

Bridge River Capital Projects: Bridge River Access and Accommodation Study

Lillooet, Virtual Open House – May 2024



Spring 2024 Virtual Open House

Bridge River Access & Accommodation Study

BC Hydro Bridge River Capital Projects

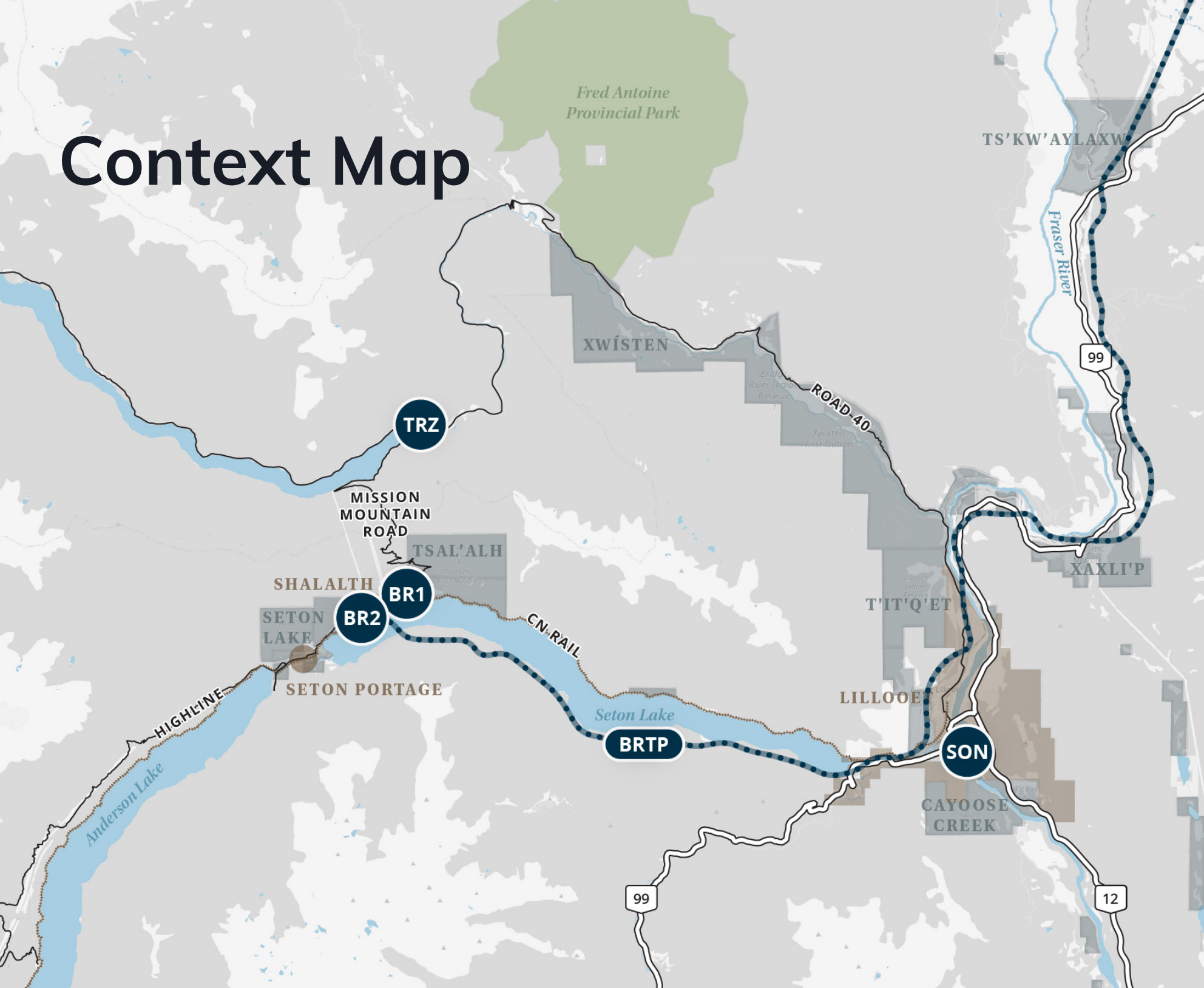
May 2024

Agenda

- 1 Study Overview
- 2 Evaluation Framework
- 3 Integrating Your Feedback
- 4 Draft Leading Options
- 5 Next Steps

1 Study Overview

Context Map



Legend

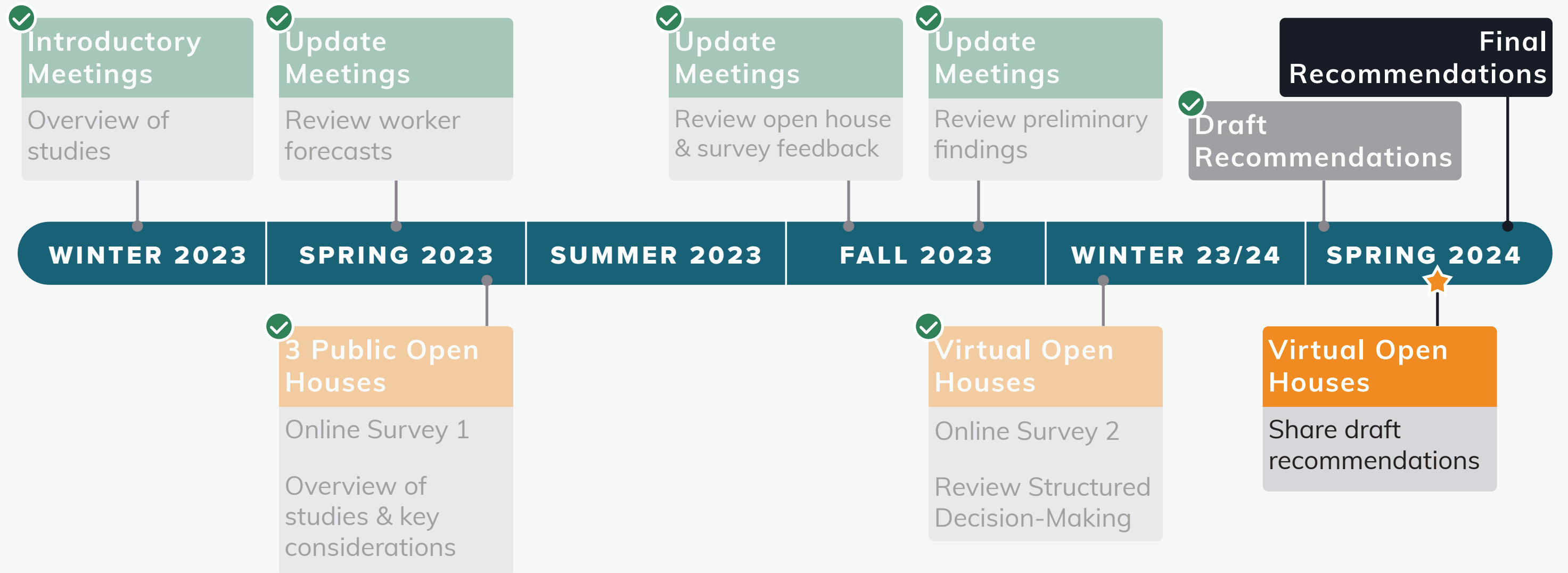
Lands & Transportation

- First Nations Reserves
- Communities
- Provincial Parks
- Waterbodies
- Provincial Highway
- Regional Roadway
- Railway

BC Hydro Project Areas

- TRZ Terzaghi Dam
- BR1 Bridge River Powerhouse 1
- BR2 Bridge River Powerhouse 2
- BRT Bridge River Transmission Project
- SON Seton Powerhouse

Study Timeline



How Information Will Be Used

- This study represents a baseline of information and conceptual level analysis of options
- BC Hydro will complete further feasibility studies on leading options and recommendations
- As projects advance, BC Hydro will integrate new information and consider implementation planning

Engagement Activities (Phases 1 & 2)



Community
Surveys



St'át'imc
Nation
Consultation



Public Open
Houses

SURVEY 1

71

Responses

SURVEY 2

233

Responses

Stakeholder
Meetings &
Calls

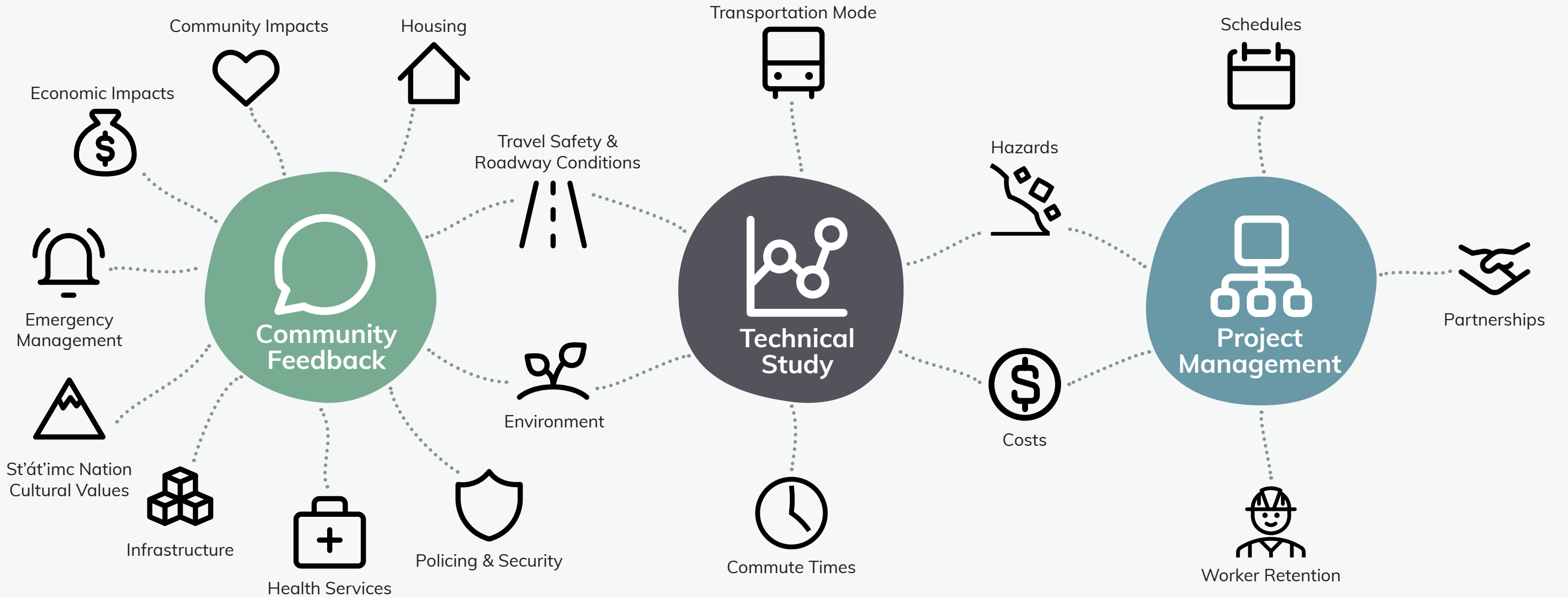


2
In-Person

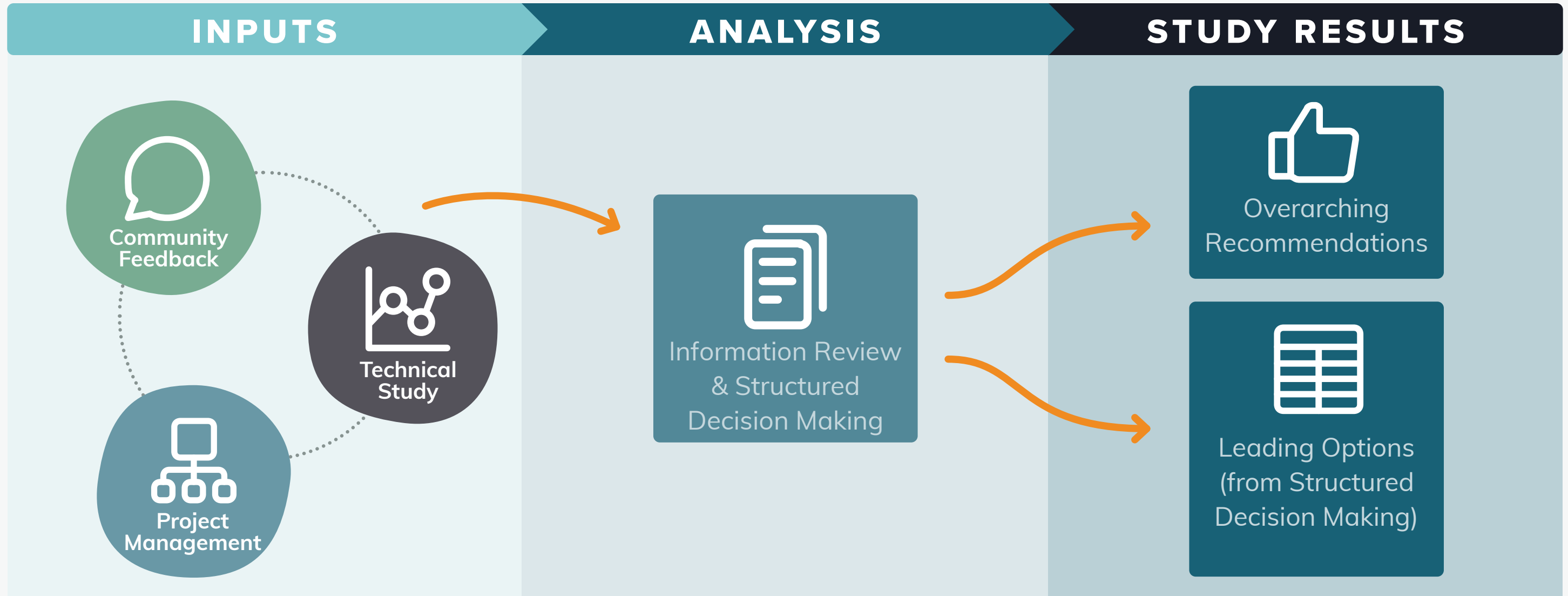
3
Virtual

2 Evaluation Framework

Study Inputs



Evaluation Process



Study Results

Overarching Recommendations

- Informed by technical data as well as St'át'imc, stakeholder, and public feedback
- Evaluated for implementation no matter which option is chosen

Example - Mitigating Invasive Species

Since the highest risk of bringing in invasive species can come in many forms and needs to be considered at a regional scale, it must be addressed no matter where workers stay

Study Results

SDM Objectives & Measures

- Informed by technical data as well as St'át'imc, stakeholder, and public feedback
- These **are differentiators** between potential options - concerns that help to choose between options
- Are used to **compare** each option's benefits and trade-offs

Example - Accommodation Costs

Each option presents different associated costs. These differences are used to compare the options

3 Integrating Your Feedback

St'át'imc Nation, Stakeholder, & Public Engagement

KEY THEMES



Travel Safety &
Roadway Conditions



Housing



Community Impacts



Environment



Emergency
Management



St'át'imc Nation
Cultural Values



Infrastructure



Economic Impacts



Health Services



Policing & Security



Travel Safety & Roadway Conditions

WHAT WE HEARD

- Unsafe driver behaviour
- Worsening roadway conditions and geohazards (rockfall, debris, etc.)
- Increased roadway incidents
- Road closures and slower travel times

“The roads are bad and **increased traffic poses a hazard**, probably could be mitigated with proper training, staying right at all times, **maintaining a safe speed** for narrow roads.”

Quote from Phase 2 survey

“Best to keep workers **off of Highway 40 and Mission Mountain Road.**”

Quote from Phase 2 survey



Travel Safety & Roadway Conditions

INTEGRATING FEEDBACK



Overarching Recommendations

- Shuttle buses for transporting workers
- Worker Code of Conduct including safe driving practices
- Local communication regarding project traffic
- Road surfacing
- Geohazard mitigations (roadside barriers, scaling, drape mesh, etc.)



SDM Objectives

- Minimize potential road safety risk due to increase in traffic
- Minimize project related traffic in community



Housing

WHAT WE HEARD

- Increased rental and housing prices
- Limited rental and housing availability
- Exacerbated homelessness

“We have a **housing shortage** in our area ... including affordable housing for younger residents and for low income residents.”

Quote from Phase 2 survey

“**Rental prices and hotel rates will increase** which will impact locals and **discourage tourism** which we have been working for years to encourage.”

Quote from Phase 2 survey



Housing

INTEGRATING FEEDBACK



Overarching Recommendations

- Avoid relying on private accommodations for worker accommodations
- Monitor the private accommodation market



SDM Objectives

- Minimize stress on existing commercial accommodations
- Minimize stress on non-commercial accommodations



Community Impact

WHAT WE HEARD

- Safety for women and girls
- Damage to infrastructure and local amenities
- Noise, nuisance, and disorderly conduct incidents
- Opportunities for new positive social connections
- Employment opportunities for locals

“Greater number of people means **greater opportunity for connection.**”

Quote from Phase 2 survey

“Work camps can create **dangerous conditions** for vulnerable people and everyone in general. Our **resources will be stretched** very thinly.”

Quote from Phase 2 survey

Community Impact **INTEGRATING FEEDBACK**

Overarching Recommendations

- Develop ongoing communication strategy
- Dust mitigation
- Worker Code of Conduct
- Coordination with local service providers

SDM Objectives

- Minimize noise in community
- Maximize ability to manage incidents



Environment

WHAT WE HEARD

- Impact to wildlife and wildlife habitat
- Disturbance of natural environment
- Respect for land, local environment, and wildlife

“Consideration to **wildlife** already impacted by **reduced habitat from forest fires.**”

Quote from Phase 2 survey

“Impact of invasive plant species on area... will require **invasive species control and monitoring** during and after project completion.”

Quote from Phase 2 survey



Environment

INTEGRATING FEEDBACK



Overarching Recommendations

- Invasive Species Management Plan
- Post-construction site re-vegetation
- Worker Code of Conduct



SDM Objectives

- Minimize impact due to land clearing



Emergency Management

WHAT WE HEARD

- Emergency management planning, including evacuation planning
- Emergency response capacity, especially in remote areas

“A **tanker fill hydrant** at the BR 1&2 penstocks would greatly assist [fire suppression].”

Quote from Phase 2 survey

“Minimal to no emergency communication and **emergency response time from centers is lengthy.**”

Quote from Phase 2 survey



Emergency Management

INTEGRATING FEEDBACK



Overarching Recommendations

- Emergency management planning for access and accommodation (with consideration for wildfires, wildlife encounters, domestic animal encounters, and large-scale evacuation planning)
- Planning sessions with local authorities



SDM Objectives

- Minimize worker exposure to geohazards while travelling to / from site
- Minimize worker travel time



St'át'imc Nation Cultural Values

WHAT WE HEARD

- Lack of cultural awareness among workers
- Disturbance of cultural and spiritual sites
- Disturbance of areas used for traditional activities
- Impact on Indigenous women and girls

“There should be **cultural training** provided to the Hydro workers.”

Quote from Phase 2 survey

“Our **First Nation communities** and members should be **key benefactors** and be provided **meaningful engagement and consultation** on decisions.”

Quote from Phase 2 survey



St'át'imc Nation Cultural Values

INTEGRATING FEEDBACK



Overarching Recommendations

- Cultural awareness training
- Coordination with local social service organizations (e.g., Friendship Centre)



SDM Objectives

- Maximize St'át'imc partnership opportunities
- Minimize community nuisance and social impact
- Maximize ability to manage incidents



Infrastructure

WHAT WE HEARD

- Some infrastructure near to or at capacity
- Further strain on services
- Increased costs for services for locals

“Limited amounts of potable water for additional housing.”

Quote from Phase 2 survey

“Our infrastructure is barely able to cope with the current demand and will need to be addressed. **Water, sewage, garbage, provisions etc. will be impacted.**”

Quote from Phase 2 survey



Infrastructure

INTEGRATING FEEDBACK



Overarching Recommendations

- Coordination with Lillooet Landfill
- Coordination with District of Lillooet regarding water supply
- Assessment and mitigation of project infrastructure needs



SDM Objectives

- Minimize demand on existing municipal systems (water, sewer, solid waste)

**Increase in water use at peak occupancy is approximately 1-1.5% of the Lillooet average*



Economic Impacts

WHAT WE HEARD

- Ability of businesses to adapt to changes in demand
- Availability of goods and services for locals
- Support for local businesses

“The extra business **helps grocery stores and suppliers** grow their business.”

Quote from Phase 2 survey

“**Incoming workers** to Seton Portage at the hotel **could be a good thing**. Most contractors are great - a few workers are horribly messy.”

Quote from Phase 2 survey



Economic Impacts

INTEGRATING FEEDBACK



Overarching Recommendations

- Communicate employment opportunities to local community members
- Communicate with local businesses regarding fluctuations in service demand



SDM Objectives

- Support spending in local communities



Health Services

WHAT WE HEARD

- Strained hospital services
- Limited first responder capacity, especially for remote areas

“The biggest problem is the **fluctuations** ... from **high demand to very low demand** ... so it is difficult to provide support services for example health services.”

Quote from Phase 2 survey

“Medical services would be one thing that I would be worried about as right now our local **hospital ... [is] strained to the hilt.**”

Quote from Phase 2 survey



Health Services

INTEGRATING FEEDBACK



Overarching Recommendations

- Consider employing a qualified medical professional to address and triage minor injuries at work site
- Encourage workers to refill prescriptions before coming to the region
- Ensure workers are able to consult virtually with their family doctor



SDM Objectives

- Minimize potential road user safety risk due to increase in traffic
- Minimize worker exposure to geohazards while travelling to / from site



Policing & Security

WHAT WE HEARD

- Added strain on RCMP services
- Increased policing on roadways

“Rd. 40 ... needs **policing** to ensure ALL drivers are **driving to road conditions** and on their side of the road, slowing down and crawling if necessary.”

Quote from Phase 2 survey

“A **signed Code of Conduct** for the workforce reviewed and **signed on a yearly basis**. It should state the outcomes of bad behavior in the community.”

Quote from Phase 2 survey



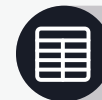
Policing & Security

INTEGRATING FEEDBACK



Overarching Recommendations

- Worker Code of Conduct
- Planning sessions with local RCMP



SDM Objectives

- Maximize ability to manage incidents

4 Draft Leading Options

Options Considered

ACCESS & ACCOMMODATION LOCATION

ROADWAYS

- Road 40 (Lillooet to Terzaghi)
- Mission Mountain Road

RAILWAYS

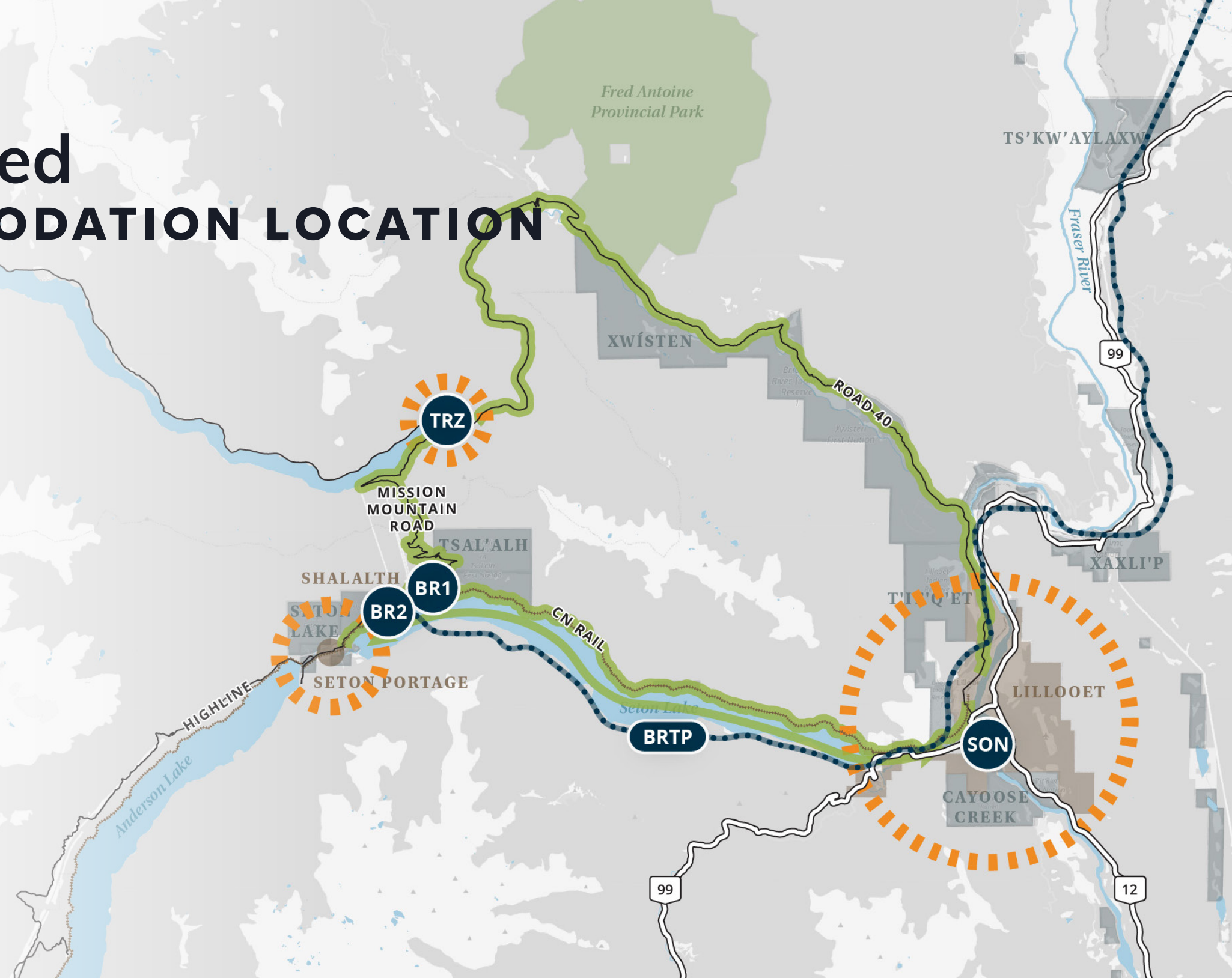
- CN Line (Lillooet to Seton Portage)

WATERWAYS

- Boat (Lillooet to Seton Portage via Seton Lake)

ACCOMMODATIONS

- Lillooet
- Seton Portage
- Terzaghi Dam



Draft Leading Option

SETON PORTAGE & LILLOOET - ACCESS & ACCOMMODATION LOCATION

Facility	Accommodation Location	Daily Commute	Bi-weekly Shift Change
BR1 BR2	Seton Portage	-	Via CN Railway
TRZ	Lillooet	Via Shuttles on Road 40	-
SON	Lillooet	-	-
B RTP	Lillooet / Seton Portage	As needed	-

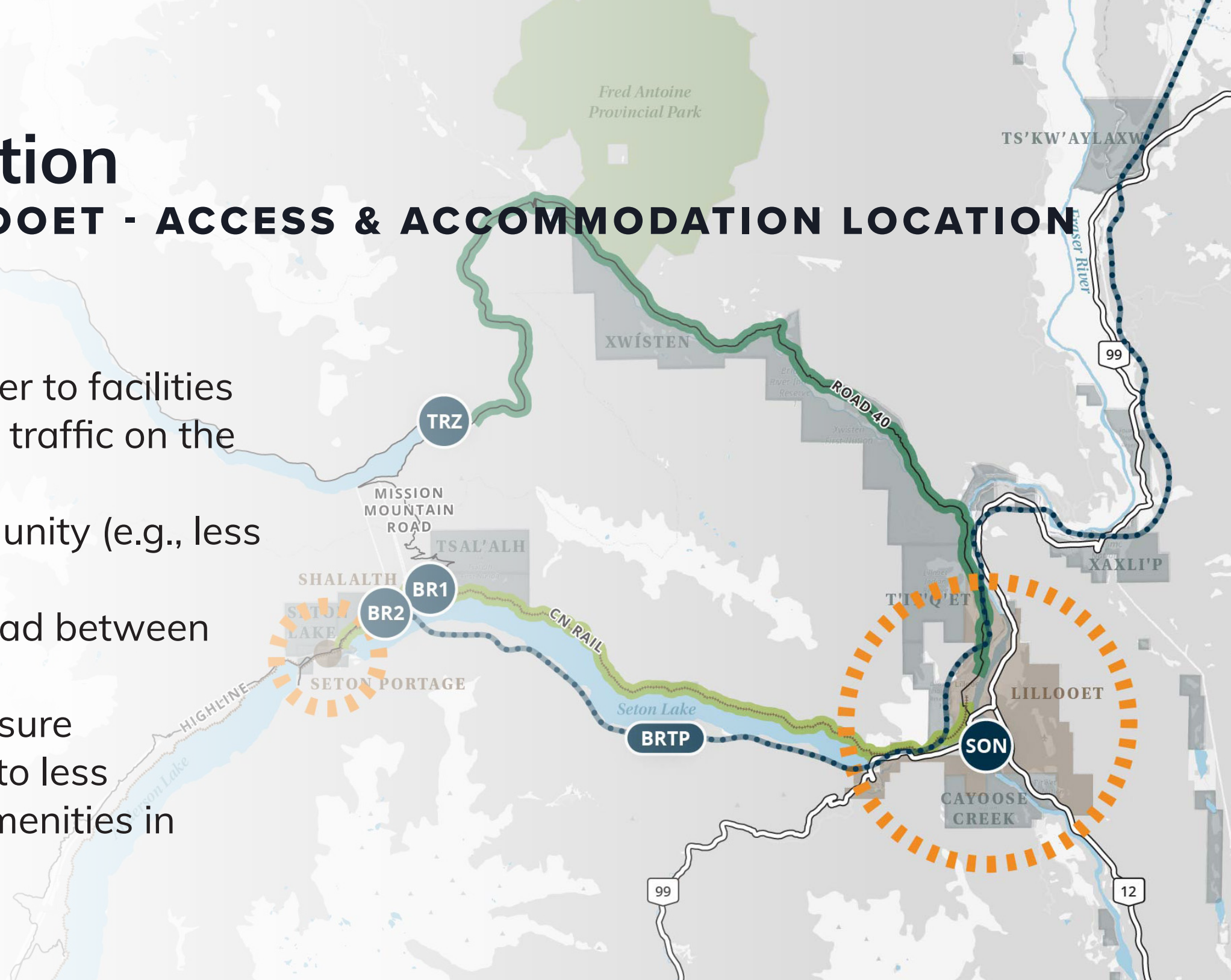


Draft Leading Option

SETON PORTAGE & LILLOOET - ACCESS & ACCOMMODATION LOCATION

Key Benefits

- Having workers staying closer to facilities means less daily commuting traffic on the roads
- Workers not all in one community (e.g., less nuisance and noise)
- Spending opportunities spread between communities
- Lower total geohazard exposure
- Better worker retention due to less commuting and access to amenities in Lillooet for those workers

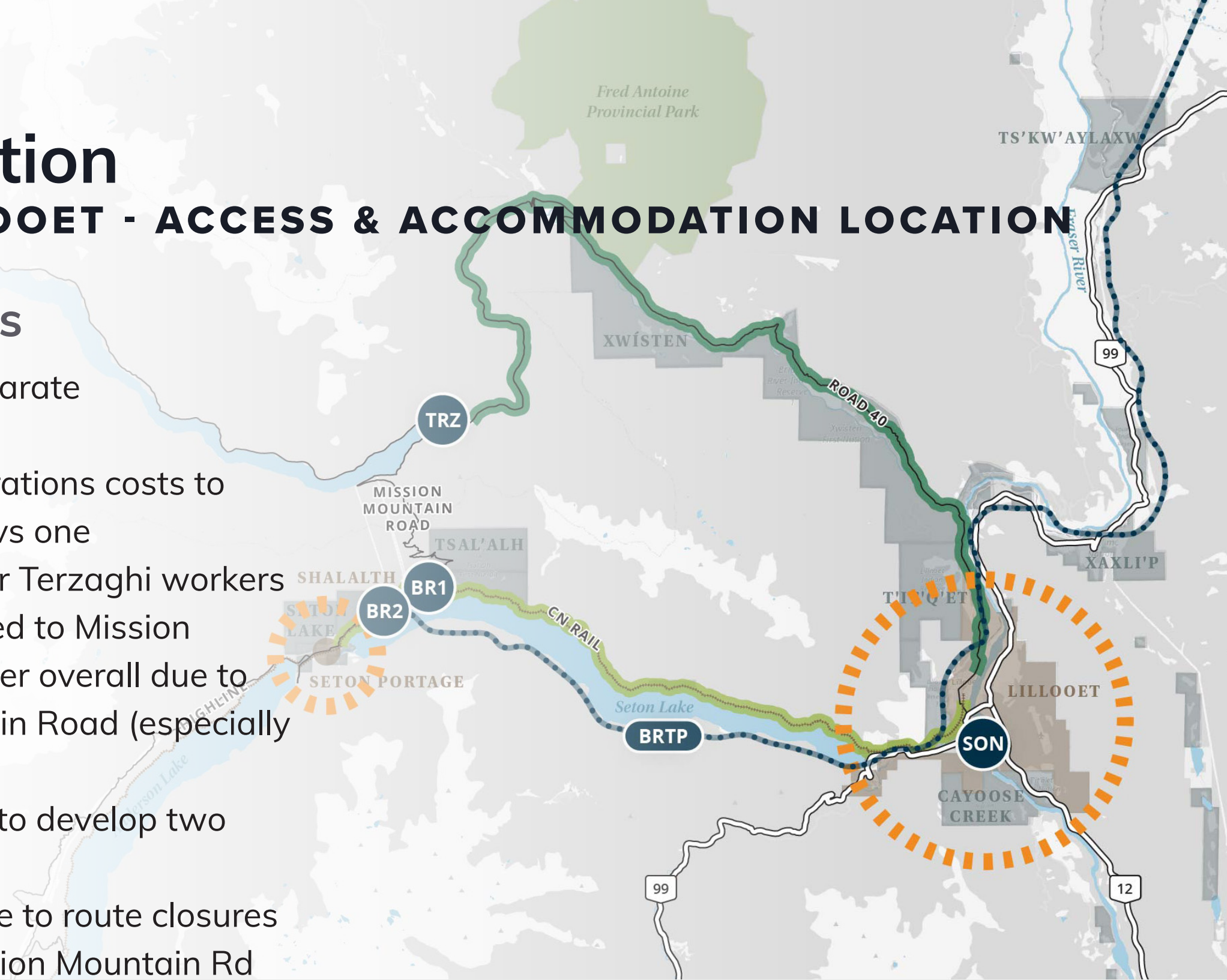


Draft Leading Option

SETON PORTAGE & LILLOOET - ACCESS & ACCOMMODATION LOCATION

Examples of Trade-offs

- Larger footprint to build two separate accommodation sites vs one
- Higher implementation and operations costs to build two accommodation sites vs one
- More exposure to geohazards for Terzaghi workers traveling along Hwy 40 compared to Mission Mountain Rd, but considered safer overall due to steep grades on Mission Mountain Road (especially for winter travel)
- Longer implementation timeline to develop two accommodation sites vs one
- Higher potential for lost days due to route closures along Hwy 40 compared to Mission Mountain Rd



Options Considered

ACCOMMODATION TYPES - LILLOOET

Existing Commercial
and Non-Commercial
Accommodations

Temporary Work
Camp

Temporary Work
Camp and Existing
Commercial
Accommodation

Temporary Work
Camp and New
Commercial
Accommodations

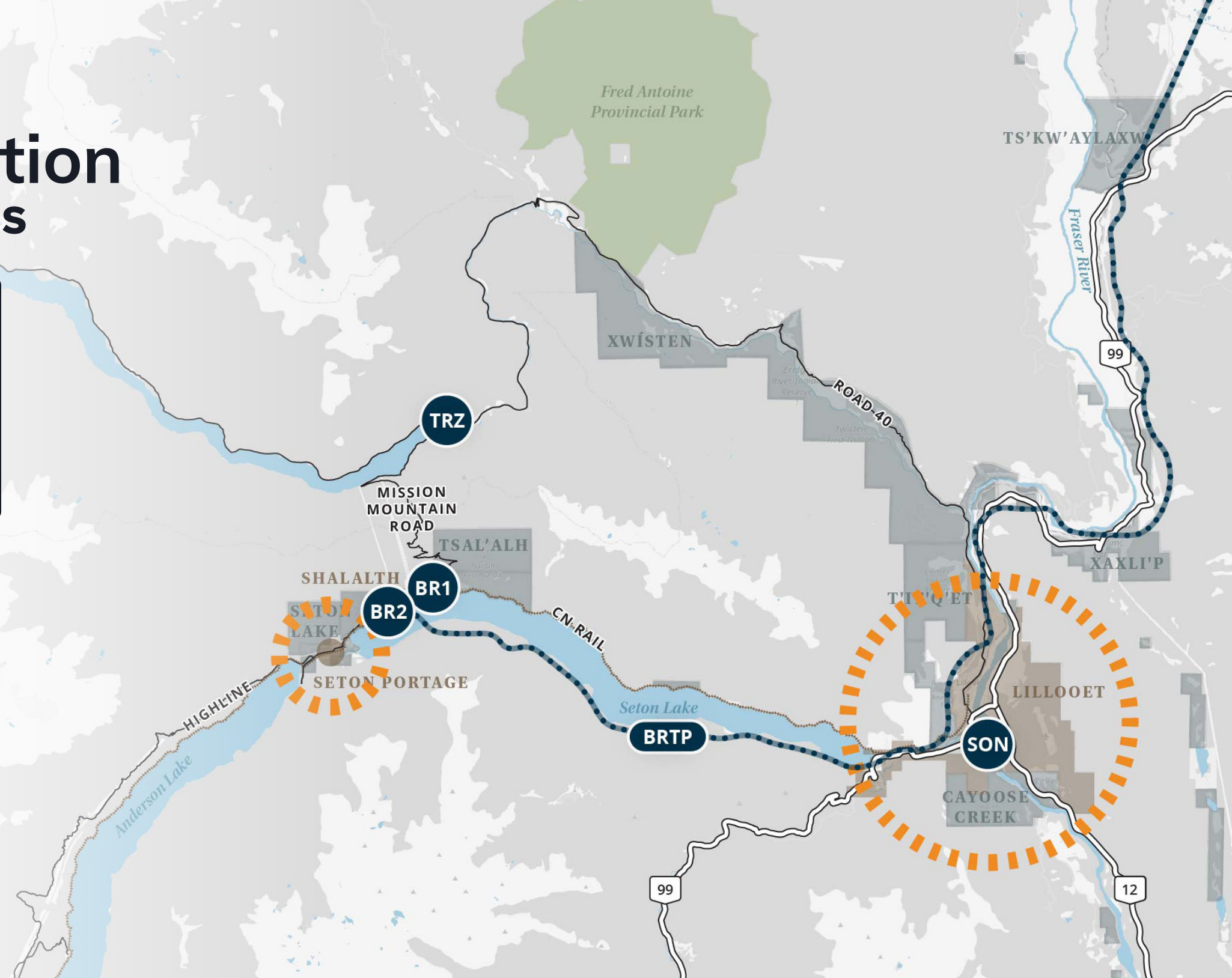
Draft Leading Option

ACCOMMODATION TYPES

Accommodation Location	Accommodation Type
Seton Portage	Lil'tem Hotel, RV Park, Highline Pub and work camp
Lillooet	Work camp and potential new commercial accommodation

Workers in Seton Portage will be staying in a combination of existing commercial accommodations and a work camp. An evaluation of options was not conducted in Seton Portage due to the following reasons:

- Continuing to support existing commercial businesses
- Limited supply of existing non-commercial spaces, and concern for added pressure on housing access and affordability

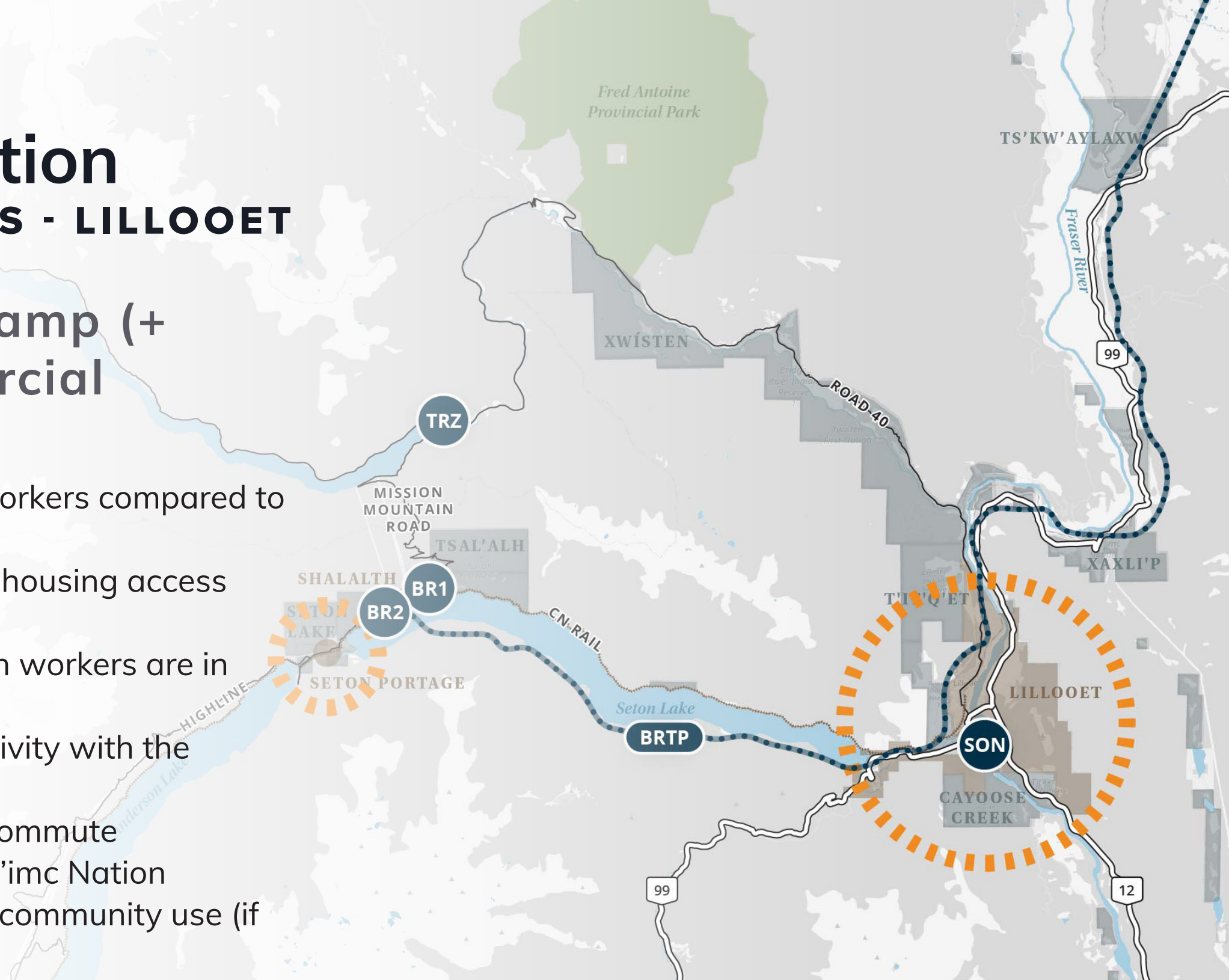


Draft Leading Option

ACCOMMODATION TYPES - LILLOOET

Key Benefits - Work Camp (+ Potential New Commercial Accommodation)

- Guaranteed vacancy for project workers compared to using existing accommodations
- Avoids adding further pressure to housing access and affordability
- Easier incident management when workers are in fewer accommodation nodes
- Easier to communicate worker activity with the community
- Easier to use shuttles for worker commute
- Partnership opportunities for St'át'imc Nation
- New commercial rooms for future community use (if new commercial added)

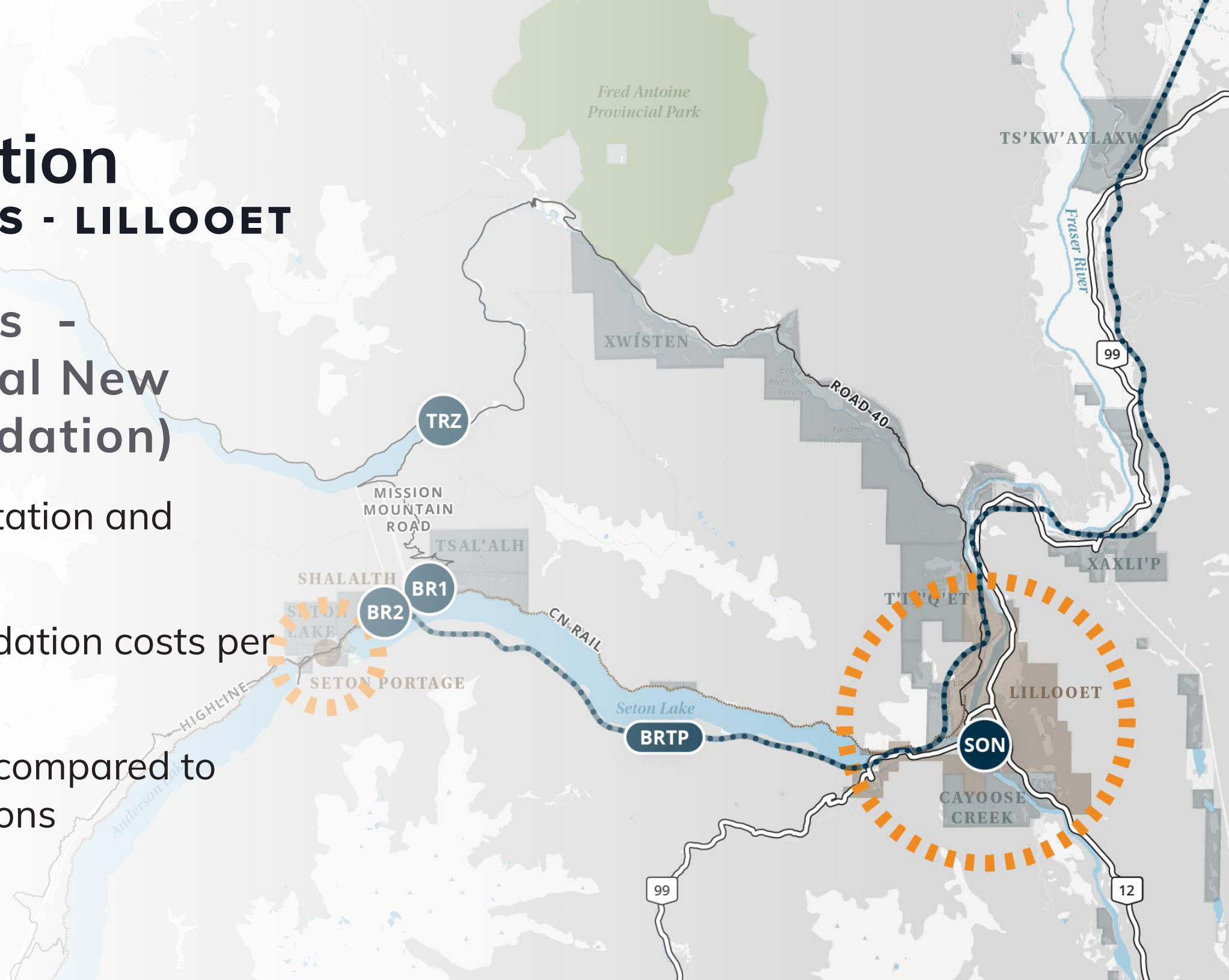


Draft Leading Option

ACCOMMODATION TYPES - LILLOOET

Examples of Trade-offs - Work Camp (+ Potential New Commercial Accommodation)

- Potentially higher implementation and operations costs
- Potentially higher accommodation costs per night
- More land clearing required compared to using existing accommodations



5 Next Steps

Next Steps

FINALIZE STUDY

**SUBMIT
RECOMMENDATIONS**

RELEASE REPORT

**FEASIBILITY
ASSESSMENT +
IMPLEMENTATION**

Report Recommendations Format



Overarching
Recommendations



Structured Decision Making
Objectives & Measures

Using the Structured Decision Making (SDM) Tables

This table is for descriptive purposes only. The final tables will be included in the report, which will be available on the BC Hydro project website once the study is complete.

Table 37: SDM 1 Consequence Table

Sub-Objective	Measure	Access & Accommodation Options									Results & Trade-Offs	Public & Stakeholder Engagement Feedback
		Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8			
		2 Camps, 7 camp workers to Uluwaa	2 Camps, 7 camp workers to Nelson Passage	3 Camps in Nelson Passage	3 Camps in Nelson Passage	3 Camps in Nelson Passage	3 Camps in Uluwaa	3 Camps in Uluwaa	3 Camps in Uluwaa			
		1.02 to Uluwaa (2024-2027) & 1.02 to Nelson Passage (2024-2027) Daily Commute by Road (2024-2027) No BRT Change (2024-2027)	1.02 to Uluwaa (2024-2027) & 1.02 to Nelson Passage (2024-2027) Daily Commute by Road (2024-2027) No BRT Change (2024-2027)	1.02 to Nelson Passage Daily Commute by Road (2024-2027) No BRT Change (2024-2027)	1.02 to Nelson Passage Daily Commute by Road (2024-2027) No BRT Change (2024-2027)	1.02 to Nelson Passage Daily Commute by Road (2024-2027) No BRT Change (2024-2027)	1.02 to Uluwaa Daily Commute by Road (2024-2027) No BRT Change (2024-2027)	1.02 to Uluwaa Daily Commute by Road (2024-2027) No BRT Change (2024-2027)	1.02 to Uluwaa Daily Commute by Road (2024-2027) No BRT Change (2024-2027)			
Maximize BRT use for work opportunity	Maximize BRT use for work opportunity. (1 = no reasonable opportunity, 5 = possible for multiple opportunities to use bus accommodation)	0	0	0	0	0	0	0	0	Option 2 is best for providing BRT use for work opportunity. However, potential opportunities for Uluwaa are only possible in Option 2, which assumes a work camp will be located in or around the District of Uluwaa.	N/A	
Maximize Stakeholder Support	Measured as the percentage increase in population of the community due to the worker volume base line worker population. Based on an estimated population of 800 in Nelson Passage/Uluwaa and 1,000 in Uluwaa.	+5%	+5%	+5%	+5%	+5%	+5%	+5%	+5%	For both communities, the best impact when workers do not stay in the community is in all. However, in all scenarios, workers will need to travel to each of the 30 camps. Further, meaning there will be some level of daily worker activity in both Nelson Passage and Uluwaa. Considering this, the best impacted option is Option 2, which results in less "commuter" traffic between communities, as the workers stay in the community and to the BC Hydro facility (with the exception of "camp" and BRT workers).	While some residents were optimistic about the presence of new people (activity) in the community and the opportunity for new social interactions, they still noted concerns over general noise and vibration that may arise as a result of the large number of temporary workers. Regarding the accommodation growing from two camps, when that testing of workers in one camp, leaves the noise and vibration impact on community members.	
Support spending in local communities	Measured as the percentage increase in population of the community due to the worker volume base line worker population. Based on an estimated population of 800 in Nelson Passage/Uluwaa and 1,000 in Uluwaa.	3	3	4	3	3	3	3	3	Option 1 and Option 2 score highest overall as they provide spending opportunities in both communities.	Business owners stated concerns over being able to attract and retain staff and meeting the increase in demand from workers. However, the majority of business owners and established businesses were supportive of new business from workers and looking forward to increased spending in the community.	
Maximize Travel Safety	Highway 40 Mishan Mountain Road	13.6% (40 up) 10.6% (30 up)	13.2% (40 up) 10.6% (30 up)	13.6% (40 up) 10.6% (30 up)	13.6% (40 up) 10.6% (30 up)	13.6% (40 up) 10.6% (30 up)	13.6% (40 up) 10.6% (30 up)	13.6% (40 up) 10.6% (30 up)	13.6% (40 up) 10.6% (30 up)	Option 1 and Option 2 reduce the largest traffic volume exposure to the one using options where all travel is by road (Options 3 and Option 4). Option 7 and Option 8 have the lowest traffic, however the reduction in volume when compared to Option 1 and Option 2 (ranging from 0.5% to 0.5%) is minimal and will not reduce worker traffic. Overall, the most significant occupancy vehicle use, and project traffic, based on the increase in the number of BRT workers.	The top concern from stakeholders and the public related to travel safety, especially increased incidents resulting from the increase in traffic on Road 40.	
Minimize project related traffic	Reduced increase in daily traffic as a result of increased worker to the existing traffic volume, by road	Option 1 and 2 have fewer workers traveling daily than Nelson Passage options, however, if the BRT+STP or BRT+STP options are implemented by 2024 or 2025, the additional project traffic is comparable as the majority of project traffic is related to workers, supplies, and equipment transport and miscellaneous project traffic.	Option 2 results in the highest increase in project related traffic due to moving workers daily and to shift change road travel by rail and local route traffic on roads by increasing the daily trip for the BRT and STP workers.	Option 2 results in the highest increase in project related traffic due to moving workers daily and to shift change road travel by rail and local route traffic on roads by increasing the daily trip for the BRT and STP workers.	Option 2 results in the highest increase in project related traffic due to moving workers daily and to shift change road travel by rail and local route traffic on roads by increasing the daily trip for the BRT and STP workers.	Option 2 results in the highest increase in project related traffic due to moving workers daily and to shift change road travel by rail and local route traffic on roads by increasing the daily trip for the BRT and STP workers.	Option 2 results in the highest increase in project related traffic due to moving workers daily and to shift change road travel by rail and local route traffic on roads by increasing the daily trip for the BRT and STP workers.	Option 2 results in the highest increase in project related traffic due to moving workers daily and to shift change road travel by rail and local route traffic on roads by increasing the daily trip for the BRT and STP workers.	Option 2 results in the highest increase in project related traffic due to moving workers daily and to shift change road travel by rail and local route traffic on roads by increasing the daily trip for the BRT and STP workers.	Option 2 results in the highest increase in project related traffic due to moving workers daily and to shift change road travel by rail and local route traffic on roads by increasing the daily trip for the BRT and STP workers.	Option 2 results in the highest increase in project related traffic due to moving workers daily and to shift change road travel by rail and local route traffic on roads by increasing the daily trip for the BRT and STP workers.	
Minimize worker exposure to greenhouse while traveling to / from site	Average annual travel time per worker through moderate to very high GHG potentials	Daily Commute: 1,800 worker hours / year BRT Change: 1,800 worker hours / year Total: 3,600 worker hours / year	Daily Commute: 1,800 worker hours / year BRT Change: 1,800 worker hours / year Total: 3,600 worker hours / year	15,100 worker hours / year	7,900 worker hours / year	1,800 worker hours / year	15,100 worker hours / year	15,100 worker hours / year	1,800 worker hours / year	Option 1 and Option 2 reduce the annual greenhouse exposure compared to all other options with the exception of Option 8. Although travel by road eliminates exposure to greenhouse, resulting up to 120 tonnes per day by road, they still have the highest exposure to greenhouse, resulting up to 120 tonnes per day by road. Travel by rail has the lowest greenhouse exposure due to road.	N/A	
	Highway 40 Mishan Mountain Road	Holding Rate = 25.0 collisions / year Potential Future Rate = 25.0 collisions / year	Holding Rate = 25.0 collisions / year Potential Future Rate = 25.0 collisions / year	Holding Rate = 25.0 collisions / year Potential Future Rate = 25.0 collisions / year	Holding Rate = 25.0 collisions / year Potential Future Rate = 25.0 collisions / year	Holding Rate = 25.0 collisions / year Potential Future Rate = 25.0 collisions / year	Holding Rate = 25.0 collisions / year Potential Future Rate = 25.0 collisions / year	Holding Rate = 25.0 collisions / year Potential Future Rate = 25.0 collisions / year	Holding Rate = 25.0 collisions / year Potential Future Rate = 25.0 collisions / year	All options are relatively comparable for this measure, with travel by rail and local providing the largest potential to reduce collisions. This measure is not included in this measure.		

Take our survey!

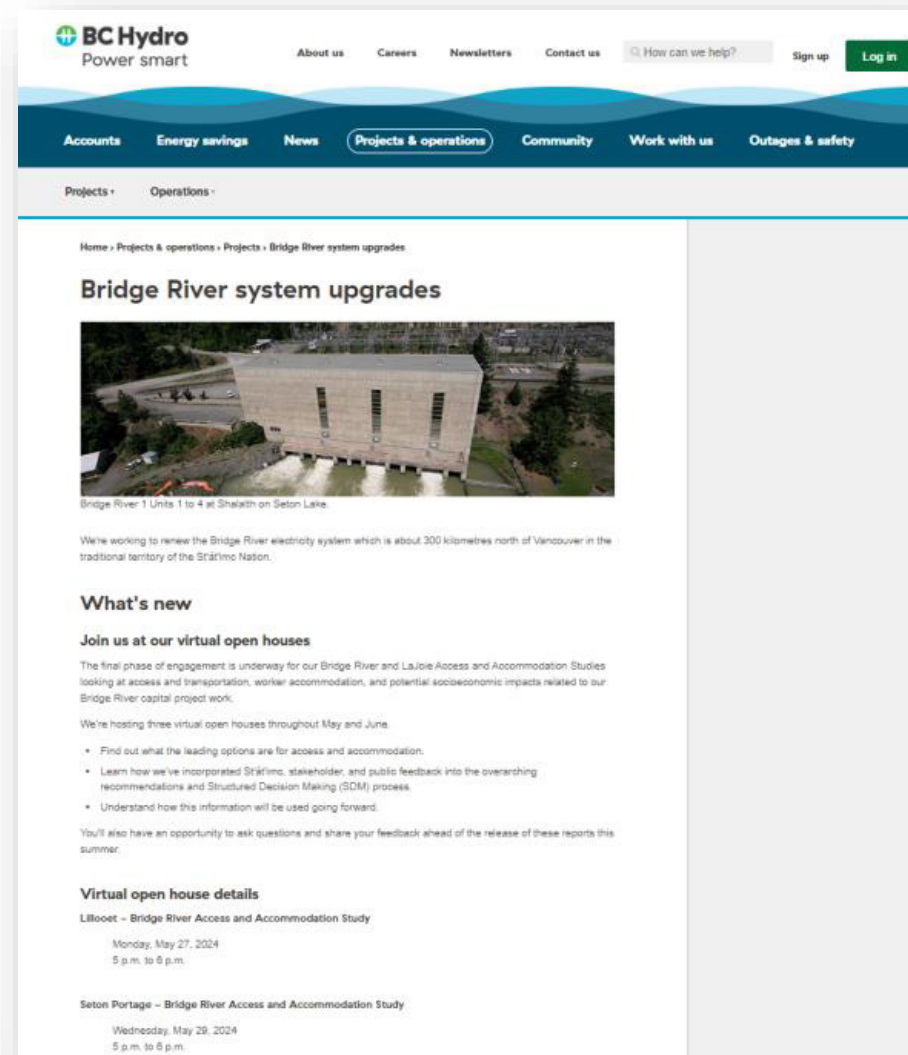


4 Ways to Find the Survey:

1. Scan the QR code with your phone and follow the link
2. Go to www.bchydro.com/bridgeriver
3. Click the link in the chat
4. Bridge River Capital Project update subscribers will receive an emailed link



Communications and Contact Info.



How we inform you about our work:

- Local ads
- Open Houses
- Bi-annual newsletter
- Delegations to local governments
- www.bchydro.com/bridgeriver
- Email projects@bchydro.com
- Phone: 1-866-647-3334

Questions?



BC Hydro

Power smart