Appendix A

Vancouver Island Rail

Initial Business Case

Island Corridor Foundation – May 2022

Contents

Executive Summary

Today, Vancouver Island is a diverse economic and cultural centre that regularly ranks among Canada's most desirable places to live, work, and play. Over the past several years the Island has experienced tremendous economic and population growth which has created challenges for the Island transportation network. Increases in congestion and travel time, and reduced network reliability have combined to limit affordable, accessible, and environmentally sound transportation options.

Transportation options on the Island for the movement of people are primarily auto or highway-centric and are heavily focused on personal automobiles. This is of particular importance to those without access to a personal automobile, who cannot afford to or choose not to drive. Lack of access to an efficient transportation network serves to limit accessibility to jobs, affordable housing, education, and supportive services and inhibits resident connectivity.

The same lack of transportation options applies to the movement of freight on Vancouver Island, resulting in increased costs to Island residents and limiting economic opportunity for the Island. Consumer goods transported to the Island are delivered almost entirely by barge or BC Ferries and distributed throughout via the Island highway system. The same applies to the movement of products originating on Vancouver Island or freight that could be handled through island ports for furtherance to destinations off the island. The lack of rail service to Island ports deprives shippers of combined efficiency of rail and island ports, and therefore the opportunity to compete with other west coast ports, by limiting access to and from markets throughout North America.

Transportation is the single largest contributor to greenhouse gas emissions, growing at a rate of 23% between 2007 and 2019 with auto emission estimated to be 41% of provincial emissions. Continued reliance on road transportation as our primary transportation method combined with investments that will induce growth in road transportation, will only exacerbate this trend and threaten our ability to meet our environmental goals of an overall reduction in greenhouse gas emissions.

The business case presented proposes to restore passenger and freight rail service to Vancouver Island by upgrading the existing Island Rail Corridor. The business case draws on the Island Rail Corridor Condition Assessment (IRCCA), commissioned by the British Columbia provincial government in 2020, as the basis for the proposal and is intended to be a decision-making tool to assess the strategic and economic rationale for restoring rail to the Island.

The proposed solution provides for a robust commuter system operating within the Capital Regional District (CRD), intercity commuter services into the CRD, regional trains between areas outside the CRD, as well as freight operations throughout the entire Island, with particular emphasis on our ports.

Business Case Results

The proposed service, fully integrated into the existing transportation network, will:

- provide a safe, efficient, reliable, and resilient transportation link between Island communities
- provide improved access to specialized services, businesses, and entertainment options
- enhance and accelerate the growth of Island economies by providing access to new markets by connecting our economic centres and port facilities and lowering costs for shippers to access the North American rail system
- promote environmental sustainability by providing an intercity and commuter passenger service that provides an alternative to reduce reliance on automobile and highway transportation
- add service for disadvantaged members of communities

Economic Case Results

Project Cost

In the development of the business case, a review of the service options outlined in the Island Rail Corridor Condition Assessment was undertaken. A Hybrid Intermediate Phase approach was chosen as the preferred option and will deliver very similar results at a much lower cost:

Combined Cost	
Hybrid Intermediate Upgrade	$368,000,000
Soft Costs	$5,000,000
Siding Capacity Upgrades	$5,000,000
Station Platforms	$3,000,000
Total Construction Costs	$381,000,000
Rolling Stock Costs	$50,000,000
Total Project Costs	$431,000,000

Table 1 Economic Case Results

Economic Impact of Construction

The Island Corridor Foundation (ICF) commissioned an economic impact report on the upgrades to the rail corridor. The report was based on a 2020 construction budget of $304 million and revealed that the impact of the construction is estimated to be $470 million and will support an estimated 2,200 person-years of employment in the B.C. economy, with total labour income of $147 million. This is an average of $67,000 per year for a full-time position.

Operating Revenue and Costs

Operating revenue and costs have been determined based on the train service and frequency outlined in the business case. The operating revenue has been determined using conservative, anticipated, and optimistic scenarios. The costing is based on the operation of a scheduled railway that can accommodate the estimated ridership and freight services outlined in the business case and therefore costs have been fixed for all three scenarios.

There will be some cost variability in the operation of excursion services however the operation of excursion trains is assumed to be a cost-plus operation, ensuring profitability. While the excursion market represents a considerable revenue opportunity, given its variability and need to build the services to suit market conditions, the business case does not include revenue for excursion services.

	Revenue	*Costs*
Conservative	$12.7 million	$12.8 million
Anticipated	$16.7 million	$12.8 million
Optimistic	$23.4 million	$12.8 million

Table 2 Operating Revenue and Costs

The most conservative scenario estimates the service will be in a break-even position at start-up, with anticipated revenues and costs providing operating profits.

Recommendation

The business case confirms there is an urgent need to provide safe, efficient, reliable, environmentally friendly, and economically viable transportation options on Vancouver Island. The business case demonstrates that rail can contribute to the immediate and long-term transportation needs of the Island, is economically viable, and will contribute to a robust and environmentally sustainable inter-regional transportation network.

The business case was developed as a tool to assess the strategic and economic rationale of restoring rail to the Island and to provide the basis for an approval in principle by stakeholders to further project development.

Upon approval, it is recommended that the provincial Ministry of Transportation and Infrastructure (MOTI) and the ICF form a joint multi-disciplinary team to oversee the development of an Updated Business Case.

Background

Built in 1886, the Vancouver Island Rail Corridor has served the Island's population and industries for over 135 years. Over its history, the corridor has served as one of the key components of the transportation network on the Island, moving people and freight over a 290-kilometer system spanning from Victoria to Courtenay and Parksville to Port Alberni.

Originally constructed by Robert Dunsmuir, the corridor was sold to Canadian Pacific in 1905 which had continuous operations on the Island until the late 1990's when it turned passenger operations over to VIA Rail and sold off its freight operations to Rail America in 1998.

It became clear in 2003 that Rail America intended to cease rail operations. Recognizing the socio-economic importance of the corridor the five Regional Districts and 14 First Nations wherein the corridor operates formed the Island Corridor Foundation (ICF) to acquire, preserve, and develop the rail corridor on Vancouver Island.

The ICF was successful in acquiring the corridor in 2004 however decades of limited capital investment, and insufficient maintenance had greatly diminished its ability to carry freight and passengers efficiently and effectively. The VIA Rail passenger service was ceased in March 2011, due to deteriorating track conditions and the inability of the rail operation to maintain the train speeds required to meet the market demands of the passenger service.

Today, freight service is restricted to the Nanaimo operating area, while always maintaining safe operations, under less-than-ideal conditions, through an operating agreement with Southern Rail of Vancouver Island (SVI).

Funding to repair a significant portion of the corridor was achieved in 2015 however the funding was put on hold and finally canceled following the filing of a lawsuit against the ICF. The lawsuit was dismissed on June 30th, 2020, and dismissed again on appeal on Sept 14, 2021, with conditions. The Appeals court held that while the corridor could be held for railway purposes it could not be held indefinitely. To address this issue the court put in place a time limitation of 18 months for Canada to determine whether it will approve funding for infrastructure improvements on the segment of the corridor involved in the lawsuit. If Canada does not make the determination the case can be brought back to the court.

In 2018 the Premier held a roundtable meeting of stakeholders to discuss the future of the corridor. The stakeholders consisted primarily of First Nations, Regional District representatives, and Mayors. Support for the restoration of rail service on the corridor was almost unanimous among the stakeholders. Following the meeting, the province undertook an in-depth assessment of the corridor to determine its condition and to develop an understanding of the costs associated with restoring the corridor.

The Island Corridor Foundation has utilized and expanded upon the provincial assessment to develop an initial business case. The business case can be used as a tool to support evidence-based decision-making for investment in the rail corridor to provide commuter, inter-regional, freight, and excursion rail services on the Island.

First Nations Recognition and Consultation

The construction of the railway is an important part of Vancouver Island's history and has been a source of both pride and controversy. The building of the railway was one of the conditions for BC to join Confederation and were included in "The terms of union" within the British North America Act.

The terms of union required the government of Canada to undertake the construction of the railway. For its part, the government of British Columbia was required to convey, to the government of Canada, a tract of land "not to exceed 20 miles on each side of the said line". The exact conveyance was then entrenched in the Esquimalt and Nanaimo Railway act of 1875.

Over the course of the next 9 years the government of Canada worked to find a suitable contractor to undertake the construction of the railway and once an agreement was reached with the contractor conveyance of the land had to be made. The first transfer of land was done under the settlement act of 1884, and then two further grants were made in 1905 and 1910. Once completed the grants conveyed an approximate 20-mile-wide property amounting to 2 million acres of land, that ran from Esquimalt to a point north of Campbell River. The combined grants are known as the E&N Land Grant and have been the source of frustration and controversy since the inception of the railway.

At the time of the grants, neither the Federal nor Provincial governments recognized the rights of First Nations. There was no consideration given to the impact of the grants on First Nations and their traditional territories and there was no compensation offered for lands taken. This has been a central issue for island First Nations since the time of the grant and remains unresolved today.

The ICF recognizes and acknowledges the aboriginal title and rights of First Nations along the corridor, in which the ICF holds a fee simple interest, and the potential right of reversion to the First Nations that may apply if the corridor is not used for railway purposes. The issues emanating from the original land grants must be justly, and equitably, settled by the governments of Canada and BC, and in keeping with the recommendations and commitments of the Truth and Reconciliation Commission, and the United Nations Declaration on the Rights of Indigenous Peoples.

Given the history and nature of these issues, and the role government must play in their settlement, the business case does not address the necessary consultation, accommodation, and reconciliation process that need to be undertaken or the potential costs associated with that process as they are the responsibility of government and must be resolved regardless of this project. ICF strongly encourages governments to resolve these historical grievances.

ICF is a foundation that has both First Nations and Regional Districts as equal partners in the ownership of the rail as well as in governance. Through this governance structure, First Nations play a major role in determining the future of island rail. ICF is committed to working with First Nations along the rail to resolve any issues they may have with the rail corridor and operations. ICF's commitment is laid out in its Declaration on Aboriginal Title.

Problem Definition

Today there are few transportation options for the movement of people on Vancouver Island. The options that do exist for the movement of people are primarily auto or highway-centric and are heavily focused on personal automobiles. This is of particular importance to those without access to a personal automobile, who choose not to drive or can't afford to drive. Lack of access to an efficient transportation network serves to limit accessibility to jobs, affordable housing, education, and supportive services and inhibits residents' connectivity.

The same lack of transportation options applies to the movement of freight on Vancouver Island. Consumer goods arriving on the Island are delivered almost entirely by barge or BC Ferries and distributed throughout via the Island highway system. The same applies to the movement of industrial products moving to and from the Island. The lack of rail service to our Island ports deprives those ports of the efficiency of rail and access to and from mainland markets throughout North America. The lack of options for freight handling reduces market efficiency, increases costs, and places the safety and security of a critical supply chain at risk.

The current transportation network on Vancouver Island is reliant on a road network that is, in many areas, limited to a single highway that is susceptible to closure and delays from the volume of automobile traffic, accidents, weather events, and maintenance impacting the movement of all passenger and freight movements.

Transportation is the single largest contributor to greenhouse gas emissions in British Columbia at 41% of all emissions with road transportation accounting for 68% of those emissions. Perhaps of greater concern is that greenhouse gas emissions have grown at a rate of 23% from 2007 to 2019. Continued reliance and investments on an auto centric transportation system will only exacerbate this trend and threatens our ability to address our environmental goals through a reduction in greenhouse gas emissions.

A fully developed and integrated rail system on Vancouver Island would be of significant benefit in addressing each of these issues.

Key Factors

The primary transportation infrastructure supporting North-South travel on Vancouver Island is along the east coast of the Island, Highway 1 from Victoria to Nanaimo, Hwy 19 from Nanaimo to Courtenay and beyond to the northern most communities of the Island, and Highway 4 from Parksville to Port Alberni and those communities on the west coast of Vancouver Island.

Public passenger transportation services across the Island are provided by a combination of BC Transit bus services, and private bus services, between communities. BC Transit provides limited operations between the communities of Duncan and Victoria four times daily, and from Shawnigan Lake to Victoria twice daily. BC Transit has also recently started a new bus service operating between Duncan and Nanaimo with 7 planned trips daily. In addition, private bus services operate twice daily between Courtenay and Victoria and points in between.

Table 3 Transit map

Travel Time Variability and Reliability

A lack of options for improvement or expansion of the Island highway system, combined with continued population growth, will serve to further exacerbate travel time variation, and will reduce travel time reliability on the Island.

In September of 2020 the provincial government released its South Island Transportation Study which highlighted the challenges in travel time variability and reliability on the South Island stating:

"Greater variation in travel time indicates reduced reliability"

Unpredictable Travel Times
A typical vehicle trip in 2019 from Mill Bay to Victoria would take approximately: **43 minutes** during the morning peak and as long as **66 minutes** on some days. With expected growth, by 2038, this same trip would take: up to **87 minutes** on a typical day and up to **144 minutes** with variability of conditions.

Table 4 South Island Transportation Strategy MOTI Sept 2020

The South Island Transportation Strategy set out as one of its goals to:

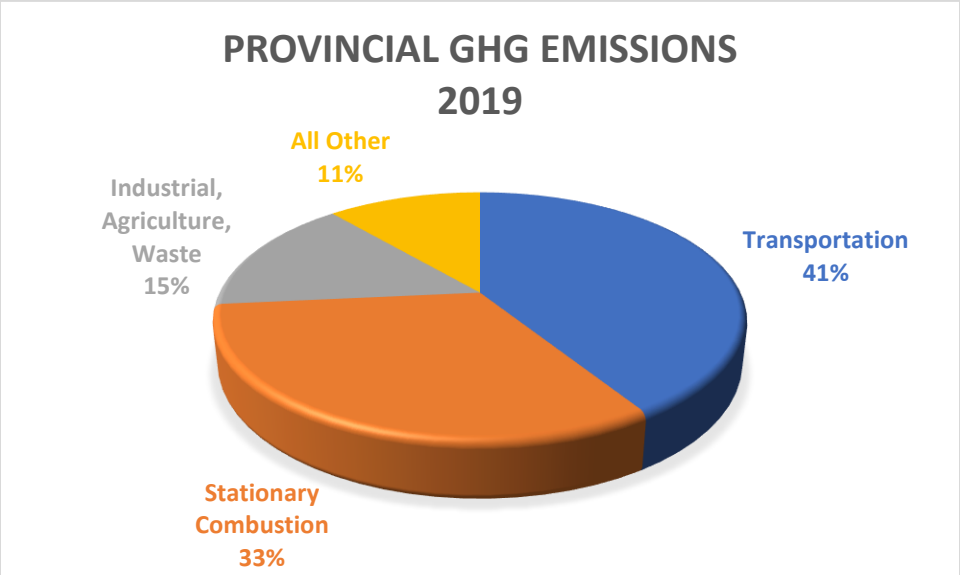
"Improve the safety and reliability of the transportation network

Safe, reliable and cost-effective networks for all travel modes are critical for the movement of people of all ages and abilities and goods throughout the region, and are necessary to support all of the goals of this Strategy."

Freight transportation on the Island is limited almost entirely to truck and trailer operations or a combination of rail movements that are transloaded to truck and trailers. Trucks are reliant on the single highway system on the Island and are susceptible to travel time variation and reduced travel time reliability as all other highway traffic.

Environmental Sustainability

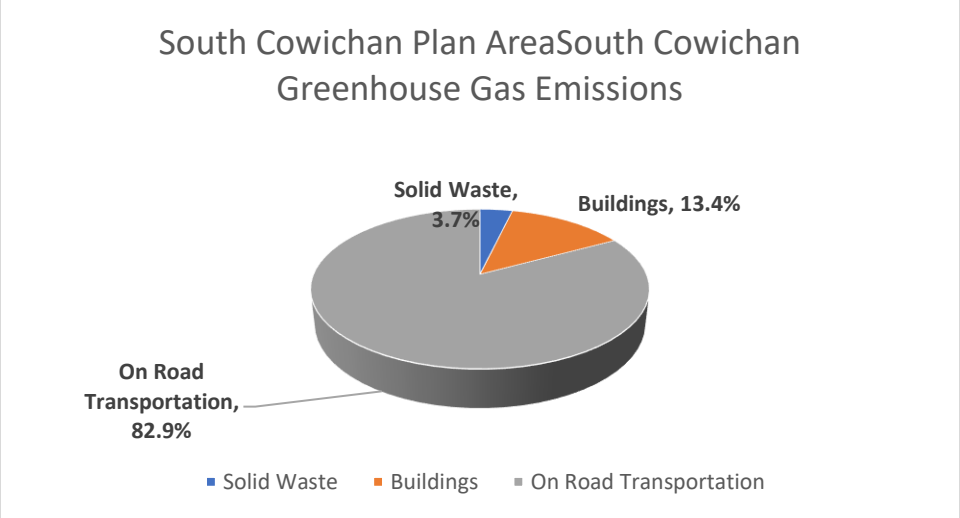
Transportation is the single largest contributor to greenhouse gas emission in British Columbia and represents the biggest threat to our ability to significantly reduce emissions targets set out in the province's legislated emissions reduction targets.



In total, transportation accounts for 41% of all greenhouse gas emissions in British Columbia

In the Cowichan Valley Regional District motor vehicle related transportation is by far the largest contributor to overall emissions.

Regionally, it represents an estimated 82.9% of the GHG emissions, as a result of driving to work, school, shopping and other daily activities

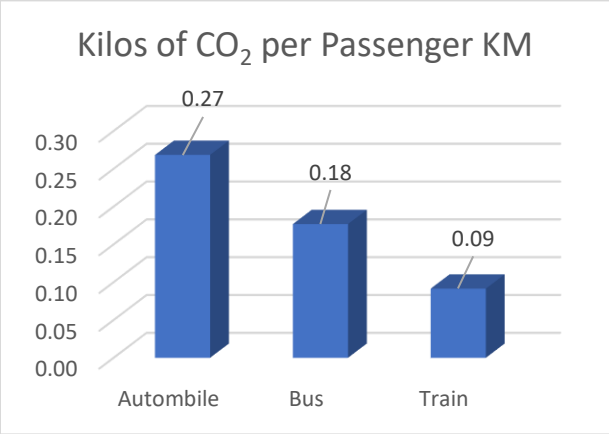


*https://www.cvrd.ca/DocumentCenter/View/7621/3510-SouthCowichan-OCP

Our continued reliance on personal automobiles, and investments in transportation infrastructure that induces increased use of personal automobiles, threatens our ability to lower our greenhouse gas emissions to a level consistent with the objectives of the provincial Clean Transportation program:

"The Ministry is working toward an interconnected transportation network that will support a clean, sustainable economy, address climate change, reduce greenhouse gas emissions, and bring B.C.'s communities together through coordinated transportation services people can count on."

Road transportation is the single largest contributor to greenhouse gas emissions and as such it is also the largest target for potential reduction. Significant reductions in road transportation emissions can be achieved through modal shifts in both the passenger and freight operations.



Modal shift to public transportation is one of the most effective actions individuals can take to reduce their individual carbon footprint.

Automobile travel produces 1.5 times the CO_2 per passenger kilometre of a bus and 3 times that of a commuter train.

Trains are four to five times more efficient than trucks. Just one locomotive can haul a tonne of goods more than 220 kilometres on a single litre of fuel, while removing upwards of 300 trucks from our congested roads in the process

Economic Development

Vancouver Island enjoys a diversified economy that includes technology, advanced manufacturing, agri-foods, value-added wood manufacturing, and post secondary education. The recent designation of Vancouver Island as free trade zone promises to enhance economic activity on the island.

The Island has a significant amount of under-utilized and undeveloped industrial land with deep water access available for development. Island ports are actively implementing strategies to optimize their unique strengths and potential through the use and expansion of their facilities. It is critically important that transportation infrastructure can support continued growth.

Rail provides economic advantages to Island-based industry by providing efficient and cost-effective access to markets throughout North America and the world. Given the fixed nature of rail, it provides investment certainty and promotes and attracts economic development. Additionally, Vancouver Island ports, combined with rail, can serve as loading and unloading facilities with rail connections throughout North America.

Vancouver Island is also a premier travel destination that attracts millions of people to the Island each year. Overall tourism revenue in the province was approximately $22.3B in 2019 before the pandemic with Vancouver Island accounting for an estimated 19% of all tourism in the province.

In its November 2021 report, Destinations Canada, a crown corporation that promotes Canada as a tourism destination, defined some challenges that Canadian Tourism is facing and the critical role transportation plays:

"In the short to medium term, availability of transportation — both air and ground — will be limited, posing barriers to connecting travelers with their destinations."

"Access to ground transportation is increasingly limited across the country. Currently, it is inconsistent and expensive, creating challenges to the movement of travelers once in-destination."

"In other cases, route cutbacks may leave single operators serving some destinations with a negative impact on pricing for travellers. Together, reduced air access and limited ground transportation will directly impact both the cost and ease of travel from one destination to the next destination."

Vancouver Island has seen a reduction in available ground transportation services with the loss of regional rail and bus transportation. Limited availability for transportation has created barriers to travellers and combined with the constraints of the highway system, exposes visitors to the same closures, delays, and transportation risks faced by residents. Left unaddressed, these challenges will become more prominent and reduce the marketability of Vancouver Island as a premier travel destination risking a significant economic contributor to the Island economy.

Demographics and Population Growth

Vancouver Island continues to experience significant year over year population growth. As of July 1, 2020, of the 162 reported B.C. municipalities, sixty were larger municipalities with a population over 10,000, and thirty small municipalities had fewer than 1,000 population. When ranked by population growth during 2019-2020, six out of the top ten large municipalities were on Vancouver Island.

Name	2019 Population	2020 Population	Change	% Growth
Langford	42,024	44,069	2045	4.9%
Sooke	14.573	15,083	510	3.5%
Colwood	18,908	19,373	465	2.5%
Courtenay	28,184	28,862	678	2.4%
View Royal	11,574	11,829	255	2.2%
Parksville	13,407	13,685	278	2.1%

Table 5 Prepared by BC Stats: Demographics and Population Growth

The rail corridor operates through five of the seven regional districts on Vancouver Island. Over the next 16 years each of the regional districts is projected to continue to experience significant growth, adding almost 170,000 new residents to the Island.

Projected Growth: Regional Districts	Population (2016)	Population projection (2028)	Population projection (2038)	Growth 2016 -2038
Capital Regional District	419,852	483,409	541,781	29%
Cowichan Valley Regional District	87,551	97,201	104,792	20%
Regional District of Nanaimo	162,617	190,382	212, 156	31%
Comox Valley Regional District	69,484	82,473	91,165	31%
Alberni Clayoquat Regional District	32,305	34,818	35,581	10%
Totals	771,809	888,283	985,475	28%

Table 6 Projected Growth: Regional Districts

Sources: BC Population Estimates & Projections

The pace of population growth on Vancouver Island has put considerable pressure on the existing constraints of the transportation network. The Island is forecast to continue its dramatic pace of growth, estimated to be 28% from 2016 to 2038. Growth will drive further, and significant, deterioration in our ability to move people and freight safely, reliably, and efficiently.

Stakeholder and Advocacy Support

Stakeholder and Advocacy groups have demonstrated strong support for the restoration of rail service on Vancouver Island:

Premier's Stakeholders Roundtable Meeting - Dec 2018

At a meeting hosted by the Premier in 2018 approximately 35 representatives of Island stakeholders including First Nations, Municipalities and Regional Districts recommended that the Island corridor should be considered key infrastructure and that rail service should be restored to the Island to ease traffic congestions and boost economic development

Capital Regional District Mayors Letter – Feb 2019

The thirteen mayors of the Capital Regional District send a joint letter to the Premier asking for immediate action to get the train running between Langford and Victoria and a commitment to the entire corridor.

Association of Vancouver Island and Coastal Communities (AVICC) resolution – April 2019

The AVICC passes a resolution asking that the province take immediate action to provide sufficient funding to restore the railway infrastructure of Vancouver Island and to ensure the corridor remains intact and available for future generations.

BC Chamber of Commerce Resolution – July 2020

The BC Chamber of Commerce passes a resolution recommending that the Provincial government work with the Federal government to:

- ensure that the Island Corridor remains intact and is designated as a transportation corridor with priority given to rail infrastructure
- fund phased improvements and upgrades to the E&N Rail Corridor to ensure it returns to operation and is capable of providing commuter and inter-city rail service, with an initial priority on commuter rail service in the greater Victoria area
- Commit to ongoing operational funding for the E&N Rail Service so it can function as a commuter and inter-city rail service, per the phased improvement plan.

Transport Action Canada – Strategic Railway Fund Request

In its submission to the House of Commons Finance Committee, the advocacy group Transport Action Canada puts forward repairs to the Island corridor as one of eight priority rail projects in Canada to be funded by the Federal Government

The Island Corridor Foundation (ICF) Survey – October 2020

The ICF conducted a public survey in September of 2020 to provide Vancouver Island residents with an opportunity to share their views and comments about rail service.

The survey gathered over 3500 responses from Island residents with over 80% agreeing that we need to revitalize rail services on the Island. Key in the findings is that 87% of respondents use a private car for their commuting needs and that 89% of respondents would consider using rail if it met their needs. In addition, 81% of respondents believe rail is an important or very important environmentally friendly transportation option.

Strategic Vision

The Island Corridor Foundation envisions that the proposed train service, fully integrated into the existing transportation network, will provide a safe, efficient, reliable, and resilient transportation link between communities across Vancouver Island. The service will include commuter, inter-regional, freight, and excursion trains, tailored to the specific and unique needs of each of the residents, businesses, and communities on Vancouver Island and will fully support the environmental goals set out in CleanBC.

Strategic Outcomes and Benefits

Transportation

Fully integrated passenger rail services will provide an enhanced transportation capability for travel across Vancouver Island connecting communities as far north as Courtenay, and as far south as Victoria. It will provide Island residents, and visitors, especially those who are unable, or unwilling to drive, with an alternative option to travel within their own communities or across Vancouver Island.

The integration of the passenger rail system is critical to the success of the new rail system to address first and last mile capabilities for users of the system. Usage of the system will be dependent on users' capabilities to easily access the system and their ability to efficiently travel from their point of origin to their destination.

Rail passengers will not be exposed to congestion and disruptions along the road network and will enjoy affordable, cost-effective transportation services with improved safety and greater travel time certainty.

Langford to Victoria will be equipped with a commuter service to avoid and reduce traffic congestion between the western communities and Victoria, providing an affordable, efficient, and reliable means of transportation for commuters that will reduce the dependency on personal vehicle transportation.

The integration of rail service with BC Transit services should attract additional riders to the BC Transit system through an overall expansion of available transportation service.

Quality of Life

A fully integrated passenger train service on Vancouver Island will improve the quality of life of island residents.

Northern communities will have improved access to specialized services, businesses, and entertainment options found in the two largest metro areas on the Island. In addition, residents will have a safe and reliable transportation option to access medical services only found in the large metro areas.

Housing price increases in the most populous Island areas have resulted in Island residents seeking housing in lower priced markets that are often significant distances from the job. Rail will provide these commuters with a safe, more efficient, and reliable commuting option. Rail will also facilitate regional land use planning targeted at transit-oriented developments with an emphasis on density leading to increased availability of affordable housing in areas where is most needed.

Visitors and Island residents will also enjoy improved access to the tourism and recreational services available throughout the Island.

The rail system will provide users with a host of quality of life benefits that could include lowered costs, convenience, alternatives, and less travel time, depending on their unique situation.

Economic Development

Introducing rail service to Vancouver Island will support economic and regional development on the Island. Improvements to our transportation system will enhance the movement of people, expertise, and ideas between the various regions of the Island.

Rail is a proven and reliable tool in driving development and economic growth. Connecting our economic centres and port facilities to the North American rail system will enhance and accelerate growth of the Island economies by gaining access to new markets and lowering costs of landed products. Improving usage rates at our deep-water ports supports their long-term viability and provides a unique opportunity to improve capacity limitations at all west coast ports.

Rail service will also boost, grow, and develop the tourism industry on Vancouver Island.

Environmental Sustainability

In March 2021, to help meet provincial greenhouse gas targets, the Province established new 2030 emission reduction targets that outline a reduction in greenhouse gas emissions of 29% in the transportation sector. Road transportation accounts for approximately 68% of all greenhouse gas emissions in the transportation sector and therefore it is critical that steps be taken to target reductions specific to road transportation.

A fully integrated rail system will promote environmental sustainability by providing a commuter passenger transportation alternative for island commuters and inter-regional long-distance trips between island communities. Modal shift from personal automobiles to trains will result in an overall reduction in transportation related emissions. Likewise, a modal shift of freight from trucks to rail will also result in an overall reduction in transportation-related emissions.

Equity

The introduction of an integrated rail service will be complementary to, and in addition to, existing shuttle, long haul bus, and BC Transit services and will be of particular benefit to those who:

- have accessibility needs that make it difficult to board and ride a bus;
- do not have a family member, friend or caregiver who can provide a ride;
- are unable to afford alternative travel modes or lack access to a personal vehicle

Rail is particularly important for communities that are remote, have increased distance and travel time or generally have very limited safe and reliable transportation options.

Alignment with Government Policy and Planning

The proposed Strategic Vision is in alignment with BC Government Policy and Planning and will have a positive impact on each of the goals outlined in the Ministry of Transportation and Infrastructure Service plan for 2021 to 2024 released in April of 2021.

Goal 1:	Invest in rural and urban infrastructure improvements that help build a strong, sustainable economy
Goal 2:	Improve transportation network efficiency to provide British Columbians with safe and reliable access to the services they depend on
Goal 3:	Invest in transportation options that enhance network efficiency and support climate change objectives
Goal 3.1:	Support local economies and communities through the continued development of a multi-modal transportation system
Goal 3.2:	Reduce greenhouse gas emissions from the transportation sector

Table 7 MOTI 2021/2022 – 2023/2024 Service Plan – April 2021

Proposed Solution

The Island Corridor Foundation proposes to move forward with the restoration of the Island Rail Corridor to support ongoing passenger and freight operations as outlined in this business case. Restoration of the corridor will require maintenance upgrades to the existing corridor and infrastructure to support the level of service defined in the business plan.

The introduction of rail service will provide enhanced transportation options for Island residents and visitors, reducing variability and improving network reliability. A new rail system will ensure equity and access to an efficient and affordable transportation network for all Island residents and visitors while taking meaningful steps towards meeting the goals and objectives set out in the CleanBC Transportation Plan.

Restoration Options Review

The development of the business case for the restoration of rail on Vancouver Island relies on the Island Rail Corridor Condition Assessment (IRCCA) commissioned by the British Columbia Ministry of Transportation and Infrastructure (MoTI) and released in 2020.

The 2020 WSP Island Rail Corridor Condition Assessment (IRCCA)

The British Columbia Ministry of Transportation and Infrastructure (MoTI) engaged WSP Canada Group Ltd. (WSP) to conduct a detailed evaluation of the base asset condition of the Island Rail Corridor on Vancouver Island. The assessment scope included the entire length of the rail corridor, Victoria to Courtenay (Victoria subdivision), Parksville to Port Alberni (Port Alberni subdivision), Wellcox Spur and Wellcox Yard. The assessment of the corridor covered railway infrastructure, grade crossings, bridges and rockfall activity.

The IRCCA report was built upon previous studies, including the 2009, Hatch Mott Macdonald report entitled "Evaluation of the E&N Railway Corridor: Baseline Reference Report" This report states *"The Railway condition is considered not to be compliant with BC Safety Authority Regulations and Rules Respecting Track Safety (Part 30) for Common Carrier Railways in the following areas:*

- *Vegetation growth in the ballast section and crossing approaches*
- *Clusters of decayed ties and decayed ties under the rail joints*
- *Worn, loose rail joints and frozen bolts."*

The WSP Team undertook site investigations between June and August 2019 and applied a Good/Fair/Poor rating for each track element to develop an overall condition assessment of each track component of the railway. The report states:

"Overall summarized results indicate that the railway corridor is in Poor to Fair condition, with the Victoria subdivision in a Poor to Fair condition and the Port Alberni subdivision in a Poor condition. The main issues contributing to the condition of the railway include but are not limited to:

- *Uncontrolled vegetation within and adjacent to the rail corridor*
- *Number of decayed ties exceed Transport Canada's "Rules Respecting Track Safety – 2012" regulations for Class 2 and Class 3 Track*
- *Single shoulder plates and angle joint bars are older technology and negatively impact track performance."*

Other capital and maintenance issues raised in these reports include the implementation of new automatic crossing signal conditions, which are currently impaired by vegetation or not up to current track safety standards.

IRCCA Report Recommendations

The IRCCA report recommended a phased in improvement approach to the restoration of rail service and provided costing information for each of the three phases:

- **Initial:** Re-establishes minimum freight and passenger service
- **Intermediate:** Upgrades higher freight loading for increased freight and passenger volumes and speeds
- **Ultimate:** Supports higher freight and passenger volumes

The phasing rationale is based on carrying out improvement work on the railway to meet Technical Safety BC and Transport Canada maximum allowable operating speeds. In each phase, a rail traffic volume Use Case is assigned and provides a corresponding track class speed and load characteristics.

Furthermore, breaking the corridor into six different segments allows flexibility for phased improvements to be implemented based on demand changes. Each phase is summarized below:

Initial Phase Improvement

Includes costs to upgrade infrastructure to re-establish a minimum rail freight and passenger service along the rail corridor.

Passenger Service	2-4 passenger trains per day 2-4 freight trains (10-20 car trains) per day
Track Characteristics	Class 2 Track Standard (25 mph Freight, 30 mph passenger). *
Track Loading	Not suitable for sustained 286,000 lb car loading
Upgrade Cost	$326,448,391

Table 8 Initial Phase Improvement
**Speeds refer to maximum safe allowable operating speed as per Technical Safety BC and Transport Canada's regulations*

Intermediate Phase Improvement

Includes costs to upgrade infrastructure beyond the Initial Phase. This phase will support higher freight loading (286k lb rail car loading) which will accommodate increased freight and passenger volumes and increased train speeds throughout the corridor.

Passenger Service	4 passenger trains/d up to 8 trains/d
Freight Service	4 freight trains (10-20 car trains)/d up to 4 million tonnes per annum (MTPA) or 133 cars/d total
Track Standard	Class 3 Track Standard (40mph Freight, 60mph passenger)*
Track Loading	286,000 lb car loading
Upgrade Cost	$552,023,932

Table 9 Intermediate Phase Improvement
**Speeds refer to maximum safe allowable operating speed as per Technical Safety BC and Transport Canada's regulations*

Ultimate Phase Improvement

Includes costs to upgrade infrastructure beyond the Intermediate Phase. This phase will support higher freight and passenger volumes than the Intermediate Phase. This phase is optimal for the implementation of a commuter rail service.

Passenger Service	More than 8 trains/d
Freight Service	Freight volumes above 4MTPA or 133 cars/d
Track Standard	Class 3 Track Standard (40mph Freight, 60mph passenger)*
Track Loading	286,000 lb car loading
Upgrade Cost	$728,778,304

Table 10 Ultimate Phase Improvement

**Speeds refer to maximum safe allowable operating speed as per Technical Safety BC and Transport Canada's regulations*

Summary of IRCCA Phase Improvements

	Track Standard	Passenger Trains/Day	Passenger Speed MPH	Freight	Freight Speed MPH	Max Load	Upgrade Cost in Millions
Phase							
Initial	2	2-4	30	2-4 Trains 20 to 40 Cars/Day	25	263,000	$326.5
Intermediate	3	4-8	60	4 Trains 133 cars/day	40	286,000	$552.0
Ultimate	3	8+	60	+133 cars/day	40	286,000	$728.8

Table 11 Summary of IRCCA Phase Improvements

The Initial Phase

The initial phase allows for passenger and freight service; however the level of service is not adequate to support passenger or freight operations. This is primarily due to reduced operating speeds making this level of service non-competitive with existing transportation options and the number of trains would be insufficient to manage commuter movements in the Langford – Vic West Corridor. Additionally, the maximum loading capacity is below industry standard and therefore not supportable.

The Intermediate Phase

The Intermediate Phase provides for a level of service that allows for the operation of passenger and freight services, as well as peak hour commuter service in the Langford – Victoria Corridor. The intermediate phase is closely aligned to the immediate needs of the Island and the service is scalable, providing flexibility to meet future demand when appropriate. Load capacity under the intermediate phase is at industry standard.

The Ultimate Phase

The Ultimate Phase offers very similar levels of service for both passenger and freight operations but allows for increased train frequency for both passenger and freight operations. This level of service and frequency is not contemplated within the next ten years, and it would be difficult to justify the additional investment required under this phase.

Recommendation of the Island Corridor Foundation

The level of improvement will be key in the success of the restored rail system. The improvement phases outlined within the IRCCA will support varying numbers and types of trains as well as varying operating characteristics and efficiencies.

The structure of the IRCCA does allow for the sequential implementation of each phase, with improved capabilities and increased costs with each phase. The phased approach would allow for the timing of investment in the corridor to meet demand, however it could also have the effect of limiting the marketability of the service and thereby diminishing its ability to succeed if investment is poorly timed.

ICF Adjusted Intermediate Phase

In reviewing each of the available upgrade plans it is clear the intermediate phase would be sufficient to meet the immediate needs of the Island, however the ICF has developed an adjusted intermediate phase that will deliver very similar results at a much lower cost.

The IRCCA intermediate upgrade plan calls for 115 lb rail to be installed on the entire corridor to allow for 286,000 lb loading capability across the entire system and to improve ride quality for passenger operations. There is need to have 286,000 lb loading capability in areas where there is likely to be high density rail operations, as is envisioned in the Nanaimo to Port Alberni corridor, however the remainder of the system is likely to have light freight operations which would allow for 263,000 lb loading and low-density passenger operations. The adjusted plan envisions the installation of heavy rail from Nanaimo to Port Alberni and in the Westhills-Victoria corridor.

Passenger Service	4 passenger trains/d up to 8 trains/d
Freight Service	4 freight trains (10-20 car trains)/d up to 4 million tonnes per annum (MTPA) or 133 cars/d total
Track Standard	Class 3 Track Standard (40mph Freight, 60mph passenger) *
Track Loading	286,000 lb car loading in heavy freight zones; 263,000 lb loading outside of heavy freight zones
Upgrade Cost	$368,000,000 – Adjusted to estimated 2023 Costs

Table 12 ICF Adjusted Intermediate Phase

**Speeds refer to maximum allowable operating speed as per Technical Safety BC and Transport Canada's regulations*

The adjusted intermediate phase is the recommended approach and has been used to determine the cost of restoration.

Statement of Estimating Risk, Accuracy & Contingency

The business case relies on the costing data and information contained within the IRCCA report. The adjusted intermediate phase costs have been updated to 2023 costs.

The IRCCA properly included contingency cost factors related to the upgrade of the rail corridor. Contingency should be viewed as an offset for coping with risk and uncertainties associated with the planning and implementation of the project and should consider the complexity of the project.

The IRCCA report had identified and applied a 50% contingency to the project costs and while this is still higher than expected, the business case includes the 50% contingency.

In addition to the contingency costs, the IRCCA report also provided for a "MOTI Contingency". In review with the Ministry, they clarified the additional costs are more properly described as "Soft Costs" and are outlined below:

Soft Cost	*Percentage*	*Dollars*
Construction Supervision	10%	$34.72 Million
Engineering	12%	$41.72 Million
Project Mgt & Supervision	10%	$34.72 Million
Total	32%	$111.16 Million

The impact of the fully applied MOTI soft costs to the project would result in an additional cost of approximately $111 Million. While the soft costs as outlined may be appropriate in the context of new construction, requiring significant design and supervision, this project is based on upgrading an existing rail system described in the IRCCA as:

"…the railway corridor is in Poor to Fair condition, with the Victoria subdivision in a Poor to Fair condition and the Port Alberni in a Poor condition. The main issues contributing to the condition of the railway include but are not limited to:
· Uncontrolled vegetation within and adjacent to the rail corridor;
· Number of decayed ties exceed Transport Canada's "Rules Respecting Track Safety - 2012" regulations for Class 2 and Class 3 Track; and
· Single shoulder plates and angle joint bars are older technology and negatively impact track performance."

Correcting these issues is considered a maintenance activity within the rail industry and would typically be undertaken by a qualified rail construction contractor with experience managing these types of projects. The project would require minimal engineering and supervision and given the nature of the work to be done, soft costs for the project are estimated to total $5 million.

Additional Costs not included in the IRCCA

Siding Capacity Upgrades - $5,000,000

The IRCCA reviewed the right of way capacity and the potential need for double tracking to provide for additional capacity and redundancy and determined that double tracking was not required to attain the levels of service contemplated in the report. While double tracking is not required there are areas that would provide significant benefits to the efficient operation of the railway through new or expanded siding capacity.

Increased siding capacity will provide flexibility for maintenance, reduce track switching delays, and minimize train conflicts in high density traffic areas. The exact locations and lengths of the sidings would be determined based on the level of service and equipment chosen.

Stations - $3,000,000

The Business case envisions the establishment of twelve stations along the corridor

STATIONS	
	Northern Terminus
INTERCITY STATIONS	- Courtenay - Qualicum Beach - Parksville - Nanaimo - Ladysmith - Duncan - Shawnigan Lake
COMMUTER STATIONS	- Westhills - Langford - Six mile - Esquimalt - Johnson St. Bridge
	Southern Terminus

Table 13 Stations

Each station will be equipped with a 100m x 5m concrete platform, a 5m x 2.5m covered shelter and a ticket machine. A cost of $250,000 is associated with the construction of each of these stations, resulting in a total cost of $3,000,000 for station construction along the entire line.

Rolling Stock - $50,000,000

There is a wide array of rolling stock that could be utilized in this service as outlined in the IRCCA. Each of the available equipment options has their own unique operating features, benefits, and costs.

While an in-depth review must be undertaken prior to the acquisition of rolling stock, the business case envisions the use of six "push-pull" trainsets consisting of two bi-level cars and powered by GM Diesel-Electric locomotives. This configuration has been chosen as they are widely used in North America as a flexible long commuter rail option. Go Transit in Greater Toronto and the Hamilton area and the West Coast Express in the Lower Mainland both employ this equipment.

Table 14 Rolling Stock

This option was also chosen for its ability to easily adapt to new, low carbon or zero carbon, locomotive power as it becomes available.

The service levels within the business plan will require four trainsets in daily service and a minimum of two trainsets to allow for planned maintenance intervals and equipment failures. Acquiring new equipment could take between 2 to 4 years from the time of ordering.

There can be significant price differentials in equipment types and given long lead times, suitable used or lease equipment may need to be acquired to support the anticipated start up. For the purposes of the business case a cost of $50,000,000 is assumed to be the highest cost associated with equipment acquisition.

Total Estimated Project Costs

Combined Cost	
Hybrid Intermediate Upgrade	$368,000,000
Soft Costs	$5,000,000
Siding Capacity Upgrades	$5,000,000
Station Platforms	$3,000,000
Total Construction Costs	$381,000,000
Rolling Stock Costs	$50,000,000
Total Project Costs	$431,000,000

Table 15 Total Estimated Project Costs

Cost Escalation and Inflation

The business case was developed utilizing the costs outlined in the IRCCA report issued in 2020 and escalated for inflation to reflect estimated costing to 2023.

Year	*Escalation*
2020	Base year
2021	3.0%
2022	5.5%
2023	6.0%

Environmental Assessment

Most of the work to be completed under this plan is classified as maintenance activity on an existing right of way that is commonly performed on an annual basis by Canadian and other North American railways. As such, it's restricted to the track encompassing only the steel rail and fittings, wooden ties, and clear crushed rock ballast section of an existing railway track structure and vegetation control measures. The proposed upgrade work is not subject to environmental assessment under the Environmental Assessment Act.

In cases where new construction is to be completed under this plan, like the construction of new sidings or passing tracks, or new stations, they will be subject to environmental review.

No activity is to be conducted under this plan that will have any potential for adverse impact to the environment and/or fisheries.

Train Operations

Business case train operations have been developed based on the performance characteristics of the Adjusted Intermediate Phase plan and consider the unique needs of the regions the trains will operate in.

The service proposal provides for four train sets to be used in scheduled passenger service on the Victoria Subdivision. In all cases it is assumed that train operations will be integrated with local transit service to provide the best possible service. A properly integrated system will result in modal shifts that will bring efficiencies to BC Transit operations and improve ridership on the bus system.

The scheduled passenger services will have two trainsets which will operate strictly as part of the commuter system between Westhills and Victoria West, and two trainsets will operate as intercity commuter and regional trains.

Freight service and excursion services will operate based on market conditions and demand. The service proposal provides for initial freight service consisting of one freight train each day, operating to various locations through the week. Freight service by location and frequency will be determined based on demand for each unique location and integrated with connecting barge services to and from the Island. Excursion services will be operated on an as is required basis.

Passenger Operations

Train 1 – Victoria Commuter 1

The first train serves as a Victoria commuter train that operates between the Westhills Station and the station located in proximity to the Johnson St. Bridge in downtown Victoria. This train will operate in this corridor from 6am-9am and 3pm-6pm, to move commuters during rush hour, and will not operate during non-commuter hours.

Train 2 – Victoria Commuter 2

The second train operates during the same commuter windows as train 1 (6am-9am & 3pm-6pm), while also operating less frequently throughout the day in this same section of track (Westhills Station to Johnson St. Station) to act as an alternative means of transportation for midday travel in Victoria. This midday service will offer 1 trip to and from Langford to Victoria every hour.

Trains operating in the commuter corridor will take approximately 30 minutes to travel between Westhills and Victoria. The timetable includes a one-minute stop at each of the stations on the route. The following table is an example of a timetable for one of the trains operating within the commuter corridor:

Commuter Timetable		
Northbound		Southbound
6:30	Victoria	6:30
6:41	Esquimalt	6:18
6:48	Six Mile	6:12
6:51	Atkins	6:08
6:55	Langford	6:05
7:00	Westhills	6:00

Table 16 Victoria Commuter

Train 3 – Intercity Train 1

The third train on the line operates as an intercity train that originates and terminates in Duncan. This train leaves in the morning heading towards Victoria, providing transportation for passengers commuting over the Malahat to Victoria. The train then makes a northbound trip from Victoria to Courtenay, and then back down to Victoria. Finally, it ends with one final run from Victoria to Duncan in the late afternoon returning commuters to the Shawnigan, Cobble Hill, and Duncan areas.

Train 4 – Regional Train

The fourth train operates as a regional train that originates in Courtenay. This train makes two roundtrips to Victoria from Courtenay each day. Its first departure is at 5:54 AM from Courtenay, allowing for a late morning arrival in Victoria. This train will then travel back to Courtenay, then make another trip down to Victoria during the mid-day, and finally a last trip back to Courtenay, arriving just after 8pm, at the end of the day in Courtenay.

Intercity and regional trains operating between Courtenay and Victoria stop at twelve stations along the route. Travel times between Courtenay and Victoria are scheduled to take 3 hours and 50 minutes, and travel times between Duncan and Victoria are scheduled to take 1 hour and 32 minutes and, in all cases, include a one-minute station stop. The following table is an example of a timetable for one of the trains operating between Victoria and Courtenay:

Timetable		
Northbound		Southbound
16:51	Victoria	9:44
17:02	Esquimalt	9:32
17:09	Six Mile	9:25
17:12	Atkins	9:22
17:16	Langford	9:18
17:21	Westhills	9:13
17:57	Shawnigan Lake	8:37
18:22	Duncan	8:12
18:48	Ladysmith	7:46
19:08	Nanaimo	7:26
19:39	Parksville	6:55
19:49	Qualicum	6:45
20:41	Courtenay	5:54

Table 17 Regional Train

Passenger Train Frequency

Train frequency was developed based on the need to provide a level of service that would make the service attractive and likely attain the highest level of modal shift and could be supported by the physical characteristics of the line once the required improvements have been made.

The following chart depicts the frequency of trains contemplated within each of the corridors within various operating windows. Trains originating in Courtenay and Duncan will operate to Victoria and are counted in the operating windows in the Westhills to Victoria corridor:

Train Frequency		
Segment	Operating Window	Total Trains
Westhills to Victoria	06:00 to 9:15	7
Victoria to Westhills	15:00 to 17:30	8
Westhills to Victoria	09:15 to 15:00	4
Victoria to Westhills	09:15 to 15:00	5
Duncan to Victoria	06:00 to 8:30	2
Victoria to Duncan	15:00 to 17:00	2
Nanaimo to Victoria	Daily	3
Victoria to Nanaimo	Daily	3
Courtenay to Victoria	Daily	3
Victoria to Courtenay	Daily	3

Table 18 Train Frequency

Freight Operations

Currently all rail cars arrive or depart Vancouver Island by rail barge that connects the Island with the Southern Railway of British Columbia. Today, freight operations and rail car movements on the Island are restricted to the Nanaimo operating area.

The business case has provision for a freight operation that will service the entire Island, with an emphasis on providing shippers with a consistent, reliable rail service. The business case provides for freight service 5 days per week with two trips per week to Port Alberni and one day per week to the North and South of Nanaimo.

Critical to the success of the business case will be the ability to provide efficient service to and from Port Alberni for freight to and from North American markets. The following table outlines the proposed schedule for the movement of goods from Port Alberni to rail connections on the mainland.

Transit time from Port Alberni to Class 1 interchange:

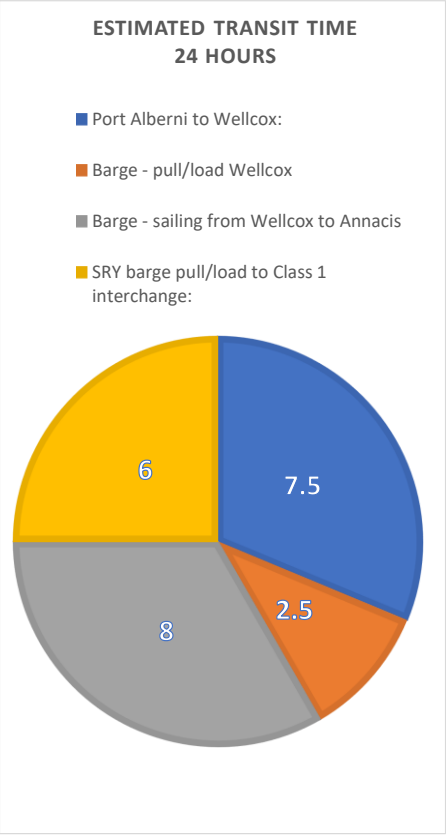
Port Alberni to Wellcox:	duration (hrs)	example schedule
Port Alberni Train released		12:00
Train prep (paperwork, air tests, train inspections)	1	
Depart Port Alberni		13:00
arrive Parksville	2.25	15:15
arrive Wellcox yard	1.25	16:30
Interchange time to Seaspan Ferries	3	19:30
Port Alberni to Wellcox:	7.50	

Barge - pull/load Wellcox	duration (hrs)	example schedule
Barge arrival		19:30
Pull barge	1	20:30
load barge	1	21:30
Barge prepares to depart	0.5	
Barge ready for departure		22:00
Barge - pull/load Wellcox	2.50	

Barge - sailing from Wellcox to Annacis	duration (hrs)	example schedule
Barge departs Wellcox		22:00
sailing time to Annacis	6	4:00
Interchange time from Seaspan to SRY	2	6:00
Barge - sailing from Wellcox to Annacis	8.00	

SRY barge pull/load to Class 1 interchange:	duration (hrs)	example schedule
Barge arrival		6:00
pull barge	1	7:00
load barge	1	8:00
SRY interchange with Class 1	4	12:00
SRY barge pull/load to Class 1 interchange:	6.00	

Total transit time Port Alberni to Class 1 Interchange:	**24.00**



The Port of Port Alberni enjoys a 2-to-3-day turnaround sailing time for Pacific Rim freight. The ocean and rail service will provide shippers with a competitive alternative to the Port of Vancouver and help relieve the current pressure and congestion at other west coast ports.

Excursion Operations

Excursion train operations would be provided on a demand basis with operations focused on cruise ship calls, visiting tourists, and as a rolling special event venue or transportation provider to Island events (sporting events, ski trains, etc.)

Excursion trains must be a high-quality hospitality product. This requires each run to be much more than a train ride. Destination, on board staff, and themed services play a key role in maintaining the demand for the service. Critical to success is guest experience and therefore partnering with an experienced tourist rail operator is considered as a first step in establishing excursion operations.

The operations of Excursion trains will be on demand by design to capitalize on cruise ship/tourism opportunities and to provide special event transportation.

Operational Costs

10 Year Maintenance Plan / Operational Plan/ Capital Plan

The estimated cost of maintenance and operations for the recommended service plan have been modeled over a 10-year period and are based on known 2021 labour and material rates and the recommended service levels in the Adjusted Intermediate Phase.

Infrastructure Maintenance Costs

Infrastructure maintenance costs include expected material and installation costs for track repairs, ballast resurfacing, culvert replacement, and bridge maintenance and repair. The costs are based on known costs and labour rates.

Train Operations Costs

Train operations costs include all expenses related to the day-to-day operations of the railway other than Infrastructure Maintenance Costs. Train operation costs, include management and unionized employee wages, fuel, G&A expenses, car hire, purchased services, etc. for the operation of the recommended passenger service level and includes the costs for a daily freight service.

Equipment Maintenance Costs

Equipment maintenance costs include all labour expenses and an estimated amount for parts replacement for equipment outside of warranty.

	Infrastructure Maintenance	Train Operations	Equipment Maintenance	Total
Year				
1	1,816,631	10,565,361	397,823	12,779,817
2	1,862,047	10,879,104	407,769	13,148,922
3	1,908,598	11,203,171	417,963	13,529,735
4	1,956,313	11,537,945	428,412	13,922,674
5	2,005,221	11,883,822	439,122	14,328,170
6	2,055,351	12,241,218	450,100	14,746,675
7	2,106,735	12,610,563	461,353	15,178,658
8	2,159,404	12,992,308	472,887	15,624,606
9	2,213,389	13,386,921	484,709	16,085,027
10	2,268,723	13,794,889	496,826	16,560,438

Table 19 Equipment Maintenance Costs

Capital Requirements

Due to the significant capital investment for the track rehabilitation infrastructure upgrade work, it is not foreseen that any significant capital work will be required in the first 10-year period.

Rather than increased capital requirements, a maintenance plan including a tie replacement program, and rail spot replacement approach will be implemented to keep the right of way, track, and bridges in optimal operating condition.

Annual Operating Revenue

Operating revenue for the project is derived primarily from Passenger Services and Freight operations defined as:

- Local Commuter
    - Operations with service between Westhills and Victoria West
- Intercity Commuter
    - Operations between Duncan and Victoria
- Regional Trains
    - Operations between Courtenay and Victoria
- Freight Service
    - Operations from Nanaimo to all points on the system
- Excursion Trains
    - On demand services throughout the Island

Local Commuter Revenue

Local commuter revenue was derived utilizing the South Island Transportation Strategy (SITS) and the 2017 Capital Regional District Origin-Destination Survey Report to determine the number of daily trips into and out of the downtown core. The data was further analyzed by community origin and destination to determine the total number of trips each day.

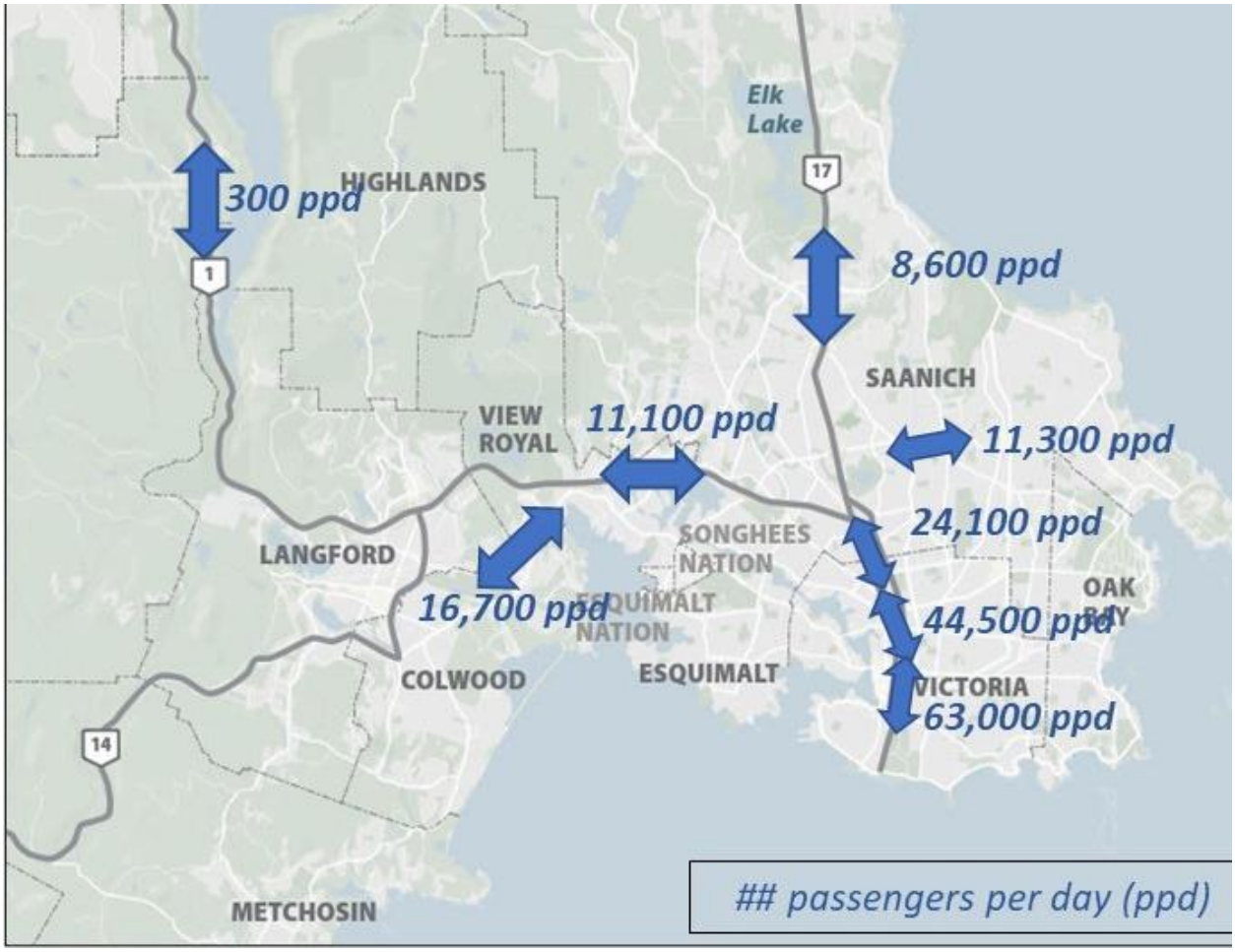


Table 20 Local Commuter Revenue

South Island Transportation Strategy – Technical Paper #2 – Sept 2020

The SITS identified a total of 27,000 daily riders on the Rapid Transit Corridor encompassing the Westshore and Saanich Peninsula corridors. Once adjusted for growth and considered in conjunction with the 2017 Capital Regional District Origin-Destination Survey report, it was determined there are approximately 35,000 people commuting to and from Victoria that would be within the catchment area that could be serviced by the train directly, or through a combination of train and other modes.

Rail would be a new entrant into the transportation network, so revenue has been determined using a modal shift capture and applying an anticipated fare rate structure within the local commuter corridor and applied to estimated one-way trips.

Modal shift was determined by comparing the unique characteristic of individual origin and destination pairs, including first and last mile analysis, total transit time, and costs associated with various modes including personal automobile, bus, cycling, and walking.

Rate levels were determined based on comparable rates for BC Transit.

Table 21 shows anticipated rates and rates of usage for each rate:

90 Minute Fare	Usage	Day Pass	Usage	Monthly Pass	Usage
$4.00	45%	$11.00	5%	$105.00	50%

Table 21 Anticipated Rates

Table 22 shows the annual revenue for Commuter service at various modal shift capture rates

Capture Rate	Passengers	Total Annual Revenue
4%	1428	$1,322,328
6%	2142	$1,983,492
8%	2856	$2,644,656
10%	3570	$3,305,820
12%	4284	$3,966,984
14%	4998	$4,628,148
16%	5712	$5,289,312
18%	6426	$5,950,476
20%	7140	$6,611,640

Table 22 Annual Revenue for Commuter Service at Various Modal Shift Capture Rates

At the start of operations, it is estimated that the new rail system will realize a modal shift of somewhere between 4% and 6% and increasing to 8% within one year resulting in revenues of approximately $2.6 Million annually.

Intercity Commuter Revenue

Intercity commuter revenue was derived utilizing the South Island Transportation Strategy (SITS) which identified approximately 30,000 passengers per day traveling into the Capital Regional District from North of the Malahat. When adjusted for growth and the inclusion of passengers traveling from the Cowichan Valley, the number of passengers is estimated to be approximately 32,000 passengers each day.

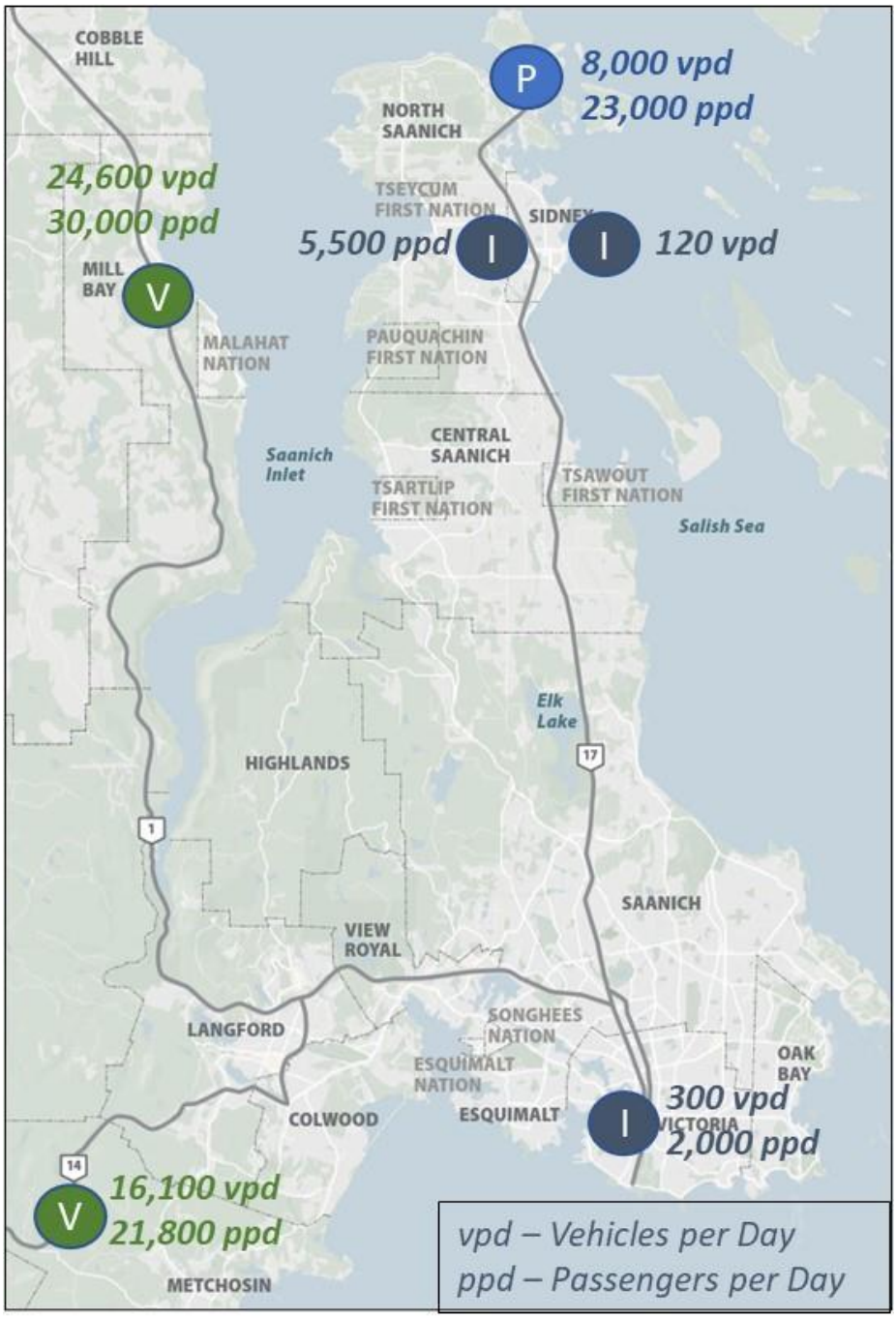


*Table 23 Intercity Commuter Revenue *South Island Transportation Strategy – Technical Paper #2 – Sept 2020*

Intercity Commuter Rail represents travelers into the Capital Regional District from a variety of origination points north of the Malahat. Revenue has been determined using a modal shift capture rate and applying an anticipated average fare rate structure within the intercity corridor and applied to the number of estimated one-way trips. Rate levels were determined based on comparable rates for BC Transit for the travelers from the Cowichan Valley to Victoria and bus rates on the Island Link bus service.

Modal shift captures shift from all other available transportation options within that segment of the corridor including buses and personal automobiles.

Those daily trips were then given a fare based on the following rates and usage levels of each fare:

90 Minute Fare	Usage	One Way Fare	Usage	Monthly Pass	Usage
$11.00	25%	$19.00	25%	$200	50%

Table 24 Fares

Table 25 shows the annual anticipated revenue at various modal shift capture rates

Capture Rate	Total Daily Commuters	Total Annual Revenue
4%	1,287	$3,322,954
6%	1,930	$4,984,432
8%	2,573	$6,645,909
10%	3,217	$8,307,386
12%	3,860	$9,968,863
14%	4,504	$11,630,340
16%	5,147	$13,291,818
18%	5,790	$14,953,295
20%	6,434	$16,614,772

Table 25 Annual Anticipated Revenue at Various Modal Shift Capture Rates

At the start of operations, it is estimated that the new rail system will realize a modal shift of somewhere between 4% and 6% increasing to 8% within one year, resulting in revenues of approximately $6.6 Million annually.

Regional Train Revenue

Regional train revenue represents revenue for all passenger movements with origination and termination points outside the local and intercity commuter operations. There is a vast array of potential origin and destination points that could be used by passengers on any one of the trains travelling between Courtenay and Victoria. Some potential origin and destination pairs:

Duncan to Nanaimo
Courtenay to Nanaimo
Parksville to Mill Bay
Shawnigan Lake to Nanaimo
Qualicum to Courtenay

Given the number of origin and destination pairs, and the lack of available data on traffic patterns between each of the pairs, the business case utilizes an average rate for regional service and an estimated number of daily passengers to determine the anticipated annual revenue. It is assumed the majority of these trips will be between major centres and as such the average one-way rate was determined using the current bus fares between larger centres such as Courtenay, Nanaimo, and Duncan.

Total Daily Passengers	Avg One Way Rate	Annual Revenue
100	$20	$600,000
150	$20	$900,000
200	$20	$1,200,000
250	$20	$1,500,000
300	$20	$1,800,000
350	$20	$2,100,000
400	$20	$2,400,000
450	$20	$2,700,000
500	$20	$3,000,000

Table 26 Regional Trains Revenue

At the start of operations, it is estimated that the regional trains will realize 150 to 200 one-way passenger trips each day, increasing to 300 one-way passenger trips each day, resulting in revenues of approximately $1.8 Million annually.

Other Passenger-Related Revenues

VIA Rail Contribution

Prior to the suspension of passenger service in 2011, passenger services on the Island were the responsibility of VIA Rail Canada, consistent with VIA Rail Canada's mandate:

> *VIA Rail Canada Inc.'s mandate is to **operate the national passenger rail services on behalf of the Government of Canada**, offering intercity rail services and ensuring rail transportation services to regional and remote communities.*

A new train service agreement was negotiated with VIA Rail in 2015 wherein VIA would provide annual deficit funding in the amount of $1.45 million, the equipment necessary to operate the service, and insurance. The operator would be responsible for the cost of operating the service, including crews, fuel, rolling stock maintenance and repair, fuel, etc. All ticket sales revenue would be given to the operator.

The service contemplated in this business case includes intercity rail service to regional communities and is therefore within the mandate of VIA Rail Canada. It is anticipated that a new train service agreement will need to be negotiated with VIA Rail Canada. Given the passage of time and the increased level of service contemplated in the business case it is estimated that a new train service agreement could result in a minimum $3.5 million funding agreement. Under the previous agreement VIA was required to provide the necessary equipment for the service and as such an opportunity to share the cost of new equipment for this service.

BC Transit Funding

The business case provides service that will operate within the Duncan to Victoria corridor and the new Duncan to Nanaimo corridor. Once train service is operational those services provided by BC Transit would become redundant. While not included in the revenue base for the business case the cost of those services could be allocated to the train service or utilized to support feeder transit to the train service.

Duncan to Victoria - $1.4 million
Duncan to Nanaimo - $1.0 million

Total Allocation - $2.4 million

Total Combined Passenger Revenue

Table 27 shows the expected ticket revenues for each type of service by modal shift as well as expected revenue from VIA funding and Transit allocation:

	Modal Shift			
	4%	6%	8%	10%
Local Commuter	$1,322,328	$1,983,492	$2,644,656	$3,305,820
Intercity Commuter	$1,983,492	$4,984,432	$6,645,909	$8,307,386
Regional Trains	$1,800,000	$1,800,000	$1,800,000	$1,800,000
Total Passenger Revenues	**$5,105,820**	**$8,767,924**	**$11,090,565**	**$13,413,206**
VIA Contribution	$3,500,000	$3,500,000	$3,5000,000	$3,5000,000
Total Revenue	**$8,605,820**	**$12,267,924**	**$14,590,565**	**$16,913,206**

Table 27 Total Combined Passenger Revenue

Modal shifts of between 4% and 6% are anticipated at start up and represent attainable ridership numbers by early adopters. Ridership is expected to increase once the service is proven, allowing for improved adoption rates by riders and as such a 8% modal shift is considered attainable within a one-year period.

Freight Operation Revenues

Background

The last remaining rail freight system on Vancouver Island was operated on the Island rail corridor by CP Rail as an integrated barge and rail service. In 1998 CP took steps to limit its participation in the service through the sale of its terminal operations to Seaspan. Under the terms of the sale, CP retained responsibility for the marketing of rail services on the Island and the delivery of cars to terminal facilities, while Seaspan provided barging services.

The new agreement resulted in a single weekly sailing which had the effect of substantially increasing rail transit times and increasing the overall cost to shippers. In addition, CP's retention of the marketing responsibility allowed CP to set the rates and determine the routing of all cars to and from the Island, creating a lack of access to competitive rail carriers and increased rates.

In the years leading up to the agreement, traffic on the system averaged approximately 8,000 carloads per year, however by 2002 the number of cars handled had dropped to 800 cars per year. The drop in carloads made continued service to areas beyond Nanaimo unsustainable, resulting in a suspension of service beyond Nanaimo.

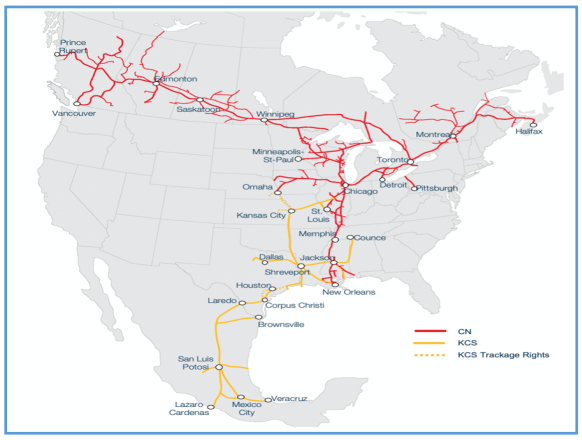
The suspension in service has resulted in a lack of opportunity to attract investment in production and distribution facilities, has left shippers with few competitive transportation options, and has restricted the marketability of port facilities on Vancouver Island. It has also resulted in a significant number of trucks moving on our highways, contributing to travel time variability, reduced reliability and safety, and increased greenhouse gas emissions.

Today

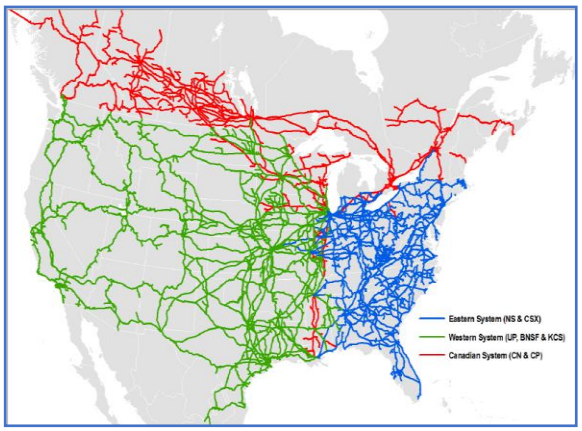
The operating environment for the upgraded rail system on Vancouver Island will be significantly different from the operating environment in 2002.

All aspects of rail service on the Island, including rail and barge services, are currently provided by Southern Rail of Vancouver Island (SVI) in partnership with Seaspan and Southern Railway of British Columbia (SRY). Strategic investments by SRY in facilities like the Annacis rail barge terminal, and loading facilities in Nanaimo, have continually improved rail operations.

All marketing and sales activity is now managed by SRY ensuring shippers are benefiting from market driven pricing and service. Shippers now have access to a competitive rail market with access to four major railways providing seamless service to North American markets.



CP Rail 2002



SVI Rail Link 2022

This expanded access is of particular importance today as an efficient, cost-effective rail service, combined with the benefits of the Foreign Trade Zone Vancouver Island, will also provide a competitive advantage for Island-based export businesses.

The suspension of service outside Nanaimo remains in effect and traffic is limited to cars that can be delivered to destination in the Nanaimo area or cars that can be transloaded to truck at transload facilities located at the Nanaimo rail yard and then taken by highway to their destination. Despite the suspension of service, SVI has managed to increase shipments to approximately 1,200 carloads per year.

Propane cars are delivered by rail to the customer, whereas all other products such as raw materials for manufacturing or agricultural products, must be transloaded to trucks to be taken to their destination.

While rail shipments to the Island have seen consistent growth over the past several years, that growth has been limited due to the inefficiencies, and additional costs, associated with the need to transload products from rail car to truck for final delivery. The lack of direct rail service into and out of our ports has completely closed those markets to rail.

Freight Revenue

Freight revenues have been based on the implementation of a haulage agreement between the rail operator on Vancouver Island and the Southern Railway of British Columbia (SRY) that would provide for a static price for each car originating or terminating on Vancouver Island, regardless of its origination or termination point.

Haulage agreements are common within the railway industry and are particularly useful to small carriers who lack the marketing and sales organizations to support rate-making activities with larger carriers. Haulage agreements are particularly effective when a significant interdependence exists between the carriers involved in the agreement. While rail service is contemplated between the Island and Washington state ports, most cars would likely flow through the SRY at their Annacis Island facility.

The haulage agreement would need to be negotiated, however for the purposes of the business case a per car rate of $1,100 has been utilized. The following table provides for the annual revenue based on the number of cars handled each year:

Annual Cars	Revenue per Car	Total Revenue
2,000	$1,100	$2,200.000
2,500	$1,100	$2,750,000
3,500	$1,100	$3,850,000
4,000	$1,100	$4,400,000
4,500	$1,100	$4,950000
5,000	$1,100	$5,500,000
8,000	$1,100	$8,800,000

Table 28 Freight Revenue

It is assumed the current 1,200 carloads to and from the Island would continue once rail service is restored. Continued growth beyond the existing 1,200 carload base is dependent upon the ability of the new rail system to compete with existing transportation modes on price and service, to effect modal shift, provide Island ports access to rail, and to create new markets that do not exist today through the attraction of industries best served by rail.

Prior to the suspension of service, the system handled an average of 8,000 carloads per year with most of those cars originating from, or destined for, the Port of Port Alberni. Most of that traffic is still moving today and could be shifted back to rail. For the purposes of determining the revenue that could be realized from freight, a target of 50% of the previous freight movement has been established, resulting in revenues of $4,400,000. Once rail service has been proven, and shipper confidence restored, continued growth significantly more than the previous 8,000 carloads is anticipated.

Combined Revenues and Costs

Total revenues include all train operations except for excursion trains. Excursion train revenues will provide another profitable revenue stream, however, given the on-demand nature of these operations and unique requirements for each train, it would be very difficult to provide an accurate estimate of revenue. Revenue contribution from VIA Rail as well as an expected transfer of current regional transit funding make up the balance of the revenue.

Revenues	Conservative	Anticipated	Optimistic
Passenger Ticket	$6,445,282	$8,767,924	$11,090,565
VIA Contribution	$3,500,000	$3,500,000	$3,500,00
Freight	$2,750,000	$4,400,000	$8,800,000
Total Revenue	**$12,695,282**	**$ 16,667,924**	**$23,390,565**

Table 29 Combined Revenues and Costs

Revenues have been provided over a range from Conservative to Optimistic. Passenger services account for the largest share of the revenue and relies on various levels of modal shift within each of the passenger operations.

Total annual operating costs reflect the expected operating costs for the new operation. The costs include all aspects of the operation including passenger and freight operations and assumes a new independent ownership structure to support operations.

Costs have been provided for the level of service and train frequency defined in the Adjusted Intermediate Phase proposal and will support the optimistic scenario as outlined in the combined revenues. The preponderance of the costs are related to scheduled train operations and therefore costs will have minimal fluctuation between the conservative and the optimistic scenarios.

Annual Operations Costs	
Infrastructure Maintenance	$1,816,631
Train Operations	$10,565,361
Equipment Maintenance	$397,823
Total Costs	**$12,779,815**

Table 30 Annual Operating Costs

Train operations costs include all labour for train operations, maintenance of way, equipment and management, as well as fuel, car hire, equipment leases, purchased services and G&A expense and based on known operating experience.

Revenue Vs Costs

The following graph shows the revenues and cost under each of the potential scenarios:

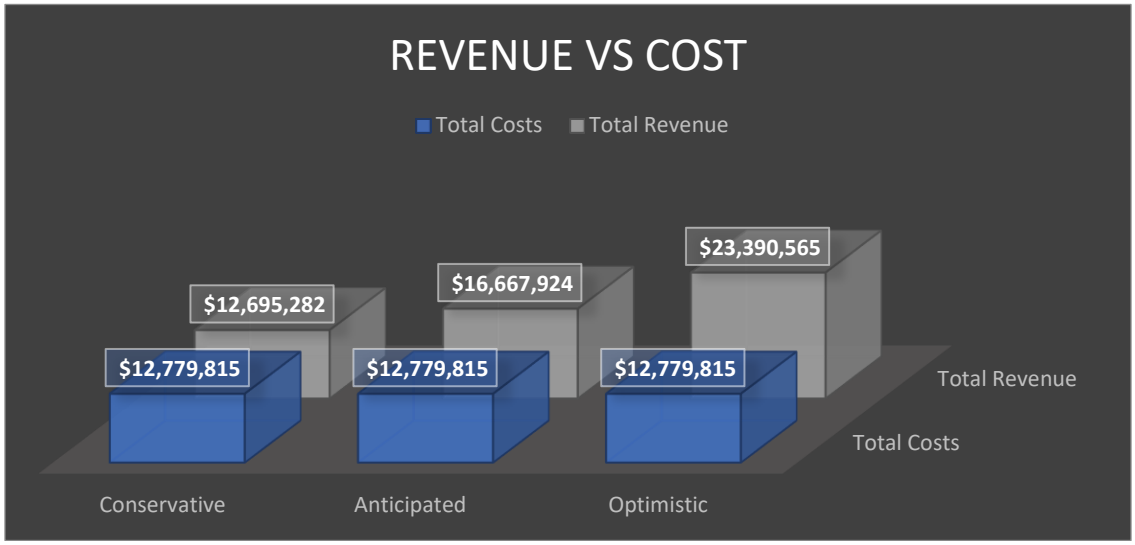


Table 31 Revenue vs. Costs

The Conservative estimate assumes low ridership numbers that would be expected upon start up of operations. The Anticipated revenues are based on a slightly higher modal shift that should be attainable by the second year of operation as the efficiency and reliability of the service is proven. At its most conservative estimate the operation will operate at a break even position.

While gains in modal shift for passengers will have a positive contribution to the new rail system, the biggest opportunity for revenue growth and profit lies within the freight operations.

The new rail system will allow for an aggressive campaign to attract more freight movements both locally and internationally as businesses gain confidence in rail as an efficient and reliable means of moving their products. Perhaps more significantly, rail service will make our ports in Port Alberni and Nanaimo more competitive with other west coast ports and could be utilized as alternate ports, reducing congestion and wait times at mainland ports, and the number of ships anchoring in waters around the Island while they wait for access to Vancouver.

The Conservative revenue scenario assumes a doubling of the current number of carloads handled and was based on known potential shippers that have demonstrated an interest in rail service, or who have contacted SVI or ICF with development interest. The Optimistic revenue scenario represents a return to the number of carloads handled prior to the suspension of service. That freight continues to move today over the highway system and as such would be susceptible to modal shift to the new rail system.

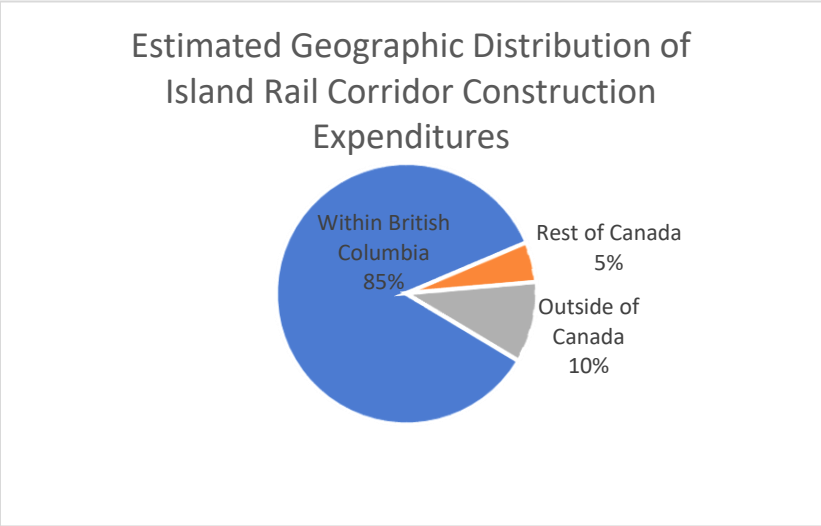
Economic Impact of Investment

In October of 2020 the ICF engaged Vann Struth Consulting group to develop a report to estimate the economic impact of restoring the Island Rail Corridor to operational condition.

The analysis focused only on the construction expenditures for rehabilitating the corridor. Construction costs were based on an April 2020 assessment prepared for the B.C. Ministry of Transportation and Infrastructure (MOTI).

The report focused on the implementation of the ICF's Adjusted Intermediate Phase development which, at the time of the report, was based on 2020 dollars. Each major line item in the project budget was analyzed to identify the most likely source for the required material or service. In most cases, the items can be sourced from British Columbia (including Vancouver Island).

The only class of material that is certain to be sourced internationally is steel products, including rails and other components. These are assumed to be sourced through a British Columbia wholesaler, in which case the wholesale margin is the only part of the expenditure that is retained within B.C. It is possible that some of the specialized technical services that are required will come from the rest of Canada or the U.S.



In total, an estimated 85% of construction expenditures for the project are expected to be sourced from British Columbia companies.

Table 32 Estimated Geographic Distribution of Island Rail Corridor Construction Expenditures

The overall economic impact of this project was developed utilizing the costing data provided in the IRCCA and were based on a construction cost of $302 million and have not been updated to reflect the updated IRCCA costs in the business case of $368 million:

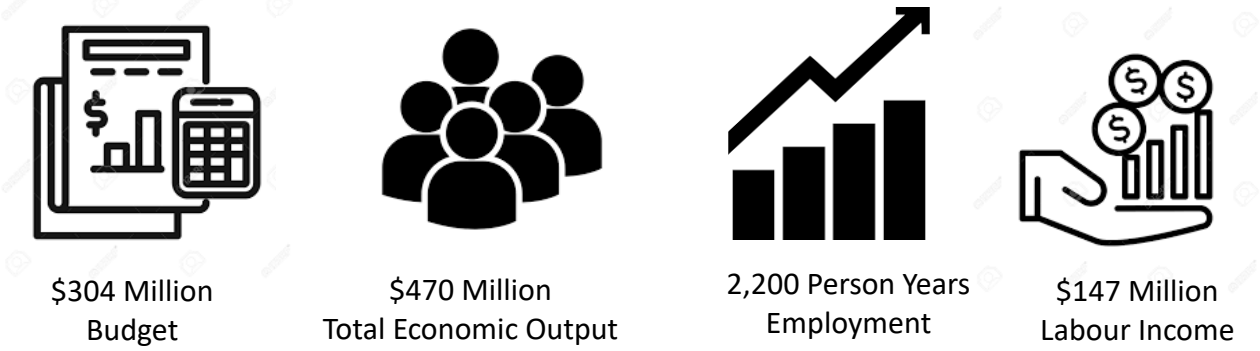


Table 33 Economic Benefits to Vancouver Island and BC

A construction budget of $304 million will support an estimated 2,200 person-years of employment in the B.C. economy, with total labour income of $147 million. This is an average of $67,000 per year for a full-time position.

It is not possible to say exactly how much of the B.C. impacts are felt directly on Vancouver Island, but there will be many opportunities for construction positions for Island-based workers as well as related impacts in accommodation and food services, fuel and equipment suppliers, and possibly wood manufacturers, aggregate producers, and other suppliers of construction materials.

The project will return significant positive economic benefits to Vancouver Island and British Columbia.

Business Case Summary and Conclusion

The following summarizes each of the case evaluations, provides a recommendation on the chosen solution to be advanced for preliminary design, and highlights additional work or investigations that are required to confirm the findings of this business case.

Strategic Case Evaluation

The restoration of rail service on Vancouver Island provides strategic benefits aligned with the planning and policy objectives of the Province of British Columbia.

Strategic benefits are divided into five key areas:

Transportation

Passenger rail service will provide:

- Enhanced transportation capability between Island Communities
- Improved connectivity between municipalities from Victoria to Courtenay
- Provides a needed transportation alternative to the Island highway system
- Rail provides greater travel time certainty for users
- Rail is affordable and accessible

Quality of Life

Passenger train service on Vancouver Island will improve the quality of life of residents through:

- Improved access to the major metro areas on the island
  - Access to specialized services, businesses, and entertainment options
- Improved commute times – more time at home and less time commuting
- Improved access to tourism and recreational services throughout the Island

Economic Development

Passenger and Freight rail service will accelerate growth of Island economies by

- Enhancing the movement of people, expertise, and ideas between the various regions of the Island
- Connecting economic centres and port facilities to the North American rail system
  - Access to new markets through economies offered by rail
- Lowering the cost of landed products
- Improving usage rates of our deep-water ports, adding to the long-term viability
- Improving capacity limitations at all west coast port facilities
- Providing a safe and efficient transportation option to Island visitors

Environmental Sustainability

Rail service will promote environmental sustainability by:

- Reducing overall transportation-related emissions
    - providing an inter-city and commuter passenger service effecting modal shift from our current auto-centric transportation network
    - reducing the number of trucks used in freight service on our island highways

Equity

Rail service will provide transportation services and options for Community members who:

- live in remote areas who have increased distance and travel time
- have accessibility needs that make it more difficult to board and ride a bus
- do not have a family member, friend or caregiver who can provide transportation
- have a low income and are unable to afford alternative travel modes
- do not have access to a personal vehicle or are unwilling or unable to drive.

Financial Case Evaluation

Capital Requirements

The proposed solution requires an estimated $431 million investment and provides for a robust commuter system operating within the Capital Regional District (CRD), intercity commuter services into the CRD, regional trains between areas outside the CRD, as well as freight operations throughout the entire Island with particular emphasis on our ports.

The $431 million investment covers the costs of construction and equipment acquisition for a fully operational passenger and freight rail system as outlined above. This equates to an investment of $1.5 million per kilometre. While this is a significant investment it is far lower than similar public rail investments in British Columbia, which are estimated to exceed $300 million per kilometre. The cost of the project on Vancouver Island is significantly lower given it is a restoration of an existing right of way, there are no land acquisition costs, and the majority of the right of way is located in rural areas.

Operating Revenue and Costs

Operating revenue and costs have been determined based on the train service and frequency outlined in the business case and in all scenarios the revenues exceed costs on an annual basis.

	Revenue	*Costs*
Conservative	$12.7 million	$12.8 million
Anticipated	$16.7 million	$12.8 million
Optimistic	$23.4 million	$12.8 million

The revenue in the business case is based on modal shift of passengers and freight primarily from known highway users. Low modal shift rates were used to provide a low risk view of the financial impact of the rail service. There is a considerable opportunity for improved financial performance as incremental improvements over the stated modal shifts will result in higher profit levels given the scalability of service without corresponding increases in cost.

Economic Impact of Investment

The construction activities associated with this project will provide a much needed, immediate, and direct benefit, to the Island economy. The project is estimated to generate $470 million in total economic output with 85% of construction expenditures being sourced from BC companies and with many of the raw materials sourced from Vancouver Island. The project will also provide Island workers with $147 million in income.

Conclusion

The business case is an overview of the benefits and costs associated with the restoration of rail service on Vancouver Island and confirms an urgent need to provide safe, efficient, reliable, and economically viable transportation options for the Island.

The business case demonstrates that rail is an economically viable transportation option that can address the immediate and long-term needs of the Island and will contribute to a robust and sustainable inter-regional transportation network.

Next Steps

The business case was developed to be a tool to assess the strategic and economic rationale of restoring rail service to Vancouver Island and to provide the basis for an approval in principle by stakeholders to further project development.

Upon approval it is recommended that:

- the provincial Ministry of Transportation and Infrastructure and the ICF form a joint multi-disciplinary team to oversee the development of an Updated Business Case with a refined project scope to determine:
    - the project planning process
    - available funding options
    - operational and management control of the new rail system

The Updated Business Case will also develop a preliminary project design that includes:

- Train operations modelling to confirm service design specifications
    - Determine optimum station placement
    - Confirm run times
    - Identify and confirm optimum locations for passing tracks

- Detailed service analysis to fully integrate the new system into the transportation network
    - Review connecting transit and ferry services to maximize connectivity
    - Rationalization of parallel and redundant services

- Review rolling stock requirements, equipment availability and options to maximize rider benefits in the most cost-effective way

- Detailed design and cost estimates for all rail infrastructure including the right of way, crossings, signals, and station infrastructure

- Confirm and update all capital, operating, and maintenance costs as new data becomes available