



MEMORANDUM

TO: Alaska Marine Highway Operations Board (AMHOB)
FROM: AMHS Comprehensive Long-Range Plan Team
DATE: 4/14/23
SUBJECT: Comparative Ferry System Brief

Introduction

This memorandum contains a summary of five ferry systems: BC Ferries, Hurtigruten, CalMac, Shetland, and Washington State Ferries. The goal of the document is to establish context and background information to inform the vision, goals, and level of service discussion during the upcoming Alaska Marine Highway System (AMHS) Comprehensive Long-Range Plan Workshop with AMHOB on April 24, 2023. The level of service and vision and goals for each system, as indicated in publicly available reports and planning documents, are discussed. The document also provides principal features of each system, such as fleet size, number of communities served, annual budget, revenue, route length, and whether the system provides lifeline transportation service.

BC Ferries

BC Ferries is a 39-vessel system that provides service to approximately 40 terminals across coastal and island communities in British Columbia, Canada with 25 routes (see Appendix A). The system's mission statement is, "To connect communities and customers to people and places important to their lives [1]." BC Ferries is committed to provide coastal communities with essential, safe, reliable, sustainable, and affordable ferry service [2].

Communities served by the system are either located in mainland British Columbia or on neighboring islands, primarily Graham and Vancouver Islands. Routes connect both multiple mainland ports to each other and island communities to the mainland and are broken up into three categories: major routes, northern routes, and minor routes. Additionally, there are Unregulated Routes which are served by independent contractors under contracts administered by BC Ferries [3]. Routes range in distance from 1.2 to 273 nautical miles and in duration from 10 minutes to upward of 20 hours.

BC Ferries provides service to more than 22 million passengers and 8.5 million vehicles annually. BC Ferries has a contract with The Province of British Columbia which sets the Core Service Level of each route and includes allowances for temporary disruption of services [3]. The Core Service Level includes the total number of round trips that are to be delivered in a Contract Year, the minimum hours of operation during which originating port departures can occur, the number of departures per day, and specifies that the capacity provided must be sufficient to carry the previous year's traffic. *Minimum hours of operation* for most routes is defined as the lapsed time from when the first sailing of the day leaves the originating port to the time the last sailing leaves from the originating port. The Core Service levels are divided into peak and off-peak seasons.

In fiscal year 2022 (ending March 31, 2022), BC Ferries delivered a total of 82,742.5 round trips which exceeded by 3,772 the annual number of round trips required under the Contract [4]. Both lifeline and tourism-based service is provided by the system.



From April 2020 to the end of March 2024, the contract with Province of British Columbia pays a service fee to BC Ferries of approximately \$144.9 million per year for the regulated routes which included \$22.4 million to offset the notional amount for Senior Discounts and the unregulated routes had a service fee of up to \$2.58 million. Actual service payment for Senior Discounts is dependent on actual usage of the discount. There are also provisions in the contract for fuel costs.

For fiscal year 2021 and 2022, BC Ferries reported the following fiscal information [4]

Table 1: BC Ferry 2021 & 2022 Fiscal Information (FY begins 4/1)

		2021 (IN 000'S)	2022 (IN 000'S)
Expenses	Operating Expense	(\$452,901)	(\$514,858)
	Cost of Capital	(\$175,975)	(\$169,035)
	Disposal and Impairment of Capital Assets	(\$6,348)	(\$5,431)
	Other	(\$478)	(\$9,758)
	Total Expenses	(\$635,702)	(\$699,082)
Revenue & Funding	Operating Revenue	\$343,538	\$476,395
	Gov't funding (Ferry Transportation Fees, Safe Restart Funding, Other Federal Subsidy)	\$307,940	\$250,299
	Total Revenue & Funding	\$651,478	\$726,694
	Total Earnings	\$15,776	\$27,612

Furthermore, BC Ferries utilizes engagement to help identify opportunities for continuous improvement. The system seeks input from customers, communities, and others in a variety of ways that include customer-initiated feedback, an active public consultation and community engagement program, and meetings with communities, businesses, stakeholders, and Indigenous people. Customer-initiated feedback is received in a variety of ways including letters, emails, phone calls, tweets, Facebook posts, Instagram, and the online feedback form. BC Ferries has a customer satisfaction survey and a feedback portal. For Fiscal Year 2022, BC Ferries had a customer experience score of 94. A score of 100 means BC Ferries' performance is equivalent to the average performance over the previous four years (a score lower than 100 indicates a lower-than-average performance), a customer experience score of less than 100 indicates the , a customer complaint score of 7.9 complaints for every 10,000 customers traveling, and a satisfaction rate with their Customer Service Center experience of 93% [4].

The governance model consists of four components. The B.C. Ferry Authority (the beneficial shareholder); BC Ferry Services Inc. (the service provider); BC Ferries Commissioner (an independent regulator); and the Coastal Ferry Service Contract (a 60-year contract between the Province of BC and BC Ferries). The B.C. Ferry Authority's board consists of nine directors with four from coastal regional districts, one from the trade union representing BC Ferries workers and four appointed by the province.



The Authority is responsible for overseeing the strategic direction of BC Ferries in support of the public interest, appointing the Board of Directors of BC Ferries and establishing compensation plans for the Directors and Executives of BC Ferries.

BC Ferry Services is led by an executive team of nine people and a board of directors. The board of directors are stewards of BC Ferries and set the strategic direction of the company. The board of directors exercises its stewardship responsibilities by overseeing the conduct of the business, supervising management, which is responsible for the day-to-day operations of the business and ensuring that all major issues affecting the business and affairs of the company are given proper consideration. [2]

The BC Ferries Commissioner [2] is responsible for monitoring service levels and other matters and regulating average fare increases. The Commissioner uses a price cap mechanism to establish the fares BC Ferries can charge customers. The Commissioner undertakes this regulation in the public interest in accordance with the following principles:

- To balance the interests of ferry users, taxpayers and the financial sustainability of ferry operators
- To encourage BC Ferries to meet provincial greenhouse gas emissions targets in this operation and when developing capital plans, and
- To encourage innovation and minimize expenses without adversely affecting safe compliance with core ferry services.

BC Ferries uses transparent public engagement to ensure the communities has a voice in the future of the ferry system and the decisions that affect them the most. Their public engagement program is a critical component of their infrastructure planning, service planning, project management and ongoing operations.

They engage with communities on a regular basis through their Ferry Advisory Committees. The Committees are generally comprised of 8-12 members who represent the ferry-dependent communities that are served. They provide input on day-to-day operations, planned improvements, broader policy issues and strategic planning. In fiscal year 2022, BC Ferries hosted 37 meetings with the Ferry Advisory Committees to review service levels, gather input on projects, and plan for the future.

BC Ferries also builds relationships with indigenous communities through outreach, dialog, cultural recognition, and support for community events. Furthermore, they have a one-day indigenous cultures awareness training course that is available to staff on an ongoing basis.

BC Ferries long term plan for the next decade includes focus on the following areas [2]:

- Ensuring they have enough people for optimal service delivery and to have the right people in the right place at the right time
- Developing meaningful and relevant relations with Indigenous communities
- Responding to climate change and striving to achieve a 27% reduction in greenhouse gas emissions by 2030
- Responding to an increasing system demand/volume and meeting current and forecast vehicle demand
- Enhancing service integration to forms of transportation with lower emissions
- Delivery of a capital plan that supports growth and addresses needed capacity on constrained routes yet has the flexibility to reduce capital spend if travel patterns and demand change.



BC Ferries' long-term capital plan and operating projections reflect the investments required to support growth and business sustainability. The Capital Plan ensures that their customers' needs are met today and tomorrow. It identifies the spending required to modernize and replace their ferries, terminals, and IT systems, reflective of passenger and vehicle growth and customer needs. The Capital Plan addresses additional system capacity requirements to accommodate growth in traffic and changes to the way people travel. Over the next two years their planned capital expenditures average approximately \$284 million per year before interest during construction. It includes new vessels, upgrades and modifications for existing vessel, improvements of our Fleet Maintenance Unit, upgrades at terminals and renewal of IT systems. The upgrades to existing vessels include enabling full electrification of their hybrid-powered Island Class vessels and shore charging infrastructure. [2]

Hurtigruten

Hurtigruten operates a fleet of 7-vessels passenger and vehicle ferries on their Norwegian Coastal Express, which is part of the Hurtigruten Group which also includes Hurtigruten Expeditions. The total Hurtigruten Group fleet consists of a 14-vessel fleet, the 7-vessels operated by Hurtigruten Expeditions are passenger only vessels. The Norwegian Coastal Express is a Norwegian public ferry system serving 36 ports of call (see Appendix B). Hurtigruten's vision and mission statement is, "We aim to be the undisputed global leader in sustainable, inspirational, adventure travel – a catalyst for change towards a greener travel industry. In doing so we provide safe, unique, active, and sustainable travel experiences that create lifelong memories for our guests."

Hurtigruten is currently investing in batteries and biofuel to cut CO2 emissions by at least 25% and NOx emissions by 80% in what is described as one of the largest environmental upgrades in the history of European shipping.

The system connects coastal ports along the length of Norway. Routes typically run no more than once daily and range from two to sixteen days in duration, with itinerary stops typically occurring once a day throughout voyages.

Service aboard a Hurtigruten vessel is branded more as cruising than as a ferry service. Food and drink, cabins, and onboard activities are included on Hurtigruten voyages. Excursions and experiences are a prioritized area. However, it is possible to book port to port sailings similar to a typical ferry service.

Hurtigruten doesn't report how many passengers and vehicles they provide service to each year but in 2019 before the pandemic they had 1,314,000 passenger cruise nights (PCN) with 1,619,000 available passenger cruise nights (APCN) and in 2022 they had 659,000 PCN with 1,011,000 APCN. PCN is defined as one occupied berth per night and APCN is the cabin capacity x 2 multiplied by the number of cruise days.

The Hurtigruten group does not break down their financial statement between Norwegian Coastal Express and the Hurtigruten Expeditions, however as a whole company in 2021, Hurtigruten group had an operating revenue decrease 18.8% to \$212.8 million compared to \$261.9 million in 2020. In 2021, Hurtigruten Group received \$78.71 million (compared to their agreement with the Norwegian government through the Ministry of Transport and Communications. The agreement applies to the Bergen-Kirkens route. The amount decreased due to a new agreement that reduced the number of ships to 7 from 11. The decrease in revenue was driven by the impact of the Covid-19 pandemic and Hurtigruten Group received \$31.72 million from the Norwegian Government Business Compensation scheme which was set



up to support enterprises with a significant drop in revenue caused by Covid-19. Furthermore, the Hurtigruten group had an operating loss in 2021 of \$216.2 million. [5]

CalMac

CalMac Ferries is a UK-based ferry system that serves over 50 ports and harbors in Scotland and the Scottish Isles (see Appendix C). CalMac has a fleet of 35 passenger and vehicle ferries [6]. The system's mission statement is to "...provide lifeline ferry services which are safe, reliable and affordable to the Clyde and Hebridean Islands... [7]"

Communities served by the system are either located on mainland Scotland or on the surrounding Scottish Isles. Routes typically run either between mainland Scotland and the isles, or from island to island. Routes range in distance from 0.5 to 93 nautical miles and in duration from 5 minutes to upward of 7 hours.

CalMac ferries provides service to approximately 4.5 million passengers, 10 thousand coaches and 1.4 million cars annually. CalMac reports daily performance data, which tracks the number of cancelled, additional, and actual sailings that occurred each day. "Performance to Timetable" is published as a measure of actual sailings to scheduled sailings. The highest level of service for most routes occurs in the summer operating season, typically between May and October.

For 2022, CalMac had the following fiscal information [8].

Table 2: CalMac 2022 Fiscal Information

		2022 (IN 000'S)
Expenses	Cost of Sales	(\$248,293)
	Administrative Expenditure	(\$35,599)
	Other	(\$3,144)
	Total Expenses	(\$287,036)
Revenue & Funding	Operating Revenue	\$87,118
	Gov't Contract & Inter Group Management Fees	\$195,324
	Total Revenue & Funding	\$282,442
	Total Earnings	(\$4,594)

In 2012, the Transport Scotland issued the Scottish Ferry Plan which set a path forward for the next 10 years. This is the most recent plan identified by the AMHS Comprehensive Long-Range Plan Team. The plan focused on things that mattered most to the communities: "how much they pay for their services; the level and type of services provided; who is responsible for providing these services, and how they can ensure that no community feels vulnerable about the future of their ferry service; whether ferry services are accessible to all and whether services are provided in the most environmentally friendly way... The intention of the report was to repeat it every 5-6 years or before the tendering of each set of ferry services. [9]" The goal of repeating the report is to ensure that communities continue to receive ferry services that meet their changing needs, the fare levels remain consistent and that the communities and island



economies can grow in the knowledge that there is continued certainty over their vital ferry services.

The report includes the purpose of the report and the framework of how the review should happen. It also includes sections on:

- How ferries should be funded and procured
 - Future Investments required
 - Future Procurement Issues – there is a separate document for the future approach to ferry procurement
- What kind of ferry services should be funded
 - Routes and Service needs based assessment
 - Plans for each community or sets of communities
 - How funding will be prioritized
- Fares
 - Fare setting balance of public sector affordability and community sustainability
 - Road Equivalent Tariff
 - Same rate per mile for all routes
- Who should be responsible for providing ferry services
 - Scottish Government Involvement
 - Local Authority Ferry Services
 - Ferry Regulator
- Accessibility
- Environmental Issues

CalMac is building two ferries that are dual fuel and can operate either on liquefied natural gas (LNG) or marine gas oil (MGO). CalMac is currently working with the Scottish Government to obtain supplies of LNG.

CalMac Ferries Ltd (CFL) is a subsidiary of David MacBrayne Ltd and is wholly owned by Scottish Ministers. CFL was previously known as Caledonian MacBrayne Ltd, however, the Scottish Ministers restructured the organization in 2006 in response to a European Union (EU) requirement that the ferry operations be openly tendered to EU companies. David MacBrayne Ltd was created as a holding company with CFL as a subsidiary to operate vessels and ports. David MacBrayne is a commercial company that is solely owned by the Scottish Ministers who also created Caledonian Maritime Assets Ltd (CMAL) as a separate asset holding company for vessels and piers.

CFL leases vessels from CMAL on a 25-year "Bare Boat" charter basis.

50% of the terminals used by CFL are owned by CMAL but operated by CFL. CFL also uses (but does not operate) terminals owned by port authorities (25%), local municipalities (20%), and private owners (5%). CFL pays berthing fees for every terminal they use.

The clear division between operating company and asset holding company allows CFL to pursue operating opportunities outside the UK. Most notably, CFL and a joint partner, GPA Holdings, were awarded a 35-year contract to run a major port that is owned by the UK Ministry of Defense at Marchwood. The revenue from this contract will flow back to the Scottish Ministers.

CFL is directly governed by a board of directors.



Timetables are negotiated with the Scottish Government. CFL proposes an operating cost by routes to the Scottish Minister of Transportation. The government then analyzes fares that would have to be collected to support this cost against the community impact, both financial and social. They then determine if a tariff will be charged. Any difference between CFL's operating cost and the determined tariff is paid to CFL as a subsidy from the government.

CFL is allowed to retain 5% return on capital, any profit above this threshold is returned to the government which effectively decreases the required subsidy.

Quarterly meetings are held in conjunction with the CMAL and Transport Scotland, to solicit any concerns and feedback from the community.

Scotland uses a Road Equivalent Tariff (RET), which ensures that the fares are similar to the equivalent cost of travel by road. Since its inception, this has decreased fares on longer routes, and ridership has doubled.

Shetland Island Ferries

Shetland Island Ferries is a public ferry system that provides service to 15 ports across eight of the Shetland Islands (see Appendix D) providing a vital link for nearly 3,500 people. located off the coast of northeast Scotland. The ferry services are specified by ZetTrans and provided by the Shetland Island Council. Shetland has a fleet of 12 passenger and vehicle ferries. The Shetland Island Council's value statement is "Excellent service is at the heart of everything we do. We provide excellent service by taking personal responsibility and working well together."

Communities served by the system are either located on mainland Shetland or on surrounding islands. Routes typically run between a mainland port and a surrounding island with a few routes connecting multiple surrounding islands to each other. Routes range in distance from 0.7 to 28.5 miles and duration from 3 minutes to 150 minutes. Some islands have service every day and for others the frequency varies from 3 to 12 sailings per week. The Fair Isle only has service during the summer.

In 2022, Shetland served more than 600,000 passengers and 380,000 vehicles, with the highest ridership in the month of August. Level of service remained relatively constant throughout the year, with number of journeys per month ranging between 4,600 in February and 5,600 in August.

Regional Transport Partnerships (RTPs) are statutory bodies responsible for bringing together key stakeholders in transport planning in an area to produce and deliver strategies which improve and enhance transport and travel. ZetTrans is the Shetland's Transport Partnership which is one of seven RTPs within Scotland. The membership of ZetTrans is made up of nominated members of Shetland Islands Council and representatives of Highlands and Island Enterprise (HIE) and NHS Shetland. There are also three observers/advisors to the Partnership.

Shetlands Island Council is the primary funder of ZetTrans and continues to face a significant challenge in achieving long-term financial sustainability with an expected cumulative funding gap of £102.8 million by 2026/27. ZetTrans needs to work with the Council to meet the future demand for transport with limited financial resources over the next five years [10]. The Shetland Transport Strategy Refresh 2018-2028 [11] documents what ZetTrans will do to maintain, enhance, and improve transport in the Shetland Islands. The document describes what needs to



be done, and why, and introduces ideas for how the goals can be achieved. There is an additional shorter range delivery plan that details the how, when, where of the plan.

ZetTrans is currently producing a new Regional Transport Strategy for 2022-2042 due to an evolving policy environment within Scotland.

In addition to the Regional Transport Strategy ZetTrans continues to embed the National Transport Strategy 2 (NTS2) [12] priorities into their policies. The priorities are:

- Improve our health and well-being;
- Take climate action;
- Reduce inequalities; and
- Help deliver inclusive economic growth.

The 2018 Strategy Refresh also set the following objectives [11]:

- To maintain, improve and expand the affordability, availability, flexibility and reliability of Shetland's lifeline transport links for both freight and passengers.
- To enable, develop and promote community, commercial, and flexible transport solutions when and where appropriate. To ensure the transport sector provides safe, inclusive and attractive travel options.
- To support all of Shetland's communities by securing equitable access to employment, training, leisure, health, goods and services.
- To support improved integration in transport ticketing, information, and services.
- To help create a healthier society and reduce Shetland's carbon footprint by promoting healthier, more sustainable and greener travel choices.
- To plan for changes in legislation, transport demand, supply, and funding.

For 2023-2024, the Scottish Government pledged to fully fund the ferries and included in their budget \$28.66 million which was an increase of \$6.94 million over 2022/23 funding to account for the following:

- Rising Fuel Costs – estimated at \$2.44 million
- Increased costs of maintenance – estimated at \$3.17 million
- Increased salary costs – estimated at \$1.26 million
- \$0.063 million – total various small increased cost estimates.

Washington State Ferries

Washington State Ferries (WSF) operates a fleet of 21 vehicle and passenger ferries to 20 different ports of call including 19 terminals across Puget Sound and the greater Salish Sea on 10 different routes (see Appendix E). All routes are offered multiple times a day and seven of the nine routes are served by multiple vessels operating simultaneously in order to keep terminal wait times low. It is the largest ferry system in the United States and the second largest in the world for vehicles carried. The system's mission statement is "We provide safe, reliable and cost-effective transportation options to improve communities and economic vitality for people and businesses.

Communities served are located on mainland Washington or on neighboring islands. Prior to the Covid-19 pandemic WSF operated one stop in Sidney, British Columbia, Canada, but since the pandemic they have not operated this route. Routes range in distance from 1.25 miles to 40 miles and in duration from 15 minutes to 150 minutes.



Prior to the Covid-19 pandemic WSF carried approximately 13.8 million passengers and 10.6 million vehicles for a total ridership of 24.5 million. In 2021, during the pandemic, WSF carried approximately 8.4 million passengers and 8.9 million vehicles for a total ridership of 17.3 million. In 2018, WSF commissioned a long-range plan to provide information about the needs of the ferry customers, establish operational and pricing strategies to meet those needs and identify vessel and terminal operations and capital requirements. The 2040 Long Range Plan [13] was completed in January 2019, and it included recommendations for short-, medium-, and long-term actions for WSF to pursue and focused on a set of investments and service enhancement to be implemented over 20 years. The plan included recommendations for 16 new ferries to replace aging vessels and to help stabilize the fleet.

The goals of the WSF long range plan were [13]:

- Sustainability & Resilience
 - Green the fleet and reduce WSF's environmental footprint through sustainable practices and environmental stewardship.
 - Plan for emergencies and climate change to sustain reliable service through 2040.
- Manage Growth
 - Increase walk-on ridership.
 - Spread out demand.
- Customer Experience
 - Provide better trip-planning information.
 - Reduce customer wait times.
 - Enhance multimodal connections and accessibility.
- Reliable Service
 - Replace aging vessels and invest in new vessels to maintain reliable service.
 - Preserve and improve terminals to enhance safety and operations.
 - Invest in attracting, retaining, and strengthening the workforce.
 - Implement technology-based solutions that improve system-wide reliability.

WSF is currently working to transition to an emission-free fleet through a hybrid electric ferry system. To transition to a hybrid electric fleet, WSF is working on the three key elements of the electrification system – building new vessels, converting vessels, and electrifying the terminal. In 2022, WSF secured \$1.33 billion to build up to five hybrid electric Olympic Class vessels, complete up to four vessel conversions, and to bring power to terminals in central Puget Sound. WSF is also working to convert three of the Jumbo Mark II vessel to hybrid electric. [14]

WSF is run by the Washington State Department of Transportation. The 2023-2025 proposed Washington State budget includes over \$761 million for WSF. This does not include any money that WSF receives from the federal government. In 2022, WSF received \$67.9 million in FTA grants and \$48.4 million in Coronavirus Response and Relief Supplemental Appropriations Act (CRRSAA) and American Rescue Plan Act (ARPA) funds. Not including these funds, the total revenue for 2022 was \$163.4 million and the total expenses were \$276.5 million.



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Appendix A
BC Ferry Route Map & Fleet



BC Ferry Routes



BC Ferry Fleet

Vessel	MAXIMUM CAPACITY		Vessel	MAXIMUM CAPACITY	
	Passengers & Crew [^]	AEQ [*]		Passengers & Crew [^]	AEQ [*]
<i>Spirit of British Columbia</i>	2,100	358	<i>Skeena Queen</i>	450	92
<i>Spirit of Vancouver Island</i>	2,100	358	<i>Mayne Queen</i>	400	58
<i>Coastal Celebration</i>	1,604	310	<i>Bowen Queen[~]</i>	400	61
<i>Coastal Renaissance</i>	1,604	310	<i>Powell River Queen</i>	400	59
<i>Coastal Inspiration</i>	1,604	310	<i>Island Aurora</i>	399	47
<i>Queen of Coquitlam</i>	1,494	316	<i>Island Discovery</i>	399	47
<i>Queen of Cowichan</i>	1,494	312	<i>Island Gwawis</i>	399	47
<i>Queen of Oak Bay</i>	1,494	308	<i>Island K'ulut'a</i>	399	47
<i>Queen of Surrey</i>	1,494	308	<i>Island Kwigwis</i>	399	47
<i>Queen of New Westminster</i>	1,332	254	<i>Island Nagalis</i>	399	47
<i>Queen of Alberni</i>	1,200	280	<i>Quinsam</i>	400	63
<i>Northern Adventure</i>	640	87	<i>Quinitsa</i>	300	44
<i>Northern Expedition</i>	638	115	<i>Kuper</i>	269	26
<i>Salish Orca</i>	600	138	<i>Quadra Queen II</i>	200	26
<i>Salish Eagle</i>	600	138	<i>Kahloke</i>	200	21
<i>Salish Raven</i>	600	138	<i>Baynes Sound Connector</i>	150	45
<i>Salish Heron[†]</i>	600	138	<i>Northern Sea Wolf</i>	150	35
<i>Malaspina Sky</i>	462	112	<i>Tacheq</i>	150	26
<i>Queen of Cumberland</i>	462	112	<i>Klitsa</i>	150	19
<i>Queen of Capilano</i>	457	100	<i>Kwuna</i>	150	16

^{*}Automobile Equivalent (AEQ) is used to determine vessel capacity based on a standard vehicle measure of 6.1 x 2.6 metres, roughly equal to a full-size family vehicle

[†]Entered service May 6, 2022

[~]Retired from the fleet March 27, 2022

[^]There are multiple passenger licences for our fleet, the passenger and crew licence listed are the maximum



Appendix B
Hurtigruten Ferry Route Maps



The Original Norwegian Coastal Express



The North Cape Express

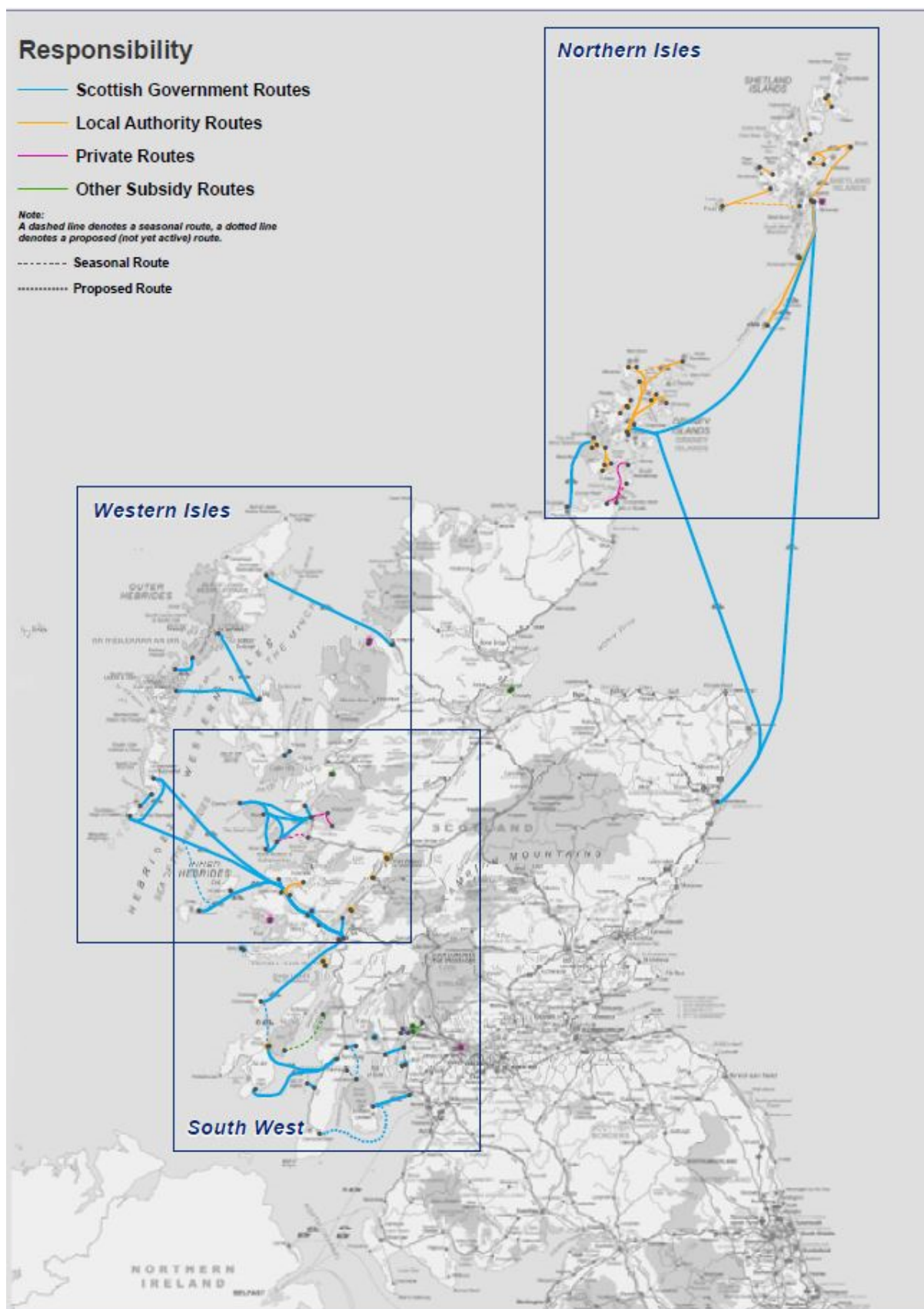


The Svalbard Express



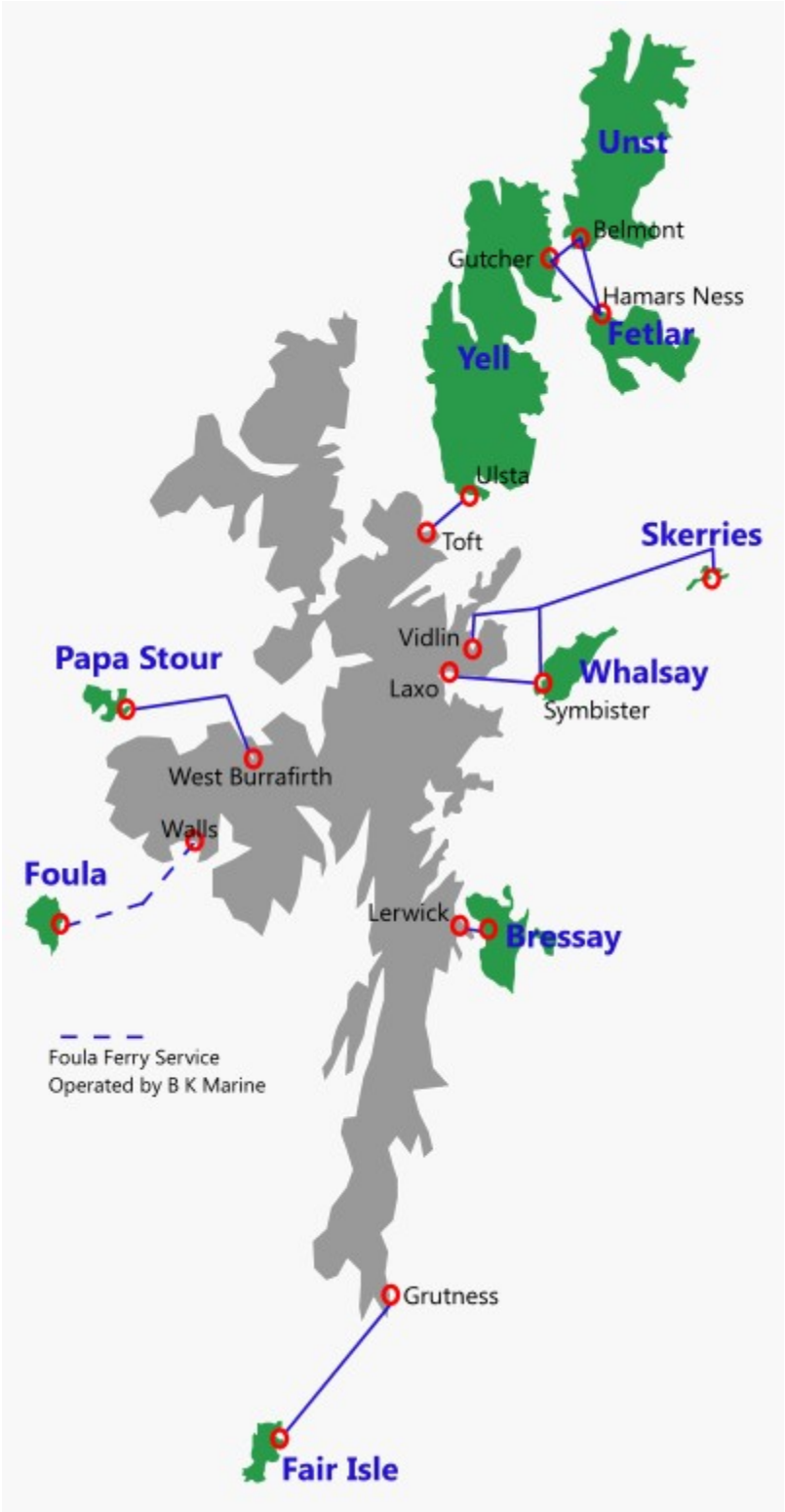
Appendix C
CalMac Route Map





Appendix D
Shetland Ferries Route Map





Appendix E
Washington State Ferries Route Map



