

# George Massey Tunnel Transmission Relocation Project

## Consultation summary report, August 2023



# Executive Summary

Between January 25 and February 25, 2023, we invited stakeholders, the communities of Richmond and Delta, and Deas Island Regional Park users, to learn more about our George Massey Tunnel Transmission Relocation Project and to share their feedback on the three alternatives that we're studying:

- **Alternative 1: Overhead Line** - A new, overhead line across the Fraser River. This line would be built adjacent to the Government of B.C.'s proposed immersed tube tunnel.
- **Alternative 2: Underground line in the proposed immersed tube tunnel** - A new underground line built into the Government of B.C.'s proposed immersed tube tunnel.
- **Alternative 3: Separate Underground Line** - A new underground line separate from the Government of B.C.'s proposed immersed tube tunnel.



Our consultation activities included three online open house sessions and an online survey. At the open houses, there was significant discussion on the footprint and height of the proposed transmission line towers supporting an overhead crossing of the Fraser River (Alternative 1) and potential construction impacts across all three alternatives. There was also interest in knowing construction costs for each alternative.

From the survey responses we received, we identified the following top themes for each alternative:

- Seventy-five per cent of respondents noted visual quality as high concern for Alternative 1;
- Some respondents noted contaminated soils (15%), wildlife (14%), and river access (12%) as high concern for Alternative 2; and
- Fifty per cent of respondents noted fish and fish habitat as high concern for Alternative 3.

As our project moves forward, we'll continue to provide updates and opportunities for stakeholders to share additional feedback on a leading alternative and we will work to address or mitigate concerns raised during the project where possible.

# Background

The Government of B.C. is proposing to replace the existing four-lane George Massey Tunnel with a new, eight-lane immersed tube tunnel, and will decommission the existing tunnel once the new tunnel is in operation.

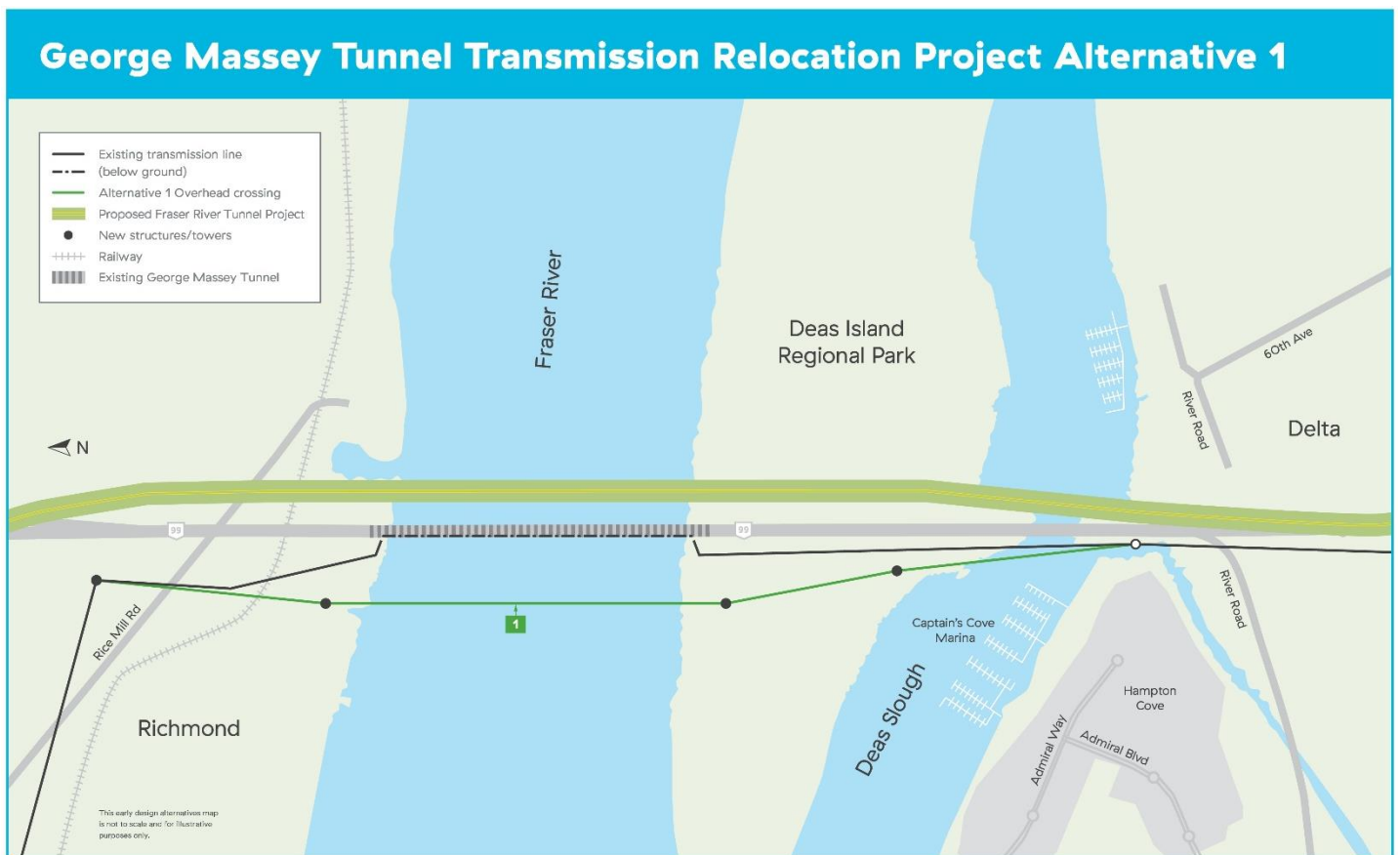
We operate a 12-kilometre, 230-kilovolt power line from Arnett Substation in Delta to Steveston Substation in Richmond, serving approximately 30,000 customers. Approximately 700 metres of this line is contained within the existing George Massey Tunnel. With the tunnel planned for replacement and decommissioning, we need to relocate this section of the power line across the Fraser River.

We anticipate that this project will primarily take place within the existing Ministry of Transportation and Infrastructure (MOTI) right-of-way. This area has undergone significant industrial and agricultural development over the past 100 years.

We're examining three alternatives to relocate a section of the existing power line that's currently located underground in the George Massey Tunnel. This project is in an early stage, and the design for each alternative is conceptual and subject to change as the project advances. All alternatives require overhead infrastructure to connect with existing overhead lines in Delta and Richmond.

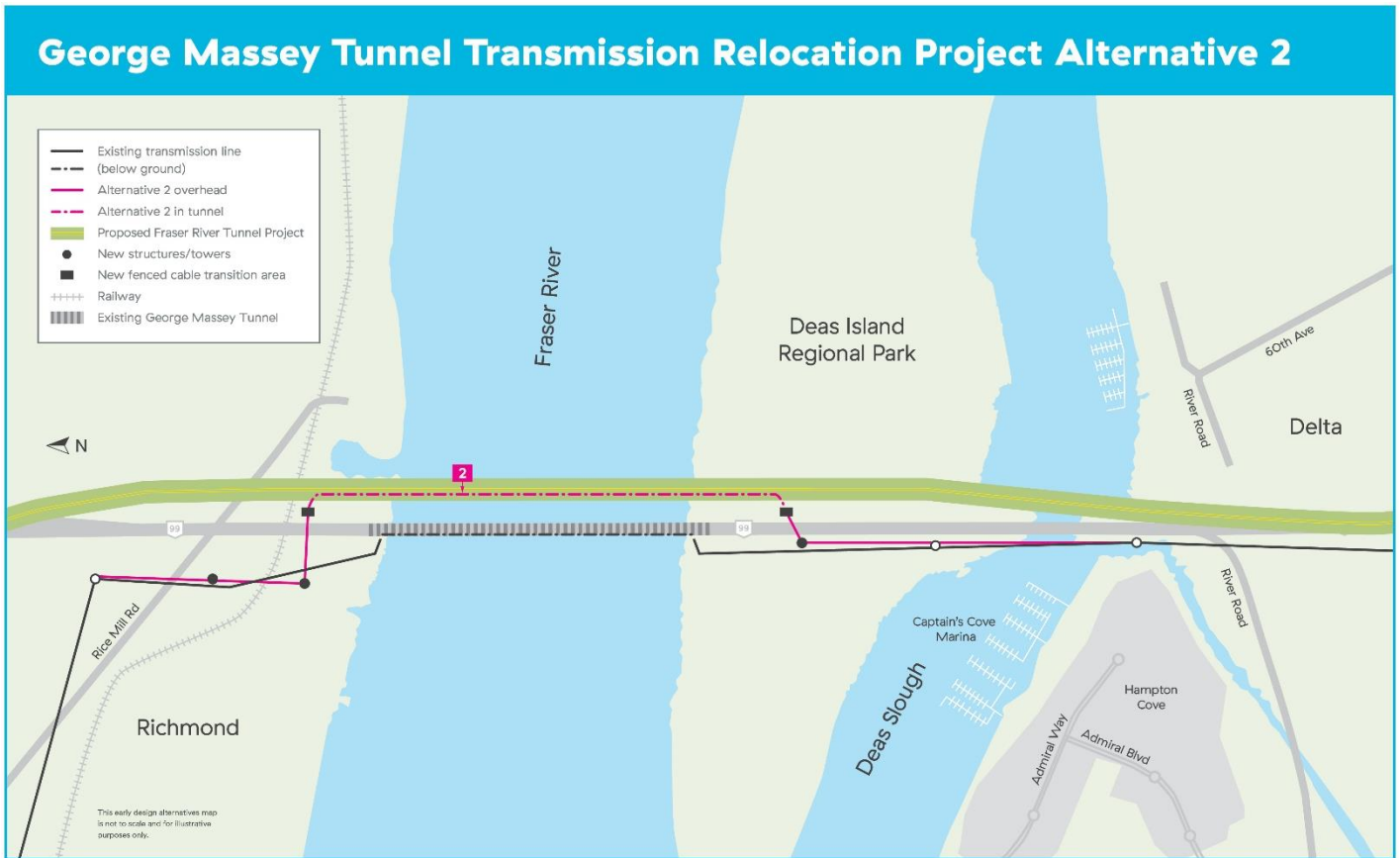
## Alternative 1: Overhead Line

A new, overhead line across the Fraser River. This line would be built adjacent to the Government of B.C.'s proposed immersed tube tunnel.



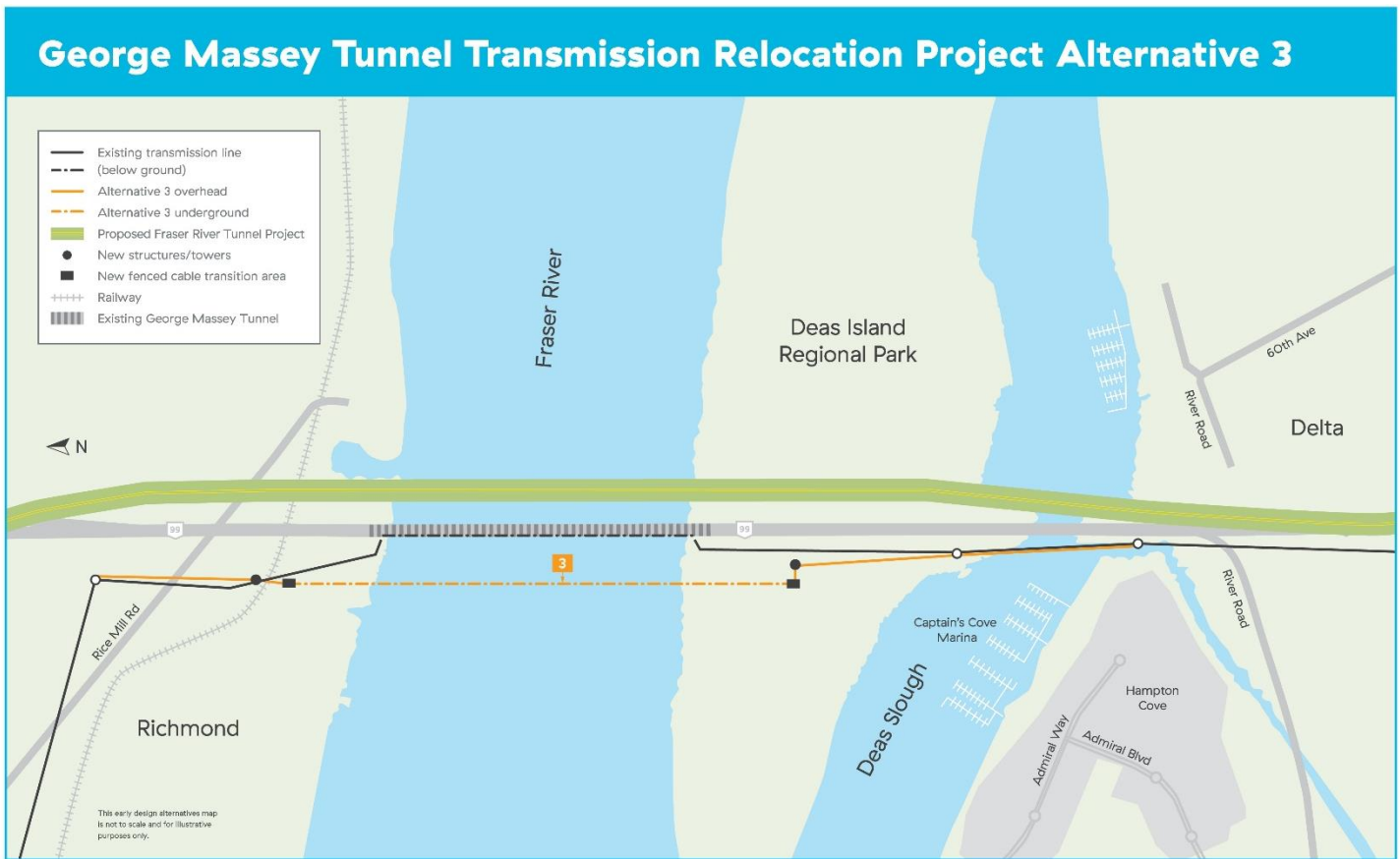
## Alternative 2: Underground line in the proposed immersed tube tunnel

A new underground line built into the Government of B.C.'s proposed immersed tube tunnel.



### Alternative 3: Separate Underground Line

A new underground line separate from the Government of B.C.'s proposed immersed tube tunnel.



## INDIGENOUS ENGAGEMENT

We are engaging with First Nations in a parallel process and will continue to do so for the duration of this project.

# What we did

## COMMUNICATION

On January 12, 2023, we invited stakeholders and the community to learn about the three alternatives we are studying for this project, and to share their input during our consultation period. Project information remains accessible on our project webpage.

### Notification

To ensure the community knew about our consultation opportunities, we used varied notification tools to reach businesses and residents:

#### Social media

- Geo-targeted (Richmond, Delta) Facebook ads
  - Advertised open houses - Jan. 12 to Jan. 24
  - Advertised survey - Jan. 25 to Feb. 9 and Feb. 14 to Feb. 25
- 280,813 impressions

#### Print media

- Ads run in the *Delta Optimist* and *Richmond News*
  - 4 x virtual open house ads on Jan. 12 and Jan. 19
  - 8 x online survey ads from Jan. 26 to Feb. 16

#### Canada Post mailer

- Postcard sent to 31,227 residents and businesses in Delta and Richmond, along the Fraser River
- Distributed by Canada Post on Jan. 12

#### Third-party website

- Consultation opportunities posted on Metro Vancouver Parks' Deas Island Regional Park webpage

#### Postering

- Consultation opportunities posted at the Deas Island Regional Park information board

### Information sharing

We developed a webpage, PowerPoint presentation and survey to use during this consultation. The materials highlighted:

- Why we need a new section of transmission line across the Fraser River
- The three alternatives that we're studying, including:
  - Technical details
  - Permits that may be required
  - Land use considerations
  - Vegetation, and habitat and wildlife considerations
  - Contaminated soils
  - Visual impacts
  - Public access to the Fraser River

# CONSULTATION

From January 25 to February 25, 2023, we invited stakeholders and the community to share their input on the three alternatives we are studying for this project.

## Virtual open houses

During this period, we held three, online open houses. In each session, the project team guided participants through a presentation that included:

- The need for a new transmission crossing,
- Details and visuals to help participants visualize and understand our current study of three potential alternatives, and
- The potential impacts and mitigation measures for each alternative.

Participants were invited to ask questions and provide comments throughout the presentation, and we collected notes from the conversations and 'chat' function comment as input into our consultation.

At the end of each session, we shared information about how participants could access and complete the project survey and encouraged them to provide additional input via the survey.

## Online survey

From January 25 to February 25, 2023, we hosted an online project survey on the [bchydro.com/GMT](https://bchydro.com/GMT) webpage.

We structured the survey to gather feedback on each of the three alternatives under study to help us understand the areas of high public concern for each alternative. By receiving this information, we can learn what is most important to our stakeholders and prepare to address or mitigate concerns raised during the project where possible.

The survey provided an overview of the project and an overview of each alternative being studied, including the technical details, permits that may be required, and other considerations such as potential impacts to land use, fish and fish habitat, vegetation and habitat, wildlife, visual quality, contaminated soils, and river access.

We asked participants to review each alternative in turn, including technical details and then rank the relevant considerations on a scale of 1 (low concern) to 5 (high concern) for each alternative. Rankings of 4 or higher prompted the participant to provide a reason for the rating.

We also asked survey participants to identify any other considerations not identified in the survey.

## Email

Stakeholders were also invited to contact us by email at [projects@bchydro.com](mailto:projects@bchydro.com). We received 16 email inquiries.

## How stakeholders reached us

### Virtual open houses



Jan. 25 and Jan. 31 - 7-8pm  
Jan. 26 - 1-2pm

**60**

attendees

### Online survey



available Jan. 25 to Feb. 25

**165**

total responses

### Email



via [projects@bchydro.com](mailto:projects@bchydro.com)

**16**

email inquiries received

# What we heard

We received input about the project and the alternatives at our virtual open houses, via the online survey and emails.

## OPEN HOUSE DISCUSSION

Sixty people attended three online open houses held between January 25 and 31, 2023. Feedback from the three discussions is summarized below. The presentation for these open houses is in Appendix A.

### Alternative 1: Overhead Line

- This alternative generated the most discussion. Feedback focused on the visual impact of the proposed towers required to support an overhead crossing of the Fraser River.
- The location of Hampton Court, a major residential development south of Deas Island Regional Park, and across the Fraser River, was noted as potentially experiencing “severe” visual impact, along with Deas Island Park users and boaters in Deas Slough.
- Participants questioned the reliability of overhead lines, the potential for light pollution from the towers, and whether they would affect marine traffic along the river.
- Concern for potential bird and bat collisions with overhead lines was raised.
- There was a concern about the amount of land that would be removed from Deas Island Regional Park because of the overhead infrastructure.

### Alternative 2: Underground line in the proposed immersed tube tunnel

- This alternative received the most support as it was seen as disturbing the area once to install both the proposed tunnel and relocate the transmission line.
- Participants liked the fact that there would be no overhead crossing of the Fraser River.
- It was perceived as providing the best reliability and the least impact to the environment.

### Alternative 3: Separate Underground Line

- While there was a preference for this alternative as compared to Alternative 1, participants questioned the constructability of this alternative and raised concerns about the potential for impacts to fish and fish habitat.



# ONLINE SURVEY RESULTS

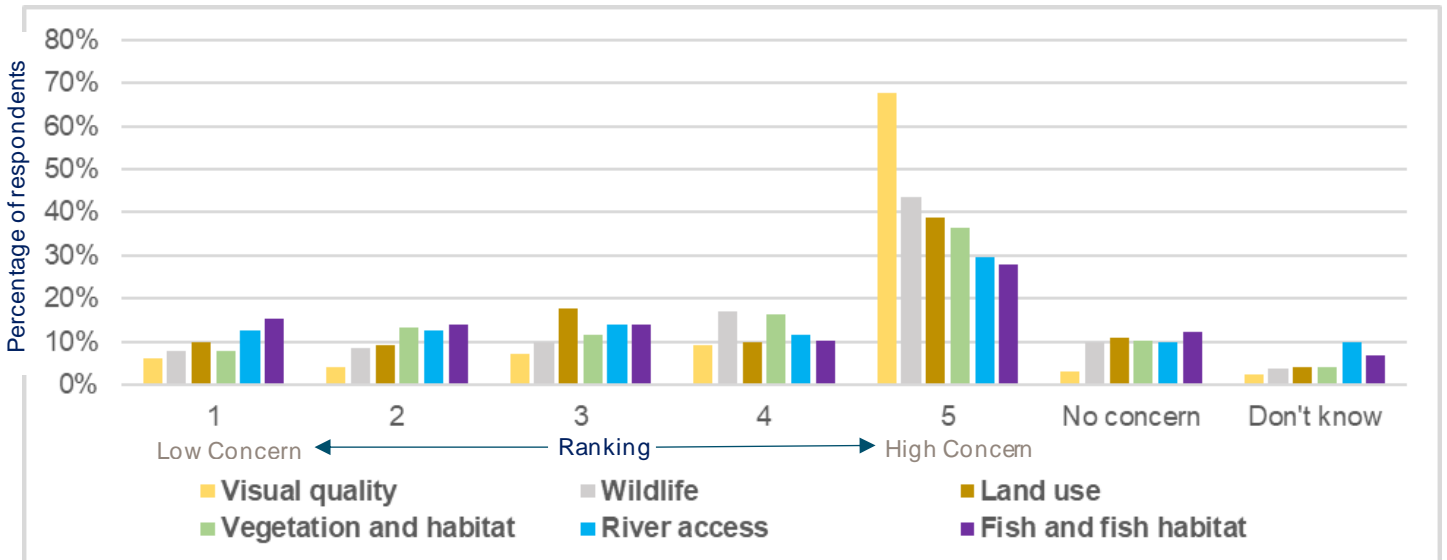
We hosted an online survey accessed via our project webpage between January 25 and February 25, 2023 (see Appendix B). We shared a link to the survey with online open house participants, and with Facebook ads geotargeted to Richmond and Delta residents.

Responses were anonymous.

In total 165 people responded to the survey, with 92 fully completed and 73 partially completed surveys.

The graphs below summarize the responses given for each alternative. They show how respondents ranked the considerations of each alternative. Rankings of 4 or 5 are combined to indicate “high” concern.

## Alternative 1: Overhead line (165 responses)



Alternative 1 received the highest number of responses and respondents noted the highest level of concern (77%, with over 68% rated “5”), particularly around the potential for visual impacts to the surrounding area due to the height of the towers supporting the overhead line crossing the Fraser River. Other considerations ranked as having high concern are wildlife (61%, with interrelated concerns with vegetation and habitat: 52%) and land use (49%).

### Reasons for high concern:

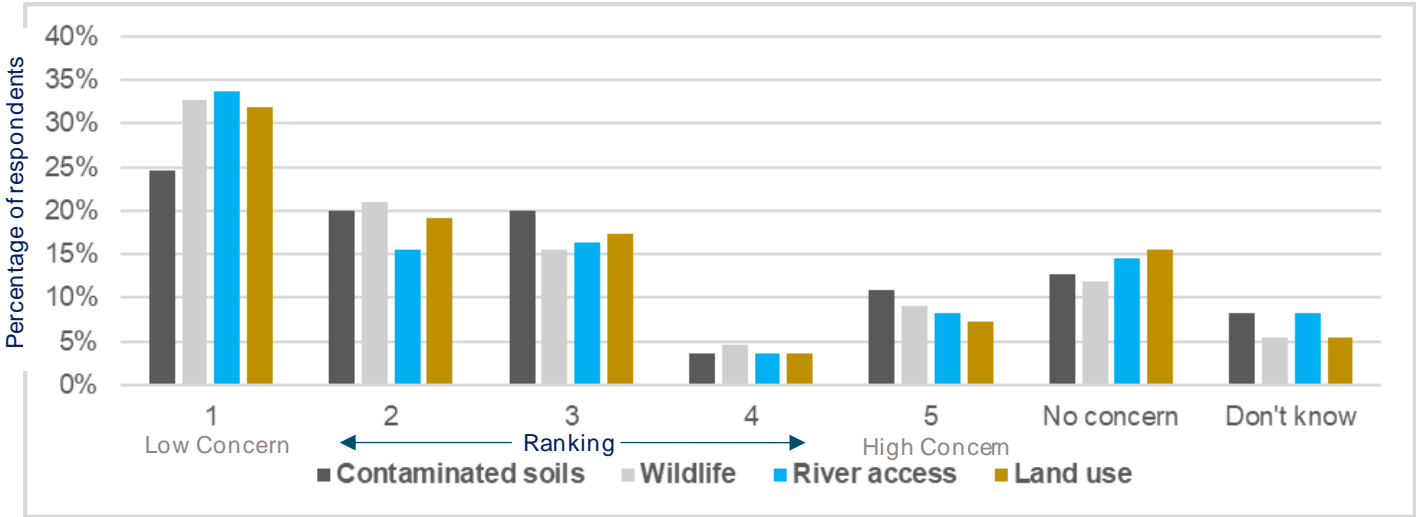
<b>Visual quality</b>	<ul style="list-style-type: none"> <li>○ View obstruction from towers, overhead lines, and ball markers, and noticeable to nearby residents and park users</li> </ul> <p><b>Participant comments</b></p> <ul style="list-style-type: none"> <li>○ “Very ugly alternative - lattice towers are very unsightly, and within close proximity to residential areas in Delta.”</li> <li>○ “I am concerned about the visual quality since residents and property owners and taxpayers in Richmond have not had to be exposed to 416-foot towers in the past 50 plus years. Please keep it that way!”</li> </ul>
<b>Wildlife (including vegetation and habitat)</b>	<ul style="list-style-type: none"> <li>○ Various bird populations (eagles, geese, heron, raptors) and surrounding wildlife (bats, rats, mice) via disruption of vegetation and habitat</li> <li>○ Bird migration, flight paths, and collision with towers, wires</li> <li>○ Noise pollution from construction, operation (noise from wires), and maintenance</li> </ul>
<b>Land use</b>	<ul style="list-style-type: none"> <li>○ Footprint on nearby vegetation, wildlife habitat, park areas, and farmlands</li> </ul>

<b>Land use (continued)</b>	<ul style="list-style-type: none"> <li>○ Access and restrictions to boating, Deas island, and farmlands, during construction</li> <li>○ Proximity and safety: impact of high voltage wires to nearby residents</li> </ul> <p><b>Participant comment</b></p> <ul style="list-style-type: none"> <li>○ “It seems this will affect more land than the current structures do. I don’t agree with any more disruption to natural/farmland than we have at present.”</li> </ul>
<b>River access</b>	<ul style="list-style-type: none"> <li>○ Wire height and potential safety risk to various vessel sizes/heights</li> <li>○ River and nearby access during construction; impact to recreational vessels</li> </ul>
<b>Fish and fish habitat</b>	<ul style="list-style-type: none"> <li>○ Siltation in riverbed/banks; impact on salmon spawns, runs</li> <li>○ Fish health from water contamination from bird feces (more birds resting on lines), and corrosion, leachates, light pollution, EMFs electric and magnetic fields from structures</li> </ul>

Some respondents identified additional considerations and noted high concern for the following:

- Boat size restrictions;
- Electrical safety i.e., potential for impacts/risks to nearby residential neighborhoods; and
- Perception of risk to aircrafts in flight path to/from Boundary Bay airport.

**Alternative 2: Underground line in the proposed immersed tube tunnel (110 responses)**



Alternative 2 received fewer responses than Alternative 1. Respondents identified this alternative as having the least concern, due to the fact that it is underground and within the tunnel. A few respondents shared high concern for contaminated soils (15%); Wildlife (14%); and, River access (12%).

**Reasons for high concern**

<b>Contaminated soils</b>	<ul style="list-style-type: none"> <li>○ Questions about soil testing, remediation plans, and the potential leaching of soil to river and nearby farmlands</li> </ul> <p><b>Participant comment</b></p>
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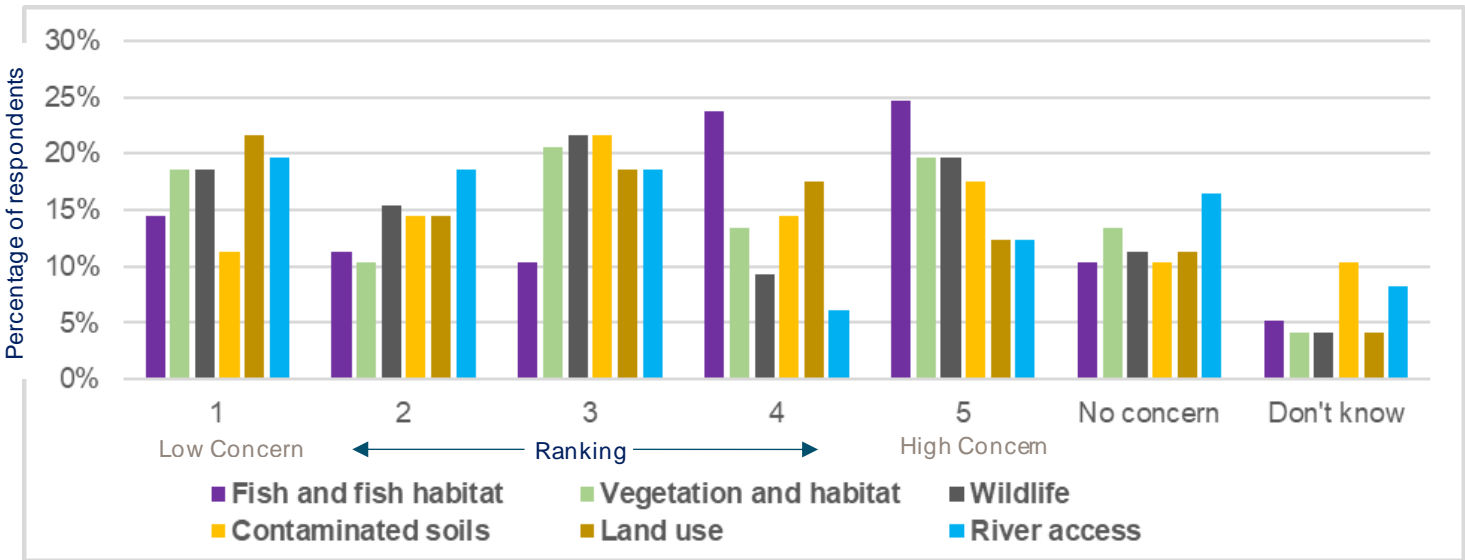
<b>Contaminated soils (continued)</b>	<ul style="list-style-type: none"> <li>○ “If testing shows there are contaminated soils they should be cleaned up regardless of alternative chosen. Contamination can leech into the river and make animals living in the area sick.”</li> </ul>
<b>Wildlife</b>	<ul style="list-style-type: none"> <li>○ Construction, tower impacts to vegetation and habitats/nests of birds, bats, fish</li> </ul>
<b>River access</b>	<ul style="list-style-type: none"> <li>○ Accessibility to Deas Slough and river and whether cable termination stations will block access to river, damage from boat anchors</li> </ul>
<b>Land use</b>	<ul style="list-style-type: none"> <li>○ Potential habitat loss from construction, land clearing and visual disturbance from erected towers or structures</li> </ul>

Some respondents identified additional considerations and noted high concern for the following:

- Costs,
- Siltation from underground construction, and
- Power disruption from catastrophic event in tunnel.

Numerous respondents additionally commented on opting for the status quo (keeping it underground as it has been over the years).

**Alternative 3: Separate underground line (97 responses)**



Alternative 3 received the least number of responses. Rankings of the considerations were mostly consistent; however, the highest concern was around potential impacts of the to fish and fish habitat (49%) followed by vegetation and habitat (including wildlife) 33%, contaminated soils 32%.

**Reasons for high concern**

<b>Fish and fish habitat</b>	<ul style="list-style-type: none"> <li>○ Water contamination during construction, e.g. drilling fluids, siltation</li> <li>○ Questioning need for a second tunnel, creating additional disturbance</li> </ul> <p><b>Participant comment</b></p> <ul style="list-style-type: none"> <li>○ “The river is quite sandy and constantly moving with the tides and currents, so question how safe and stable the construction could be to not impact fish and fish habitat. Should any problems develop within the tubing, this would likely cause even more disruption.”</li> </ul>
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<b>Vegetation and habitat (including wildlife)</b>	<ul style="list-style-type: none"> <li>○ Vegetation removal; particular impacts to species (birds, bats, coyotes, rats, raccoons, skunks) and areas (Deas Island Park)</li> <li>○ Wildlife and habitat stress, disruption, and loss from large land footprint</li> <li>○ Extent of impacts (siltation from staging area and drilling); long term effects to wildlife, and potential contamination from drill fluid</li> </ul>
<b>Contaminated soils</b>	<ul style="list-style-type: none"> <li>○ Fluids and other chemicals from heavy equipment</li> <li>○ Contamination of and pressure on riverbed from drilling (fluid release)</li> <li>○ Contamination spillover to wildlife and habitat, farmlands</li> <li>○ Extent of remediation efforts for the placement and large movement of soils</li> </ul> <p><b><i>Participant comments</i></b></p> <ul style="list-style-type: none"> <li>○ <i>“Are drilling fluids potentially harmful to soils throughout this alternative?”</i></li> <li>○ <i>“Placement of additional dredged materials that may be contaminated will add additional expense to the project or may result in additional environmental damage if not processed before placement elsewhere.”</i></li> </ul>
<b>Land use</b>	<ul style="list-style-type: none"> <li>○ Large footprint from construction; impact to farmland, Deas Island Park; noise</li> </ul>
<b>River access</b>	<ul style="list-style-type: none"> <li>○ More disturbance could result in a marine traffic risk, as well as compromising access to Deas Slough for residents</li> </ul>

Some respondents identified additional considerations and noted high concern for the following:

- Cost and long-term impact on marine ecosystem.

## Next steps

The feedback that stakeholder and community participants shared will help inform our decision on a leading alternative that we'll bring forward for future study.

We are also considering First Nations input, cost, reliability, constructability and potential impacts to environment, cultural heritage, and archaeology.

We will host additional engagement sessions once we have a leading alternative. In the meantime, we continue to work with the Government of B.C. on the technical feasibility of all three alternatives.

### STAY INFORMED

You can find the latest information about this project and sign-up to receive information about future consultation opportunities on our project webpage.

Visit [bchydro.com/GMT](http://bchydro.com/GMT).

# APPENDIX A

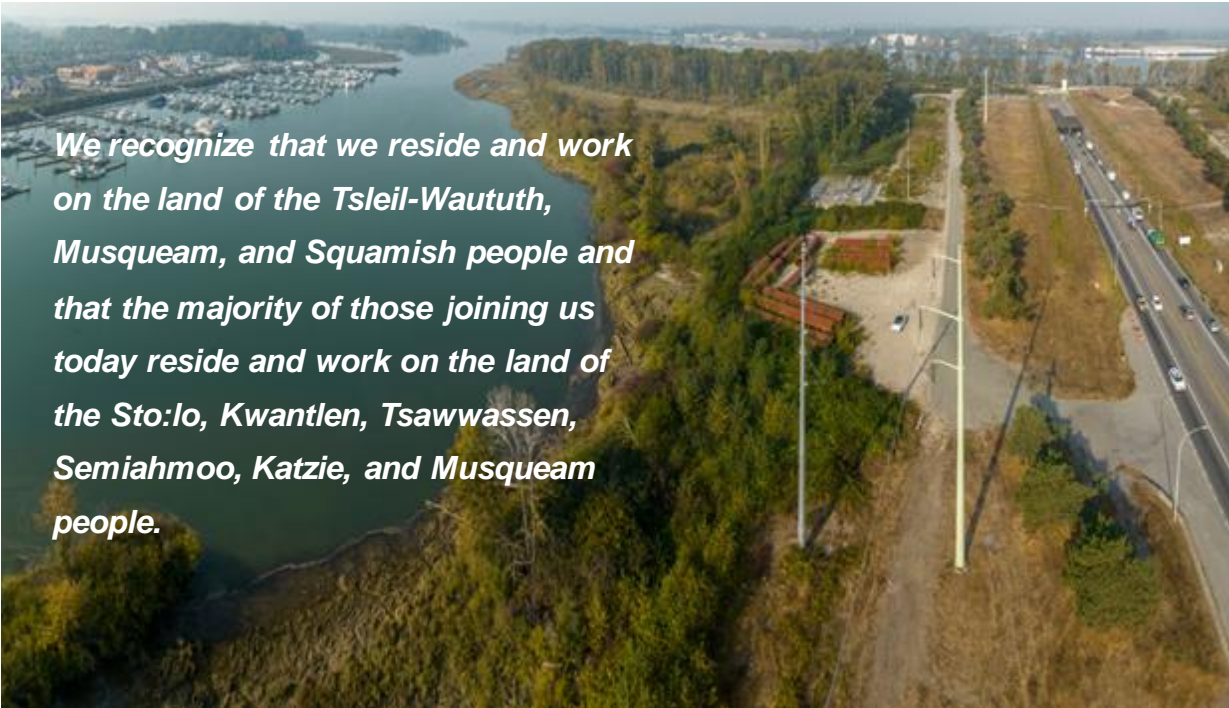
Open house presentation

# George Massey Tunnel Transmission Relocation Project

Open House



January 25, 26 & 31, 2023

An aerial photograph showing a coastal area. On the left, a marina is filled with numerous boats. The water extends into the distance. To the right of the marina, there are dense green forests on a hillside. Further right, a multi-lane highway runs parallel to the coast, with several cars visible. The sky is clear and blue.

*We recognize that we reside and work on the land of the Tsleil-Waututh, Musqueam, and Squamish people and that the majority of those joining us today reside and work on the land of the Sto:lo, Kwantlen, Tsawwassen, Semiahmoo, Katzie, and Musqueam people.*

# Virtual Meeting Etiquette



- Be respectful by listening to others and sharing time so that everyone is heard
- Minimize distractions by “muting” when not speaking
- Use the raise hand and chat function to ask questions
- If you want to keep your video on during the meeting, please don’t use a virtual background to save bandwidth
- We’re not recording these sessions, and kindly ask that others don’t record



# Agenda

- Introductions
- Project purpose
- Project process
- Relocation alternatives
- Wrap up and next steps



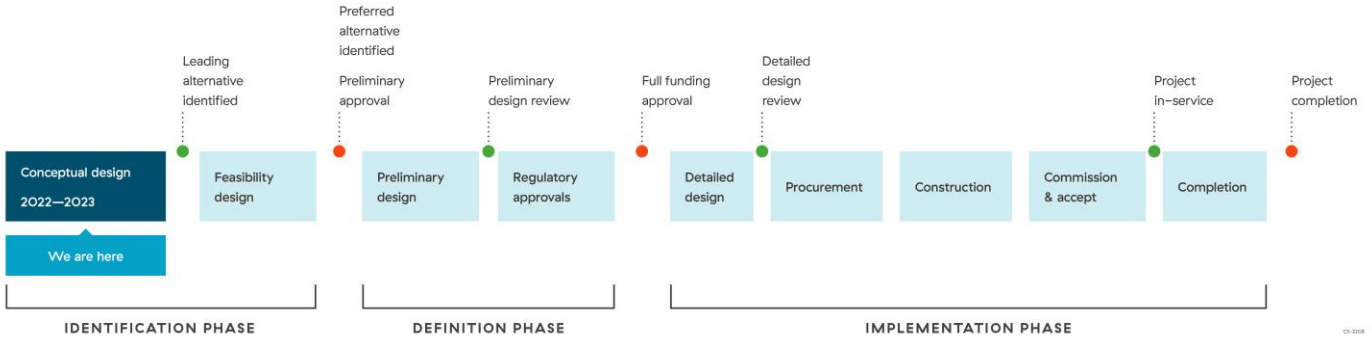
# Project purpose

As a new tunnel is planned, a section of our power line needs to be relocated



- The Province proposes to replace the existing four-lane George Massey Tunnel with a new, eight-lane immersed tube tunnel
- The existing tunnel will be decommissioned by 2032, once the new tunnel is in operation
- We have a section of power line in the existing tunnel that will need to be relocated

# Project process

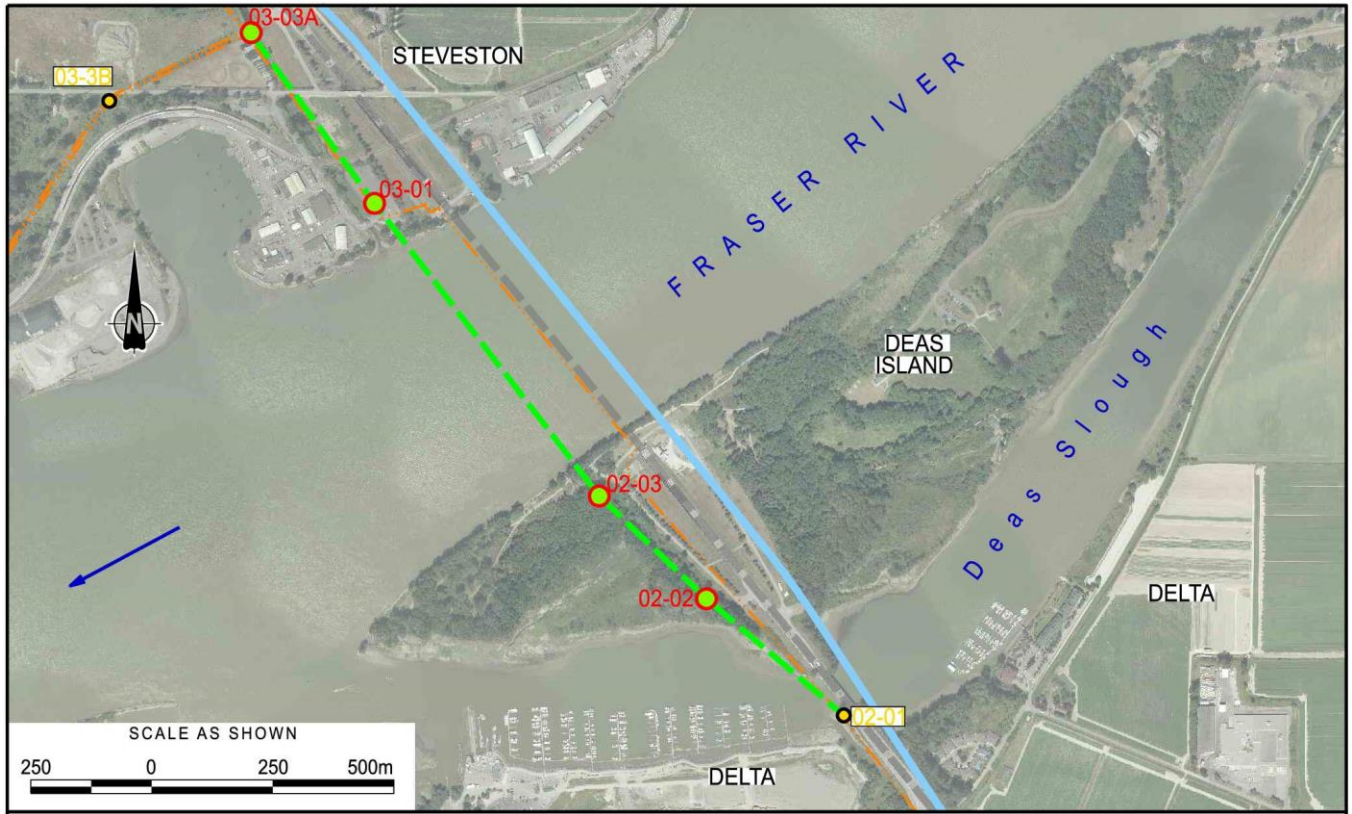


03/2024

- This project is in its earliest days and a project timeline hasn't been established.
- We will identify an estimated project timeline after a leading alternative has been identified in 2023.

# Relocation alternatives

## Alternative 1: Overhead line – plan view



# Alternative 1: Overhead line – profile view



This image is for illustrative purposes only and is not to scale. It is designed to be a representation of the general orientation of the proposed changes and existing structures on the line.

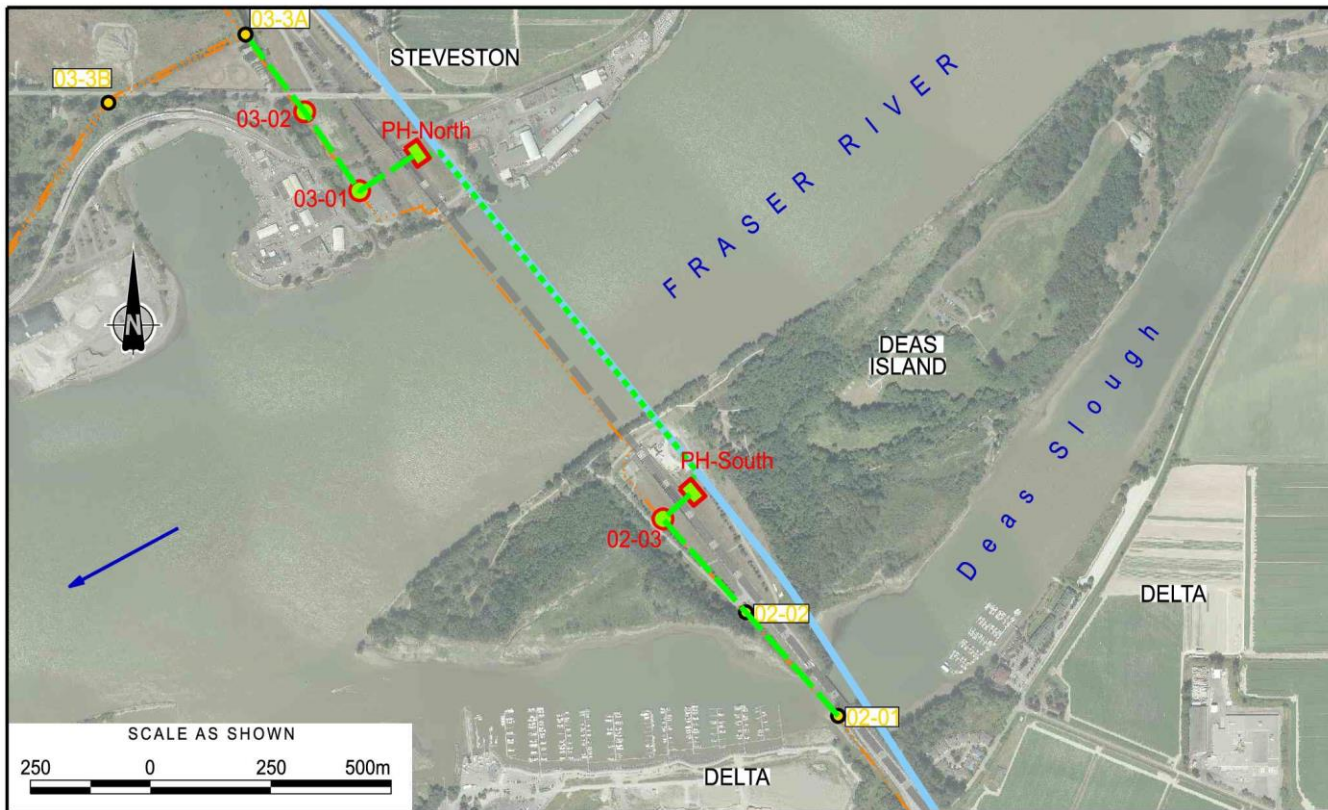


# Alternative 1: Feedback

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# Relocation alternatives

## Alternative 2: Underground line in the proposed immersed tube tunnel



## Alternative 2: Underground line in the proposed immersed tube tunnel

- Proposed Fraser River Tunnel
- Cables in proposed tunnel
- Nav Canada marker ball



This image is for illustrative purposes only and is not to scale. It is designed to be a representation of the general orientation of the proposed changes and existing structures on the line.

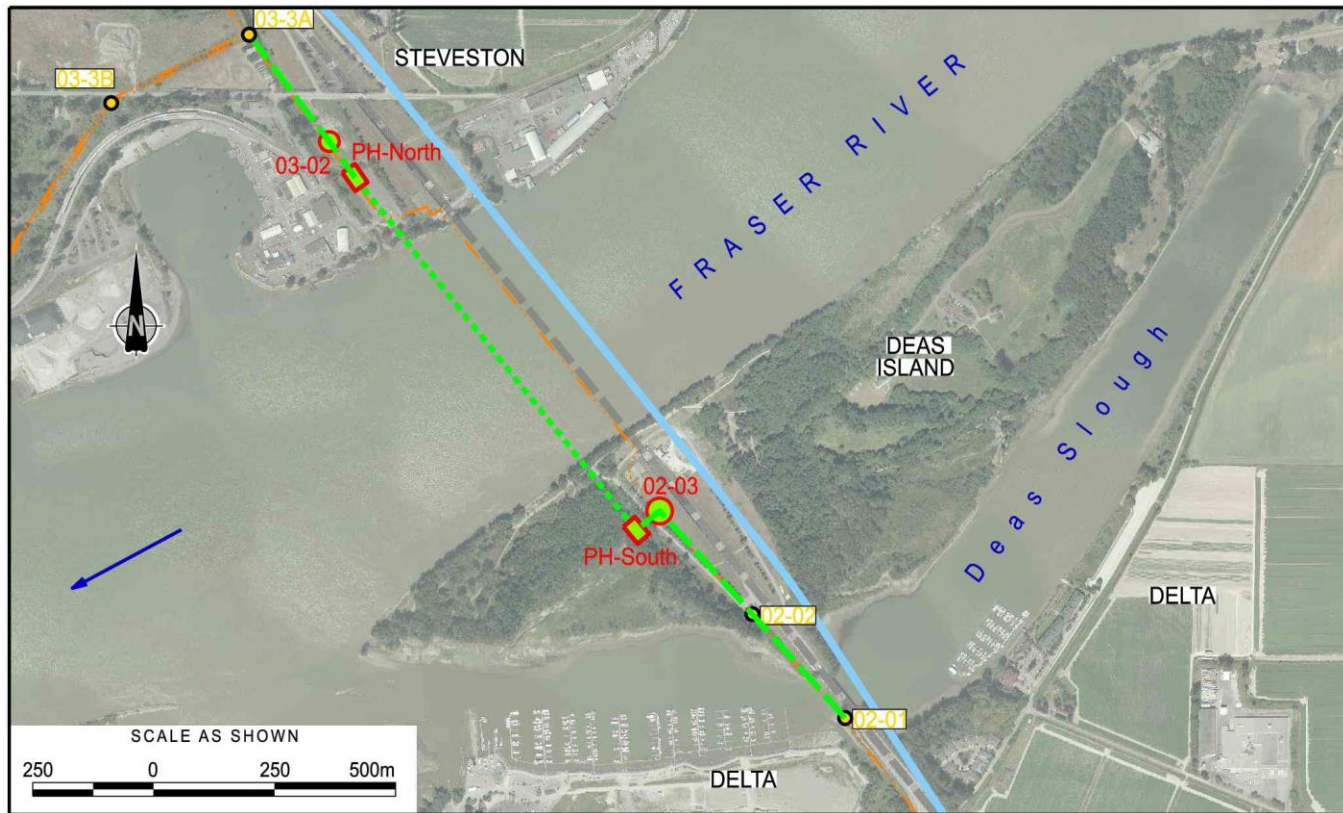


# Alternative 2: Feedback

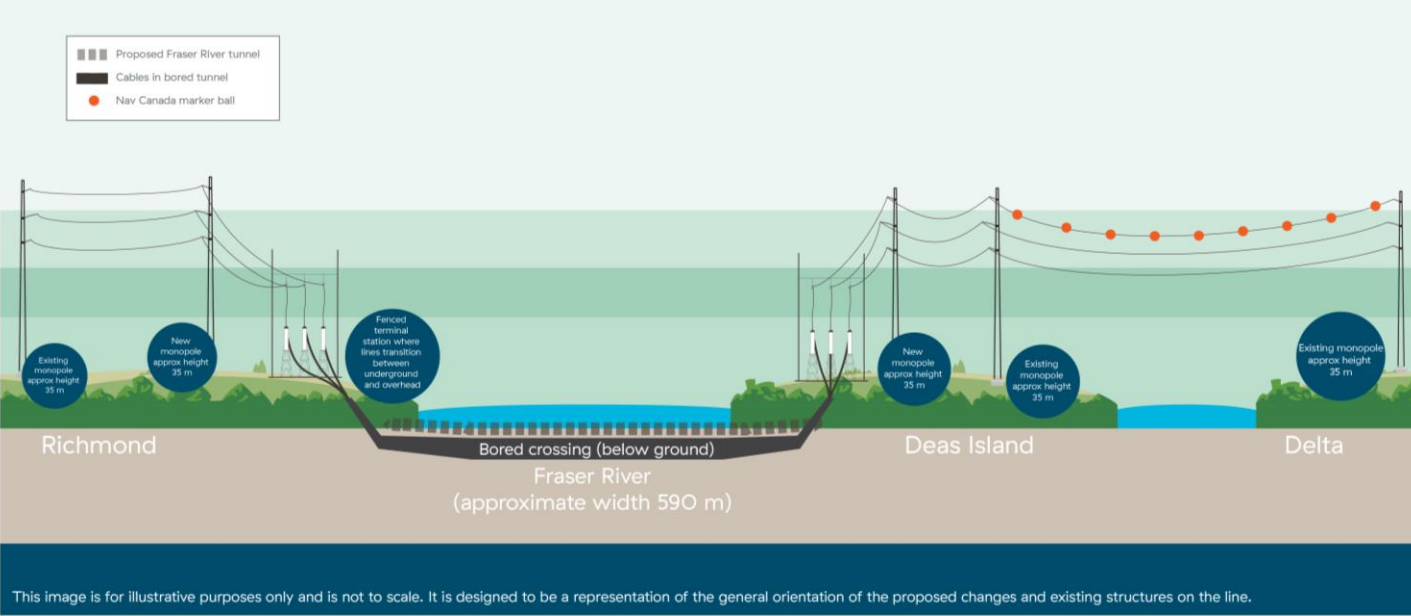
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# Relocation alternatives

## Alternative 3: Separate underground line



# Alternative 3: Separate underground line



# Alternative 3: Feedback

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# Thank you

- Your feedback will be compiled with survey responses to inform the leading alternative.
- If you want to add more comments, please take the time to complete our online survey.
- A leading alternative will be identified later this year.



[bchydro.com/gmt](http://bchydro.com/gmt)

# APPENDIX B

Online survey



## INTRO

# George Massey Tunnel Transmission Relocation Project Stakeholder Feedback Survey





The Government of B.C. is proposing to replace the existing four-lane George Massey Tunnel with a new, eight-lane immersed tube tunnel, and will decommission the existing tunnel once the new tunnel is in operation.

A section of one of our power lines crosses the Fraser River through the George Massey Tunnel so we need to relocate it before the tunnel is decommissioned. We've identified three alternatives and we want your input.

By completing this survey, you're letting us know what is

important to you as we evaluate these alternatives. This helps us identify a leading alternative that provides the best value for our ratepayers.

This survey will take approximately 10 to 15 minutes and is divided into three parts:

**Project Overview:** Project description and the alternatives we're currently studying.

**Feedback:** Survey questions on each alternative.

**Demographics:** A bit about you.

We recommend completing this survey on the computer for the best viewing experience.

For any open text box questions, please don't enter any information that identifies yourself or others. Any such information, if entered, will be removed.

If you have any questions about the survey, please contact [projects@bchydro.com](mailto:projects@bchydro.com).

*BC Hydro is collecting your feedback information in accordance with the Freedom of Information and Protection of Privacy Act Section 26(c) and (e). Your feedback will help us to better understand public views relating to the George Massey Tunnel Transmission Relocation Project. All responses are submitted in confidence and treated accordingly. If you have questions about why your information is*

*being collected, please contact Judy Dobrowolski, Manager, Capital Projects Communications at [projects@bchydro.com](mailto:projects@bchydro.com) or call 604-623-4472.*

## **Project Overview**

BC Hydro operates a 12-kilometre, 230-kilovolt power line from Arnott Substation in Delta to Steveston Substation in Richmond, serving approximately 30,000 customers. Approximately 700 metres of this line is underground in the existing George Massey Tunnel.

We've identified three alternatives for relocating this section of power line and the project team has undertaken environmental and engineering studies to determine the feasibility of each alternative.

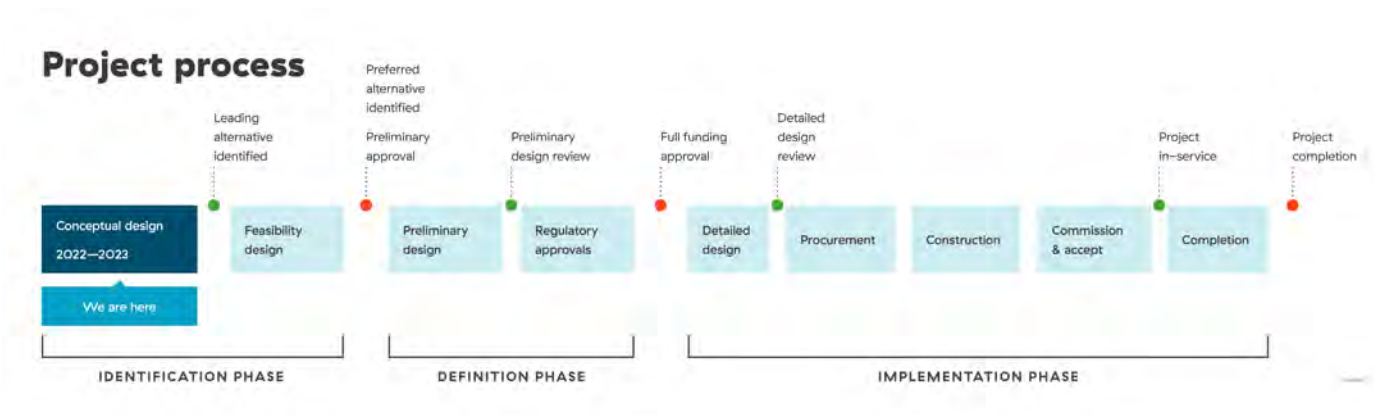
We're now looking to you to tell us what's important to you as we evaluate these alternatives. For your input to be most useful please include specific details about your concern(s) when requested in the survey. Your input will help us identify a leading alternative for further study.

## **Project Process**

The George Massey Tunnel Transmission Relocation Project is in its earliest days and a project timeline hasn't been established.

Once a leading alternative has been identified, we'll develop a project timeline.

Click the graphic below to view it at a larger size.



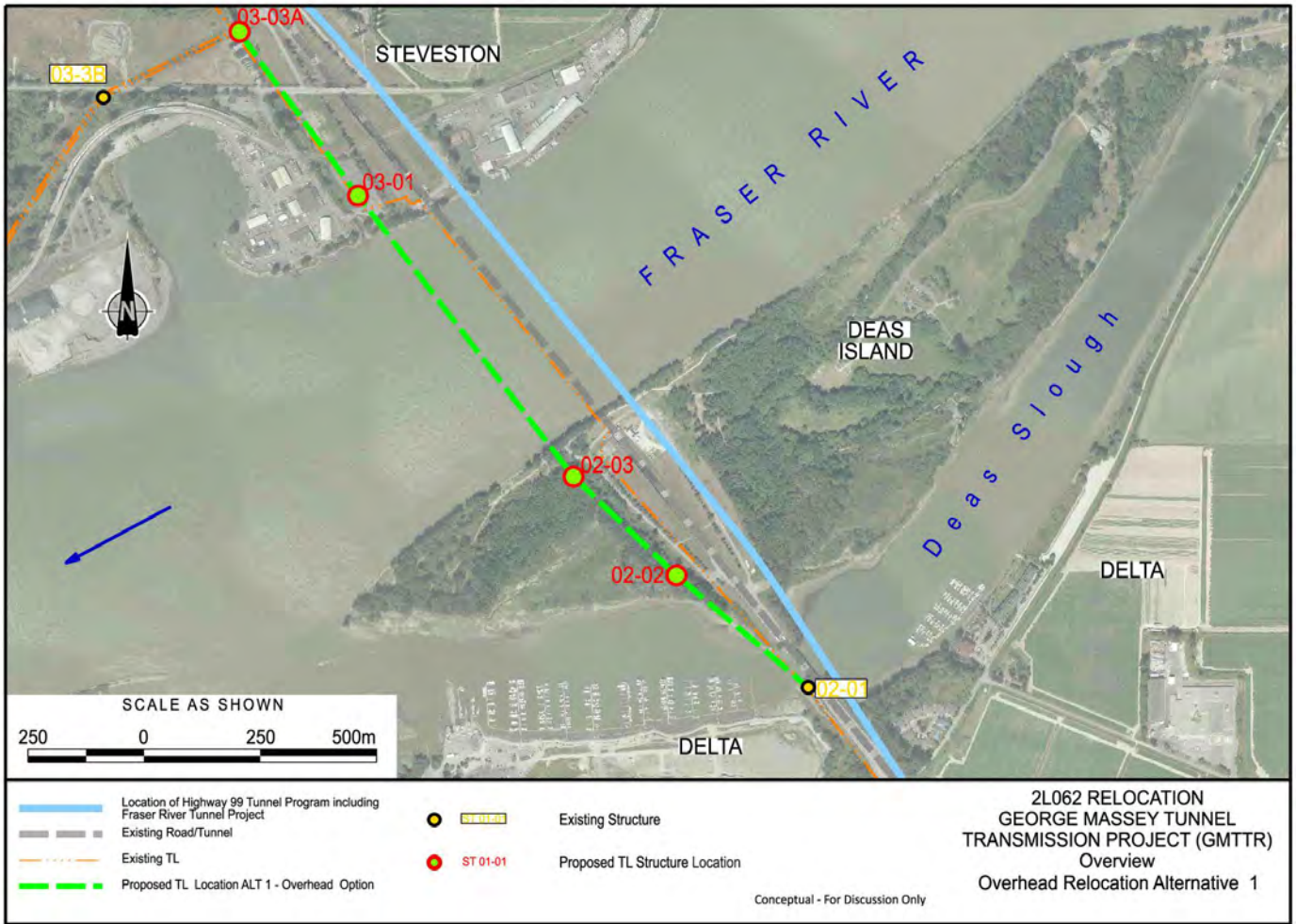
**With the tunnel planned for decommissioning, we need to relocate this section of the power line.**

We'd like your feedback on the three alternatives shown below.

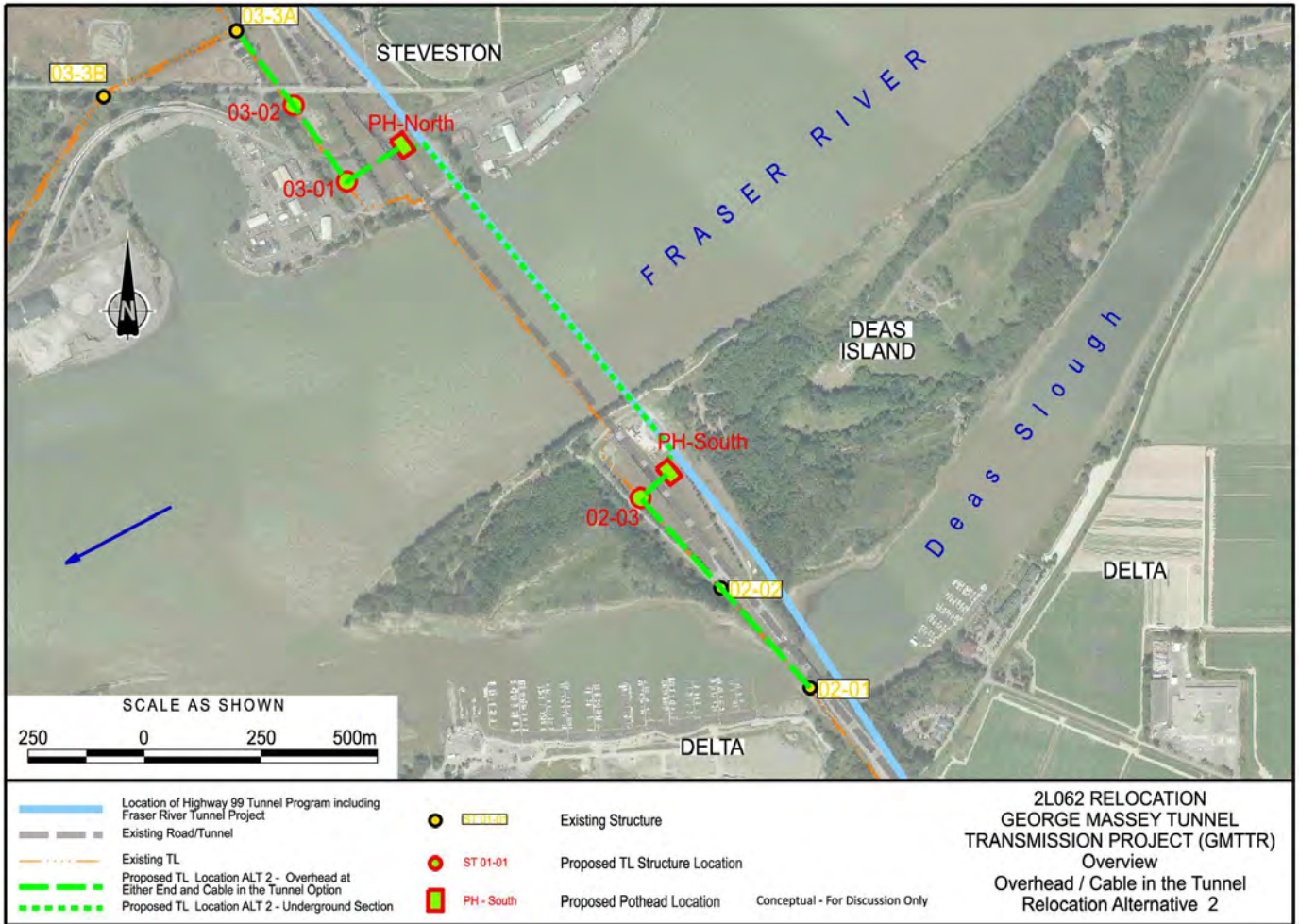
In the following pages, you'll have the opportunity to tell us what's important to you and provide details on those concerns.

Click on each map below to view it in a larger size.

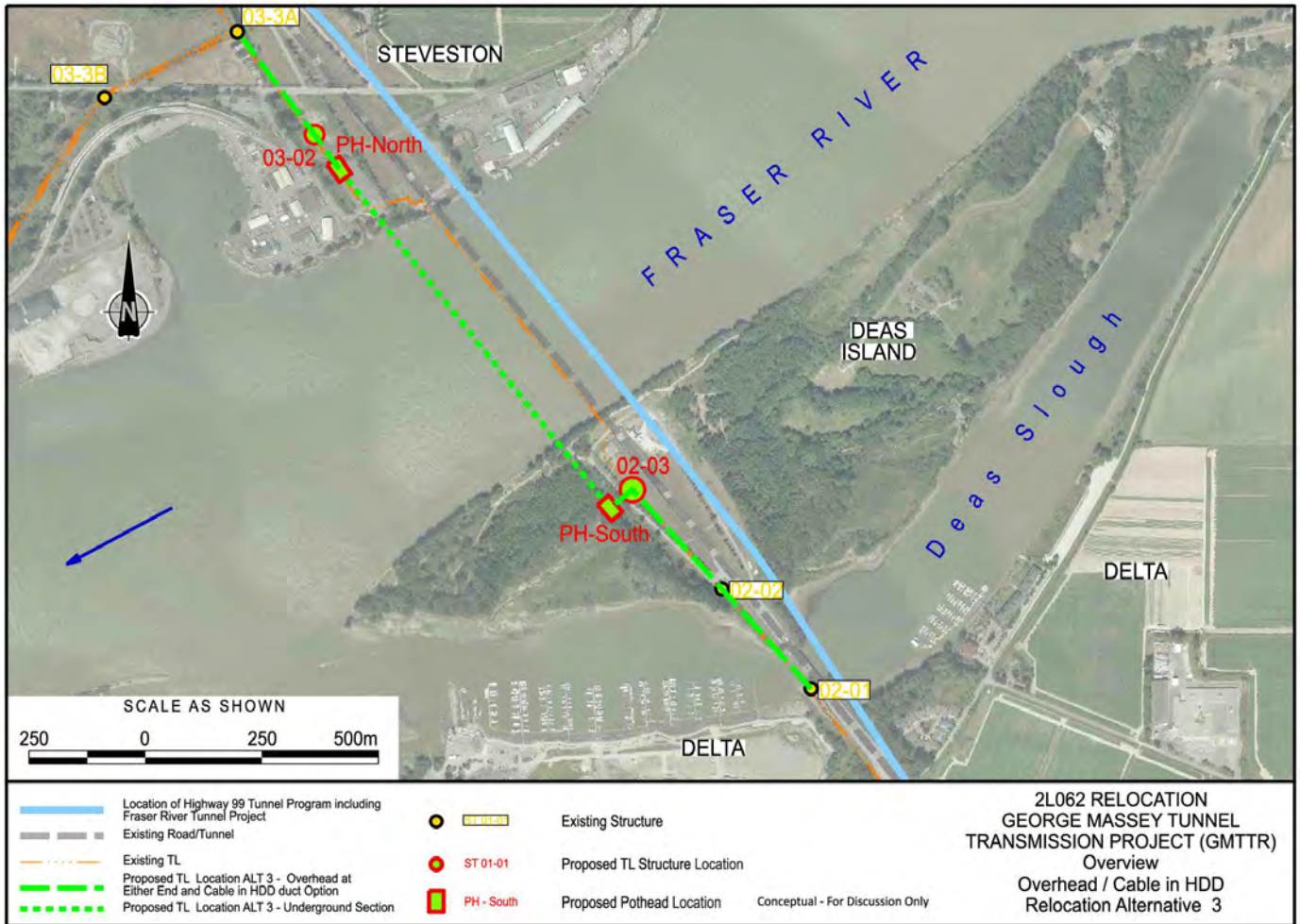
## Alternative 1: Overhead line



**Alternative 2: Underground line in the proposed immersed tube tunnel**



### Alternative 3: Separate underground line



Here's what we know so far:

- The project area has been subject to considerable industrial, agricultural, and residential development over the past 100 years.
- The project is anticipated to take place mainly within the existing Ministry of Transportation and Infrastructure (MOTI) right-of-way, although there is the potential for some construction activities to occur on adjacent lands. None of these lands are actively farmed.

- Each alternative has specific permits or approvals requirements which will be further studied when a leading alternative is selected. This project doesn't trigger the *Federal Impact Assessment Act* or the *BC Environmental Assessment Act*.

We've summarized each alternative's potential impacts to inform your input.

## **Alternative 1**

### **Alternative 1: Overhead line**

A new, overhead line across the Fraser River to connect with existing overhead lines in Delta and in Richmond. This line would be built adjacent to the Government of B.C.'s proposed immersed tube tunnel.

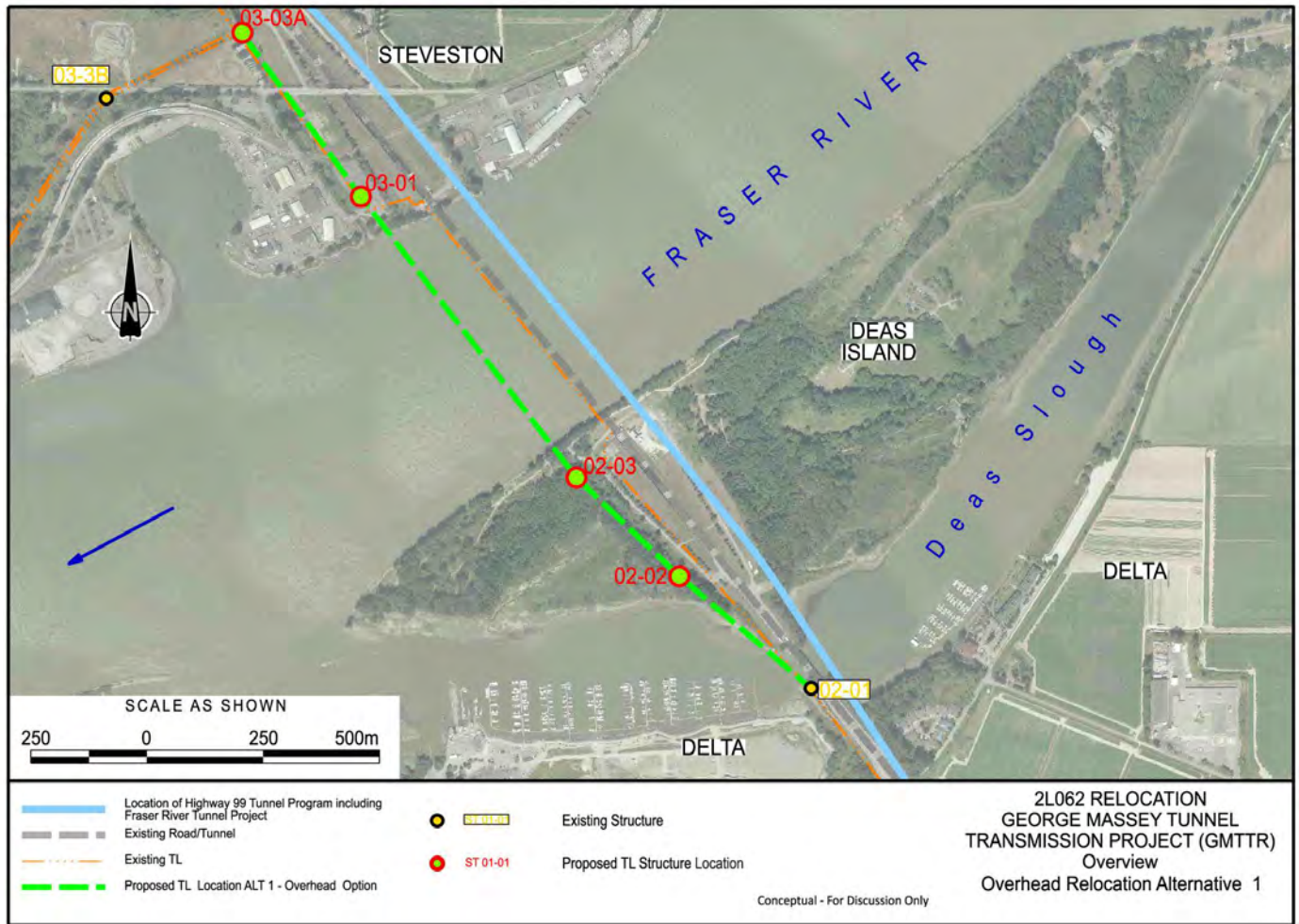
Alternative 1 features new steel lattice structures to support an overhead crossing of the Fraser River. Works will be installed on Deas Island Regional Park and in Richmond.

Please note that these designs below are preliminary and are subject to change.



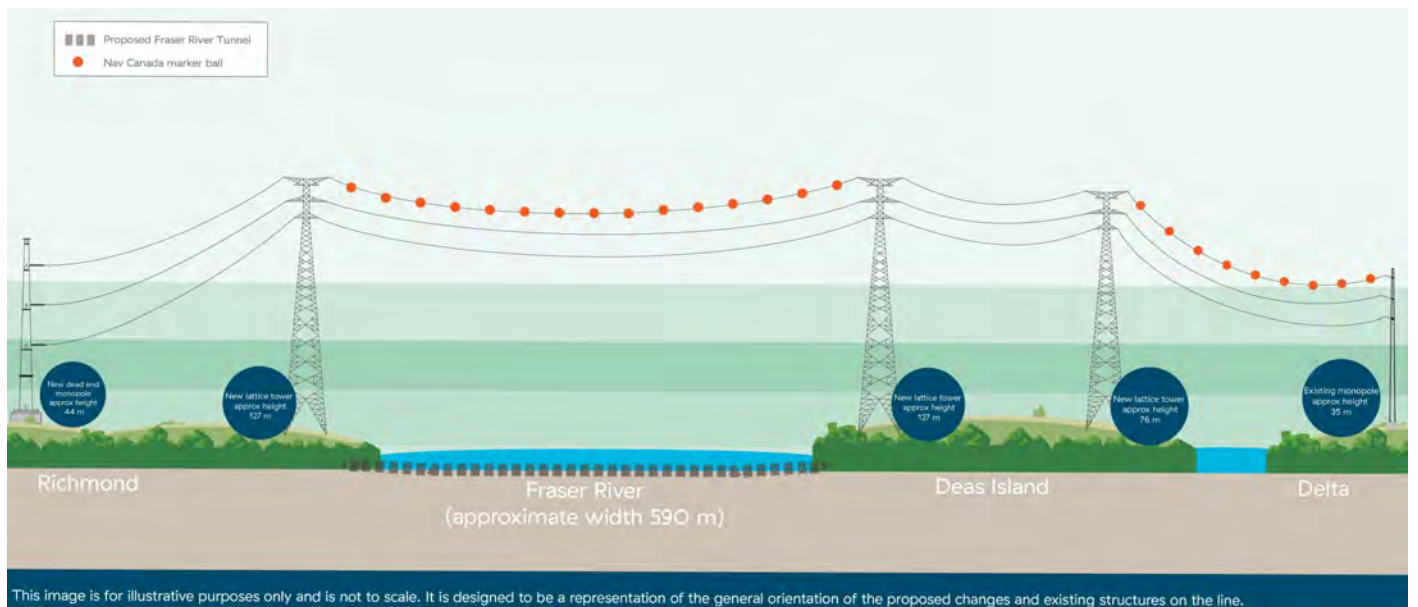
# Alternative 1 plan drawing

Click on the map to view it at a larger size.



# Alternative 1 profile illustration (not to scale)

Click on the illustration to view it at a larger size.



Click on each header below to view more information about Alternative 1: Overhead line.

## Technical details

- Would replace seven existing approximately 38-metre steel monopoles with four new structures.
  - Two new 127-metre steel lattice suspension towers to support the 760-metre power line crossing the river. Power line height requirements over navigable waters are determined by Transport Canada.
  - One 76.6-metre steel lattice tower on Deas Island to support the power line.
  - One 44-metre steel monopole in Richmond to support the power line.

- For aircraft safety, it would require 15 marker balls on the line across the Fraser River and nine on the line across Deas Slough.

## **Permits that may be required**

- Application for approval for Fraser River and Deas Slough (*Canadian Navigable Waters Act*).
- Other regulatory considerations may be added as the project advances.

## **Other considerations**

### **Land use**

- Would require temporary laydown areas on Deas Island and in Richmond for construction, all within the MOTI right-of-way and on previously disturbed land.
- Public access to some areas of Deas Island and the Model Airplane Park in Richmond may be restricted during construction. There would be no effects once the project is complete.

### **Fish and fish habitat**

- Potential for siltation in fish habitat during construction near the Model Airplane Park in Richmond. This would be mitigated as per environmental best management practices.

## **Vegetation and habitat**

- Potential for vegetation removal in Deas Island Regional Park during ground improvements for structures that support the power line across the Fraser River. Vegetation removal activities would be done outside of the bird nesting window and follow best management practices.

## **Wildlife**

- Potential collision risk with birds and bats. This risk would be mitigated through design.

## **Visual quality**

- The new structures would cause a change to the visual landscape. The visibility of the structures may be mitigated by trees adjacent to the project area and by the lattice design which is see-through.

## **River access**

- Access from the study area to the Fraser River and Deas Slough may be temporarily affected during construction when installing the power lines.

On a scale of 1 to 5, with 1 being low concern and 5 being high concern, please rate your level of concern for each of the following about Alternative 1: Overhead line?

	Low concern			High concern		No concern	Don't know
	1	2	3	4	5		
Land use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fish and fish habitat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vegetation and habitat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wildlife	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visual quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
River access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)							
<input style="width: 250px; height: 20px;" type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You rated high concern on Land use for Alternative 1: Overhead line. Please explain your concern.

You rated high concern on Fish and fish habitat for Alternative 1: Overhead line. Please explain your concern.

You rated high concern on Vegetation and habitat for Alternative 1: Overhead line. Please explain your concern.

You rated high concern on Wildlife for Alternative 1: Overhead line. Please explain your concern.

You rated high concern on Visual quality for Alternative 1: Overhead line. Please explain your concern.

You rated high concern on River access for Alternative 1: Overhead line. Please explain your concern.

You rated high concern on

[\\${q://QID6/ChoiceTextEntryValue/5}](#) for Alternative 1: Overhead line. Please explain your concern.

Please share any additional comments you may have about Alternative 1: Overhead line.

This question is optional.

## Alternative 2

### **Alternative 2: Underground line in the proposed immersed tube tunnel**

A new underground line built in the Government of B.C.'s proposed immersed tube tunnel.

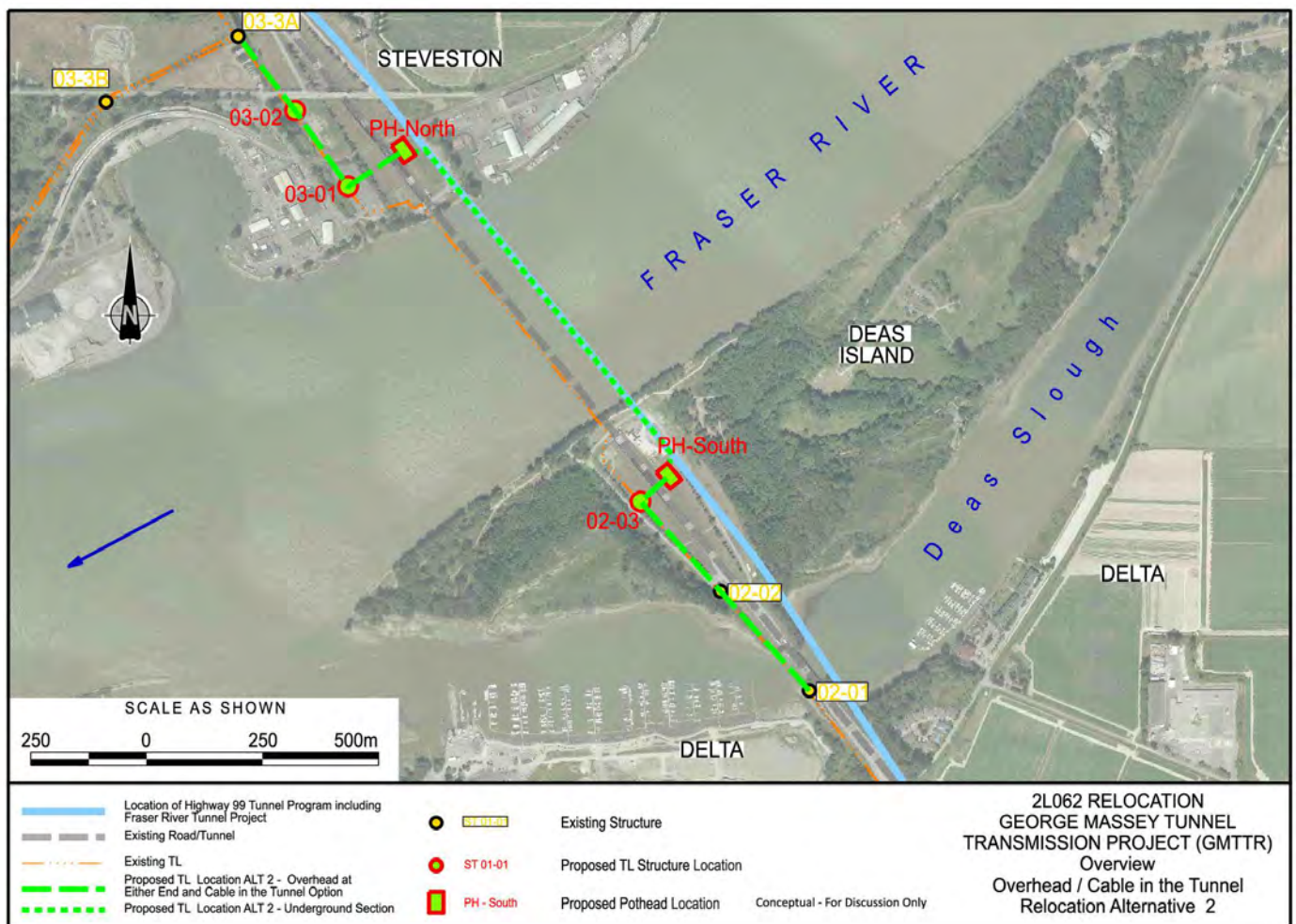
This alternative contains both overhead structures and an above-ground cable termination station where the power line transitions

from overhead to underground.

Please note that these designs below are preliminary and are subject to change.

## Alternative 2 plan drawing

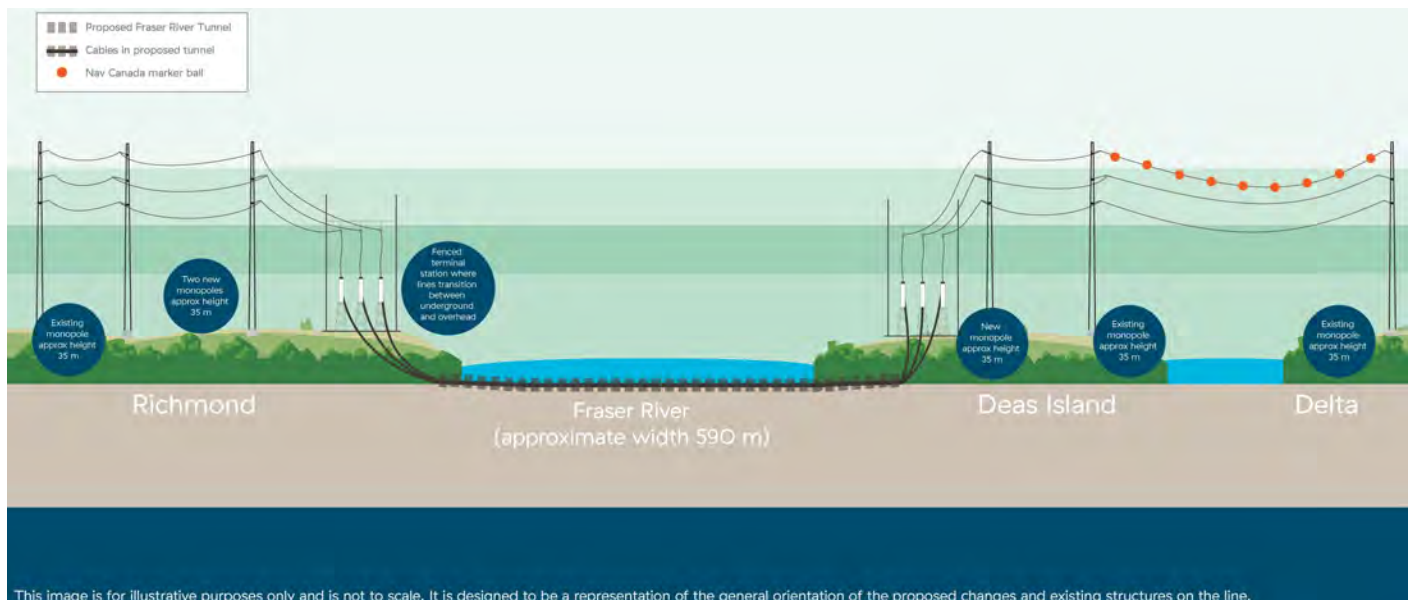
Click on the map to view it at a larger size.



## Alternative 2 profile illustration (not to scale)

Click on the illustration to view it at a larger size.





Click on each header below to view more information about Alternative 2: Underground line in the proposed immersed tube tunnel.

## Technical details

- Would replace seven existing approximately 38-metre steel monopoles with five new structures:
  - Three new 35-metre steel monopoles.
  - Would require two 800-square-metre, above-ground terminal stations, with two 18-metre steel structures, where the line transitions from overhead to underground, one in Richmond and one on Deas Island.

## Permits that may be required

- Notification for Deas Slough (*Canadian Navigable Waters Act*).
- Other regulatory considerations may be added as the project advances.

## Other considerations

### Land use

- Would require temporary laydown areas in Richmond outside of the MOTI right-of-way and on Deas Island for construction.

### Wildlife

- May require nest protection during vegetation maintenance. This would be managed with best management practices.

### Contaminated soils

- Temporary interaction during construction of terminal structures and monopoles. Excavated soils would be tested for contamination and properly disposed.

## River access

- Access from the study area to the Fraser River and Deas Slough may be temporarily affected during construction when installing the power lines.

On a scale of 1 to 5, with 1 being low concern and 5 being high concern, please rate your level of concern for each of the following about Alternative 2: Underground line in the proposed immersed tube tunnel?

	Low concern					High concern	
	1	2	3	4	5	No concern	Don't know
Land use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wildlife	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contaminated soils	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
River access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You rated high concern on Land use for Alternative 2: Underground line in the proposed immersed tube tunnel. Please explain your concern.

You rated high concern on Wildlife for Alternative 2: Underground line in the proposed immersed tube tunnel. Please explain your concern.

You rated high concern on Contaminated soils for Alternative 2: Underground line in the proposed immersed tube tunnel. Please explain your concern.

You rated high concern on River access for Alternative 2: Underground line in the proposed immersed tube tunnel. Please explain your concern.

You rated high concern on QID54/ChoiceTextEntryValue/5 for Alternative 2:

Underground line in the proposed immersed tube tunnel. Please explain your concern.

Please share any additional comments you may have about Alternative 2: Underground line in the proposed immersed tube tunnel.

This question is optional.

## **Alternative 3**

### **Alternative 3: Separate underground line**

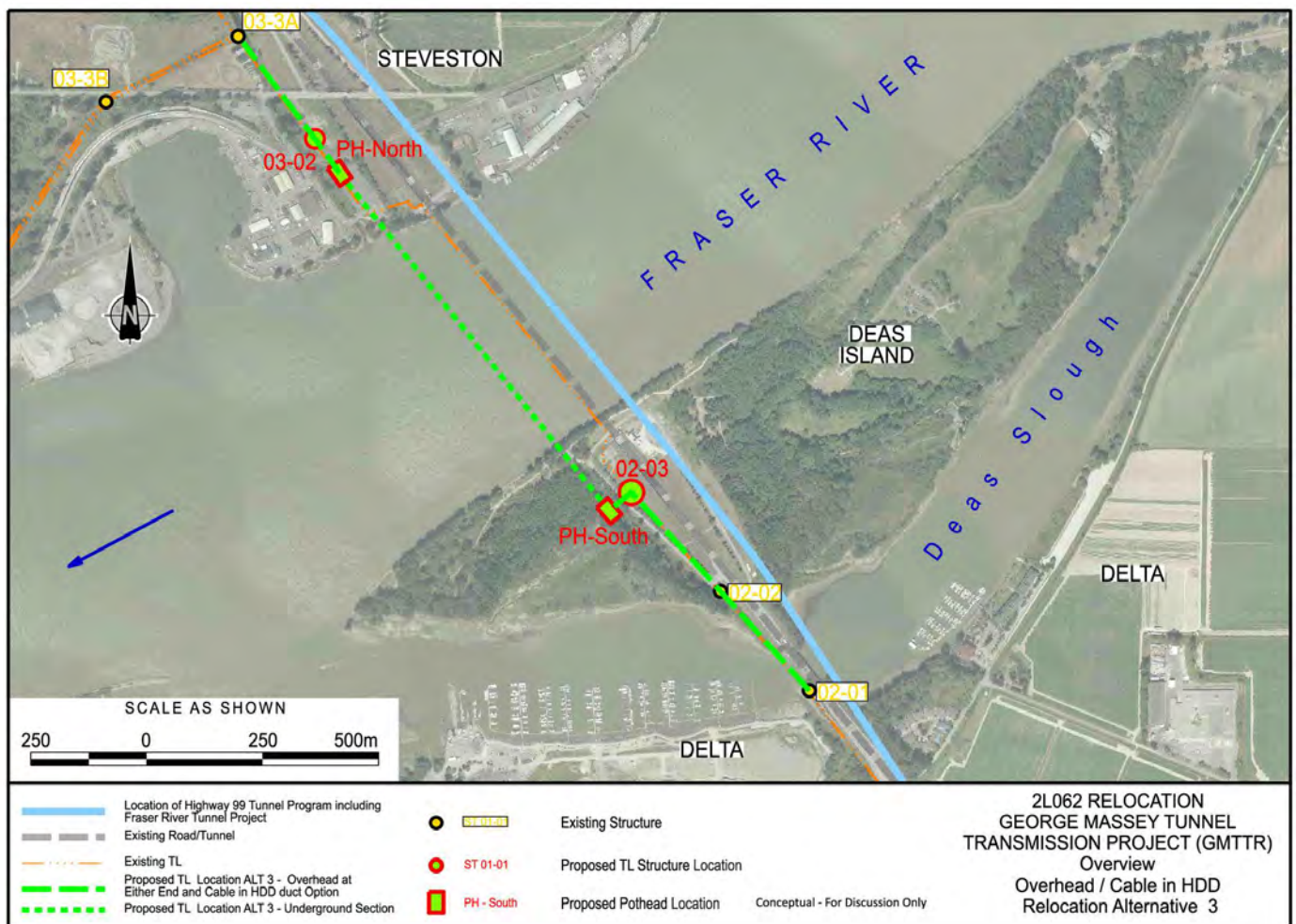
A new underground line separate from the Government of B.C.'s proposed immersed tube tunnel.

This alternative contains both overhead structures and an above-ground cable termination station where the power line transitions from overhead to underground. Above-ground staging areas on Deas Island and in Richmond are needed for the horizontal directional drilling process under the riverbed.

Please note that these designs below are preliminary and are subject to change.

## Alternative 3 plan drawing

Click on the map to view it at a larger size.



## Alternative 3 profile illustration (not to scale)

Click on the illustration to view it at a larger size.



Click on each header below to view more information about Alternative 3: Separate underground line.

## Technical details

- Would replace seven existing approximately 38-metre steel monopoles with five new structures:
  - Three new 35-metre steel monopoles.
  - Would require two 800-square-metre, above-ground terminal stations, with two 18-metre steel structures, where the line transitions from overhead to underground, one in Richmond and one on Deas Island.
- Construction method would use horizontal directional drilling (HDD) to bore a 940-metre path between Deas Island and Richmond, approximately 15 metres below the riverbed.

- Could require two bore paths.
- Would require a 17,000-square-metre staging area in Richmond for the drill rig and associated construction equipment.

## Permits that may be required

- Application for submarine cable (*Canadian Navigable Waters Act*).
- Request for Review (*Fisheries Act*).
- Changes in and about a stream (*Water Sustainability Act, s. 11*).
- Temporary Dewatering for HDD (*Water Sustainability Act, s. 10*).
- Other regulatory considerations may be added as the project advances.

## Other considerations

### Land use



- Would require temporary laydown areas in Richmond outside of the MOTI right-of-way, and on Deas Island for construction.
- This alternative would have the largest footprint due to the staging area for horizontal directional drilling.

## **Fish and fish habitat**

- Potential interaction with fish during tunnel drilling under the riverbed due to risk of drilling fluid release.

## **Vegetation and habitat**

- Potential for vegetation removal for construction of new terminal stations and potential ground improvements for each station.

## **Wildlife**

- Potential vegetation removal may result in minor habitat impacts for wildlife during construction of new terminal infrastructure.

## **Contaminated soils**



Low concern

High concern

1

2

3

4

5

No  
concern

Don't  
know

Other (please specify)

You rated high concern on Land use for Alternative 3: Separate underground line. Please explain your concern.

You rated high concern on Fish and fish habitat for Alternative 3: Separate underground line. Please explain your concern.

You rated high concern on Vegetation and habitat for Alternative 3: Separate underground line. Please explain your concern.

You rated high concern on Wildlife for Alternative 3: Separate underground line. Please explain your concern.

You rated high concern on Contaminated soils for Alternative 3: Separate underground line. Please explain your concern.

You rated high concern on River access for Alternative 3: Separate underground line. Please explain your concern.

You rated high concern on QID69/ChoiceTextEntryValue/5 for Alternative 3: Separate underground line. Please explain your concern.

Please share any additional comments you may have about Alternative 3: Separate underground line.

This question is optional.

## ADD\_COMMENTS

Please share any additional comments you may have on any of the Alternatives that are currently under consideration.

This question is optional.

## DEMOS

Thanks for your feedback.

Before you go, we'd like to know a bit about you.

Which group do you identify with in providing feedback on this project?

Select all that apply.

- Commercial: I own or work at a commercial business near the study area
- Residential: I live near the study area
- Recreational: I play in and around the study area (this includes the Fraser River)
- Indigenous group or community

Other group (please specify)

None, I'm speaking on my own behalf

Prefer not to say

Please provide the **first three characters** of your postal code.

Click to write Choice 1

Prefer not to say

