 17



Number	Project Name	Total (all years)	Prior_Years	F2023	F2024	F2025
92466	Baynes Sound Connector - Asset Betterment					
92264	Baynes Sound Connector - Electrification					

s. 13, s. 17

s. 13, s. 17

Lesley Hancyk, MPAcc, CPA, CA
Manager, Financial Planning & Analysis (Capital)
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s. 15, 19

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Rasmussen, Shauna

From: Elliott, Scott
Sent: January 05, 2023 11:29 AM
To: Simpson, Peter; 'Terry Wright'; Hancyk, Lesley; Doyle, Joanne
Subject: RE: BSC - Financials

My other meeting has now moved so I will be there this afternoon...

Regards,
Scott.

From: Elliott, Scott
Sent: January 04, 2023 6:21 PM
To: Simpson, Peter <Peter.Simpson@bcferries.com>; 'Terry Wright' <terry.wright@ipsconsulting.ca>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>; Doyle, Joanne <Joanne.Doyle@bcferries.com>
Subject: RE: BSC - Financials

Hi all,
Unfortunately I have a conflict and won't be able to make the Komo Gway meeting tomorrow at 2pm but Lesley will attend and she is well up to speed on the options and the draft state of the NPV analysis.

This evening I did a bit of further clean up to the draft NPV workbook which I have attached and I also included a summary sheet. Lesley can do the walkthrough at the meeting.

Regards,
Scott.

From: [Simpson, Peter](#)
To: [Elliott, Scott](#); [Hancyk, Lesley](#)
Cc: [Doyle, Joanne](#); [Terry Wright](#)
Subject: Options - reset
Date: January 06, 2023 9:56:27 AM

Change up in options t

1. Expand BSC
2. Replace with Conventional Ferry (remove option with Quinsam as temp ship)
3. Defer Expansion decision: BSC as is with Kahloke to 2034 and then replace Kah with IC (extra ship)
4. Defer Expansion decision: BSC as is with Kahloke to 2034 and then rely on relief IC for summer only (and shuttle in shoulders)
5. Defer Expansion decision: BSC as is with Kahloke to 2034 and expand BSC and rely on relief IC for summer only (if high traffic increase exceeds shuttle capacity)

Peter Simpson
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s. 15, 19

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Rasmussen, Shauna

From: Adams, James
Sent: January 06, 2023 10:48 AM
To: Amusan, Sam
Cc: Hayden Vander Ploeg
Subject: RE: BSC Expansion Project
Attachments: 23 01 06 - Total Project Budget Summary from Sam.xlsx

Hi Sam,

See attached suggested changes in red.

I'll follow-up with a call to discuss.

Thanks,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** [REDACTED] **F:** 250-361-4922
james.adams@bcferries.com s. 15, 19
bcferries.com

From: Amusan, Sam <Sam.Amusan@bcferries.com>
Sent: January 05, 2023 7:26 PM
To: Adams, James <James.Adams@bcferries.com>
Subject: FW: BSC Expansion Project

Hi James,

As discussed, see attached spreadsheet for review and comments.

We will definitely get better estimates after the PBC. We will discuss further tomorrow.

Thank you.

Sam Amusan, P.Eng., PMP
Project Manager, Fleet Project Management Office
British Columbia Ferry Services Inc.
T: 604-204-2255 **C:** [REDACTED]
Sam.amusan@bcferries.com s. 15, 19
bcferries.com

From: Simpson, Peter <Peter.Simpson@bcferries.com>
Sent: January 04, 2023 4:01 PM
To: Amusan, Sam <Sam.Amusan@bcferries.com>
Cc: Terry Wright <terry.wright@ipsconsulting.ca>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>
Subject: BSC Expansion Project

Hi Sam

Are you able to provide us with the information you have with regard to the cost estimates for the BSC expansion project.

Preferably in summary form with any insights into the certainty or risk with the estimates. If we were to need better estimates, please advise what resources or timeline would be needed to accomplish that.

Happy to also chat if that is preferred.

Thanks

Peter

Peter Simpson

Director, Fleet Operations Strategy

Strategy and Community Engagement

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92466 - BSC Asset Betterment Budget				
Description	Budget Estimates (\$)	Updated Terminal Budget	Updated Terminal + Vessel Budget	Variance
Project Management (Terminal)				
Project Management (Vessel)				
Crew Cost				
Design (Terminal)				
Design & Regulatory				
Commissioning/Sea Trials				
Training				
AEQ Expansion Installation				
Shipyard Support				
Terminal Work				
Sub-Total				
Contingency (15%)				
Grand Total				

s. 13, s. 17

92264 - BSC Electrification	
Description	Budget Estimates (\$)
Project Management (Terminal)	
Project Management (Vessel)	
Crew Cost	
Design (Terminal)	
Design & Regulatory	
Commissioning and Trials	
Training	
Electrification Installation	
Shipyards Support	
Terminal Work	
Sub-Total	
Contingency (15%)	
Grand Total	
Terminal (Including Contingency)	
Vessel (including Contingency)	

s. 13, s. 17

Rasmussen, Shauna

From: Adams, James
Sent: January 06, 2023 12:52 PM
To: Simpson, Peter
Cc: Monrad, Eric; Terry Wright; Doyle, Joanne; Elliott, Scott; Hancyk, Lesley; Paterson, Bruce
Subject: RE: Komo Gway - Denman West

Hi Peter,

Following yesterday's meeting, a review was conducted on the berthing capacity of the lay-by berths for Quinsam and Island Class. High-level costs to upgrade the berths for these larger vessels have been added to my original response. See below in blue for updates:

1. Denman West Terminal

- a. Need short summary of what modifications/costs are required to support next year's two ship operating scenario – i.e., to support traffic flow (this may not be clarified until after initial experience with the two ship operation this summer)
 - i. Engineering Services is working on a repair plan for DenW berth 2. Repairs will maintain the berth to current load rating of 38,500kg. TM has budgeted [REDACTED] OpEx in F24 to support this work. s. 17 s. 13
 - ii. Engineering Services is currently reviewing berth fits for the Kahloke; [REDACTED]
 - iii. Terminal Operations is developing a plan to modify the two terminals to support traffic flows for two ship operation. [REDACTED] s. 13
[REDACTED]. Costs are not known but expected to be [REDACTED] s. 13, s. 17
- b. Need short summary of what further modifications/costs would be required to support an expanded BSC or alternately a larger conventional vessel i.e., larger holding capacity
 - i. Expanded BSC – terminal modifications:
 - o Feasibility review of the marine structures and cable system indicates the structures can support the expanded BSC; changes to pontoon freeboard may be required, subject to final design of the widened vessel s. 17
 - o Repowering expected to reduce cable life, resulting in [REDACTED] OpEX annually
 - o BSC electrification will require terminal upgrades. The budget will be included in the BSC electrification project
 - ii. Buckley Bay Terminal Upgrades:
 - o Terminal upgrades may be required to achieve increased through-put requirements, as per previous meetings with Operations. The terminal currently has a holding compound capacity of 61 AEQ, 3 less than TNMP requirements if the vessel was expanded to 64 AEQ. However, traffic becomes congested during peak summer periods and backs up onto the highway. Traffic must load in sequential order because only 2 of the 6 queuing lanes have direct access to the berth.
 - o s. 17 Potential terminal upgrades include a new through lane to allow for segregated loading, expanded holding compound, and commercial lanes. s. 13
 - o Budget estimate: [REDACTED]
 - iii. DenW Terminal Upgrades:

- o No changes are proposed at this time. The terminal holding capacity is 51 AEQ, 13 less than TNMP requirements for 64 AEQ vessel; however, the additional 57 AEQ in roadway is proposed to offset this variance.
 - o Meeting the TNMP would cost approx. [REDACTED] and would require demolition and relocation of the new waiting room. s. 17
- iv. Existing conventional vessel (Quinitza, etc) – high-level cost estimate to maintain the conventional berths:
- o Buckley Bay Berth:
 - s. 17 a. [REDACTED] life extension in 2030 (included in cap plan)
 - b. [REDACTED] life extension in 2040
 - c. [REDACTED] life extension in 2050
 - o DenW Berth:
 - s. 17 a. [REDACTED] life extension in 2024 (included in cap plan)
 - s. 17 b. [REDACTED] increase to life extension in 2024 if highway legal required (subject to further engineering review)
 - s. 17 c. [REDACTED] life extension in 2027
 - s. 17 d. [REDACTED] berth replacement in 2030
- v. Larger conventional vessel (Quinsam or Island Class) – high-level cost estimate to upgrade and maintain the conventional berths:
- o Buckley Bay Berth:
 - s. 17 a. [REDACTED] wingwall upgrades for larger vessel; high-level estimate only; upgrades may not achieve standard berthing speed
 - s. 17 b. [REDACTED] life extension in 2030 (included in cap plan)
 - c. [REDACTED] life extension in 2040
 - d. [REDACTED] life extension in 2050
 - o DenW Berth – Quinsam:
 - s. 17 a. [REDACTED] wingwall and ramp structure adjustments for Quinsam; high-level estimate only; upgrades may not achieve standard berthing speed
 - s. 17 b. [REDACTED] life extension in 2024 (included in cap plan)
 - s. 17 c. [REDACTED] increase to life extension if highway legal required (subject to further engineering review)
 - s. 17 d. [REDACTED] life extension in 2027
 - s. 17 e. [REDACTED] berth replacement in 2030 (2030 dollars)
 - o DenW Berth – Island Class:
 - s. 17 a. [REDACTED] new berth required for Island Class (2025 dollars)
- vi. Larger conventional vessel – Convert BSC Berths to conventional:
- o Buckley Bay: [REDACTED] s. 17
 - o DenW: [REDACTED] s. 17
 - o Above options are very high-level cost estimates; further engineering review required to determine if option is feasible; DenW water depth and berth location may not be suitable
- vii. Convert BSC berth to conventional for temporary use during refits (plug pontoon concept):
- s. 17 o [REDACTED] per berth
 - o Notes:
 - a. Concept is very high-level; further engineering review required to determine if feasible

- b. Pontoon plug excludes wing walls due to location of flared apron – pontoon will rest against existing wing walls
- c. Existing pontoon needs to be raised to accommodate freeboard difference; it is assumed the transition platform requires modification to accommodate freeboard changes between vessels
- d. Vessel slow bell required; no floating lead or line dolphin included; “L-shaped” pontoon and anchors may be possible for lateral restraint

2. Denman West **Conventional Berths**

a. We need the cost to life extend to 2030

s. 17

- The F23 capital plan includes a life extension in 2024. It is anticipated that the project will maintain the existing load rating of 38,500kg and life extend the berth to 2027-2031, pending further engineering review.

s. 17

- If a conservative approach is required, it should be assumed two life extensions are required to achieve 2030: in 2024 and in 2027

s. 17

b. Can we life extend to 2035 and at what cost?

- The 2021 Level II estimates the structures will be at end of life by 2031 at the latest, therefore replacement should be planned around that timeframe. There is too much uncertainty to comment whether the berth could be life extended to 2035.

s. 13

s. 13, s. 17

s. 13

c. Would life extension allow for highway standard weight capacity?

- Further engineering review is required to determine if load rating can be increased to 63,500 kg. For high-level planning purposes, assume that would need to be added to the life extension in F24 to upgrade the berth to highway legal

s. 17

James Adams, P.Eng.
 Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: F: 250-361-4922
james.adams@bcferries.com
bcferries.com

s. 15, 19

From: Adams, James
Sent: January 05, 2023 1:23 PM
To: Simpson, Peter <Peter.Simpson@bcferries.com>
Cc: Monrad, Eric <Eric.Monrad@bcferries.com>; Terry Wright <terry.wright@ipsconsulting.ca>; Doyle, Joanne <Joanne.Doyle@bcferries.com>
Subject: RE: Komo Gway - Denman West

Hi Peter,

See below in green for response to your questions:

1. Denman West Terminal

- a. Need short summary of what modifications/costs are required to support next year’s two ship operating scenario – i.e., to support traffic flow (this may not be clarified until after initial experience with the two ship operation this summer)

s. 17

- Engineering Services is working on a repair plan for DenW berth 2. Repairs will maintain the berth to current load rating of 38,500kg. TM has budgeted [redacted] OpEx in F24 to support this work.

s. 13

- Engineering Services is currently reviewing berth fits for the Kahloke; [redacted]

s. 13

- Terminal Operations is developing a plan to modify the two terminals to support traffic flows for two ship operation. [redacted]

[redacted] Costs are not known but expected to be [redacted]

s. 17

b. Need short summary of what further modifications/costs would be required to support an expanded BSC or alternately a larger conventional vessel i.e., larger holding capacity

- Expanded BSC – terminal modifications:

- Feasibility review of the marine structures and cable system indicates the structures can support the expanded BSC; changes to pontoon freeboard may be required, subject to final design of the widened vessel
- Repowering expected to reduce cable life, resulting in [redacted] OpEX annually
- BSC electrification will require terminal upgrades. The budget will be included in the BSC electrification project

s. 17

- Buckley Bay Terminal Upgrades:

- Terminal upgrades may be required to achieve increased through-put requirements, as per previous meetings with Operations. The terminal currently has a holding compound capacity of 61 AEQ, 3 less than TNMP requirements if the vessel was expanded to 64 AEQ. However, traffic becomes congested during peak summer periods and backs up onto the highway. Traffic must load in sequential order because only 2 of the 6 queuing lanes have direct access to the berth.
- Potential terminal upgrades include a new through lane to allow for segregated loading, expanded holding compound, and commercial lanes.

s. 17

s. 13

- Budget estimate: [redacted]

- DenW Terminal Upgrades:

- No changes are proposed at this time. The terminal holding capacity is 51 AEQ, 13 less than TNMP requirements for 64 AEQ vessel; however, the additional 57 AEQ in roadway is proposed to offset this variance.
- Meeting the TNMP would cost approx. [redacted] and would require demolition and relocation of the new waiting room.

s. 17

- Larger conventional vessel – high-level cost estimate to maintain the conventional berths:

- Buckley Bay Berth:

- a. [redacted] life extension in 2030 (included in cap plan)
- b. [redacted] life extension in 2040
- c. [redacted] life extension in 2050

s. 17

- DenW Berth:

- a. [redacted] life extension in 2024 (included in cap plan)
- b. [redacted] increase to above life extension if highway legal required (subject to further engineering review)
- c. [redacted] life extension in 2027
- d. [redacted] berth replacement in 2030

s. 17

s. 17

s. 17

s. 17

- Larger conventional vessel – Convert BSC Berths to conventional:

- Buckley Bay:

s. 17

- a. [redacted]
- o DenW
 - a. [redacted] s. 17
 - o Above options are very high-level cost estimates; further engineering review required to determine if option is feasible; DenW water depth and berth location may not be suitable

- Convert BSC berth to conventional for temporary use during refits (plug pontoon concept):

- s. 17 o [redacted] per berth
- o Notes:
 - a. Concept is very high-level; further engineering review required to determine if feasible
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2. Denman West **Conventional Berths**

- a. We need the cost to life extend to 2030 s. 17
 - The F23 capital plan includes a [redacted] life extension in 2024. It is anticipated that the project will maintain the existing load rating of 38,500kg and life extend the berth to 2027-2031, pending further engineering review.

- s. 17 • If a conservative approach is required, it should be assumed two life extensions are required to achieve 2030: [redacted] in 2024 and [redacted] in 2027 s. 17

- b. Can we life extend to 2035 and at what cost?
 - The 2021 Level II estimates the structures will be at end of life by 2031 at the latest, therefore replacement should be planned around that timeframe. There is too much uncertainty to comment whether the berth could be life extended to 2035. s. 13

s. 13, s. 17

- c. Would life extension allow for highway standard weight capacity?
 - Further engineering review is required to determine if load rating can be increased to 63,500 kg. For high-level planning purposes, assume that [redacted] would need to be added to the life extension in F24 to upgrade the berth to highway legal s. 13

James Adams, P.Eng.
 Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
 T: 250-978-1317 M: [redacted] F: 250-361-4922
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From: Simpson, Peter <Peter.Simpson@bcferries.com>
Sent: January 03, 2023 1:06 PM
To: Adams, James <James.Adams@bcferries.com>

Cc: Monrad, Eric <Eric.Monrad@bcferries.com>; Terry Wright <terry.wright@ipsconsulting.ca>; Doyle, Joanne <Joanne.Doyle@bcferries.com>
Subject: Komo Gway - Denman West

Hi James, from last week there were some follow on questions we hope you will be able to address for the Thursday meeting

1. Denman West Terminal (for follow up with James)
 - a. Need short summary of what modifications/costs are required to support next year's two ship operating scenario – i.e., to support traffic flow (this may not be clarified until after initial experience with the two ship operation this summer)
 - b. Need short summary of what further modifications/costs would be required to support an expanded BSC or alternately a larger conventional vessel i.e., larger holding capacity

2. Denman West Conventional Berths (for follow up with James)
 - a. We need the cost to life extend to 2030
 - b. Can we life extend to 2035 and at what cost?
 - c. Would life extension allow for highway standard weight capacity?

Thanks
Peter

Peter Simpson
Director, Fleet Operations Strategy
Strategy and Community Engagement
British Columbia Ferry Services Inc.
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Rasmussen, Shauna

From: Simpson, Peter
Sent: January 09, 2023 2:20 PM
To: Elliott, Scott; Hancyk, Lesley
Cc: Terry Wright; Doyle, Joanne
Subject: FW: BSC Expansion Project

s. 13

Hi,

Peter s. 13, s. 17

From: Amusan, Sam
Sent: January 06, 2023 11:17 AM
To: Simpson, Peter
Cc: Terry Wright ; Paterson, Bruce ; Hancyk, Lesley ; Adams, James
Subject: RE: BSC Expansion Project

Hi Peter,

The BSC Capacity Expansion is linked to the BSC Electrification project, and the team is working on the Preliminary Business Case (to be submitted in March, 2023) for both projects. Please see below tables for the high-level cost estimates.

92466 - BSC Asset Betterment	
Description	Terminal + Vessel Budget
Project Management (Terminal)	
Project Management (Vessel)	
Crew Cost	
Design (Terminal)	
Design & Regulatory	
Commissioning/Sea Trials	
Training	
AEQ Expansion Installation	
Shipyard Support	
Terminal Work	
Sub-Total	
Contingency (15%)	
Grand Total	

s. 17

Project Mana
Project Mana
Crew Cost
Design (Term
Design & Rec
Commissioni
Training
Electrification
Shipyard Sup
Terminal Wor
Sub-Total
Contingency
Grand Total

Terminal (Inc
Vessel (includ

For BSC Electrification, we have split the budget into two; Terminal and Vessel. The reason is that we are currently reviewing an option of using generators to power the electric motors. This will eliminate the need for shore based charging requirements, thereby significantly reducing the terminal work cost.

We will have better estimates for the detailed business case, which will commence after the approval of the PBC.

Thank you.

Best regards,
Sam Amusan, P.Eng., PMP
Project Manager, Fleet Project Management Office
British Columbia Ferry Services Inc.
T: 604-204-2255 C: [REDACTED]
Sam.amusan@bcferries.com
bcferries.com

s. 15, 19

From: Simpson, Peter <Peter.Simpson@bcferries.com>
Sent: January 04, 2023 4:01 PM
To: Amusan, Sam <Sam.Amusan@bcferries.com>
Cc: Terry Wright <terry.wright@ipsconsulting.ca>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>
Subject: BSC Expansion Project

Hi Sam

Are you able to provide us with the information you have with regard to the cost estimates for the BSC expansion project.

Preferably in summary form with any insights into the certainty or risk with the estimates. If we were to need better estimates, please advise what resources or timeline would be needed to accomplish that.

Happy to also chat if that is preferred.

Thanks

Peter

Peter Simpson
Director, Fleet Operations Strategy
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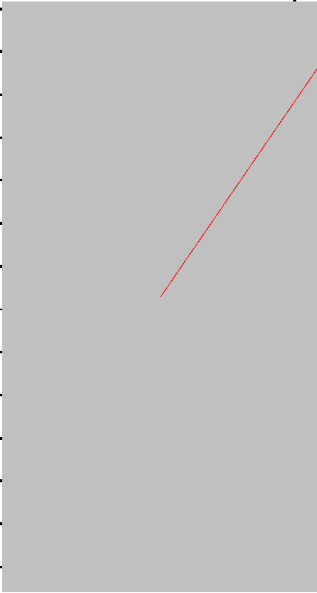
s. 15, 19

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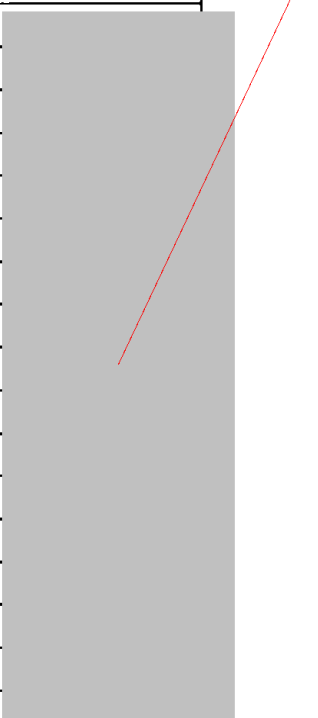
92466 - BSC Asset Betterment	
Description	Terminal + Vessel Budget
Project Management (Terminal)	
Project Management (Vessel)	
Crew Cost	
Design (Terminal)	
Design & Regulatory	
Commissioning/Sea Trials	
Training	
AEQ Expansion Installation	
Shipyards Support	
Terminal Work	
Sub-Total	
Contingency (15%)	
Grand Total	

s. 17



92264 - BSC Electrification	
Description	Budget Estimates (\$)
Project Management (Terminal)	
Project Management (Vessel)	
Crew Cost	
Design (Terminal)	
Design & Regulatory	
Commissioning and Trials	
Training	
Electrification Installation	
Shipyards Support	
Terminal Work	
Sub-Total	
Contingency (15%)	
Grand Total	

s. 17



Terminal (Including Contingency)	
Vessel (Including Contingency)	

Rasmussen, Shauna

From: Adams, James
Sent: January 11, 2023 2:20 PM
To: Bruce Paterson (Bruce.Paterson@bcferries.com)
Subject: FW: Komo Gway
Attachments: BUCK-266-SK003A.pdf

Hi Bruce,

Peter asked me to provide an estimated cost to modify the bulwark on the current vessel to resolve the berth interface issue. He mentioned this work could be tied into a short term option including hydraulic and coolant upgrades.

I would like to defer to you if possible for a high-level cost estimate for this modification, can you help? Attached is the sketch that includes the results of the DSA analysis for the current vessel. It appears the bulwark would not need to be moved much to resolve this issue.

Thanks,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** [REDACTED] **F:** 250-361-4922
james.adams@bcferries.com s. 15, 19
bcferries.com

From: Simpson, Peter <Peter.Simpson@bcferries.com>
Sent: January 11, 2023 10:53 AM
To: Adams, James <James.Adams@bcferries.com>
Subject: Komo Gway

When you're able, could you give me a call
Thanks
Peter

Peter Simpson
Director, Fleet Operations Strategy
Strategy and Community Engagement
British Columbia Ferry Services Inc.
Suite 500, 1321 Blansard Street, Victoria, BC
T: 250.978.1163 **C:** [REDACTED]
peter.simpson@bcferries.com s. 15, 19
bcferries.com

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Page redacted

From: [Doyle, Joanne](#)
To: "Terry Wright"; [Simpson, Peter](#)
Subject: Updated Table and PPT Template for discussion
Date: January 12, 2023 10:51:00 AM
Attachments: [Update to Komo Gway v6 Jan 12 2023.xlsx](#)
[BSC Review Jan 2023.pptx](#)

Good Morning Terry and Peter,

I have reviewed the Excel spreadsheet and provided some comments in **purple text** (attached). I think that we can probably cover these off pretty quickly between the three of us.

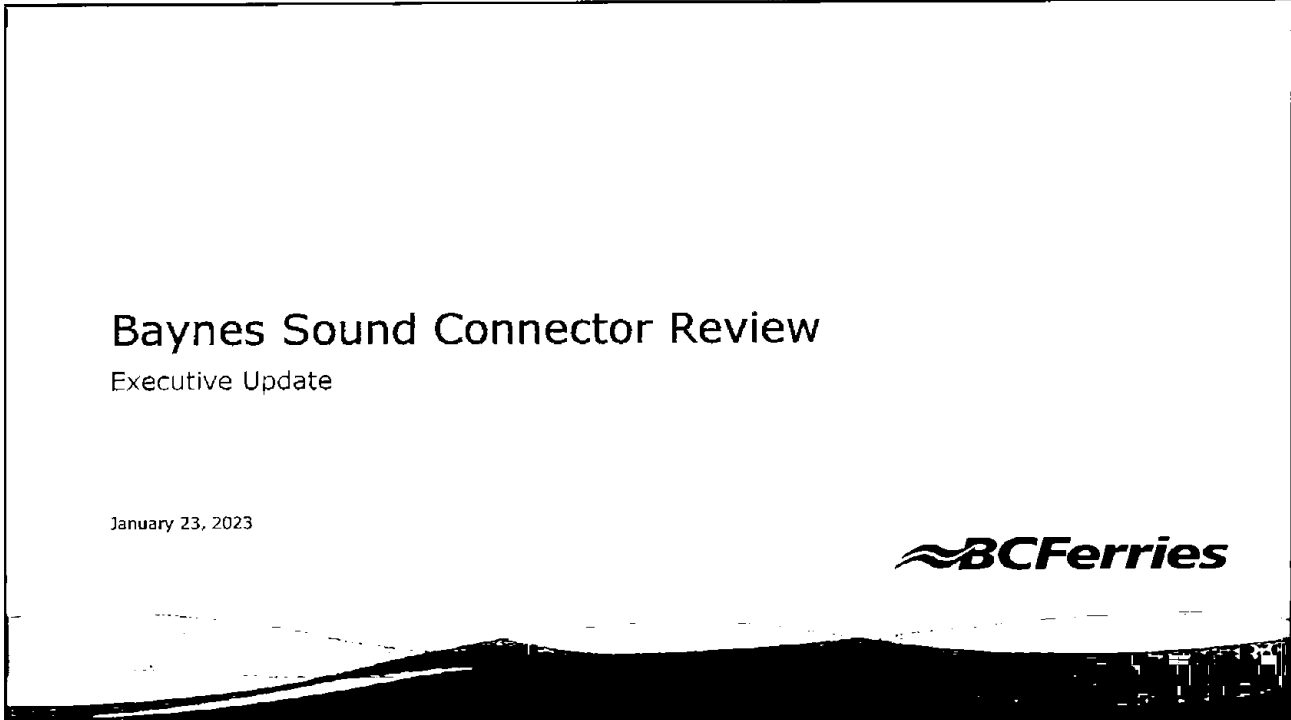
I have also started to flush out a template for the PPT (also attached) for the January 23 meeting for us to discuss (blue boxes on the slides are points for us to further discuss not meant to remain on the slides). I would like to draw your attention to the "Supplemental Material" section of the PPT I have put in an example of what I think we could convert the excel spreadsheet too so it is easier for the group to consume the information as opposed to the excel format – have a look and see if this is something that you both agree with and if so if there are other pieces that are missing.

Thanks,
Joanne

Joanne Doyle
Manager, Fleet Strategic Planning
Strategy & Community Engagement
British Columbia Ferry Services Inc.
The Atrium
Suite 500, 1321 Blanshard St., Victoria, BC V8W 0B7
T: 250-978-1322 C: F: 250-388-9599
Joanne.doyle@bcferries.com s. 15, 19
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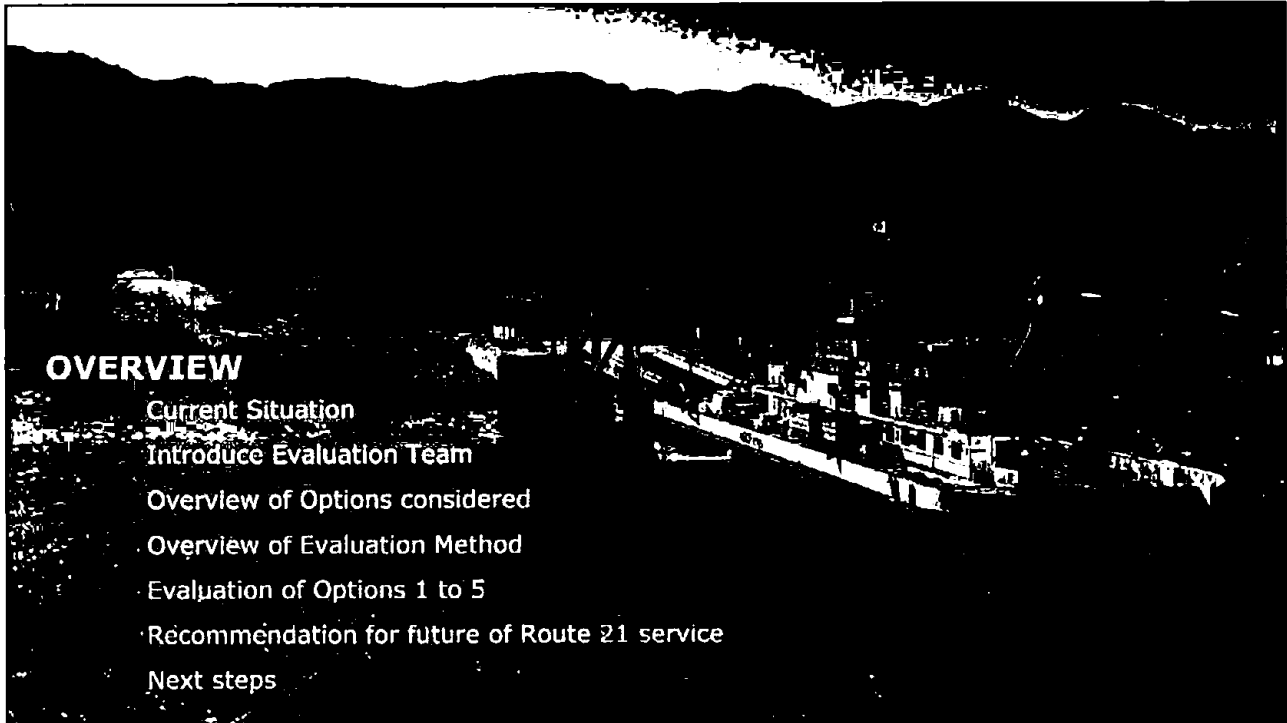
PURPOSE

- Provide BCF Executive with options and a recommendation in respect to the BSC
- Provide BCF Executive with an overview of the work undertaken to develop and evaluate the options



1

The slide contains a section titled "PURPOSE" in bold. Below the title are two bullet points. The first bullet point states: "Provide BCF Executive with options and a recommendation in respect to the BSC". The second bullet point states: "Provide BCF Executive with an overview of the work undertaken to develop and evaluate the options". To the right of the text is a small, square inset photograph showing a coastal town or village with buildings and a forested background. At the bottom right corner of the slide, the number "1" is displayed.



CURRENT SITUATION

- Higher than expected growth on Route 21 has resulted in a need for increased capacity during the peak summer season
- The increased capacity will be met in the short term by the use of the Kahloke to supplement summer service
- While the BSC has a good reliability record there are a number of unresolved issues currently being managed:
 - Overheating of the hydraulic motors
 - Bolt cracking on the fly wheel
 - Hull fouling
- Management of these issues has recently been shifted to Fleet Engineering
- Conventional berths at the Denman West terminal have limited life expectancy

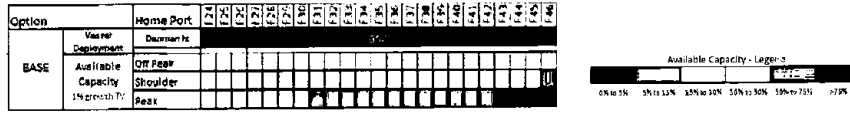
3

WHY?

Traffic levels from Route 22 exceed capacity in the summer

- Quinitza deployment at Hornby increases AEQ throughput onto Route 21
 - 44 AEQ Route 22 ship will create 'pulses' of traffic arriving at Denman West at same time Denman based traffic is travelling
- Combination of Route 21 demand & larger 'pulses' of Route 22 demand will cause lineups back into the village at top of hill; overwhelm the intersection and create potentially unsafe and unmanageable traffic convergence.

s. 13



Transit times for Route 21 are interdependent with capacity offered while shuttling

- Currently achieving 12 minute transits is reducing benefits of shuttling
 - Require improved transit times (maintenance and powering solutions in progress)
- Expansion of BSC (to 64AEQ) requires longer in-port times, off-setting 40% increase in capacity to best case estimate of 20% (during shuttling mode assuming same transits btw BSC & Expanded BSC)

s. 13

EVALUATION TEAM

- Primary Team
 - Peter Simpson, Director Fleet Operations Strategy
 - Joanne Doyle, Manager Fleet Strategic Planning
 - Stephen Jones, Executive Director Engineering
 - Bruce Paterson, Director Naval Architecture Fleet Technical
 - James Adams, Project Manager Terminal Construction
 - Scott Elliott, Director Corporate Planning
 - Lesley Hancyk, Manager Financial Planning & Analysis
 - Terry Wright, IPS Consulting
- Subject Matter Experts
 - Megan Caldwell, Regional Manager Terminal Operations
 - Captain Claudio Raduta, Fleet Operations
 - Captain Andrew Weigold, Fleet Operations
 - Darren Johnston Executive Director Fleet Operations
 - Jordan Knutsen Director Terminal Operations

OVERVIEW OF OPTIONS CONSIDERED

Primary Options

1. Expansion of BSC to 64 AEQ
2. Replace BSC with Conventional Vessel ~70 AEQ
3. Supplement BSC (45 AEQ) with a 2nd ship (21 - 47 AEQ)

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4. Supplement BSC (45 AEQ) with a 2nd ship (21 - 47 AEQ)

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5. Supplement BSC (45 AEQ) with a 2nd ship (21 - 47 AEQ)

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Other Options (*eliminated*)

- Replace BSC with existing Conventional Vessel (Quinsam)
- Convert BSC to a Conventional Vessel
- No change to BSC, Operate new route between Hornby and Vancouver Island

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OVERVIEW OF OPTIONS EVALUATION

Criteria Used

- People Workforce
- Reliability and Redundancy
- Flexibility
- Risk
- Future Growth Option
- Financial

Key Assumptions

- Growth – 0.41% to 2% annually Total Vehicles
- ICPH4 availability of relief vessel for Summer Operations for Route 21
- Kahloke remains in fleet until ICPH4 relief vessel is in service
- All BSC options include repowering (but not full electrification of Terminal/Vessel)
- Added seasonal workforce in Options 3,4,5

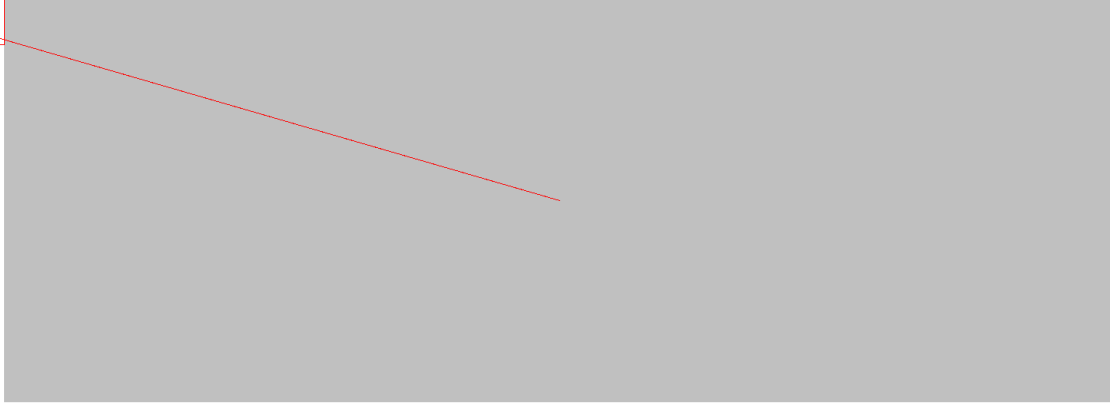
7

OPTION 1 – BSC Expansion

Description:

Expand Baynes Sound Connector from 45 AEQ to 64 AEQ

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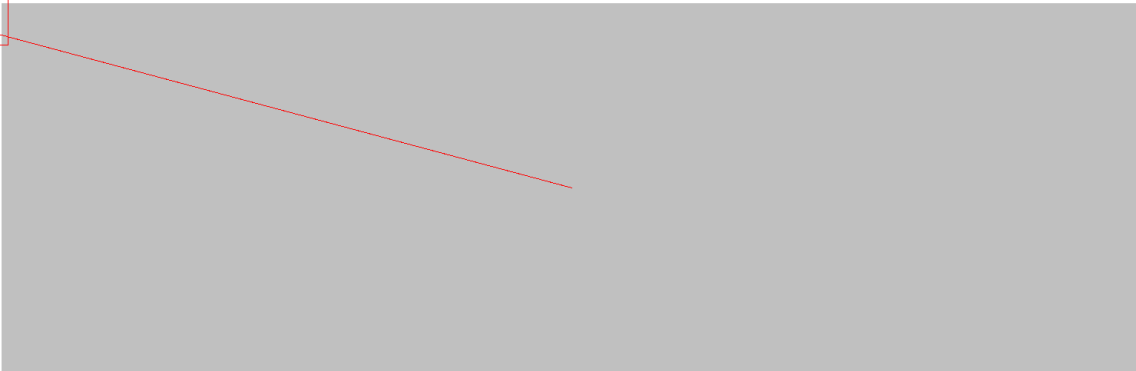
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OPTION 2 – Replace with Conventional Vessel

Description:

Replace Baynes Sound Connector (45 AEQ) with a Conventional Vessel (~70 AEQ)

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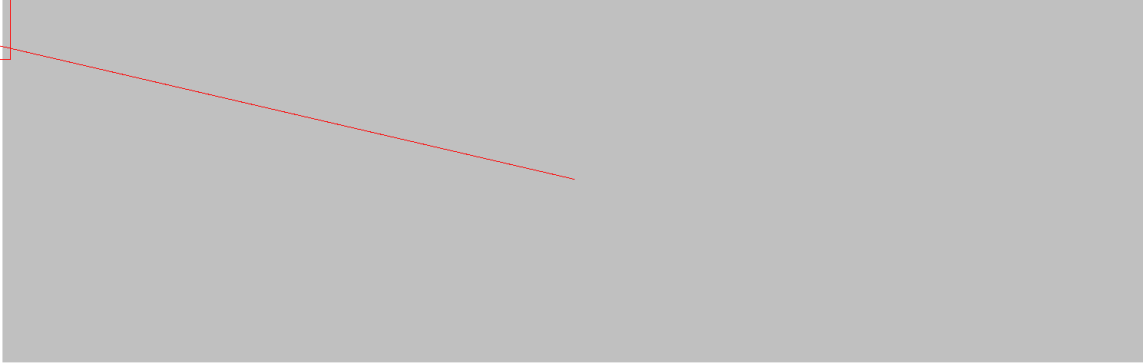
9

OPTION 3

Description:

Maintain Baynes Sound Connector (45 AEq) and support with Supplementary Vessel during peak period - Kahloke (21 AEq) to F2034 and then purchase new Island Class (47 AEq)

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OPTION 4

Description:

Maintain Baynes Sound Connector (45 AEq) and support with Supplementary Vessel during peak period - Kahloke (21 AEq) to F2034 and rely on relief Island Class vessel (47 AEq) for summer peak period only.

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OPTION 5

Description:

Defer Expansion of Baynes Sound Connector until F2034.
 Support route with supplementary vessel during peak periods - Kahloke (21 AEG) to F2034
 and then the relief Island Class vessel (ICPH4 - 47 AEG) for summer peak period only.

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OPTION OVERVIEW s. 13, s. 17

Option	Home Port
1 Expand Baynes Sound Connector from 45 AEG to 64 AEG	Denman Is Buckley Bay (Peak Only)
Available Capacity	Off Peak
15 growth TV	Shoulder
	Peak
2 Replace Baynes Sound Connector (45 AEG) with a Conventional Vessel (~70 AEG)	Denman Is Buckley Bay (Peak Only)
Available Capacity	Off Peak
10 growth TV	Shoulder
	Peak
3 Supplement BSC (45 AEG) with a 2nd ship (21 - 47 AEG) Procure Island Class (F34)	Denman Is Buckley Bay (Peak Only)
Available Capacity	Off Peak
15 growth TV	Shoulder - F27 on BSC Shuttles (3)
	Peak
4 Supplement BSC (45 AEG) with a 2nd ship (21 - 47 AEG) Island Class relief (F34) Peak Only	Denman Is Buckley Bay (Peak Only)
Available Capacity	Off Peak
20 growth TV	Shoulder - F27 on BSC Shuttles (3)
	Peak
5 Expand BSC in F2034, supplement with 2nd ship peak only	Denman Is Buckley Bay (Peak Only)
Available Capacity	Off Peak
15 growth TV	Shoulder
	Peak

RECOMMENDATION

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NEXT STEPS

- Fall review of 2-ship service.
- Fall review of progress made on maintenances and operational outcomes
- Obtain Executive consensus on a recommendation assuming the subject to's are successfully addressed and accepted

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OPTION #1
Expansion of the BSC to 64 AEQ & repowering project

Details:
Expansion of the Baynes Sound Connector from 45 AEQ to 64 AEQ and repowering the vessel to support operational need

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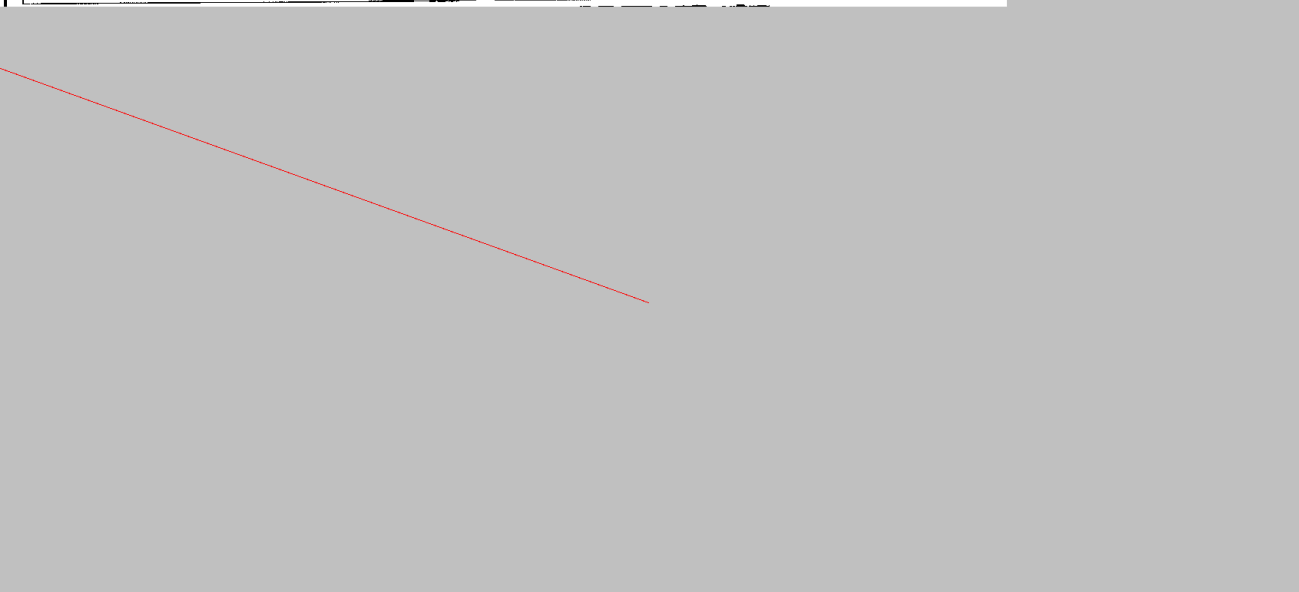


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OPTION #2
Replace BSC with Conventional Vessel ~70 AEQ

Details:
BSC replaced by newly built conventional vessel, unique vessel, BSC sold, cable ferry berths decommissioned

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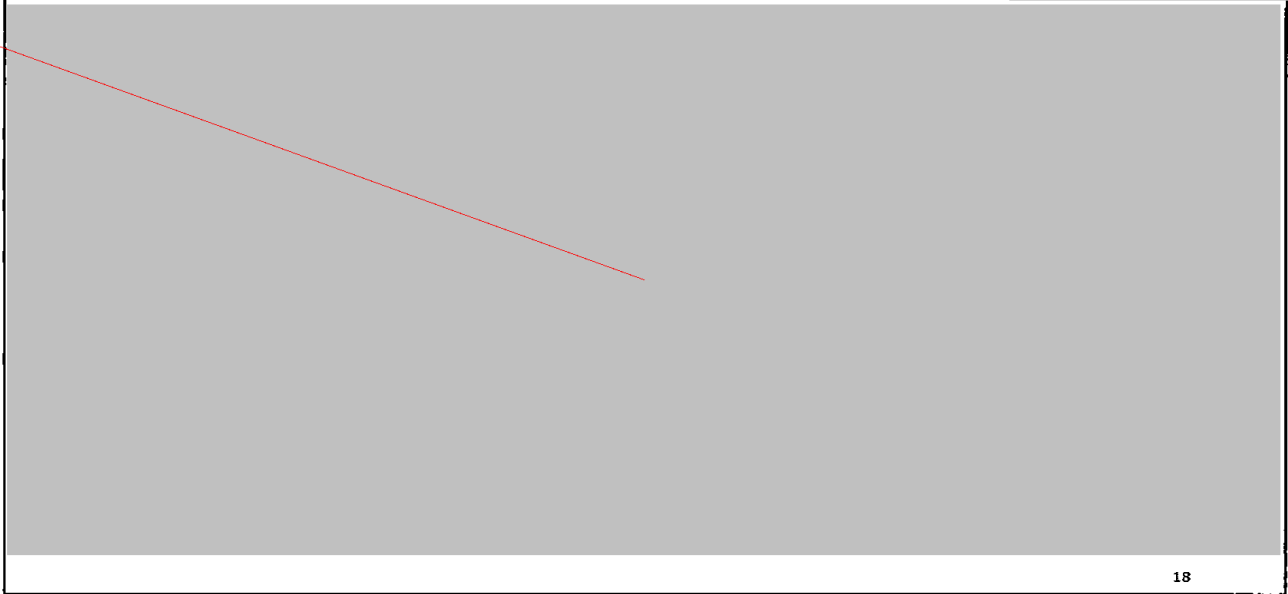
OPTION #3

Supplement BSC (45 AEQ) with a 2nd ship (21 - 47 AEQ)

Details:

Kahloke (21 AEQ) Peak only to F34
Procure an incremental Island Class for post F34 service, supplementary service potential to be provided year-round

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OPTION #4

Supplement BSC (45 AEQ) with a 2nd ship (21 - 47 AEQ)

Details:

No change to BSC
Kahloke (21 AEQ) to supplement until F34
Island Class relief vessel post F34 peak only service

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OPTION #5
Expand BSC in F2034, supplement with 2nd ship peak only

Details:
Repowering and expanding BSC in F2034 should growth require additional capacity

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Two Growth Scenarios – Available Capacity

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FINANCIAL ANALYSIS

s. 13, s. 17

Options	25 Year NPV		Non Discounted Cash Outflows (\$M)		Misc Comments
	Discounted at 7%		to 2026	to 2034	
Option 1: Expansion of BSC to 64 AEQ & Repowering (by F2027)					
Option 2: Replace with Conventional 70 AEQ vessel in F2027					
Option 3: Defer Expansion decision: BSC as is with Kahloke to 2034 and then replace Kah with IC (extra ship build)					
Option 4: Defer Expansion decision: BSC as is with Kahloke to 2034 and then rely on relief IC for summer only (and shuttle in shoulders)					
Option 5: Defer Expansion decision: BSC as is with Kahloke to 2034 and expand BSC and rely on relief IC for summer only (if high traffic increase exceeds shuttle capacity)					
Option 6: Defer Expansion decision: BSC as is with Kahloke to 2034 and expand BSC to full capacity					

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FINANCIAL ANALYSIS – OPTION 1

Option 1: Expansion of BSC to 64 AEQ & Repowering (by F2027)

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Capital - BSC Investment (Repowering & Expansion) in F2026 (30% contingency)
Capital - Denman West Conventional Berth Life Extension in 2024 (Full Highway Legal)
Capital - Denman West Conventional Berth Life Extension in 2027
Capital - Denman West Conventional Berth Full Replacement in 2030
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040
Capital - Buckley Bay TDP Improvements (Brought forward from F2030 to F2026 for larger vessel)
Operating/Capital - BSC Refits every 5 Years (is there any other MLU/QUU investment?) LRMP
Operating - BSC & Cable Annual Maintenance
Operating - Incremental Cable Changeout Costs (post Expansion) of \$60K per yr
Operating - Diesel
BSC Crewing (4)
Incremental Sr. Chief Engineer
Summer Supplemental (Kahloke) Until BSC Expanded
Incremental Crew for Expanded BSC (1)?
Total cash flow
Discounted cash flow

25 Year NPV - Option 1

Non Discounted Cashflow to 2026

Non Discounted Cashflow to 2034

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FINANCIAL ANALYSIS – OPTION 2

Option 2: Replace with Conventional 70 AEQ vessel in F2027

s. 17

Conventional 70 AEQ Ferry Build
Capital - Denman West Conventional Berth Full Replacement in 2026 *Potential ~\$10M less to convert cable ferry berth
Capital - Buckley Bay Conventional Berth Upgrade for Larger Vessel
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040
Capital - Buckley Bay TDP Improvements (Brought forward from F2030 to F2026 for larger vessel)
Capital - Conventional 65 AEQ Ferry QLU (Approx. 2041)
Capital - Conventional 65 AEQ Ferry MLU (just outside of 25 years)
BSC Operating Costs & Kahloke Summer Supplemental through F2026
Operating/Capital - Conventional Refits every 5 Years
Operating - Conventional Annual Maintenance
Operating - Diesel & Urea
Conventional Ferry Crewing (7)(Based on Quinsam on R6 in F2024)
Safe value of BSC? Offset by any cable ferry decommissioning costs?
Residual value of New Build 65 AEQ vessel in 2048
Total cash flow
Discounted cash flow

25 Year NPV - Option 2
 Non Discounted Cashflow to 2026
 Non Discounted Cashflow to 2034

FINANCIAL ANALYSIS – OPTION 3

Option 3: Defer Expansion decision: BSC stays with Kahloke to 2034 and then replace with IC (extra ship build,

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Capital - BSC Investment (Repower Only)
Capital - Denman West Conventional Berth Life Extension in 2024 (Full Highway Legal)
Capital - Denman West Conventional Berth Life Extension in 2027
Capital - Denman West Conventional Berth Full Replacement in 2030
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040
Capital - Buckley Bay TDP Improvements in F2030
Operating/Capital - BSC Refits every 5 Years
Operating - BSC & Cable Annual Maintenance
Operating - Diesel
BSC Crewing (4)
Incremental Sr. Chief Engineer
Summer Supplemental Kahloke) Until 2030 (5 days per wk)
Summer Supplemental Kahloke) post 2030 until retirement (7 days per wk)
Capital - New Island Class Conventional Vessel in F2035
Summer Supplemental with New Island Class (Fuel, Labour)
New Island Class Annual Maintenance (100% allocated)
New Island Class Caretaking out of Peak Season (100% allocated) - 9 months @ \$100K
Capital - Conventional QLU (outside 25 years)
Capital - Conventional MLU (outside the 25 years)
Operating/Capital - Conventional Refits every 5 Years
Residual value of New Build Island Class in 2048
Total cash flow
Discounted cash flow

25 Year NPV - Option 3
 Non Discounted Cashflow to 2026
 Non Discounted Cashflow to 2034

FINANCIAL ANALYSIS – OPTION 4

Option 4: Defer Expansion decision; BSC as is with Kahloke to 2034 and then rely on relief IC for summer only (and shuttle in shouldors)

Capital - BSC Investment (Repower Only)
Capital - Denman West Conventional Berth Life Extension In 2024 (Full Highway Legal)
Capital - Denman West Conventional Berth Life Extension In 2027
Capital - Denman West Conventional Berth Full Replacement In 2030
Capital - Buckley Bay Conventional Berth Life Extensions In 2030 and 2040
Capital - Buckley Bay TDP Improvements In F2030
Operating/Capital - BSC Refits every 5 Years
Operating - BSC & Cable Annual Maintenance
Operating - Diesel
BSC Crewing (4)
Incremental Sr. Chief Engineer
Summer Supplemental (Kahloke) Until 2030 (5 days per wk)
Summer Supplemental (Kahloke) post 2030 until retirement (7 days per wk)
Summer Supplemental (IC) in Summer Only
Shoulder Season Increased BSC Shuttling
Total cash flow
Discounted cash flow

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25 Year NPV - Option 4
 Non Discounted Cashflow to 2026
 Non Discounted Cashflow to 2034

FINANCIAL ANALYSIS – OPTION 5

Option 5: Defer Expansion decision; BSC as is with Kahloke to 2034 and expand BSC and rely on relief IC for summer only (if high traffic increase exceeds shuttle capacity)

Capital - BSC Investment (Repower Only)
Capital - BSC Investment (Expansion)
Capital - Denman West Conventional Berth Life Extension In 2024 (Full Highway Legal)
Capital - Denman West Conventional Berth Life Extension In 2027
Capital - Denman West Conventional Berth Full Replacement In 2030
Capital - Buckley Bay Conventional Berth Life Extensions In 2030 and 2040
Capital - Buckley Bay TDP Improvements In F2030
Operating/Capital - BSC Refits every 5 Years
Operating - BSC Annual Maintenance? Budget is \$650k next year plus the Exempt Chief Engineer
Operating - Incremental Cable Changeout Costs (post Expansion) of \$60K per yr
Operating - Diesel
BSC Crewing (4)
Incremental Sr. Chief Engineer
Summer Supplemental (Kahloke) Until 2030 (5 days per wk)
Summer Supplemental (Kahloke) post 2030 until retirement (7 days per wk)
Incremental Crew for Expanded BSC (1)?
Summer Supplemental (IC) in Summer Only
Shoulder Season Increased BSC Shuttling (Until Expansion)
Total cash flow
Discounted cash flow

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25 Year NPV - Option 5
 Non Discounted Cashflow to 2026
 Non Discounted Cashflow to 2034

Baynes Sound Connector, 45 AEQ, example of **Peak Season** Available Capacity with 2% growth annually

Route	F23	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46
21																								

Option	Details	NPV	Vessel Capital	OpEx Notes	Service Overview	People Workforce	Berth Capital	Reliability and Redundancy	Future Growth Option	Flexibility	Risk
1	Expansion of the BSC to 64 AEQ & repowering project		Repowering scope currently assumes full electrification - using generators rather than batteries/shore infrastructure is another less expensive option, estimate (TBD)	Repowering expected to reduce hydraulics maintenance costs but will also reduce cable life offsetting some of the savings. Minor impact on labour costs.	Primary vessel provides 14 to 17 Round trips daily, with up to 24 Shuttle Round Trips daily. Shuttle frequency will likely be reduced because of increased loading time, resulting in some loss of "increased" capacity during peak season	Expansion of BSC would have minor impact on workforce requirements, with up to 3 incremental positions and crew having simpler qualifications (no licensed officers)	Likely an ongoing need for conventional berths (as well as the BSC berths) to support operations and refits. Denman West conventional berth requires upgrade to support full highway loads and replacement may be required as early as F2030; It's possible that only BSC berths needed if a 'plug' option is viable for conventional vessel use during BSC refits, but this has not been proven viable yet (note that future growth may necessitate conventional berth growth in any event). Modifications to BUCK vehicle holding compound may be required to improve loading efficiency/ achieve target throughput; DENW holding compound may require mods to suit location of lay-by berth.	Not possible to provide certainty that expanded BSC will prove to be more reliable however new power systems should help; simple vessel, should be low complexity with exception of electrification component. Also may be possible to use hydraulics as well but this has to be explored. Cable ferry has no interoperability with rest of BCF fleet. Growth means adding conventional ship during peak periods (or replacing with larger cable ferry.	BSC not expandable again (gallery decks or additional length not practical). Increased capacity would need to come from adding conventional ship in Peak season and enhanced shuttle mode and longer operating days in non peak season. Adding conventional ship during peak season adds operating costs and requires conventional berths - on top of the 'expansion' costs which would be avoided as 'adding ship' is full solution in its own right (don't quite follow this statement)	Some capacity gain possible during peak operations through shuttling. Capacity gain in shuttling mode uncertain as speed and loading will affect throughput, i.e. slower loading will reduce round trips and offset capacity gains during shuttling operations- very reliant on electrification and solution to braking issues to shorten transit times to offset increased loading times. The relatively short transit time means increased loading/unloading time is a bigger factor in predicting overall capacity gain during shuttling operations	Uncertain capital expenditure estimate given early stage of design development and uncertainty in local shipyard pricing pressures. Overall track record of cost escalation for expansion projects is an issue. Capacity and throughput risk during shuttling operations; Performance and reliability risk given past challenges with BSC (these should be mitigated by repowering and revised maintenance strategy) Potential requirement to add conventional ship if peak season growth continues at the pace of the last three years.

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DEPLOYMENT PLAN

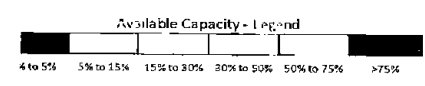
Rte	Position	Home Port	F2027	F2028	F2029	F2030	F2031	F2032	F2033	F2034	F2035	F2036	F2037	F2038	F2039	F2040	F2041	F2042	F2043	F2044	F2045	F2046
21	#1	Denman Island	Expanded BSC																			

AVAILABLE CAPACITY - PEAK SEASON (approx June)

Example of 2% annual growth

Route	F23	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46
21																								

Increased capacity introduced



Baynes Sound Connector, 45 AEQ, example of **Peak Season** Available Capacity with 2% growth annually

Route	F23	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46
21																								

Option	Details	NPV	Vessel Capital	OpEx Notes	Service Overview	People Workforce	Berth Capital	Reliability and Redundancy	Future Growth Option	Flexibility	Risk
2	Replace with Conventional Ship	70- 75 AEQ Connector	Capital cost estimate is based in recent experience but is order of magnitude only.	Operating expense would be much higher given the size of crew and increased fuel use	Single vessel operation 14 to 17 RT's daily. Shuttling remains viable during peak periods and historically a conventional ferry (Quintsa) has outperformed the 50 AEQ BSC - however estimate for improvements (75 AEQ conventional over 64 AEQ BSC) is tempered by longer in-port time.	Conventional vessel requires high qualified crew (3 licensed Master, Mate, Chief Engineer) with an incremental workforce of 9 positions (3 per watch). If a second ship was required in the future it would necessitate double the higher qualified positions (and up to 10 more positions - 5 per watch X 2 watches)	Would require 1 set of conventional berths. Rebuild of Denman West berth would be accelerated to coincide with in service date of new vessel. Increased displacement of conventional ferry may impact berth structure costs. Further engineering review required to determine if BSC berths are convertible, particularly at DenW where water depth and wind exposure may not be suitable for conversion; Modifications to BUCK vehicle holding compound may be required to improve loading efficiency/ achieve target throughput; DENW holding compound may require mods to suit location of lay-by berth. (DW or BB where would crews be)	Conventional ships reliability is more predictable and maintenance regimes are well established. Conventional vessel would be interoperable with BCF fleet.	Future growth could be offset by shuttling in peak periods and increase in operating hours and shuttling in off peak periods. Significant growth above current forecasts could necessitate a two ship operation.	Capacity gain in Peak season uncertain as speed and loading may affect throughput, i.e. slower loading/unloading will reduce round trips and offset capacity gains; Uncertain as to whether conventional vessel can shorten transit times as acceleration less than cable ferry but braking better than cable ferry; Existing conventional ferry berths are angled to holding compound, increasing loading/discharge times vs BSC berths	Conventional vessel build more certain however cost estimate is only order of magnitude. Class risk as size makes this a unique conventional vessel. Capacity and throughput risk during peak periods may require supplemental ship. Performance more certain.

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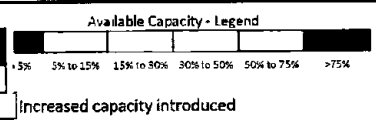
DEPLOYMENT PLAN

Rte	Position	Home Port	F2027	F2028	F2029	F2030	F2031	F2032	F2033	F2034	F2035	F2036	F2037	F2038	F2039	F2040	F2041	F2042	F2043	F2044	F2045	F2046
21	#1	Denman Island	BSC	Quinsam										NEW CONVENTIONAL VESSEL								

AVAILABLE CAPACITY - PEAK SEASON

Example of 2% annual growth 63 AEQ

Route	F23	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46
21																								



Baynes Sound Connector, 45 AEQ, example of **Peak Season** Available Capacity with 2% growth annually

Route	F23	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46
21																								

Option	Details	NPV	Vessel Capital	OpEx Notes	Service Overview	People Workforce	Berth Capital	Reliability and Redundancy	Future Growth Option	Flexibility	Risk
3 Defer Expansion - Existing BSC with Supplementary Vessel during peak period- Kahloke to F2034 and then purchase new Island Class	BSC - (with or without repowering project)		Post F2034 purchase of additional Island Class vessel. BSC may need repowering but new maintenance approach may alleviate need. Braking and cooling solutions required but may not need capital	Higher costs during peak period to operate Kahloke. Using estimates approved for summer 2023 operation.	BSC operating 14 to 17 RT's daily plus shuttling during peak periods. Secondary vessel operating 10 RT's daily, peak only. Risk of berth conflicts due to delays with one vessel (10 min cycle) could have negative impact on throughput. Summer 2023 will reveal scope of issue	Conventional vessel requires incremental workforce of 10 positions on Kahloke with higher qualifications for licensed officers.	Mandates an ongoing need for conventional berths (as well as the BSC berths) to support operations and refits. Denman West conventional berth requires upgrade to support full highway loads and replacement may be required as early as F2030; Modifications to BUCK vehicle holding compound may be required to improve loading efficiency/ achieve target throughput; DENW holding compound may require mods to suit location of lay-by berth.	Two ship operation increased reliability and redundancy. Availability of conventional berths increases redundancy. Repowering, hull coating and maintenance regime changes should give higher reliability of BSC	Capacity expansion could be realized through longer day for 2nd ship during peak periods, shuttling both ships during peak periods and shuttling/longer hours for BSC during non peak periods and extending use of second vessel during non peak period	Increased flexibility through shuttling on 2 ships; longer operating on 2nd ship; extending operational period of 2nd ship, replace 2nd ship with larger CV; BSC expansion still available	Conventional vessel build more certain but also more expensive.
	2nd ship operating seasonally during peak period		No incremental capital cost until F2034 by using Kahloke during peak period to F2034.	s. 13							

s. 13

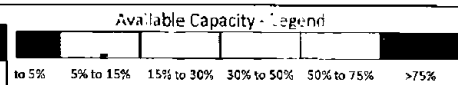
DEPLOYMENT PLAN

Rte	Position	Home Port	F2027	F2028	F2029	F2030	F2031	F2032	F2033	F2034	F2035	F2036	F2037	F2038	F2039	F2040	F2041	F2042	F2043	F2044	F2045	F2046
21	#1	Denman Island	Baynes Sound Connector																			
21	#2	Buckley Bay	Kahloke NEW SEASONALLY DEPLOYED Island Class																			

AVAILABLE CAPACITY - PEAK SEASON

Example of 2% annual growth
21 AEQ Kahloke,
47 AEQ New

Route	F23	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46
21																								



Increased capacity introduced

Baynes Sound Connector, 45 AEQ, example of **Peak Season** Available Capacity with 2% growth annually

Route	F23	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46
21																								

Option	Details	NPV	Vessel Capital	OpEx Notes	Service Overview	People Workforce	Berth Capital	Reliability and Redundancy	Future Growth Option	Flexibility	Risk
4 Defer Expansion - Existing BSC with Supplementary Vessel during peak period- Kahloke to F2034 and then rely on relief Island Class vessel for summer peak period only.	Repowering BSC (only if required, see note above)		No incremental capital for new vessels. BSC may need repowering but new maintenance approach may alleviate need. Braking and cooling solutions required but may not need capital No incremental capital cost until F2034 by using Kahloke during peak period to F2034.	Increased operating costs of second vessel. s. 13	BSC operating 14 to 17 RT's daily plus shuttling during peak periods. Secondary vessel operating 10 RT's daily, peak only. Risk of berth conflicts due to delays with one vessel (10 min cycle) could have negative impact on throughput. Summer 2023 will reveal scope of issue	Conventional vessel requires incremental workforce of 10 positions on Kahloke with higher qualifications for licensed officers.	Mandates an ongoing need for conventional berths (as well as the BSC berths) to support operations and refits. Denman West conventional berth requires upgrade to support full highway loads and replacement may be required as early as F2030; Modifications to BUCK vehicle holding compound may be required to improve loading efficiency/ achieve target throughput; DENW holding compound may require mods to suit location of lay-by berth.	Two ship operation increased reliability and redundancy. Availability of conventional berths increases redundancy. Repowering, hull coating and maintenance regime changes should give higher reliability of BSC ?? Refit should include guide sheave and bulkwark mods to extend Operational weather window (contact between apron and ship currently limits berthing) ?? not sure what this is for PS	Capacity expansion could be realized through longer day for 2nd ship during peak periods, shuttling both ships during peak periods and shuttling/longer hours for BSC during non peak periods and future expansion of BSC	Increased flexibility through shuttling on 2 ships; longer operating on 2nd ship; extending operational period of 2nd ship, replace 2nd ship with larger CV; BSC expansion still available s. 13	s. 13 Flexibility for unexpected growth. New management challenge of two ship operation, offset in part by two berth configuration in both ports.

DEPLOYMENT PLAN

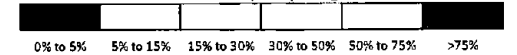
Rte	Position	Home Port	F2027	F2028	F2029	F2030
21	#1	Denman Island	BSC			
21	#2	Buckley Bay	Kahloke			

AVAILABLE CAPACITY - PEAK SEASON

Route	F23	F24	F25	F26	F27	F28	F29	F30
21								

Increased capacity introduced

Available Capacity - Legend



Baynes Sound Connector, 45 AEQ, example of **Peak Season** Available Capacity with 2% growth annually

Route	F23	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46
21																								

Option	Details	NPV	Vessel Capital	OpEx Notes	Service Overview	People Workforce	Berth Capital	Reliability and Redundancy	Future Growth Option	Flexibility	Risk
5 Defer Expansion - Existing BSC and complete expansion in F2034 with Supplementary Vessel during peak period- Kahloke to F2034 and then rely on relief Island Class vessel for summer peak period only.	Repowering and expanding BSC in F2034 should require additional capacity		Future BSC expansion and repowering - scope of repowering still to be finalized. BSC may need repowering prior to expansion but new maintenance approach may alleviate need. Braking and cooling solutions required ASAP but may not need capital No incremental capital cost until F2034 by using Kahloke during peak period to F2034.	Increased operating costs of second vessel. s. 13	BSC operating 14 to 17 RT's daily plus shuttling during peak periods. Secondary vessel operating 10 RT's daily, peak only. Risk of berth conflicts due to delays with one vessel (10 min cycle) could have negative impact on throughput. Summer 2023 will reveal scope of issue	Conventional vessel requires incremental workforce of 10 positions on Kahloke with higher qualifications for licensed officers.	Mandates an ongoing need for conventional berths (as well as the BSC berths) to support operations and refits. Denman West conventional berth requires upgrade to support full highway loads and replacement may be required as early as F2030; Modifications to BUCK vehicle holding compound may be required to improve loading efficiency/ achieve target throughput; DENW holding compound may require mods to suit location of lay-by berth.	Two ship operation increased reliability and redundancy. Availability of conventional berths increases redundancy. Expansion of BSC would address repowering, hull coating and maintenance regime. ?? Refit should include guide sheave and bulkwark mods to extend Operational weather window (contact between apron and ship currently limits berthing) ??	Capacity expansion could be realized through longer day for 2nd ship during peak periods, shuttling both ships during peak periods and shuttling/longer hours for BSC during non peak periods and future expansion of BSC to cover growth in non peak periods	Increased flexibility through shuttling on 2 ships; longer operating on 2nd ship; extending operational period of 2nd ship, BSC expansion as growth dictates s. 13	Flexibility for unexpected growth. New management challenge of two ship operation, offset in part by two berth configuration in both ports.

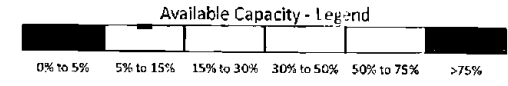
DEPLOYMENT PLAN

Rte	Position	Home Port	F2027	F2028	F2029	F2030
21	#1	Denman Island	BSC			
21	#2	Buckley Bay	Kahloke			

AVAILABLE CAPACITY - PEAK SEASON

Route	F23	F24	F25	F26	F27	F28	F29	F30
21								

Increased capacity introduced



Rasmussen, Shauna

From: Simpson, Peter
Sent: January 12, 2023 4:41 PM
To: Elliott, Scott
Cc: Terry Wright; Doyle, Joanne; Hancyk, Lesley
Subject: RE: Komo Gway - Updated Options/NPVs
Attachments: RE: BSC Expansion Project

Hi Scott

That makes sense to me. I've attached the full document on breakdown as provided by Sam Amuson for you do double check against.

Peter

From: Elliott, Scott
Sent: January 12, 2023 3:50 PM
To: Simpson, Peter
Cc: Terry Wright ; Doyle, Joanne ; Hancyk, Lesley
Subject: RE: Komo Gway - Updated Options/NPVs

Hi Peter, I just need a bit of clarity from you or others on the best high level figures to reflect in the NPV once taking out the battery electric piece.

For this latest version, I had high level & rounded estimates of [redacted] for repowering/electrification (vessel and shoreside combined) and [redacted] for BSC expansion. This added up to [redacted]. I then added another [redacted] to those estimates, based on another note from you, which brought the total up to [redacted]. For simplicity, in the options where the two pieces were broken out separately, I just added a simple [redacted] to each so [redacted] for repowering/electrification and then [redacted] for BSC expansion.

Your note below has a different set of figures for the repowering/electrification. [redacted] I am guessing that is effectively the [redacted] figure that I then added another [redacted] to.

How about I take just the vessel \$ below of [redacted] add another [redacted] contingency, taking it to [redacted] and run with that [redacted] figure for the BSC repowering (seems very conservative if we aren't going battery operated). For the BSC expansion, I keep the [redacted] figure I currently have. So...the combined option now totals [redacted] (compared to the previous [redacted]).

Does that make sense?

Thanks,
Scott.

From: Simpson, Peter <Peter.Simpson@bcferries.com>
Sent: January 11, 2023 10:51 AM
To: Elliott, Scott <scott.elliott@bcferries.com>; Terry Wright <terry.wright@ipsconsulting.ca>; Doyle, Joanne <Joanne.Doyle@bcferries.com>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>
Subject: RE: Komo Gway - Updated Options/NPVs

Hi Scott – thanks for this, very clear and concise. Some follow up.

s. 13

- Based on the our discussion with Engineering/Bruce P, our thinking is that [redacted]

According to Sam Amusan

s. 17

Terminal (Including Contingency)	[redacted]
Vessel (Including Contingency)	[redacted]

s. 17

- Under Option 2 Conventional ferry there is both QLU and 5 year refit costs [redacted] total) in F2041 – have these been double counted or are they truly separate items – please advise
- Under Options with Kahloke summer service the costing for 5 day service is [redacted] which then rises to [redacted] for 7 day – checking on what changed, e.g. the new added Sr Chief Engineer can sail Kahloke in summer or...?

s. 17

s. 17

s. 17

Thanks again, talk soon
Peter

From: Elliott, Scott <scott.elliott@bcferries.com>

Sent: January 10, 2023 5:05 PM

To: Simpson, Peter <Peter.Simpson@bcferries.com>; Terry Wright <terry.wright@ipsconsulting.ca>; Doyle, Joanne <Joanne.Doyle@bcferries.com>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>

Subject: Komo Gway - Updated Options/NPVs

Hi all, I have realigned the options and made quite a few updates to the NPV analysis based on what I believe is the latest and greatest (from Peter, Joanne, James, and my team on the Opex side).

While lots of tweaks have been made, the overall results are quite similar with Options 1, 4, and 5 having 25 year NPVs very close to one another (somewhat depending on how much contingency gets attached to the assumed cost of the cable ferry expansion/electrification/repowering) while the NPVs for two options that involve building conventional vessels are significantly worse.

s. 13, s. 17

Let me know if we should have a meeting to walk through this. I'd also appreciate a few more sets of eyes on it as I caught a few minor errors/inconsistencies between the options today.

Regards,
Scott.

From: [Weigold, Andrew](#)
To: [Doyle, Joanne](#)
Subject: FW: Timing
Date: January 15, 2023 3:05:52 PM
Attachments: [Denman West TraCR Jan 13 2023 AM.pdf](#)
[Denman West TraCR Jan 14 2023 AM.pdf](#)
[Denman West TraCR Jan 15 2023 AM.pdf](#)

Hi Joanne,

Here were the times over the weekend, traffic is still at 50% so I think it's safe to double the numbers for peak traffic.

Regards,

Andy Weigold
Sr. Master, Route 17, Salish Class
Sr. Master, Route 21, Baynes Sound Connector
British Columbia Ferry Services Inc.
1300 Ellenor Rd., Comox, BC, V9M 4B3
C: [REDACTED]
Andrew.Weigold@bcferries.com
bcferries.com

s. 15, 19

From: Ireland, Steve <Steve.Ireland@bcferries.com>
Sent: January 15, 2023 1:41 PM
To: Weigold, Andrew <Andrew.Weigold@bcferries.com>
Subject: RE: Timing

OK Andy, I've got enough sample now to be confident in these numbers. #3 swings the widest, as the interval depends on how/if walk-ons are spaced out between unload and next load. The other three are quite consistent.

TracR attached for the three survey days, Denman West only. I've measured both sides, I don't see a significant difference between the two terminals. The biggest variations come from crew practice and the walk-ons factor:

1. **44 sec** (ranging 28-56)
2. **12** (8-20)
3. **27** (15-43)
4. **59** (44-83)

Steve Ireland
ASTO Operator / Relief Lead Operator
Baynes Sound Connector, Route 21

From: Weigold, Andrew <Andrew.Weigold@bcferries.com>
Sent: January 13, 2023 1:44 PM
To: Ireland, Steve <Steve.Ireland@bcferries.com>
Subject: RE: Timing

If you could send me today's with traffic stats and I'll share it with strategic planning with the caveat for more numbers to come that represent different conditions.

Andy

Sent with BlackBerry Work
(www.blackberry.com)

From: Ireland, Steve <Steve.Ireland@bcferries.com>
Date: Friday, Jan 13, 2023 at 1:31 PM
To: Weigold, Andrew <Andrew.Weigold@bcferries.com>
Subject: RE: Timing


OK, collecting times today – could I also do this Sat. & Sun AMs, to get us better averages? There's a wide swing on #3 especially, due to variables. I'd have it ready Sunday.

By Tracer, do you mean just attach the traffic stats form these watches? Maybe you'd like to know specifically which sailing is related to each time interval?

Steve

From: Weigold, Andrew <Andrew.Weigold@bcferries.com>
Sent: January 12, 2023 4:04 PM
To: Ireland, Steve <Steve.Ireland@bcferries.com>
Subject: RE: Timing

Can you include the tracer when you run the numbers

Andy Weigold
Sr. Master, Route 17, Salish Class
Sr. Master, Route 21, Baynes Sound Connector
British Columbia Ferry Services Inc.
C: 
Andrew.Weigold@bcferries.com

s. 15, 19

From: Ireland, Steve <Steve.Ireland@bcferries.com>
Sent: January 12, 2023 2:05 PM
To: Weigold, Andrew <Andrew.Weigold@bcferries.com>
Subject: RE: Timing

A snapshot from just now at BBay:

1. 35
2. 10
3. 29
4. 54

I can do this through tomorrow and get a better sense with averages.

Steve

From: Weigold, Andrew <Andrew.Weigold@bcferries.com>

Sent: January 12, 2023 1:51 PM

To: Ireland, Steve <Steve.Ireland@bcferries.com>

Subject: Timing

Can you time a couple things for me as close as possible to the second. It's for assessing how much time we will take with a bigger cable ferry.

1. Time from in dock until passengers start walking off.
2. Time from closing footsie gate to rolling passengers
3. Once LVO time to start loading again from when the last vehicle is on the apron.
4. Time from last vehicle onboard to departure.

Thanks

Andy

Sent with BlackBerry Work
(www.blackberry.com)

From: [Doyle, Joanne](#)
To: ["Terry Wright"](#)
Cc: [Simpson, Peter](#)
Subject: RE: Slide Content
Date: January 16, 2023 1:11:00 PM

Great, thank you will update slide deck. Hope you are having a great time in Whistler!

From: Terry Wright <terry.wright@ipsconsulting.ca>
Sent: January 16, 2023 8:57 AM
To: Doyle, Joanne <Joanne.Doyle@bcferries.com>
Cc: Simpson, Peter <Peter.Simpson@bcferries.com>
Subject: [EXTERNAL] Slide Content

CAUTION: This email originated from outside of BC Ferries. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Joanne

As promised here is my suggested content for the first two slides:

Purpose of the Presentation:

- Provide BCF Executive with options and a recommendation in respect to the BSC
- Provide BCF Executive with an overview of the work undertaken to develop and evaluate the options

Current Situation:

- Higher than expected growth on Route 21 has resulted in a need for increased capacity during the peak summer season
- The increased capacity will be met in the short term by the use of the Kahloke to supplement summer service
- While the BSC has a good reliability record there are a number of unresolved issues currently being managed:
 - Overheating of the hydraulic motors
 - Bolt cracking on the fly wheel
 - Inability to use the dynamic braking system
 - Hull fouling
- Management of these issues has recently been shifted to Fleet Engineering
- Conventional berths at the Denman West terminal have a limited life expectancy

Rasmussen, Shauna

From: Elliott, Scott
Sent: January 17, 2023 2:53 PM
To: Carpendale, Joanne
Subject: FW: Komo Gway NPV
Attachments: Komo Gway Options NPV V5 (Jan 12).xlsx

Hi Joanne,
Attached is the Komo Gway NPV analysis that Lesley and I showed you on Monday.

Regards,
Scott.

From: Elliott, Scott
Sent: January 17, 2023 2:51 PM
To: Simpson, Peter ; Doyle, Joanne ; 'Terry Wright' ; Hancyk, Lesley
Subject: Komo Gway NPV

Hi Peter and co,
Attached is the latest version of the NPV analysis. Yesterday, Lesley and I walked Joanne through this at a high level so the meeting next Monday won't be the first she has seen it.

A reminder I will be on vacation until January 30th but Lesley is familiar and will represent Finance on this while I am away.

Regards,
Scott.

s. 17

Options	Non Discounted Cash Outflows (\$M)		25 Year NPV Discounted at 7%	Misc Comments
	to 2026	to 2034		
Option 1: Expansion of BSC to 64 AEQ & Repowering (by F2027)				Base option in capital plan but with electrification removed. The BSC expansion & repowering cost is assumed to be [redacted] contingency on latest cost estimate)
Option 2: Replace with Conventional 65 AEQ vessel in F2027				Expensive to build and operate a new 65 AEQ conventional vessel
Option 3: Defer Expansion decision: BSC as is with Kahloke to 2034 and then replace Kah with IC (extra ship build)				Becomes an expensive/unrealistic option if an incremental Island Class is constructed to serve as the supplemental vessel (in peak + season) upon the Kahloke's retirement. Also, incurs caretaking costs remainder of year
Option 4: Defer Expansion decision: BSC as is with Kahloke to 2034 and then rely on relief IC for summer only (and shuttle in shoulders)				Defers near term decision on the BSC expansion but is partially offset by the higher incremental operating cost of the supplementary vessel. NPV is starting to look better than option 1 (in part due to increased contingency on cable ferry expansion/repowering in Option 1 and a reduced cost on Kahloke summer supplemental service that Option 4 benefits from). Requires a relief IC vessel from the IC Phase 4 build program that is effectively surplus in the summer period (cost to acquire vessel and maintain outside of the peak season not included in this option).
Option 5: Defer Expansion decision: BSC as is with Kahloke to 2034 and expand BSC and rely on relief IC for summer only (if high traffic increase exceeds shuttle capacity)				Interesting high capacity option if peak season traffic continues with a high growth scenario. In 2034, there is both an IC supplemental in the peak and a year round expanded cable ferry.
Option 5b: Defer Expansion decision: BSC as is with Kahloke to 2034 and expand B at that time,				Essentially Option 5 without operating a summer supplemental vessel after Kahloke retirement and cable ferry expansion in 2034

s. 17

From: Terry Wright
To: Simpson, Peter; Doyle, Joanne
Subject: [EXTERNAL] RE: BSC Review Jan 2023 v1 spjedit.pptx
Date: January 19, 2023 1:48:06 PM

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Hi

Sorry, I pushed send by accident. I have noted my comments to Peter's comments in red below

It seems that we may have a disagreement on repowering between Stephen and Bruce – when you read their comments on the recommendations slide. We will have to be sure we cover off these views in our presentation – even if we don't change the slide

See you tomorrow – as mentioned I will come down around 1015 and will need the use of a space until 1130 to do a board call if that is ok

Thx

From: Terry Wright
Sent: January 19, 2023 1:44 PM
To: Simpson, Peter <Peter.Simpson@bcferries.com>; Doyle, Joanne <Joanne.Doyle@bcferries.com>
Subject: RE: BSC Review Jan 2023 v1 spjedit.pptx

From: Simpson, Peter <Peter.Simpson@bcferries.com>
Sent: January 19, 2023 11:51 AM
To: Terry Wright <terry.wright@ipsconsulting.ca>; Doyle, Joanne <Joanne.Doyle@bcferries.com>
Subject: FW: BSC Review Jan 2023 v1 spjedit.pptx

Please see attached input. For your comments.

My comments on their input:

SJ – remove braking comment; seems okay given the comment in blue I am ok

SJ – maintenance going to Engineering – not technically current but okay to add agreed

SJ – not understanding line: the 12 min transit is today but is being address (stated in sub-bullet);

the assumption is that any future transit issues will be the same for BSC or BSC-E – [REDACTED]

s. 13

[REDACTED]

BP - what are assumptions? Included in the NPV analysis – assumption is it will cost more in the future – s. 13 [REDACTED]

[REDACTED]

why

Re BP comments in his email.

- The NPV is part of the rationale – the uncertainty of 2 ship service is addressed (Next Steps) and the other part of the rationale is the uncertainty on Expansion costs and performance.
- Escalating shipyard costs re deferral – check with Lesley these were included in NPV – the s. 13 [REDACTED]
- Recommendation of Deferral options is 'subject to' the Sept reviews – don't change but let Bruce know that will address his concern Agreed

From: Paterson, Bruce <Bruce.Paterson@bcferries.com>

Sent: January 19, 2023 11:01 AM

To: Simpson, Peter <Peter.Simpson@bcferries.com>

Cc: Jones, Stephen <Stephen.Jones@bcferries.com>; Bajwa, Karan <Karan.Bajwa@bcferries.com>

Subject: RE: BSC Review Jan 2023 v1 spjedit.pptx

Peter,

s. 13

Attached is the presentation with input from Steve (in red) and me (in blue). My particular discomfort was and is [REDACTED]

Bruce Paterson, P.Eng, M.Eng

Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.

Tel: (250) 978-1385

Cell: [REDACTED]

s. 15, 19

Fax: (250) 978-1166

bruce.paterson@bcferries.com

www.bcferries.com

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From: Jones, Stephen <Stephen.Jones@bcferries.com>

Sent: January 19, 2023 7:20 AM

To: Paterson, Bruce <Bruce.Paterson@bcferries.com>

Subject: BSC Review Jan 2023 v1 spjedit.pptx

Bruce,

I have already reviewed and commented on the attached document.

Suggest you review it and add your comments to this one and then get it to Peter, rather than us sending in separate reviews.

Karan, pls also review this today.

Thanks,

Steve

Stephen Jones

Executive Director, Engineering

British Columbia Ferry Services Inc.

C: [REDACTED] s. 15, 19

stephen.jones@bcferries.com

bcferries.com

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Rasmussen, Shauna

From: Adams, James
Sent: January 19, 2023 1:53 PM
To: Simpson, Peter; Doyle, Joanne; Jones, Stephen; Paterson, Bruce; Elliott, Scott; Hancyk, Lesley; Terry Wright
Subject: RE: Komo Gway
Attachments: BSC Review Jan 2023 v1_JA Edits.pptx

Sensitivity: Confidential

Hi Peter,

See attached in red font for several minor suggested edits on pages 3 and 4.

s. 13, s. 17

Regards,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** [REDACTED] **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

s. 15, 19

From: Simpson, Peter <Peter.Simpson@bcferries.com>
Sent: January 18, 2023 5:04 PM
To: Doyle, Joanne <Joanne.Doyle@bcferries.com>; Jones, Stephen <Stephen.Jones@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Adams, James <James.Adams@bcferries.com>; Elliott, Scott <scott.elliott@bcferries.com>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>; Terry Wright <terry.wright@ipsconsulting.ca>
Subject: Komo Gway
Importance: High
Sensitivity: Confidential

Please find attached the PPT we intend to present to the executive on January 23 (we will forward to them on Friday). Please advise by end of day Thursday if you see any inaccuracies that need to be corrected.

Thanks
Peter

Peter Simpson
Director, Fleet Operations Strategy
Strategy and Community Engagement
British Columbia Ferry Services Inc.
Suite 500, 1321 Blansard Street, Victoria, BC
T: 250.978.1163 **C:** [REDACTED]

s. 15, 19

peter.simpson@bcferries.com
bcferries.com

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Rasmussen, Shauna

From: Paterson, Bruce
Sent: January 19, 2023 1:58 PM
To: Adams, James
Subject: FW: BSC Review Jan 2023 v1 spjedit.pptx
Attachments: BSC Review Jan 2023 v1 spj_RBPedit.pptx

FYI – this was my take on things....

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
Tel: (250) 978-1385
Cell: [REDACTED] s. 15, 19
Fax: (250) 978-1166
bruce.paterson@bcferries.com
www.bcferries.com
Safety and Operational Readiness

Notes:

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From: Paterson, Bruce
Sent: January 19, 2023 11:00 AM
To: peter.simpson@bcferries.com
Cc: Stephen Jones (Stephen.Jones@bcferries.com) <Stephen.Jones@bcferries.com>; Karan Bajwa (Karan.Bajwa@bcferries.com) <Karan.Bajwa@bcferries.com>
Subject: RE: BSC Review Jan 2023 v1 spjedit.pptx

Peter,

s. 13

Attached is the presentation with input from Steve (in red) and me (in blue). My particular discomfort was and is [REDACTED]

[REDACTED]

Bruce Paterson, P.Eng, M.Eng
Director, Naval Architecture, Engineering British Columbia Ferry Services Inc.
Tel: (250) 978-1385
Cell: [REDACTED] s. 15, 19
Fax: (250) 978-1166
bruce.paterson@bcferries.com
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From: Jones, Stephen <Stephen.Jones@bcferries.com>
Sent: January 19, 2023 7:20 AM
To: Paterson, Bruce <Bruce.Paterson@bcferries.com>
Subject: BSC Review Jan 2023 v1 spjedit.pptx

Bruce,
I have already reviewed and commented on the attached document.
Suggest you review it and add your comments to this one and then get it to Peter, rather than us sending in separate reviews.

Karan, pls also review this today.
Thanks,
Steve

Stephen Jones
Executive Director, Engineering
British Columbia Ferry Services Inc.
C: s. 15, 19
stephen.jones@bcferries.com
bcferries.com

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Baynes Sound Connector Review

Executive Update

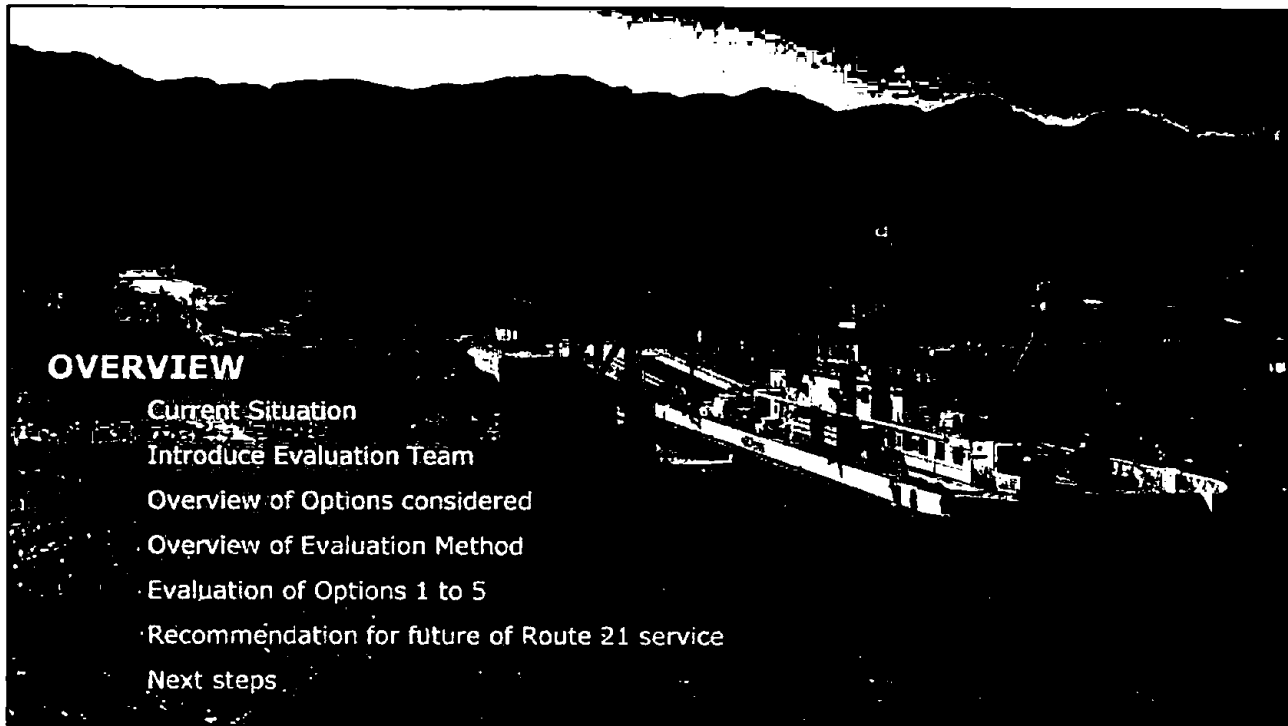
January 23, 2023



PURPOSE

- Provide BCF Executive with options and a recommendation in respect to the BSC
- Provide BCF Executive with an overview of the work undertaken to develop and evaluate the options





CURRENT SITUATION

- Higher than expected growth on Route 21 has resulted in a need for increased capacity during the peak summer season
- The increased capacity will be met in the short term by the use of the Kahloke to supplement summer service
- While the BSC has a good reliability record there are a number of unresolved issues currently being managed:
 - Overheating of the hydraulic motors
 - Bolt cracking on the Bull-wheel (also impacting utilization of new brake system)
 - Hull fouling slowing crossing times
- Maintenance responsibility for the BSC is transitioning to Fleet Engineering Apr 1, 2023
- Conventional berths at the Denman West terminal have a limited life expectancy

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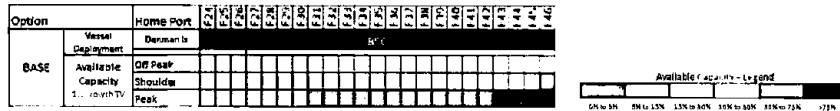
Slide 4



WHY?

Traffic levels from Route 22 exceed capacity in the summer

- Quinitisa deployment at Hornby increases AEQ throughput onto Route 21
 - 44 AEQ Route 22 ship will create 'pulses' of traffic arriving at Denman West at same time Denman based traffic is travelling
- Combination of Route 21 demand & larger 'pulses' of Route 22 demand will cause lineups back into the village at top of hill; overwhelm the intersection and create potentially unsafe and unmanageable traffic convergence



Transit times for Route 21 are interdependent with capacity offered while shuttling

- Currently achieving 12 minute transits is reducing benefits of shuttling
 - Require improved transit times (maintenance and powering solutions in progress)
- Expansion of BSC (to 64AEQ) requires longer in-port times, off-setting 40% increase in capacity to best case estimate of 20% (during shuttling mode assuming same transits btw BSC & Expanded BSC)

s. 13

[Redacted text]

EVALUATION TEAM

- Primary Team
 - Peter Simpson, Director Fleet Operations Strategy
 - Joanne Doyle, Manager Fleet Strategic Planning
 - Stephen Jones, Executive Director Engineering
 - Bruce Paterson, Director Naval Architecture Fleet Technical
 - James Adams, Project Manager Terminal Construction
 - Scott Elliott, Director Corporate Planning
 - Lesley Hancyk, Manager Financial Planning & Analysis
 - Terry Wright, IPS Consulting
- Subject Matter Experts
 - Megan Caldwell, Regional Manager Terminal Operations
 - Captain Claudio Raduta, Fleet Operations
 - Captain Andrew Weigold, Fleet Operations
 - Darren Johnston Executive Director Fleet Operations
 - Jordan Knutsen Director Terminal Operations

s. 13

Slide 5



OVERVIEW OF OPTIONS CONSIDERED

Primary Options

1. Expansion of BSC to 64 AEQ
2. Replace BSC with Conventional Vessel ~70 AEQ
3. Supplement BSC (45 AEQ) with a 2nd ship (21 - 47 AEQ)

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[Redacted]

4. Supplement BSC (45 AEQ) with a 2nd ship (21 - 47 AEQ)

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[Redacted]

5. Supplement BSC (45 AEQ) with a 2nd ship (21 - 47 AEQ)

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[Redacted]

Other Options (eliminated)

- Replace BSC with existing Conventional Vessel (Quinsam)
- Convert BSC to a Conventional Vessel
- No change to BSC, Operate new route between Hornby and Vancouver Island

OVERVIEW OF OPTIONS EVALUATION

Criteria Used

- People Workforce
- Reliability and Redundancy
- Flexibility
- Risk
- Future Growth Option
- Financial

Key Assumptions

- Growth – 0.41% to 2% annually Total Vehicles
- ICV Ph4 availability of relief vessel for Summer Operations for Route 21
- Kahloke remains in fleet until ICV Ph4 relief vessel is in service
- All BSC options include repowering (but not full electrification of Terminal/Vessel)
- Added seasonal workforce in Options 3,4,5

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[Redacted]

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OPTION 1 – BSC Expansion

Description:

Expand Baynes Sound Connector from 45 AEQ to 64 AEQ

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OPTION 2 – Replace with Conventional Vessel

Description:

Replace Baynes Sound Connector (45 AEQ) with a Conventional Vessel (~70 AEQ)

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OPTION 3

Description:

Maintain Baynes Sound Connector (45 AEQ) and support with Supplementary Vessel during peak period - Kahloke (21 AEQ) to F2034 and then purchase new Island Class (47 AEQ)

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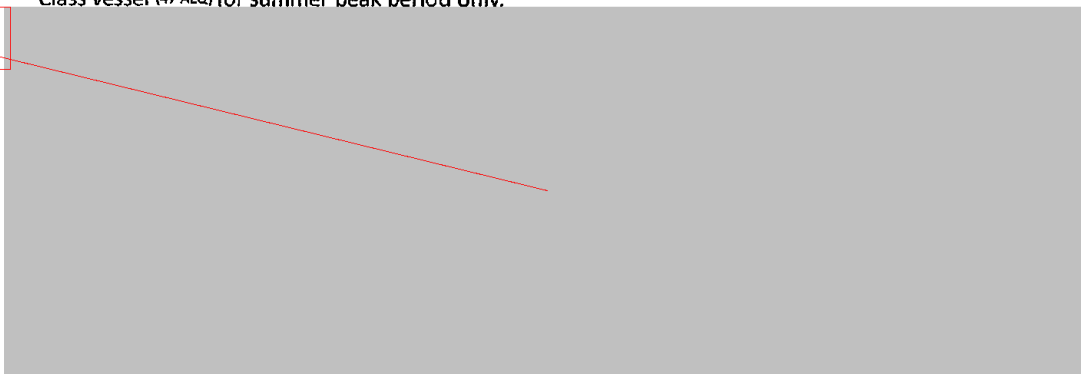


OPTION 4

Description:

Maintain Baynes Sound Connector (45 AEQ) and support with Supplementary Vessel during peak period - Kahloke (21 AEQ) to F2034 and rely on relief Island Class vessel (47 AEQ) for summer peak period only.

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Slide 12

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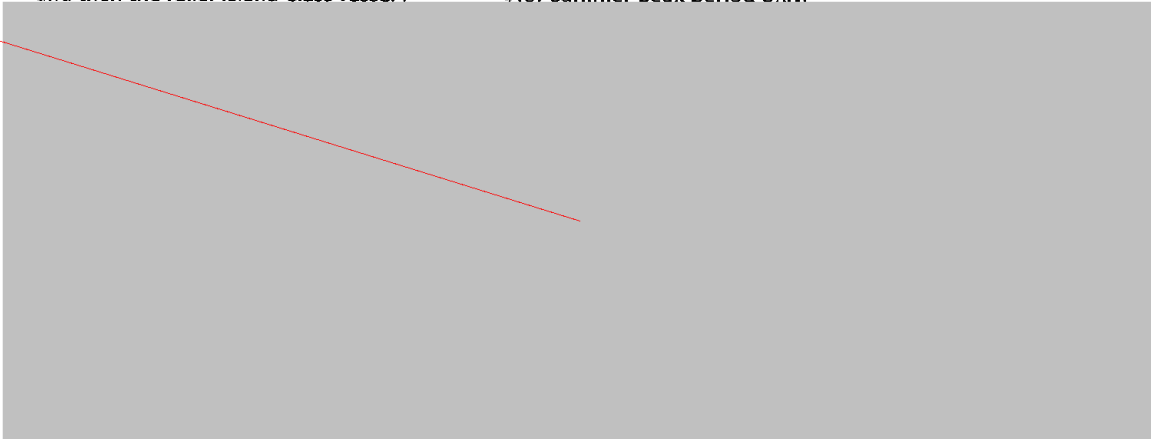


OPTION 5

Description:

Defer Expansion of Baynes Sound Connector until F2034^[PB4]
 Support route with supplementary vessel during peak periods - Kahloke (21 AEQ) to F2034
 and then the relief Island Class vessel (ICPB4 - 47 AEQ) for summer peak period only.

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OPTION OVERVIEW

s. 13, s. 17

Option	Home Port		F24 F25 F26 F27 F28 F29 F30 F31 F32 F33 F34 F35 F36 F37 F38 F39 F40 F41 F42 F43 F44 F45 F46													25 Year NPV Discounted at 7% (ISM)	Non Discounted Cash Outflows (\$M)		
																	to 2026	to 2034	
1	Expand Baynes Sound Connector from 45 AEQ to 64 AEQ	Vessel Deployment	Denman Is	Buckley Bay (Peak Only)															
		Available Capacity	Off Peak																
		18.0% growth TV	Shoulder																
			Peak																
2	Replace Baynes Sound Connector (45 AEQ) with a Conventional Vessel (~70 AEQ)	Vessel Deployment	Denman Is	Buckley Bay (Peak Only)															
		Available Capacity	Off Peak																
		18.0% growth TV	Shoulder																
			Peak																
3	Supplement BSC (45 AEQ) with a 2nd ship (21 - 47 AEQ) Procure Island Class (F34)	Vessel Deployment	Denman Is	Buckley Bay (Peak Only)															
		Available Capacity	Off Peak																
		15% growth TV	Shoulder - F27 on BSC Shuttle (2)																
			Peak																
4	Supplement BSC (45 AEQ) with a 2nd ship (21 - 47 AEQ) Island Class relief (F34) Peak Only	Vessel Deployment	Denman Is	Buckley Bay (Peak Only)															
		Available Capacity	Off Peak																
		15% growth TV	Shoulder - F27 on BSC Shuttle (2)																
			Peak																
5	Expand BSC in F2034, supplement with 2nd ship peak only	Vessel Deployment	Denman Is	Buckley Bay (Peak Only)															
		Available Capacity	Off Peak																
		7% growth TV	Shoulder																
			Peak																

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RECOMMENDATION

s. 13



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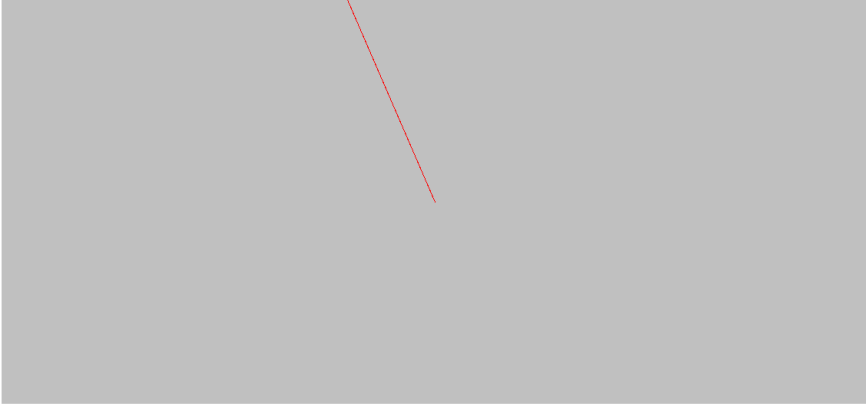
NEXT STEPS

- Fall review of 2-ship service
- Fall review of progress made on maintenance and operational outcomes
- Obtain Executive consensus on a recommendation assuming the subject to's are successfully addressed and accepted

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Slide 15



s. 17

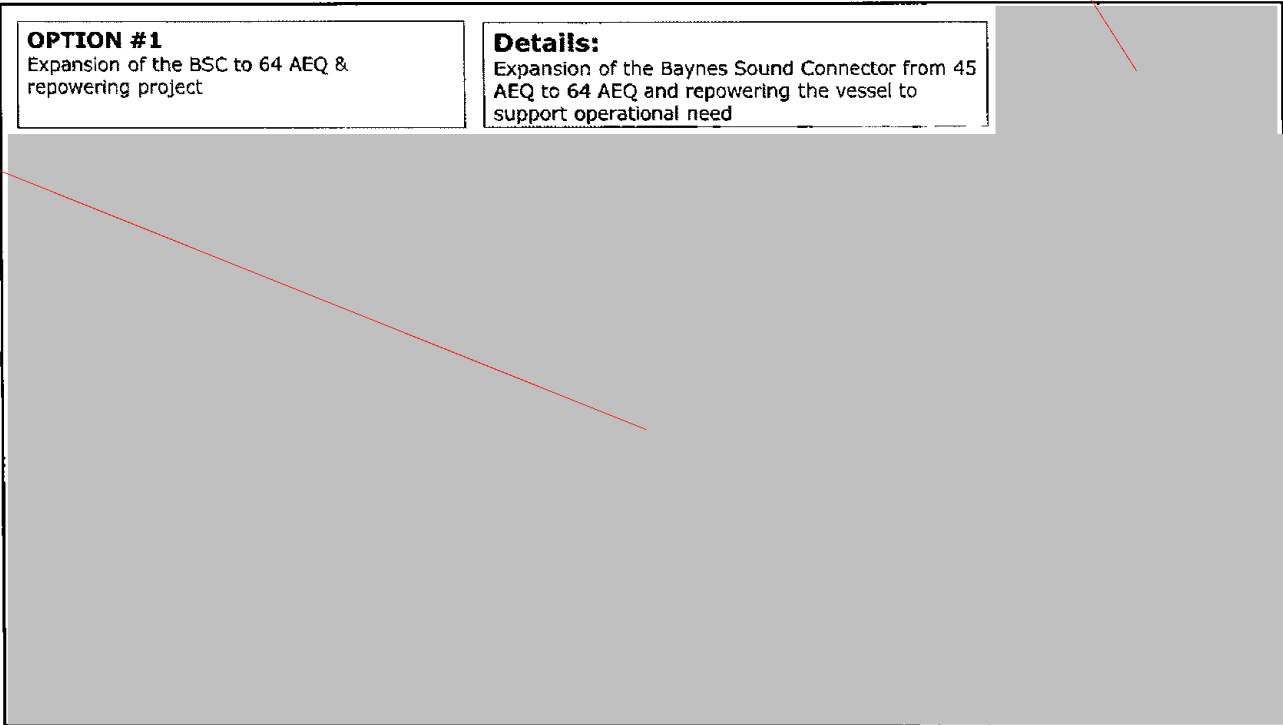
OPTION #1

Expansion of the BSC to 64 AEQ & repowering project

Details:

Expansion of the Baynes Sound Connector from 45 AEQ to 64 AEQ and repowering the vessel to support operational need

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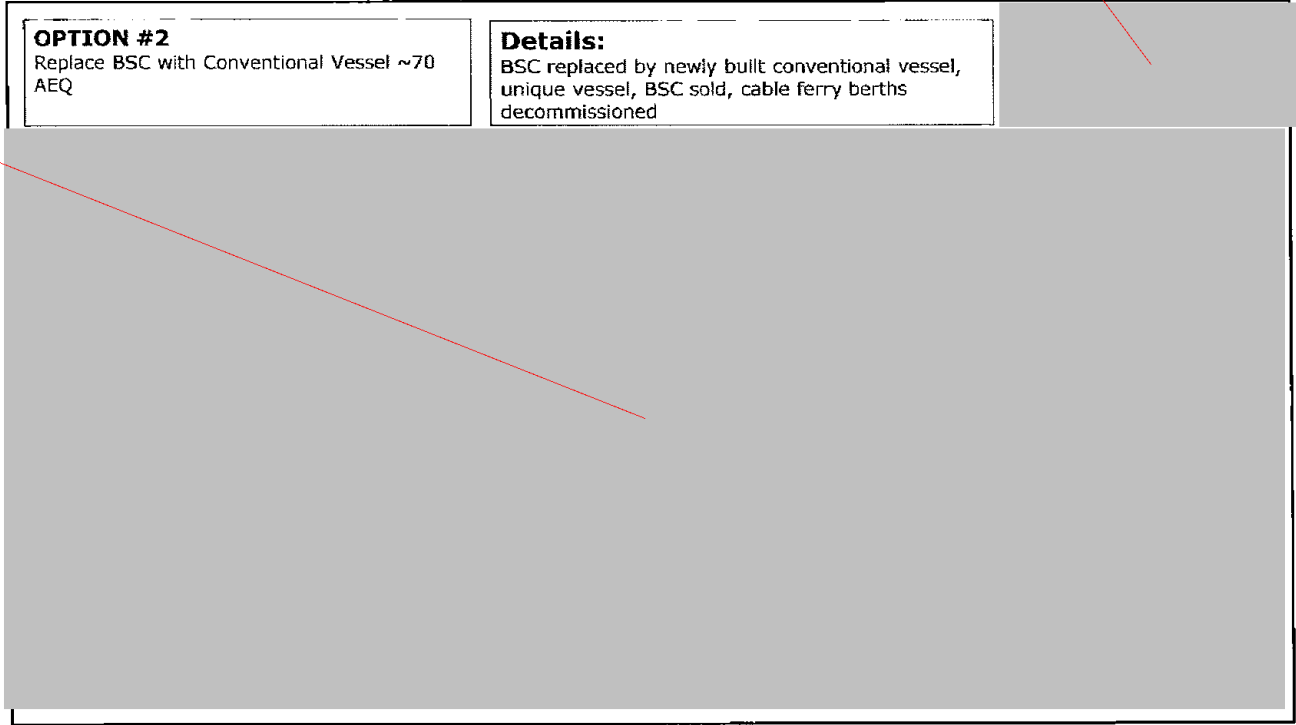
OPTION #2

Replace BSC with Conventional Vessel ~70 AEQ

Details:

BSC replaced by newly built conventional vessel, unique vessel, BSC sold, cable ferry berths decommissioned

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s. 17

OPTION #3
Supplement BSC (45 Aeq) with a 2nd ship (21 - 47 Aeq)

Details:
Kahloke (21 Aeq) Peak only to F34
Procure an incremental Island Class for post F34 service, supplementary service potential to be provided year-round

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OPTION #4
Supplement BSC (45 Aeq) with a 2nd ship (21 - 47 Aeq)

Details:
No change to BSC
Kahloke (21 Aeq) to supplement until F34
Island Class relief vessel post F34 peak only service

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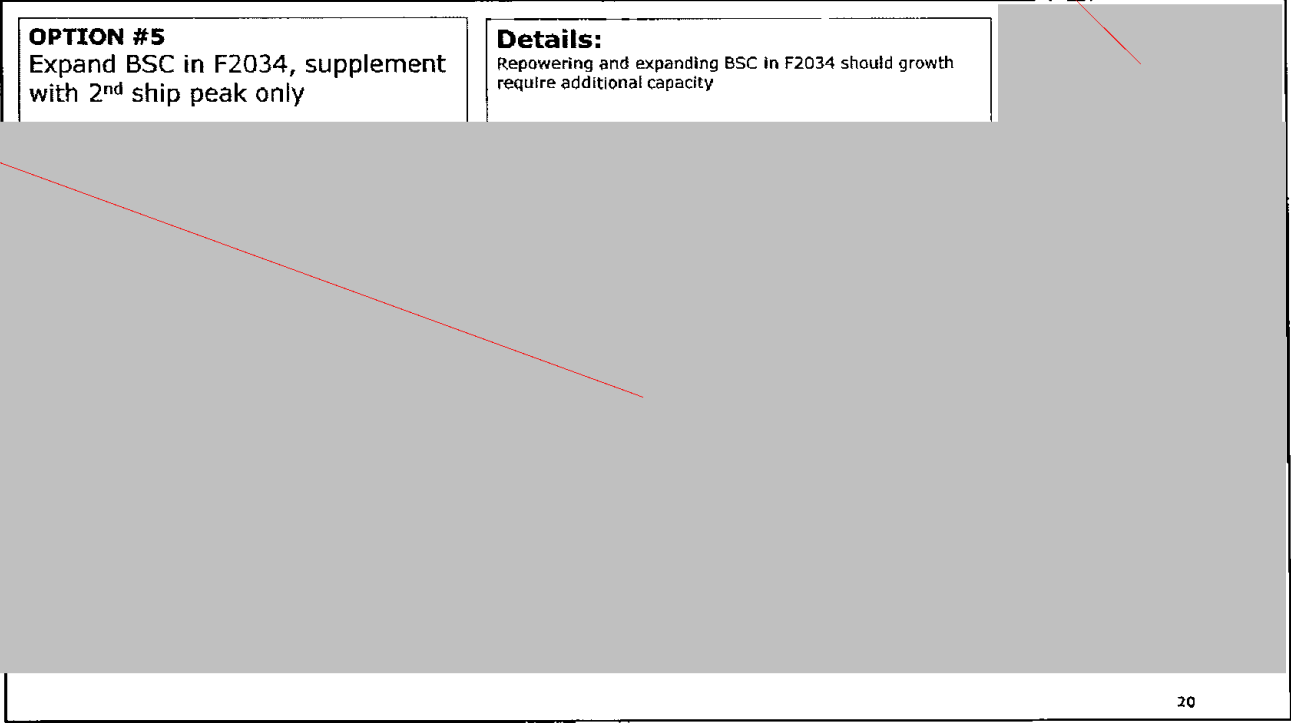
OPTION #5

Expand BSC in F2034, supplement with 2nd ship peak only

Details:

Repowering and expanding BSC in F2034 should growth require additional capacity

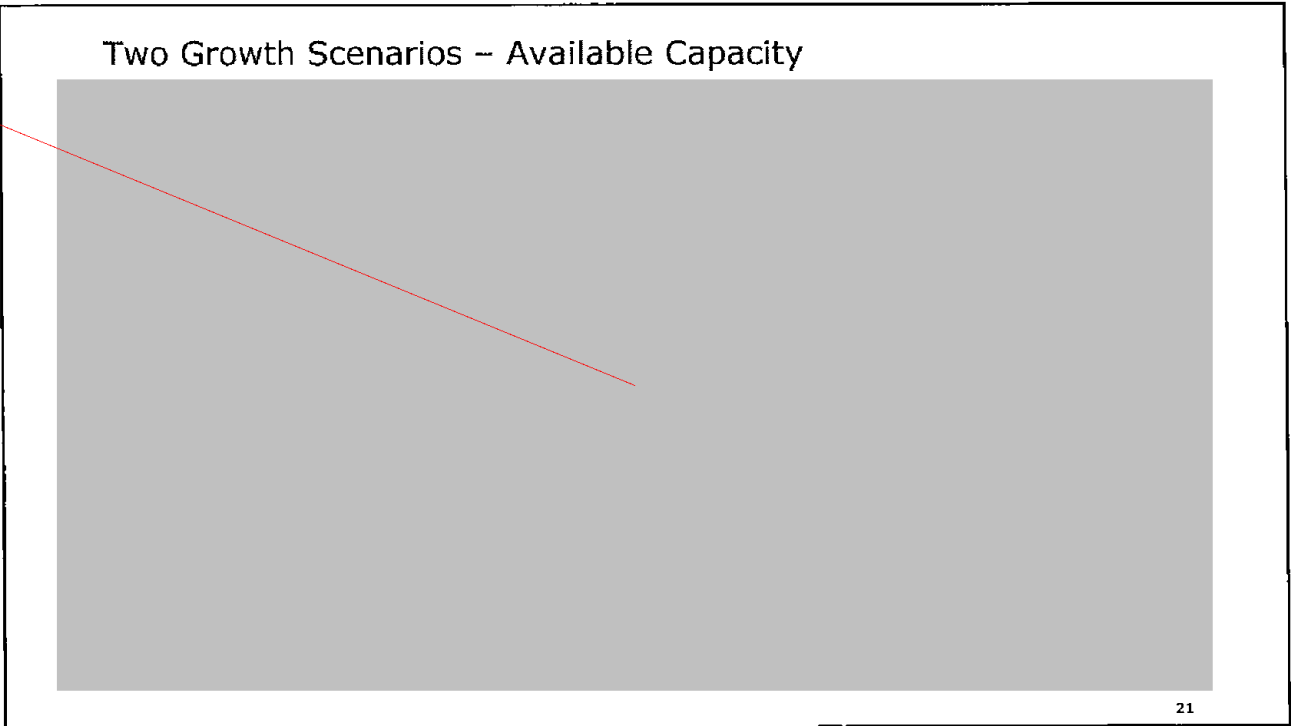
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Two Growth Scenarios – Available Capacity

s. 13



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FINANCIAL ANALYSIS

S. 17

Options	25 Year NPV Discounted at 7%	Non Discounted Cash Outflows (\$M)		Misc Comments
		to 2026	to 2034	
Option 1: Expansion of BSC to 64 AEQ & Repowering (by F2027)				
Option 2: Replace with Conventional 70 AEQ vessel in F2027				
Option 3: Defer Expansion decision: BSC as is with Kahloke to 2034 and then replace Kah with IC (extra ship build)				
Option 4: Defer Expansion decision: BSC as is with Kahloke to 2034 and then rely on relief IC for summer only (and shuttle in shouldered)				
Option 5: Defer Expansion decision: BSC as is with Kahloke to 2034 and expand BSC and rely on relief IC for summer only (if high traffic increase exceeds shuttle capacity)				
Option 5b: Defer Expansion decision: BSC as is with Kahloke to 2034 and expand BSC at that time				

FINANCIAL ANALYSIS – OPTION 1

Option 1: Expansion of BSC to 64 AEQ & Repowering (by F2027)

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Capital - BSC Investment (Repowering & Expansion) in F2026 (30% contingency)
Capital - Denman West Conventional Berth Life Extension in 2024 (Full Highway Legal)
Capital - Denman West Conventional Berth Life Extension in 2027
Capital - Denman West Conventional Berth Full Replacement in 2030
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040
Capital - Buckley Bay TDP Improvements (Brought forward from F2030 to F2026 for larger vessel)
Operating/Capital - BSC Refits every 5 Years (Is there any other MLU/OLU investment?) LRMP
Operating - BSC & Cable Annual Maintenance
Operating - Incremental Cable Chargeout Costs (post Expansion) of \$60K per yr
Operating - Diesel
BSC Crewing (4)
Incremental Sr. Chief Engineer
Summer Supplemental (Kahloke) Until BSC Expanded
Incremental Crew for Expanded BSC (1)?
Total cash flow
Discounted cash flow

25 Year NPV - Option 1
 Non Discounted Cashflow to 2026
 Non Discounted Cashflow to 2034

FINANCIAL ANALYSIS – OPTION 2

Option 2: Replace with Conventional 70 AEQ vessel in F2027

s. 17

Conventional 70 AEQ Ferry Build
Capital - Denman West Conventional Berth Full Replacement in 2026 *Potential ~\$10M less to convert cable ferry berth
Capital - Buckley Bay Conventional Berth Upgrade for Larger Vessel
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040
Capital - Buckley Bay TDP Improvements (brought forward from F2030 to F2026 for larger vessel)
Capital - Conventional 65 AEQ Ferrt QLU (Approx. 2041)
Capital - Conventional 65 AEQ Ferry MLU (just outside of 25 years)
BSC Operating Costs & Kahloke Summer Supplemental through F2026
Operating/Capital - Conventional Refits every 5 Years
Operating - Conventional Annual Maintenance
Operating - Diesel & Urea
Conventional Ferry Crewing (7)(Based on Quinsam on R6 in F2024)
Sale value of BSC? Offset by any cable ferry decommissioning costs?
Residual value of New Build 65 AEQ vessel in 2048
Total cash flow
Discounted cash flow

25 Year NPV - Option 2
 Non Discounted Cashflow to 2026
 Non Discounted Cashflow to 2034

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FINANCIAL ANALYSIS – OPTION 3

Option 3: Deferral Expansion decision: BSC as is with Kahloke to 2034 and then replace it with IC (extra ship build)

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Capital - BSC Investment (Repower Only)
Capital - Denman West Conventional Berth Life Extension in 2024 (Full Highway Legal)
Capital - Denman West Conventional Berth Life Extension in 2027
Capital - Denman West Conventional Berth Full Replacement in 2030
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040
Capital - Buckley Bay TDP Improvements in F2030
Operating/Capital - BSC Refits every 5 Years
Operating - BSC & Cable Annual Maintenance
Operating - Diesel
BSC Crewing (4)
Incremental Sr. Chief Engineer
Summer Supplemental (Kahloke) until 2030 (5 days per wk)
Summer Supplemental (Kahloke) post 2030 until retirement (7 days per wk)
Capital - New Island Class Conventional Vessel in F2035
Summer Supplemental with New Island Class (Fuel, Labour)
New Island Class Annual Maintenance (100% allocated)
New Island Class Caretaking out of Peak Season (100% allocated) - 9 months @ \$100K
Capital - Conventional QLU (outside 25 years)
Capital - Conventional MLU (outside the 25 years)
Operating/Capital - Conventional Refits every 5 Years
Residual value of New Build Island Class in 2048
Total cash flow
Discounted cash flow

25 Year NPV - Option 3
 Non Discounted Cashflow to 2026
 Non Discounted Cashflow to 2034

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FINANCIAL ANALYSIS – OPTION 4

Option 4: Defer Expansion decision: BSC as is with Kahloke to 2034 and then rely on relief IC for summer only (and shuttles in shoulder)

Capital - BSC Investment (Repower Only)
Capital - Denman West Conventional Berth Life Extension in 2024 (Full Highway Legal)
Capital - Denman West Conventional Berth Life Extension in 2027
Capital - Denman West Conventional Berth Full Replacement in 2030
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040
Capital - Buckley Bay TDP Improvements in F2030
Operating/Capital - BSC Refits every 5 Years
Operating - BSC & Cable Annual Maintenance
Operating - Diesel
BSC Crewing (4)
Incremental Sr. Chief Engineer
Summer Supplemental (Kahloke) Until 2030 (3 days per wk)
Summer Supplemental (Kahloke) post 2030 until retirement (7 days per wk)
Summer Supplemental (IC) in Summer Only
Shoulder Season Increased BSC Shuttling
Total cash flow
Discounted cash flow

S. 17

25 Year NPV - Option 4
 Non Discounted Cashflow to 2026
 Non Discounted Cashflow to 2034

FINANCIAL ANALYSIS – OPTION 5

Option 5: Defer Expansion decision: BSC as is with Kahloke to 2031 and then expand BSC and rely on relief IC for summer only (if high traffic incidence exceeds shuttle capacity) **PBS**

Capital - BSC Investment (Repower Only)
Capital - BSC Investment (Expansion)
Capital - Denman West Conventional Berth Life Extension in 2024 (Full Highway Legal)
Capital - Denman West Conventional Berth Life Extension in 2027
Capital - Denman West Conventional Berth Full Replacement in 2030
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040
Capital - Buckley Bay TDP Improvements in F2030
Operating/Capital - BSC Refits every 5 Years
Operating - BSC Annual Maintenance? Budget is \$650K next year plus the Exempt Chief Engineer
Operating - Incremental Cable Changeout Costs (post Expansion) of \$60K per yr
Operating - Diesel
BSC Crewing (4)
Incremental Sr. Chief Engineer
Summer Supplemental (Kahloke) Until 2030 (3 days per wk)
Summer Supplemental (Kahloke) post 2030 until retirement (7 days per wk)
Incremental Crew for Expanded BSC (1)?
Summer Supplemental (IC) in Summer Only
Shoulder Season Increased BSC Shuttling (Until Expansion)
Total cash flow
Discounted cash flow

S. 17

25 Year NPV - Option 5
 Non Discounted Cashflow to 2026
 Non Discounted Cashflow to 2034

s. 13

Slide 28



Rasmussen, Shauna

From: Terry Wright <terry.wright@ipsconsulting.ca>
Sent: January 19, 2023 2:00 PM
To: Adams, James
Cc: Simpson, Peter; Doyle, Joanne
Subject: [EXTERNAL] RE: Komo Gway

Sensitivity: Confidential

CAUTION: This email originated from outside of BC Ferries. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi James

s. 13

I don't understand your point about [REDACTED]

Terry

From: Adams, James <James.Adams@bcferries.com>
Sent: January 19, 2023 1:53 PM
To: Simpson, Peter <Peter.Simpson@bcferries.com>; Doyle, Joanne <Joanne.Doyle@bcferries.com>; Jones, Stephen <Stephen.Jones@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Elliott, Scott <scott.elliott@bcferries.com>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>; Terry Wright <terry.wright@ipsconsulting.ca>
Subject: RE: Komo Gway
Sensitivity: Confidential

Hi Peter,

See attached in red font for several minor suggested edits on pages 3 and 4.

s. 13, s. 17

Also, the executive may ask whether any of the options result in a negative to the approved capital plan. It may be beneficial to add a note that Option 4 [REDACTED]

Regards,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** [REDACTED] **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

s. 15, 19

From: Simpson, Peter <Peter.Simpson@bcferries.com>
Sent: January 18, 2023 5:04 PM
To: Doyle, Joanne <Joanne.Doyle@bcferries.com>; Jones, Stephen <Stephen.Jones@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Adams, James <James.Adams@bcferries.com>; Elliott, Scott

<scott.elliott@bcferries.com>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>; Terry Wright
<terry.wright@ipsconsulting.ca>

Subject: Komo Gway

Importance: High

Sensitivity: Confidential

Please find attached the PPT we intend to present to the executive on January 23 (we will forward to them on Friday). Please advise by end of day Thursday if you see any inaccuracies that need to be corrected.

Thanks

Peter

Peter Simpson
Director, Fleet Operations Strategy
Strategy and Community Engagement
British Columbia Ferry Services Inc.
Suite 500, 1321 Blansard Street, Victoria, BC
T: 250.978.1163 **C:** [REDACTED]
peter.simpson@bcferries.com s. 15, 19
bcferries.com

Notice:

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From: Doyle, Joanne
To: "Terry Wright"; Simpson, Peter
Subject: FW: Komo Gway
Date: January 19, 2023 2:26:00 PM
Sensitivity: Confidential

Hi Peter & Terry,

s. 13

Have to run but looking forward to the conversation tomorrow.

From: Adams, James <James.Adams@bcferries.com>
Sent: January 19, 2023 1:53 PM
To: Simpson, Peter <Peter.Simpson@bcferries.com>; Doyle, Joanne <Joanne.Doyle@bcferries.com>; Jones, Stephen <Stephen.Jones@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Elliott, Scott <scott.elliott@bcferries.com>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>; Terry Wright <terry.wright@ipsconsulting.ca>
Subject: RE: Komo Gway
Sensitivity: Confidential

Hi Peter,

See attached in red font for several minor suggested edits on pages 3 and 4.

s. 13

Also, the executive may ask whether any of the options result in a negative to the approved capital plan. It may be beneficial to add a note that Option 4

Regards,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: [REDACTED] F: 250-361-4922
james.adams@bcferries.com
bcferries.com

s. 15, 19

From: Simpson, Peter <Peter.Simpson@bcferries.com>
Sent: January 18, 2023 5:04 PM
To: Doyle, Joanne <loanne.Doyle@bcferries.com>; Jones, Stephen <Stephen.Jones@bcferries.com>;
Paterson, Bruce <Bruce.Paterson@bcferries.com>; Adams, James <James.Adams@bcferries.com>;
Elliott, Scott <scott.elliott@bcferries.com>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>; Terry
Wright <terry.wright@ipsconsulting.ca>
Subject: Komo Gway
Importance: High
Sensitivity: Confidential

Please find attached the PPT we intend to present to the executive on January 23 (we will forward to them on Friday). Please advise by end of day Thursday if you see any inaccuracies that need to be corrected.

Thanks
Peter

Peter Simpson
Director, Fleet Operations Strategy
Strategy and Community Engagement
British Columbia Ferry Services Inc.
Suite 500, 1321 Blansard Street, Victoria, BC
T: 250.978.1163 C: [REDACTED]
peter.simpson@bcferries.com
bcferries.com

s. 15, 19

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Rasmussen, Shauna

From: Simpson, Peter
Sent: January 20, 2023 9:00 AM
To: Doyle, Joanne; Terry Wright; Hancyk, Lesley
Subject: FW: Komo Gway

Sensitivity: Confidential

Thanks Lesley, see everyone later this morning.

From: Hancyk, Lesley
Sent: January 20, 2023 8:56 AM
To: Simpson, Peter
Subject: RE: Komo Gway
Sensitivity: Confidential

Hi Peter, I don't have any substantial changes, and none that impact the main content/messaging. Just some minor points as noted below, and I will send you a separate email to respond to your question on the capital plan piece.

s. 13

Some other comments for awareness:

s. 13

Lesley Hancyk, MPAcc, CPA, CA
Manager, Financial Planning & Analysis (Capital)
Finance
British Columbia Ferry Services Inc.
T: 250-978-1263 **C:** [REDACTED]
bctferries.com

s. 15, 19

From: Simpson, Peter <Peter.Simpson@bctferries.com>
Sent: January 19, 2023 4:05 PM
To: Hancyk, Lesley <Lesley.Hancyk@bctferries.com>
Subject: RE: Komo Gway
Sensitivity: Confidential

You're also joining us at 1130 tomorrow – we can include then too.
Joanne and I are briefing Brian in the morning – let me know if he needs to know your input

From: Hancyk, Lesley <Lesley.Hancyk@bctferries.com>
Sent: January 19, 2023 3:02 PM

To: Simpson, Peter <Peter.Simpson@bcferries.com>

Subject: RE: Komo Gway

Sensitivity: Confidential

Hi Peter,

I'm reviewing and have some suggestions but I'm in a meeting till 4 so I will get this back to you a little later, sorry.

Lesley Hancyk, MPAcc, CPA, CA
Manager, Financial Planning & Analysis (Capital)
Finance

British Columbia Ferry Services Inc.

T: 250-978-1263 **C:** [REDACTED]

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s. 15, 19

From: Simpson, Peter <Peter.Simpson@bcferries.com>

Sent: January 18, 2023 5:04 PM

To: Doyle, Joanne <Joanne.Doyle@bcferries.com>; Jones, Stephen <Stephen.Jones@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Adams, James <James.Adams@bcferries.com>; Elliott, Scott <scott.elliott@bcferries.com>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>; Terry Wright <terry.wright@ipsconsulting.ca>

Subject: Komo Gway

Importance: High

Sensitivity: Confidential

Please find attached the PPT we intend to present to the executive on January 23 (we will forward to them on Friday). Please advise by end of day Thursday if you see any inaccuracies that need to be corrected.

Thanks

Peter

Peter Simpson
Director, Fleet Operations Strategy
Strategy and Community Engagement
British Columbia Ferry Services Inc.
Suite 500, 1321 Blansard Street, Victoria, BC

T: 250.978.1163 **C:** [REDACTED]

peter.simpson@bcferries.com

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s. 15, 19

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Rasmussen, Shauna

From: Hancyk, Lesley
Sent: January 20, 2023 9:09 AM
To: Simpson, Peter
Subject: RE: Komo Gway

Sensitivity: Confidential

Hi Peter,

Nothing needs to change in the document with respect to this, it doesn't impact the analysis. Rather, it is just an understanding of whether there are material differences in our analysis vs. the capital plan. At a high level, Option 1 is our baseline and it is generally consistent with our capital plan

s. 13

For reference, here's a summary main differences in our analysis compared to the proposed 12 year capital plan:

s. 13

Lesley Hancyk, MPAcc, CPA, CA
Manager, Financial Planning & Analysis (Capital)
Finance
British Columbia Ferry Services Inc.
T: 250-978-1263 **C:** [REDACTED]
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s. 15, 19

From: Simpson, Peter
Sent: January 20, 2023 8:18 AM
To: Hancyk, Lesley
Subject: FW: Komo Gway
Sensitivity: Confidential

Can you look at this in preparation for the 1130 meeting. Does anything need to change?

From: Adams, James <James.Adams@bcferries.com>
Sent: January 19, 2023 3:20 PM
To: Terry Wright <terry.wright@ipsconsulting.ca>
Cc: Simpson, Peter <Peter.Simpson@bcferries.com>; Doyle, Joanne <Joanne.Doyle@bcferries.com>
Subject: RE: Komo Gway
Sensitivity: Confidential

Hi Terry,

s. 13

s. 13

I was referring to the [redacted] The plan changes year to year, so we often refer to the latest plan by fiscal year. [redacted]. With regards to the terminal projects, the current 12-year capital plan includes [redacted] All other terminal projects will be new to the capital plan.

s. 13, s. 17

s. 17

Capital - BSC Investment (Repower Only)
Capital - Denman West Conventional Berth Life Extension in 2024 (Full Highway Legal)
Capital - Denman West Conventional Berth Life Extension in 2027
Capital - Denman West Conventional Berth Full Replacement in 2030
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040
Capital - Buckley Bay TDP Improvements in F2030
Operating/Capital - BSC Refits every 5 Years
Operating - BSC & Cable Annual Maintenance
Operating - Diesel
BSC Crewing (4)
Incremental Sr. Chief Engineer
Summer Supplemental (Kahlcke) Until 2030 (5 days per wk)
Summer Supplemental (Kahlcke) post 2030 until retirement (7 days per wk)
Summer Supplemental (IC) in Summer Only
Shoulder Season Increased BSC Shuttling
Total cash flow
Discounted cash flow

25 Year NPV - Option 4
Non Discounted Cashflow to 2026
Non Discounted Cashflow to 2034

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: [redacted] F: 250-361-4922
james.adams@bcferries.com
bcferries.com

s. 15, 19

From: Terry Wright <terry.wright@ipsconsulting.ca>
Sent: January 19, 2023 2:00 PM
To: Adams, James <James.Adams@bcferries.com>
Cc: Simpson, Peter <Peter.Simpson@bcferries.com>; Doyle, Joanne <Joanne.Doyle@bcferries.com>
Subject: [EXTERNAL] RE: Komo Gway
Sensitivity: Confidential

CAUTION: This email originated from outside of BC Ferries. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi James

s. 13

I don't understand your point about [redacted]

Terry

From: Adams, James <James.Adams@bcferries.com>

Sent: January 19, 2023 1:53 PM

To: Simpson, Peter <Peter.Simpson@bcferries.com>; Doyle, Joanne <Joanne.Doyle@bcferries.com>; Jones, Stephen <Stephen.Jones@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Elliott, Scott <scott.elliott@bcferries.com>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>; Terry Wright <terry.wright@ipsconsulting.ca>

Subject: RE: Komo Gway

Sensitivity: Confidential

Hi Peter,

See attached in red font for several minor suggested edits on pages 3 and 4.

s. 13, s. 17

Also, the executive may ask whether any of the options result in a negative to the approved capital plan. It may be beneficial to add a note that Option 4

Regards,

James Adams, P.Eng.

Project Manager, Terminal Construction

British Columbia Ferry Services Inc.

T: 250-978-1317 **M:** [REDACTED] **F:** 250-361-4922

james.adams@bcferries.com
bcferries.com

s. 15, 19

From: Simpson, Peter <Peter.Simpson@bcferries.com>

Sent: January 18, 2023 5:04 PM

To: Doyle, Joanne <Joanne.Doyle@bcferries.com>; Jones, Stephen <Stephen.Jones@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Adams, James <James.Adams@bcferries.com>; Elliott, Scott <scott.elliott@bcferries.com>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>; Terry Wright <terry.wright@ipsconsulting.ca>

Subject: Komo Gway

Importance: High

Sensitivity: Confidential

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Thanks

Peter

Peter Simpson

Director, Fleet Operations Strategy

Strategy and Community Engagement

British Columbia Ferry Services Inc.

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peter.simpson@bcferries.com
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s. 15, 19

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Rasmussen, Shauna

From: Adams, James
Sent: January 20, 2023 12:31 PM
To: Hancyk, Lesley
Subject: RE: Komo Gway

Sensitivity: Confidential

s. 13

Good point, [REDACTED] is common to all options. I agree that a brief note should be sufficient for the purposes of the presentation.

Thanks,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** [REDACTED] **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

s. 15, 19

From: Hancyk, Lesley <Lesley.Hancyk@bcferries.com>
Sent: January 20, 2023 9:28 AM
To: Adams, James <James.Adams@bcferries.com>
Subject: RE: Komo Gway
Sensitivity: Confidential

s. 13

Right okay. There are capital plan differences to all options so I've summarized at a high level for Peter. The main one is that [REDACTED] which is common to all, and then there are other timing/placeholder changes across the other options. So I think we note it for awareness and that should be fine. Doesn't impact the analysis itself.

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Manager, Financial Planning & Analysis (Capital)
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s. 15, 19

From: Adams, James <James.Adams@bcferries.com>
Sent: January 20, 2023 9:23 AM
To: Hancyk, Lesley <Lesley.Hancyk@bcferries.com>
Subject: RE: Komo Gway
Sensitivity: Confidential

Hi Lesley,

s. 13, s. 17

It is my understanding that the F24 Cap Plan currently includes the following projects:

[REDACTED]

s. 13, s. 17

Option 4 - Proposed changes:

s. 13, s. 17

s. 17

Capital - BSC Investment (Repower Only)
Capital - Denman West Conventional Berth Life Extension in 2024 (Full Highway Legal)
Capital - Denman West Conventional Berth Life Extension in 2027
Capital - Denman West Conventional Berth Full Replacement in 2030
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040
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25 Year NPV - Option 4
Non Discounted Cashflow to 2026
Non Discounted Cashflow to 2034

Regards,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: [redacted] F: 250-361-4922
james.adams@bcferries.com
bcferries.com

s. 15, 19

From: Hancyk, Lesley <Lesley.Hancyk@bcferries.com>
Sent: January 20, 2023 8:27 AM
To: Adams, James <James.Adams@bcferries.com>
Subject: RE: Komo Gway
Sensitivity: Confidential

s. 17

Hi James, I'm not understanding the [redacted] stated here. Can you help clarify that?

Lesley Hancyk, MPAcc, CPA, CA
Manager, Financial Planning & Analysis (Capital)
Finance
British Columbia Ferry Services Inc.

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bcferries.com

s. 15, 19

From: Adams, James <James.Adams@bcferries.com>

Sent: January 19, 2023 1:53 PM

To: Simpson, Peter <Peter.Simpson@bcferries.com>; Doyle, Joanne <Joanne.Doyle@bcferries.com>; Jones, Stephen <Stephen.Jones@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Elliott, Scott <scott.elliott@bcferries.com>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>; Terry Wright <terry.wright@ipsconsulting.ca>

Subject: RE: Komo Gway

Sensitivity: Confidential

Hi Peter,

See attached in red font for several minor suggested edits on pages 3 and 4. s. 13, s. 17

Also, the executive may ask whether any of the options result in a negative to the approved capital plan. It may be beneficial to add a note that Option 4

Regards,

James Adams, P.Eng.

Project Manager, Terminal Construction

British Columbia Ferry Services Inc.

T: 250-978-1317 **M:** [REDACTED] **F:** 250-361-4922

james.adams@bcferries.com

bcferries.com

s. 15, 19

From: Simpson, Peter <Peter.Simpson@bcferries.com>

Sent: January 18, 2023 5:04 PM

To: Doyle, Joanne <Joanne.Doyle@bcferries.com>; Jones, Stephen <Stephen.Jones@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Adams, James <James.Adams@bcferries.com>; Elliott, Scott <scott.elliott@bcferries.com>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>; Terry Wright <terry.wright@ipsconsulting.ca>

Subject: Komo Gway

Importance: High

Sensitivity: Confidential

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Thanks

Peter

Peter Simpson

Director, Fleet Operations Strategy

Strategy and Community Engagement

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Doyle, Joanne

From: Hancyk, Lesley
Sent: January 20, 2023 2:22 PM
To: Doyle, Joanne; Simpson, Peter
Subject: Deck updated

Hi Joanne and Peter,

I updated the deck with the financial slides at the end, I included the cash flows to 2035 to show the changing spend profile (it may help with understanding timing of investment). The deck now includes 1a and I changed the option names in the NPV tables to match the rest of the deck as well.

Joanne, can you please update the options summary with 1a (it is a picture)? Also, I noticed the individual options slides (around slide 10), some have option descriptions in the header and some don't.... so just a consistency thing.

Thanks!

Lesley Hancyk, MPAcc, CPA, CA
Manager, Financial Planning & Analysis (Capital)
Finance

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Rasmussen, Shauna

From: Simpson, Peter
Sent: January 20, 2023 3:20 PM
To: Jones, Stephen; Paterson, Bruce; Adams, James; Elliott, Scott
Cc: Hancyk, Lesley; Doyle, Joanne; Terry Wright
Subject: FW: Baynes Sound Connector - Future
Attachments: BSC Review Jan 2023 Executive Presentation.pptx

Please find attached the presentation for Monday.

This includes adjustments based on your feedback yesterday. Notably, any deferred capital costs are escalated within the NPV with sensitivity reviewed at both standard and high inflationary rates. We refer to upcoming and/or necessary work on BSC (e.g. hydraulic cooling) as powering solutions. Only expansion attracts repowering which is included in the project costs. We recommend [REDACTED]

Thanks again, will advise of meeting outcomes next week
Peter

s. 13

From: Simpson, Peter
Sent: January 20, 2023 3:10 PM
To: Sharland, Jill <Jill.Sharland@bcferries.com>; Anderson, Brian <Brian.Anderson@bcferries.com>; Carpendale, Joanne <Joanne.Carpendale@bcferries.com>; Storey, Corrine <Corrine.Storey@bcferries.com>
Cc: Doyle, Joanne <Joanne.Doyle@bcferries.com>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>; Terry Wright <terry.wright@ipsconsulting.ca>
Subject: Baynes Sound Connector - Future

Please find attached the presentation for the meeting and discussion on Monday, January 23.
Peter

Peter Simpson
Director, Fleet Operations Strategy
Strategy and Community Engagement
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Baynes Sound Connector Review

Executive Update

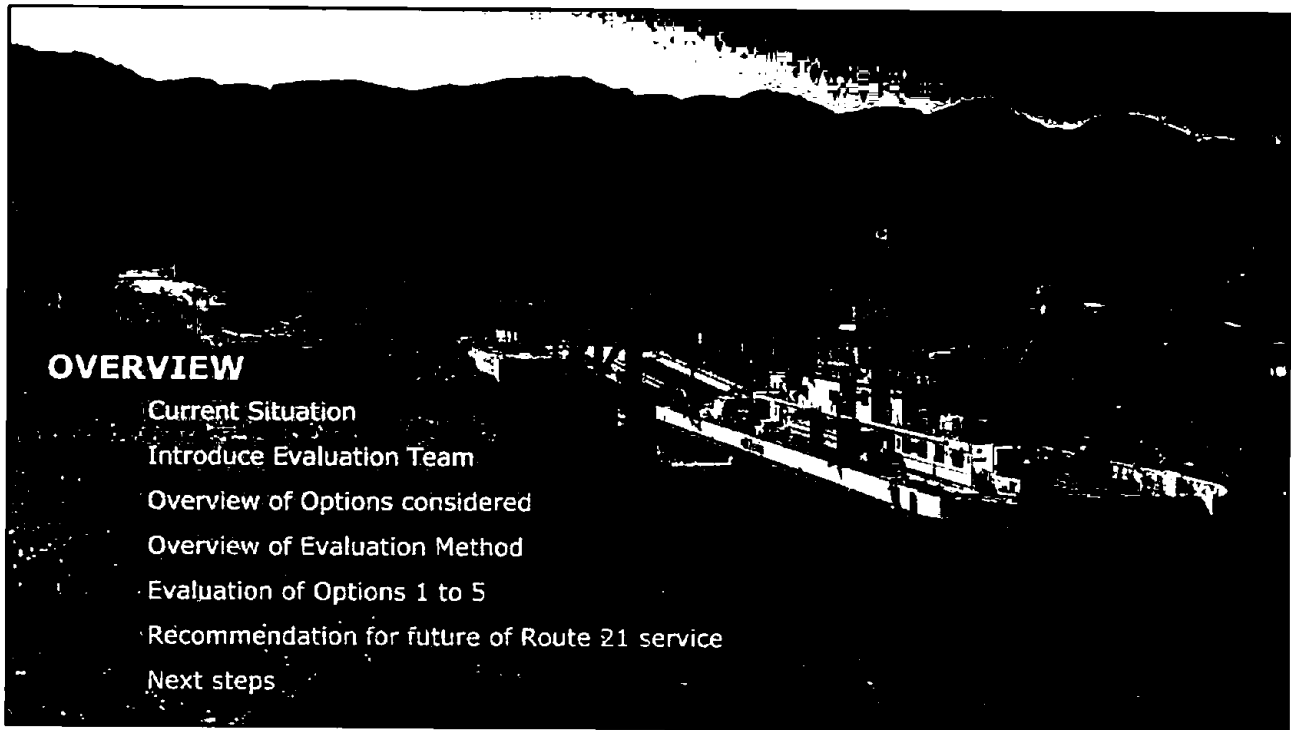
January 23, 2023



PURPOSE

- Provide BCF Executive with options and a recommendation in respect to the BSC
- Provide BCF Executive with an overview of the work undertaken to develop and evaluate the options





OVERVIEW

- Current Situation
- Introduce Evaluation Team
- Overview of Options considered
- Overview of Evaluation Method
- Evaluation of Options 1 to 5
- Recommendation for future of Route 21 service
- Next steps

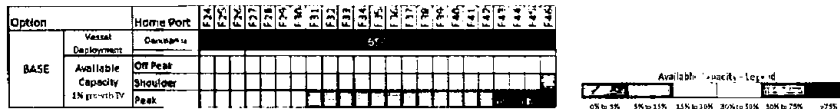
CURRENT SITUATION

- Higher than expected growth on Route 21 has resulted in a need for increased capacity during the peak summer season
- The increased capacity will be provided in the short term by the use of the Kahloke to supplement summer service
- While the BSC has a good reliability record there are a number of unresolved issues currently being managed:
 - Overheating of the hydraulic motors
 - Bolt cracking on the bull-wheel (impacting utilization of new brake system)
 - Hull fouling slowing crossing times
- Maintenance responsibility will shift to Fleet Engineering on April 1
- Conventional berths at the Denman West terminal has a vehicle load restriction and a limited life expectancy

WHY?

Traffic levels from Route 22 exceed capacity in the summer

- Quinitsa deployment at Hornby increases AEQ throughput onto Route 21
 - 44 AEQ Route 22 ship will create 'pulses' of traffic arriving at Denman West at same time Denman based traffic is travelling
- Combination of Route 21 demand & larger 'pulses' of Route 22 demand will cause lineups back into the village at top of hill; overwhelm the intersection and create potentially unsafe and unmanageable traffic convergence



Transit times for Route 21 are interdependent with capacity offered while shuttling

- Current 12 minute transits are reducing benefits of shuttling, however improvements are expected with the transition of maintenance responsibilities and powering solutions in progress
- Expanded BSC (~64AEQ) will require longer in-port times, off-setting 40% increase in capacity to an best case estimated 20% increase (assuming same transit time whether BSC or Expanded BSC)

s. 13

EVALUATION TEAM

- Primary Team
 - Peter Simpson, Director Fleet Operations Strategy
 - Joanne Doyle, Manager Fleet Strategic Planning
 - Stephen Jones, Executive Director Engineering
 - Bruce Paterson, Director Naval Architecture Fleet Technical
 - James Adams, Project Manager Terminal Construction
 - Scott Elliott, Director Corporate Planning
 - Lesley Hancyk, Manager Financial Planning & Analysis
 - Terry Wright, IPS Consulting
- Subject Matter Experts
 - Megan Caldwell, Regional Manager Terminal Operations
 - Captain Claudiu Raduta, Fleet Operations
 - Captain Andrew Weigold, Fleet Operations
 - Darren Johnston Executive Director Fleet Operations
 - Jordan Knutsen Director Terminal Operations
 - Ed Hooper, Executive Director Shipbuilding

OVERVIEW OF OPTIONS CONSIDERED

Primary Options

1. Expansion of BSC to 64 AEQ
- 1a. Defer Expansion to F34
 - Includes 2-ship service to F34
2. Replace BSC with Conventional Vessel ~70 AEQ
3. Supplement BSC (45 AEQ) with a 2nd ship (21 - 47 AEQ)
- s. 13 4. Supplement BSC (45 AEQ) with a 2nd ship (21 - 47 AEQ)
- s. 13 5. Supplement BSC (45 AEQ) with a 2nd ship (21 - 47 AEQ) and Expand BSC in F2034

Other Options (eliminated)

- Replace BSC with existing Conventional Vessel (Quinsam)
- Convert BSC to a Conventional Vessel
- No change to BSC, Operate new route between Hornby and Vancouver Island

6

OVERVIEW OF OPTIONS EVALUATION

Criteria Used

- People Workforce
- Reliability and Redundancy
- Flexibility (to increase service)
- Risk
- Future Growth Option
- Financial

Key Assumptions

- Growth – 0.41% to 2% annually Total Vehicles
- Cost escalation on deferred capital expenditure, at 2%
- ICPH4 availability of relief vessel for Summer Operations for Route 21
- Kahloke remains in fleet until ICPH4 relief vessel is in service
- All BSC options include an allowance for powering solutions
- Added seasonal workforce in Options 3,4,5
- Electrification of BSC not included
- Condition based berth replacement at Denman West is required by 2030

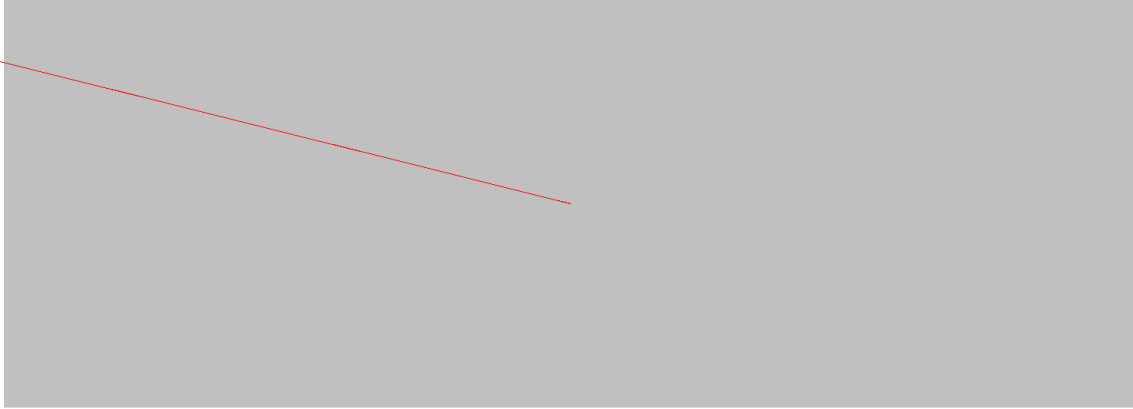
7

OPTION 1 – BSC Expansion

Description:

Expand Baynes Sound Connector from 45 AEQ to 64 AEQ

s. 13, s. 17



8

OPTION 1a – Defer BSC Expansion

Description:

Defer expansion of BSC until F34, maintain 2-ship service with Kahloke (21 AEQ) in peak until F34

s. 13, s. 17



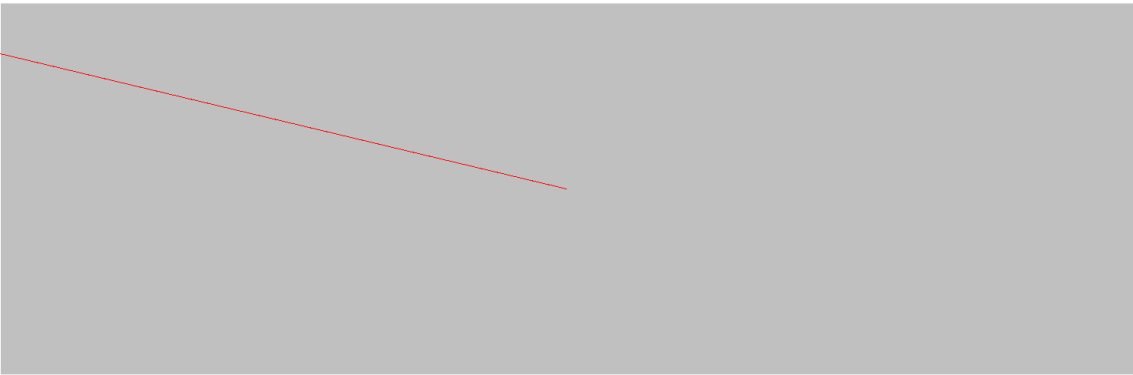
9

OPTION 2 – Replace with Conventional Vessel

Description:

Replace Baynes Sound Connector (45 AEq) with a Conventional Vessel (~70 AEq)

s. 13, s. 17



OPTION 3 – Keep BSC, Kahloke w/IC replacement

Description:

Maintain Baynes Sound Connector (45 AEq) and support with Supplementary Vessel during peak period - Kahloke (21 AEq) to F2034 and then purchase new Island Class (47 AEq)

s. 13, s. 17

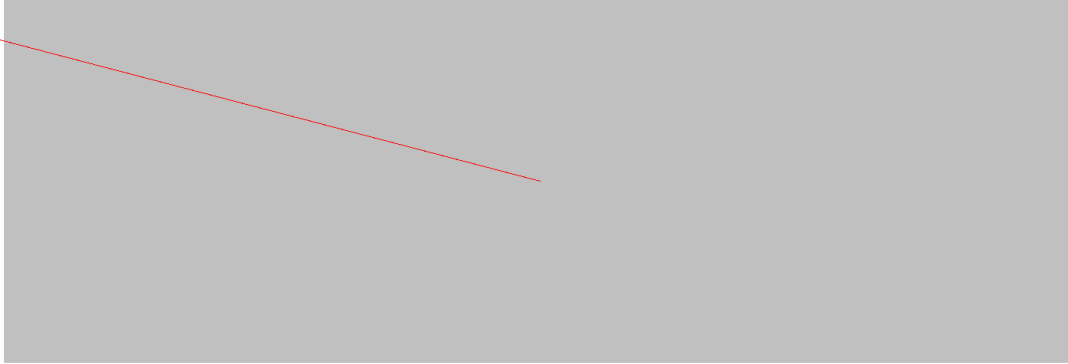


OPTION 4 – Keep BSC, Kahloke w/IC summer

Description:

Maintain Baynes Sound Connector (45 AEQ) and support with Supplementary Vessel during peak period - Kahloke (21 AEQ) to F2034 and rely on relief Island Class vessel (47 AEQ) for summer peak period only.

s. 13, s. 17



OPTION 5 – Keep BSC, Kahloke w/IC summer then Expand

Description:

Defer Expansion of Baynes Sound Connector until F2034.
Support route with supplementary vessel during peak periods - Kahloke (21 AEQ) to F2034 and then the relief Island Class vessel (ICPM4 – 47 AEQ) for summer peak period only.

s. 13, s. 17



OPTION OVERVIEW

s. 13, s. 17

Option	HomePort	Year												25 Year NPV Discounted at	Non Discounted Cash							
		2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037		2038	2039	2040	2041	2042	2043	2044	2045
1	Expand Baynes Sound Connector from 45 AECQ to 64 AECQ	Vessel Deployment	Dermanis																			
		Available Capacity	Buckley Bay (Peak Only)																			
		1% growth TV	Off Peak	Shoulder	Peak																	
1a	Defer decision to expand Baynes Sound Connector from 45 AECQ to 64 AECQ	Vessel Deployment	Dermanis																			
		Available Capacity	Buckley Bay (Peak Only)																			
		1% growth TV	Off Peak	Shoulder	Peak																	
2	Replace Baynes Sound Connector (45 AECQ) with a Conventional Vessel (~70 AECQ)	Vessel Deployment	Dermanis																			
		Available Capacity	Buckley Bay (Peak Only)																			
		1% growth TV	Off Peak	Shoulder	Peak																	
3	Supplement BSC (45 AECQ) with a 2nd ship (21 - 47 AECQ) Procure Island Class (F34)	Vessel Deployment	Dermanis																			
		Available Capacity	Buckley Bay (Peak Only)																			
		1% growth TV	Off Peak	Shoulder - F27 on BSC Shuttle (2)	Peak																	
4	Supplement BSC (45 AECQ) with a 2nd ship (21 - 47 AECQ) Island Class refit (F34) Peak Only	Vessel Deployment	Dermanis																			
		Available Capacity	Buckley Bay (Peak Only)																			
		1% growth TV	Off Peak	Shoulder - F27 on BSC Shuttle (2)	Peak																	
5	Expand BSC in F2034, supplement with 2nd ship peak only	Vessel Deployment	Dermanis																			
		Available Capacity	Buckley Bay (Peak Only)																			
		1% growth TV	Off Peak	Shoulder	Peak																	

14

RECOMMENDATION

Findings

- Recommendation subject to:
 - Assessment of success of two-ship service after summer of 2023
 - Alignment of decision on future service model with the Island Class program
 - Acknowledge that ongoing seasonal workforce required to maintain 2 ship service

Recommendation (if subject-to's satisfied)

s. 13



15

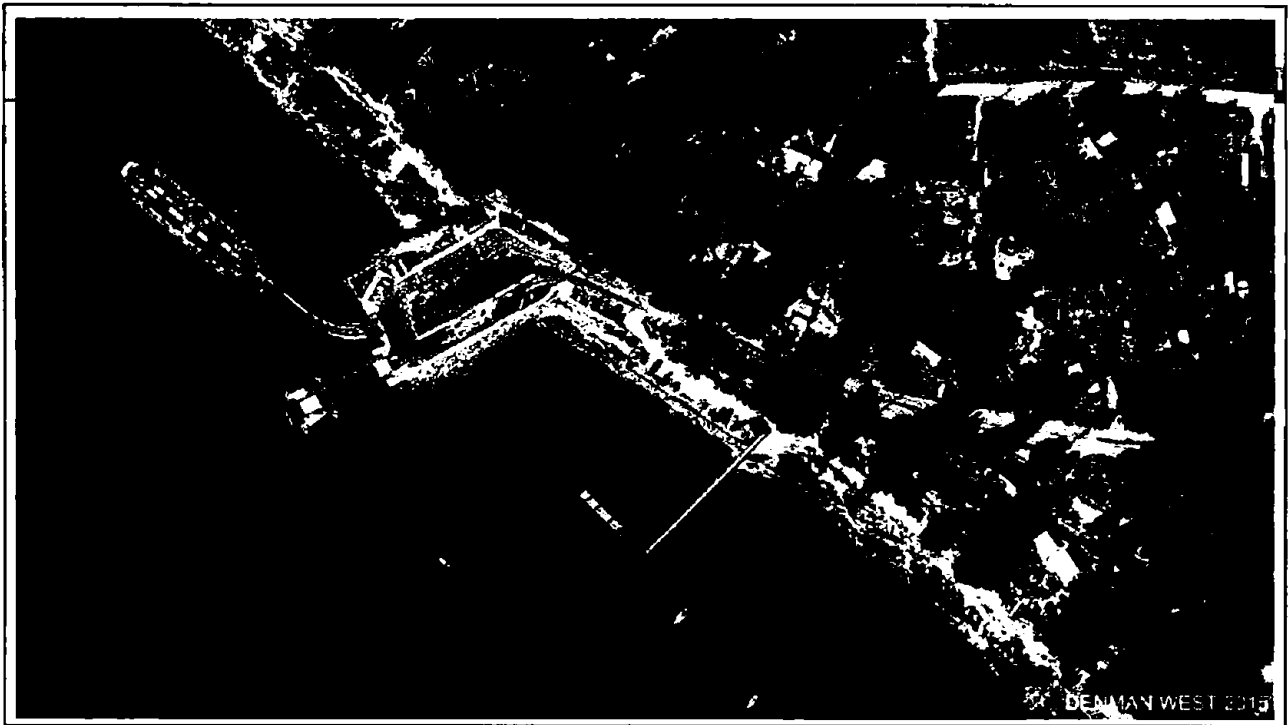
NEXT STEPS

- Fall review of 2-ship service
- Fall review of progress made on maintenances and operational outcomes
- Obtain Executive support of the recommendation assuming the subject to's are successfully addressed and accepted
- Develop transition plan to move away from 2-ship service, if demand allows

16

SUPPLEMENTAL MATERIAL

17

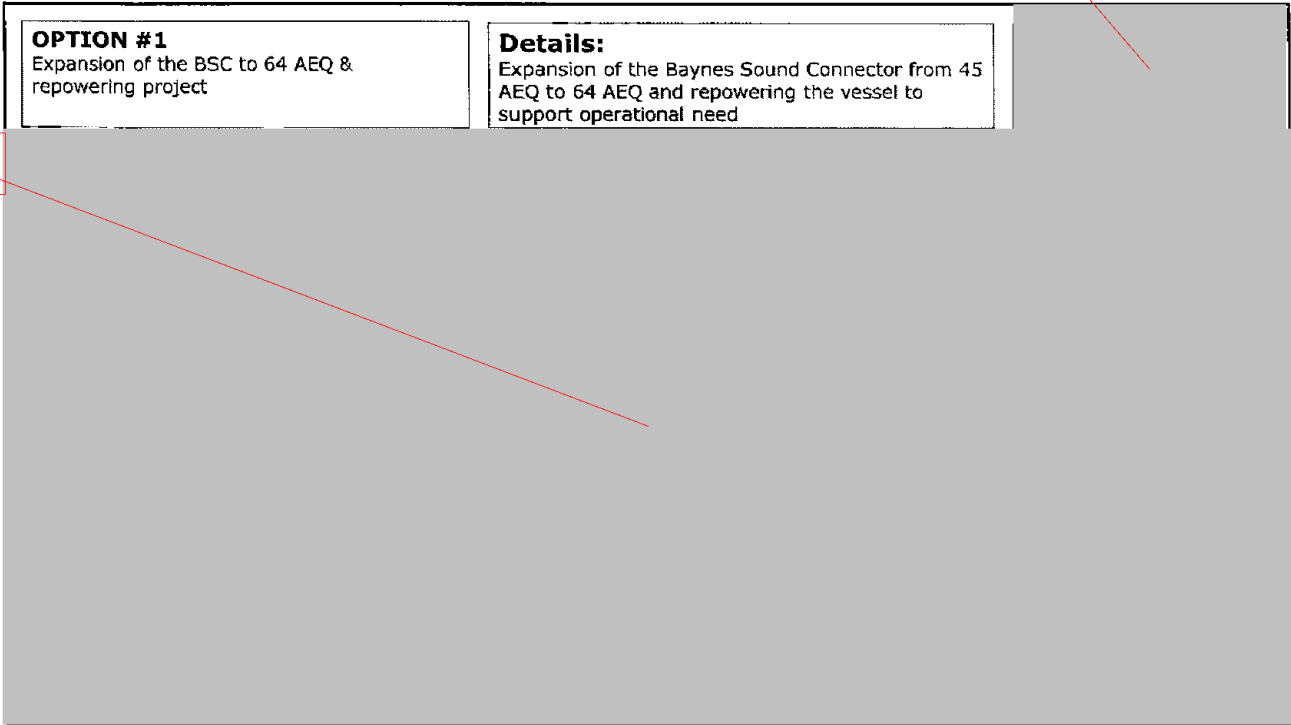


s. 17

OPTION #1
Expansion of the BSC to 64 AEQ & repowering project

Details:
Expansion of the Baynes Sound Connector from 45 AEQ to 64 AEQ and repowering the vessel to support operational need

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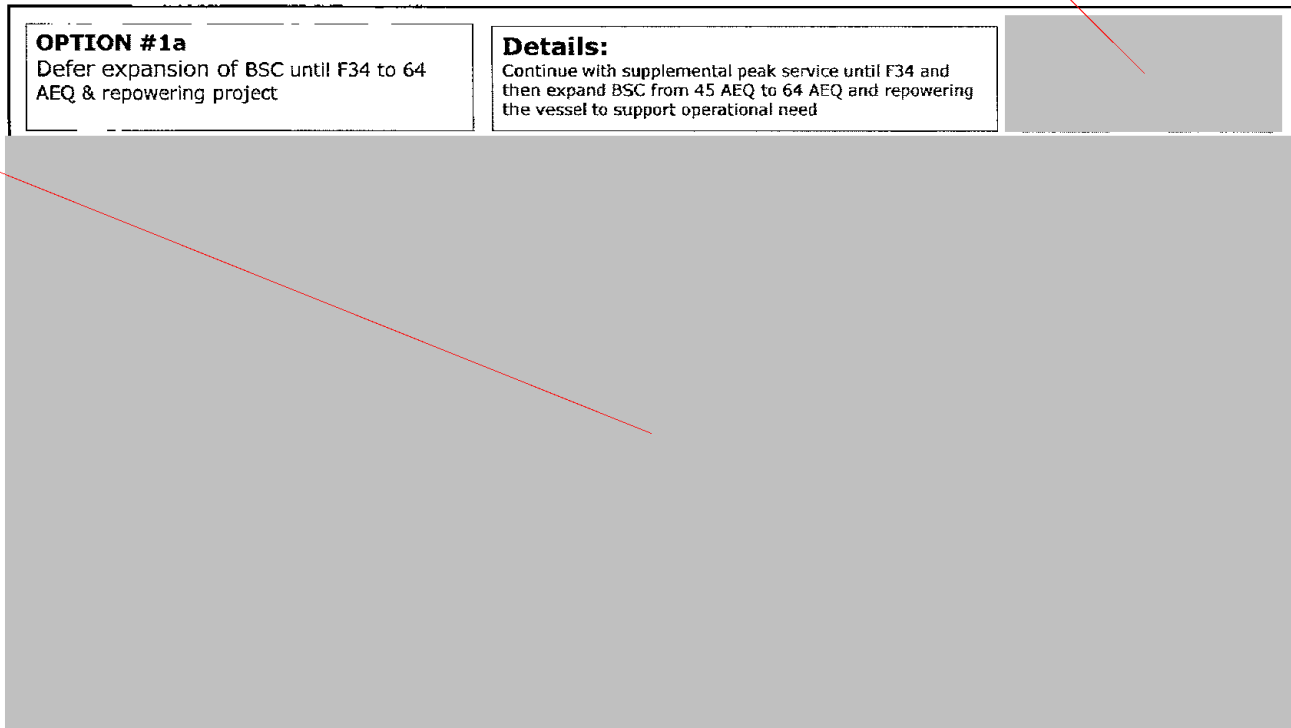


s. 17

OPTION #1a
Defer expansion of BSC until F34 to 64 AEQ & repowering project

Details:
Continue with supplemental peak service until F34 and then expand BSC from 45 AEQ to 64 AEQ and repowering the vessel to support operational need

s. 13

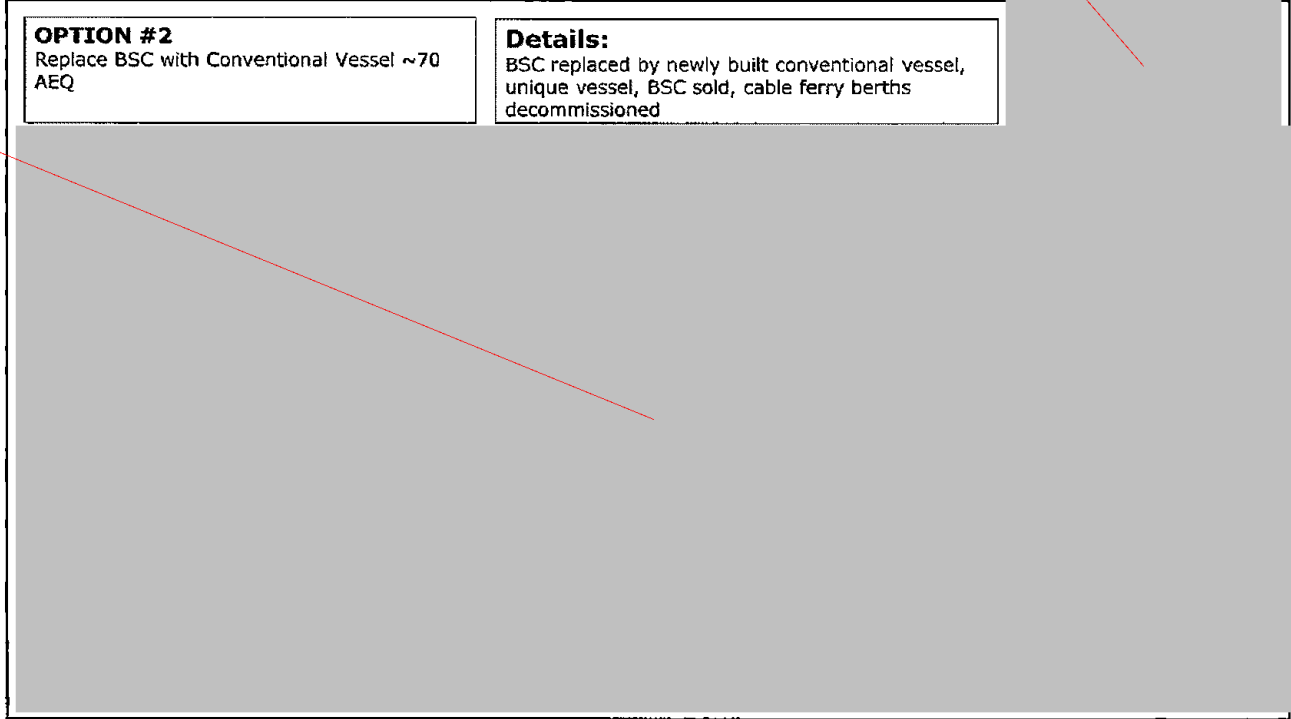


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OPTION #2
Replace BSC with Conventional Vessel ~70
AEQ

Details:
BSC replaced by newly built conventional vessel,
unique vessel, BSC sold, cable ferry berths
decommissioned

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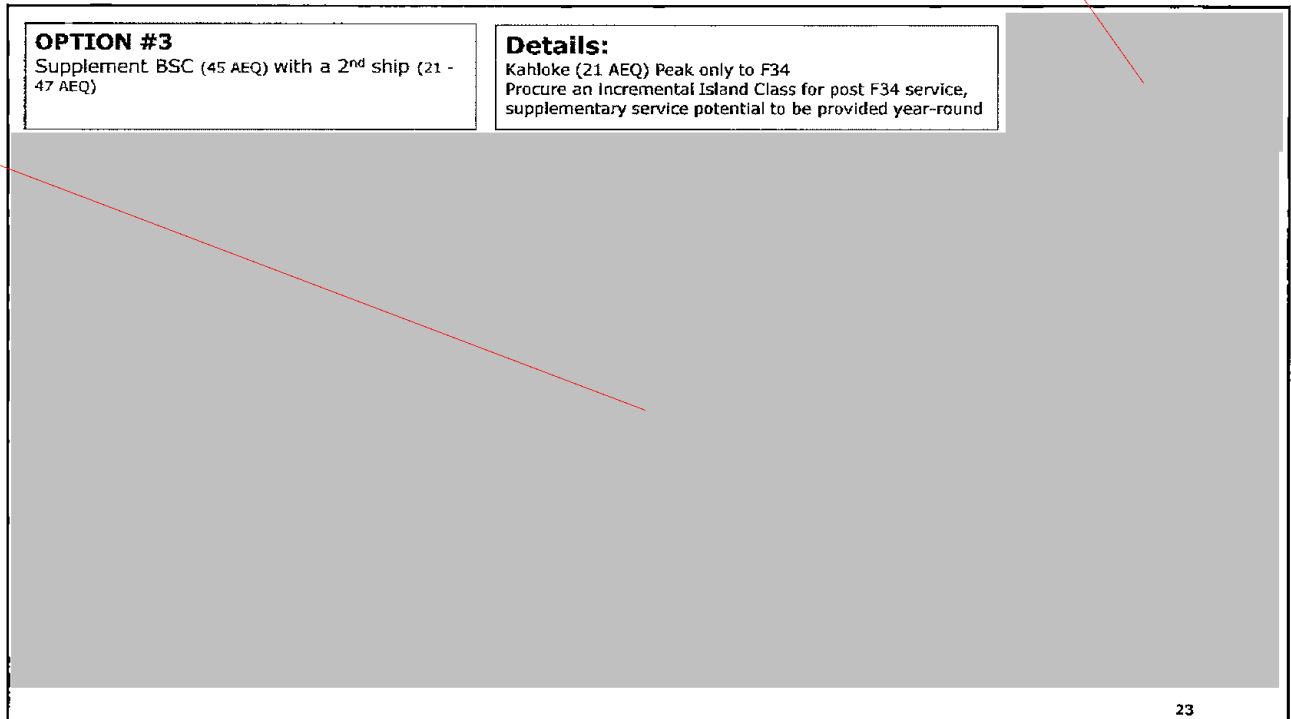


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OPTION #3
Supplement BSC (45 AEQ) with a 2nd ship (21 -
47 AEQ)

Details:
Kahloke (21 AEQ) Peak only to F34
Procure an Incremental Island Class for post F34 service,
supplementary service potential to be provided year-round

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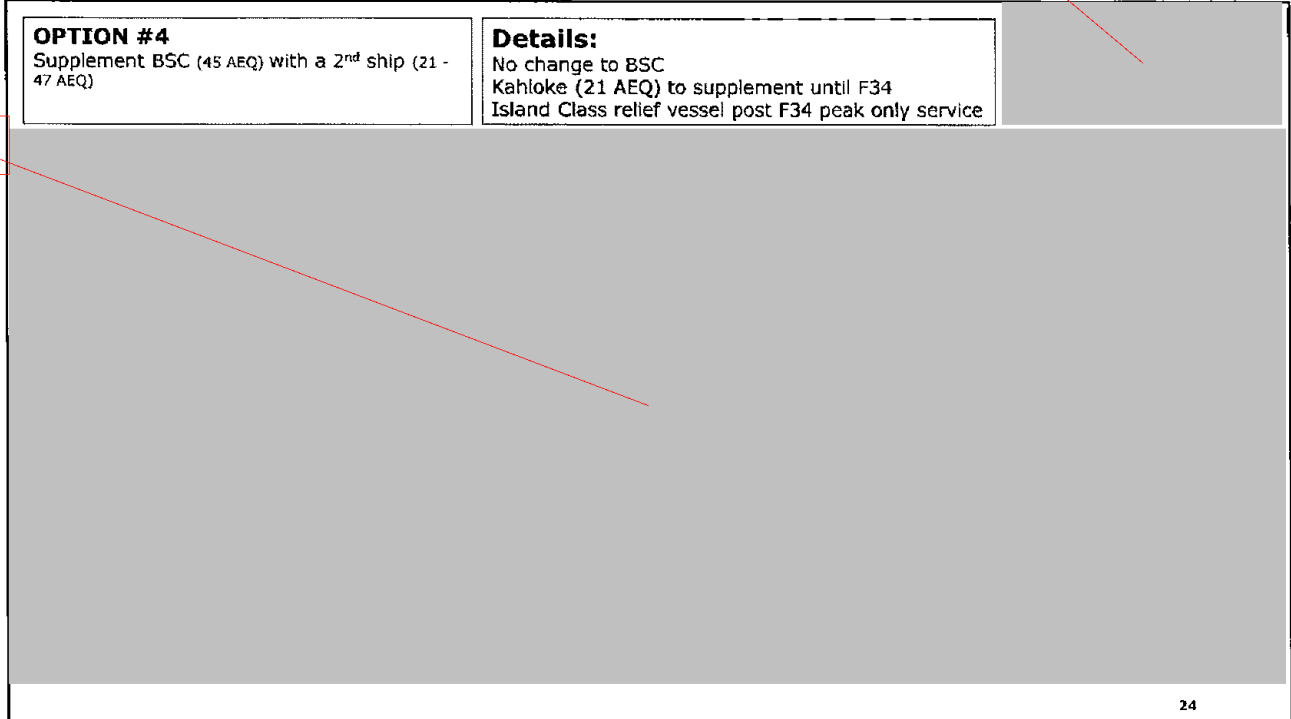


s. 17

OPTION #4
Supplement BSC (45 AEQ) with a 2nd ship (21 - 47 AEQ)

Details:
No change to BSC
Kahloke (21 AEQ) to supplement until F34
Island Class relief vessel post F34 peak only service

s. 13

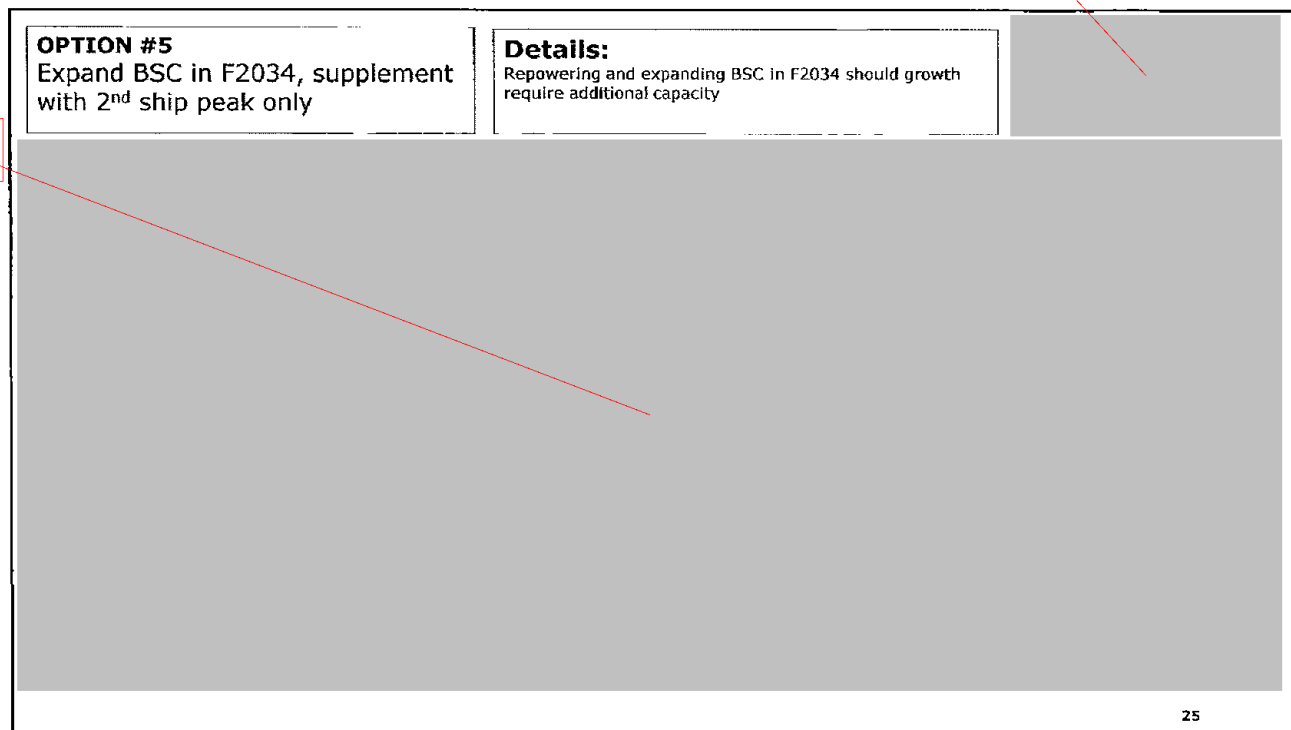


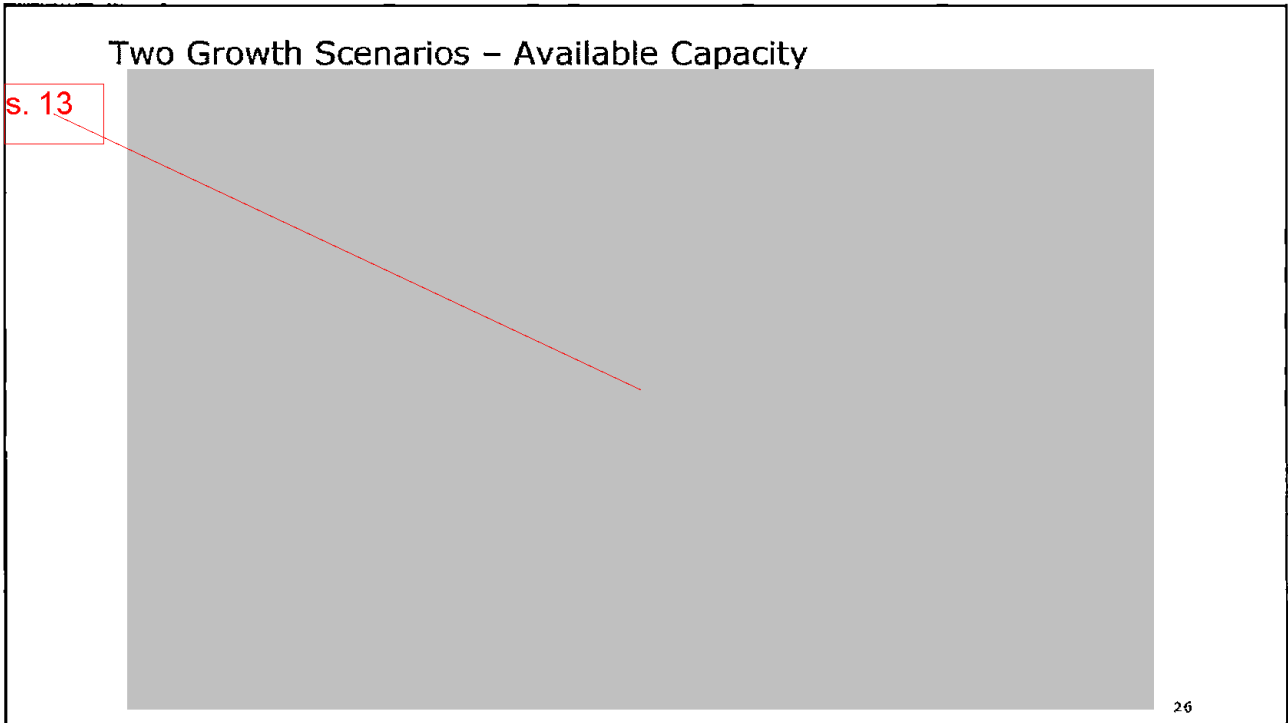
s. 17

OPTION #5
Expand BSC in F2034, supplement with 2nd ship peak only

Details:
Repowering and expanding BSC in F2034 should growth require additional capacity

s. 13





FINANCIAL ANALYSIS

Options	25 Year NPV Discounted at 7%	Non Discounted Cash Outflows (\$M)		Misc Comments
		to 2026	to 2034	
Option 1: Expansion of BSC to 64 AEQ				
Option 1a: Defer Expansion to F34, includes 2-Ship Service to F34				
Option 2: Replace with Conventional Vessel ~70 AEQ				
Option 3: Supplement BSC (45 AEQ) with a 2nd Ship (21-47 AEQ) [Kahloke to F34 then procure additional Island Class ship]				
Option 4: Supplement BSC (45 AEQ) with a 2nd Ship (21-47 AEQ) [Kahloke to F34 then utilize Island Class relief vessel]				
Option 5: Supplement BSC (45 AEQ) with a 2nd Ship (21-47 AEQ) [Kahloke to F34 then utilize Island Class relief vessel and expand BSC in F34]				

s. 17

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FINANCIAL ANALYSIS – OPTION 1

Option 1: Expansion of BSC to 64 AEQ

s. 17

Fiscal Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
NPV Year	0	1	2	3	4	5	6	7	8	9	10	11	12
Capital - BSC Investment (Repowering & Expansion) in F2026 (30% contingency)													
Capital - Denman West Conventional Berth Life Extension in 2024 (Full Highway Legal)													
Capital - Denman West Conventional Berth Life Extension in 2027													
Capital - Denman West Conventional Berth Full Replacement in 2030													
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040													
Capital - Buckley Bay TDP Improvements (Advanced from F2030 to F2026 for larger ship)													
Operating/Capital - BSC Refits every 5 Years													
Operating - BSC & Cable Annual Maintenance													
Operating - Incremental Cable Changeout Costs (post Expansion) ~\$60K/yr													
Operating - Diesel													
Operating - BSC Crewing (4)													
Operating - BSC Incremental Sr. Chief Engineer													
Summer Supplemental (Kahlake) Until BSC Expanded													
Operating - Incremental Crew for Expanded BSC (1 assumed)													
Total cash flow													
Discounted cash flow													

25 Year NPV - Option 1
 Non Discounted Cashflow to 2026
 Non Discounted Cashflow to 2034

28

FINANCIAL ANALYSIS – OPTION 1a

Option 1a: Defer Expansion to F34, includes 2-Ship Service to F34

s. 17

Fiscal Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
NPV Year	0	1	2	3	4	5	6	7	8	9	10	11	12
Capital - BSC Investment (Repower Only)													
Capital - BSC Investment (Expansion)													
Capital - Denman West Conventional Berth Life Extension in 2024 (Full Highway Legal)													
Capital - Denman West Conventional Berth Life Extension in 2027													
Capital - Denman West Conventional Berth Full Replacement in 2030													
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040													
Capital - Buckley Bay TDP Improvements in F2030													
Operating/Capital - BSC Refits every 5 Years													
Operating - BSC & Cable Annual Maintenance													
Operating - Incremental Cable Changeout Costs (post Expansion) ~\$60K/yr													
Operating - Diesel													
Operating - BSC Crewing (4)													
Operating - BSC Incremental Sr. Chief Engineer													
Summer Supplemental (Kahlake) Until 2030 (5 days per wk)													
Summer Supplemental (Kahlake) post 2030 until retirement (7 days per wk)													
Operating - Incremental Crew for Expanded BSC (1 assumed)													
Shoulder Season Increased BSC Shuttling (Until Expansion)													
Total cash flow													
Discounted cash flow													

25 Year NPV - Option 5
 Non Discounted Cashflow to 2026
 Non Discounted Cashflow to 2034

29

FINANCIAL ANALYSIS – OPTION 2

Option 2: Replace with Conventional Vessel ~70 AEQ

s. 17

Fiscal Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
NPV Year	0	1	2	3	4	5	6	7	8	9	10	11	12

Conventional 70 AEQ Ferry Build
Capital - Denman West Conventional Berth Full Replacement in 2026 *
Capital - Buckley Bay Conventional Berth Upgrade for Larger Vessel
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040
Capital - Buckley Bay TDP Improvements (Advanced from F2030 to F2026 for larger ship)
Capital - Conventional 70 AEQ Ferry QLU (Approx. 2041)
Capital - Conventional 70 AEQ Ferry MLU (just outside of 25 years)
BSC Operating Costs & Kahloke Summer Supplemental through F2026
Operating/Capital - Conventional Refits every 5 Years
Operating - Conventional Annual Maintenance
Operating - Diesel & Urea
Operating - Conventional Ferry Crewing (7, based on Quinsam on R6 in F2024)
Sale value of BSC? Offset by any cable ferry decommissioning costs? (assumes nil)
Residual value of New Build 70 AEQ vessel in 2048 (assumes remaining NBV)
Total cash flow
Discounted cash flow

*Potential ~\$10M less to convert cable ferry berth

25 Year NPV - Option 2
 Non Discounted Cashflow to 2026
 Non Discounted Cashflow to 2034

30

FINANCIAL ANALYSIS – OPTION 3

Option 3: Supplement BSC (45 AEQ) with a 2nd Ship (21-47 AEQ)
 [Kahloke to F34 then procure additional Island Class ship]

s. 17

Fiscal Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
NPV Year	0	1	2	3	4	5	6	7	8	9	10	11	12

Capital - BSC Investment (Repower Only)
Capital - Denman West Conventional Berth Life Extension in 2024 (Full Highway Legal)
Capital - Denman West Conventional Berth Life Extension in 2027
Capital - Denman West Conventional Berth Full Replacement in 2030
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040
Capital - Buckley Bay TDP Improvements in F2030
Operating/Capital - BSC Refits every 5 Years
Operating - BSC & Cable Annual Maintenance
Operating - Diesel
Operating - BSC Crewing (4)
Operating - BSC Incremental Sr. Chief Engineer
Summer Supplemental [Kahloke] until 2030 (5 days per wk)
Summer Supplemental [Kahloke] post 2030 until retirement (7 days per wk)
Capital - New Island Class Conventional Vessel in F2035
Summer Supplemental with New Island Class (Fuel, Labour)
New Island Class Annual Maintenance (100% allocated)
New Island Class Caretaking out of Peak Season (100% allocated) - 9 months @ \$100K
Capital - Conventional QLU (outside 25 years)
Capital - Conventional MLU (outside the 25 years)
Operating/Capital - Conventional Refits every 5 Years
Residual value of New Build Island Class in 2048 (assumes remaining NBV)
Total cash flow
Discounted cash flow

25 Year NPV - Option 3
 Non Discounted Cashflow to 2027
 Non Discounted Cashflow to 2035

31

FINANCIAL ANALYSIS – OPTION 4

Option 4: Supplement BSC (45 AEQ) with a 2nd Ship (21-47 AEQ)
[Kahloke to F2 then utilize Island Class relief vessel]

s. 17

Fiscal Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
NPV Year	0	1	2	3	4	5	6	7	8	9	10	11	12
Capital - BSC Investment (Repower Only)													
Capital - Denman West Conventional Berth Life Extension in 2024 (Full Highway Legal)													
Capital - Denman West Conventional Berth Life Extension in 2027													
Capital - Denman West Conventional Berth Full Replacement in 2030													
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040													
Capital - Buckley Bay TDP Improvements in F2030													
Operating/Capital - BSC Refits every 5 Years													
Operating - BSC & Cable Annual Maintenance													
Operating - Diesel													
Operating - BSC Crewing (4)													
Operating - BSC Incremental Sr. Chief Engineer													
Summer Supplemental (Kahloke) Until 2030 (5 days per wk)													
Summer Supplemental (Kahloke) post 2030 until retirement (7 days per wk)													
Summer Supplemental (IC) in Summer Only													
Shoulder Season Increased BSC Shuttling													
Total cash flow													
Discounted cash flow													

25 Year NPV - Option 4
 Non Discounted Cashflow to 2025
 Non Discounted Cashflow to 2034

32

FINANCIAL ANALYSIS – OPTION 5

Option 5: Supplement BSC (45 AEQ) with a 2nd Ship (21-47 AEQ)
[Kahloke to F3 then utilize Island Class relief vessel and expand BSC in F34]

s. 17

Fiscal Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
NPV Year	0	1	2	3	4	5	6	7	8	9	10	11	12
Capital - BSC Investment (Repower Only)													
Capital - BSC Investment (Expansion)													
Capital - Denman West Conventional Berth Life Extension in 2024 (Full Highway Legal)													
Capital - Denman West Conventional Berth Life Extension in 2027													
Capital - Denman West Conventional Berth Full Replacement in 2030													
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040													
Capital - Buckley Bay TDP Improvements in F2030													
Operating/Capital - BSC Refits every 5 Years													
Operating - BSC & Cable Annual Maintenance													
Operating - Incremental Cable Changeout Costs (post Expansion) ~\$60K/yr													
Operating - Diesel													
Operating - BSC Crewing (4)													
Operating - BSC Incremental Sr. Chief Engineer													
Summer Supplemental (Kahloke) Until 2030 (5 days per wk)													
Summer Supplemental (Kahloke) post 2030 until retirement (7 days per wk)													
Operating - incremental Crew for Expanded BSC (1 assumed)													
Summer Supplemental (IC) in Summer Only													
Shoulder Season Increased BSC Shuttling (Until Expansion)													
Total cash flow													
Discounted cash flow													

25 Year NPV - Option 5
 Non Discounted Cashflow to 2025
 Non Discounted Cashflow to 2034

33

From: Anderson, Brian
To: Sharland, Jill
Cc: Johnston, Karen; Jessica van Delden (Jessica.VanDelden@bcferries.com)
Subject: RE: [EXTERNAL] review of Baynes Sound Connector
Date: January 23, 2023 8:19:00 PM

Yes.

Will work with Karen on a communications plan that factors in our internal and external parties – employees, boards, commissioner, ministry, community, etc...

From: Sharland, Jill
Sent: January 23, 2023 5:20 PM
To: Anderson, Brian
Subject: FW: [EXTERNAL] review of Baynes Sound Connector

Can you respond on my behalf?

Thanks

Jill Sharland

Interim President and CEO

British Columbia Ferry Services Inc.

T: 250-978-1277 **C:** [REDACTED] s. 15, 19

Jill.Sharland@bcferries.com

From: Bernhard Weiss <bernhard.weiss.ca@gmail.com>

Sent: January 09, 2023 4:40 PM

To: Sharland, Jill <Jill.Sharland@bcferries.com>

Subject: [EXTERNAL] review of Baynes Sound Connector

CAUTION: This email originated from outside of BC Ferries. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Madam,

do you have a timeline as to when the review of the BSC and decision about the future of Route 21 will be complete?

Submissions to the Commissioner re PT6 are due soon, and as far as the Hornby/ Denman situation is concerned, the decisions about Route 21 need to be known.

Regards,

Bernhard Weiss

From: [Terry Wright](#)
To: [Simpson, Peter](#)
Cc: [Doyle, Joanne](#)
Subject: [EXTERNAL] RE: DRAFT for you
Date: January 26, 2023 8:50:48 AM
Attachments: [BSC Review Brief - Draft V2 pgs with TW comments.docx](#)

CAUTION: This email originated from outside of BC Ferries. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Peter and Joanne

I make some suggested edits and have also suggested removing a couple of sections to shorten the overall briefing note – and keep things at a relatively high level

I used track changes, and have attached the note with all changes hidden so that its easier to read and see the flow.

Terry

From: Simpson, Peter <Peter.Simpson@bcferries.com>
Sent: January 25, 2023 4:02 PM
To: Terry Wright <terry.wright@ipsconsulting.ca>
Cc: Doyle, Joanne <Joanne.Doyle@bcferries.com>
Subject: RE: DRAFT for you

Hi Terry
Attached is Decision Request for your review and input.
Thanks, talk soon.
Peter

From: Doyle, Joanne <Joanne.Doyle@bcferries.com>
Sent: January 25, 2023 9:38 AM
To: Simpson, Peter <Peter.Simpson@bcferries.com>
Subject: DRAFT for you

Hi Peter,

I have started a draft for the BSC review and it is saved here:

- [BSC Review Brief DRAFT](#)
- [APPENDICES](#) (if we want to include for internal use)

Over to you and then Terry.

Thanks,
Joanne

Joanne Doyle

Manager, Fleet Strategic Planning
Strategy & Community Engagement

British Columbia Ferry Services Inc.

The Atrium

Suite 500, 1321 Blanshard St., Victoria, BC V8W 0B7

T: 250-978-1322 **C:** [REDACTED] **F:** 250-388-9599

Joanne.doyle@bcferries.com

s. 15, 19

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Rasmussen, Shauna

From: Adams, James
Sent: January 30, 2023 9:04 AM
To: Jones, Stephen
Cc: Amusan, Sam; Paterson, Bruce
Subject: FW: Baynes Sound connector conclusion

Morning Stephen,

I understand the BSC review is on the Feb 15 agenda for CPC.

Please keep Sam and myself posted whether direction is received on the BSC widening or electrification projects. In the meantime, we will continue to advance the feasibility studies and prepare for submission of the PBCs to March CPBC.

Thanks,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** [REDACTED] **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

s. 15, 19

From: Simpson, Peter <Peter.Simpson@bcferries.com>
Sent: January 30, 2023 8:35 AM
To: Adams, James <James.Adams@bcferries.com>; Doyle, Joanne <Joanne.Doyle@bcferries.com>; Jones, Stephen <Stephen.Jones@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>; Elliott, Scott <scott.elliott@bcferries.com>
Cc: Terry Wright <terry.wright@ipsconsulting.ca>
Subject: FW: Baynes Sound connector conclusion

FYI, the BSC review is on the Feb 15 agenda for CPC.

From: Barabash, Jason <Jason.Barabash@bcferries.com>
Sent: January 27, 2023 1:53 PM
To: Anderson, Brian <Brian.Anderson@bcferries.com>
Cc: Simpson, Peter <Peter.Simpson@bcferries.com>; Taylor, Meghan <Meghan.Taylor@bcferries.com>; Sharland, Jill <Jill.Sharland@bcferries.com>; Carpendale, Joanne <Joanne.Carpendale@bcferries.com>
Subject: RE: Baynes Sound connector conclusion

We've added the 'Baynes Sound Connector report' as 2.4 under the Consent Agenda

From: Anderson, Brian <Brian.Anderson@bcferries.com>
Sent: January 27, 2023 1:02 PM
To: Sharland, Jill <Jill.Sharland@bcferries.com>; Carpendale, Joanne <Joanne.Carpendale@bcferries.com>
Cc: Simpson, Peter <Peter.Simpson@bcferries.com>; Barabash, Jason <Jason.Barabash@bcferries.com>
Subject: RE: Baynes Sound connector conclusion

Yes.

From: Sharland, Jill <Jill.Sharland@bcferries.com>
Sent: January 27, 2023 12:28 PM
To: Anderson, Brian <Brian.Anderson@bcferries.com>; Carpendale, Joanne <Joanne.Carpendale@bcferries.com>
Cc: Simpson, Peter <Peter.Simpson@bcferries.com>; Barabash, Jason <Jason.Barabash@bcferries.com>
Subject: Baynes Sound connector conclusion

Are you able to have this written up in time to include as a consent agenda item for the CPC?

Jill Sharland
Interim President and CEO
500 – 1321 Blanshard St, Victoria, BC V8W 0B7
British Columbia Ferry Services Inc.
T: 250-978-1233 **C:** [REDACTED]
Jill.Sharland@bcferries.com s. 15, 19
bcferries.com | Facebook | Twitter

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From: [Doyle, Joanne](#)
To: [Hancyk, Lesley](#)
Cc: [Simpson, Peter](#); [Elliott, Scott](#)
Subject: RE: BSC - Questions for Board brief
Date: February 02, 2023 1:17:00 PM

Nope this is perfect – it was a typo in the slides that's all. Thank you very much!

From: Hancyk, Lesley <Lesley.Hancyk@bcferries.com>
Sent: February 02, 2023 1:14 PM
To: Doyle, Joanne <Joanne.Doyle@bcferries.com>
Cc: Simpson, Peter <Peter.Simpson@bcferries.com>; Elliott, Scott <scott.elliott@bcferries.com>
Subject: RE: BSC - Questions for Board brief

s. 13

Hi Joanne, answers in red.

If you need

help in the presentation of the materials to ensure it is captured appropriately please let Scott and I know.

Example:

s. 13

Lesley Hancyk, MPACC, CPA, CA
Manager, Financial Planning & Analysis (Capital)
Finance
British Columbia Ferry Services Inc.
T: 250-978-1263 C: lesley.hancyk@bcferries.com

s. 15, 19

From: Doyle, Joanne <Joanne.Doyle@bcferries.com>
Sent: February 02, 2023 9:55 AM
To: Hancyk, Lesley <Lesley.Hancyk@bcferries.com>
Cc: Simpson, Peter <Peter.Simpson@bcferries.com>
Subject: BSC - Questions for Board brief

Hi Lesley,

In the financial analysis Brian has noticed something and I am wondering if you can help me to explain it.

s. 13

Appreciate your help.

Thanks,
Joanne

Joanne Doyle
Manager, Fleet Strategic Planning
Strategy & Community Engagement
British Columbia Ferry Services Inc.
The Atrium
Suite 500, 1321 Blanshard St., Victoria, BC V8W 0B7
T: 250-978-1322 C: joanne.doyle@bcferries.com F: 250-388-9599
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From: [Simpson, Peter](#)
To: [Terry Wright](#); [Anderson, Brian](#); [Doyle, Joanne](#)
Cc: [Doyle, Joanne](#)
Subject: RE: BSC Review
Date: February 02, 2023 1:43:55 PM
Attachments: [BSC - Supplemental Material to incorporate pgs jd edits.pptx](#)
[Brians draft with suggested changes.docx](#)

Hi Brian

I agree with Terry's suggestion for the covering note.

For the Supplemental information, find attached an updated version with both mine & Joanne's amendments completed and inserted

Peter

From: Terry Wright

Sent: February 02, 2023 8:27 AM

To: Anderson, Brian ; Simpson, Peter

Cc: Doyle, Joanne

Subject: [EXTERNAL] RE: BSC Review

CAUTION: This email originated from outside of BC Ferries. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Brian, Peter and Joanne

I reviewed the briefing note and have suggested one change to the recommendation – related to option 4 – for your consideration

Terry

From: Anderson, Brian <Brian.Anderson@bcferries.com>

Sent: February 1, 2023 4:55 PM

To: Simpson, Peter <Peter.Simpson@bcferries.com>

Cc: Doyle, Joanne <Joanne.Doyle@bcferries.com>; Terry Wright <terry.wright@ipsconsulting.ca>

Subject: RE: BSC Review

Peter and team, thank you for this.

I drafted the attached cover note for our board and adjusted the descriptions and tables to better reflect the "lay person's" understanding of the options and considerations. Please advise if there is anything now misrepresented through this activity, especially the option descriptions from the Supplemental Material powerpoint. I do not plan to include the detailed financial slides and made no edits to them.

Many thanks – Brian.

From: Simpson, Peter <Peter.Simpson@bcferries.com>

Sent: January 26, 2023 4:29 PM

To: Anderson, Brian <Brian.Anderson@bcferries.com>

Cc: Doyle, Joanne <Joanne.Doyle@bcferries.com>; Terry Wright <terry.wright@ipsconsulting.ca>

Subject: BSC Review

Brian, for your first review.

Peter

Peter Simpson

Director, Fleet Operations Strategy

Strategy and Community Engagement

British Columbia Ferry Services Inc.

Suite 500, 1321 Blansard Street, Victoria, BC

T: 250.978.1163 C: [REDACTED]

peter.simpson@bcferries.com

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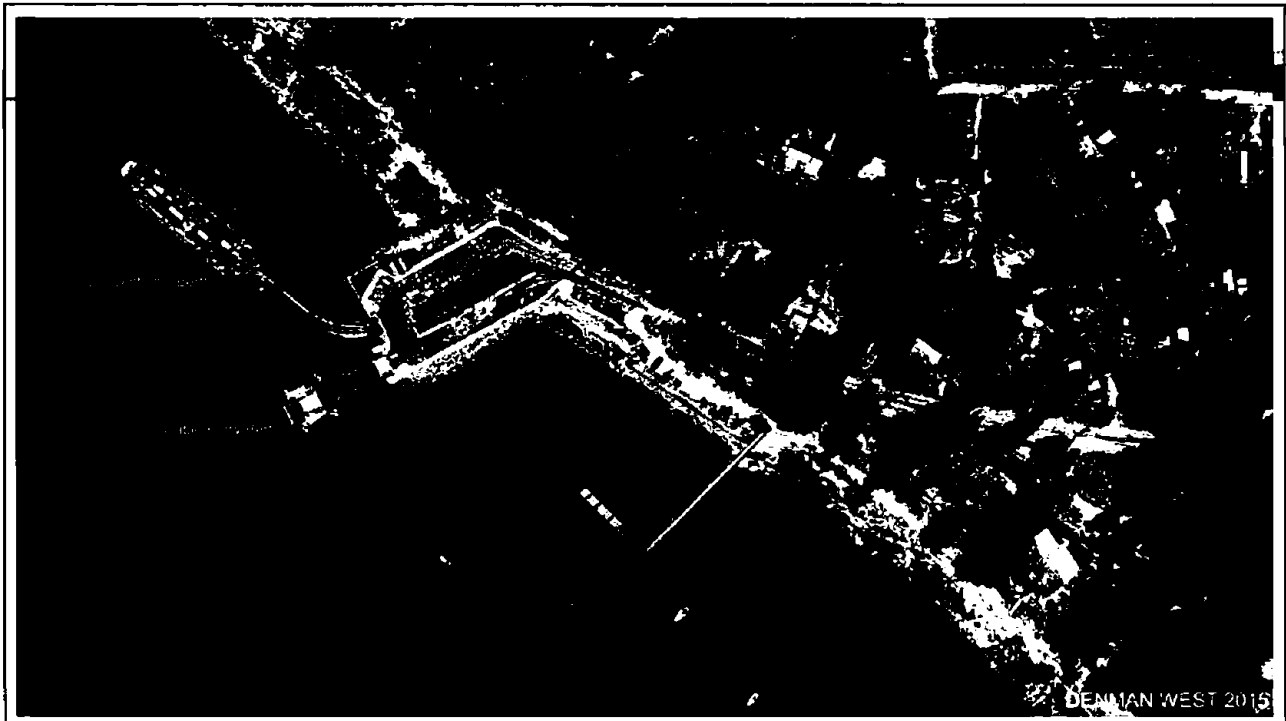
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SUPPLEMENTAL MATERIAL

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OPTION #1

Base Performance Term 6 plan

Details:

Provide supplemental peak service until F26 and then expand BSC. Remove supplementary peak service at that time.

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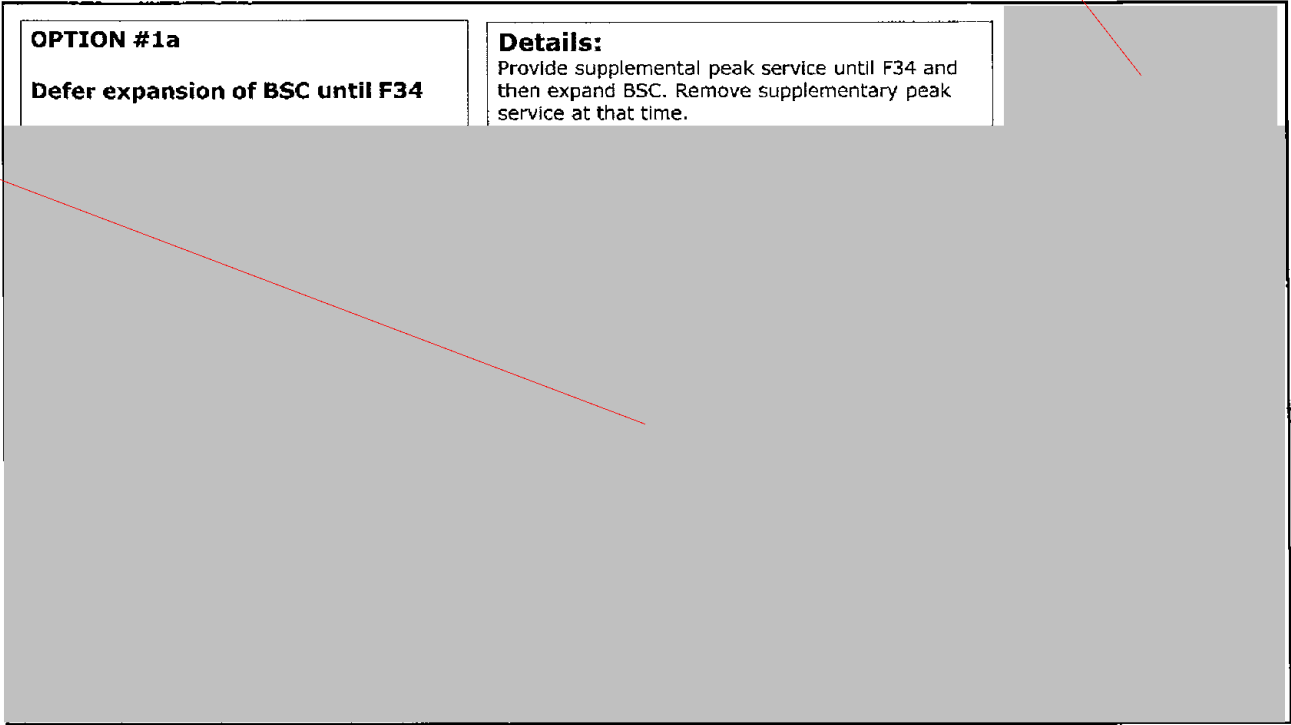
OPTION #1a

Defer expansion of BSC until F34

Details:

Provide supplemental peak service until F34 and then expand BSC. Remove supplementary peak service at that time.

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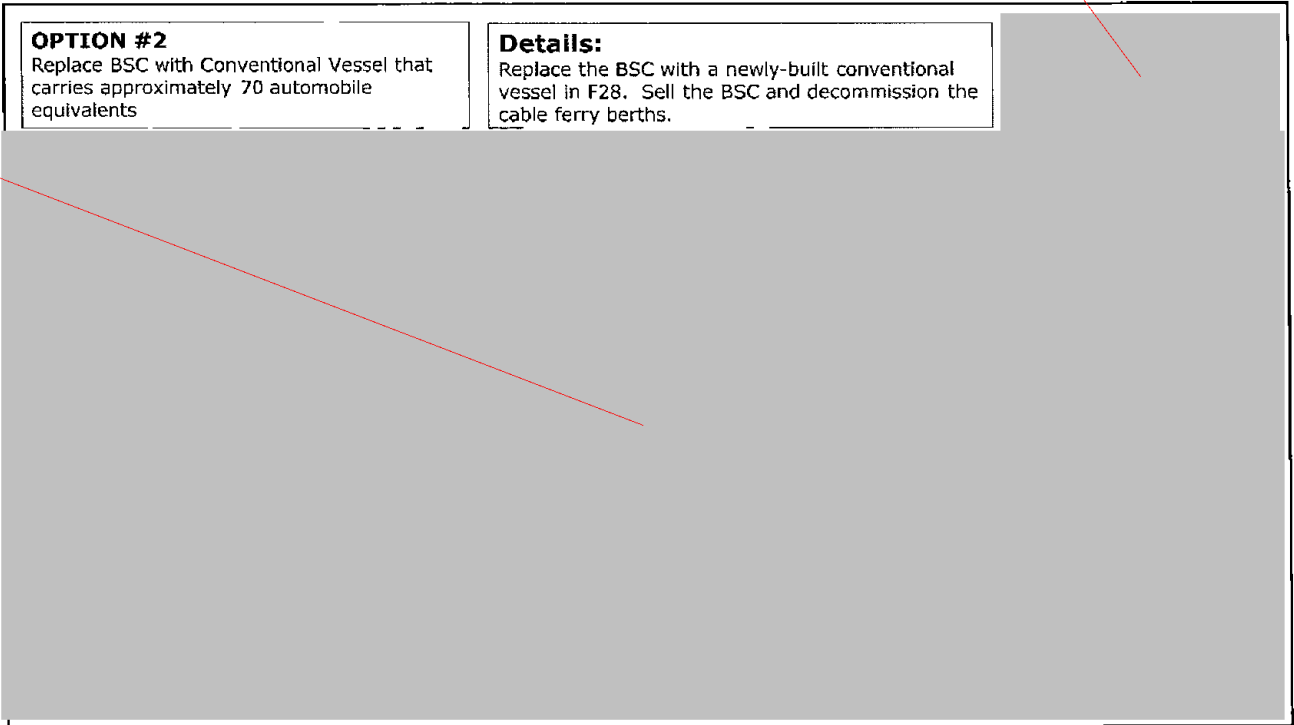
OPTION #2

Replace BSC with Conventional Vessel that carries approximately 70 automobile equivalents

Details:

Replace the BSC with a newly-built conventional vessel in F28. Sell the BSC and decommission the cable ferry berths.

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OPTION #3
Supplement BSC indefinitely rather than expand it

Details:
Do not expand the BSC. Continue with supplemental peak service until F34, then transition to potential year-round supplemental service with dedicated Island Class vessel.

s. 13

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OPTION #4
Supplement BSC indefinitely rather than expand it

Details:
Do not expand the BSC. Continue with supplemental peak service indefinitely, first with Kahlke and transitioning to one of the relief Island Class vessels.

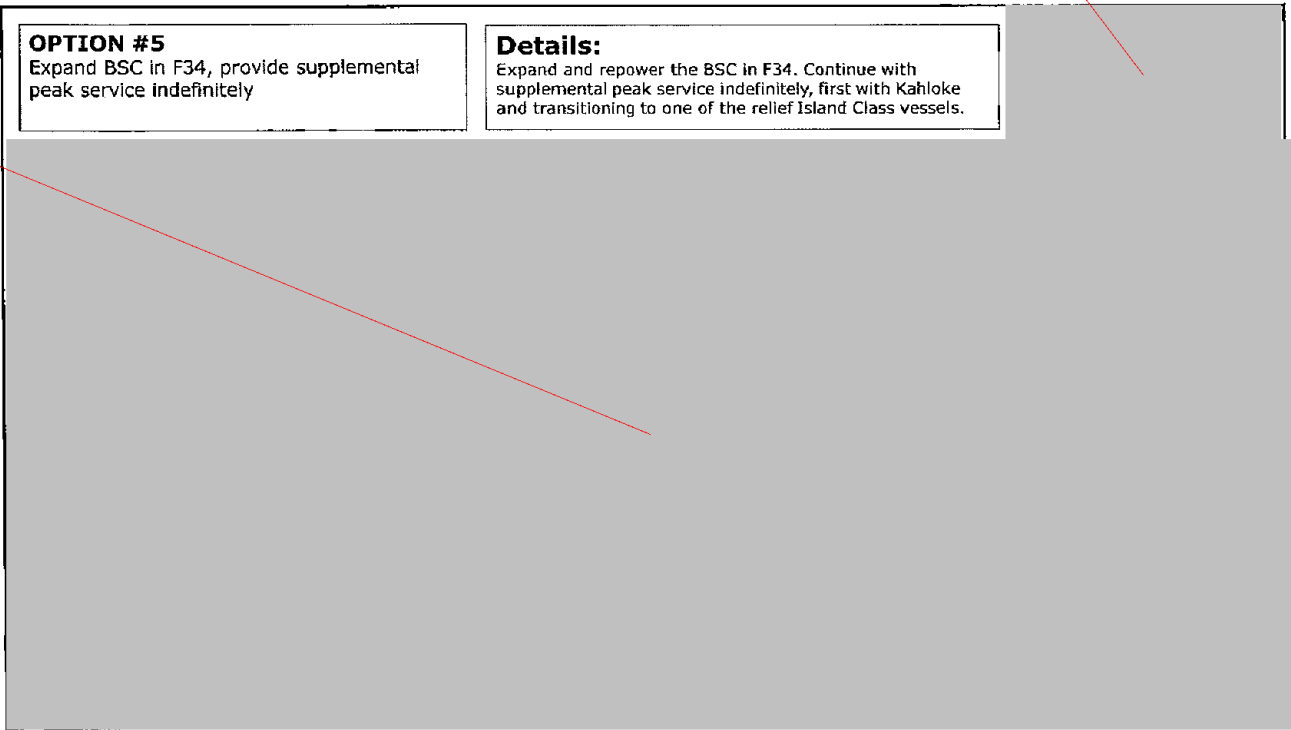
s. 13

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OPTION #5
Expand BSC in F34, provide supplemental peak service indefinitely

Details:
Expand and repower the BSC in F34. Continue with supplemental peak service indefinitely, first with Kahloke and transitioning to one of the relief Island Class vessels.

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Two Growth Scenarios – Available Capacity

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FINANCIAL ANALYSIS

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Options	25 Year NPV	Non Discounted Cash Outflows (\$M)		Misc Comments
	Discounted at 7%	to 2026	to 2034	
Option 1: Expansion of BSC to 64 AEQ				
Option 1a: Defer Expansion to F34, includes 2-Ship Service to F34				
Option 2: Replace with Conventional Vessel ~70 AEQ				
Option 3: Supplement BSC (45 AEQ) with a 2nd Ship (21-47 AEQ) [Kahloke to F34 then procure additional Island Class ship]				
Option 4: Supplement BSC (45 AEQ) with a 2nd Ship (21-47 AEQ) [Kahloke to F34 then utilize Island Class relief vessel]				
Option 5: Supplement BSC (45 AEQ) with a 2nd Ship (21-47 AEQ) [Kahloke to F34 then utilize Island Class relief vessel and expand BSC in F34]				

FINANCIAL ANALYSIS – OPTION 1

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Option 1: Expansion of BSC to 64 AEQ

Fiscal Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
NPV Year	0	1	2	3	4	5	6	7	8	9	10	11	12
Capital - BSC Investment (Repowering & Expansion) in F2026 (30% contingency)													
Capital - Denman West Conventional Berth Life Extension in 2024 (Full Highway Legal)													
Capital - Denman West Conventional Berth Life Extension in 2027													
Capital - Denman West Conventional Berth Full Replacement in 2030													
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040													
Capital - Buckley Bay TDP Improvements (Advanced from F2030 to F2026 for larger ship)													
Operating/Capital - BSC Refits every 5 Years													
Operating - BSC & Cable Annual Maintenance													
Operating - Incremental Cable Changeout Costs (post Expansion) ~\$60K/yr													
Operating - Diesel													
Operating - BSC Crewing (4)													
Operating - BSC Incremental Sr. Chief Engineer													
Summer Supplemental (Kahloke) Until BSC Expanded													
Operating - Incremental Crew for Expanded BSC (1 assumed)													
Total cash flow													
Discounted cash flow													

25 Year NPV - Option 1
 Non Discounted Cashflow to 2026
 Non Discounted Cashflow to 2034

FINANCIAL ANALYSIS – OPTION 1a

Option 1a: Defer Expansion to F34, includes 2-Ship Service to F34

s. 17

	Fiscal Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
	NPV Year	0	1	2	3	4	5	6	7	8	9	10	11	12
Capital - BSC Investment (Repower Only)														
Capital - BSC Investment (Expansion)														
Capital - Denman West Conventional Berth Life Extension in 2024 (Full Highway Legal)														
Capital - Denman West Conventional Berth Life Extension in 2027														
Capital - Denman West Conventional Berth Full Replacement in 2030														
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040														
Capital - Buckley Bay TDP Improvements in F2030														
Operating/Capital - BSC Refits every 5 Years														
Operating - BSC & Cable Annual Maintenance														
Operating - Incremental Cable Changeout Costs (post Expansion) ~\$60K/yr														
Operating - Diesel														
Operating - BSC Crewing (4)														
Operating - BSC Incremental Sr. Chief Engineer														
Summer Supplemental (Kahloke) Until 2030 (5 days per wk)														
Summer Supplemental (Kahloke) post 2030 until retirement (7 days per wk)														
Operating - Incremental Crew for Expanded BSC (1 assumed)														
Shoulder Season Increased BSC Shuttling (Until Expansion)														
Total cash flow														
Discounted cash flow														

25 Year NPV - Option 1a
 Non Discounted Cashflow to 2026
 Non Discounted Cashflow to 2034

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FINANCIAL ANALYSIS – OPTION 2

Option 2: Replace with Conventional Vessel ~70 AEQ

s. 17

	Fiscal Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
	NPV Year	0	1	2	3	4	5	6	7	8	9	10	11	12
Conventional 70 AEQ Ferry Build														
Capital - Denman West Conventional Berth Full Replacement in 2026 *														
Capital - Buckley Bay Conventional Berth Upgrade for Larger Vessel														
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040														
Capital - Buckley Bay TDP Improvements (Advanced from F2030 to F2026 for larger ship)														
Capital - Conventional 70 AEQ Ferry Q/U (Approx. 2041)														
Capital - Conventional 70 AEQ Ferry M/U (just outside of 25 years)														
BSC Operating Costs & Kahloke Summer Supplemental through F2026														
Operating/Capital - Conventional Refits every 5 Years														
Operating - Conventional Annual Maintenance														
Operating - Diesel & Urea														
Operating - Conventional Ferry Crewing (7, Based on Quinsam on R6 in F2024)														
Sale value of BSC? Offset by any cable ferry decommissioning costs? (assumes nil)														
Residual value of New Build 70 AEQ vessel in 2048 (assumes remaining NBV)														
Total cash flow														
Discounted cash flow														

*Potential ~\$10M less to convert cable ferry berth

25 Year NPV - Option 2
 Non Discounted Cashflow to 2026
 Non Discounted Cashflow to 2034

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FINANCIAL ANALYSIS – OPTION 3

Option 3: Supplement BSC (45 AEQ) with a 2nd Ship (21-47 AEQ)
 [Kahloke to F34 then procure additional Island Class ship]

s. 17

Fiscal Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
NPV Year	0	1	2	3	4	5	6	7	8	9	10	11	12
Capital - BSC Investment (Repower Only)													
Capital - Denman West Conventional Berth Life Extension in 2024 (Full Highway Legal)													
Capital - Denman West Conventional Berth Life Extension in 2027													
Capital - Denman West Conventional Berth Full Replacement in 2030													
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040													
Capital - Buckley Bay TDP Improvements In F2030													
Operating/Capital - BSC Refits every 5 Years													
Operating - BSC & Cable Annual Maintenance													
Operating - Diesel													
Operating - BSC Crewing (4)													
Operating - BSC Incremental Sr. Chief Engineer													
Summer Supplemental (Kahloke) Until 2030 (5 days per wk)													
Summer Supplemental (Kahloke) post 2030 until retirement (7 days per wk)													
Capital - New Island Class Conventional Vessel In F2035													
Summer Supplemental with New Island Class (Fuel, Labour)													
New Island Class Annual Maintenance (100% allocated)													
New Island Class Caretaking out of Peak Season (100% allocated) - 9 months @ \$100K													
Capital - Conventional OLU (outside 25 years)													
Capital - Conventional MLU (outside the 25 years)													
Operating/Capital - Conventional Refits every 5 Years													
Residual value of New Build Island Class in 2048 (assumes remaining NBV)													
Total cash flow													
Discounted cash flow													

25 Year NPV - Option 3
 Non Discounted Cashflow to 2026
 Non Discounted Cashflow to 2034

FINANCIAL ANALYSIS – OPTION 4

Option 4: Supplement BSC (45 AEQ) with a 2nd Ship (21-47 AEQ)
 [Kahloke to F34 then utilize Island Class relief vessel]

s. 17

Fiscal Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
NPV Year	0	1	2	3	4	5	6	7	8	9	10	11	12
Capital - BSC Investment (Repower Only)													
Capital - Denman West Conventional Berth Life Extension in 2024 (Full Highway Legal)													
Capital - Denman West Conventional Berth Life Extension in 2027													
Capital - Denman West Conventional Berth Full Replacement in 2030													
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040													
Capital - Buckley Bay TDP Improvements In F2030													
Operating/Capital - BSC Refits every 5 Years													
Operating - BSC & Cable Annual Maintenance													
Operating - Diesel													
Operating - BSC Crewing (4)													
Operating - BSC Incremental Sr. Chief Engineer													
Summer Supplemental (Kahloke) Until 2030 (5 days per wk)													
Summer Supplemental (Kahloke) post 2030 until retirement (7 days per wk)													
Summer Supplemental (IC) in Summer Only													
Shoulder Season Increased BSC Shuttling													
Total cash flow													
Discounted cash flow													

25 Year NPV - Option 4
 Non Discounted Cashflow to 2026
 Non Discounted Cashflow to 2034

FINANCIAL ANALYSIS – OPTION 5

Option 5: Supplement BSC (45 AEq) with a 2nd Ship (21-47 AEq)
[Kahioke to F34 then utilize Island Class relief vessel and expand BSC in F34]

s. 17

Fiscal Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
NPV Year	0	1	2	3	4	5	6	7	8	9	10	11	12
Capital - BSC Investment (Repower Only)													
Capital - BSC Investment (Expansion)													
Capital - Denman West Conventional Berth Life Extension in 2024 (Full Highway Legal)													
Capital - Denman West Conventional Berth Life Extension in 2027													
Capital - Denman West Conventional Berth Full Replacement in 2030													
Capital - Buckley Bay Conventional Berth Life Extensions in 2030 and 2040													
Capital - Buckley Bay TDP Improvements in F2030													
Operating/Capital - BSC Refits every 5 Years													
Operating - BSC & Cable Annual Maintenance													
Operating - Incremental Cable Changeout Costs (post Expansion) ~\$60K/yr													
Operating - Diesel													
Operating - BSC Crewing (4)													
Operating - BSC Incremental Sr. Chief Engineer													
Summer Supplemental (Kahioke) Until 2030 (5 days per wk)													
Summer Supplemental (Kahioke) post 2030 until retirement (7 days per wk)													
Operating - Incremental Crew for Expanded BSC (1 assumed)													
Summer Supplemental (IC) in Summer Only													
Shoulder Season Increased BSC Shuttling (Until Expansion)													
Total cash flow													
Discounted cash flow													
25 Year NPV - Option 5													
Non Discounted Cashflow to 2026													
Non Discounted Cashflow to 2034													

February 16, 2023

Baynes Sound Connector Review

PURPOSE

This report summarizing BC Ferries' review of the *Baynes Sound Connector* ("BSC") capacity and propulsion upgrades is provided FOR INFORMATION.

BACKGROUND

The BSC is a cable ferry serving Route 21 between Vancouver Island (Buckley Bay) and Denman Island (Denman Island West). This is the sole cable ferry in BC Ferries' fleet and, since its introduction, it has presented unique technical challenges related to its design and systems. While it meets the requirements for service delivery, mechanical reliability remains a concern and the vessel is prone to service speed reductions (especially during summer), primarily due to extreme hull fouling.

Maintenance costs for this vessel have been significantly higher than anticipated in the business case and are driven by a number of factors. Since vessel introduction, several modifications have improved performance or reduced costs, including:

- Development of the drive tunnel roller system;
- Use of a hull cleaning robot;
- Fire monitor system upgrade;
- Redesign of the guide sheaves and sheave bearings; and
- Redesign of the bull wheel and seawater strainer modifications.

These efforts have reduced fuel usage, increased vessel performance or reduced restrictions on deck space.

While targeted technical modifications have achieved some improvements, costs remain above business case estimates. In addition, the following unresolved vessel issues are under investigation and there are solutions under development that are anticipated to improve vessel reliability and transit times:

- Overheating of the hydraulic motors
- Bolt cracking on the bull-wheel (impacting utilization of new brake system)
- Hull fouling

s. 13, s. 17

BC Ferries' Performance Term 6 submission includes [redacted] to address mechanical reliability concerns as well as expand the capacity of the BSC to support anticipated vehicle traffic growth on the route. The broad community continues to be unsupportive of the vessel and reactions to potential increased investment remain highly negative. Islanders, the Ferry Commissioner and the BC Ferry Authority have questioned vessel reliability and the proposed investments.

Prior to proceeding with planned investments, BC Ferries engaged a consultant to undertake a review of vessel operations to date and assess alternative options to accommodate future demand. This review considered service options to meet the long term forecast demand for Route 21 based on required capital expenditure and known and projected operating and maintenance costs. A 25-year financial analysis is summarized in a net present value ("NPV") figure that can be compared across the current plan and all options. Additionally, the review conducted an analysis of the anticipated performance to assess expected relative improvements in service delivery.

DISCUSSION

The two investments included in the Performance Term 6 submission (the "Current Plan") to support growing demand on Denman and Hornby Islands include expansion of the cable ferry along with repowering.

The review considered eight alternative options summarized in Table 1. Three options were eliminated from further study because they were not technically practical or operationally feasible. Options that consider maintaining the BSC include the maintenance and replacement of the conventional berths on the route to support seasonal supplementary service and refit relief. Options that consider expanding the BSC include an investment to increase carrying capacity from 45 to 64 automobile equivalents and repowering. All service options were analyzed using a range of growth projections from 0.41% to 2% annually. More detailed information and service quality assessment for each assessed option is attached.

RECOMMENDATION

s. 13

Attachment

1. Option considerations and service analysis

From: [Anderson, Brian](#)
To: [Anderson, Brian](#); [Barabash, Jason](#); [Carpendale, Joanne](#); [Carson, Janet](#); [Dobrinsky, Dean](#); [Martinez, Erwin](#); [Sharland, Jill](#); [Storey, Corrine](#)
Cc: [Taylor, Meghan](#)
Subject: Board Report: 2.4 - BSC Review
Date: February 03, 2023 3:09:04 PM
Attachments: [2.4 Baynes Sound Connector Review.docx](#)

Hi team,

Jill asked me to forward the BSC review item requested to be included in the board material. If you have any feedback that you would like to see incorporated, or any questions about the analysis/conclusions please let me know by end-of-day Monday. Thanks, Brian.

Brian Anderson (he/him)
Vice President, Strategy and Community Engagement
British Columbia Ferry Services Inc.
Suite 500 – 1321 Blanshard Street, Victoria, BC V8W 0B7
T: 250-978-1276
brian.anderson@bcferries.com

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February 16, 2023

Baynes Sound Connector Review

PURPOSE

This report summarizing BC Ferries' review of the *Baynes Sound Connector* ("BSC") capacity and propulsion upgrades is provided FOR INFORMATION.

BACKGROUND

The BSC is a cable ferry serving Route 21 between Vancouver Island (Buckley Bay) and Denman Island (Denman Island West). This is the sole cable ferry in BC Ferries' fleet and, since its introduction, it has presented unique technical challenges related to its design and systems. While it meets the requirements for service delivery, mechanical reliability remains a concern and the vessel is prone to service speed reductions (especially during summer), primarily due to extreme hull fouling.

Maintenance costs for this vessel have been significantly higher than anticipated in the business case and are driven by a number of factors. Since vessel introduction, several modifications have improved performance or reduced costs, including:

- Development of the drive tunnel roller system;
- Use of a hull cleaning robot;
- Redesign of the guide sheaves and sheave bearings; and
- Redesign of the bull wheel and seawater strainer modifications.

These efforts have reduced fuel usage, increased vessel performance or reduced restrictions on deck space.

While targeted technical modifications have achieved some improvements, costs remain above business case estimates. In addition, the following unresolved vessel issues are under investigation and there are solutions under development that are anticipated to improve vessel reliability and transit times, including:

- Overheating of the hydraulic motors;
- Bolt cracking on the bull-wheel (impacting utilization of the brake system); and
- Hull fouling.

BC Ferries' Performance Term 6 submission includes \$17.9M to address mechanical reliability concerns as well as expand the capacity of the BSC to support anticipated vehicle traffic growth on the route. The broad community continues to be unsupportive of the vessel and reactions to potential increased investment remain highly negative. Islanders, the Ferry Commissioner and the BC Ferry Authority have questioned vessel reliability and the proposed investments.

Prior to proceeding with planned investments, BC Ferries engaged a consultant to undertake a review of vessel operations to date and assess alternative options to accommodate future demand. This review considered service options to meet the long term forecast demand for Route 21 based on required capital expenditure and known and projected operating and maintenance costs. A 25-year financial analysis summarizes the anticipated capital and operating expenditures into a net present value ("NPV") figure that can be compared across the current plan and options. The review also conducted an analysis of the anticipated performance to assess expected relative improvements in service delivery.

DISCUSSION

The Performance Term 6 submission to support growing demand on Denman and Hornby Islands includes \$17.9M to expand and repower the BSC in 2026. The larger ship increases capacity at peak times; although during shuttling operations, this increase comes at that expense of frequency due to increased loading and

unloading time. The original business case for the cable ferry envisioned decommissioning the conventional ferry berths; however, the plan now anticipates keeping both conventional berths as well as the cable ferry berths to support operations and refits (four berths in total).

Base case deployment and seasonal service capacity analysis anticipated over the planning horizon is summarized below and a comparative table is provided for each option.

Base Case		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
Vessel Deployment	Denman Island	BSC		Expanded Baynes Sound Connector																					
	Buckey Bay (Peak Only)	KAH																							
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																								
Average Vehicle Space Capacity Available				5 to 15%		15 to 30%		30 to 50%		50 to 75%															

Option Assessment

The review considered five alternatives that are technically practical and operationally feasible. Options that consider maintaining the BSC include the maintenance and replacement of the conventional berths on the route to support seasonal supplementary service and refit relief. Options that consider expanding the BSC include an investment to increase carrying capacity from 45 to 64 automobile equivalents and repowering.

All service options were analyzed using a range of annual growth projections from 0.41% to 2%; those presented in this report use 1% annual growth for all vehicle types.

Option 1: Defer Expansion until 2034

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering. Supplemental vessel service during the peak season would continue until 2034, at which time the BSC would be expanded at an estimated cost of \$15.9M. The supplemental vessel is expected to be required more frequently in the peak season beginning in 2030 and can transition from five to seven days per week operation. Remaining components are consistent with the base case.

Defer expansion until 2034		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
Vessel Deployment	Denman Island	BSC		Expanded Baynes Sound Connector																					
	Buckey Bay (Peak Only)	KAH (5 days)		KAH (7 days)																					
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																								
Average Vehicle Space Capacity Available				5 to 15%		15 to 30%		30 to 50%		50 to 75%															

Option 2: Replace BSC with Conventional Ferry

This alternative avoids any further investment in the BSC and instead \$91.9M is allocated to replace the BSC with a newly-built conventional vessel and rebuild the terminal berths by 2028. A larger conventional vessel requires a larger number of highly qualified crew (three licensed - Master, Mate, Chief Engineer) with an incremental workforce of nine positions (three per watch). The BSC would be offered for sale (no material proceeds anticipated) and the remaining two berths would be decommissioned.

Replace BSC with Conventional Ferry		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
Vessel Deployment	Denman Island	BSC		NEW CONVENTIONAL VESSEL (~70 AEQ)																					
	Buckey Bay (Peak Only)	KAH																							
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																								
Average Vehicle Space Capacity Available				5 to 15%		15 to 30%		30 to 50%		50 to 75%															

Option 3: Supplement the BSC Indefinitely Rather Than Expand

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering of the BSC. Supplemental vessel service during the peak season would continue indefinitely, starting with the Kahloke (21 automobile capacity) and transitioning to an Island Class (47 automobile capacity) in 2035. Instead of expanding the BSC, an investment of \$65M is required to procure a dedicated Island Class vessel. This approach allows for the dedicated vessel to be available to support operations not only in the peak season but year-round, as required in the future.

Supplement the BSC Indefinitely Rather Than Expand		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46									
3	Vessel Deployment	Denman Island																															
		Buckey Bay (Peak Only)	KAH (5days)							KAH (7days)							Incremental Island Class (7days peak)																
	Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																															
		Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																															
	Peak (late-June to Labour Day)																																
Average Vehicle Space Capacity Available		5 to 15%							15 to 30%							30 to 50%									50 to 75%								

Option 4: Supplement the BSC Indefinitely Rather Than Expand

This alternative is a very similar to Option 3, but relies upon an existing Island Class vessel to provide supplemental service post 2034. Because the Island Class vessel is required to provide maintenance relief across the fleet, it is only available to provide supplemental service on this route in the peak season.

Supplement the BSC Indefinitely Rather Than Expand		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46									
4	Vessel Deployment	Denman Island																															
		Buckey Bay (Peak Only)	KAH (5days)							KAH (7days)							Relief Island Class (7days peak)																
	Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																															
		Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																															
	Peak (late-June to Labour Day)																																
Average Vehicle Space Capacity Available		5 to 15%							15 to 30%							30 to 50%									50 to 75%								

Option 5: Expand the BSC in 2034 and Supplement the BSC Indefinitely

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering of the BSC, with \$15.9M allocated in 2034 to expand the vessel. Supplemental vessel service during the peak season would continue indefinitely, starting with the Kahloke (21 automobile capacity) and transitioning to an Island Class (47 automobile capacity) in 2035. Similar to Option 4, because the supplemental vessel is required to provide maintenance relief across the fleet, it would be restricted to peak season use.

Defer Expansion Until 2034 and Supplement Indefinitely		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46									
5	Vessel Deployment	Denman Island																															
		Buckey Bay (Peak Only)	KAH (5days)							KAH (7days)							Relief Island Class (7days peak)																
	Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																															
		Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																															
	Peak (late-June to Labour Day)																																
Average Vehicle Space Capacity Available		5 to 15%							15 to 30%							30 to 50%									50 to 75%								

OPTION SUMMARY

The following table summarizes the base case plan and each of the five options, including the results of the 25-year net present value analysis of anticipated capital and operating expenses:

Option	Vessel Deployment	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	25-Year NPV
(Base Case)	Denman Is	BSC																							(\$81 M)
	Buckley Bay (Peak Season)	Expanded Baynes Sound Connector																							
1	Denman Is	BSC																							(\$77 M)
	Buckley Bay (Peak Season)	KAH (5days)							KAH (7days)							Expanded Baynes Sound Connector									
2	Denman Is	NEW CONVENTIONAL VESSEL (~70 AEO)																							(\$149 M)
	Buckley Bay (Peak Season)	KAH																							
3	Denman Is	BSC																							(\$113 M)
	Buckley Bay (Peak Season)	KAH (5days)							KAH (7days)							Incremental Island Class (Potential Year-Round)									
4	Denman Is	BSC																							(\$73 M)
	Buckley Bay (Peak Season)	KAH (5days)							KAH (7days)							Relief Island Class									
5	Denman Is	ESC																							(\$82 M)
	Buckley Bay (Peak Season)	KAH (5days)							KAH (7days)							Relief Island Class									

RECOMMENDATION

BC Ferries is pursuing immediate maintenance and operational enhancements to the BSC and plans to introduce supplemental vessel service on Route 21 during the upcoming peak season.

The review recommends proceeding with Option 1, 4 or 5, all of which defer the major capital investment in the BSC for up to 10 years, or longer if demand does not warrant it. This approach provides an opportunity to assess the outcomes of the operational enhancements and inform the feasibility and suitability of using supplemental vessel service on a longer term basis.

If traffic demand or operational needs dictate the need for expanded capacity beyond what can be accommodated with this service strategy, it can be achieved by accelerating the timing of the expansion of the BSC or through the deployment of a larger supplemental vessel.

From: [Anderson, Brian](#)
To: [Sharland, Jill](#)
Cc: [Johnston, Karen](#)
Subject: RE: [EXTERNAL] BSC
Date: February 09, 2023 9:05:00 AM

Karen is working on a full release/comms plan... lots of players who all want to be briefed/informed of the plan. B

From: Sharland, Jill
Sent: February 09, 2023 9:00 AM
To: Anderson, Brian
Subject: FW: [EXTERNAL] BSC

I suggest we send him the summary note after we share with the board to start with. I am sure he will want more details.....

Jill Sharland
Chief Financial Officer
British Columbia Ferry Services Inc.

T: 250-978-1233 **C:** s. 15, 19

Jill.sharland@bcferries.com

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From: Bernhard Weiss <bernhard.weiss.ca@gmail.com>

Sent: February 08, 2023 4:00 PM

To: Sharland, Jill <Jill.Sharland@bcferries.com>

Subject: [EXTERNAL] BSC

CAUTION: This email originated from outside of BC Ferries. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Madam,
it is my understanding that you had tasked VP Brian Anderson with providing a report comparing the BSC to other free swimming ferries on Route 21. Are you willing to share the report?

Regards,
Bernhard Weiss

Rasmussen, Shauna

From: Bajwa, Karan
Sent: February 23, 2023 2:33 PM
To: Jones, Stephen
Subject: RE: Commissioner BSC March 14 2023 update.pptx
Attachments: Commissioner BSC March 14 2023 update.pptx

Hi Steve, See attached. I made an addition under #1 for your consideration.

Regards
Karan

Karan S Bajwa
Director, Fleet Engineering

British Columbia Ferry Services Inc.

#1 Ferry Causeway, Delta, BC V4M 4G6

O: 604-948-3575 **C:** [REDACTED] s. 15, 19

karan.bajwa@bcferries.com

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From: Jones, Stephen
Sent: February 23, 2023 10:02 AM
To: Bajwa, Karan
Subject: Commissioner BSC March 14 2023 update.pptx

Karan,
Can you pls review the attached short update for the ferry commissioner today and add any missing details/changes.
Thanks
Steve

Stephen Jones
Executive Director, Engineering
British Columbia Ferry Services Inc.
C: [REDACTED] s. 15, 19
stephen.jones@bcferries.com
bcferries.com

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Baynes Sound Connector

Update December 2022

Baynes Sound Connector – in progress

1. Analysis of reasons for bull wheel bolt failures

- Excessive cable side loading; suggests misalignment in drive system
- Corrosion and wear leading to inadequate contact between liner and bull wheel

2. Shift in maintenance responsibility from TM to FE from April 2023

3. Modifications planned for 7 day out of service period in April:

- i. Bull wheel bolting arrangement strengthened – wheel realignment
- ii. Replacement of hydraulic pumps, cleaning of system, addition of condition monitoring to hydraulics.

4. Add parts storage at Denman West for quick access to reduce downtime (date??)

5. 1.5" diameter cable confirmed acceptable for long term use (regulatory approval pending)

6. Hull coating will now wait until dry-dock in 2024 or 2025.

Next Steps: Longer Term



1. Dry-dock (2024 or 2025) Reliability improvements

- Drive system modifications to lower hydraulic system pressures
- Cooling system modifications to add keel coolers
- Renew vessel hull coating

2. Consider shift of vessel home port from Denman West to Buckley Bay

3.

s. 13

Rasmussen, Shauna

From: Adams, James
Sent: February 27, 2023 3:54 PM
To: Jones, Stephen
Cc: Amusan, Sam; Paterson, Bruce; Zhong, Ming
Subject: FW: Baynes Sound connector conclusion

Hi Steve,

Peter provided a couple details on the BSC presentation to CPC on Feb 15th. I understand they agreed with the two part deferral, the first being to assess the 2 ship evaluation this Fall. Peter mentioned we will reconvene in September to discuss and finalize.

With this in mind, what is the recommended action for the BSC Widening and Expansion projects? The feasibility studies are approaching completion and the PBC's are tentatively scheduled for submission to March CPBC. Should we consider closing out the projects or deferring PBC submission to late-Fall, pending the review on the first 2 ship evaluation?

Thanks,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** [REDACTED] **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

S. 15, 19

From: Simpson, Peter <Peter.Simpson@bcferries.com>
Sent: February 27, 2023 2:25 PM
To: Adams, James <James.Adams@bcferries.com>
Subject: RE: Baynes Sound connector conclusion

Yes, it was brought up at the CPC meetings with the Board.
They agreed with the two part deferral, the first being to this Fall for 2 ship evaluation.
We will reconvene in September to discuss and finalize.
Peter

From: Adams, James <James.Adams@bcferries.com>
Sent: February 27, 2023 11:25 AM
To: Simpson, Peter <Peter.Simpson@bcferries.com>
Subject: RE: Baynes Sound connector conclusion

Hi Peter,

Did you receive any feedback from the BSC review meeting?

Thanks,

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 M: [REDACTED] F: 250-361-4922
james.adams@bcferries.com s. 15, 19
bcferries.com

From: Simpson, Peter <Peter.Simpson@bcferries.com>
Sent: January 30, 2023 8:35 AM
To: Adams, James <James.Adams@bcferries.com>; Doyle, Joanne <Joanne.Doyle@bcferries.com>; Jones, Stephen <Stephen.Jones@bcferries.com>; Paterson, Bruce <Bruce.Paterson@bcferries.com>; Hancyk, Lesley <Lesley.Hancyk@bcferries.com>; Elliott, Scott <scott.elliott@bcferries.com>
Cc: Terry Wright <terry.wright@ipsconsulting.ca>
Subject: FW: Baynes Sound connector conclusion

FYI, the BSC review is on the Feb 15 agenda for CPC.

From: Barabash, Jason <Jason.Barabash@bcferries.com>
Sent: January 27, 2023 1:53 PM
To: Anderson, Brian <Brian.Anderson@bcferries.com>
Cc: Simpson, Peter <Peter.Simpson@bcferries.com>; Taylor, Meghan <Meghan.Taylor@bcferries.com>; Sharland, Jill <Jill.Sharland@bcferries.com>; Carpendale, Joanne <Joanne.Carpendale@bcferries.com>
Subject: RE: Baynes Sound connector conclusion

We've added the 'Baynes Sound Connector report' as 2.4 under the Consent Agenda

From: Anderson, Brian <Brian.Anderson@bcferries.com>
Sent: January 27, 2023 1:02 PM
To: Sharland, Jill <Jill.Sharland@bcferries.com>; Carpendale, Joanne <Joanne.Carpendale@bcferries.com>
Cc: Simpson, Peter <Peter.Simpson@bcferries.com>; Barabash, Jason <Jason.Barabash@bcferries.com>
Subject: RE: Baynes Sound connector conclusion

Yes.

From: Sharland, Jill <Jill.Sharland@bcferries.com>
Sent: January 27, 2023 12:28 PM
To: Anderson, Brian <Brian.Anderson@bcferries.com>; Carpendale, Joanne <Joanne.Carpendale@bcferries.com>
Cc: Simpson, Peter <Peter.Simpson@bcferries.com>; Barabash, Jason <Jason.Barabash@bcferries.com>
Subject: Baynes Sound connector conclusion

Are you able to have this written up in time to include as a consent agenda item for the CPC?

Jill Sharland
Interim President and CEO
500 – 1321 Blanshard St, Victoria, BC V8W 0B7
British Columbia Ferry Services Inc.
T: 250-978-1233 C: [REDACTED] s. 15, 19
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Rasmussen, Shauna

From: Simpson, Peter
Sent: March 01, 2023 3:08 PM
To: Doyle, Joanne; Jones, Stephen; Paterson, Bruce; Adams, James; Elliott, Scott; Hancyk, Lesley; Terry Wright
Subject: BSC
Attachments: 2.4 Baynes Sound Connector Review.pdf

Hi

This is a follow up to work you all participated and contributed toward wrt the BSC (Komo Gway).

In addition to support from the Executive, the BCF Board accepted the recommendation as laid out in the attached presentation to CPC.

Thanks again for your help in providing this proposal. I will organize a meeting in late September to consider the results of two ship service over the summer period and outcomes of the maintenance oversight changes.

Peter

Peter Simpson
Director, Fleet Operations Strategy
Strategy and Community Engagement
British Columbia Ferry Services Inc.
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s. 15, 19

Notes:

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February 16, 2023

Baynes Sound Connector Review

PURPOSE

This report summarizing BC Ferries' review of the *Baynes Sound Connector* ("BSC") capacity and propulsion upgrades is provided FOR INFORMATION.

BACKGROUND

The BSC is a cable ferry serving Route 21 between Vancouver Island (Buckley Bay) and Denman Island (Denman Island West). This is the sole cable ferry in BC Ferries' fleet and, since its introduction, it has presented unique technical challenges related to its design and systems. While it meets the requirements for service delivery, mechanical reliability remains a concern and the vessel is prone to service speed reductions (especially during summer), primarily due to extreme hull fouling.

Maintenance costs for this vessel have been significantly higher than anticipated in the business case and are driven by a number of factors. Since vessel introduction, several modifications have improved performance or reduced costs, including:

- Development of the drive tunnel roller system;
- Use of a hull cleaning robot;
- Redesign of the guide sheaves and sheave bearings; and
- Redesign of the bull wheel and seawater strainer modifications.

These efforts have reduced fuel usage, increased vessel performance or reduced restrictions on deck space.

While targeted technical modifications have achieved some improvements, costs remain above business case estimates. In addition, the following unresolved vessel issues are under investigation and there are solutions under development that are anticipated to improve vessel reliability and transit times, including:

- Overheating of the hydraulic motors;
- Bolt cracking on the bull-wheel (impacting utilization of the brake system); and
- Hull fouling.

BC Ferries' Performance Term 6 submission includes \$17.9M to address mechanical reliability concerns as well as expand the capacity of the BSC to support anticipated vehicle traffic growth on the route. The broad community continues to be unsupportive of the vessel and reactions to potential increased investment remain highly negative. Islanders, the Ferry Commissioner and the BC Ferry Authority have questioned vessel reliability and the proposed investments.

Prior to proceeding with planned investments, BC Ferries engaged a consultant to undertake a review of vessel operations to date and assess alternative options to accommodate future demand. This review considered service options to meet the long term forecast demand for Route 21 based on required capital expenditure and known and projected operating and maintenance costs. A 25-year financial analysis summarizes the anticipated capital and operating expenditures into a net present value ("NPV") figure that can be compared across the current plan and options. The review also conducted an analysis of the anticipated performance to assess expected relative improvements in service delivery.

DISCUSSION

The Performance Term 6 submission to support growing demand on Denman and Hornby Islands includes \$17.9M to expand and repower the BSC in 2026. The larger ship increases capacity at peak times; although during shuttling operations, this increase comes at that expense of frequency due to increased loading and

unloading time. The original business case for the cable ferry envisioned decommissioning the conventional ferry berths; however, the plan now anticipates keeping both conventional berths as well as the cable ferry berths to support operations and refits (four berths in total).

Base case deployment and seasonal service capacity analysis anticipated over the planning horizon is summarized below and a comparative table is provided for each option.

Base Case		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
Vessel Deployment	Denman Island	BSC					Expanded Baynes Sound Connector																		
	Buckey Bay (Peak Only)	KAH																							
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																								
Average Vehicle Space Capacity Available		5 to 15%					15 to 30%					30 to 50%					50 to 75%								

Option Assessment

The review considered five alternatives that are technically practical and operationally feasible. Options that consider maintaining the BSC include the maintenance and replacement of the conventional berths on the route to support seasonal supplementary service and refit relief. Options that consider expanding the BSC include an investment to increase carrying capacity from 45 to 64 automobile equivalents and repowering.

All service options were analyzed using a range of annual growth projections from 0.41% to 2%; those presented in this report use 1% annual growth for all vehicle types.

Option 1: Defer Expansion until 2034

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering. Supplemental vessel service during the peak season would continue until 2034, at which time the BSC would be expanded at an estimated cost of \$15.9M. The supplemental vessel is expected to be required more frequently in the peak season beginning in 2030 and can transition from five to seven days per week operation. Remaining components are consistent with the base case.

Defer expansion until 2034		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
Vessel Deployment	Denman Island	BSC					Expanded Baynes Sound Connector																		
	Buckey Bay (Peak Only)	KAH (5days)					KAH (7days)																		
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																								
Average Vehicle Space Capacity Available		5 to 15%					15 to 30%					30 to 50%					50 to 75%								

Option 2: Replace BSC with Conventional Ferry

This alternative avoids any further investment in the BSC and instead \$91.9M is allocated to replace the BSC with a newly-built conventional vessel and rebuild the terminal berths by 2028. A larger conventional vessel requires a larger number of highly qualified crew (three licensed - Master, Mate, Chief Engineer) with an incremental workforce of nine positions (three per watch). The BSC would be offered for sale (no material proceeds anticipated) and the remaining two berths would be decommissioned.

Replace BSC with Conventional Ferry		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
Vessel Deployment	Denman Island	BSC					NEW CONVENTIONAL VESSEL (~70 AEq)																		
	Buckey Bay (Peak Only)	KAH																							
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																								
Average Vehicle Space Capacity Available		5 to 15%					15 to 30%					30 to 50%					50 to 75%								

Option 3: Supplement the BSC Indefinitely Rather Than Expand

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering of the BSC. Supplemental vessel service during the peak season would continue indefinitely, starting with the Kahloke (21 automobile capacity) and transitioning to an Island Class (47 automobile capacity) in 2035. Instead of expanding the BSC, an investment of \$65M is required to procure a dedicated Island Class vessel. This approach allows for the dedicated vessel to be available to support operations not only in the peak season but year-round, as required in the future.

Supplement the BSC Indefinitely Rather Than Expand			F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
3	Vessel Deployment	Denman Island	BSC																							
		Buckey Bay (Peak Only)	KAH (5days)							KAH (7days)							Incremental Island Class (7days peak)									
	Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
		Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																									
Average Vehicle Space Capacity Available			5 to 15%							15 to 30%							30 to 50%				50 to 75%					

Option 4: Supplement the BSC Indefinitely Rather Than Expand

This alternative is a very similar to Option 3, but relies upon an existing Island Class vessel to provide supplemental service post 2034. Because the Island Class vessel is required to provide maintenance relief across the fleet, it is only available to provide supplemental service on this route in the peak season.

Supplement the BSC Indefinitely Rather Than Expand			F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
4	Vessel Deployment	Denman Island	BSC																							
		Buckey Bay (Peak Only)	KAH (5days)							KAH (7days)							Relief Island Class (7days peak)									
	Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
		Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																									
Average Vehicle Space Capacity Available			5 to 15%							15 to 30%							30 to 50%				50 to 75%					

Option 5: Expand the BSC in 2034 and Supplement the BSC Indefinitely

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering of the BSC, with \$15.9M allocated in 2034 to expand the vessel. Supplemental vessel service during the peak season would continue indefinitely, starting with the Kahloke (21 automobile capacity) and transitioning to an Island Class (47 automobile capacity) in 2035. Similar to Option 4, because the supplemental vessel is required to provide maintenance relief across the fleet, it would be restricted to peak season use.

Defer Expansion Until 2034 and Supplement Indefinitely			F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
5	Vessel Deployment	Denman Island	BSC																							
		Buckey Bay (Peak Only)	KAH (5days)							KAH (7days)							Relief Island Class (7days peak)									
	Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
		Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																									
Average Vehicle Space Capacity Available			5 to 15%							15 to 30%							30 to 50%				50 to 75%					

OPTION SUMMARY

The following table summarizes the base case plan and each of the five options, including the results of the 25-year net present value analysis of anticipated capital and operating expenses:

Option	Vessel Deployment	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	25-Year NPV
(Base Case)	Denman Is	BSC																							(\$81 M)
	Buckley Bay (Peak Season)	Expanded Baynes Sound Connector																							
1	Denman Is	BSC										Expanded Baynes Sound Connector										(\$77 M)			
	Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)																		
2	Denman Is	BSC										NEW CONVENTIONAL VESSEL (~70 AEQ)										(\$149 M)			
	Buckley Bay (Peak Season)	KAH																							
3	Denman Is	BSC																							(\$113 M)
	Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)					Incremental Is and Class (Potential Year-Round)													
4	Denman Is	BSC																							(\$73 M)
	Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)					Relief Is and Class													
5	Denman Is	BSC										Expanded Baynes Sound Connector										(\$82 M)			
	Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)					Relief Island Class													

RECOMMENDATION

BC Ferries is pursuing immediate maintenance and operational enhancements to the BSC and plans to introduce supplemental vessel service on Route 21 during the upcoming peak season.

The review recommends proceeding with Option 1, 4 or 5, all of which defer the major capital investment in the BSC for up to 10 years, or longer if demand does not warrant it. This approach provides an opportunity to assess the outcomes of the operational enhancements and inform the feasibility and suitability of using supplemental vessel service on a longer term basis.

If traffic demand or operational needs dictate the need for expanded capacity beyond what can be accommodated with this service strategy, it can be achieved by accelerating the timing of the expansion of the BSC or through the deployment of a larger supplemental vessel.

Rasmussen, Shauna

From: Adams, James
Sent: March 03, 2023 4:09 PM
To: Jones, Stephen
Subject: RE: Comissioner BSC March 14 2023 update v2.pptx
Attachments: Comissioner BSC March 14 2023 update v2_JA Edits.pptx

Hi Steve,

See attached for suggested edits in red. I also added a note on the trestle life extension on sheet 2.

DSA plans to issue their dynamic analysis report on Monday. However, I've reviewed the results with them and have summarized their findings for your awareness:

s. 21



Regards,

James

James Adams, P.Eng.
Project Manager, Terminal Construction
British Columbia Ferry Services Inc.
T: 250-978-1317 **M:** [REDACTED] **F:** 250-361-4922
james.adams@bcferries.com
bcferries.com

s. 15, 19

From: Jones, Stephen
Sent: February 23, 2023 2:45 PM
To: Adams, James
Subject: Comissioner BSC March 14 2023 update v2.pptx

James,
Further to my earlier email; this is my initial draft response to the commissioner.

Pls review/correct add additional comment if there is something I have missed.
(Note, I do not need to submit this until March 7th so we should have the relevant analysis information by then).

Thanks,

Steve

Stephen Jones

Executive Director, Engineering

British Columbia Ferry Services Inc.

C: [REDACTED] s. 15, 19

stephen.jones@bcferries.com

bcferries.com

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Baynes Sound Connector

Update December 2022

Baynes Sound Connector – in progress

1. Analysis of reasons for bull wheel bolt failures

- Excessive cable side loading; suggests misalignment in drive system
- Corrosion and wear leading to inadequate contact between liner and bull wheel

2. Shift in maintenance responsibility from TM to FE from April 2023

3. Modifications planned for 7 day out of service period in April:

- Bull wheel bolting arrangement strengthened – wheel realignment
- Replacement of hydraulic pumps, cleaning of system, addition of condition monitoring to hydraulics.

4. Add parts storage at Denman West for quick access to reduce downtime

5. Analysis of 1-1/2" diameter cable in guide locations

- 1-1/2" diameter cable confirmed acceptable for long term use with no incremental weather limitations (regulatory approval pending).
- Existing 1-5/8" diameter cable will be retrained for use in drive location to meet existing brake and propulsion requirements.

6. Hull coating will now wait until dry-dock in 2024 or 2025.

Next Steps: Longer Term



1. Dry-dock (2024 or 2025) Reliability improvements

- Drive system modifications to lower hydraulic system pressures
- Cooling system modifications to add keel coolers
- Renew vessel hull coating

2. Consider shift of vessel home port from Denman West to Buckley Bay

3. Life extension project on the conventional ferry berth at Denman West scheduled in advance of dry-dock

Rasmussen, Shauna

From: Eamer-Goult, Jason
Sent: March 06, 2023 9:54 AM
To: Jones, Stephen; Anderson, Brian
Cc: van Delden, Jessica
Subject: FW: Comissioner BSC March 14 2023 update v3.pptx
Attachments: Comissioner BSC March 14 2023 update v3.pptx; Agenda item 1 2023 03 14 quarterly meeting draft.docx

Thanks Stephen, could you please also send a deck for item 2.e.i. – Coastal Class QLU's?

Stephen and Brian, since I sent the original call for agenda items, the commissioner has also asked that the discussion about BSC include summer service enhancements on the route and the Denman East parking lot. Brian is tagged for this – my apologies, I went off-track on the fact that Stephen was tagged for the BSC mechanical component. Given the new updated item, Brian – if Stephen doesn't mind – do you want to take on the whole item including the mechanical update, or would you like Stephen there as well for the mechanical component?

Thanks,
Jason

From: Jones, Stephen
Sent: March 06, 2023 9:24 AM
To: Eamer-Goult, Jason
Subject: Comissioner BSC March 14 2023 update v3.pptx

Jason,
pls let me know if you are still waiting for anything else from me.

Thanks
Steve

Stephen Jones
Executive Director, Engineering
British Columbia Ferry Services Inc.
C: [REDACTED] s. 15, 19
stephen.jones@bcferries.com
bcferries.com

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Baynes Sound Connector

Update December 2022



Baynes Sound Connector – in progress

- 1. Analysis of reasons for bull wheel bolt failures**
 - Excessive cable side loading; suggests misalignment in drive system
 - Corrosion and wear leading to inadequate contact between liner and bull wheel
- 2. Shift in maintenance responsibility from TM to FE from April 2023**
- 3. Modifications planned for 7 day out of service period in April:**
 - Bull wheel bolting arrangement strengthened – wheel realignment
 - Replacement of hydraulic pumps, cleaning of system, addition of condition monitoring to hydraulics.
- 4. Add parts storage at Denman West for quick access to reduce downtime**
- 5. Analysis of 1-1/2" diameter cable in guide locations**
 - 1-1/2" diameter cable confirmed acceptable for long term use with no increased weather limitations (regulatory approval pending).
 - Existing 1-5/8" drive cable will be retained.
- 6. Hull coating will now wait until dry-dock in 2024 or 2025.**

Next Steps: Longer Term



1. Dry-dock (2024 or 2025) Reliability improvements

- Drive system modifications to lower hydraulic system pressures
- Cooling system modifications to add keel coolers
- Renew vessel hull coating

2. Consider shift of vessel home port from Denman West to Buckley Bay

3. Life extension project on the conventional ferry berth at Denman West scheduled in advance of BSC dry-dock

MEETING
British Columbia Ferry Commission / British Columbia Ferry Services Inc.
Quarterly Meeting

Date / Time: 9:00 a.m. to 2:00 p.m., Tuesday, March 14, 2023
Location: 1321 Blanshard Street, Victoria
Atrium Building, Meeting Room 7A (Boardroom)

Expected Participants:

British Columbia Ferry Commission (BCFC):

Eva Hage Commissioner
Piet Langstraat Deputy Commissioner

British Columbia Ferry Services Inc. (BCFS):

Jill Sharland Vice President & Chief Financial Officer
Jason Barabash Vice President, General Counsel & Corporate Secretary
Joanne Carpendale Treasurer
Jason Eamer-Goult Director, Regulatory & FOIPP

Attendance for Specific Agenda Items

Brian Anderson	Vice President, Strategy & Community Engagement	(2.b.ii., 2.e.iii., 4, 6.b., 8.c., 8.d.)
Carrie McIntosh	Director, Community Relations	(4.)
Rob McNair	Director, Tariff and Revenue	(8.b. to d.)
Shane Scroggie	Senior Project Manager, Terminal Construction	(8.f.)
Ed Hooper	Executive Director, Shipbuilding	(8.g.)

As Required

Darren Johnston	Executive Director, Fleet Operations	(2.b.i.)
Janet Carson	Vice President, Marketing & Customer Experience	(2.b.ii)
Karen Tindall	Director, Customer Care	(2.b.ii.)
Scott Elliott	Director, Corporate Planning	(2.b.iii.)
Stephen Jones	Executive Director, Engineering	(2.e.i.)
Frank Camaraire	Director, Climate Change Policy	(2.e.ii.)

AGENDA

- | | | |
|----|---|--------------|
| 1. | ADOPTION OF AGENDA | <i>EHage</i> |
| 2. | CONSENT AGENDA | <i>EHage</i> |
| | a. December 12, 2022 Quarterly Record of Meeting and Action Items
(approved XX, 2023) (EHage) (page 3) | |
| | b. Fiscal 2023 – Compliance Reports | |
| | i. Q3 Core Service Levels (DJohnston) (page X) | |
| | ii. Q3 Feedback and Engagement Report
(JCarson/KTindall/BAnderson) (page XX) | |
| | iii. Q3 Drop Trailer (JSharland/SElliott) (page XX) | |
| | iv. Q3 Price Caps (JSharland) (page X) | |
| | v. Q3 Carbon Reduction Investment Account (JSharland) (page X) | |

(cont'd)

2. CONSENT AGENDA (cont'd)	
c. Fuel Deferral Accounts (JSharland)	
i. Balance at January 31, 2023 (page X)	
ii. Forecast (page X)	
iii. GST Appeal Status (page X)	
d. Regulatory Filings	
i. Conditions Status Update (EHage/JBarabash) (page X)	
e. Updates	
i. Coastal Class Quarter-Life Upgrades (SJones) (page X)	
ii. Greenhouse Gas Emissions (FCamaraire) (page X)	
iii. Fleet Standardization Annual Update (page X) (BAnderson)	
3. DISCLOSURES	<i>EHage/JBarabash</i>
4. GOVERNMENT RELATIONS, INDIGENOUS RELATIONS, TASK FORCE AND COMMUNITY ENGAGEMENT (page X)	<i>BAnderson/ CMcIntosh</i>
a. Visioning process	
5. REGULATORY FILINGS	
a. Section 55 Filings - Timing	<i>JSharland</i>
• Major Terminals Efficiency Project	
• Island Class Vessels	
6. PERFORMANCE TERMS SIX AND SEVEN	
a. Performance Term Six Submission Review	<i>EHage</i>
b. Contribution Agreement Compliance (page x)	<i>BAnderson/JCarpendale</i>
7. PERFORMANCE REVIEWS	<i>EHage</i>
a. Efficiency	
b. Yield Management	
c. Risk Management	
d. Upcoming Reviews	
8. UPDATES	
a. Fiscal 2024 Operating Plan and Capital Budget	<i>JSharland</i>
b. Revenue Management	<i>RMcNair</i>
c. Route 2 Reservations Pilot	<i>RMcNair</i>
d. Reservations on Minor Routes	<i>RMcNair</i>
e. Denman Island and Hornby Island (Routes 21 and 22)	<i>BAnderson</i>
• <i>Baynes Sound Connector</i>	
• Service Enhancements	
• Denman East parking lot expansion	
f. Fleet Maintenance Unit Site Redevelopment (page X)	<i>SScroggie/BAnderson</i>
g. New Major Vessels Possible Energy Source (page X)	<i>EHooper</i>
9. OTHER BUSINESS	
10. NEXT MEETINGS	
11. TERMINATION	

Rasmussen, Shauna

From: Eamer-Goult, Jason
Sent: March 09, 2023 10:37 AM
To: Hooper, Ed; Jones, Stephen; Camaraira, Frank
Cc: Brown, Sheila; Lywood, Julie
Subject: BCFC / BCFS quarterly meeting material
Attachments: Agenda item 1 2023 03 14 quarterly meeting.pdf; Agenda item 2e i Coastal Class QLU.pdf; Agenda item 2e ii Commissioner GHG Update_FY23 Q3.pdf; Agenda item 8e BCFC - Baynes Sound Connector Review.pdf; Agenda item 8e Commissioner BSC March 14 2023 update v3.pptx; Agenda item 8g NMV Update to Commissioner.pdf

Good morning,

Attached please find your agenda material for the BCFC / BCFS quarterly meeting on March 14, 2023, commencing at 9:00 a.m. in room 7A / remote by Webex (but use teleconference number for audio).

Please let me know if you intend to attend remotely. A reminder that the agenda items numbered '2' are consent items so you might not need to attend for those. Ed I've noted you're unavailable from 10:30 to noon.

Reminders:

- Stephen – item 8.e. (BSC): I'll leave it to you and Brian please to arrange who will speak to what on BSC.

I'll call or text you when your items come up.

Thanks,
Jason

Jason Eamer-Goult, MAS, MBA, CIPM
Director, Regulatory & FOIPP, Corporate Affairs
British Columbia Ferry Services Inc.
500, 1321 Blanshard Street, Victoria, BC, V8W 0B7
T: 250-978-1450 **C:** [REDACTED] **F:** 250-978-1953
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s. 15, 19

MEETING
British Columbia Ferry Commission / British Columbia Ferry Services Inc.
Quarterly Meeting

Date / Time: 9:00 a.m. to 2:00 p.m., Tuesday, March 14, 2023
Location: 1321 Blanshard Street, Victoria
Atrium Building, Meeting Room 7A (Boardroom)

Expected Participants:

British Columbia Ferry Commission (BCFC):

Eva Hage Commissioner
Piet Langstraat Deputy Commissioner

British Columbia Ferry Services Inc. (BCFS):

Jill Sharland Vice President & Chief Financial Officer
Jason Barabash Vice President, General Counsel & Corporate Secretary
Joanne Carpendale Treasurer
Jason Eamer-Goult Director, Regulatory & FOIPP

Attendance for Specific Agenda Items

Brian Anderson	Vice President, Strategy & Community Engagement	(2.b.ii., 2.e.iii., 4, 6.b., 8.d. to f.)
Stephen Jones	Executive Director, Engineering	(2.e.i., 8.e.)
Carrie McIntosh	Director, Community Relations	(4.)
Rob McNair	Director, Tariff and Revenue	(8.b. and c.)
Shane Scroggie	Senior Project Manager, Terminal Construction	(8.f.)
Ed Hooper	Executive Director, Shipbuilding	(8.g.)

As Required

Darren Johnston	Executive Director, Fleet Operations	(2.b.i.)
Janet Carson	Vice President, Marketing & Customer Experience	(2.b.ii)
Karen Tindall	Director, Customer Care	(2.b.ii.)
Scott Elliott	Director, Corporate Planning	(2.b.iii.)
Frank Camaraire	Director, Climate Change Policy	(2.e.ii.)

AGENDA

1. ADOPTION OF AGENDA *EHage*
2. CONSENT AGENDA *EHage*
 - a. December 12, 2022 Quarterly Record of Meeting and Action Items (approved March 3, 2023) (EHage) (page 3)
 - b. Fiscal 2023 – Compliance Reports
 - i. Q3 Core Service Levels (DJohnston) (page 9)
 - ii. Q3 Feedback and Engagement Report (JCarson/KTindall/BAnderson) (page 19)
 - iii. Q3 Drop Trailer (JSharland/SElliott) (page 38)
 - iv. Q3 Price Caps (JSharland) (page 41)
 - v. Q3 Carbon Reduction Investment Account (JSharland) (page 47)

(cont'd)

2. CONSENT AGENDA (cont'd)	
c. Fuel Deferral Accounts (JSharland)	
i. Balance at January 31, 2023 (page 48)	
ii. Forecast (page 49)	
iii. GST Appeal Status (page 52)	
d. Regulatory Filings	
i. Conditions Status Update (EHage/JBarabash) (page 54)	
e. Updates	
i. Coastal Class Quarter-Life Upgrades (SJones) (page 68)	
ii. Greenhouse Gas Emissions (FCamaraire) (page 70)	
iii. Fleet Standardization Annual Update (page 75) (BAnderson)	
3. DISCLOSURES	<i>EHage/JBarabash</i>
4. GOVERNMENT RELATIONS, INDIGENOUS RELATIONS, TASK FORCE AND COMMUNITY ENGAGEMENT (page 78)	<i>BAnderson/ CMcIntosh</i>
a. Visioning process (page 104)	
5. REGULATORY FILINGS	
a. Section 55 Filings - Timing	<i>JSharland</i>
• Major Terminals Efficiency Project	
• Island Class Vessels	
6. PERFORMANCE TERMS SIX AND SEVEN	
a. Performance Term Six Submission Review	<i>EHage</i>
b. Contribution Agreement Compliance	<i>BAnderson/JCarpendale</i>
7. PERFORMANCE REVIEWS	<i>EHage</i>
a. Efficiency	
b. Yield Management	
c. Risk Management	
d. Upcoming Reviews	
8. UPDATES	
a. Fiscal 2024 Capital Plan and Operating Budget (page 106)	<i>JSharland</i>
b. Revenue Management	<i>RMcNair</i>
c. Route 2 Reservations Pilot	<i>RMcNair</i>
d. Reservations on Minor Routes	<i>BAnderson</i>
e. Denman Island and Hornby Island (Routes 21 and 22) (page 191)	<i>BAnderson / SJones</i>
• <i>Baynes Sound Connector</i>	
• Service Enhancements	
• Denman East parking lot expansion	
f. Fleet Maintenance Unit Site Redevelopment	<i>SScroggie/BAnderson</i>
g. New Major Vessels Possible Energy Source (page 198)	<i>EHooper</i>
9. OTHER BUSINESS	
10. NEXT MEETINGS	
11. TERMINATION	

Baynes Sound Connector Review

PURPOSE

This report summarizing BC Ferries' review of the *Baynes Sound Connector* ("BSC") capacity and propulsion upgrades is provided for information.

BACKGROUND

The BSC is a cable ferry serving Route 21 between Vancouver Island (Buckley Bay) and Denman Island (Denman Island West). This is the sole cable ferry in BC Ferries' fleet and, since its introduction, it has presented unique technical challenges related to its design and systems. While it meets the requirements for service delivery, mechanical reliability remains a concern and the vessel is prone to service speed reductions (especially during summer), primarily due to extreme hull fouling.

Maintenance costs for this vessel have been significantly higher than anticipated in the business case and are driven by a number of factors. Since vessel introduction, several modifications have improved performance or reduced costs, including:

- Development of the drive tunnel roller system;
- Use of a hull cleaning robot;
- Redesign of the guide sheaves and sheave bearings; and
- Redesign of the bull wheel and seawater strainer modifications.

These efforts have reduced fuel usage, increased vessel performance or reduced restrictions on deck space.

While targeted technical modifications have achieved some improvements, costs remain above business case estimates. In addition, the following unresolved vessel issues are under investigation and there are solutions under development that are anticipated to improve vessel reliability and transit times, including:

- Overheating of the hydraulic motors;
- Bolt cracking on the bull-wheel (impacting utilization of the brake system); and
- Hull fouling.

BC Ferries' Performance Term 6 submission includes \$17.9M to address mechanical reliability concerns as well as expand the capacity of the BSC to support anticipated vehicle traffic growth on the route. The broad community continues to be unsupportive of the vessel and reactions to potential increased investment remain highly negative. Islanders, the Ferry Commissioner and the BC Ferry Authority have questioned vessel reliability and the proposed investments.

Prior to proceeding with planned investments, BC Ferries engaged a consultant to undertake a review of vessel operations to date and assess alternative options to accommodate future demand. This review considered service options to meet the long term forecast demand for Route 21 based on required capital expenditure and known and projected operating and maintenance costs. A 25-year financial analysis summarizes the anticipated capital and operating expenditures into a net present value ("NPV") figure that can be compared across the current plan and options. The review also conducted an analysis of the anticipated performance to assess expected relative improvements in service delivery.

DISCUSSION

The Performance Term 6 submission to support growing demand on Denman and Hornby Islands includes \$17.9M to expand and repower the BSC in 2026. The larger ship increases capacity at peak times; although during shuttling operations, this increase comes at that expense of frequency due to increased loading and

unloading time. The original business case for the cable ferry envisioned decommissioning the conventional ferry berths; however, the plan now anticipates keeping both conventional berths as well as the cable ferry berths to support operations and refits (four berths in total).

Base case deployment and seasonal service capacity analysis anticipated over the planning horizon is summarized below and a comparative table is provided for each option.

Base Case		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
Vessel Deployment	Denman Island	BSC				Expanded Baynes Sound Connector																			
	Buckey Bay (Peak Only)	KAH																							
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																								
Average Vehicle Space Capacity Available		5 to 15%				15 to 30%				30 to 50%				50 to 75%											

Option Assessment

The review considered five alternatives that are technically practical and operationally feasible. Options that consider maintaining the BSC include the maintenance and replacement of the conventional berths on the route to support seasonal supplementary service and refit relief. Options that consider expanding the BSC include an investment to increase carrying capacity from 45 to 64 automobile equivalents and repowering.

All service options were analyzed using a range of annual growth projections from 0.41% to 2%; those presented in this report use 1% annual growth for all vehicle types.

Option 1: Defer Expansion until 2034

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering. Supplemental vessel service during the peak season would continue until 2034, at which time the BSC would be expanded at an estimated cost of \$15.9M. The supplemental vessel is expected to be required more frequently in the peak season beginning in 2030 and can transition from five to seven days per week operation. Remaining components are consistent with the base case.

Defer expansion until 2034		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
Vessel Deployment	Denman Island	BSC				Expanded Baynes Sound Connector																			
	Buckey Bay (Peak Only)	KAH (5days)				KAH (7days)																			
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																								
Average Vehicle Space Capacity Available		5 to 15%				15 to 30%				30 to 50%				50 to 75%											

Option 2: Replace BSC with Conventional Ferry

This alternative avoids any further investment in the BSC and instead \$91.9M is allocated to replace the BSC with a newly-built conventional vessel and rebuild the terminal berths by 2028. A larger conventional vessel requires a larger number of highly qualified crew (three licensed - Master, Mate, Chief Engineer) with an incremental workforce of nine positions (three per watch). The BSC would be offered for sale (no material proceeds anticipated) and the remaining two berths would be decommissioned.

Replace BSC with Conventional Ferry		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
Vessel Deployment	Denman Island	BSC				NEW CONVENTIONAL VESSEL (~70 AEQ)																			
	Buckey Bay (Peak Only)	KAH																							
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																								
Average Vehicle Space Capacity Available		5 to 15%				15 to 30%				30 to 50%				50 to 75%											

Option 3: Supplement the BSC Indefinitely Rather Than Expand

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering of the BSC. Supplemental vessel service during the peak season would continue indefinitely, starting with the Kahloke (21 automobile capacity) and transitioning to an Island Class (47 automobile capacity) in 2035. Instead of expanding the BSC, an investment of \$65M is required to procure a dedicated Island Class vessel. This approach allows for the dedicated vessel to be available to support operations not only in the peak season but year-round, as required in the future.

Supplement the BSC Indefinitely Rather Than Expand		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
3	Vessel Deployment	Denman Island	BSC																						
		Buckey Bay (Peak Only)	KAH (5days)							KAH (7days)							Incremental Island Class (7days peak)								
	Average Vehicle Capacity	Off Peak (Thanksgiving to mid-May)																							
	Capacity Available	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																							
		Peak (late-June to Labour Day)																							
Average Vehicle Space Capacity Available			5 to 15%				15 to 30%				30 to 50%				50 to 75%										

Option 4: Supplement the BSC Indefinitely Rather Than Expand

This alternative is a very similar to Option 3, but relies upon an existing Island Class vessel to provide supplemental service post 2034. Because the Island Class vessel is required to provide maintenance relief across the fleet, it is only available to provide supplemental service on this route in the peak season.

Supplement the BSC Indefinitely Rather Than Expand		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
4	Vessel Deployment	Denman Island	BSC																						
		Buckey Bay (Peak Only)	KAH (5days)							KAH (7days)							Relief Island Class (7days peak)								
	Average Vehicle Capacity	Off Peak (Thanksgiving to mid-May)																							
	Capacity Available	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																							
		Peak (late-June to Labour Day)																							
Average Vehicle Space Capacity Available			5 to 15%				15 to 30%				30 to 50%				50 to 75%										

Option 5: Expand the BSC in 2034 and Supplement the BSC Indefinitely

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering of the BSC, with \$15.9M allocated in 2034 to expand the vessel. Supplemental vessel service during the peak season would continue indefinitely, starting with the Kahloke (21 automobile capacity) and transitioning to an Island Class (47 automobile capacity) in 2035. Similar to Option 4, because the supplemental vessel is required to provide maintenance relief across the fleet, it would be restricted to peak season use.

Defer Expansion Until 2034 and Supplement Indefinitely		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
5	Vessel Deployment	Denman Island	BSC							Expanded Baynes Sound Connector															
		Buckey Bay (Peak Only)	KAH (5days)							KAH (7days)							Relief Island Class (7days peak)								
	Average Vehicle Capacity	Off Peak (Thanksgiving to mid-May)																							
	Capacity Available	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																							
		Peak (late-June to Labour Day)																							
Average Vehicle Space Capacity Available			5 to 15%				15 to 30%				30 to 50%				50 to 75%										

OPTION SUMMARY

The following table summarizes the base case plan and each of the five options, including the results of the 25-year net present value analysis of anticipated capital and operating expenses:

Option	Vessel Deployment	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	25-Year NPV
(Base Case)	Denman Is	BSC										Expanded Baynes Sound Connector										(\$81 M)			
	Buckley Bay (Peak Season)	KAH																							
1	Denman Is	BSC										Expanded Baynes Sound Connector										(\$77 M)			
Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)																			
2	Denman Is	BSC										NEW CONVENTIONAL VESSEL (~70 AEO)										(\$149 M)			
Buckley Bay (Peak Season)	KAH																								
3	Denman Is	BSC																				(\$113 M)			
Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)					Incremental Island Class (Potential Year-Round)														
4	Denman Is	BSC																				(\$73 M)			
Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)					Relief Island Class														
5	Denman Is	BSC										Expanded Baynes Sound Connector										(\$82 M)			
Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)					Relief Island Class														

CONCLUSION

BC Ferries is pursuing immediate maintenance and operational enhancements to the BSC and plans to introduce supplemental vessel service on Route 21 during the upcoming peak season.

The review recommends proceeding with Option 1, 4 or 5, all of which defer the major capital investment in the BSC for up to 10 years, or longer if demand does not warrant it. This approach provides an opportunity to assess the outcomes of the operational enhancements and inform the feasibility and suitability of using supplemental vessel service on a longer term basis.

If traffic demand or operational needs dictate the need for expanded capacity beyond what can be accommodated with this service strategy, it can be achieved by accelerating the timing of the expansion of the BSC or through the deployment of a larger supplemental vessel.



Baynes Sound Connector

Stephen Jones
Director, Fleet Project Management Office

March 14, 2023

Baynes Sound Connector – in progress



- 1. Analysis of reasons for bull wheel bolt failures**
 - Excessive cable side loading; suggests misalignment in drive system
 - Corrosion and wear leading to inadequate contact between liner and bull wheel
- 2. Shift in maintenance responsibility from Terminal Maintenance to Fleet Engineering from April 2023**
- 3. Modifications planned for seven day out of service period in April:**
 - Bull wheel bolting arrangement strengthened – wheel realignment
 - Replacement of hydraulic pumps, cleaning of system, addition of condition monitoring to hydraulics.
- 4. Add parts storage at Denman West for quick access to reduce downtime**
- 5. Analysis of 1-1/2" diameter cable in guide locations**
 - 1-1/2" diameter cable confirmed acceptable for long term use with no increased weather limitations (regulatory approval pending).
 - Existing 1-5/8" drive cable will be retained.
- 6. Hull coating will now wait until dry-dock in 2024 or 2025.**

Next Steps: Longer Term



- 1. Dry-dock (2024 or 2025) reliability improvements**
 - Drive system modifications to lower hydraulic system pressures
 - Cooling system modifications to add keel coolers
 - Renew vessel hull coating
- 2. Consider shift of vessel home port from Denman West to Buckley Bay**
- 3. Life extension project on the conventional ferry berth at Denman West scheduled in advance of *Baynes Sound Connector* dry-dock**

From: [Karen Ross](#)
To: [Anderson, Brian](#)
Subject: [EXTERNAL] Greetings from Hornby/Denman
Date: March 23, 2023 1:25:06 PM

CAUTION: This email originated from outside of BC Ferries. Do not click links or open attachments unless you recognize the sender and know the content is safe.

March 23, 2023

To: Brian Anderson, VP BCF

Hi Brian,

Thanks for meeting with MLA Osborne last week. She has reported that the meeting was very successful.

She particularly mentioned that mutually respectful conversations remain high on her priority list. As does improving the ferry capacity to the Islands. MLA Osborne mentioned that the analysis of the BSC will be done prior to the May 27th community consultations and that you've committed to sending a copy to us in advance of those meetings. Thank you.

On a different topic, we have observed some intensive work occurring on the Denman West dock, which is very heartening in terms of the planned tandem service on Route 21. Prior to that there will be the projected deployment of the Quinitsa onto the route in order to re-fit the BSC this Spring. The "haulers" and commercial suppliers have asked about the service during this time period and the implications for their businesses. (Of particular importance for hauling gravel, lumber, cement, logs, recycling/garbage trucks, trucks pulling pups, etc.) Can you provide an answer?

Specifically: The G.V.W. on the Denman West ramp has been posted at 39.5 GVW, and the BSC ramp is posted at 63.5 GVW. Are upgrades being done on the old Denman West dock to carry matching weights to the BSC?

So, the immediate question is "During the BSC re-fit will there be load restrictions, and if so, what is the time-line for that limitation in order for the commercial suppliers, and customers, to schedule work?"

Many thanks for your support as we work together to find workable solutions on Routes 21 and 22,

Karen Ross

Chair Hornby Denman FAC

Member of the Hornby Ferry Action Discussion Group

From: [Anderson, Brian](#)
To: [McIntosh, Carrie](#)
Subject: RE: BSC report that was discussed at Feb BCFA meeting
Date: April 19, 2023 4:47:00 PM

I'm happy to speak to the review... technical expert would need to come from engineering I think. Stephen Jones has carried the torch so far, but don't know his capacity/availability... If we have the details and expectations, I could enquire with Corrine

From: McIntosh, Carrie
Sent: April 19, 2023 4:20 PM
To: Anderson, Brian
Subject: RE: BSC report that was discussed at Feb BCFA meeting

Hi Brian,
Thinking about the upcoming engagement, who can best speak to the review? We'll need a technical expert on-hand to answer questions from folks. Peter has already said he is uninterested in attending.

Carrie

Carrie McIntosh
Director, Community Relations
Strategy & Community Engagement
British Columbia Ferry Services Inc.
500 – 1321 Blanshard Street, Victoria BC

T: 250-978-1720 **C:** s. 15, 19
carrie.mcintosh@bcferries.com

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en. 1000

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From: Anderson, Brian <Brian.Anderson@bcferries.com>
Sent: April 14, 2023 12:58 PM
To: McIntosh, Carrie <Carrie.McIntosh@bcferries.com>
Subject: Fwd: BSC report that was discussed at Feb BCFA meeting
FYI... easier to forward this email than find the document since I'm on my cell phone! ;)

Sent from my iPhone

Begin forwarded message:

From: "Anderson, Brian" <Brian.Anderson@bcferries.com>
Date: April 2, 2023 at 12:28:00 PM PDT
To: William Beale <WilliamBeale@bcferryauthority.com>
Subject: BSC report that was discussed at Feb BCFA meeting

Hi Will, here is the document that I referenced when updating the BCFA board with Jill.

I had shared it with the BCFS board earlier in the day. We plan to share with the community and FAC through some facilitated workshops over the coming weeks, so please do not discuss publicly until we are able to do so. Thanks

Good talking to you Thursday- Brian.

Brian Anderson (he/him)

Vice President, Strategy and Community Engagement

British Columbia Ferry Services Inc.

Suite 500 – 1321 Blanshard Street, Victoria, BC V8W 0B7

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⚠️⚠️⚠️

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From: [Anderson, Brian](#)
To: [Karen Ross](#)
Cc: [Osborne, MLA, Josie](#); [McIntosh, Carrie](#)
Subject: RE: [EXTERNAL] Baynes Sound Connector update please
Date: April 19, 2023 4:56:00 PM

Hi Karen – thanks for reaching out. The report is complete and we will be reviewing the findings with the FAC and broader community next month. Other topics will include summer plans and addressing vehicles queuing on approach to the terminals. I believe the sessions are scheduled for May 27th and venues are in the process of being booked. I know that Carrie and Tamara will keep you apprised as plans firm up.

I appreciate the community's patience as we worked through a mechanical issue with the Kahloke today. On another note, I'm glad to hear that the Quinitsa is doing a good job moving traffic while the BSC is getting some attention and upgrades.

Best regards,

Brian.

From: Karen Ross

Sent: April 15, 2023 11:49 AM

To: Anderson, Brian

Cc: Osborne, MLA, Josie

Subject: [EXTERNAL] Baynes Sound Connector update please

CAUTION: This email originated from outside of BC Ferries. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Brian,

Big question: Have you completed your report on the future of the Baynes Sound Connector? One of our Ferry Action Discussion Group sent this report yesterday:

Quinitsa is doing a very nice job of moving traffic - trucks everywhere.

-

I counted 14 BCF terminal maintenance trucks @ BB plus 2 crane trucks. Dozens of private pickups. A Cat Diesel service truck. They have an industrial ambulance there. They have it all fenced off - portapottis and everything. BSC is a beehive. I watched a forklift bring the bull wheel up to a crane truck. The other crane truck had a Cat Diesel engine transport frame on it. By my count that is engine number 5. Got to be at least 60 people working on that thing.

Brian, thank you for your promised report. FYI, I will share the update with our working group and also the wider community,

Karen Ross

Hornby Island Community Economic Enhancement Corporation

From: [Anderson, Brian](#)
To: [Storey, Corrine](#)
Subject: Baynes Sound Connector Community Discussion
Date: April 24, 2023 12:59:00 PM

Hi Corrine,

We are hosting a few community information sessions on Denman and Hornby islands late next month (May 26th and 27th). We will be covering a few topics, including the future of the Bayne Sound Connector, the terminal expansion work (and ‘the trees’) along with operational plans for the summer.

A few of your team will be playing supporting roles. We have engaged a facilitator to support as well. I believe the reach outs have already started to occur and wanted you to be aware in case you hear about it from your team. If you have any questions I can do my best to answer or find them!

Thanks – Brian.

Brian Anderson (he/him)
Vice President, Strategy and Community Engagement
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From: [McIntosh, Carrie](#)
To: [Jones, Stephen](#)
Cc: [Anderson, Brian](#)
Subject: RE: Engagement with Denman-Hornby Community on BSC Review
Date: May 02, 2023 4:34:06 PM

Thanks Stephen. We have terminal construction and terminal ops attending so we're probably covered there. Looks like we'll have lots of expertise in the room which is great. Really appreciate the quick response and the willingness to participate!

Carrie

Carrie McIntosh
Director, Community Relations
Strategy & Community Engagement
British Columbia Ferry Services Inc.
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From: Jones, Stephen <Stephen.Jones@bcferries.com>
Sent: May 02, 2023 4:32 PM
To: McIntosh, Carrie <Carrie.McIntosh@bcferries.com>
Cc: Anderson, Brian <Brian.Anderson@bcferries.com>
Subject: RE: Engagement with Denman-Hornby Community on BSC Review

Carrie,

So far it looks like there may be 3 of us:

- Myself
- Karan Bajwa Director, Fleet Engineering
- Bruce Paterson Director, Fleet Technical

Not sure if more people is better or less is better? Because I can probably rope in someone from Terminal if we feel that the Denman project will require some technical input?

Thanks,
Steve

Stephen Jones
Executive Director, Engineering
British Columbia Ferry Services Inc.
C: [REDACTED] s. 15, 19
stephen.jones@bcferries.com
bcferries.com

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From: McIntosh, Carrie <Carrie.McIntosh@bcferries.com>
Sent: May 01, 2023 3:05 PM
To: Jones, Stephen <Stephen.Jones@bcferries.com>
Cc: Anderson, Brian <Brian.Anderson@bcferries.com>
Subject: Engagement with Denman-Hornby Community on BSC Review

Hi Stephen,

I hope this message finds you well. We are preparing for two community workshops on Denman and Hornby Islands on May 26 and 27. One of the topics we'll be addressing is the BSC and the recent technical review that was completed. I expect the community will have some very technical questions for us, e.g. cables, wind speeds, reliability, findings of the review etc. I'm hoping we may be able to have a member of the engineering department join us who can handle these answers. I am not sure if you are the best person, or if you could recommend someone from your team who could join us? It will be two days with a three-hour session on each day.

I'm happy to hop on a quick call if you have any questions or need a bit more detail.

I appreciate your direction.

Carrie

Carrie McIntosh
Director, Community Relations
Strategy & Community Engagement
British Columbia Ferry Services Inc.
500 – 1321 Blanshard Street, Victoria BC
T: 250-978-1720 **C:** [REDACTED] s. 15, 19
carrie.mcintosh@bcferries.com
bcferries.com | [Facebook](#) | [Twitter](#)

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From: [Bresser, Amy](#)
To: [Johnston, Karen](#); [Anderson, Brian](#)
Subject: RE: BSC Review - Suggested redactions
Date: May 04, 2023 12:24:33 PM

Hi Karen,

s. 13

Kindly,
Amy

Amy Bresser (she/her/hers)
Analyst, Information and Privacy
British Columbia Ferry Services Inc.
T: 250-978-1712 **F:** 866-846-0453
Amy.bresser@bcferries.com
bcferries.com

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From: Eamer-Goult, Jason <Jason.Eamer-Goult@bcferries.com>
Sent: May 04, 2023 12:13 PM
To: [Johnston, Karen](#) <Karen.Johnston@bcferries.com>; [Bresser, Amy](#) <Amy.Bresser@bcferries.com>; [Anderson, Brian](#) <Brian.Anderson@bcferries.com>
Subject: RE: BSC Review - Suggested redactions

s. 13

Hi Karen,

Thanks,
Jason

From: [Johnston, Karen](#) <Karen.Johnston@bcferries.com>
Sent: May 04, 2023 12:07 PM
To: [Bresser, Amy](#) <Amy.Bresser@bcferries.com>; [Anderson, Brian](#) <Brian.Anderson@bcferries.com>
Cc: [Eamer-Goult, Jason](#) <Jason.Eamer-Goult@bcferries.com>
Subject: RE: BSC Review - Suggested redactions

Hey Amy – was able to grab Jason E-G in the hallway this am. Told him what our thoughts are and he will likely ask to see the doc as he wasn't totally familiar with the file. Thanks

Karen Johnston
Executive Director, Communications and Engagement
British Columbia Ferry Services Inc.
T: 250-978-1367 C: [REDACTED]
Karen.johnston@bcferries.com s. 15, 19
bcferries.com

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From: Bresser, Amy <Amy.Bresser@bcferries.com>
Sent: May 04, 2023 9:33 AM
To: Anderson, Brian <Brian.Anderson@bcferries.com>
Cc: Johnston, Karen <Karen.Johnston@bcferries.com>
Subject: RE: BSC Review - Suggested redactions

Good morning Brian,

Sounds great.

Looking forward to the conversation.

Kindly,

Amy

Amy Bresser (she/her/hers)
Analyst, Information and Privacy
British Columbia Ferry Services Inc.
T: 250-978-1712 F: 866-846-0453
Amy.bresser@bcferries.com
bcferries.com

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From: Anderson, Brian <Brian.Anderson@bcferries.com>
Sent: May 03, 2023 10:11 PM

To: Bresser, Amy <Amy.Bresser@bcferries.com>
Cc: Johnston, Karen <Karen.Johnston@bcferries.com>
Subject: RE: BSC Review - Suggested redactions

Hi Amy,

I reviewed with Karen this afternoon and she is going to connect with you to discuss the communications plan and how we plan to share/engage the community. Thanks, Brian.

From: Bresser, Amy <Amy.Bresser@bcferries.com>
Sent: May 02, 2023 4:13 PM
To: Anderson, Brian <Brian.Anderson@bcferries.com>; van Delden, Jessica <jessica.vanDelden@bcferries.com>
Subject: BSC Review - Suggested redactions

Good afternoon Brian,

Please find attached the suggested severing/redactions for the BSC report. In order to be accurate on the severing I do have a few questions:

s. 13



As you can see from the attached records, I have made suggestions as to what we should withhold, yet this all depends on the communication plan and what you plan on sharing with the community.

Please let me know your thoughts around this. We hope to have this cleared for release by no later than May 12, 2023 so the deadline is approaching.

Thank you kindly for your insights.

Amy

Amy Bresser (she/her/hers)
Analyst, Information and Privacy
Corporate Affairs
British Columbia Ferry Services Inc.
Suite 500 – 1321 Blanshard Street, Victoria, BC, V8W 0B7
T: 250-978-1712 **F:** 886-846-0453
Amy.Bresser@bcferries.com
bcferries.com | [Facebook](#) | [Twitter](#)

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Rasmussen, Shauna

From: Bajwa, Karan
Sent: May 09, 2023 12:46 PM
To: Paterson, Bruce
Cc: Jones, Stephen
Subject: Fwd: BSC
Attachments: 2.4 Baynes Sound Connector Review.pdf

s. 13

Hi Bruce, are you in agreement with this (see below).

My understanding of our last meeting was that [REDACTED]

[REDACTED] The change below seems to be in a different direction.

Regards

Karan

Karan S Bajwa

Director, Fleet Engineering

British Columbia Ferry Services Inc.

#1 Ferry Causeway, Delta, BC V4M 4G6

O: 604-948-3575 C: [REDACTED]

s. 15, 19

karan.bajwa@bcferries.com

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Begin forwarded message:

From: "Hancyk, Lesley"

Date: May 9, 2023 at 12:43:07 PM PDT

To: "Jones, Stephen"

Cc: "Bajwa, Karan"

Subject: RE: BSC

Hi Stephen,

As part of the capital plan update for the Board (June meeting), we need to update our plans for BSC that aligns with the recommendation (accepted by the Board) [REDACTED]

s. 13, s. 17

[REDACTED]

As Owner, I wanted to advise you of this change. I will coordinate with Sam, the PM, as the projects are active right now.

I need to make the change now so we can incorporate into the Board materials, so I have copied Karan for awareness. The Board materials are being discussed at EMC next Wednesday, May 17, so if you have concerns please contact me when you are back.

Thanks,

Lesley Hancyk, MPAcc, CPA, CA

Manager, Financial Planning & Analysis (Capital)

British Columbia Ferry Services Inc.

T: 250-978-1263 C: [REDACTED]

lesley.hancyk@bcferries.com s. 15, 19

bcferries.com

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From: [Eamer-Goult, Jason](mailto:Jason.Eamer-Goult@bcferries.com)
To: [Doyle, Joanne](mailto:Joanne.Doyle@bcferries.com)
Subject: RE: Baynes Sound connector - public release of review
Date: May 09, 2023 12:55:46 PM

s. 13

Hi Joanne, sorry I've not had conduct of this matter but I understand Amy sent it to the business area [REDACTED]

Tx.

From: Doyle, Joanne <Joanne.Doyle@bcferries.com>
Sent: May 09, 2023 12:13 PM
To: Eamer-Goult, Jason <Jason.Eamer-Goult@bcferries.com>
Subject: FW: Baynes Sound connector - public release of review

Can you share your thoughts on the BSC review full release?

Joanne Doyle (she/her)
Manager, Fleet Strategic Planning
Strategy & Community Engagement

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From: Johnston, Karen <Karen.Johnston@bcferries.com>
Sent: May 09, 2023 11:35 AM
To: Marshall, Deborah <Deborah.Marshall@bcferries.com>; McIntosh, Carrie <Carrie.McIntosh@bcferries.com>
Cc: Olson, Tamara <Tamara.Olson@bcferries.com>; Doyle, Joanne <Joanne.Doyle@bcferries.com>
Subject: Baynes Sound connector - public release of review

Hi there – just wanted to ensure everyone is on the same page re: release of the BSS document which is going out in its entirety. Plan is as follows:

s. 13

- Community relations has advised the Denman/Hornby chair that the review will be made public week of May 15
- Document will be sent to FAC members on Denman/Hornby and posted on the community page (date to be determined)
- Shortly thereafter, Deb will send to local media with a cover note summarizing why the vessel will remain on the run but not expanded in the near term
- Further input/discussion will be facilitated as part of the engagement planned with the communities at the end of May. It's part of the invitation to bring forward other areas of community concern.

Deb – Carrie – over to you both to determine the best date for release once the p-note is done
Thanks all!!!! kj

Karen Johnston
Executive Director, Communications and Engagement,
Strategy and Community Engagement
British Columbia Ferry Services Inc.
Suite 500-1321 Blanshard Street, Victoria, B.C., V8W 0B7
T: 250-978-1367 C: [REDACTED]
Karen.johnston@bcferries.com s. 15, 19
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Rasmussen, Shauna

From: Johnston, Karen
Sent: May 15, 2023 2:16 PM
To: Marshall, Deborah; McIntosh, Carrie
Subject: Draft PNote - Baynes Sound Connector Review v4
Attachments: Draft PNote - Baynes Sound Connector Review v4.docx

I think I got this right – but of course get Peter’s take. kj

May 10, 2023

0XX/23

Issue: BC Ferries Reviews Future Investment in Baynes Sound Connector

Background:

The Baynes Sound Connector servicing the Buckley Bay (Vancouver Island) - Denman Island route is operationally reliable, but the community continues to be unsupportive of the vessel. Despite on-time performance of approximately 97 per cent and reliability of XX per cent, perception is that the vessel is not reliable and it's anticipated that reaction to any increased investment in the ship will be negative.

In the Performance Term 6 (PT6) Submission presented to the BC Ferry Commissioner September 30, 2022, the company outlined its plan to invest millions in the Baynes Sound Connector to increase its size from 45 AEQ to approximately 65 AEQ and repower the ship in 2026. The bigger ship would move additional traffic and better support a higher capacity vessel on Route 22, the connection between Denman and Hornby Islands.

In light of the community sentiment about the Baynes Sound Connector, BC Ferries undertook a review of vessel operations to date and assess alternative options to accommodate future demand.

The review considered five options:

- Defer expansion of the Baynes Sound Connector until 2034
- Replace the Baynes Sound Connector with a conventional ferry
- Supplement the Baynes Sound Connector with an additional vessel (conventional then new Island Class) indefinitely rather than expand
- Supplement the Baynes Sound Connector with an existing Island Class vessel in peak season
- Expand the Baynes Sound Connector in 2034 and supplement with another vessel indefinitely

s. 13

Upon review, it was recommended to [REDACTED] the Baynes Sound Connector by up to five years and amend the capital plan and service plan in accordance with this deferral subject to the outcomes of peak summer 2023 travel season.

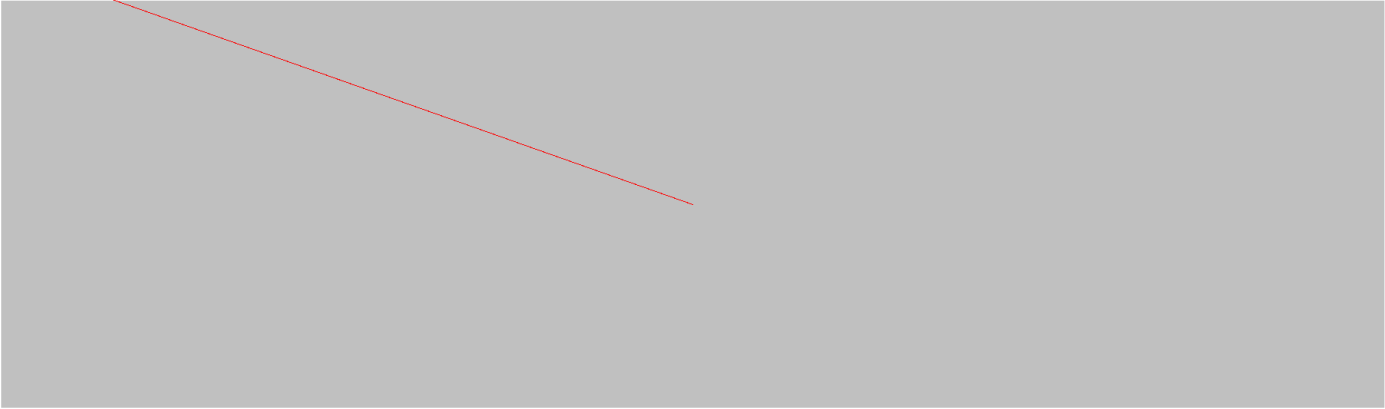
The plans outlined in PT6 to enhance service for both Denman and Hornby Islands (redeploying the larger Quinitsa for summer service on Route 22, and providing two-ship service with the Kahloke and Baynes Sound Connector during peak season on Route 21) begins in the summer of 2024. BC Ferries and the Province amended the contract to bring these service enhancements forward to the summer of 2023.

The Baynes Sound Connector Review was presented to the Board of Directors for information on February 16, 2023.

BC Ferries is hosting public engagement sessions on Denman and Hornby Islands on May 26 & 27 to discuss the enhanced summer schedules and the Denman East terminal upgrade project. We will post and circulate the Baynes Sound Connector Review in advance of the open houses for public interest.

s. 13

Holding Statement:



We have decided to defer the decision to expand the Baynes Sound Connector by up to five years and amend the capital plan and service plan subject to service viability demonstrated during the summer of 2023.

In the meantime, BC Ferries will enhance service on the Buckley Bay - Denman Island route this summer by providing two-ship service with the Kahloke and Baynes Sound Connector during peak season, Monday through Friday.

In addition, the larger vessel, Quintsa, will provide service this summer between Denman and Hornby Islands.

This fall we'll review how the summer went and collect customer feedback to further inform our decision not to expand the cable ferry in the near term

s. 13



will be engaging with the community on how to evaluate the success of the summer service at our upcoming engagement sessions.

s. 13

s. 13

IF ASKED:



Additional Information:

There is less than 30 per cent capacity available on the Buckley Bay – Denman Island route in the peak season, high commuter directional demand year-round at key times of day, and overloads cause congestion in surrounding community.

In addition to the operational enhancements, BC Ferries also recently conducted maintenance on the Baynes Sound Connector (hull cleaning, bull wheel servicing, main engine and hydraulic pump servicing) to improve the vessel's speed and reliability.

Vessel carrying capacity:

Baynes Sound Connector – 45 AEQ

Kahloke – 21 AEQ

Quinitsa – 44 AEQ

Drafted by:

Deborah Marshall - May 10, 2023

Approvals:

Peter Simpson – May 11, 2023

Carrie McIntosh – May 12, 2023

Karen Johnston

Brian Anderson

From: [Anderson, Brian](#)
To: [Marshall, Deborah](#)
Subject: RE: Draft PNote - BSC Review
Date: May 17, 2023 2:50:00 PM

Thanks Deb

From: Marshall, Deborah
Sent: May 17, 2023 2:44 PM
To: Anderson, Brian
Subject: RE: Draft PNote - BSC Review

Thanks, Brian. To answer your question about vessel reliability, Jason Bremner confirms BSC is at 99% for F23.

Deborah Marshall (she/her)
Executive Director, Public Affairs

British Columbia Ferry Services Inc.

T: 250-978-1267 **C:** [REDACTED] s. 15, 19

Email Deborah.marshall@bcferries.com

bcferries.com

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From: Anderson, Brian <Brian.Anderson@bcferries.com>

Sent: May 17, 2023 10:21 AM

To: Marshall, Deborah <Deborah.Marshall@bcferries.com>

Cc: Johnston, Karen <Karen.Johnston@bcferries.com>

Subject: RE: Draft PNote - BSC Review

Hi Deb – as discussed, I will be ensuring my colleagues and potentially board(s) are aware that we will be releasing this report and discussing at the upcoming sessions. This isn't 'new' news, but certainly want them to be aware from us rather than via interest groups. Will be doing this during my 'roundtable' at ELT this morning. In the meantime, a couple of clarifications in the pnote – particularly confirming we have decided to defer investments while we assess the supplemental service this summer... the success of that approach will factor into the timing of potential expansion investment of course. Make sense?

Thanks- Brian.

From: Marshall, Deborah <Deborah.Marshall@bcferries.com>

Sent: May 15, 2023 5:13 PM

To: Anderson, Brian <Brian.Anderson@bcferries.com>

Cc: Johnston, Karen <Karen.Johnston@bcferries.com>

Subject: Draft PNote - BSC Review

Hi Brian,

Please find attached draft pnote for your review and approval.

Please note comment bubble – [REDACTED]

s. 13

Thanks,

Deborah Marshall (she/her)
Executive Director, Public Affairs
Strategy & Community Engagement
British Columbia Ferry Services Inc.

500 - 1321 Blanshard Street, Victoria, B.C. V8W 0B7

T: 250-978-1267 C: [REDACTED] s. 15, 19

Email Deborah.marshall@bcferries.com

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From: [Anderson, Brian](#)
To: [McIntosh, Carrie](#)
Cc: [Marshall, Deborah](#); [Johnston, Karen](#)
Subject: RE: BSC Review
Date: May 17, 2023 3:55:00 PM

Thanks!

From: McIntosh, Carrie
Sent: May 17, 2023 3:54 PM
To: Anderson, Brian
Cc: Marshall, Deborah ; Johnston, Karen
Subject: RE: BSC Review

TERMINALS

Jordan Knutsen	Director, Terminal Operations
Megan Caldwell	Regional Manager, Terminal Operations
Scott Kesteloot	Terminal Manager, Denman/Hornby
Tyler Thompson	Senior Manager, Terminal Project Management Office
Jameson Mtanga	Project Manager, Denman East Terminal Project
Mak Rokic	Project Coordinator, Denman East Terminal Project

FLEET

Stephen Jones	Executive Director, Engineering
Karan Bajwa	Director, Fleet Engineering
Bruce Paterson	Director, Fleet Technical
Claudiu Raduta	Marine Superintendent, Routes 21 & 22
Andrew Weigold	Senior Master, Route 21
Gord Nettleton	Senior Master
Badrim Kassim	Senior Master, Route 22

Carrie McIntosh
Director, Community Relations
Strategy & Community Engagement
British Columbia Ferry Services Inc.
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T: 250-978-1720 **C:** s. 15, 19
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From: Anderson, Brian <Brian.Anderson@bcferries.com>
Sent: May 17, 2023 3:51 PM
To: McIntosh, Carrie <Carrie.McIntosh@bcferries.com>
Cc: Marshall, Deborah <Deborah.Marshall@bcferries.com>; Johnston, Karen <Karen.Johnston@bcferries.com>
Subject: RE: BSC Review

Hope so! Who / what distribution list have you been using? Perhaps we leverage that to get the

word out expeditiously?

From: McIntosh, Carrie <Carrie.McIntosh@bcferries.com>

Sent: May 17, 2023 2:00 PM

To: Marshall, Deborah <Deborah.Marshall@bcferries.com>; Anderson, Brian <Brian.Anderson@bcferries.com>; Johnston, Karen <Karen.Johnston@bcferries.com>

Subject: RE: BSC Review

Hopefully employees are well aware of the upcoming sessions we've been in constant communication with terminal and fleet ops and have provided them with materials to be passed along to crew about the events.

Carrie McIntosh
Director, Community Relations
Strategy & Community Engagement
British Columbia Ferry Services Inc.
500 – 1321 Blanshard Street, Victoria BC

T: 250-978-1720 **C:** [REDACTED] s. 15, 19
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From: Marshall, Deborah <Deborah.Marshall@bcferries.com>

Sent: May 17, 2023 1:51 PM

To: Anderson, Brian <Brian.Anderson@bcferries.com>; McIntosh, Carrie <Carrie.McIntosh@bcferries.com>; Johnston, Karen <Karen.Johnston@bcferries.com>

Subject: RE: BSC Review

Yes, we just spoke about it.

Deborah Marshall (she/her)
Executive Director, Public Affairs
British Columbia Ferry Services Inc.

T: 250-978-1267 **C:** [REDACTED] s. 15, 19
Email Deborah.marshall@bcferries.com

bcferries.com

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From: Anderson, Brian <Brian.Anderson@bcferries.com>

Sent: May 17, 2023 1:50 PM

To: McIntosh, Carrie <Carrie.McIntosh@bcferries.com>; Johnston, Karen <Karen.Johnston@bcferries.com>; Marshall, Deborah <Deborah.Marshall@bcferries.com>

Subject: RE: BSC Review

Spoke with Corrine at lunch... she requested that we send Route 21/22 employees a short memo outlining the key points / messages along with notification that we will be holding conversations with the community next week. That way they hear about it from "us" first. Nothing extensive – could mirror the messaging to community. Can we get that out first thing tomorrow morning so we could follow later with the message to community?

From: McIntosh, Carrie <Carrie.McIntosh@bcferries.com>

Sent: May 17, 2023 8:57 AM

To: Johnston, Karen <Karen.Johnston@bcferries.com>; Anderson, Brian <Brian.Anderson@bcferries.com>; Marshall, Deborah <Deborah.Marshall@bcferries.com>

Subject: BSC Review

Hi Everyone,

Do we have an update on the release of the BSC review? We have promised the community it will be released this week and that we will be discussing it at the sessions next week, so if we're not able to release it we'll need to communicate this quickly.

Carrie

Carrie McIntosh

Director, Community Relations

Strategy & Community Engagement

British Columbia Ferry Services Inc.

500 – 1321 Blanshard Street, Victoria BC

T: 250-978-1720 **C:** [REDACTED] s. 15, 19

carrie.mcintosh@bcferries.com

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From: [Johnston, Karen](#)
To: [Anderson, Brian](#); [McIntosh, Carrie](#); [Marshall, Deborah](#)
Subject: Re: Draft PNote - BSC Review
Date: May 18, 2023 9:30:33 AM
Attachments: [Memo to staff - Routes 21 and 22.docx](#)

Good by me.

Sent from my iPhone

On May 18, 2023, at 7:59 AM, Anderson, Brian
<Brian.Anderson@bcferries.com> wrote:

Thanks -- I tweaked a bit so appreciate a quick scan to ensure I haven't introduced anything erroneous!

I can send to Carrie's distribution list and request it be posted / shared with team members on both routes (terminals and vessels). Then we can proceed with community release later today.

B

From: Marshall, Deborah <Deborah.Marshall@bcferries.com>
Sent: May 17, 2023 3:12 PM
To: Anderson, Brian <Brian.Anderson@bcferries.com>; Johnston, Karen <Karen.Johnston@bcferries.com>
Subject: RE: Draft PNote - BSC Review

Here's a draft memo for you.
Not sure we have a dlist just for R21 and 22.

Deborah Marshall (she/her)
Executive Director, Public Affairs
British Columbia Ferry Services Inc.
T: 250-978-1267 **C:** s. 15, 19
Email Deborah.marshall@bcferries.com
bcferries.com

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From: Anderson, Brian <Brian.Anderson@bcferries.com>

Sent: May 17, 2023 11:56 AM

To: Marshall, Deborah <Deborah.Marshall@bcferries.com>; Johnston, Karen <Karen.Johnston@bcferries.com>

Subject: RE: Draft PNote - BSC Review

Raised the release of the report and upcoming sessions with ELT... only concern raised was that we need to inform the employees at the site before we release the report and inform the community. So internal comms the weak link yet again! We will need to draft up a very short note that can be distributed to leadership and shipboard/terminal staff today or first thing tomorrow morning. Then we can release the report.

From: Marshall, Deborah <Deborah.Marshall@bcferries.com>

Sent: May 15, 2023 5:13 PM

To: Anderson, Brian <Brian.Anderson@bcferries.com>

Cc: Johnston, Karen <Karen.Johnston@bcferries.com>

Subject: Draft PNote - BSC Review

Hi Brian,

Please find attached draft pnote for your review and approval.

Please note comment bubble –

s. 13

Thanks,

Deborah Marshall (she/her)
Executive Director, Public Affairs
Strategy & Community Engagement
British Columbia Ferry Services Inc.
500 – 1321 Blanshard Street, Victoria, B.C. V8W 0B7
T: 250-978-1267 **C:**  s. 15, 19
[Email Deborah.marshall@bcferries.com](mailto:Deborah.marshall@bcferries.com)
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To All Route 21/22 team members,

Our four-year plan submitted to the BC Ferry Commissioner on September 30, 2022 included a proposed expansion and repowering of the Baynes Sound Connector in 2026. The bigger ship would move additional traffic and better support a higher capacity vessel on Route 22, the connection between Denman and Hornby Islands.

Since submitting the report, we have completed a thorough review of vessel operations to date and assessed alternative ways to accommodate future demand. The review considered multiple options including replacing the Baynes Sound Connector with a conventional ferry.

Upon review, it was decided to accelerate upgrades to the vessel machinery and hull coatings while deferring the proposed expansion of the vessel. Instead, we will be deploying the Kahloke alongside the Baynes Sound Connector this summer and bringing the Quinitsa into service on Route 22.

Starting June 22, the Kahloke and Baynes Sound Connector will operate together Monday to Friday on Route 21. This service is scheduled through to September 4. In addition, the Quinitsa, which began service earlier this week between Denman and Hornby Islands, will continue on the route into December.

This fall we'll review how the summer went and collect feedback from you and customers to inform a final decision on the proposed expansion of the Baynes Sound Connector.

Attached you will find the report comparing the options that supported our decision. This report has been shared with the BC Ferry Commissioner, the BC Ferry Authority, our operations board and will be shared with the community shortly.

We are hosting two large community events next week (May 26th and 27th) to discuss medium-term plans for the Baynes Sound Connector, evaluation criteria for summer service and safety-related upgrades at the Denman East terminal. You are welcome to attend either session or chat with me or members of the leadership team who will be in attendance at the terminal or onboard.

Thank you for your continued support on these busy routes. As we ramp up to peak season please know that the excellent customer service you provide is greatly appreciated by community members and tourists!

Sincerely,

Brian Anderson

Vice President, Strategy and Community Engagement

Rasmussen, Shauna

From: McIntosh, Carrie
Sent: May 18, 2023 10:54 AM
To: Anderson, Brian; Johnston, Karen; Marshall, Deborah
Subject: RE: Draft PNote - BSC Review
Attachments: BCF_Baynes Sound Connector Review.pdf

Here you go – with cover. This is the version from Amy Bresser.

Carrie McIntosh
Director, Community Relations
Strategy & Community Engagement
British Columbia Ferry Services Inc.
500 – 1321 Blanshard Street, Victoria BC
T: 250-978-1720 **C:** [REDACTED] s. 15, 19
carrie.mcintosh@bcferries.com
[bcferries.com](https://www.bcferries.com) | [Facebook](https://www.facebook.com/bcferries) | [Twitter](https://twitter.com/bcferries)

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Sent: May 18, 2023 9:38 AM
To: Johnston, Karen <Karen.Johnston@bcferries.com>; Anderson, Brian <Brian.Anderson@bcferries.com>; Marshall, Deborah <Deborah.Marshall@bcferries.com>
Subject: RE: Draft PNote - BSC Review

Hi Brian,

Could you please cc me on the message to staff? I'll make a post to the community page and send to the FAC once I see it.

Carrie

Carrie McIntosh
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Deborah Marshall (she/her)
Executive Director, Public Affairs
British Columbia Ferry Services Inc.

T: 250-978-1267 **C:** [REDACTED] s. 15, 19
Email Deborah.marshall@bcferries.com
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Please note comment bubble –

s. 13

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British Columbia Ferry Services Inc.

Baynes Sound Connector Review
February 16, 2023



BCFerries

February 16, 2023

Baynes Sound Connector Review

PURPOSE

This report summarizing BC Ferries' review of the *Baynes Sound Connector* ("BSC") capacity and propulsion upgrades is provided FOR INFORMATION.

BACKGROUND

The BSC is a cable ferry serving Route 21 between Vancouver Island (Buckley Bay) and Denman Island (Denman Island West). This is the sole cable ferry in BC Ferries' fleet and, since its introduction, it has presented unique technical challenges related to its design and systems. While it meets the requirements for service delivery, mechanical reliability remains a concern and the vessel is prone to service speed reductions (especially during summer), primarily due to extreme hull fouling.

Maintenance costs for this vessel have been significantly higher than anticipated in the business case and are driven by a number of factors. Since vessel introduction, several modifications have improved performance or reduced costs, including:

- Development of the drive tunnel roller system;
- Use of a hull cleaning robot;
- Redesign of the guide sheaves and sheave bearings; and
- Redesign of the bull wheel and seawater strainer modifications.

These efforts have reduced fuel usage, increased vessel performance or reduced restrictions on deck space.

While targeted technical modifications have achieved some improvements, costs remain above business case estimates. In addition, the following unresolved vessel issues are under investigation and there are solutions under development that are anticipated to improve vessel reliability and transit times, including:

- Overheating of the hydraulic motors;
- Bolt cracking on the bull-wheel (impacting utilization of the brake system); and
- Hull fouling.

BC Ferries' Performance Term 6 submission includes \$17.9M to address mechanical reliability concerns as well as expand the capacity of the BSC to support anticipated vehicle traffic growth on the route. The broad community continues to be unsupportive of the vessel and reactions to potential increased investment remain highly negative. Islanders, the Ferry Commissioner and the BC Ferry Authority have questioned vessel reliability and the proposed investments.

Prior to proceeding with planned investments, BC Ferries engaged a consultant to undertake a review of vessel operations to date and assess alternative options to accommodate future demand. This review considered service options to meet the long term forecast demand for Route 21 based on required capital expenditure and known and projected operating and maintenance costs. A 25-year financial analysis summarizes the anticipated capital and operating expenditures into a net present value ("NPV") figure that can be compared across the current plan and options. The review also conducted an analysis of the anticipated performance to assess expected relative improvements in service delivery.

DISCUSSION

The Performance Term 6 submission to support growing demand on Denman and Hornby Islands includes \$17.9M to expand and repower the BSC in 2026. The larger ship increases capacity at peak times; although during shuttling operations, this increase comes at that expense of frequency due to increased loading and

unloading time. The original business case for the cable ferry envisioned decommissioning the conventional ferry berths; however, the plan now anticipates keeping both conventional berths as well as the cable ferry berths to support operations and refits (four berths in total).

Base case deployment and seasonal service capacity analysis anticipated over the planning horizon is summarized below and a comparative table is provided for each option.

Base Case			F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
Vessel Deployment	Denman Island		BSC		Expanded Baynes Sound Connector																					
	Buckey Bay (Peak Only)		KAH																							
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																									
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																									
	Peak (late-June to Labour Day)																									
Average Vehicle Space Capacity Available					5 to 15%		15 to 30%		30 to 50%		50 to 75%															

Option Assessment

The review considered five alternatives that are technically practical and operationally feasible. Options that consider maintaining the BSC include the maintenance and replacement of the conventional berths on the route to support seasonal supplementary service and refit relief. Options that consider expanding the BSC include an investment to increase carrying capacity from 45 to 64 automobile equivalents and repowering.

All service options were analyzed using a range of annual growth projections from 0.41% to 2%; those presented in this report use 1% annual growth for all vehicle types.

Option 1: Defer Expansion until 2034

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering. Supplemental vessel service during the peak season would continue until 2034, at which time the BSC would be expanded at an estimated cost of \$15.9M. The supplemental vessel is expected to be required more frequently in the peak season beginning in 2030 and can transition from five to seven days per week operation. Remaining components are consistent with the base case.

Defer expansion until 2034			F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
Vessel Deployment	Denman Island		BSC		Expanded Baynes Sound Connector																					
	Buckey Bay (Peak Only)		KAH (5days)		KAH (7days)																					
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																									
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																									
	Peak (late-June to Labour Day)																									
Average Vehicle Space Capacity Available					5 to 15%		15 to 30%		30 to 50%		50 to 75%															

Option 2: Replace BSC with Conventional Ferry

This alternative avoids any further investment in the BSC and instead \$91.9M is allocated to replace the BSC with a newly-built conventional vessel and rebuild the terminal berths by 2028. A larger conventional vessel requires a larger number of highly qualified crew (three licensed - Master, Mate, Chief Engineer) with an incremental workforce of nine positions (three per watch). The BSC would be offered for sale (no material proceeds anticipated) and the remaining two berths would be decommissioned.

Replace BSC with Conventional Ferry			F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
Vessel Deployment	Denman Island		BSC		NEW CONVENTIONAL VESSEL (~70 AEQ)																					
	Buckey Bay (Peak Only)		KAH																							
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																									
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																									
	Peak (late-June to Labour Day)																									
Average Vehicle Space Capacity Available					5 to 15%		15 to 30%		30 to 50%		50 to 75%															

Option 3: Supplement the BSC Indefinitely Rather Than Expand

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering of the BSC. Supplemental vessel service during the peak season would continue indefinitely, starting with the Kahloke (21 automobile capacity) and transitioning to an Island Class (47 automobile capacity) in 2035. Instead of expanding the BSC, an investment of \$65M is required to procure a dedicated Island Class vessel. This approach allows for the dedicated vessel to be available to support operations not only in the peak season but year-round, as required in the future.

Supplement the BSC Indefinitely Rather Than Expand		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
3	Vessel Deployment	Denman Island	BSC																						
		Buckley Bay (Peak Only)	KAH (5days)					KAH (7days)					Incremental Island Class (7days peak)												
	Average Vehicle Capacity	Off Peak (Thanksgiving to mid-May)																							
	Available	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																							
		Peak (late-June to Labour Day)																							
Average Vehicle Space Capacity Available			5 to 15%					15 to 30%					30 to 50%					50 to 75%							

Option 4: Supplement the BSC Indefinitely Rather Than Expand

This alternative is a very similar to Option 3, but relies upon an existing Island Class vessel to provide supplemental service post 2034. Because the Island Class vessel is required to provide maintenance relief across the fleet, it is only available to provide supplemental service on this route in the peak season.

Supplement the BSC Indefinitely Rather Than Expand		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
4	Vessel Deployment	Denman Island	BSC																						
		Buckley Bay (Peak Only)	KAH (5days)					KAH (7days)					Relief Island Class (7days peak)												
	Average Vehicle Capacity	Off Peak (Thanksgiving to mid-May)																							
	Available	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																							
		Peak (late-June to Labour Day)																							
Average Vehicle Space Capacity Available			5 to 15%					15 to 30%					30 to 50%					50 to 75%							

Option 5: Expand the BSC in 2034 and Supplement the BSC Indefinitely

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering of the BSC, with \$15.9M allocated in 2034 to expand the vessel. Supplemental vessel service during the peak season would continue indefinitely, starting with the Kahloke (21 automobile capacity) and transitioning to an Island Class (47 automobile capacity) in 2035. Similar to Option 4, because the supplemental vessel is required to provide maintenance relief across the fleet, it would be restricted to peak season use.

Defer Expansion Until 2034 and Supplement Indefinitely		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
5	Vessel Deployment	Denman Island	BSC										Expanded Baynes Sound Connector												
		Buckley Bay (Peak Only)	KAH (5days)					KAH (7days)					Relief Island Class (7days peak)												
	Average Vehicle Capacity	Off Peak (Thanksgiving to mid-May)																							
	Available	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																							
		Peak (late-June to Labour Day)																							
Average Vehicle Space Capacity Available			5 to 15%					15 to 30%					30 to 50%					50 to 75%							

OPTION SUMMARY

The following table summarizes the base case plan and each of the five options, including the results of the 25-year net present value analysis of anticipated capital and operating expenses:

Option	Vessel Deployment	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	25-Year NPV
(Base Case)	Denman Is	BSC										Expanded Baynes Sound Connector										(\$81 M)			
	Buckley Bay (Peak Season)	KAH																							
Option	Vessel Deployment	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	25-Year NPV
1	Denman Is	BSC										Expanded Baynes Sound Connector										(\$77 M)			
	Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)																		
Option	Vessel Deployment	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	25-Year NPV
2	Denman Is	BSC										NEW CONVENTIONAL VESSEL (~70 AEQ)										(\$149 M)			
	Buckley Bay (Peak Season)	KAH																							
Option	Vessel Deployment	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	25-Year NPV
3	Denman Is	BSC																				(\$113 M)			
	Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)					Incremental Island Class (Potential Year-Round)													
Option	Vessel Deployment	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	25-Year NPV
4	Denman Is	BSC																				(\$73 M)			
	Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)					Relief Island Class													
Option	Vessel Deployment	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	25-Year NPV
5	Denman Is	BSC										Expanded Baynes Sound Connector										(\$82 M)			
	Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)					Relief Island Class													

RECOMMENDATION

BC Ferries is pursuing immediate maintenance and operational enhancements to the BSC and plans to introduce supplemental vessel service on Route 21 during the upcoming peak season.

The review recommends proceeding with Option 1, 4 or 5, all of which defer the major capital investment in the BSC for up to 10 years, or longer if demand does not warrant it. This approach provides an opportunity to assess the outcomes of the operational enhancements and inform the feasibility and suitability of using supplemental vessel service on a longer term basis.

If traffic demand or operational needs dictate the need for expanded capacity beyond what can be accommodated with this service strategy, it can be achieved by accelerating the timing of the expansion of the BSC or through the deployment of a larger supplemental vessel.

From: [Anderson, Brian](#)
To: [McIntosh, Carrie](#); [Johnston, Karen](#); [Marshall, Deborah](#)
Subject: RE: Draft PNote - BSC Review
Date: May 18, 2023 12:43:00 PM

Just about to break from DCC and I'll be able to send!

From: McIntosh, Carrie
Sent: May 18, 2023 12:42 PM
To: Johnston, Karen ; Anderson, Brian ; Marshall, Deborah
Subject: RE: Draft PNote - BSC Review

Everything is cued up – just waiting on Brian's note to ops.

Carrie McIntosh

Director, Community Relations

Strategy & Community Engagement

British Columbia Ferry Services Inc.

500 – 1321 Blanshard Street, Victoria BC

T: 250-978-1720 **C:** [REDACTED] s. 15, 19

carrie.mcintosh@bcferries.com

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Carrie- -pls let Deb know when you've done your thing with the community pages and FAC so that she can reach out to media – thanks all - kj

Karen Johnston

Executive Director, Communications and Engagement

British Columbia Ferry Services Inc.

T: 250-978-1367 **C:** [REDACTED] s. 15, 19

Karen.johnston@bcferries.com

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Deborah Marshall (she/her)

Executive Director, Public Affairs

British Columbia Ferry Services Inc.

T: 250-978-1267 **C:** [REDACTED] s. 15, 19

Email Deborah.marshall@bcferries.com
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Cc: Johnston, Karen <Karen.Johnston@bcferries.com>

Subject: Draft PNote - BSC Review

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Please note comment bubble – [REDACTED]

s. 13

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Deborah Marshall (she/her)

Executive Director, Public Affairs

Strategy & Community Engagement

British Columbia Ferry Services Inc.

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BC Ferries acknowledges and respects the territories of Indigenous peoples on whose beautiful lands and waters our ships, offices, terminals, and work sites operate along the Pacific West Coast.

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McIntosh, Carrie

From: Anderson, Brian
Sent: May 18, 2023 2:17 PM
To: Knutsen, Jordan; Caldwell, Megan; Kesteloot, Scott; Jones, Stephen; Bajwa, Karan; Raduta, Captain Claudiu; Weigold, Andrew; Nettleton, Gordon; Kassim, Badrin; McCulloch, John
Cc: Storey, Corrine; Johnston, Darren; Lucia, Melanie
Subject: Baynes Sound Connector Update
Attachments: BCF_Baynes Sound Connector Review.pdf; 2023 0518 Employee Bulletin - Baynes Sound Connector Review Update.pdf

Colleagues,

As you know, we have recently completed upgrades to the Baynes Sound Connector and are prepping for enhanced service this summer on both Routes 21 and 22. As part of those preparations, we will be engaging with the broader community next week on a number of topics including public sessions on both Denman and Hornby Islands. One topic of will be the decision to defer expansion of the Baynes Sound Connector while we assess the impact of increased frequency provided by the supplemental vessel on Route 21 this summer. A memo along with the report summarizing the options that were considered is attached for your information. Can you please support sharing this information with your terminal and shipboard teams in a timely manner so that they have access to the same information we plan to share with the community?

Many thanks,
Brian.

Brian Anderson (he/him)
Vice President, Strategy and Community Engagement
British Columbia Ferry Services Inc.
Suite 500 – 1321 Blanshard Street, Victoria, BC V8W 0B7
T: 250-978-1276
brian.anderson@bcferries.com

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Strategy & Community Engagement Employee Bulletin

May 18, 2023

Baynes Sound Connector Review Update

To All Route 21/22 team members,

Our four-year plan submitted to the BC Ferry Commissioner on September 30, 2022 included a proposed expansion and repowering of the *Baynes Sound Connector* in 2026. The bigger ship was proposed to move additional traffic and better support a higher capacity vessel on Route 22, the connection between Denman and Hornby Islands.

Since submitting the report, we have completed a review of vessel operations to date and assessed alternative ways to accommodate future demand. The review considered multiple options including replacing the *Baynes Sound Connector* with a conventional ferry.

Upon review, it was decided to accelerate upgrades to the vessel machinery and hull coatings while deferring the proposed expansion of the vessel. Instead, we will be deploying the *Kahloke* alongside the *Baynes Sound Connector* this summer and bringing the *Quinitsa* into service on Route 22.

Starting June 22, the *Kahloke* and *Baynes Sound Connector* will operate together Monday to Friday on Route 21. This service is scheduled through to September 4. In addition, the *Quinitsa*, which began service earlier this week between Denman and Hornby Islands, will continue on the route into December.

This fall we'll review how the summer went and collect feedback from you and customers to inform a final decision on the proposed expansion of the *Baynes Sound Connector*.

Attached you will find the report comparing the options that supported our decision. This report has been shared with the BC Ferry Commissioner, the BC Ferry Authority, our operations board and will be shared with the community shortly.

We are hosting two large community events next week (May 26th and 27th) to discuss medium-term plans for the *Baynes Sound Connector*, evaluation criteria for summer service and safety-related upgrades at the Denman East terminal. You are welcome to attend either session or chat with me or members of the leadership team who will be in attendance at the terminal or onboard.

Thank you for your continued support on these busy routes. As we ramp up to peak season please know that the excellent customer service you provide is greatly appreciated by community members and tourists!

s. 22 Sincerely,



Brian Anderson
Vice President, Strategy & Community Engagement

British Columbia Ferry Services Inc.

Baynes Sound Connector Review
February 16, 2023



 **BC Ferries**

Baynes Sound Connector Review

PURPOSE

This report summarizing BC Ferries' review of the *Baynes Sound Connector* ("BSC") capacity and propulsion upgrades is provided FOR INFORMATION.

BACKGROUND

The BSC is a cable ferry serving Route 21 between Vancouver Island (Buckley Bay) and Denman Island (Denman Island West). This is the sole cable ferry in BC Ferries' fleet and, since its introduction, it has presented unique technical challenges related to its design and systems. While it meets the requirements for service delivery, mechanical reliability remains a concern and the vessel is prone to service speed reductions (especially during summer), primarily due to extreme hull fouling.

Maintenance costs for this vessel have been significantly higher than anticipated in the business case and are driven by a number of factors. Since vessel introduction, several modifications have improved performance or reduced costs, including:

- Development of the drive tunnel roller system;
- Use of a hull cleaning robot;
- Redesign of the guide sheaves and sheave bearings; and
- Redesign of the bull wheel and seawater strainer modifications.

These efforts have reduced fuel usage, increased vessel performance or reduced restrictions on deck space.

While targeted technical modifications have achieved some improvements, costs remain above business case estimates. In addition, the following unresolved vessel issues are under investigation and there are solutions under development that are anticipated to improve vessel reliability and transit times, including:

- Overheating of the hydraulic motors;
- Bolt cracking on the bull-wheel (impacting utilization of the brake system); and
- Hull fouling.

BC Ferries' Performance Term 6 submission includes \$17.9M to address mechanical reliability concerns as well as expand the capacity of the BSC to support anticipated vehicle traffic growth on the route. The broad community continues to be unsupportive of the vessel and reactions to potential increased investment remain highly negative. Islanders, the Ferry Commissioner and the BC Ferry Authority have questioned vessel reliability and the proposed investments.

Prior to proceeding with planned investments, BC Ferries engaged a consultant to undertake a review of vessel operations to date and assess alternative options to accommodate future demand. This review considered service options to meet the long term forecast demand for Route 21 based on required capital expenditure and known and projected operating and maintenance costs. A 25-year financial analysis summarizes the anticipated capital and operating expenditures into a net present value ("NPV") figure that can be compared across the current plan and options. The review also conducted an analysis of the anticipated performance to assess expected relative improvements in service delivery.

DISCUSSION

The Performance Term 6 submission to support growing demand on Denman and Hornby Islands includes \$17.9M to expand and repower the BSC in 2026. The larger ship increases capacity at peak times; although during shuttling operations, this increase comes at that expense of frequency due to increased loading and

unloading time. The original business case for the cable ferry envisioned decommissioning the conventional ferry berths; however, the plan now anticipates keeping both conventional berths as well as the cable ferry berths to support operations and refits (four berths in total).

Base case deployment and seasonal service capacity analysis anticipated over the planning horizon is summarized below and a comparative table is provided for each option.

Base Case		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
Vessel Deployment	Denman Island	BSC		Expanded Baynes Sound Connector																					
	Buckey Bay (Peak Only)	KAH																							
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																								
Average Vehicle Space Capacity Available				5 to 15%	15 to 30%	30 to 50%	50 to 75%																		

Option Assessment

The review considered five alternatives that are technically practical and operationally feasible. Options that consider maintaining the BSC include the maintenance and replacement of the conventional berths on the route to support seasonal supplementary service and refit relief. Options that consider expanding the BSC include an investment to increase carrying capacity from 45 to 64 automobile equivalents and repowering.

All service options were analyzed using a range of annual growth projections from 0.41% to 2%; those presented in this report use 1% annual growth for all vehicle types.

Option 1: Defer Expansion until 2034

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering. Supplemental vessel service during the peak season would continue until 2034, at which time the BSC would be expanded at an estimated cost of \$15.9M. The supplemental vessel is expected to be required more frequently in the peak season beginning in 2030 and can transition from five to seven days per week operation. Remaining components are consistent with the base case.

Defer expansion until 2034		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
Vessel Deployment	Denman Island	BSC		Expanded Baynes Sound Connector																					
	Buckey Bay (Peak Only)	KAH (5days)		KAH (/days)																					
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																								
Average Vehicle Space Capacity Available				5 to 15%	15 to 30%	30 to 50%	50 to 75%																		

Option 2: Replace BSC with Conventional Ferry

This alternative avoids any further investment in the BSC and instead \$91.9M is allocated to replace the BSC with a newly-built conventional vessel and rebuild the terminal berths by 2028. A larger conventional vessel requires a larger number of highly qualified crew (three licensed - Master, Mate, Chief Engineer) with an incremental workforce of nine positions (three per watch). The BSC would be offered for sale (no material proceeds anticipated) and the remaining two berths would be decommissioned.

Replace BSC with Conventional Ferry		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
Vessel Deployment	Denman Island	BSC		NEW CONVENTIONAL VESSEL (~70 AEQ)																					
	Buckey Bay (Peak Only)	KAH																							
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																								
Average Vehicle Space Capacity Available				5 to 15%	15 to 30%	30 to 50%	50 to 75%																		

Option 3: Supplement the BSC Indefinitely Rather Than Expand

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering of the BSC. Supplemental vessel service during the peak season would continue indefinitely, starting with the Kahloke (21 automobile capacity) and transitioning to an Island Class (47 automobile capacity) in 2035. Instead of expanding the BSC, an investment of \$65M is required to procure a dedicated Island Class vessel. This approach allows for the dedicated vessel to be available to support operations not only in the peak season but year-round, as required in the future.

Supplement the BSC Indefinitely Rather Than Expand		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46		
3	Vessel Deployment	Denman Island	BSC																							
		Buckey Bay (Peak Only)	KAH (5days)							KAH (7days)							Incremental Island Class (7days peak)									
	Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
		Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
Peak (late-June to Labour Day)																										
Average Vehicle Space Capacity Available			5 to 15%				15 to 30%				30 to 50%				50 to 75%											

Option 4: Supplement the BSC Indefinitely Rather Than Expand

This alternative is a very similar to Option 3, but relies upon an existing Island Class vessel to provide supplemental service post 2034. Because the Island Class vessel is required to provide maintenance relief across the fleet, it is only available to provide supplemental service on this route in the peak season.

Supplement the BSC Indefinitely Rather Than Expand		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
4	Vessel Deployment	Denman Island	BSC																						
		Buckey Bay (Peak Only)	KAH (5days)							KAH (7days)							Relief Island Class (7days peak)								
	Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																							
		Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																							
Peak (late-June to Labour Day)																									
Average Vehicle Space Capacity Available			5 to 15%				15 to 30%				30 to 50%				50 to 75%										

Option 5: Expand the BSC in 2034 and Supplement the BSC Indefinitely

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering of the BSC, with \$15.9M allocated in 2034 to expand the vessel. Supplemental vessel service during the peak season would continue indefinitely, starting with the Kahloke (21 automobile capacity) and transitioning to an Island Class (47 automobile capacity) in 2035. Similar to Option 4, because the supplemental vessel is required to provide maintenance relief across the fleet, it would be restricted to peak season use.

Defer Expansion Until 2034 and Supplement Indefinitely		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
5	Vessel Deployment	Denman Island	BSC											Expanded Baynes Sound Connector											
		Buckey Bay (Peak Only)	KAH (5days)							KAH (7days)							Relief Island Class (7days peak)								
	Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																							
		Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																							
Peak (late-June to Labour Day)																									
Average Vehicle Space Capacity Available			5 to 15%				15 to 30%				30 to 50%				50 to 75%										

OPTION SUMMARY

The following table summarizes the base case plan and each of the five options, including the results of the 25-year net present value analysis of anticipated capital and operating expenses:

Option	Vessel Deployment	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	25-Year NPV
(Base Case)	Denman Is	Expanded Baynes Sound Connector																							(\$81 M)
	Buckley Bay (Peak Season)	KAH																							
1	Denman Is	BSC										Expanded Baynes Sound Connector										(\$77 M)			
	Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)																		
2	Denman Is	BSC										NEW CONVENTIONAL VESSEL (~70 AEQ)										(\$149 M)			
	Buckley Bay (Peak Season)	KAH																							
3	Denman Is	BSC																							(\$113 M)
	Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)					Incremental Island Class (Potential Year-Round)													
4	Denman Is	BSC																							(\$73 M)
	Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)					Relief Island Class													
5	Denman Is	BSC										Expanded Baynes Sound Connector										(\$82 M)			
	Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)					Relief Island Class													

RECOMMENDATION

BC Ferries is pursuing immediate maintenance and operational enhancements to the BSC and plans to introduce supplemental vessel service on Route 21 during the upcoming peak season.

The review recommends proceeding with Option 1, 4 or 5, all of which defer the major capital investment in the BSC for up to 10 years, or longer if demand does not warrant it. This approach provides an opportunity to assess the outcomes of the operational enhancements and inform the feasibility and suitability of using supplemental vessel service on a longer term basis.

If traffic demand or operational needs dictate the need for expanded capacity beyond what can be accommodated with this service strategy, it can be achieved by accelerating the timing of the expansion of the BSC or through the deployment of a larger supplemental vessel.

A large, thick red 'X' is drawn across the entire page, indicating that the content has been redacted.

Page redacted

Rasmussen, Shauna

From: McIntosh, Carrie
Sent: May 18, 2023 3:59 PM
To: karenross@telus.net; dr.jredmonds@gmail.com; jackgill@telus.net; jkevinhutton@msn.com; mcrobhi@telus.net; stephanwehner@gmail.com; aallen@islandstrust.bc.ca; sstrom@hotmail.com; denmantruck@gmail.com; acdanks@telus.net; denmanchief@gmail.com; sborthwick@islandtrust.bc.ca
Cc: Olson, Tamara; Johnston, Karen; Marshall, Deborah
Subject: Baynes Sound Connector Review Released
Attachments: BCF_Baynes Sound Connector Review.pdf

Hello FAC Members,

We have just released the review of the Baynes Sound Connector. I have attached it here for you, and it is posted for public viewing on the project page and the community pages:

<https://www.bcferriesprojects.ca/denman-east-terminal>

<https://www.bcferriesprojects.ca/denman-island>

<https://www.bcferriesprojects.ca/hornby-island>

The report summary is included below for your easy reference as well.

We look forward to seeing everyone next week.

Warm Regards,
Carrie

Report Summary

Our four-year plan submitted to the BC Ferry Commissioner on September 30, 2022 included a proposed expansion and repowering of the Baynes Sound Connector in 2026. The bigger ship was proposed to move additional traffic and better support a higher capacity vessel on Route 22, the connection between Denman and Hornby Islands.

Since submitting the report, we have completed a review of vessel operations to date and assessed alternative ways to accommodate future demand. The review considered multiple options including replacing the Baynes Sound Connector with a conventional ferry.

Upon review, it was decided to accelerate upgrades to the vessel machinery and hull coatings while deferring the proposed expansion of the vessel. Instead, we will be deploying the Kahloke alongside the Baynes Sound Connector this summer and bringing the Quinitza into service on Route 22.

Starting June 22, the Kahloke and Baynes Sound Connector will operate together Monday to Friday on Route 21. This service is scheduled through to September 4. In addition, the Quinitza, which began service earlier this week between Denman and Hornby Islands, will continue on the route into December.

This fall we'll review how the summer went and collect feedback from customers to inform a final decision on the proposed expansion of the Baynes Sound Connector.

This report has been shared with the BC Ferry Commissioner, the BC Ferry Authority, and our operations board.

We are hosting two large community events next week (May 26th and 27th) to discuss medium-term plans for the Baynes Sound Connector, evaluation criteria for summer service and safety-related upgrades at the Denman East terminal. You can learn more about the sessions [here](#).

Carrie McIntosh
Director, Community Relations
Strategy & Community Engagement
British Columbia Ferry Services Inc.
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British Columbia Ferry Services Inc.

Baynes Sound Connector Review
February 16, 2023



 **BC Ferries**

February 16, 2023

Baynes Sound Connector Review

PURPOSE

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- Bolt cracking on the bull-wheel (impacting utilization of the brake system); and
- Hull fouling.

BC Ferries' Performance Term 6 submission includes \$17.9M to address mechanical reliability concerns as well as expand the capacity of the BSC to support anticipated vehicle traffic growth on the route. The broad community continues to be unsupportive of the vessel and reactions to potential increased investment remain highly negative. Islanders, the Ferry Commissioner and the BC Ferry Authority have questioned vessel reliability and the proposed investments.

Prior to proceeding with planned investments, BC Ferries engaged a consultant to undertake a review of vessel operations to date and assess alternative options to accommodate future demand. This review considered service options to meet the long term forecast demand for Route 21 based on required capital expenditure and known and projected operating and maintenance costs. A 25-year financial analysis summarizes the anticipated capital and operating expenditures into a net present value ("NPV") figure that can be compared across the current plan and options. The review also conducted an analysis of the anticipated performance to assess expected relative improvements in service delivery.

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unloading time. The original business case for the cable ferry envisioned decommissioning the conventional ferry berths; however, the plan now anticipates keeping both conventional berths as well as the cable ferry berths to support operations and refits (four berths in total).

Base case deployment and seasonal service capacity analysis anticipated over the planning horizon is summarized below and a comparative table is provided for each option.

Base Case			F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46
Vessel Deployment	Denman Island		BSC		Expanded Baynes Sound Connector																				
	Buckey Bay (Peak Only)		KAH																						
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																								
Average Vehicle Space Capacity Available					5 to 15%		15 to 30%		30 to 50%		50 to 75%														

Option Assessment

The review considered five alternatives that are technically practical and operationally feasible. Options that consider maintaining the BSC include the maintenance and replacement of the conventional berths on the route to support seasonal supplementary service and refit relief. Options that consider expanding the BSC include an investment to increase carrying capacity from 45 to 64 automobile equivalents and repowering.

All service options were analyzed using a range of annual growth projections from 0.41% to 2%; those presented in this report use 1% annual growth for all vehicle types.

Option 1: Defer Expansion until 2034

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering. Supplemental vessel service during the peak season would continue until 2034, at which time the BSC would be expanded at an estimated cost of \$15.9M. The supplemental vessel is expected to be required more frequently in the peak season beginning in 2030 and can transition from five to seven days per week operation. Remaining components are consistent with the base case.

Defer expansion until 2034			F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46
Vessel Deployment	Denman Island		BSC		Expanded Baynes Sound Connector																				
	Buckey Bay (Peak Only)		KAH (5days)		KAH (7days)																				
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
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Average Vehicle Space Capacity Available					5 to 15%		15 to 30%		30 to 50%		50 to 75%														

Option 2: Replace BSC with Conventional Ferry

This alternative avoids any further investment in the BSC and instead \$91.9M is allocated to replace the BSC with a newly-built conventional vessel and rebuild the terminal berths by 2028. A larger conventional vessel requires a larger number of highly qualified crew (three licensed - Master, Mate, Chief Engineer) with an incremental workforce of nine positions (three per watch). The BSC would be offered for sale (no material proceeds anticipated) and the remaining two berths would be decommissioned.

Replace BSC with Conventional Ferry			F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46
Vessel Deployment	Denman Island		BSC		NEW CONVENTIONAL VESSEL (~70 AEC)																				
	Buckey Bay (Peak Only)		KAH																						
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																								
Average Vehicle Space Capacity Available					5 to 15%		15 to 30%		30 to 50%		50 to 75%														

Option 3: Supplement the BSC Indefinitely Rather Than Expand

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering of the BSC. Supplemental vessel service during the peak season would continue indefinitely, starting with the Kahloke (21 automobile capacity) and transitioning to an Island Class (47 automobile capacity) in 2035. Instead of expanding the BSC, an investment of \$65M is required to procure a dedicated Island Class vessel. This approach allows for the dedicated vessel to be available to support operations not only in the peak season but year-round, as required in the future.

Supplement the BSC Indefinitely Rather Than Expand		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46		
3	Vessel Deployment	Denman Island	BSC																							
		Buckey Bay (Peak Only)	KAH (5days)							KAH (7days)							Incremental Island Class (7days peak)									
	Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
		Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																									
Average Vehicle Space Capacity Available			5 to 15%				15 to 30%				30 to 50%				50 to 75%											

Option 4: Supplement the BSC Indefinitely Rather Than Expand

This alternative is a very similar to Option 3, but relies upon an existing Island Class vessel to provide supplemental service post 2034. Because the Island Class vessel is required to provide maintenance relief across the fleet, it is only available to provide supplemental service on this route in the peak season.

Supplement the BSC Indefinitely Rather Than Expand		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
4	Vessel Deployment	Denman Island	BSC																						
		Buckey Bay (Peak Only)	KAH (5days)							KAH (7days)							Relief Island Class (7days peak)								
	Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																							
		Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																							
	Peak (late-June to Labour Day)																								
Average Vehicle Space Capacity Available			5 to 15%				15 to 30%				30 to 50%				50 to 75%										

Option 5: Expand the BSC in 2034 and Supplement the BSC Indefinitely

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering of the BSC, with \$15.9M allocated in 2034 to expand the vessel. Supplemental vessel service during the peak season would continue indefinitely, starting with the Kahloke (21 automobile capacity) and transitioning to an Island Class (47 automobile capacity) in 2035. Similar to Option 4, because the supplemental vessel is required to provide maintenance relief across the fleet, it would be restricted to peak season use.

Defer Expansion Until 2034 and Supplement Indefinitely		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
5	Vessel Deployment	Denman Island	Expanded Baynes Scund Connector																						
		Buckey Bay (Peak Only)	KAH (5days)							KAH (7days)							Relief Island Class (7days peak)								
	Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																							
		Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																							
	Peak (late-June to Labour Day)																								
Average Vehicle Space Capacity Available			5 to 15%				15 to 30%				30 to 50%				50 to 75%										

OPTION SUMMARY

The following table summarizes the base case plan and each of the five options, including the results of the 25-year net present value analysis of anticipated capital and operating expenses:

Option	Vessel Deployment	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	25-Year NPV
(Base Case)	Denman Is	BSC																							(\$81 M)
	Buckley Bay (Peak Season)	Expanded Baynes Sound Connector																							
1	Denman Is	BSC																							(\$77 M)
	Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)					Expanded Baynes Sound Connector													
2	Denman Is	NEW CONVENTIONAL VESSEL (~70 AEQ)																							(\$149 M)
	Buckley Bay (Peak Season)	KAH																							
3	Denman Is	BSC																							(\$113 M)
	Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)					Incremental Island Class (Potential Year-Round)													
4	Denman Is	BSC																							(\$73 M)
	Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)					Relief Island Class													
5	Denman Is	BSC																							(\$82 M)
	Buckley Bay (Peak Season)	KAH (5days)					KAH (7days)					Expanded Baynes Sound Connector													

RECOMMENDATION

BC Ferries is pursuing immediate maintenance and operational enhancements to the BSC and plans to introduce supplemental vessel service on Route 21 during the upcoming peak season.

The review recommends proceeding with Option 1, 4 or 5, all of which defer the major capital investment in the BSC for up to 10 years, or longer if demand does not warrant it. This approach provides an opportunity to assess the outcomes of the operational enhancements and inform the feasibility and suitability of using supplemental vessel service on a longer term basis.

If traffic demand or operational needs dictate the need for expanded capacity beyond what can be accommodated with this service strategy, it can be achieved by accelerating the timing of the expansion of the BSC or through the deployment of a larger supplemental vessel.

Rasmussen, Shauna

From: Karen Ross <karenross@telus.net>
Sent: May 18, 2023 9:37 PM
To: McIntosh, Carrie
Cc: dr.jredmonds@gmail.com; jackgill@telus.net; jkevinhutton@msn.com; mcrobhi@telus.net; stephanwehner@gmail.com; aallen@islandstrust.bc.ca; sstrom@hotmail.com; denmantruck@gmail.com; acdanks@telus.net; denmanchief@gmail.com; sborthwick@islandtrust.bc.ca; Olson, Tamara; Johnston, Karen; Marshall, Deborah
Subject: [EXTERNAL] Re: Baynes Sound Connector Review Released

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Karen Ross is out of office [REDACTED] until May 24.

Karen Ross

s. 22

On May 18, 2023, at 3:59 PM, McIntosh, Carrie wrote:

Hello FAC Members,

We have just released the review of the Baynes Sound Connector. I have attached it here for you, and it is posted for public viewing on the project page and the community pages:

<https://www.bcferreriesprojects.ca/denman-east-terminal>

<https://www.bcferreriesprojects.ca/denman-island>

<https://www.bcferreriesprojects.ca/hornby-island>

The report summary is included below for your easy reference as well.

We look forward to seeing everyone next week.

Warm Regards,

Carrie

Report Summary

Our four-year plan submitted to the BC Ferry Commissioner on September 30, 2022 included a proposed expansion and repowering of the Baynes Sound Connector in 2026. The bigger ship was proposed to move additional traffic and better support a higher capacity vessel on Route 22, the connection between Denman and Hornby Islands.

Since submitting the report, we have completed a review of vessel operations to date and assessed alternative ways to accommodate future demand. The review considered multiple options including replacing the Baynes Sound Connector with a conventional ferry.

Upon review, it was decided to accelerate upgrades to the vessel machinery and hull coatings while deferring the proposed expansion of the vessel. Instead, we will be deploying the Kahloke alongside the Baynes Sound Connector this summer and bringing the Quinitisa into service on Route 22.

Starting June 22, the Kahloke and Baynes Sound Connector will operate together Monday to Friday on Route 21. This service is scheduled through to September 4. In addition, the Quinitisa, which began service earlier this week between Denman and Hornby Islands, will continue on the route into December.

This fall we'll review how the summer went and collect feedback from customers to inform a final decision on the proposed expansion of the Baynes Sound Connector.

This report has been shared with the BC Ferry Commissioner, the BC Ferry Authority, and our operations board.

We are hosting two large community events next week (May 26th and 27th) to discuss medium-term plans for the Baynes Sound Connector, evaluation criteria for summer service and safety-related upgrades at the Denman East terminal. You can learn more about the sessions [here](#).

Carrie McIntosh

Director, Community Relations

Strategy & Community Engagement

British Columbia Ferry Services Inc.

500 – 1321 Blanshard Street, Victoria BC

T: 250-978-1720 C: s. 15, 19

carrie.mcintosh@bcferries.com

bcferries.com | [Facebook](#) | [Twitter](#)

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Rasmussen, Shauna

From: Anderson, Steve
Sent: May 23, 2023 11:37 AM
To: Olson, Tamara
Subject: RE: BSC

Thanks Tamara!

I found it under the "here" hyperlink in the body of text, but the documents listing is also quite helpful. Thanks for pointing that out.

Steve Anderson B.Sc., M.A.
Manager Fleet Deployment & Scheduling
Strategy & Community Engagement
British Columbia Ferry Services Inc.

T: [REDACTED] s. 15, 19
steve.anderson@bcferries.com

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From: Olson, Tamara
Sent: May 23, 2023 11:14 AM
To: Anderson, Steve
Subject: BSC

<https://www.bcferrysprojects.ca/denman-island>

Right hand side under documents

Tamara Olson (she/her)
Community Relations Manager
Strategy and Community Engagement
British Columbia Ferry Services Inc.
Suite 500 -1321 Blanshard St. Victoria, BC, V8W 0B7
T: 250-978-2069
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bcferries.com | Facebook | Twitter

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1003.4

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From: [Marshall, Deborah](#)
To: [Anderson, Brian](#); [Annez, Alex](#); [Boyle, Kevin](#); [Carson, Janet](#); [Dave, Rhonda](#); [Jamieson, Rebecca](#); [Japson, Maria](#); [Jimenez, Nicolas](#); [Johnston, Karen](#); [Lanigan, Daniel](#); [Marinelli, Rosa](#); [McCall, Natalie](#); [McIntosh, Carrie](#); [McIntosh, Daniel](#); [Naylor, Liam](#); [Olson, Tamara](#); [Slater, Dawn](#); [Smith, Hannah](#); [Soucie, Angela](#); [Tindall, Karen](#); [Webmaster BC Ferries](#)
Subject: PNote - Baynes Sound Connector Review
Date: May 24, 2023 10:50:38 AM
Attachments: [018-23 Baynes Sound Connector Review.pdf](#)

As you are most likely aware, we are hosting round table conversations on Denman and Hornby on Fri., May 26 and Sat., May 27 to discuss the Denman East terminal upgrades as well as the summer schedules and vessel plans.

Part of the information we've shared with the community is the Baynes Sound Connector Review. I've attached our positioning note regarding the review. (The positioning note is an internal document).

The Baynes Sound Connector Review, along with other information about the sessions is posted on our Denman community page.

Link below.

<https://www.bcferriesprojects.ca/denman-island>

Deborah Marshall (she/her)
Executive Director, Public Affairs
Strategy & Community Engagement
British Columbia Ferry Services Inc.
500 – 1321 Blanshard Street, Victoria, B.C. V8W 0B7
T: 250-978-1267 **C:** s. 15, 19
[Email Deborah.marshall@bcferries.com](mailto:Deborah.marshall@bcferries.com)
[bcferries.com](https://www.bcferries.com) | [Facebook](#) | [Twitter](#)

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! :
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May 10, 2023

0XX/23

Issue: BC Ferries Reviews Future Investment in Baynes Sound Connector

Background:

The Baynes Sound Connector servicing the Buckley Bay (Vancouver Island) - Denman Island route is operationally reliable, but the community continues to be unsupportive of the vessel. Despite on-time performance of approximately 97 per cent and reliability of [redacted] per cent, perception is that the vessel is not reliable and it's anticipated that reaction to any increased investment in the ship will be negative.

s. 13

In the Performance Term 6 (PT6) Submission presented to the BC Ferry Commissioner September 30, 2022, the company outlined its plan to invest millions in the Baynes Sound Connector to increase its size from 45 AEQ to approximately 65 AEQ and repower the ship in 2026. The bigger ship would move additional traffic and better support a higher capacity vessel on Route 22, the connection between Denman and Hornby Islands.

In light of the community sentiment about the Baynes Sound Connector, BC Ferries undertook a review of vessel operations to date and assess alternative options to accommodate future demand.

The review considered five options:

- Defer expansion of the Baynes Sound Connector until 2034
- Replace the Baynes Sound Connector with a conventional ferry
- Supplement the Baynes Sound Connector with an additional vessel (conventional then new Island Class) indefinitely rather than expand
- Supplement the Baynes Sound Connector with an existing Island Class vessel in peak season
- Expand the Baynes Sound Connector in 2034 and supplement with another vessel indefinitely

Upon review, [redacted] it was decided [redacted] to defer the expansion [redacted] of the Baynes Sound Connector by up to five years and amend the capital plan and service plan in accordance with this deferral subject to the outcomes of peak summer 2023 travel season.

s. 13

s. 13

s. 13

The plans outlined in PT6 to enhance service for both Denman and Hornby Islands (redeploying the larger Quinitsa for summer service on Route 22, and providing two-ship service with the Kahloke and Baynes Sound Connector during peak season on Route 21) begins in the summer of 2024. BC Ferries and the Province amended the contract to bring these service enhancements forward to the summer of 2023.

The Baynes Sound Connector Review was presented to the Board of Directors for information on February 16, 2023.

BC Ferries is hosting public engagement sessions on Denman and Hornby Islands on May 26 & 27 to discuss the enhanced summer schedules and the Denman East terminal upgrade project. We will post and circulate the Baynes Sound Connector Review in advance of the open houses for public interest.

Holding Statement:

s. 13

s. 13

We have decided to defer [REDACTED] the expansion of the Baynes Sound Connector by up to five years and amend the capital plan and service plan subject to service viability demonstrated during the summer of 2023.

In the meantime, BC Ferries will enhance service on the Buckley Bay - Denman Island route this summer by providing two-ship service with the Kahloke and Baynes Sound Connector during peak season, Monday through Friday.

In addition, the larger vessel, Quinitsa, will provide service this summer between Denman and Hornby Islands.

s. 13

This fall we'll review how the summer went and collect customer feedback to further inform our decision on potential expansion [REDACTED] of the cable ferry. In the near term, and we will be engaging with the community on how to evaluate the success of the summer service at our upcoming engagement sessions.

s. 13

IF ASKED:

Additional Information:

There is less than 30 per cent capacity available on the Buckley Bay - Denman Island route in the peak season, high commuter directional demand year-round at key times of day, and overloads cause congestion in surrounding community.

In addition to the operational enhancements, BC Ferries also recently conducted maintenance on the Baynes Sound Connector (hull cleaning, bull wheel servicing, main engine and hydraulic pump servicing) to improve the vessel's speed and reliability.

Vessel carrying capacity:

Baynes Sound Connector - 45 AEQ

Kahloke - 21 AEQ

Quinitsa - 44 AEQ

Drafted by:

Deborah Marshall - May 10, 2023

Approvals:

Peter Simpson - May 11, 2023

Carrie McIntosh - May 12, 2023

Karen Johnston - May 15, 2023

Brian Anderson

Rasmussen, Shauna

From: Marshall, Deborah
Sent: May 24, 2023 10:51 AM
To: Anderson, Brian; Annez, Alex; Boyle, Kevin; Carson, Janet; Daye, Rhonda; Jamieson, Rebecca; Japson, Maria; Jimenez, Nicolas; Johnston, Karen; Lanigan, Daniel; Marinelli, Rosa; McCall, Natalie; McIntosh, Carrie; McIntosh, Daniel; Naylor, Liam; Olson, Tamara; Slater, Dawn; Smith, Hannah; Soucie, Angela; Tindall, Karen; Webmaster BC Ferries
Subject: PNote - Baynes Sound Connector Review
Attachments: 018-23 Baynes Sound Connector Review.pdf

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Link below.

<https://www.bcferriesprojects.ca/denman-island>

Deborah Marshall (she/her)
Executive Director, Public Affairs
Strategy & Community Engagement
British Columbia Ferry Services Inc.
500 – 1321 Blanshard Street, Victoria, B.C. V8W 0B7
T: 250-978-1267 **C:** [REDACTED] s. 15, 19
Email: Deborah.marshall@bcferries.com
[bcferries.com](https://www.bcferries.com) | [Facebook](#) | [Twitter](#)

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May 17, 2023

018/23

Issue: BC Ferries Reviews Future Investment in Baynes Sound Connector

Background:

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Upon review, it was decided to defer the expansion of the Baynes Sound Connector by up to five years and amend the capital plan and service plan in accordance with this deferral subject to the outcomes of peak summer 2023 travel season.

The plans outlined in PT6 to enhance service for both Denman and Hornby Islands (redeploying the larger Quinitsa for summer service on Route 22, and providing two-ship service with the Kahloke and Baynes Sound Connector during peak season on Route 21) begins in the summer of 2024. BC Ferries and the Province amended the contract to bring these service enhancements forward to the summer of 2023.

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upgrade project. We will post and circulate the Baynes Sound Connector Review in advance of the open houses for public interest.

Holding Statement:

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In the meantime, BC Ferries will enhance service on the Buckley Bay - Denman Island route this summer by providing two-ship service with the Kahloke and Baynes Sound Connector during peak season, Monday through Friday.

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s. 13

IF ASKED:



Additional Information:

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Vessel carrying capacity:

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Kahloke – 21 AEQ

Quinitisa – 44 AEQ

Drafted by:

Deborah Marshall - May 10, 2023

Approvals:

Peter Simpson – May 11, 2023

Carrie McIntosh – May 12, 2023


Karen Johnston – May 15, 2023

Brian Anderson - May 17, 2023

Rasmussen, Shauna

From: Anderson, Steve
Sent: May 24, 2023 1:52 PM
To: Popa, Tudor
Subject: FW: BSC

Steve Anderson B.Sc., M.A.
Manager Fleet Deployment & Scheduling
Strategy & Community Engagement
British Columbia Ferry Services Inc.

T:  s. 15, 19
steve.anderson@bcferries.com

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From: Olson, Tamara
Sent: May 23, 2023 11:14 AM
To: Anderson, Steve
Subject: BSC

<https://www.bcferriesprojects.ca/denman-island>
Right hand side under documents

Tamara Olson (she/her)
Community Relations Manager
Strategy and Community Engagement
British Columbia Ferry Services Inc.
Suite 500 -1321 Blanshard St. Victoria, BC, V8W 0B7
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Rasmussen, Shauna

From: Hancyk, Lesley
Sent: June 15, 2023 5:29 PM
To: Jones, Stephen
Cc: Bajwa, Karan; Zhong, Ming; Amusan, Sam
Subject: RE: BSC

Hi Stephen,

As a follow up, I wanted to let you know I advised the analyst, Ming, to work with the PM on taking the actions with respect to the BSC projects. This is based on the direction I understood from ELT and in line with the Feb Board briefing on the BSC but please weigh in as owner if you don't agree with the approach.

1. Move BSC asset betterment (i.e. expansion) to the reserve list, which will involve a cancellation or deferral form. It was removed from the capital plan the board approved in June. We will be reassessing the need in the fall and if we decide to add it back in we can do so at that time.
2. Forecast the BSC Re-powering (previously "electrification") to s. 17 to align with the estimate in the briefing note that went to the Board, and what was included in the capital plan approved by the board in June. Unless of course there is new information.

s. 13, s. 17

Thank you!

Lesley Hancyk, MPAcc, CPA, CA
Manager, Financial Planning & Analysis (Capital)
British Columbia Ferry Services Inc.
T: 250-978-1263 **C:** s. 15, 19
lesley.hancyk@bcferries.com
bcferries.com

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From: Hancyk, Lesley
Sent: May 09, 2023 12:43 PM
To: Jones, Stephen
Cc: Bajwa, Karan
Subject: RE: BSC

Hi Stephen,

s. 13, s. 17

As part of the capital plan update for the Board (June meeting), we need to update our plans for BSC that aligns with the recommendation (accepted by the Board) s. 13, s. 17

As Owner, I wanted to advise you of this change. I will coordinate with Sam, the PM, as the projects are active right now.

I need to make the change now so we can incorporate into the Board materials, so I have copied Karan for awareness. The Board materials are being discussed at EMC next Wednesday, May 17, so if you have concerns please contact me when you are back.

Thanks,

Lesley Hancyk, MPAcc, CPA, CA
Manager, Financial Planning & Analysis (Capital)

British Columbia Ferry Services Inc.

T: 250-978-1263 C: [REDACTED]

lesley.hancyk@bcferries.com

bcferries.com

s. 15, 19

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From: [Anderson, Brian](#)
To: [Jimenez, Nicolas](#)
Subject: RE: June BCFA Board meeting
Date: June 17, 2023 11:59:00 AM
Attachments: [Route Capacity Analysis - Informing PT6.pdf](#)
[PT6 Service Enhancements.pdf](#)
[BSC Review to BCF Commissioner - Sept 2022.pdf](#)
[BSC Review Jan 2023 Executive Presentation.pdf](#)
[2.4 Baynes Sound Connector Review.pdf](#)

Hi Nicolas,

Following up from our discussion yesterday morning, attached are the supporting documents:

- 1) Capacity analysis supporting the short term and longer term service enhancements included in our PT6 submission
 - a. "Route Capacity Analysis" – demonstrates the process used along with an example
 - b. "PT6 Service Enhancements" – total of all material service enhancements included in the submission along with descriptions of upcoming changes for Summer 2023 or Fall 2023
- 2) Baynes Sound Connector
 - a. "BSC Review to Commissioner" – the presentation provided in September 2022 in response to community concerns summarizing reliability and plans
 - b. "BSC Review to Executive" – following commitment to review alternative deployments
 - c. "2.4 BSC Review" – went to both boards as well as Commissioner and communities
 - d. Asked Stephen Jones for a summary of the recent upgrade work completed and performance since – will forward when received

A bit more than you were likely looking for, but I think it is good background material for you as it outlines the process rather than just the answer.

Brian.

From: Jimenez, Nicolas

Sent: June 16, 2023 7:41 AM

To: Anderson, Brian ; Barabash, Jason

Subject: FW: June BCFA Board meeting

i have 1-1s with both of you this am. was hoping to spend a few mins to address/confirm. don't know the history on what we tend to share/not share at BCFA board updates.

Nicolas Jimenez (he/him)

President & CEO

British Columbia Ferry Services Inc.

From: William Beale <WilliamBeale@bcferryauthority.com>

Sent: June 15, 2023 9:57 AM

To: Jimenez, Nicolas <Nicolas.Jimenez@bcferries.com>

Cc: Creighton, Kathleen <Kathleen.Creighton@bcferries.com>; Lecia Stewart <LeciaStewart@bcferryauthority.com>

Subject: [EXTERNAL] June BCFA Board meeting

CAUTION: This email originated from outside of BC Ferries. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello Nicolas,

Please see the below note sent on behalf of Lecia.

Thank you,

Will

Hello Nicolas,

Thank you for your attendance at the upcoming BCFA Board meeting June 27th in Prince Rupert.

Your presence and report to the Board will be a welcome addition as various changes are afoot.

Regarding topic areas for your report to our board, the Authority has a particular interest in:

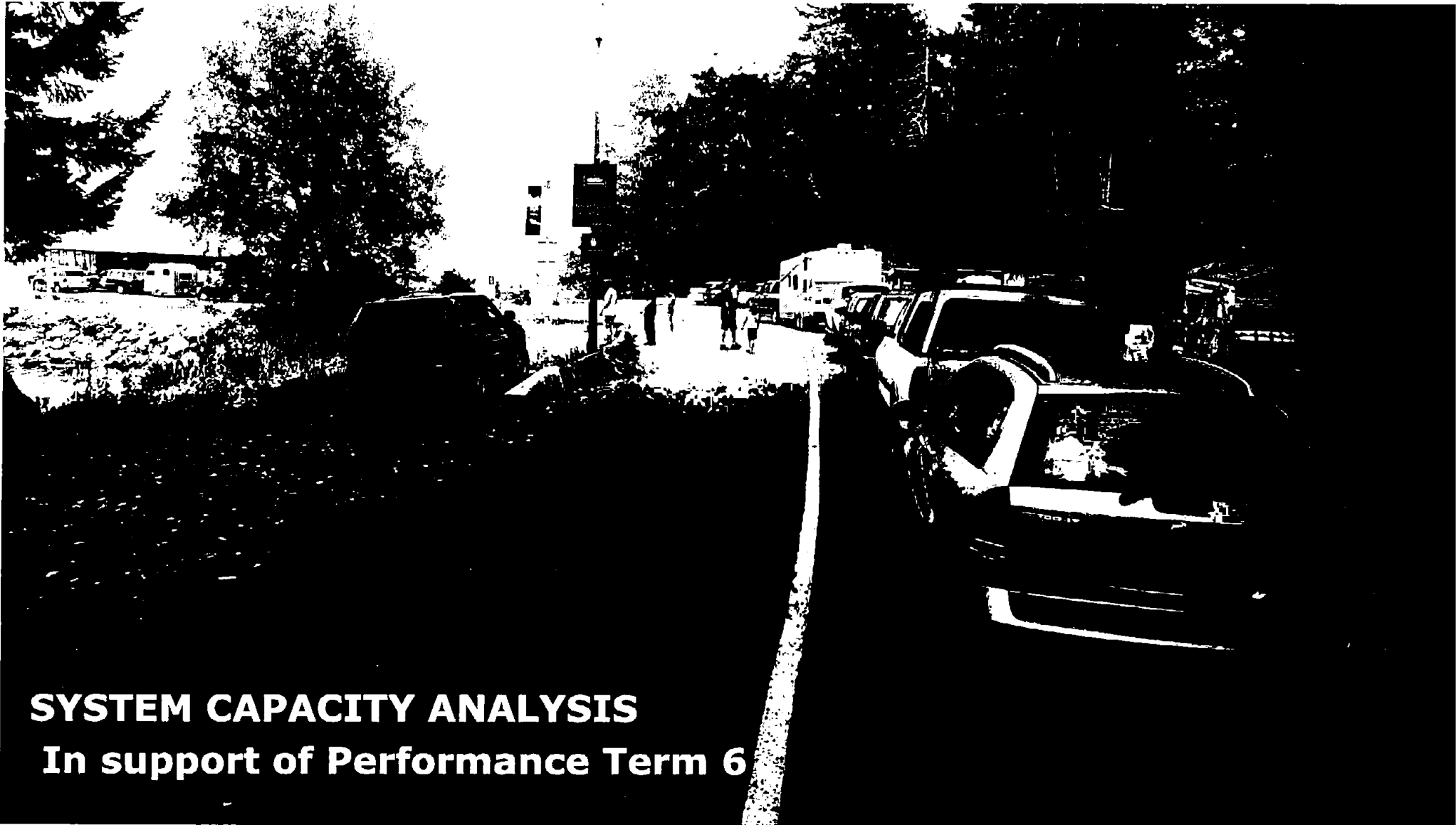
- An update on the Performance Term 6 process and especially how the Province's contribution of \$500m impacts the PT6 capital plan
- An assessment of the health of existing assets (vessels and terminals)
- Any short term service and communications plans related to the upcoming summer peak service period
- Data on service reliability over the last year and projections for the coming year
- Update on the strategic HR workforce plan

Thank you again for your participation and we look forward to seeing you in Prince Rupert.

Best,

Lecia Stewart

Chair, BC Ferry Authority

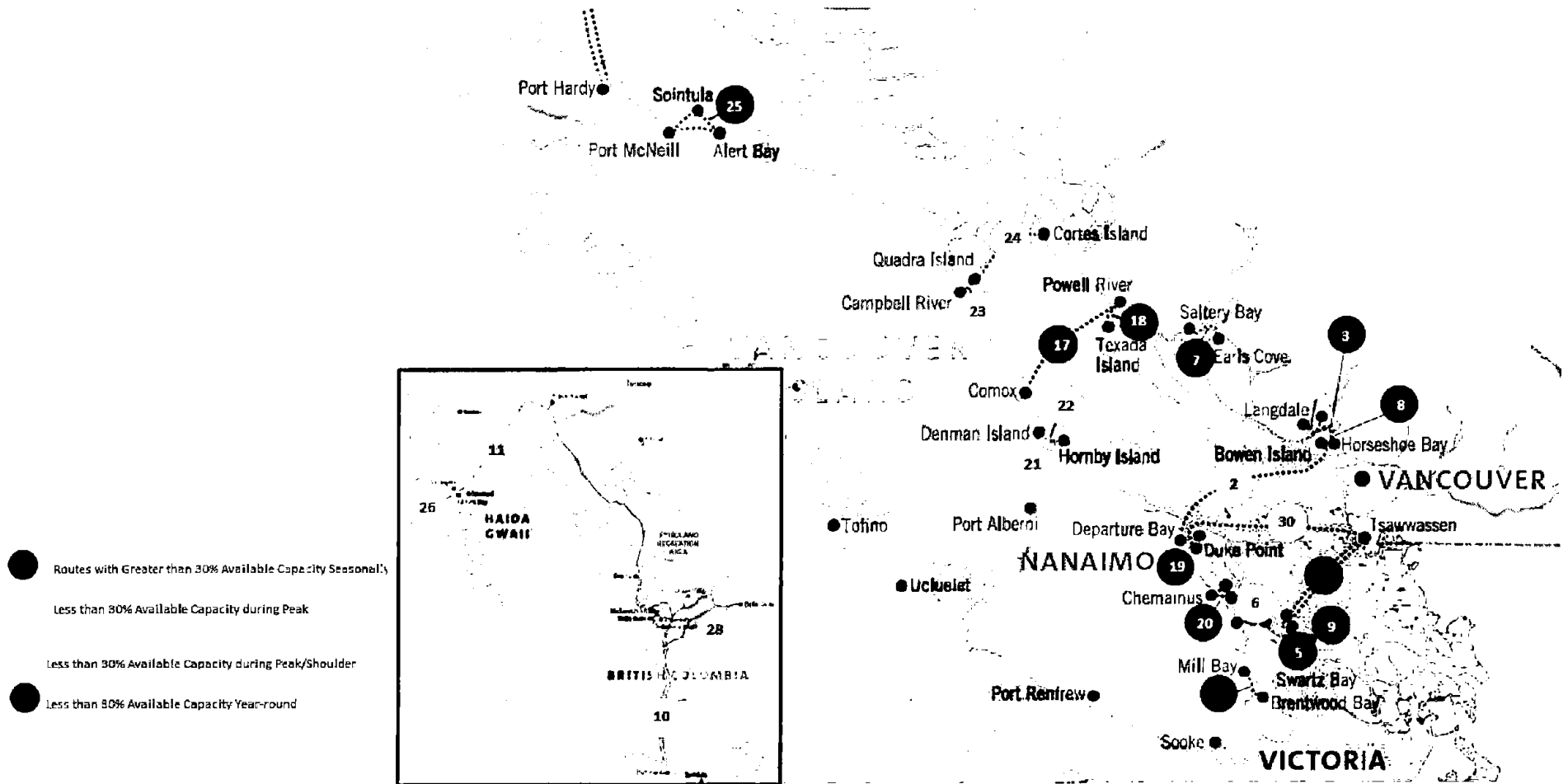


SYSTEM CAPACITY ANALYSIS
In support of Performance Term 6

“Absolute” vs “Practical Capacity”

- **Transportation systems show stress when utilization exceeds 75-85%**
 - Congestion
 - Less choice for customers
 - No slack in system to absorb shocks
- **Accessing the last 15-25% of Absolute capacity is challenging**
 - More so on smaller routes with limited terminal infrastructure
- **When assessing service capacity, reaching “Practical” capacity is a leading indicator for further review**

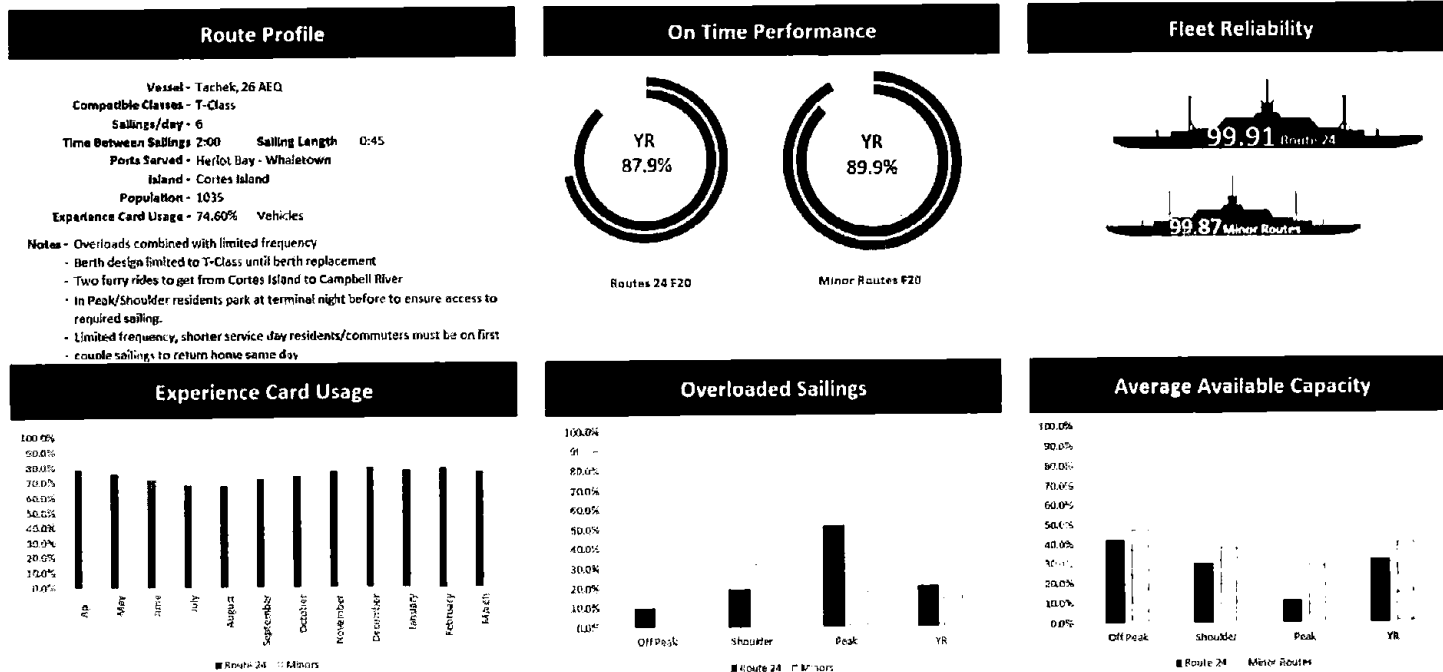
Capacity Constrained Routes, Seasonally System Wide - MAP



System Capacity – Specific Example

EXAMPLE: Route 24 (Quadra Island – Cortes Island)

Route Overview



Route 22 Denman Island to Hornby Island



PRE-COV'D

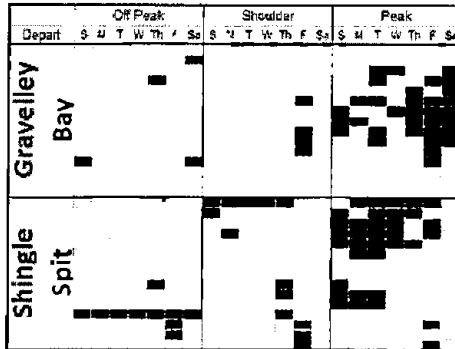
NEAR TERM SERVICE ENHANCEMENT

LONGER TERM SERVICE ENHANCEMENT

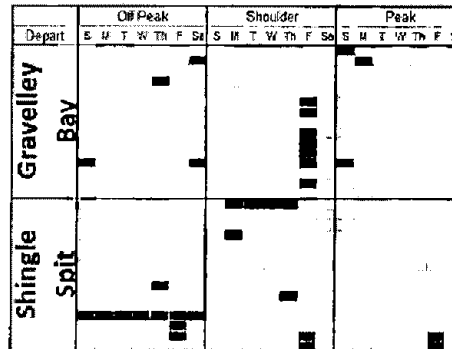
Summer 2023 - Increase the capacity on route by deploying larger vessel in peak season

Spring 2026 - Deploy Quinitsa year round

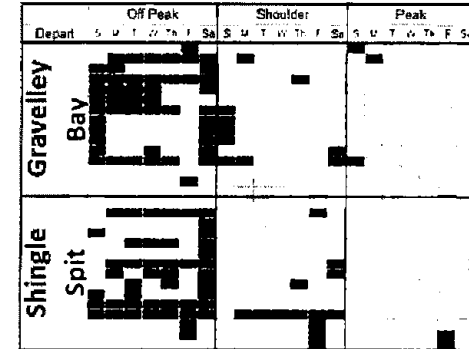
Rte 22 - Current with Kahloke



Rte 22 - F24 with Quinitsa in Peak Kahloke Off Peak & Shoulder



Rte 22 - F27 with Quinitsa



Vessel	Kahloke (21 AEQ)
Service	10 to 15 round trips daily
Time Between Sailings	1 hour
Crossing	10 minutes

Vessel	Kahloke (21 AEQ) Quinitsa (44 AEQ) Peak Only
Service	10 to 15 round trips daily
Time Between Sailings	1 hour
Crossing	10 minutes

Vessel	Quinitsa (44 AEQ)
Service	10 to 15 round trips daily
Time Between Sailings	1 hour
Crossing	10 minutes

Increase in annual Round Trips	NA
Increase in Vessel Capacity	110%

Increase in annual Round Trips	NA
Increase in Vessel Capacity	110%

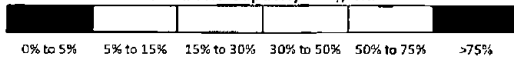
Annual Operating Cost Increase	\$0.3M
Capital Cost	NA

Annual Operating Cost Increase	\$1.2M -> \$1.7M
Capital Cost	NA

Funding Options	0.01% annual price cap \$0.3M annual funding increase in PT6
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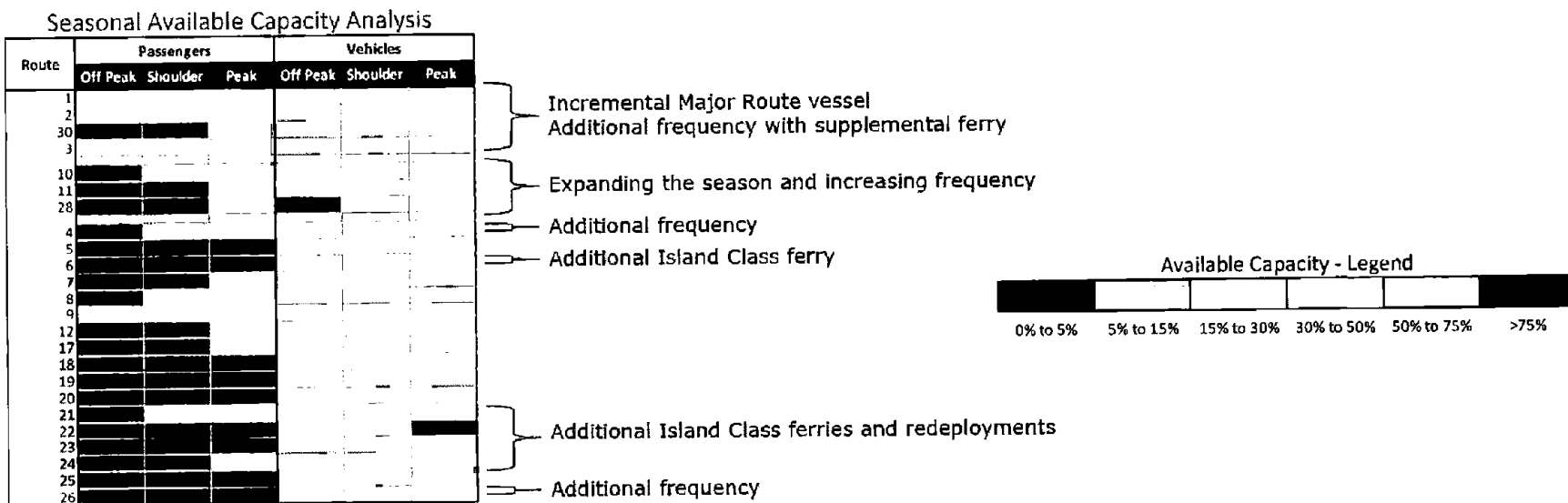
Funding Options	0.14% annual price cap \$1.2M annual funding increase in PT6, growing to \$1.7M in PT7
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Available Capacity - Legend



System Capacity Increases

- These investments are designed to ensure peak frequency and capacity availability better align with peak demand
- Current seasonal average available capacity shown; day of week or time of day experience will differ



PT6 Service Enhancements

Near term and future scheduled improvements

August 27, 2022



Ferry System Capacity Review Results

Step 1. Identify Hot Spot Routes

- Major Routes (1, 2, 3, 30)
- Northern Routes (10, 11, 26)
- Inter-Island Routes (4, 6, 12, 21, 22, 23, 24)

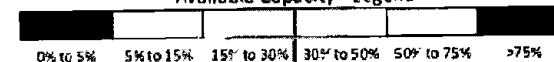
Step 2. Identify Options to improve access

- Expand the service day
- Extend the Peak season
- Deploy larger vessel from the current fleet
- Deploy additional vessel from the current Fleet
- Utilize revenue management
- Procure new vessel

Seasonal Available Capacity Analysis

Route	Passengers			Vehicles		
	Off Peak	Shoulder	Peak	Off Peak	Shoulder	Peak
1						
2						
30						
3						
10						
11						
28						
4						
5						
6						
7						
8						
9						
12						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						

Available Capacity - Legend



routes require a more detailed assessment

Service Enhancement Overview & Prioritization

	Priority	Route	Summary	Estimated Cost Impact in F24	Timing
Near Term	1	Route 24	Seasonally supplement the Tachek with the QQII Potential alternative under consideration <i>Schedule enhancement of 1 round trip daily in peak, with existing crew. This alternative along with the 2 ships on Rte 23, and the minor routes reservation pilot opportunity would support until the Island Class introduced in F26. (Costing underway)</i>	\$1.7M	Summer 2023
	2	Route 21 Route 22	Seasonally deploy Quinitsa to Route 22 and supplement Route 21 with Kahloke	\$0.7M	Summer 2023 ~3 yrs until BSC expanded
	3	Route 11	Add round trips in peak season to Route 11, increase to 6 round trips per week	\$0.6M	Summer 2023
	4	Route 3	Increase service with supplementary vessel to provide additional trips on Tuesdays and Wednesdays in the peak season (already provided rest of week). Capacity Increase of 22%.	\$6.2M	Summer 2024
	5	Route 4	Increase Route 4 service to 10 round trips daily during peak season	\$0.6M	Summer 2023
	6	Route 3	Increase service with Route 2 supplementary vessel to provide additional trips during the week.	\$1.6M	Fall 2023
	7	Route 10 Route 11	Extend the length of the peak season on Routes 10 (May 18 to May 30) and increase service for Route 11 (May 18 to June 18 and Labour Day to Sept 30)	\$3.3M	Summer 2023
TOTAL				\$14.8 million	
Complete	Route 6	Add capacity by deploying Quinsam			
	Route 23	Add capacity & frequency with Two Island Class to be deployed in fall 2022			
	Mid-Island Corridor	Seasonal redeployment of Coastal Class to Route 30 and Queen of Alberni to Route 2, to support growth on Route 30			

Route 24 Quadra Island to Cortes Island

Route Information

Population – 1,035

Experience Card Usage – 74.6%

Service Considerations:

- Overloads combined with limited frequency
- Berth design limited to T-Class, until replacement
- Two ferries to get from Cortes to Campbell River
- Peak/Shoulder residents park at terminal night before to ensure access to required sailing

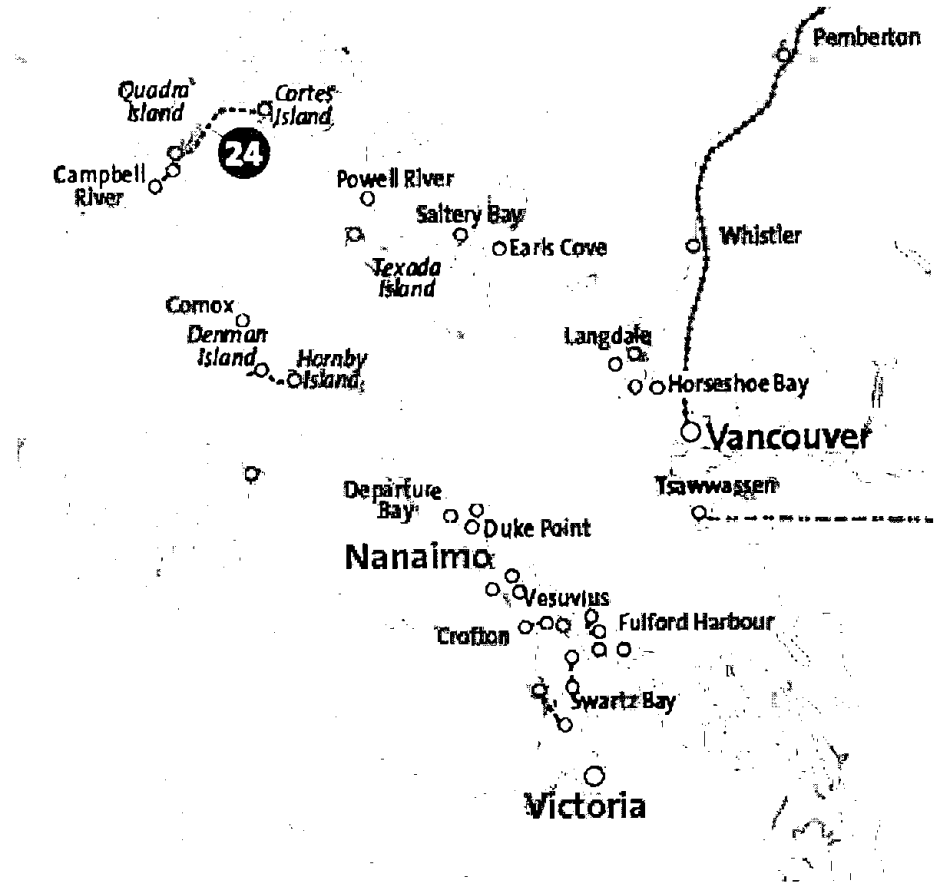
Proposed Enhancement

Summer 2023 – Up to \$1.7 million

- Deploy the Quadra Queen II to supplement the Tachek during the peak season (\$1.7 million)
- *Assessing an alternative to add an incremental Round Trip with Tachek, peak season only (\$TBC)*

Spring 2026 - \$2.7 million

- Deploy Island Class year-round
- *Requires advancing procurement of 4 Island Class vessels*



Route 24 Quadra Island to Cortes Island

PRE-COVID

NEAR TERM SERVICE ENHANCEMENT

UNDER CONSIDERATION

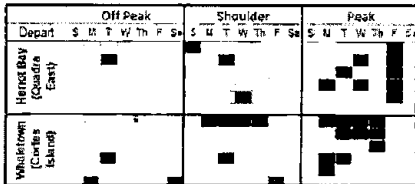
LONGER TERM SERVICE ENHANCEMENT

Summer 2023 - Increase the capacity on route by supplementing route with additional vessel in peak

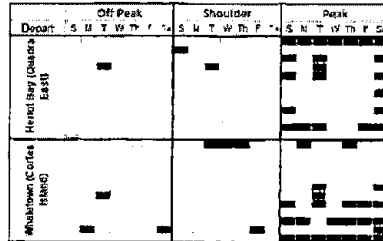
Summer 2023 - Increase the capacity on route by adding 1 round trip with the Tachek & introduce a trial of Minor Routes Reservations for high demand sailing.

Spring 2026 - Deploy Island Class year round

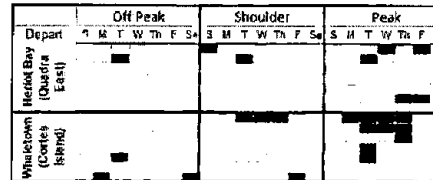
Rte 24 - Current with Tachek



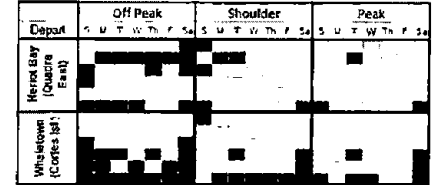
F24 with Additional Service w QQII in Peak, 26 AEC



F24 with Additional Service w Tachek in Peak, 26 AEC



F27 Introduction of the Island Class, 47 AEC



Vessel	Tachek (26 AEC)
Service	6 round trips daily
Time Between Sailings	2 hours
Crossing	45 minutes

Vessel	Tachek (26 AEC) QQII (26 AEC) peak only
Service	6 round trips daily 12 rounds trips daily in peak
Time Between Sailings	up to 2 hours
Crossing	45 minutes

Vessel	Tachek (26 AEC)
Service	6 round trips daily 7 round trips daily in peak
Time Between Sailings	up to 2 hours
Crossing	45 minutes

Vessel	Island Class (47 AEC)
Service	6 round trips daily
Time Between Sailings	2 hours
Crossing	45 minutes

Increase in annual Round Trips	420
Increase in Vessel Capacity	100% peak season

Increase in annual Round Trips	up to 70 RT's
Increase in Vessel Capacity	16% peak season

Increase in annual Round Trips	NA
Increase in Vessel Capacity	81%

Annual Operating Cost Increase	
Capital Cost	NA

Annual Operating Cost Increase	costing underway
Capital Cost	NA

Annual Operating Cost Increase	
Capital Cost	

Funding Options	0.03% annual price cap increase annual funding increase
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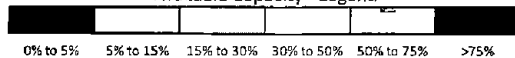
Funding Options	
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Funding Options	0.22% annual price cap increase annual funding increase in PT6, growing to in PT7
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Available Capacity - Legend



Route 22 Denman Island to Hornby Island

Route Information

- Population – 1,016
- CST Score – 2.86
- Experience Card Usage – 75.5%
- Service Considerations:
 - Seasonal high capacity utilization & overloads
 - Use shuttling to address peak period demand
 - Size of Baynes Sound Connector is a consideration for a larger vessel on Route 22

Proposed Enhancement s. 17

- Summer 2023 - [redacted]
 - Deploy Quinitsa (larger vessel) for peak season
- Spring 2026 - [redacted] s. 17

s. 13

[redacted]



Route 22 Denman Island to Hornby Island

PRE-COVID

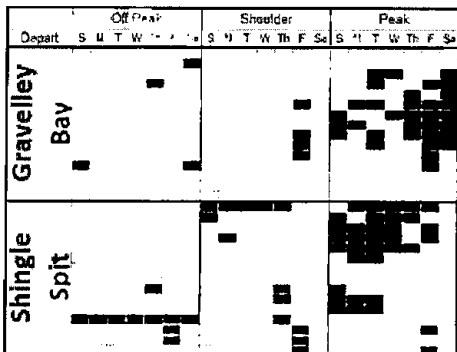
NEAR TERM SERVICE ENHANCEMENT

LONGER TERM SERVICE ENHANCEMENT

Summer 2023 - Increase the capacity on route by deploying larger vessel in peak season

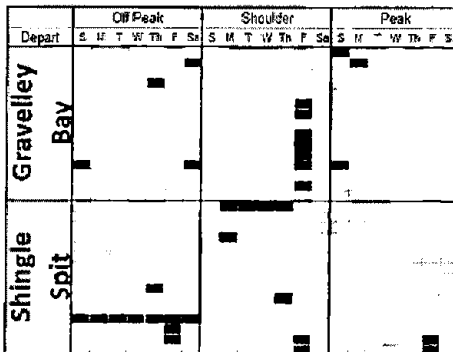
Spring 2026 - Deploy Quinitsa year round

Rte 22 - Current with Kahloke



Vessel	Kahloke (21 AEQ)
Service	10 to 15 round trips daily
Time Between Sailings	1 hour
Crossing	10 minutes

Rte 22 - F24 with Quinitsa in Peak Kahloke Off Peak & Shoulder



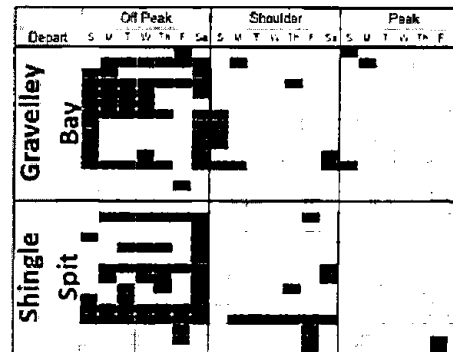
Vessel	Kahloke (21 AEQ) Quinitsa (44 AEQ) Peak Only
Service	10 to 15 round trips daily
Time Between Sailings	1 hour
Crossing	10 minutes

Increase in annual Round Trips	NA
Increase in Vessel Capacity	110%

Annual Operating Cost Increase	
Capital Cost	NA

Funding Options	0.01% annual price cap annual funding increase in PT5
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Rte 22 - F27 with Quinitsa

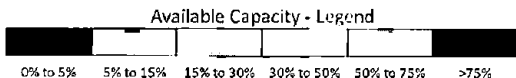


Vessel	Quinitsa (44 AEQ)
Service	10 to 15 round trips daily
Time Between Sailings	1 hour
Crossing	10 minutes

Increase in annual Round Trips	NA
Increase in Vessel Capacity	110%

Annual Operating Cost Increase	
Capital Cost	NA

Funding Options	0.14% annual price cap annual funding increase in PT6, growing to in PT7
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s. 17

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Route 21 Buckley Bay, Vancouver Island to Denman Island

Route Information

Population – 1,016

CST Score – 4.21

Experience Card Usage – 81.6%

Service Considerations:

- Seasonal high capacity utilization and overloads
- Use of shuttling to address peak demand

Proposed Enhancement

Summer 2023 - [redacted]

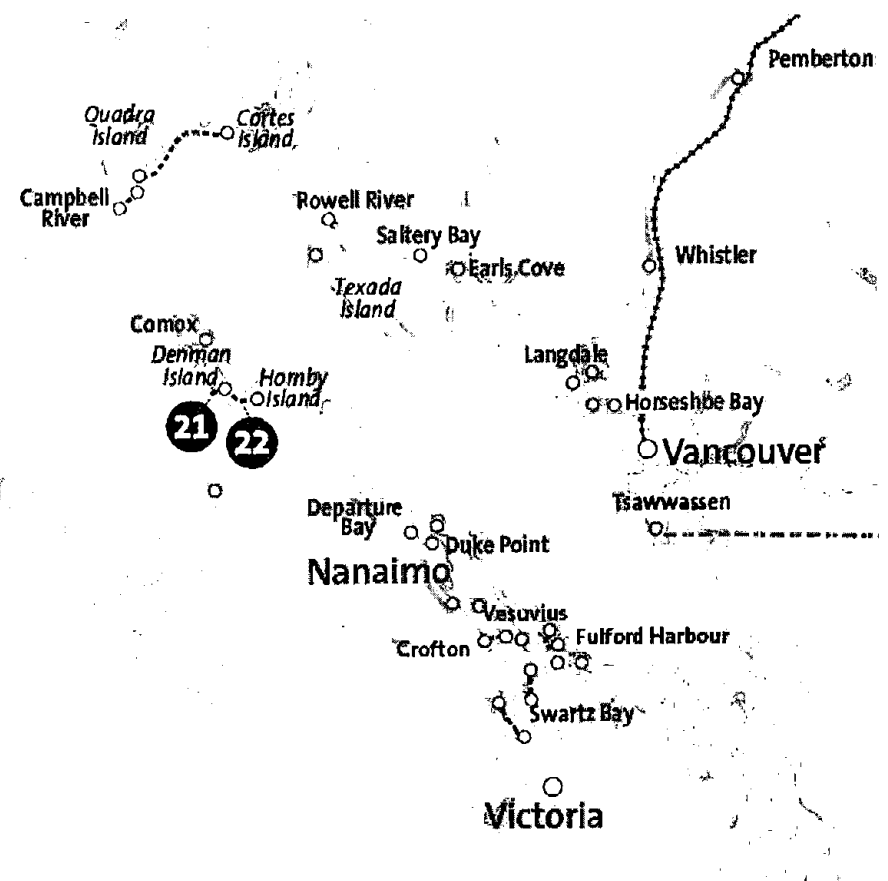
- Supplement route with Kahloke to increase frequency and service capacity during peak season until Baynes Sound Connector expanded

Spring 2026 - [redacted]

s. 13

s. 17

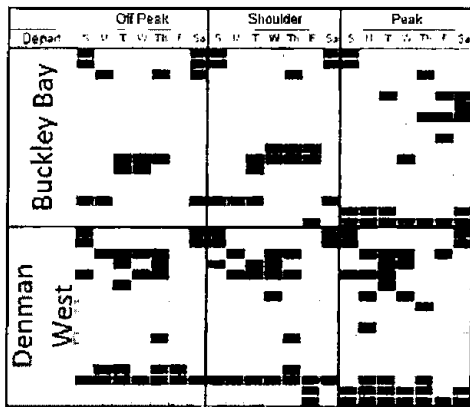
s. 17



Route 21 Buckley Bay, Vancouver Island to Denman Island

PRE-COVID

Rte 21 - current with BSC (45 AEQ)

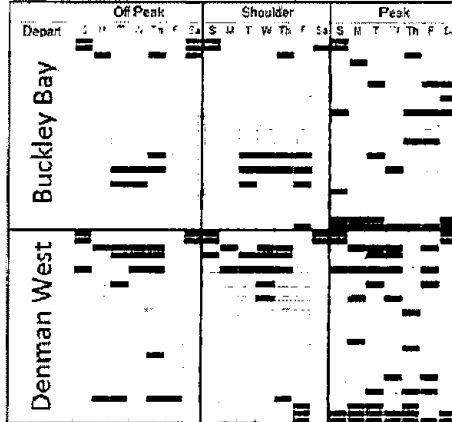


Vessel	Baynes Sound Connector (45 AEQ)
Service	14 to 17 RT's daily
Time Between Sailings	40 minutes
Crossing	10 minutes

NEAR TERM SERVICE ENHANCEMENT

Summer 2023 - Increase the frequency of service by supplementing with the Kahloke adding up to 10 RT's daily in peak season

F24 - Kahloke supplementing Peak service



Vessel	Baynes Sound Connector (45 AEQ) Kahloke (21 AEQ)
Service	24 to 27 round trips daily
Time Between Sailings	up to 40 minutes
Crossing	20 min

Increase in annual Round Trips	700
Increase in Capacity	18%

Annual Operating Cost Increase	
Capital Cost	NA

Funding Options	0.01% annual price cap in annual funding increase in PT6
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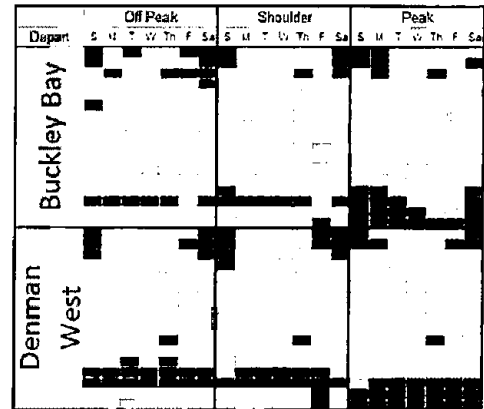
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LONGER TERM SERVICE ENHANCEMENT

Spring 2026 - Expansion of the Baynes Sound Connector

Rte 21 - F27 with BSC (~65 AEQ)



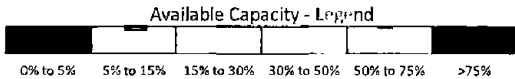
Vessel	Baynes Sound Connector (~65 AEQ)
Service	14 to 17 RT's daily
Time Between Sailings	est 40 minutes
Crossing	10 minutes

Increase in annual Round Trips	NA
Increase in Vessel Capacity	45%

Annual Operating Cost Increase	
Capital Cost	

Funding Options	0.02% annual price cap annual funding increase
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s. 17



Route 3 Horseshoe Bay to Langdale

Service Considerations

- High Commuter use
- Access to medical appointments
- Frequent Overloads
- High Capacity Utilization
- Difficulty getting reservations during peak travel

Proposed Enhancement

- Fall 2023 - [redacted] s. 17
 - Increase supplementary service in shoulder period
 - Requires additional crews (long lead time)

Summer 2024 - [redacted] s. 17

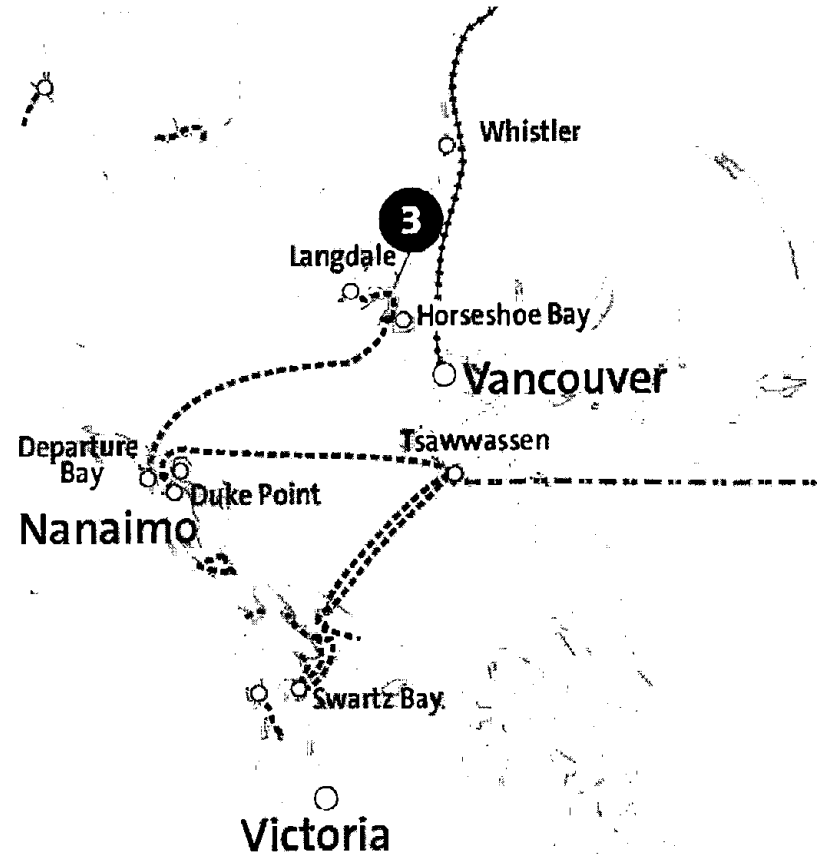
s. 13

[redacted]

Summer 2029

s. 13

[redacted]



Route 3 Horseshoe Bay to Langdale

FRF-COVID

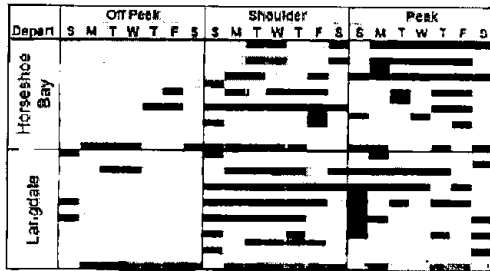
NEAR TERM SERVICE ENHANCEMENT - PEAK

NEAR TERM SERVICE ENHANCEMENT - SHOULDER

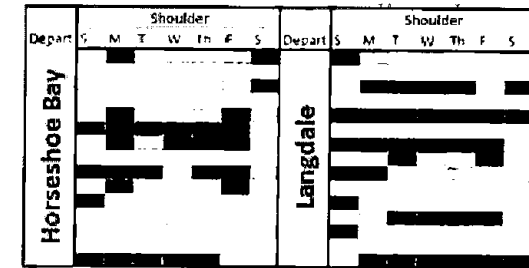
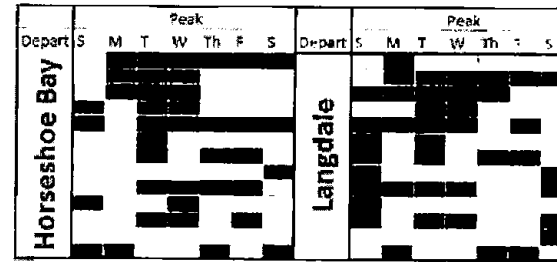
Summer 2024 - Add crews to the supplementary vessel to allow 7 days/week operation, Peak season only

Fall 2023 - add service additional sailings during the shoulder period

Current, by season, Sample Week Available Capacity, Route 3



Peak Season Sample week with additional sailings



Vessel	Qn of Surrey (307 AEQ) Qn of Coquitlam (316 AEQ) Peak only
Service	8 round trips daily off peak 8 to 10 round trips daily peak
Time Between Sailings	up to 2.5 hrs off peak 1+ hr peak
Crossing	40 minutes

Vessel	Qn of Surrey (307 AEQ) Qn of Coquitlam (316 AEQ) Peak only
Service	Increase service Tues/Wed in Peak
Time Between Sailings	up to 2.5 hrs off peak 1+ hr peak
Crossing	40 minutes

Vessel	Qn of Surrey (307 AEQ) Qn of Alberni (280 AEQ) Shoulder only
Service	Add service in shoulder
Time Between Sailings	up to 2.5 hrs off peak 1+ hr peak
Crossing	40 minutes

Increase in Round Trips	109
Increase in Vessel Capacity	22%

Increase in Round Trips	2 per day M-F, shoulder (46 incremental)
Increase in Vessel Capacity	23%

Annual Operating Cost Increase	
Capital Cost	NA

Annual Operating Cost Increase	
Capital Cost	NA

Funding Options	0.15% annual price cap increase in funding increase annually in PT6, growing to by end of PT7
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Funding Options	0.04% annual price cap increase in funding increase annually in PT6, growing to by end of PT7
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Route 4 Swartz Bay to Salt Spring Island (Fulford Harbour)

Route Information

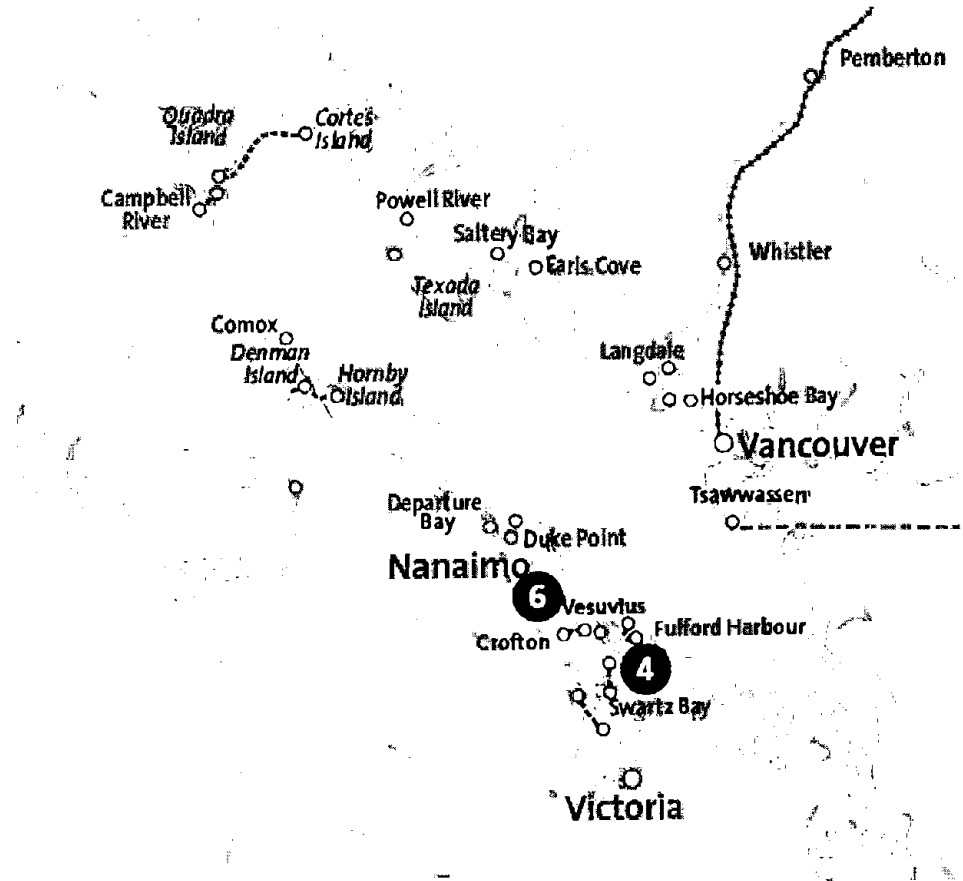
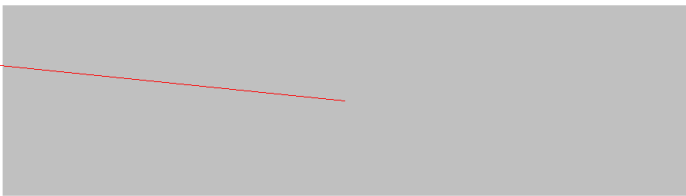
- Population – 10,557
- CST Score – 4.09
- Experience Card Usage – 57.8%
- Service Considerations:
 - Frequent overloads, high capacity utilization
 - Congestions at Fulford & limited holding capacity

Proposed Enhancement

s. 17

- Summer 2023 - [REDACTED]
 - additional sailings with Skeena Queen
- Summer 2026 – costing underway

s. 13



Route 4 Swartz Bay to Salt Spring Island (Fulford Harbour)

PRE-COVID

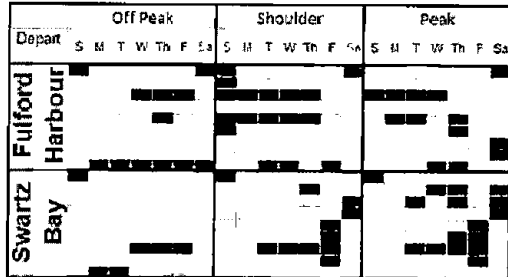
NEAR TERM SERVICE ENHANCEMENT

LONGER TERM SERVICE ENHANCEMENT

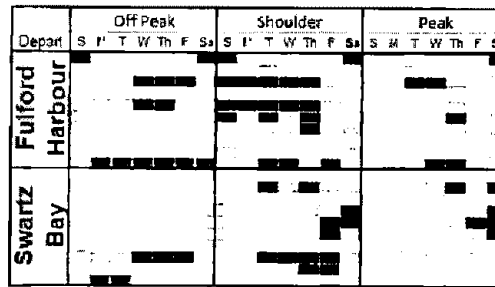
Summer 2023 - Increase the frequency of service by adding 2 RT's daily in peak season

Summer 2028 - Supplement the Skeena Queen with additional sailings of the Quinsam Peak season only

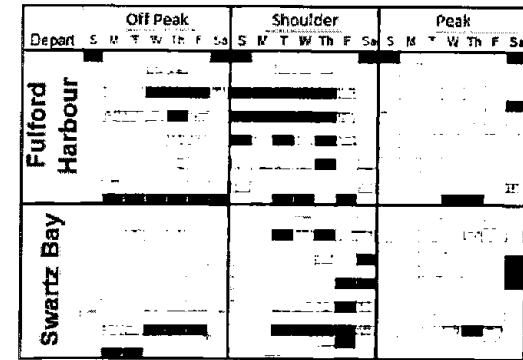
Route 4 - Base Year Current Service



Route 4 - F24 with Additional 2 RT Peak



Route 4 - F27 with Quinsam supplemental



Vessel	Skeena Queen (91 AEQ)
Service	up to 14 round trips daily
Time Between Sailings	2 hours
Crossing	35 minutes

Vessel	Skeena Queen (91 AEQ)
Service	up to 10 round trips daily
Time Between Sailings	up to 2 hours
Crossing	35 minutes

Vessel	Skeena Queen (91 AEQ)
	Quinsam (63 AEQ) Peak only
Service	up to 13 RT's daily
Time Between Sailings	estimated at 1 hour
Crossing	35 minutes

Increase in annual Round Trips	130
Increase in Vessel Capacity	24%

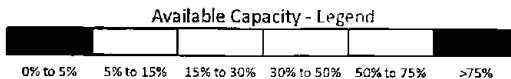
Increase in annual Round Trips	350
Increase in Vessel Capacity	43%

Annual Operating Cost Increase	
Capital Cost	NA

Annual Operating Cost Increase	TBC
Capital Cost	NA

Funding Options	0.08% annual price cap increase in annual funding increase
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Funding Options	TBD, costing underway
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s. 17

s. 17

Route 6 Crofton to Salt Spring Island (Vesuvius)

Route Information

Population – 10,557

- CST Score – 3.75

Experience Card Usage – 67.4%

Service Considerations:

- Seasonal redeployments required to address demand as Quinitsa too small to handle growth
- Berth weight restriction increase to highway limit (at replacement) may impact the types of commercial vehicles traveling on route

Proposed Enhancement

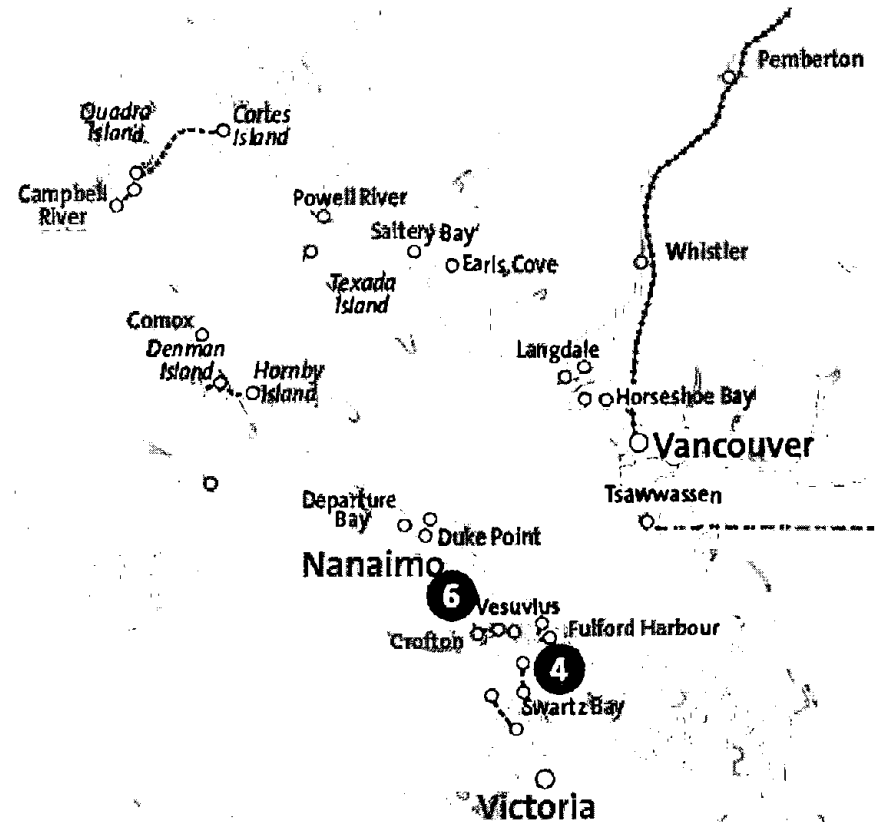
Spring 2022 - COMPLETED

- Deploy larger ferry Quinsam to route year-round

Fall 2026 -

s. 17

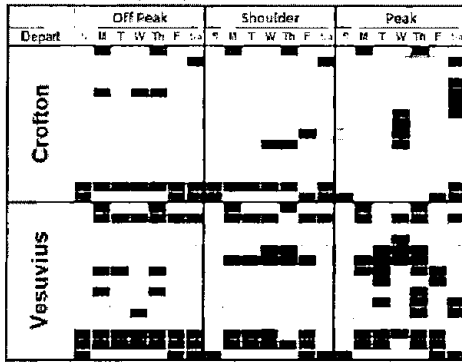
s. 13



Route 6 Crofton to Salt Spring Island (Vesuvius)

PRE-COVID

Route 6 Pre-Covid Quinitsa/Bowen



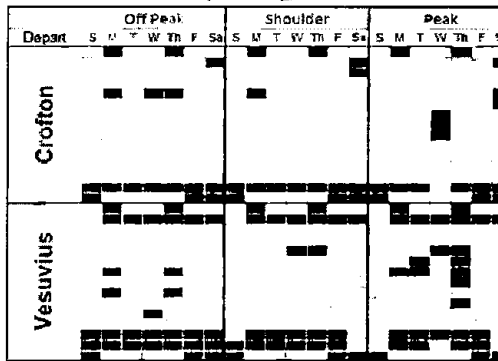
Vessel	Quinitsa (44 AEQ) Off Peak, Bowen Qn (61 AEQ) Peak
Service	up to 14 round trips daily
Time Between Sailings	1.25 hours
Crossing	20 min

NEAR TERM SERVICE ENHANCEMENT

Spring 2022 - deployed larger capacity vessel to Route

COMPLETED

Rte 6 Current Service with Quinsam



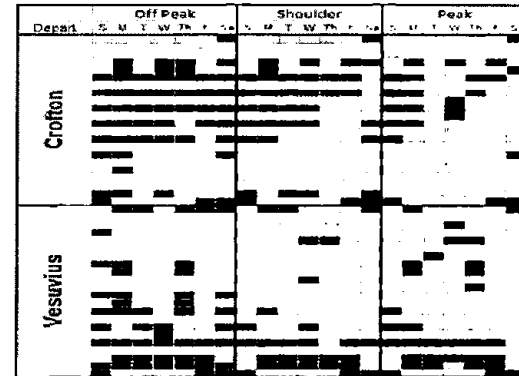
Vessel	Quinsam (63 AEQ)
Service	up to 14 round trips daily
Time Between Sailings	1.25 hours
Crossing	20 min

Increase in annual Round Trips	no change
Increase in Vessel Capacity	48%
Annual Operating Cost Increase	embedded into operating costs
Capital Cost	N/A

LONGER TERM SERVICE ENHANCEMENT

Fall 2026 - Increase capacity and frequency by deploying 2xIsland Class to Route

Rte 6 F27 with 2x IC

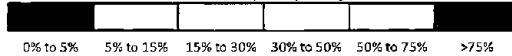


Vessel	Island Class (47 AEQ) x 2
Service	up to 23 RT's daily
Time Between Sailings	est 40 min
Crossing	20 min

Increase in annual Round Trips	3,285
Increase in Vessel Capacity	49%
Annual Operating Cost Increase	
Capital Cost	

Funding Options	0.43% annual price cap through PT7 Annual funding increase in PT6, growing to in PT7
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Available Capacity - Legend



s. 17

s. 17

s. 17

Route 10 & 11 North Coast

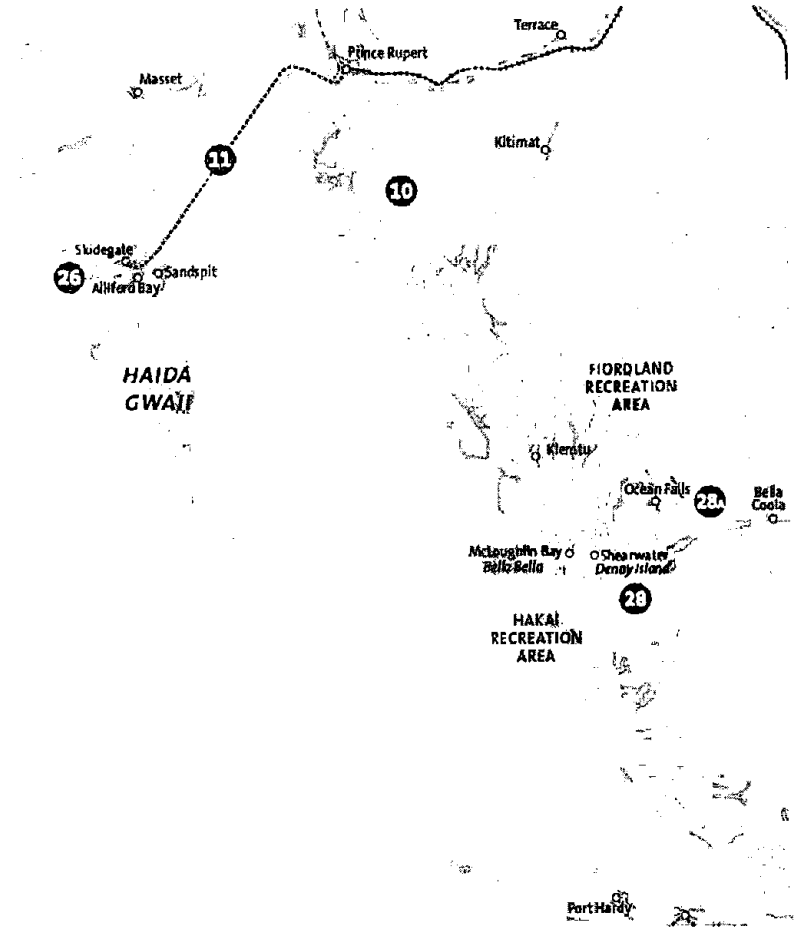
Route Information

Service Considerations:

- Off peak, one ship serves both Route 10 and 11, most service provided overnight
- Peak season, each route has own ship, day service
- Route 10 unable to add service in the peak with existing assets, get more capacity by expanding the season

Proposed Enhancement

- May 2023 - [redacted] s. 17
- Route 10 & Route 11 extend the length of the peak season service
- June 2023 - [redacted] s. 17
- Route 11, increase weekly service to 6 round trips during peak season



Route 10 & 11 North Coast

PRE-COVID Northern Routes

Peak Season Available Capacity (Mid Growth)

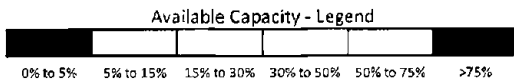
Route	F23	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36
10														
11														
26														

Route 10

Vessel	Northern Expedition
Service	1.5 round trips per week off peak 3.5 round trips per week peak
Crossing	15.5+ hours

Route 11

Vessel	Northern Adventure
Service	2 round trips per week off peak 5 round trips per week peak
Crossing	6+ hours



NEAR TERM SERVICE ENHANCEMENT #1 Route 11

Summer 2023 - Increase the weekly frequency of service from 5 round trips to 6 round trips per week

Route 11 Forecast Available Capacity, Mid Growth – with additional sailings

Route	F23	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36
Route 11														

Increased capacity introduced

Vessel	Northern Adventure (87 AEQ)
Service	2-3 round trips per week Off Peak 6 round trips per week Peak
Crossing	no change

Increase in annual Round Trips	14 Peak season Route 11
Increase in Vessel Capacity	20%

Annual Operating Cost Increase	s. 17
Capital Cost	NA

Funding Options	0.03% annual price cap increase annual funding increase in PT6, growing to s. 17 by end of PT7
-----------------	--

s. 17

s. 17

NEAR TERM SERVICE ENHANCEMENT #2 Route 10 and 11

Summer 2023 - Increase the weekly frequency of service from 5 round trips to 6 round trips per week on Route 11 and expand the Route 10 and 11 summer schedule to Mid-May to Mid-September

Vessel	Northern Adventure (Rte 11) Northern Expedition (Rte 10)
Service	Increase the duration of peak season
Crossing	no change

Increase in annual Round Trips	4 Route 10 Peak 13 Route 11 Peak
Increase in Vessel Capacity	s. 17

Annual Operating Cost Increase	s. 17
Capital Cost	NA

Funding Options	0.12% annual price cap increase annual funding increase in PT6, growing to s. 17 by end of PT7
-----------------	--

s. 17

s. 17

Major Routes

Connecting Lower Mainland, Vancouver Island and Sunshine Coast

Route 1:

- assets fully deployed, reached the effective capacity of the route.
- future capacity provided by slightly larger vessels provides a limited solution with the current projections

Routes 2 & 30

- Mid-island to Lower Mainland corridor, has available capacity to utilize
- Future capacity provided by the larger vessels will increase the available capacity

Proposed Enhancement

Summer 2022 - COMPLETED

- Additional commercial capacity to Route 30 peak season (Coastal/Alberni seasonal redeployments

s. 17

Summer 2029 - _____ annually

s. 13



Major Routes

Connecting Lower Mainland, Vancouver Island and Sunshine Coast

Increase in Capacity from Replacement Vessels:

Vessel	Retiring AEQ	Replacement AEQ	% Increase in AEQ Capacity
Queen of Alberni	280	360	29%
Queen of Coquitlam	316	360	14%
Queen of Cowichan	312	360	15%
Queen of New Westminster	254	360	42%
Queen of Surrey	307	360	17%
Queen of Oak Bay	307	360	17%
Total AEQ (Automobile Equivalent)	1,776	2,160	22%

Increase in Capacity from Incremental New Major Vessel:

- **Route 1: allows for 5 vessel operation during Peak season**
 - Current Service: 4 vessels in Peak
 - ~16% increase in peak season service
- **Route 3: allows for 2-ship operation year-round**
 - Current Service: 2-ship operation only in Peak season
 - ~46% increase in off-peak service

Incremental Major Vessel	Average Annual Increase:		
	If Price Cap (%)	If Funding (PT6, \$M)	If Funding (PT7, \$M)
Funding Options	0.73%	6.1	8.9

Route 1: Swartz Bay – Tsawwassen

Route 3: Horseshoe Bay - Langdale

Summary of Enhancements

COMPLETED

Service Enhancements

Spring 2022

- Route 19 – 2x Island Class service introduced. Increased frequency and capacity to route.
- Route 6 – Quinsam replaces Quinitisa on route, increased capacity year round.

Summer 2022

- Redeploy Coastal to Route 30 to increase capacity of route

Fall 2022

- Route 23 – 2x Island Class service introduced. Increased frequency and capacity to route.
- Route 5 – Salish Class replaces Mayne Queen. Adds capacity to route

Upcoming Enhancements

Summer 2023

- **Route 24** – Schedule additional sailings with *Tachek*
- **Route 22** – Deploy *Quinitisa*, increased capacity
- **Route 21** – Supplement with *Kahloke*, increased frequency
- **Route 11** – Increase weekly service to 6 round trips
- **Route 4** – Provide additional sailings with *Skeena Queen*
- **Route 10/11** – Increase the length of the peak season service

Fall 2023

- **Route 3** – Increase round trips on weekdays with Route 2 supplementary vessel

Cost of Near-Term Service Enhancements

s. 17

Forecasted Cost	F2024	F2025	F2026	F2027	F2028	F2029	F2030	F2031 (onwards)
Majors								
Minors								
North								
TOTAL								

- Indicative price cap impact if no increase to Ferry Transportation Fee = 0.42% per year



Baynes Sound Connector

Return to the units in the BC Ferries Commercial Unit
September 8, 2022



Northey Bay to Denman Island (Route 21) Performance

Performance Against Annual Core Service Levels*				
Fiscal Year	Round Trips Required	Required Round Trips Cancelled (all reasons)	Actual Round Trips Provided	Total Extra/Short Round Trips**
2016	5,278	0	5,446.0	168
2017	5,263	3	5,474.0	214
2018	5,261	0	5,768.0	417
2019	5,260	0	5,772.0	512
2020	5,275	0	5,838.0	563
2021	5,261	5	5,819.5	563.5
2022	5,261	6.5	5,812.0	261.5

* Core service level requirements have varied with periodic adjustments to contract-required minimums in the Coastal Ferry Services Contract and also because of annual calendar fluctuations

** including adjustments to service levels from supplemental agreements with the Province, such as the Contribution Agreement between BC Ferries and the Province dated November 11, 2020

Reliability Index (Route 21) (Fiscal Year)*						
2016	2017	2018	2019	2020	2021	2022
100.00%	99.87%	99.98%	100.00%	99.96%	99.87%	99.90%

Reliability Index: the percentage of scheduled sailings that are not cancelled due to controllable events (i.e., any event other than medical, weather or rescue)

Baynes Sound Connector Performance Report – Actuals



The following table includes the actual legs (not round trips) that have been recorded as missed by the *Baynes Sound Connector* due to terminal or mechanical cancellations by fiscal year (April 1 – March 31):

Location Type	Fiscal Year								Total
	2016	2017	2018	2019	2020	2021 ¹	2022	2023 ²	
Terminal		2	7	2	2		2		15
Vessel	3	32	57	8	30	59	12	12	213
Grand Total	3	34	64	10	32	59	14	12	228^{3, 4}

1. Includes four missed legs due to scheduled Terminal Maintenance

2. Includes missed legs for the quarter ending Jun 30, 2022 only

3. These 228 missed legs have been driven by 39 incidents in total

4. Terminal/vessel mechanical numbers have not been adjusted for when relief service was provided during unplanned mechanical outages



BC Ferries - Operational Performance by Mechanical Category

Location	Mechanical Reason	FY									
		2016	2017	2018	2019	2020	2021	2022	2023	Total	
Terminal	Unknown		2	3		1		2		8	
	Ramp Apron			2	2	1				5	
	Hydraulic Leak: Gate (vessel)			2						2	
Terminal Total			2	7	2	2		2		15	
Vessel	Hydraulic Drive Leak (Bull Wheel Room)		9							9	
	Hydraulic Drive Leak (Engine Room)						13			13	
	Hydraulic Drive Leak (Motor O Ring)							2		2	
	Hydraulic Drive Leak (Brake Room)		16	52						68	
	Hydraulic Drive: Oil Overheating		3		2					5	
	Hydraulic Drive: Pump Failure						30			30	
	Hydraulic Leak: Gate				2		12			14	
	Main Engine Failure		2			6			2	10	
	ME Cooling System					1	5			8	
	Guide Cable				3	5	12	4	4	2	30
	Electrical	1								1	
	Fire Suppression System	2					7			9	
	Navigational Equipment								5	5	
Other Engineering		2						1	3		
Vessel Total		3	32	57	8	30	59	12	12	213	
Total		3	34	64	10	32	59	14	12	228	

Hydraulic system issues account for 141/228 or 62 percent of all sailing cancellations



The following table shows the number of mechanical incidents involving the *Baynes Sound Connector* that did not necessarily lead to sailing cancellations but that were reported to the Operations Security Centre:

Location Type	Fiscal Year								Total
	2016	2017	2018	2019	2020	2021	2022	2023 ¹	
Terminal	1	5	5	17	9	11	11	10	69
Vessel	14	72	40	22	34	20	35	24	261
Total	15	77	45	39	43	31	46	34	330

1. Includes all mechanical incidents as of end of day August 21, 2022



Commercially Sensitive & Strictly Confidential

Location Type	Mechanical Reason	Fiscal Year								Total
		2016	2017	2018	2019	2020	2021	2022	2023	
Terminal	Ramp or Berth Failure		3	3	12	7	9	7		41
	Passenger Area		2		1	2		3	8	16
	Navigational Equipment	1		2	4		2		2	11
	Generator							1		1
Terminal Total		1	5	5	17	9	11	11	10	69
Vessel	Fire Suppression System	4	17	14	3	8	3	3	4	56
	Navigational Equipment	2	11	4	2	6	1	4		30
	ME Cooling System	1	5	1	3	6	1	6	7	30
	Hydraulic System	1	9	6	3		5	4	1	29
	Electrical	2	7	4	3	6	3	3		28
	Main Engine Failure	1	6	3	3	2		3	6	24
	Guide Cable		2	2	2	4	4	4	1	19
	Passenger Area	1	4	5	2	1		4		17
	Other Engineering	1	8	1			1	3	1	15
	Bull Wheel System					1		1	3	5
	HVAC Failure	1			1		1			3
	Blackout		1						1	2
	Procedural		1				1			2
	Ventilation System		1							1
Vessel Total		14	72	40	22	34	20	35	24	261
Total		15	77	45	39	43	31	46	34	330

Previous modifications to improve reliability

- New sheave design using 4140 steel, (cast design wore too quickly);
- Cooling system swing check valves changed to spring check valves in order to minimize fouling;
- Cooling system steel piping changed to stainless to address failing pipes (ongoing);
- Main engine cooling isolation valves added to isolate engines from cooling leaks;
- Fire monitor nozzles replaced;
- Hydraulic isolation valves added to car deck gates;
- Installed antifouling system for salt water inlets (fire pumps);
- Dynamic Brake system upgrades; and
- Cables changed to uncoated to address plastic debris.

2022 Maintenance Review



-
1. We are conducting a maintenance review of the of this vessel with focus on identifying key areas for improvement:
 - a) Review the hydraulic system for potential improvements
 - b) Identify potential cooling system modifications
 - c) Bull wheel liner bolting arrangement engineering review in progress
 2. Adding parts storage at Denman West for quick access to minimize vessel downtime
 3. Adding key Terminal Maintenance personnel on after-hours standby to respond to incidents rapidly
 4. Increasing our inventory of cables and exploring use of available cable purchasing options (current cables are custom built for BC Ferries which makes them expensive to procure; we are exploring the use of more cost effective readily-available cable types)



The following are under consideration but have not been decided:

1. Potential change in departmental responsibility for *Baynes Sound Connector* maintenance from Terminal Maintenance to Fleet Engineering;
2. Plan and execute identified modifications to increase the vessel's capacity and repowering with aim to also increase its reliability:
 - Drive system modifications;
 - Cooling system modifications;
3. Consider potential of home port change for the vessel from Denman West to Buckley Bay, following appropriate community consultations; and
4. Potential to adjust vessel crew complement to provide technical support in operations.

Baynes Sound Connector Review

Executive Update

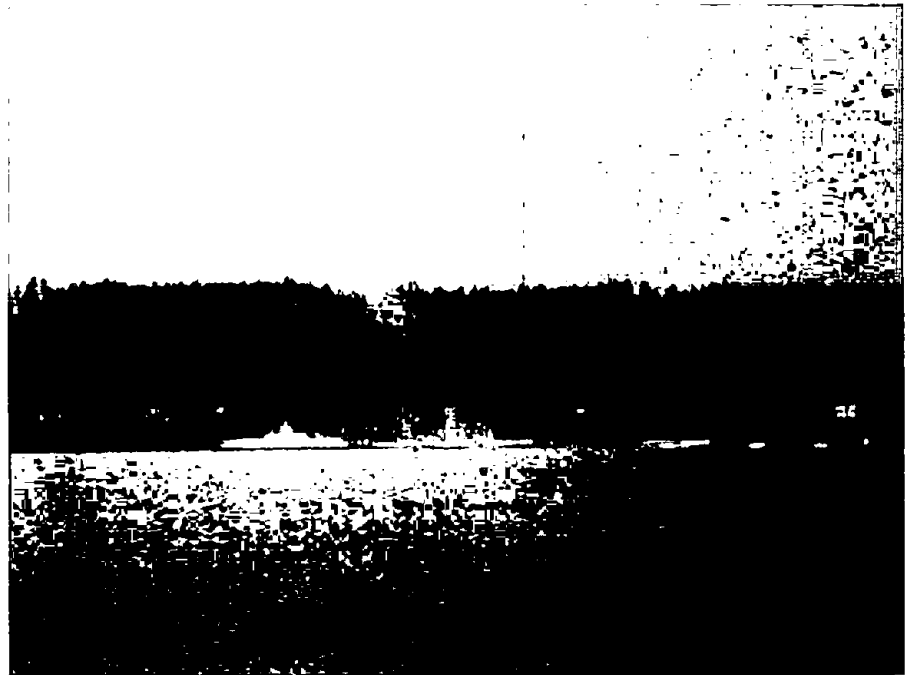
January 23, 2023



PURPOSE

Provide BCF Executive with options and a recommendation in respect to the BSC

Provide BCF Executive with an overview of the work undertaken to develop and evaluate the options



A large cargo ship is docked at a pier in a harbor. The ship is white with a dark hull and has several masts and antennas. The harbor is surrounded by mountains and some buildings are visible in the background. The sky is clear and blue.

OVERVIEW

- Current Situation
- Introduce evaluation team
- Overview of Options considered
- Overview of Evaluation Method
- Evaluation of Options 1 to 5
- Recommendation for future of Route 21 service
- Next steps

CURRENT SITUATION

- Higher than expected growth on Route 21 has resulted in a need for increased capacity during the peak summer season
- The increased capacity will be provided in the short term by the use of the Kahloke to supplement summer service
- While the BSC has a good reliability record there are a number of unresolved issues currently being managed:
 - Overheating of the hydraulic motors
 - Bolt cracking on the bull-wheel (impacting utilization of new brake system)
 - Hull fouling slowing crossing times
- Maintenance responsibility will shift to Fleet Engineering on April 1
- Conventional berths at the Denman West terminal has a vehicle load restriction and a limited life expectancy

WHY?

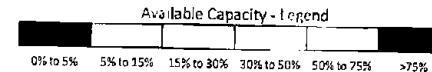
Traffic levels from Route 22 exceed capacity in the summer

Quintitsa deployment at Hornby increases AEQ throughput onto Route 21

- 44 AEQ Route 22 ship will create 'pulses' of traffic arriving at Denman West at same time Denman based traffic is travelling

Combination of Route 21 demand & larger 'pulses' of Route 22 demand will cause lineups back into the village at top of hill; overwhelm the intersection and create potentially unsafe and unmanageable traffic convergence

Option		Home Port	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46		
BASE	Vessel Deployment	Denman Is	BSC																								
	Available Capacity <small>1% growth in TV</small>	Off Peak																									
		Shoulder																									
		Peak																									



Transit times for Route 21 are interdependent with capacity offered while shuttling

Current 12 minute transits are reducing benefits of shuttling, however improvements are expected with the transition of maintenance responsibilities and powering solutions in progress

Expanded BSC (~64AEQ) will require longer in-port times, off-setting 40% increase in capacity to an best case estimated 20% increase (assuming same transit time whether BSC or Expanded BSC)

Future transit time degradation due to hull fouling over the 5 year maintenance cycle could limit capacity improvements in shuttling mode

EVALUATION TEAM

Primary Team

- Peter Simpson, Director Fleet Operations Strategy
- Joanne Doyle, Manager Fleet Strategic Planning
- Stephen Jones, Executive Director Engineering
- Bruce Paterson, Director Naval Architecture Fleet Technical
- James Adams, Project Manager Terminal Construction
- Scott Elliott, Director Corporate Planning
- Lesley Hancyk, Manager Financial Planning & Analysis
- Terry Wright, IPS Consulting

Subject Matter Experts

- Megan Caldwell, Regional Manager Terminal Operations
- Captain Claudiu Raduta, Fleet Operations
- Captain Andrew Weigold, Fleet Operations
- Darren Johnston Executive Director Fleet Operations
- Jordan Knutsen Director Terminal Operations
- Ed Hooper, Executive Director Shipbuilding

OVERVIEW OF OPTIONS CONSIDERED

Primary Options

BaseCase: Expansion of BSC to 64 AEQ

1. Defer Expansion to F34
 - Includes 2-ship service to F34
2. Replace BSC with Conventional Vessel ~70 AEQ
3. Supplement BSC (45 AEQ) with a 2nd ship (21 - 47 AEQ)

s. 13

4. Supplement BSC (45 AEQ) with a 2nd ship (21 - 47 AEQ)

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5. Supplement BSC (45 AEQ) with a 2nd ship (21 - 47 AEQ) and Expand BSC in F2034

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Other Options (*eliminated*)

Replace BSC with existing Conventional Vessel (Quinsam)

Convert BSC to a Conventional Vessel

No change to BSC, Operate new route between Hornby and Vancouver Island

OVERVIEW OF OPTIONS EVALUATION

Criteria Used

- People Workforce
- Reliability and Redundancy
- Flexibility (to increase service)
- Risk
- Future Growth Option
- Financial

Key Assumptions

- Growth – 0.41% to 2% annually Total Vehicles
- Cost escalation on deferred capital expenditure, at 2%
- ICPH4 availability of relief vessel for Summer Operations for Route 21
- Kahloke remains in fleet until ICPH4 relief vessel is in service
- All BSC options include an allowance for powering solutions
- Added seasonal workforce in Options 3,4,5
- Electrification of BSC not included
- Condition based berth replacement at Denman West is required by 2030

OPTION OVERVIEW

Option	Vessel Deployment	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	25-Year NPV	
(Base Case)	Denman Is	BSC																							Expanded Baynes Sound Connector	
	Buckley Bay (Peak Season)	KAH																								
Option	Vessel Deployment	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46		
1	Denman Is	BSC																							Expanded Baynes Sound Connector	
	Buckley Bay (Peak Season)	KAH (5days)							KAH (7days)																	
Option	Vessel Deployment	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46		
2	Denman Is	RSC																							NEW CONVENTIONAL VESSEL (~70 AEO)	
	Buckley Bay (Peak Season)	KAH																								
Option	Vessel Deployment	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46		
3	Denman Is	RSC																							Incremental Island Class (Potential Year-Round)	
	Buckley Bay (Peak Season)	KAH (5days)							KAH (7days)																	
Option	Vessel Deployment	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46		
4	Denman Is	BSC																							Relief Island Class	
	Buckley Bay (Peak Season)	KAH (5days)							KAH (7days)																	
Option	Vessel Deployment	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46		
5	Denman Is	BSC																							Expanded Baynes Sound Connector	
	Buckley Bay (Peak Season)	KAH (5days)							KAH (7days)							Relief Island Class										

s. 17

RECOMMENDATION

Findings

Recommendation subject to:

- Assessment of success of two-ship service after summer of 2023
- Alignment of decision on future service model with the Island Class program
- Acknowledge that ongoing seasonal workforce required to maintain 2 ship service

Recommendation (if subject-to's satisfied)

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NEXT STEPS

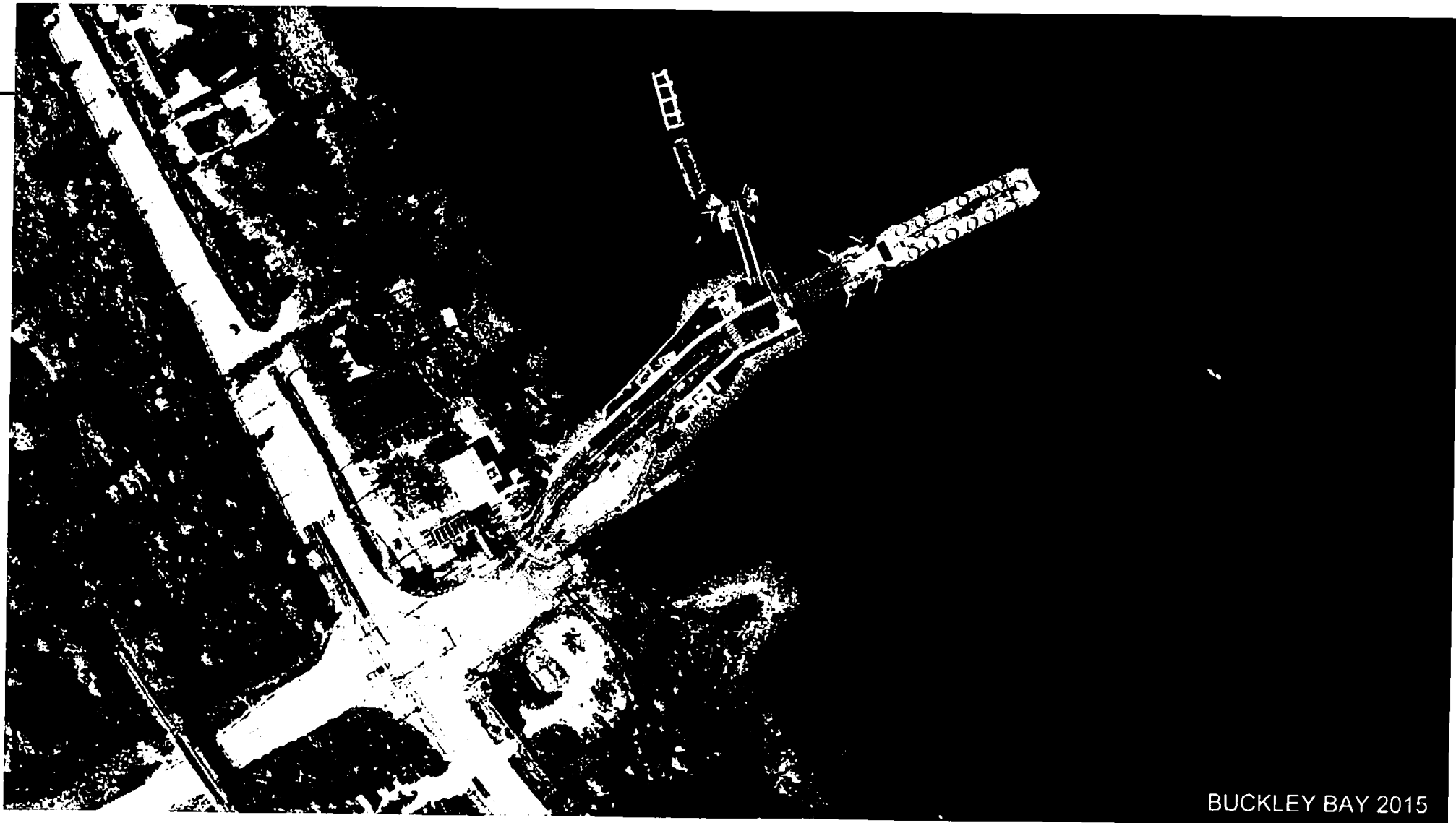
Fall review of 2-ship service

Fall review of progress made on maintenances and operational outcomes

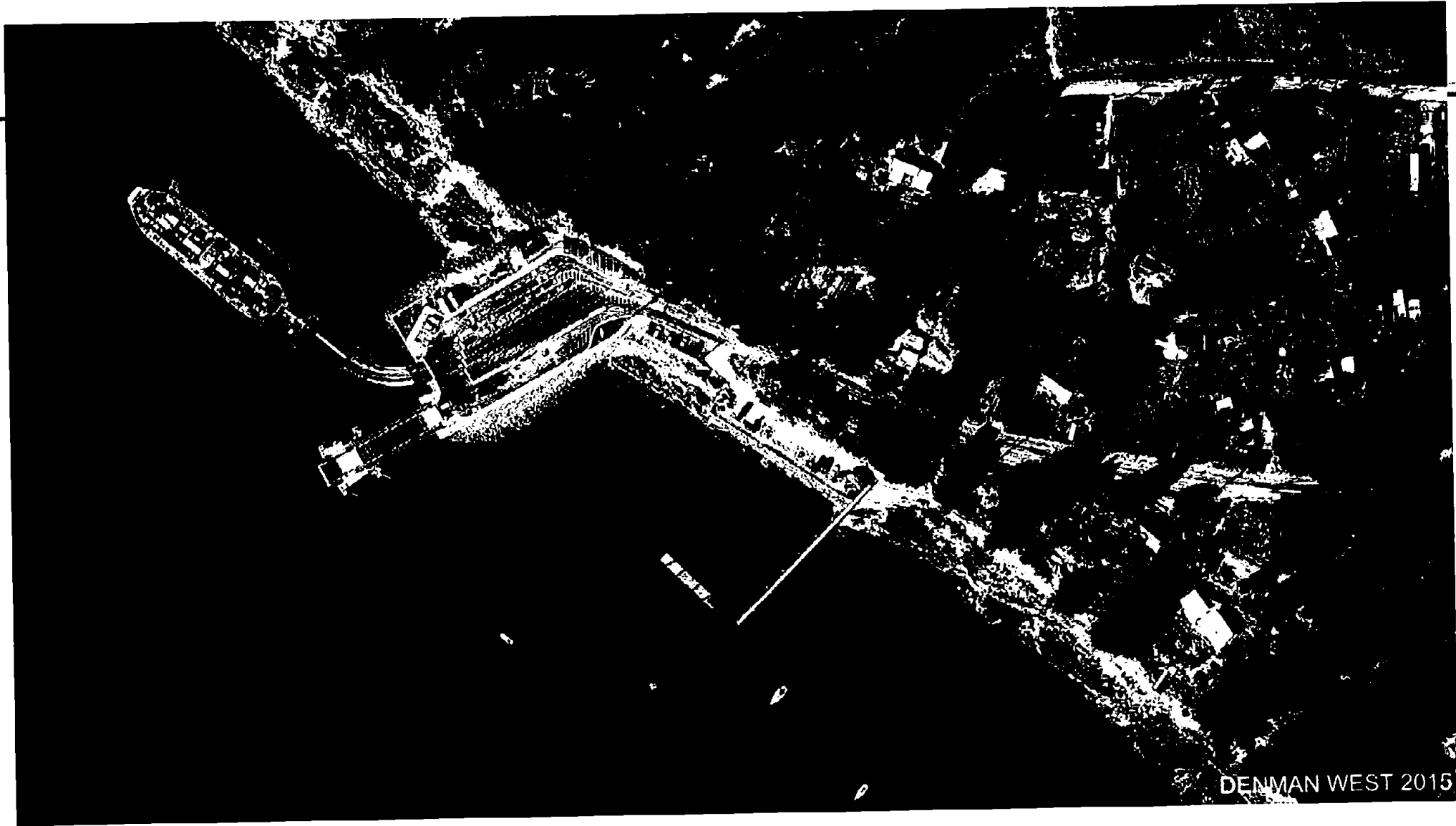
Obtain Executive support of the recommendation assuming the subject to's are successfully addressed and accepted

Develop transition plan to move away from 2-ship service, if demand allows

SUPPLEMENTAL MATERIAL
- AERIAL VIEWS OF THE TERMINALS



BUCKLEY BAY 2015



DENMAN WEST 2015

February 16, 2023

Baynes Sound Connector Review

PURPOSE

This report summarizing BC Ferries' review of the *Baynes Sound Connector* ("BSC") capacity and propulsion upgrades is provided FOR INFORMATION.

BACKGROUND

The BSC is a cable ferry serving Route 21 between Vancouver Island (Buckley Bay) and Denman Island (Denman Island West). This is the sole cable ferry in BC Ferries' fleet and, since its introduction, it has presented unique technical challenges related to its design and systems. While it meets the requirements for service delivery, mechanical reliability remains a concern and the vessel is prone to service speed reductions (especially during summer), primarily due to extreme hull fouling.

Maintenance costs for this vessel have been significantly higher than anticipated in the business case and are driven by a number of factors. Since vessel introduction, several modifications have improved performance or reduced costs, including:

- Development of the drive tunnel roller system;
- Use of a hull cleaning robot;
- Redesign of the guide sheaves and sheave bearings; and
- Redesign of the bull wheel and seawater strainer modifications.

These efforts have reduced fuel usage, increased vessel performance or reduced restrictions on deck space.

While targeted technical modifications have achieved some improvements, costs remain above business case estimates. In addition, the following unresolved vessel issues are under investigation and there are solutions under development that are anticipated to improve vessel reliability and transit times, including:

- Overheating of the hydraulic motors;
- Bolt cracking on the bull-wheel (impacting utilization of the brake system); and
- Hull fouling.

BC Ferries' Performance Term 6 submission includes \$17.9M to address mechanical reliability concerns as well as expand the capacity of the BSC to support anticipated vehicle traffic growth on the route. The broad community continues to be unsupportive of the vessel and reactions to potential increased investment remain highly negative. Islanders, the Ferry Commissioner and the BC Ferry Authority have questioned vessel reliability and the proposed investments.

Prior to proceeding with planned investments, BC Ferries engaged a consultant to undertake a review of vessel operations to date and assess alternative options to accommodate future demand. This review considered service options to meet the long term forecast demand for Route 21 based on required capital expenditure and known and projected operating and maintenance costs. A 25-year financial analysis summarizes the anticipated capital and operating expenditures into a net present value ("NPV") figure that can be compared across the current plan and options. The review also conducted an analysis of the anticipated performance to assess expected relative improvements in service delivery.

DISCUSSION

The Performance Term 6 submission to support growing demand on Denman and Hornby Islands includes \$17.9M to expand and repower the BSC in 2026. The larger ship increases capacity at peak times; although during shuttling operations, this increase comes at that expense of frequency due to increased loading and

unloading time. The original business case for the cable ferry envisioned decommissioning the conventional ferry berths; however, the plan now anticipates keeping both conventional berths as well as the cable ferry berths to support operations and refits (four berths in total).

Base case deployment and seasonal service capacity analysis anticipated over the planning horizon is summarized below and a comparative table is provided for each option.

Base Case		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
Vessel Deployment	Denman Island	BSC		Expanded Baynes Sound Connector																					
	Buckey Bay (Peak Only)	KAH																							
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																								
Average Vehicle Space Capacity Available				5 to 15%		15 to 30%		30 to 50%		50 to 75%															

Option Assessment

The review considered five alternatives that are technically practical and operationally feasible. Options that consider maintaining the BSC include the maintenance and replacement of the conventional berths on the route to support seasonal supplementary service and refit relief. Options that consider expanding the BSC include an investment to increase carrying capacity from 45 to 64 automobile equivalents and repowering.

All service options were analyzed using a range of annual growth projections from 0.41% to 2%; those presented in this report use 1% annual growth for all vehicle types.

Option 1: Defer Expansion until 2034

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering. Supplemental vessel service during the peak season would continue until 2034, at which time the BSC would be expanded at an estimated cost of \$15.9M. The supplemental vessel is expected to be required more frequently in the peak season beginning in 2030 and can transition from five to seven days per week operation. Remaining components are consistent with the base case.

Defer expansion until 2034		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
Vessel Deployment	Denman Island	BSC		Expanded Baynes Sound Connector																					
	Buckey Bay (Peak Only)	KAH (5days)		KAH (7days)																					
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																								
Average Vehicle Space Capacity Available				5 to 15%		15 to 30%		30 to 50%		50 to 75%															

Option 2: Replace BSC with Conventional Ferry

This alternative avoids any further investment in the BSC and instead \$91.9M is allocated to replace the BSC with a newly-built conventional vessel and rebuild the terminal berths by 2028. A larger conventional vessel requires a larger number of highly qualified crew (three licensed - Master, Mate, Chief Engineer) with an incremental workforce of nine positions (three per watch). The BSC would be offered for sale (no material proceeds anticipated) and the remaining two berths would be decommissioned.

Replace BSC with Conventional Ferry		F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	
Vessel Deployment	Denman Island	BSC		NEW CONVENTIONAL VESSEL (~70 AEC)																					
	Buckey Bay (Peak Only)	KAH																							
Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																								
	Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																								
	Peak (late-June to Labour Day)																								
Average Vehicle Space Capacity Available				5 to 15%		15 to 30%		30 to 50%		50 to 75%															

Option 3: Supplement the BSC Indefinitely Rather Than Expand

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering of the BSC. Supplemental vessel service during the peak season would continue indefinitely, starting with the Kahloke (21 automobile capacity) and transitioning to an Island Class (47 automobile capacity) in 2035. Instead of expanding the BSC, an investment of \$65M is required to procure a dedicated Island Class vessel. This approach allows for the dedicated vessel to be available to support operations not only in the peak season but year-round, as required in the future.

Supplement the BSC Indefinitely Rather Than Expand			F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46
3	Vessel Deployment	Denman Island																							
		Buckey Bay (Peak Only)	KAH (5days)							KAH (7days)							BSC								
	Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																							
		Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																							
		Peak (late-June to Labour Day)																							
Average Vehicle Space Capacity Available			5 to 15%					15 to 30%					30 to 50%					50 to 75%							

Option 4: Supplement the BSC Indefinitely Rather Than Expand

This alternative is a very similar to Option 3, but relies upon an existing Island Class vessel to provide supplemental service post 2034. Because the Island Class vessel is required to provide maintenance relief across the fleet, it is only available to provide supplemental service on this route in the peak season.

Supplement the BSC Indefinitely Rather Than Expand			F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46
4	Vessel Deployment	Denman Island																							
		Buckey Bay (Peak Only)	KAH (5days)							KAH (7days)							BSC								
	Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																							
		Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																							
		Peak (late-June to Labour Day)																							
Average Vehicle Space Capacity Available			5 to 15%					15 to 30%					30 to 50%					50 to 75%							

Option 5: Expand the BSC in 2034 and Supplement the BSC Indefinitely

This alternative reduces the scope of investment in 2026 to \$5.4M to support repowering of the BSC, with \$15.9M allocated in 2034 to expand the vessel. Supplemental vessel service during the peak season would continue indefinitely, starting with the Kahloke (21 automobile capacity) and transitioning to an Island Class (47 automobile capacity) in 2035. Similar to Option 4, because the supplemental vessel is required to provide maintenance relief across the fleet, it would be restricted to peak season use.

Defer Expansion Until 2034 and Supplement Indefinitely			F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46
5	Vessel Deployment	Denman Island																							
		Buckey Bay (Peak Only)	KAH (5days)							KAH (7days)							BSC								
	Average Vehicle Capacity Available	Off Peak (Thanksgiving to mid-May)																							
		Shoulder (Labour Day to Thanksgiving / mid-May to late-June)																							
		Peak (late-June to Labour Day)																							
Average Vehicle Space Capacity Available			5 to 15%					15 to 30%					30 to 50%					50 to 75%							

OPTION SUMMARY

The following table summarizes the base case plan and each of the five options, including the results of the 25-year net present value analysis of anticipated capital and operating expenses:

Option	Vessel Deployment	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	25-Year NPV
(Base Case)	Denman Is	BSC Expanded Baynes Sound Connector																							(\$81 M)
	Buckley Bay (Peak Season)	KAH																							
1	Denman Is	BSC Expanded Baynes Sound Connector																							(\$77 M)
	Buckley Bay (Peak Season)	KAH (5days)							KAH (7days)																
2	Denman Is	NEW CONVENTIONAL VESSEL (~70 AEC)																							(\$149 M)
	Buckley Bay (Peak Season)	KAH																							
3	Denman Is	BSC																							(\$113 M)
	Buckley Bay (Peak Season)	KAH (5days)							KAH (7days)							Incremental Island Class (Potential Year-Round)									
4	Denman Is	BSC																							(\$73 M)
	Buckley Bay (Peak Season)	KAH (5days)							KAH (7days)							Relief Island Class									
5	Denman Is	BSC Expanded Baynes Sound Connector																							(\$82 M)
	Buckley Bay (Peak Season)	KAH (5days)							KAH (7days)							Relief Island Class									

RECOMMENDATION

BC Ferries is pursuing immediate maintenance and operational enhancements to the BSC and plans to introduce supplemental vessel service on Route 21 during the upcoming peak season.

The review recommends proceeding with Option 1, 4 or 5, all of which defer the major capital investment in the BSC for up to 10 years, or longer if demand does not warrant it. This approach provides an opportunity to assess the outcomes of the operational enhancements and inform the feasibility and suitability of using supplemental vessel service on a longer term basis.

If traffic demand or operational needs dictate the need for expanded capacity beyond what can be accommodated with this service strategy, it can be achieved by accelerating the timing of the expansion of the BSC or through the deployment of a larger supplemental vessel.

From: William Beale
To: Creighton, Kathleen; Anderson, Brian
Subject: [EXTERNAL] Re: BSC report that was discussed at Feb BCFA meeting
Date: June 20, 2023 9:07:07 AM

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Thank you very much Kathy

William Beale
Executive Director
BC Ferry Authority
(250) 889-1428

From: Creighton, Kathleen <Kathleen.Creighton@bcferries.com>
Sent: Tuesday, June 20, 2023 9:00:16 AM
To: William Beale <WilliamBeale@bcferryauthority.com>; Anderson, Brian <Brian.Anderson@bcferries.com>
Subject: RE: BSC report that was discussed at Feb BCFA meeting

Will, just closing the loop on this.

Nicolas will be reaching out directly to Marc Tremblay, with the hopes of connecting with him on this topic while in Prince Rupert next week.

Kathy

Kathleen Creighton (she/her)
British Columbia Ferry Services Inc.
T: 250-978-1351
Kathleen.Creighton@bcferries.com

BC Ferries acknowledges and respects the territories of Indigenous peoples on whose beautiful lands and waters our ships, offices, terminals, and work sites operate along the Pacific West Coast.

From: William Beale <WilliamBeale@bcferryauthority.com>
Sent: June 13, 2023 3:02 PM
To: Anderson, Brian <Brian.Anderson@bcferries.com>; Creighton, Kathleen <Kathleen.Creighton@bcferries.com>
Subject: [EXTERNAL] Re: BSC report that was discussed at Feb BCFA meeting

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Hello Brian and Kathleen,

Thank you again Brian for a copy of the report. In a discussion between Lecia and Joy it was determined that a follow up meeting regarding the Baynes Sound Connector Review be scheduled for BCFA Director Marc Tremblay. It was Joy's suggestion that Nicolas would be the most appropriate

to meet/brief with BCFA Directors.

Kathleen, could we work to get this scheduled in the coming weeks?

Thank you both

William Beale
Executive Director
BC Ferry Authority
(250) 889-1428

From: Jimenez, Nicolas
To: Anderson, Brian
Subject: FW: [EXTERNAL] Re: baynes sound connector
Date: June 20, 2023 2:49:34 PM

Nicolas Jimenez (he/him)
President & CEO
British Columbia Ferry Services Inc.

s. 22

From: [REDACTED]
Sent: June 20, 2023 2:18 PM
To: Jimenez, Nicolas <Nicolas.Jimenez@bcferries.com>
Subject: [EXTERNAL] Re: baynes sound connector

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Thanks for contacting me. An opportunity to touch base about ferry services to Denman and Hornby while we are in Prince Rupert will be much appreciated. A lingering concern has been the provision of an independent assessment of the efficacy of continuing with investment in the BSC vs a shift to more conventional equipment. A verifiable analysis of this type could serve to calm or quieten many of the most vocal detractors and could form the base documentation for capital approval of the expansion project.

I look forward to chatting as well.

Regards
Marc

On Tue, Jun 20, 2023 at 12:15 PM Jimenez, Nicolas <Nicolas.Jimenez@bcferries.com> wrote:

hi marc,

i wanted to reach out as a follow-up to a request for a short update on the baynes sound connector. i'd be happy to discuss this, and am thinking that we could do it next week when we're both in prince rupert attending the BCFA board meeting.

if this works, let me know. otherwise, we can set up a one-off call via teams/zoom.

look forward to chatting.

cheers

Nicolas Jimenez (he/him)
President & CEO
British Columbia Ferry Services Inc.
M: [REDACTED]
bcferries.com | [Facebook](#) | [Twitter](#)

s. 15, 19

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Rasmussen, Shauna

From: Anderson, Brian
Sent: July 10, 2023 1:17 PM
To: McIntosh, Carrie; Johnston, Karen
Cc: Olson, Tamara
Subject: RE: The Anderson Report

Thanks... my takeaway from that email exchange is this: all seems ok with the new ferry arrangements so far. Thanks for listening to us.



From: McIntosh, Carrie
Sent: July 10, 2023 10:34 AM
To: Johnston, Karen ; Anderson, Brian
Cc: Olson, Tamara
Subject: FW: The Anderson Report

The BSC report has now become the 'Anderson Report'. Colin Boyd's take on the report below and attached FYI.

Carrie

Carrie McIntosh
Director, Community Relations
Strategy & Community Engagement
British Columbia Ferry Services Inc.
500 – 1321 Blanshard Street, Victoria BC
T: 250-978-1720 **C:** [REDACTED] s. 15, 19
carrie.mcintosh@bcferries.com
bcferries.com | [Facebook](#) | [Twitter](#)

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From: Engagement <engagement@bcferries.com>
Sent: July 04, 2023 1:39 PM
To: McIntosh, Carrie <Carrie.McIntosh@bcferries.com>
Subject: FW: The Anderson Report

Good morning Carrie!

Please see email below and attachment addressed to you on the Baynes Sound Connector.

Many thanks,

Arielle Houghton (She/Her)
Community Relations Coordinator
Strategy and Community Engagement
Suite 500 -1321 Blanshard St. Victoria BC, V8W 0B7
T: 250-978-1172 C: [REDACTED] s. 15, 19
arielle.houghton@bcferries.com
bcferries.com | Facebook | Twitter

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From: Boyd, Colin <boyd@edwards.usask.ca>
Sent: June 30, 2023 1:32 PM
To: Engagement <engagement@bcferries.com>
Cc: Karen Ross <hornbykarenross@gmail.com>
Subject: [EXTERNAL] The Anderson Report

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Hi Carrie:

I have belatedly written a response to the Anderson Report, which I attach for you to circulate within the organization.

Personal problems slowed me down in responding.

If you are not able to circulate it, then please let me know so that I can try an alternative way of getting it known.

Best wishes,

Colin

PS all seems ok with the new ferry arrangements so far. Thanks for listening to us.