

Cowichan Valley Regional District

Paratransit Study



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1.0 Introduction

The Cowichan Valley Regional District (CVRD) is comprised of the City of Duncan, Municipality of North Cowichan, Town of Ladysmith, Town of Lake Cowichan, nine electoral areas and eight First Nations communities. The established areas of the Region support over 80,000 people and occupy less than 60% of the Regional valley land base. Approximately 50% of the population of the CVRD live outside the built-up areas of Duncan, Municipality of North Cowichan and Towns of Ladysmith and Lake Cowichan, where most communities have population densities of less than 100 persons per square kilometre (or 1 person per hectare).

1.1 Transit Future

In March of 2012, BC Transit completed a Transit Future Plan for the Cowichan Valley Region. The Transit Future Plan envisions the CVRD's transit network 25 years from now and describes what services, infrastructure and investments are needed to get there. The Plan includes a review of existing transit services, regional and local land use plans, transportation data, and demographic projections. The background research and community engagement resulted in the creation of a unified vision for transit and its phased development including several short, medium and longer term priorities to improve the transit service designed to meet the needs of the Cowichan Valley Region.

Although pockets of increased density and a mixture of land uses are planned in Duncan, the low density character of most communities in the CVRD is expected to remain for many years. In these lower density areas, fixed-route and fixed-schedule transit services are challenging, particularly given the low ridership levels during off-peak periods. As in suburban and other rural communities, the 'one-size-fits-all' model of a fixed-route, fixed-schedule service combined with broadly dispersed land use limits the functionality and cost effectiveness of transit for travellers in the CVRD. Rather than continue with the current services, the Transit Future Plan identified the need to explore other flexible, demand-responsive services along with changes to the existing fixed-route system in the South Cowichan and Cowichan Lake areas of the Region. This report outlines the process and findings of this exploration.

1.2 Study Process

Under the guidance of an internal working group (Urban Systems, BC Transit, and CVRD Staff), this study was conducted using a six-phase process, which was carried out simultaneously in both South Cowichan and Cowichan Lake. Phase 1 began with a detailed review of the existing system, with routes in the study areas examined within the context of ridership numbers and costs for routes across the region (*WHAT'S operating now*). Phase 2 was a review of the transit customer base, using on-board and online passenger surveys to better understand passenger trip patterns and needs (*WHO'S travelling where and when*). This information then became the

basis for two facilitated community stakeholder workshops held in the South Cowichan and Cowichan Lake areas. Participants were solicited using advertisements in local newspapers, earned media, and also by direct invitation.

Following a presentation of the first two phases, participants were then asked to identify and discuss possible options for improving transit services to these areas of the region. Based on this community stakeholder input, preliminary concepts were developed (phase 3). Findings were then screened by the internal working group (phase 4) before being developed into a second round of facilitated community stakeholder workshops held again in the South Cowichan and Cowichan Lake areas. Public input from these workshops was used to arrive at a preferred set of improvement strategies (phase 5) that have been examined with the Transit Committee of the CVRD. This brief report provides an overview of the current conditions and recommended changes.

Figure 1 – Paratransit Study Process

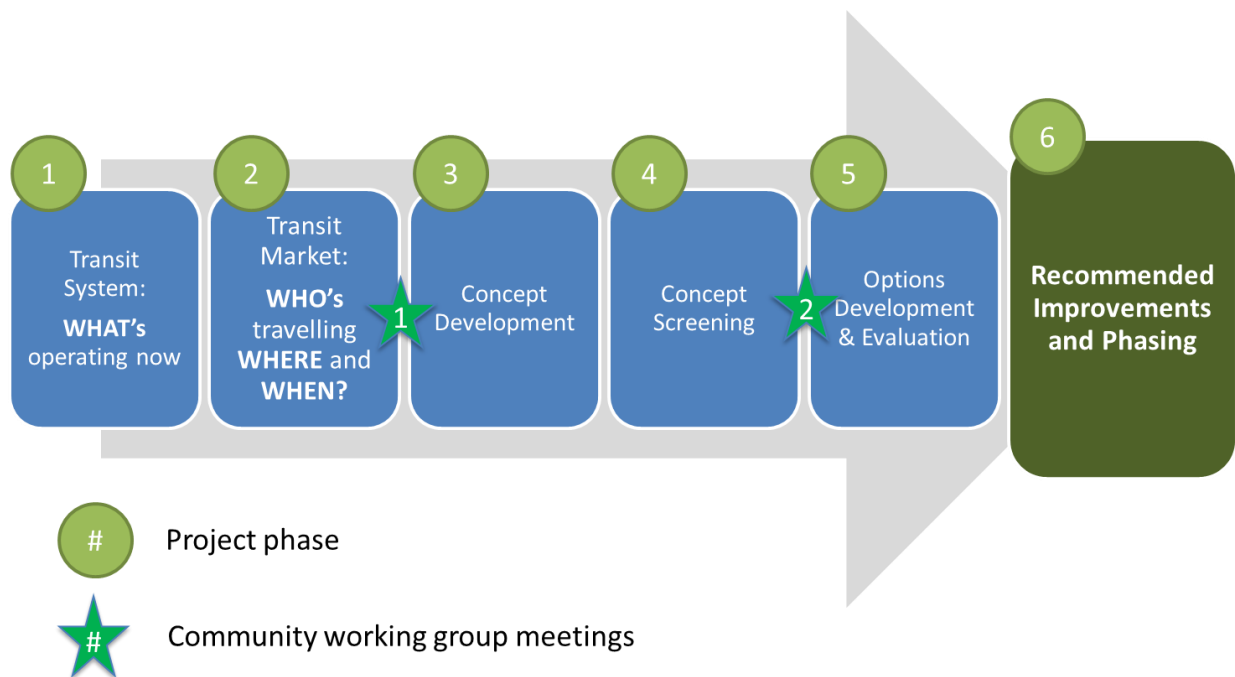


Figure 2 summarizes the report's key recommendations and suggested phasing for transit system modifications in the Cowichan Lake and South Cowichan areas.

Figure 2 – Paratransit Study Key Recommendations

(see page 21 for additional details)

Route	Short-term (1 Year)	Mid-term (2 – 3 Years)	Longer-term (4-6 Years)
Cowichan Lake 7 / 7X 20 21	Flex Route 7 & Redesign Route 7X	Small Bus	
	Flex Route		
	Flex Route	Taxi Supplement*	
So. Cowichan 5 10, 12, 15	Routing Change		
	Route Consolidation & 2-way service	Flex Routing	Taxi Supplement*
		Small Bus	

**Subject to availability of a viable taxi operator*

2.0 Existing Services & the Transit Customer

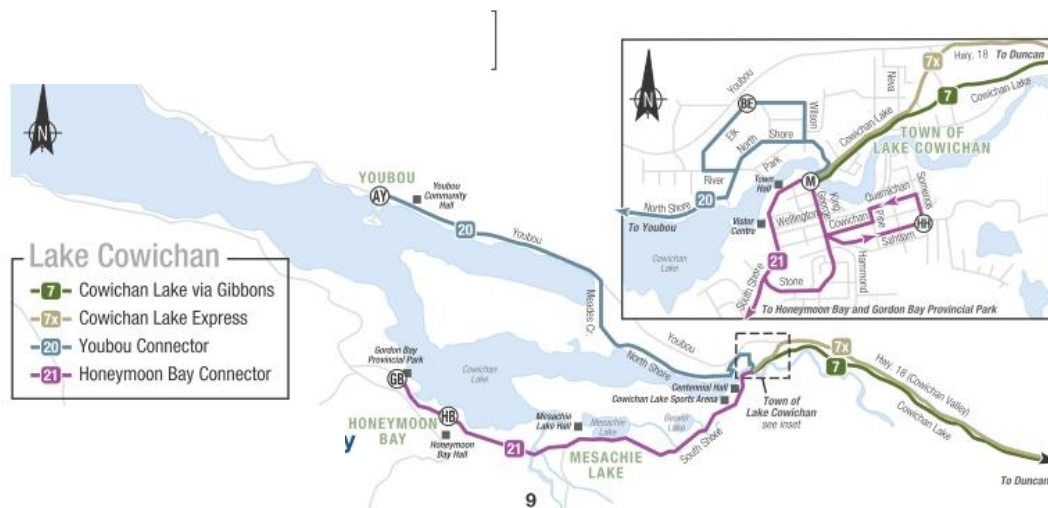
Ultimately, the transit system is most effective when it is designed to suit the area and the customer market that is most likely to ride transit. This section of the report provides an overview of existing transit services and customers currently utilizing transit in the South Cowichan and Cowichan Lake areas, and highlights the fundamental challenges transit faces in each area.

A. Cowichan Lake

Cowichan Lake is located in the western areas of the region, approximately 30 km from Duncan, via Highway 18. The following discussion summarizes existing service features and the customer base currently using the transit system serving Cowichan Lake residents and visitors.

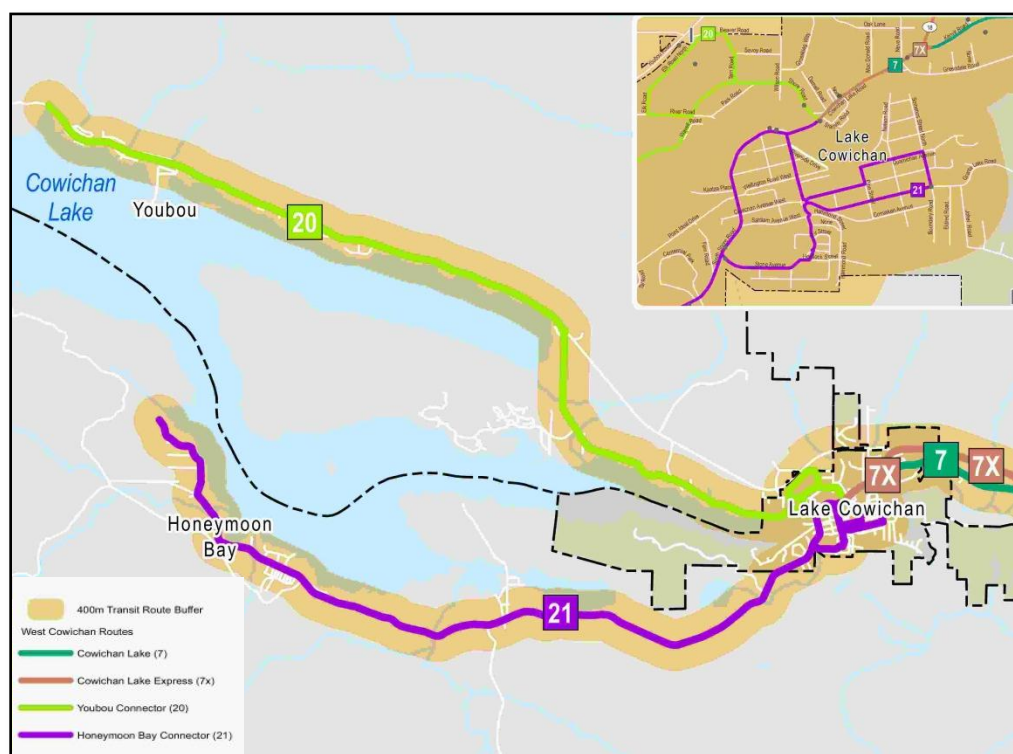
- The Cowichan Lake area is served by two local routes and one regional route.***
 Local services (Routes 20 and 21) connect the north and south shore communities, respectively, to Lake Cowichan and a regional service (Routes 7/7X) connects these areas to Duncan via Highway 18 (Route 7X) or Cowichan Lake Road (Route 7). These routes operate at 40 to 50 minute frequencies during peak day time periods and up to 120 to 160 minute frequencies on weekends. Routes 7/7X service is provided using standard large buses, while local routes 20/21 utilize smaller community shuttle vehicles.

Figure 3 – Cowichan Lake Area Transit Route Map

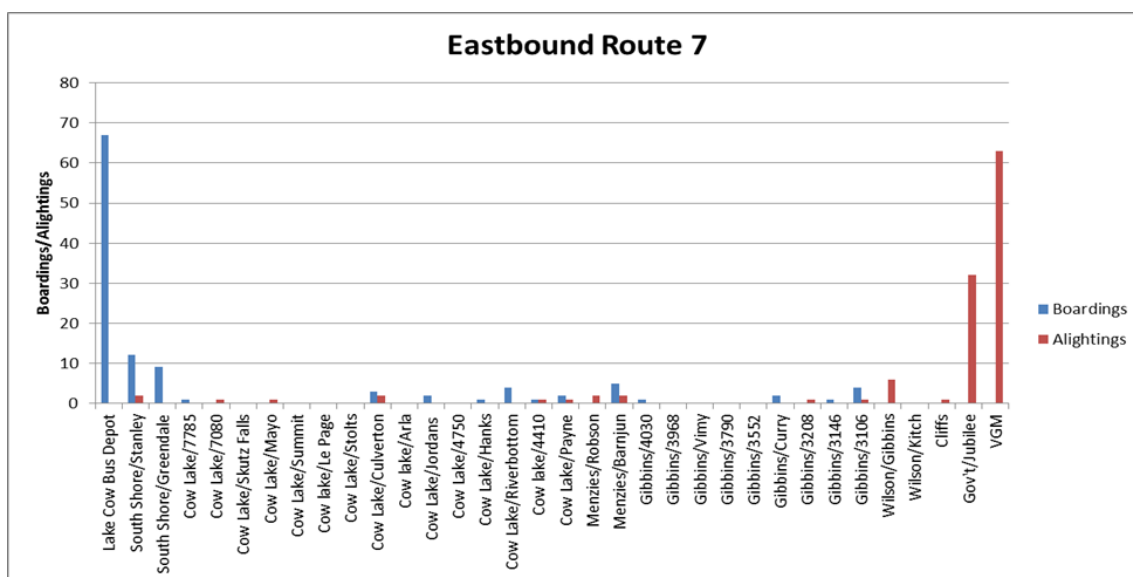


- ***Transit is an essential service for many people in the community.*** Many existing transit customers are of mid-age demographic and frequent riders for whom transit is a primary mode of transportation. Most customers using the transit system today originate from and are destined to the Town of Lake Cowichan or areas on the north shore (to/from Youbou).
- ***Approximately 70% of all residents live within walking distance of a transit route.*** In most communities, residents will walk approximately 300 to 400m to access transit services. As population along the north and south shores is constrained by the mountains and lake, most residences live fairly close to existing transit services.

**Figure 4 – Cowichan Lake Area Transit Coverage
(within 400 m of transit)**



- ***A large majority of people using Route 7 are boarding the bus in Lake Cowichan to go to Duncan (see Figure 5).*** Throughout the day, it is estimated that approximately 80% of those riding Route 7 to Duncan board the bus in Lake Cowichan. In other words, very few people, and in some cases no one, will get on or off the bus along Cowichan Lake Road between the two communities. When this occurs, all customers must endure a trip that takes approximately 15 minutes longer than Route 7X to travel between Duncan and Cowichan Lake.

Figure 5 – Route 7 Boardings and Alightings (Passenger Loading and Unloading)

- On average, Routes 7 / 7X carry approximately 9 passengers per trip between Duncan and Cowichan Lake.** The 2012 BC Transit fare box ridership reports indicate that average passenger loads are much lower than the capacity of a large bus (31 seats) and that most trip loads could be accommodated on a smaller bus (23 seats).
- Although a majority of customers using Routes 7 / 7X are destined to Duncan, approximately 35% of those surveyed indicated that they currently use transit to get to Cowichan Commons Shopping Mall, located 3 km north of Downtown Duncan on the Trans-Canada Highway.** These trips currently require a transfer in central Duncan. An additional 20% of respondents indicated that they travel to Victoria, a transit trip which is currently not available for Cowichan Lake residents (the commuter buses depart Duncan 54 minutes before the first Route 7 arrives), but which would similarly require a transfer in central Duncan.

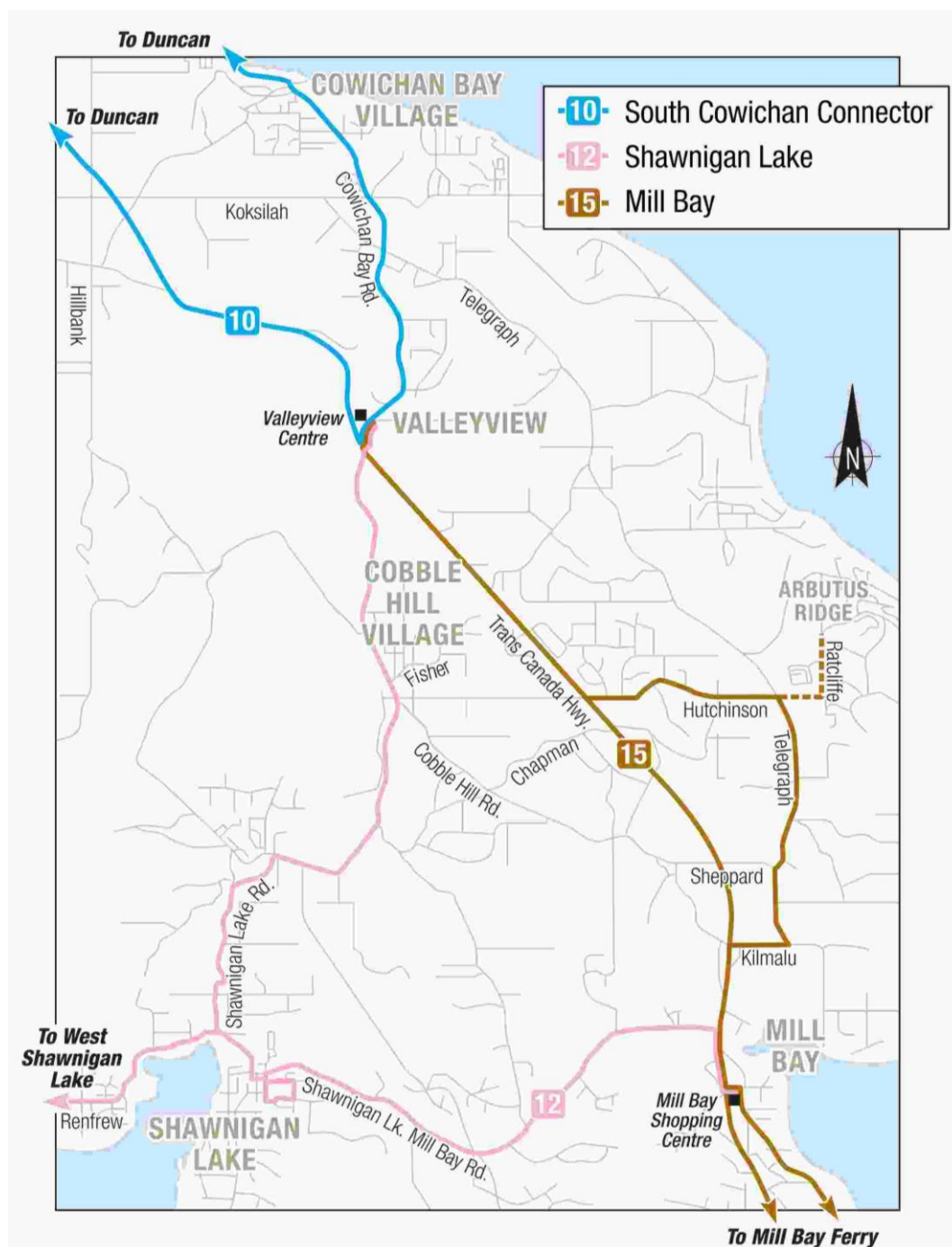
B. South Cowichan

The South Cowichan transit service area extends approximately 25 km south of Duncan. The following discussion summarizes existing service features and the customer base currently using the transit system serving South Cowichan residents and visitors.

- Three local, interconnected routes serve the South Cowichan area today.** Route 10 connects the South Cowichan area (Valleyview Centre) to Duncan via either Cowichan Bay Road or Highway 1. At Valleyview, Route 10 vehicles continue south to Mill Bay as either Route 12 (via Shawnigan Lake) or Route 15 (via Mill Bay Ferry). South Cowichan routes operate at 25 to 50 minute frequencies during peak day time periods and up to 80

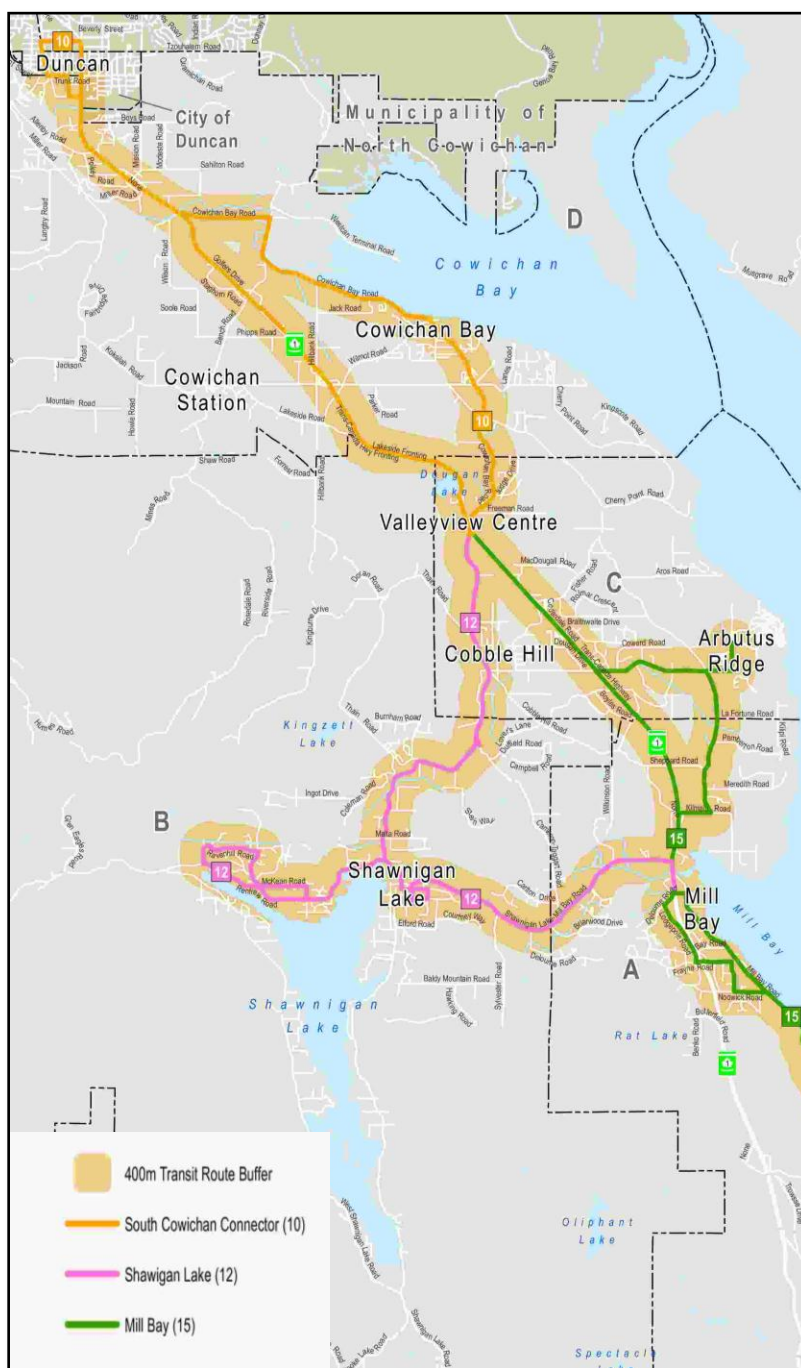
to 140 minute frequencies during off-peak periods and on weekends. Standard “big” buses provide service along all routes.

Figure 6 – South Cowichan Transit Route Map



- **Existing routes are circuitous and can be confusing for the infrequent transit customer.** Three separate routes operate in South Cowichan along a number of individual legs. Certain legs provide limited two-way service, often requiring passengers to circle around the South Cowichan area to return to their starting point. For example, while all northbound Route 15 trips from Mill Bay to Valleyview Centre travel via Telegraph and Hutchinson Roads, the majority of southbound trips avoid these roads and instead use the Trans-Canada Highway.
- **Transit is an essential service for many in the community.** Similar to the Cowichan Lake area, existing transit customers are of the mid-age to older demographic and are frequent riders who rely on transit for basic mobility needs (to/from shopping, medical appointments, etc). Once again, this part of the region is generally aging and is home to retirement style subdivisions, such as Arbutus Ridge.
- **52% of all residents live within walking distance of a transit route.** In most communities, residents will walk approximately 300 to 400m in order to access transit services. As population settlement patterns in South Cowichan are dispersed, conventional transit is only capable of serving about 52% of the total households in the area. Many areas, including village centres, neighbourhoods, and subdivisions are simply not within reasonable walking distance for most transit customers.

Figure 7 – South Cowichan Transit Coverage

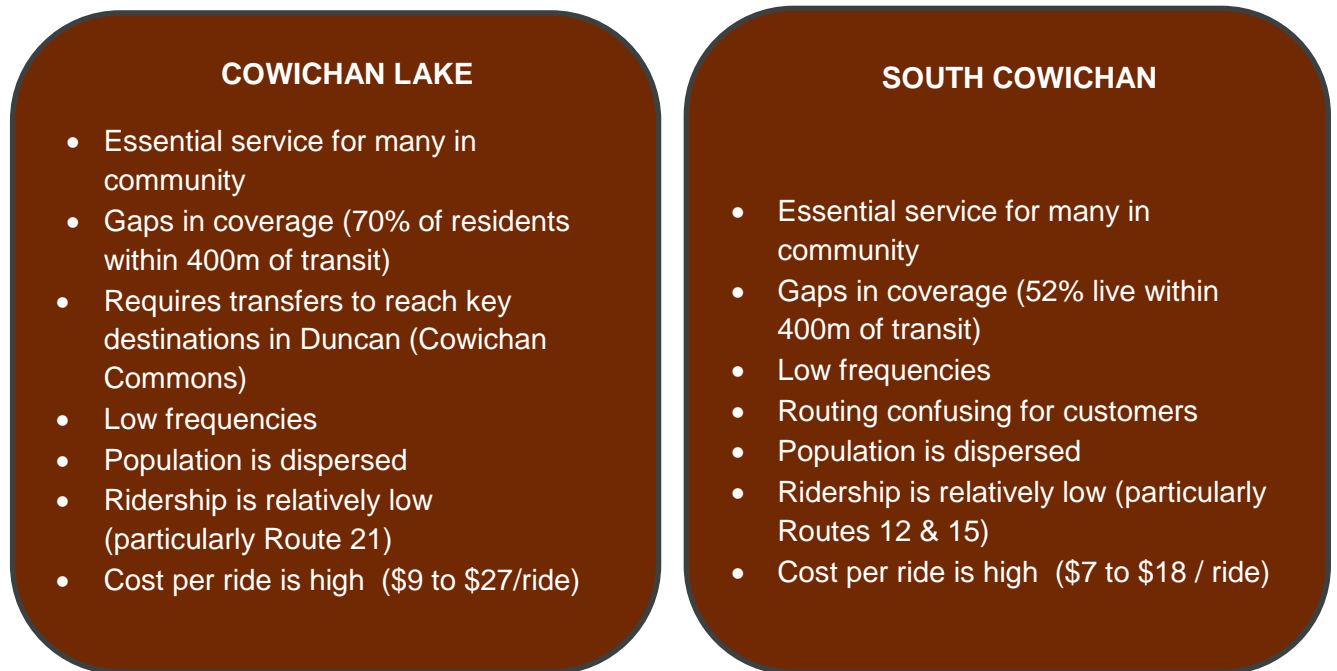


- On average, Route 10 carries approximately 6 passengers per trip – average passenger loads are even lower on the other two South Cowichan routes.** 2012 BC Transit farebox ridership reports indicate that average passenger loads are much lower than the capacity of a large bus (31 seats) and that most trip loads could be accommodated on a smaller bus (23 seats).

Summary of Challenges

Although there are similar challenges facing the Cowichan Lake and South Cowichan areas, the services and transit ridership characteristics are unique. The key challenges to providing attractive transit services in each area are briefly highlighted below:

Figure 8 - Summary of Key Challenges



3.0 The Plan

This section of the study identifies the preferred plan along with a potential implementation strategy that will be influenced by not only transit system finances and priorities, but availability of resources to the system such as required by changes in fleet, and time required to implement certain changes.

Alternative Forms of Transit

As previously indicated, transit must be designed to fit the community and potential customer market. In this regard, the Transit Future Plan identified the need to explore alternative models of transit service for the South Cowichan and Cowichan Lake areas that would better suit these areas. Before describing the recommended service improvements, it is worth highlighting and comparing conventional service features with that of the paratransit services that are being recommended for both areas of the Region.

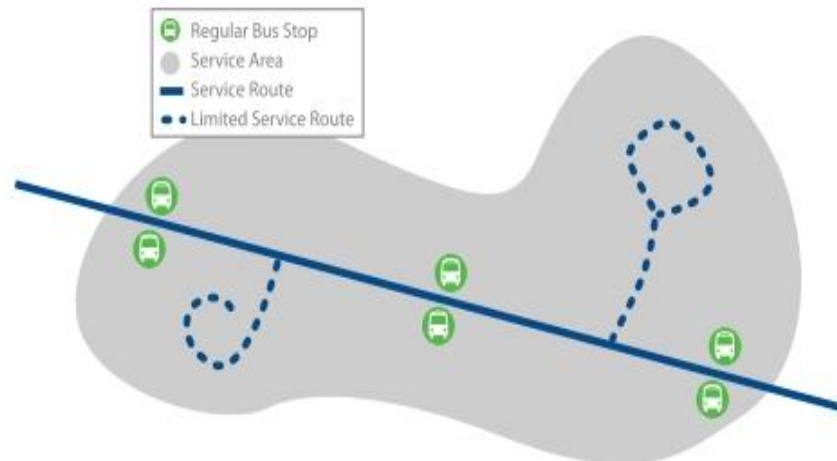
- Conventional transit** is what currently operates in most communities, including the CVRD, where all buses operate on a fixed-route and fixed schedule. Pick-up and drop-offs are achieved at defined transit stops in the system and passengers can refer to schedules for service times.



- Flex route transit** is largely the same as fixed-route, in that the majority of the route is operating on a fixed route and schedule most of the time, serving the majority of the customers. In an effort to increase service coverage and ridership to potential customers, flex route services allow drivers to deviate from the fixed route as requested either when the passenger boards the bus or by calling a dispatch for pick-up. In these cases, pick-up and drop-off away from the main route may be either at fixed stops or closer to a person's destination.



- Taxi supplement service**¹ extends transit coverage by using taxis to connect areas that are not reasonably served by conventional transit with the nearest scheduled transit route. Riders may have the option of paying the additional taxi cost to travel beyond the nearest transit stop. The taxi supplement service would be contracted by BC Transit to provide door to transit stop service to a defined area. Customer pick-ups would be coordinated through BC Transit dispatch services. Established taxi companies would be invited to bid on a contract to provide service where and when indicated.



¹ It is important to note the provision of taxi-supplement services is dependent on the availability of a viable taxi operator (adequate coverage, and accessible vehicles).

Taxi supplement service is used to serve lower density areas in several Canadian municipalities including Hamilton and Peterborough, ON.

Table 1 summarizes some of the preliminary features of each of the paratransit services recommended for the Cowichan Lake and South Cowichan areas in comparison to the conventional services that exist today.

Table 1 - Preliminary Service and Operating Features

Features	Flex Routing	Taxi Supplement
Pick-Up / Drop-Off	Stop or Door to Stop	Door to Stop
Dispatch Provider	BC Transit dispatch	
Vehicle	Bus	Taxi
Trips Operate	As per schedule	On demand only
Service Area	Routes or area defined	Area defined
Periods of Operation	Existing periods of operation & frequency	
Fares	Transit Fare	Transit Fare + \$2 surcharge
Inbound Advance Booking	1 to 2 hours	Potentially < 1 Hr
Boarding at Stop/Home	Board at Stop or Call to BC Transit Dispatch	Call to BC Transit dispatch
Boarding at Hub	Schedule/ no advance notice required	Call to BCT dispatch
Route Deviations	2 per bus trip	To/from nearest bus stop

Cowichan Lake Plan

The recommended plan for Cowichan Lake includes a redesign of Route 7X and conversion of Routes 7, 20 and 21 to flex routes. In the mid-term (2-3 years), the conversion of Route 21 to a taxi supplement service² and Routes 7/7X vehicle conversion to a smaller bus are recommended. The recommended service alterations for the Cowichan Lake area are briefly highlighted below.

- Short-term: Route 7X trips should be re-routed from Lake Cowichan to Cowichan Commons (via Drinkwater Road) before terminating downtown Duncan as shown in Figure 9 below.** Re-orienting Route 7X trips is not expected to increase overall travel time and will drastically improve connectivity for the 35% of existing customers destined for Cowichan Commons. **Route 7 should operate on a flex routing basis** – providing services to those on Cowichan Lake Road as requested. If no customers call for pick-up or indicate that they would like to be dropped off along Cowichan Lake Road, the bus will take Highway 18 between Lake Cowichan and Duncan, reducing travel time for the majority of customers. Once in the established areas of Duncan, regularly scheduled Route 7 trips will follow the existing route to Village Green Mall as indicated in **Figure 9**. No additional costs are anticipated to implement this proposed service change.
- Mid-term: Routes 7/7x may be converted to a smaller bus based on ridership data provided by BC Transit.** A conversion from the 31 seat Dennis Dart to a 23- seat Vicinity bus (presently being trialed by BC Transit elsewhere) could reduce route annual operating costs by approximately 12%.

Figure 9 – Routes 7/7X Proposed Routing & Service Changes



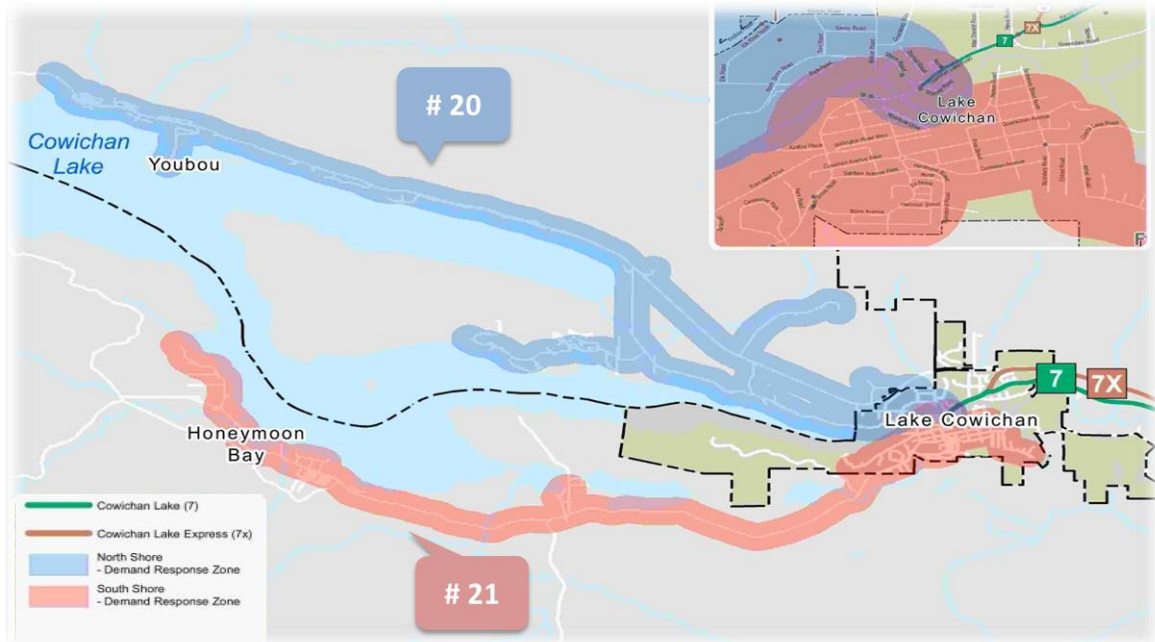
- Short-term - Routes 20 & 21: Both services operating along the north and south shores of Cowichan Lake should be converted to flex route services providing access on demand to nearby locations off-route as shown in Figure 10.** Converting these local routes to flex route services will provide greater coverage to enhance access for residents, and slightly increase ridership. It is understood that community shuttle

² Subject to the availability of a viable taxi operator

drivers already travel off-route on an ad hoc basis to best serve the needs of their clientele. Formalizing these flexible services simplifies the call-in process and publicizes that this service arrangement is an available option to all. No additional costs are anticipated to implement this proposed service change as there is already some leeway in the existing schedules.

- **Mid-term:** - Route 21 could be converted to a taxi supplement service³ based on current ridership data. Contracted taxis would provide service to south shore communities and connect transit customers with Routes 20 and 7/7X trunk services. Taxi supplement service would operate during existing transit service hours only and at the frequencies that exist today upon requested. Reservations and dispatch would be coordinated through BC Transit. Established taxi companies would be invited to bid on a contract to provide service where and when indicated. This transition could reduce route annual operating costs by nearly 50%.

Figure 10 – Routes 20 and 21 Flex Route Service Areas



³ Subject to the availability of a viable taxi operator

South Cowichan Plan

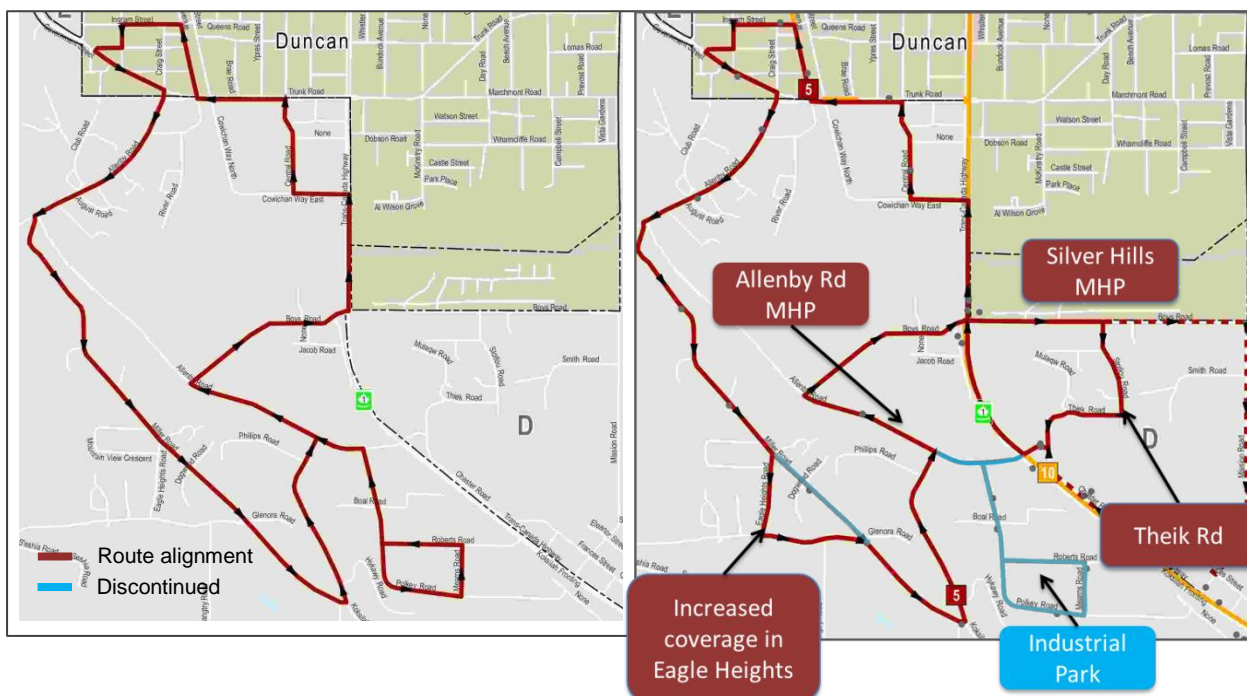
The recommended plan for South Cowichan includes a redesign of Route 5; redesign, consolidation and simplification of Routes 10, 12, and 15; and flex routing to increase service coverage. In the mid-term (2-3 years), the consolidated South Cowichan route (Routes 10, 12, and 15) can be converted to community shuttles to reduce operating costs. Longer term (4-6 years), opportunities to use taxi supplement service for expanding transit service coverage to additional areas currently not served can be explored. The following discussion describes the recommended service improvements.

- **Route 5** is a short, one-way, counter-clockwise loop extending south from central Duncan to Eagle Heights and neighbouring industrial lands west of Highway 1. The entry level service provided by Route 5 offers just five trips per day on weekdays and no weekend service, and has ridership that is among the lowest in the system. It is anticipated that as the route matures, service will be expanded, and consideration should be made for bi-directional service as future expansion occurs.

Though Route 5 technically does not serve South Cowichan, the route was considered in this section as it may present an opportunity for a quick improvement; however any changes are subject to further consultation with area residents, including First Nations communities.

The recommended changes to Route 5 include realigning the route to serve *Silver Hills Mobile Home Park* on Boys Road – home to over 250 residences – and to increase service coverage in Eagle Heights, as shown in **Figure 11**. This route change will also provide services to the Cowichan Tribe lands along Thiek Road. To maintain current run times, service to Polkey Road Industrial Park is to be discontinued. All other general route characteristics are to remain as is. The recommended re-routing improves service coverage to potentially larger transit customer markets without expanding transit service hours. As such, the cost recovery for this service change is expected to improve with higher ridership.

Figure 11 – Route 5 Existing (L) & Proposed (R) Re-alignment



- Short-term:** - Consolidate Routes 10, 12 and 15 in order to minimize customer confusion and potentially increase ridership and revenues, as illustrated in Figure 12. Services will operate from central Duncan as a two-way loop, increasing frequency and trip choice. Riders will know that regardless of where they board, they will be able to ride transit in either direction to any transit destination in South Cowichan. Where possible, services will operate on rural side-roads – not Highway 1 – increasing area coverage and destination opportunities. In addition to creating a single route, transit service can be re-aligned to extend service coverage to the *Braithwaite Drive Neighbourhood* and to *Cowichan Station* village. This improvement requires approximately 1,700 additional annual hours of service, which may be sourced by (1) reducing trips and re-allocating existing hours or (2) adding new hours for a projected 17% increase in annual South Cowichan operating costs.
- Mid-term:** Flex routing to increase transit service coverage along Cobble Hill Road / Lovers Lane, Holland Avenue and Cherry Point. It is recommended that the new fixed route service could flex on an on-demand basis into these communities as illustrated in Figure 12. Additionally, service frequencies to Arbutus Ridge would be increased by providing every trip the ability to flex off-route to serve this community (currently only 2 southbound trips and 2 northbound trips serve Arbutus Ridge). If no customers call for pick-up or indicate that they would like to be dropped off along these flex portions, the bus would simply skip them, reducing travel time for customers already on board. This improvement increases coverage to key areas and is expected to result

in increased ridership. Flex route options to serve these areas of South Cowichan will require approximately 1,300 additional hours of annual service, which may be sourced by (1) reducing trips and reallocating existing hours, (2) operating cost savings by vehicle conversion, or (3) by adding new hours resulting in a further 13% increase in annual South Cowichan operating costs.

- **Mid-term: Convert the South Cowichan services to a small bus.** Today, average passenger loads on South Cowichan area buses are below 6 passengers per trip. Based on existing ridership data, all existing South Cowichan routes may be converted to small bus operations in order to reduce operating costs. A conversion from the 31 seat Dennis Dart to a 23- seat Vicinity bus (presently being trialed by BC Transit elsewhere), or a 20 – seat Arboc could potentially reduce route annual operating costs. Further analysis of ridership on the proposed routes changes is required before an appropriate bus type is selected.

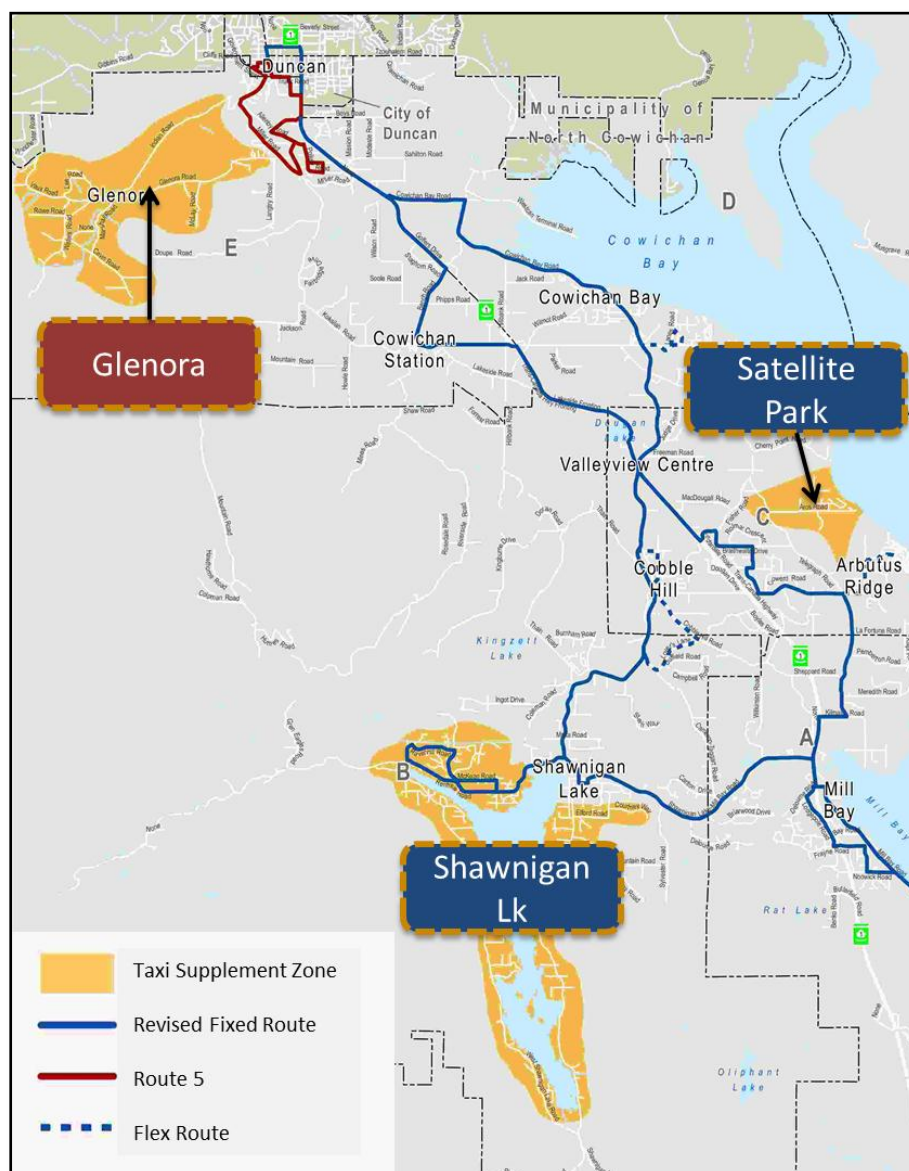
Figure 12 – South Cowichan Route Consolidation and Flex Routing Improvements



- Long-term:** As resources become available, a taxi supplement service is recommended to extend service coverage to additional areas of South Cowichan that are beyond reasonable walking distance to transit. As shown in Figure 13 below, taxi supplement service zones are identified for Glenora (connecting to transit at Duncan or Eagle Heights-Route 5), Satellite Park (connecting to transit at Valleyview Centre) and the east and west side of Shawnigan Lake (connecting to transit at Shawnigan Lake Village). Taxi supplement service would operate during existing transit service hours only and reservations would be coordinated through BC Transit dispatch.

Established taxi companies would be invited to bid on a contract to provide service where and when indicated. This improvement is projected to result in a further 20% increase in annual South Cowichan operating costs.

Figure 13 – South Cowichan Taxi Supplement Service



4.0 Phasing and Financial Implications

While some of the changes can be implemented in the fall of 2014 and even may reduce net operating costs in some parts of the system, other system improvements identified from this review will take time to implement and will require additional financial resources. **Table 2** below summarizes the potential phasing and cost implications of each recommendation as briefly described below.

Table 2 - Phasing & Financial Implications

Route	Short-term (1 Year)		Mid-term (2 – 3 Years)		Longer-term (4-6 Years)	
	ACTION	COST	ACTION	COST	ACTION	COST
Cowichan Lake 7 / 7X 20 21	Flex Route 7 & Redesign Route 7X	Nil	Small Bus	- \$52,000		
	Flex Route	Nil				
	Flex Route	Nil	Taxi Supplement*	- \$60,000		
So. Cowichan 5 10, 12, 15	Routing Change	Nil				
	Route Consolidation & 2-way service	+ \$30,000	Flex Routing	+ \$110,000	Taxi Supplement*	+ \$160,000
			Small Bus	- \$95,000		
		TOTAL COST		TOTAL COST		TOTAL COST
PROJECTED CHANGE IN ANNUAL COST		+ \$30,000		- \$97,000		+ \$160,000

*Subject to availability of a viable taxi operator

~Costs based on \$90 / hour (standard bus) and \$81 / hour (smaller bus), BC Transit

~The cost shown above is a total, the CVRD portion would be 53 per cent of the total figure.

- **Short-term improvements** that could be implemented within the next year or so include service changes that are designed to improve the customer experience without significantly increasing service hours. For the Cowichan Lake area, service improvements include re-routing Route 7X to provide a direct connection to Cowichan Commons, altering Route 7 to provide a flex service along Cowichan Lake Road upon request only, and converting Routes 20 and 21 to flex routes to enhance coverage and increase the service area for customers.

Short-term South Cowichan improvements include re-aligning Route 5 and consolidating Routes 10, 12 and 15 with some minor re-routing to increase service coverage. The short-term recommended improvements for the South Cowichan area will require an additional 1,700 service hours and are projected to result in a \$30,000 increase in annual operating costs.

- **Mid-term improvements** that could be implemented in the next 2 to 3 years generally include changes that reduce annual operating costs by transitioning to smaller buses or even a taxi supplement program where passenger loads do not require a larger vehicle. Although the existing circumstances indicate that these improvements could be implemented in the short-term, it will require additional time to coordinate new fleet or exchanges from elsewhere in the BC Transit system and to design contract arrangements in the case of a taxi supplement service. Within the Cowichan Lake area, existing passenger loads indicate that Routes 7/7X could be converted to a smaller bus operation and a taxi supplement service may be used in place of Route 21 along the south shore. In addition to consolidating the three routes and enhancing overall service levels in the South Cowichan area, a smaller bus is recommended based on existing passenger loads. This will also ease any impacts of a flex route system to increase transit service coverage. Altogether, the mid-term improvements require 1,300 hours and are projected to result in an approximately \$97,000 savings in annual operating costs (most savings being derived from vehicle right-sizing).
- **Long-term improvements** that could be implemented within the next 4 to 6 years include options of increasing the transit service area in South Cowichan as resources are available and deemed a priority. Rather than running conventional bus services to expand coverage in the South Cowichan area, a taxi supplement service is recommended to connect passengers with the modified routing as previously described. These additional services are projected to result in an increase to annual operating costs of approximately \$160,000 per year.

5.0 Next Steps: Phasing and Financial Implications

- The upcoming service standards workshop for the Cowichan Valley Transit commission, to be held in March 2014, will help the CVRD determine the criteria that will be used to assess and rank priorities for implementation of future improvements, including 3,200 hours which are targeted for short term and midterm implementations in the CVRD.
- A public information campaign is required to confirm that the implementation concepts proposed in this report are supported by the general public. The public will be provided an opportunity to provide comment on the service plan at the end of April 2014 using techniques to target existing transit riders as well as non-transit riding members of the community. These techniques include on-board passenger surveys, on-line surveys, and two Open Houses to be held in separate locations in the Cowichan Valley.
- The CVRD has requested from the Province and is targeted to receive 3,200 expansion hours for 2015/16, which would support the short term (1,700 hours) and mid-term (1,300 hours) initiatives noted in this report.