REGIONAL DISTRICT OF BULKLEY-NECHAKO

CONNECTIVITY COMMITTEE AGENDA Thursday, April 14, 2022

PAGE NO.		ACTION
	AGENDA- April 14, 2022	**Approve**
	Supplementary Agenda	**Receive**
	MINUTES	
2-4	**Connectivity Committee Meeting Minutes - February 10, 2022**	**Approve**
	REPORTS	
5-122	**Nellie Davis, Manager of Regional Economic Development – Understanding Internet Speed Discrepancies**	**Discussion**
123-153	**Nellie Davis, Manager of Regional Economic - Connecting Remote Communities and First Nation Reserves to High-speed Internet**	**Discussion**
	VERBAL REPORTS	
	Chair Riis-Christianson – Update	
	SUPPLEMENTARY AGENDA	
	NEW BUSINESS	
	ADJOURNMENT	

REGIONAL DISTRICT OF BULKLEY-NECHAKO

CONNECTIVITY COMMITTEE MEETING

Thursday, February 10, 2022

PRESENT:	Chair	Michael Riis-Christianson
	Directors	Tom Greenaway Clint Lambert Chris Newell Mark Parker Gerry Thiessen
	Staff	Curtis Helgesen, Chief Administrative Officer Cheryl Anderson, Director of Corporate Services Nellie Davis, Manager of Regional Economic Development Justin Greer, Economic Development Assistant John Illes, Chief Financial Officer Wendy Wainwright, Deputy Director of Corporate Services
	Others	Mark Fisher, Electoral Area "A" (Smithers Rural) Linda McGuire, Village of Granisle Annette Morgan, Village of Telkwa – via Zoom Bob Motion, District of Fort St. James – via Zoom Jerry Petersen, Electoral Area "F" (Vanderhoof Rural)

CALL TO ORDER Chair Riis-Christianson called the meeting to order at 1:50 p.m.

AGENDA

Moved by Director Lambert
Seconded by Director Parker

BBC.2022-1-1 "That the Connectivity Committee Agenda for February 10, 2022 be approved."

(All/Directors/Majority) CARRIED UNANIMOUSLY

MINUTES

Connectivity Committee Meeting Minutes –October 7, 2021

Moved by Director Lambert
Seconded by Director Parker

BBC.2022-1-2 "That the Broadband Committee Meeting Minutes of October 7, 2021 be approved."

(All/Directors/Majority) CARRIED UNANIMOUSLY

REPORT

Prioritization Criteria Metrics

Moved by Director Parker
Seconded by Director Greenaway

BBC.2022-1-3 "That the Connectivity Committee receive the Manager of Regional Economic Development's Prioritization Criteria Metrics memorandum."

(All/Directors/Majority) CARRIED UNANIMOUSLY

REPORT (CONT'D)

Nellie Davis, Manager of Regional Economic Development provided an overview of the Prioritization Criteria Metrics memorandum. The following was discussed:

- Staff developed and tested costing formula
  - Assist in ranking projects in an area based on lowest cost per home passed
- #2 Population density – terminology
  - Amend to Density
- Determining a balance of priorities
  - All priorities may not be equal
  - In some areas the only access to internet may be satellite
  - Intention factors considered equally
  - Prioritization metrics will be determined by each Electoral Area Director
- Prioritization Criteria Metrics a part of the RDBN Connectivity Strategy
- Provides a framework and tool for future Boards
- Design Phase
  - Staff to reach out for information and collaboration with First Nations partners
- Telecommunication companies speeds are often not the minimally set federal mandate of 50/10 Mbps
- Utilizing different funding for projects
- CityWest
  - No one left behind model
  - Ensure lines of communications remain open and RDBN brings forward its priorities.

VERBAL UPDATES

Chair Riis-Christianson – Update

- Meetings with CityWest – encouraging
- Regional Connectivity Network.

Verbal Reports — Moved by Director Lambert
Seconded by Director Greenaway

BBC.2022-1-4 — "That the Connectivity Committee receive the verbal report as presented."

(All/Directors/Majority) CARRIED UNANIMOUSLY

Nellie Davis, Manager of Regional Economic Development – Introductory Meeting with Rogers

- Ms. Davis and CAO Helgesen met with three representatives from Rogers
- Preliminary meeting
- Merger with Shaw still moving forward
  - Federal decision expected March to June, 2022
  - Included in the merger Rogers committed capital investment to establishing Rural Indigenous Fund
- Investigating areas in western Canada for potential clusters of homes to serve
- Work contingent with merger with Shaw
- Highway of Tears (Highway 16) successful application for 12 towers east of Smithers to Prince Rupert
- Staff provided an overview of RDBN expectations.

IN-CAMERA MOTION Moved by Director Lambert
Seconded by Director Greenaway

BBC.2022-1-4 "In accordance with Section 90 of the *Community Charter*, it is the opinion of the Committee that matters pertaining to Section 90(2)(b) – the consideration of information received and held in confidence relating to negotiations between the municipality and a provincial government or the federal government or both, or between a provincial government or the federal government or both and a third party (Connectivity), must be closed to the public, therefore exercise their option of excluding the public for this meeting."

(All/Directors/Majority) CARRIED UNANIMOUSLY

ADJOURNMENT Moved by Director Greenaway
Seconded by Director Parker

BBC.2022-1-5 "That the meeting be adjourned at 2:20 p.m."

(All/Directors/Majority) CARRIED UNANIMOUSLY

_____
Michael Riis-Christianson, Chair

_____
Wendy Wainwright, Deputy Director of Corporate Services

Regional District of Bulkley-Nechako
Connectivity Committee

To: Chair and Committee

From: Nellie Davis, Manager of Regional Economic Development

Date: April 14, 2022

Subject: Understanding Internet Speed Discrepancies

RECOMMENDATION: **(all/directors/majority)**

Receipt.

BACKGROUND

In February 2022 the Province provided the completed internet speed study document produced by TANEx, called Understanding Internet Speed Discrepancies as well as the RDBN Analysis prepared by CIRA.

Both documents are attached for your information.

ATTACHMENTS

1) Internet Speed Study Summary
2) Internet Speed Study, RDBN
3) Letter from Minister Beare

BRITISH COLUMBIA

February 14, 2022 Ref: 116736

His Worship Gerry Thiessen
Mayor, District of Vanderhoof and
Chair, Bulkley Nechako Regional District
PO Box 900
Vanderhoof, BC V0J 3A0
Via email: mayor@district.vanderhoof.ca

Dear Mayor Thiessen:

I hope you and your team are enjoying a healthy and happy start to the year. Thank you for participating in the Broadband Internet Service Speed Study conducted in 2021 to better understand the factors contributing to the difference between internet speed data published on the federal government's National Broadband Internet Service Availability Map (the map) and community experiences in B.C. Our report is now complete, and I am pleased to share with you some insights gained, actions being taken, and further information specific to your area.

Following an update to the map in January 2021, we heard directly from local governments including your community, Burns Lake, Fort. St. James, Fraser Lake, Houston and the Nak'azdli Whut'en and Saik'uz First Nations who expressed concerns regarding the reported level of available broadband service speeds indicated in the federal map, and the connectivity levels that community stakeholders report they were experiencing.

Responding to this call for action by local governments, my Ministry partnered with UBCM and Northern Development Initiative Trust to contract TANEx Engineering to better understand the issues and determine the extent of possible discrepancies. The study found that in some areas there may be discrepancies; and there are multiple reasons for why a discrepancy might be experienced by community residents. TANEx identified a number of factors including:

- Technical or network challenges, including the quality of the network, congestion, etc.;
- Consumer preference and technology; and
- Inconsistent ways of measuring internet speeds in the home and on the map.

These factors are outlined in more detail in the report summary included in this package.

.../2

Ministry of Citizens' Services

Office of the Minister

Mailing Address:
PO Box 9068 Stn Prov Govt
Victoria BC V8W 9E2
Phone: 250 387-9699
Fax: 250 387-9722

Location:
Room 151
Parliament Buildings
Victoria BC V8V 1X4
www.gov.bc.ca/citz

The insights from the report helped us to identify steps we can take now:

1. Review report findings for specific locations directly with service providers

We've reached out to service providers with the findings from the report and asked them to advise on any technical, network or other issues that would impact speeds to communities, specifically for the communities or locales highlighted by TANEx with a high potential of experiencing slower speeds than those stated on the map.

2. Support British Columbians to get the most out of available internet

We've established a new partnership with the Canadian Internet Registration Authority (CIRA) to work with my Ministry and UBCM to develop educational resources to help consumers and communities get the most out of available internet speeds. CIRA will support communities to navigate service providers and their packages, and the different technologies being used in the home that can affect the internet speed experienced. Online resources as well as webinars with CIRA will be available, and we'll have more information on this next month.

3. Proactive internet speed monitoring

The TANEx study identified 106 locales, or clusters of homes as areas where possible discrepancies might exist and may warrant further investigation and action. Through our partnership with CIRA we are digging deeper into communities that may have a discrepancy by examining all available speed test data. We will be able to provide more insights for these communities which will identify anomalies and gaps in the surrounding area to help identify potential underlying causes for the differences in internet speeds.

Over the longer term, we will use available CIRA data to assist with monitoring speeds in communities benefiting from provincially funded connectivity projects. We are building into our connectivity program the ability to proactively monitor the speed promised from these projects to ensure they are delivered as planned, and communities are getting the speeds they are expecting when a funded project is complete.

4. Working with our federal colleagues

We are also engaging Innovation, Science and Economic Development (ISED) Canada, who manages the map and sharing the TANEx report with them to discuss ways of ensuring the speeds reported by service providers reflected in the federal map are representative of the speeds experienced by community residents. We are pleased that ISED has already taken steps to significantly advance the map with the recent announcement of their plans to provide next-generation mapping data in support of the deployment of high-speed Internet across rural Canada. Using AI-based mapping systems to mine a variety of geospatial datasets, they will identify broadband serviceable locations across rural Canada – including many locations in remote and Indigenous communities, and the data will be used to identify connectivity gaps and accelerate the deployment of broadband infrastructure across the country. The map is currently in production and will be delivered by March 2022.

…/3

The profile of the Vanderhoof, Fraser Lake, Fort St. James, Nak'azdli Whut'en and Saik'uz First Nations areas in the TANEx report is a good illustration of the report findings and I extend my gratitude for the role the regional district and these communities played in helping my ministry to understand this issue more fully and determine courses of action.

As part of the TANEx report, 106 locales were identified that had a medium-high to high potential of having a discrepancy with the map. The District of Vanderhoof and Houston were not identified as having a discrepancy, however 16 other locales are in the Regional District of Bulkley Nechako were. My Ministry staff have worked with CIRA to compile a report on each of these locations that you will find attached for your information. The CIRA data supported possible discrepancies in Fraser Lake and Fort St. James. I'm pleased that steps to expand connectivity in Fraser Lake are in progress with Mascon and CityWest, and my Ministry staff will continue to work directly with Fort St. James and Nak'azdli Whut'en on a path forward.

I hope this information is helpful. My staff is available to answer any questions and will continue to work with you on future connectivity planning in your area and to look at ways to address any outstanding issues you are experiencing. Please contact Jeanne Holliss, A/Executive Director, Connected Communities at 250 516-3848.

Thank you once again for your collaboration in support of improving connectivity and I look forward connecting with you again soon.

Sincerely,

Lisa Beare
Minister

pc: Alexander McKinnon, Chief, Nak'azdli Whut'en
Priscilla Mueller, Chief, Saik'uz First Nation
Shane Brienen, Mayor, District of Houston
Roly Russell, Parliamentary Secretary for Rural Development
Connected Communities, ConnectedCommunitiesBC@gov.bc.ca

Understanding Internet Speed Discrepancies

A Summary of Findings

| WINTER 2021 / 22

BRITISH COLUMBIA
Ministry of Citizens' Services

Minister's Message

From the Honourable Lisa Beare — Minister of Citizens' Services

Hon. Lisa Beare

BRITISH COLUMBIANS NEED access to dependable, high-speed internet to be able to work and access the vital services they count on. This is particularly important in rural and Indigenous communities where reliable connectivity can still be a challenge.

In 2021 we heard from communities that they were not receiving the internet speeds reported as being available on the federal National Broadband Internet Service Availability Map. We responded to these concerns by undertaking research into the issue in partnership with the Union of British Columbia Municipalities (UBCM) and Northern Development Initiative Trust. I am pleased to present a summary of the research findings here.

A special note of recognition goes to local government and Indigenous partners who took time to participate in measuring speeds in what was a busy summer and fall. Thank you. This research is a good first step to understanding some of the factors associated with reduced internet speed and the findings will inform some immediate actions from my Ministry to address this issue in our communities.

Honourable Lisa Beare
Minister of Citizens' Services

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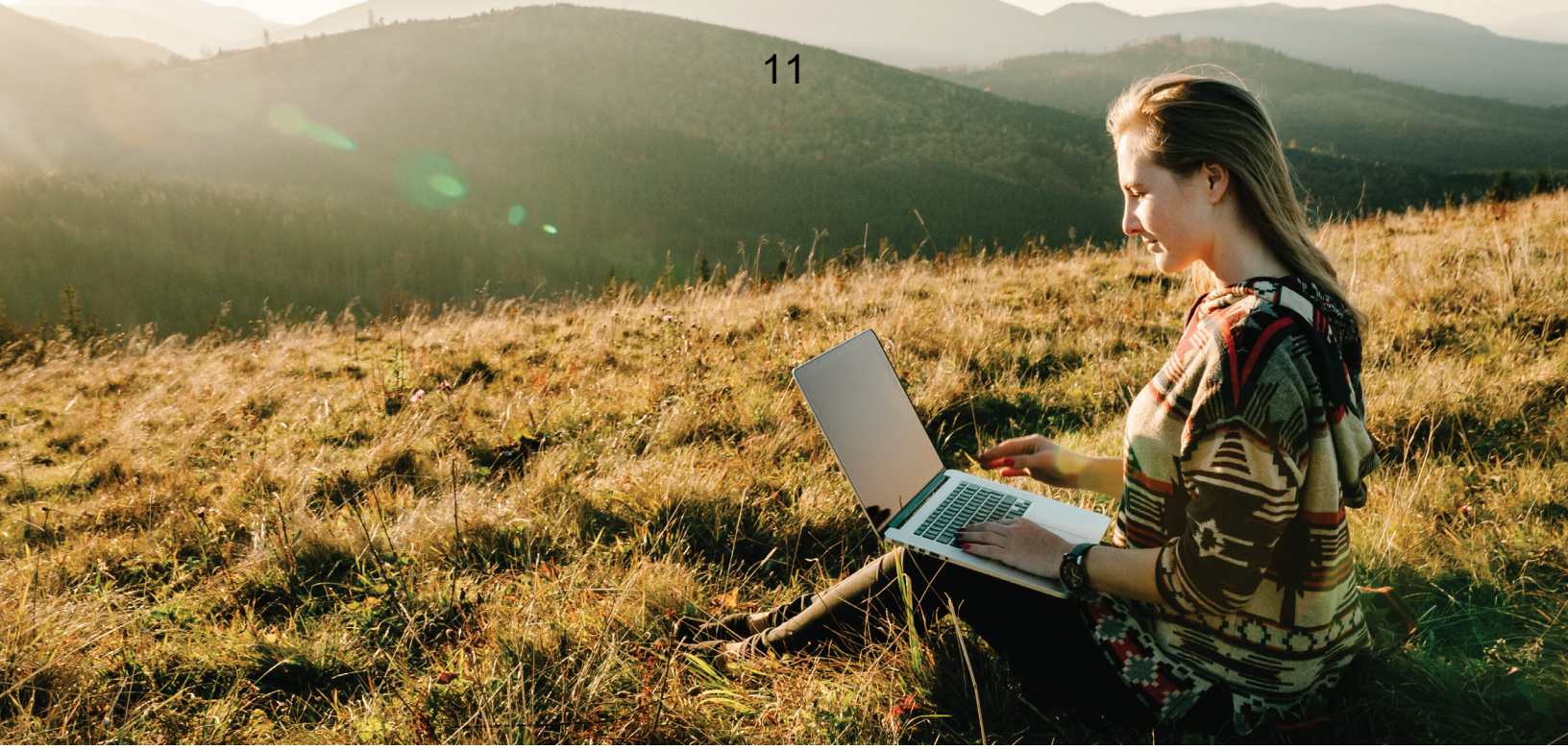


Introduction

THIS REPORT SUMMARIZES the findings of a study that aims to better understand the possible discrepancies of internet speeds shown on the **National Broadband Internet Service Availability Map** (the map)* and the experience of communities in rural and remote British Columbia.

The study by TANEx Engineering Corporation was commissioned in response to concerns raised by a number of local governments in rural and remote communities that internet speeds reported on the map appeared not to reflect actual speeds experienced in some communities or areas surrounding the communities. Speeds outlined on the map are one factor (among others) that determine eligibility for federal funding.

TANEx was asked to examine the nature and potential cause of possible discrepancies with the goal to better understand the issue and ultimately provide a compass for actions. The full technical report can be found here.

DEFINITION

*** National Broadband Internet Service Availability Map:** Describes availability of retail broadband internet services and wholesale backbone infrastructure in Canada. The data plotted on the map is collected in partnership between the Canadian Radio-television and Telecommunications Commission (CRTC) and the federal government's Innovation, Science, and Economic Development (ISED) through annual surveys and consultation with key stakeholders, including internet service providers, federal partners, industry associations, and provinces.

This data is collected and used for the statistical measure of broadband Internet service availability in Canada as well as the administration of various broadband related contribution programs.

Context

IN THE WAY that building roads and highways became essential to economic prosperity in the 19th century, access to reliable high-speed internet and cellular connectivity has become inexplicably tied to British Columbian's health, education, public safety, prosperity and social well-being in the 21st century.

While most British Columbians live in urban centres where internet coverage is well established, many remote, rural, and less densely populated areas and Indigenous communities that are major contributors to our economy and food production, do not have access to basic high-speed internet to, for example, run a business or have a video call. This creates a digital divide between those who have reasonable access and those who do not. Local governments and Indigenous leaders are understandably keen to close that divide, and both the federal and B.C. governments are committed to programs and funding to improve connectivity in those areas.

What minimum internet speed should consumers and businesses be able to access? The Canadian Radio-television and Telecommunications Commission (CRTC) through regulation aims to facilitate affordable and high-quality telecommunication service for all Canadians. It has established a Universal Service Objective* that says service subscribers should be able to access speeds of at least 50 megabits per second (Mbps) download and 10 Mbps upload*, which throughout this summary will be referred to as 50/10.

To track how many parts of Canada have reached that Universal Service Objective, the federal government's Innovation, Science, and Economic Development (ISED) documents reported internet speeds on the map which also informs funding eligibility for government connectivity programs.

DEFINITION

***Universal Service Objective:** Canadians, in urban areas as well as in rural and remote areas, have access to voice services and broadband Internet access services, on both fixed and mobile wireless networks. To measure the successful achievement of this objective, the CRTC has established several criteria, including:

- Canadian residential and business fixed broadband Internet access service subscribers should be able to access speeds of at least 50 megabits per second (Mbps) download and 10 Mbps upload, and to subscribe to a service offering with an unlimited data allowance; and
- The latest generally deployed mobile wireless technology (currently LTE) should be available not only in Canadian homes and businesses, but on as many major transportation roads as possible in Canada.

***Mbps:** Stands for Megabits per second, or millions of bits per second. This is a measurement of how much data can be transmitted through a connection.

Mapping the level of internet service across Canada — right down to details in small rural communities and clusters of homes — is understandably a significant task, and as service providers* offer new services the map needs to be updated periodically. When it was updated in January 2021, community leaders raised concerns, believing there may be discrepancies in some areas indicating 50/10 service which may warrant an examination.

With governments at all levels aspiring to the goal of affordable and high-quality telecommunications for citizens, the Province, Union of BC Municipalities and Northern Development Initiative Trust collaborated on the independent study to understand the nature of this concern including its magnitude and factors contributing to potential discrepancies.

DEFINITION

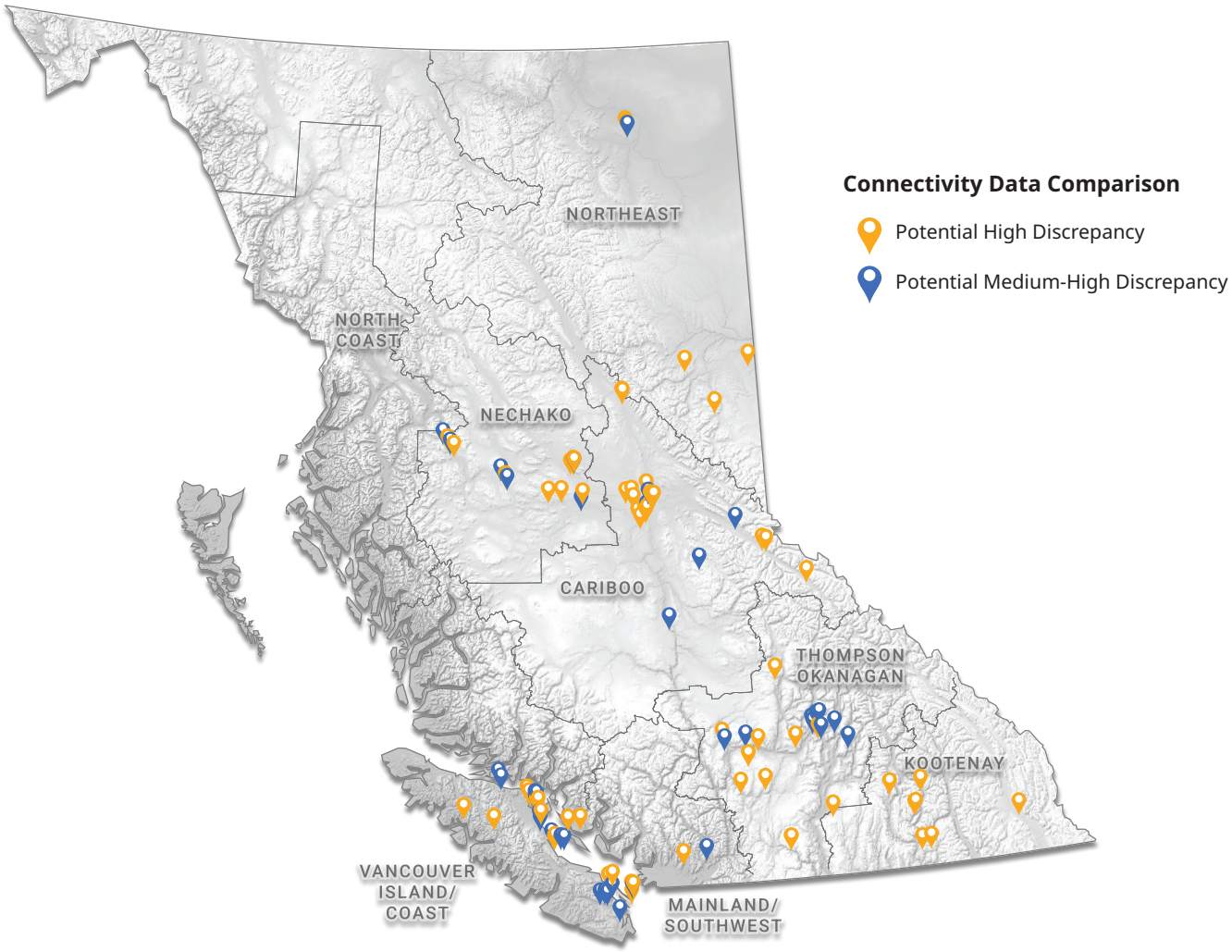
***Service Providers:** A generic term that refers to an organization that delivers telecommunication services, including internet services, to its customers.

What the Study Found

THE STUDY LOOKED at 940 rural locales — communities and/or clusters of homes — that were marked on the map as having 50/10 service. These represent different community types such as incorporated municipalities, non-incorporated rural locales and Indigenous communities.

The study found that discrepancies between service speeds reflected on the map, and speeds experienced at the local level may exist in some locales. In particular, there was medium to high evidence of possible discrepancies in 106 locales.

The study found that the reasons for any discrepancies are complex, multifaceted and likely differ from place to place. In some locations, further analysis will be required to confirm the causes and determine an effective solution or remediation path for the community or locale.



Factors Influencing Internet Speed

THERE ARE A wide range of factors that contribute to internet speeds experienced, and differences in reported internet speeds.

The factors fall into three general categories:

- Technical or network challenges, including the quality of the network;
- Consumer preference and/or whether internet service in their home or business is optimized; and
- Inconsistent ways of measuring internet speeds.

Technical or network challenges

Technology is a powerful enabler and ever changing. Not all technologies are created equal; changes in needs happen over time and the capability of service provider components or technology in the consumer's premises can impact performance. Its capacity to perform in optimal ways depends on ideal conditions which may change for a range of reasons and might cause discrepancies in speed.

Conditions affecting the ability for technology to perform optimally include:

- Operating factors like over subscription, network congestion, level of maintenance, and type and condition of the cable;
- Environmental factors like topography and/or foliage that block line of sight access to wireless; and
- Business/cost factors might include the lack of a business case for a service provider to provide the same service everywhere in a locale. For example homes in a downtown core may receive 50/10, but some outlying homes in the locale, where there is less of a business case for network expansion, do not.

Consumer preference and/or whether internet service in the home or business is optimized

The consumer internet speed experience can be affected by factors beyond the control of service providers and this reduction of speed will not be reflected on the map. These range and can include:

- Number of users accessing the internet at the same time on a consumer's network;
- Consumer purchasing choices such as the internet plan purchased and service provider;
- Compatibility with network and the number and age of devices such as computers, laptops, TVs, telephones, personal tablets and mobile devices, gaming systems, security monitory systems and others; and
- Issues related to the wireless technology of WiFi such as quality, distances signals need to span, and construction materials used in buildings where it is being used.

Some of the choices around the types of technology used — perhaps made without full appreciation or knowledge of their impact on internet speed — can be driven by consumer preferences, brand loyalty, cost, and the desire to bundle services. The study noted, however, that consumer-related factors would not explain discrepancies found throughout a community or larger area.

While the study did not make suggestions for consumers on ways to evaluate their internet service, things to consider when wanting to improve internet speeds are:

OPTION 01 — Consider if your router is outdated, or too far away from your devices.

OPTION 02 — Gather factual information on whether upgrading service could improve service.

OPTION 03 — Review the details of the service plan purchased including speed to be delivered. Terms like "... up to 50 Mbps" may be used in the service agreement meaning the provider does not guarantee that level of service.

OPTION 04 — Reboot your modem and router.

OPTION 05 — Be informed about the number of providers offering service in an area.

OPTION 06 — Conduct a speed test available through the Canadian Internet Registration Authority (CIRA) https://www.cira.ca. Conduct the test at different times of the day because speeds can be slower depending on the number of people using it at any one time.

Inconsistent ways that internet speeds are measured and reported

Service providers, consumers and governments talk about internet speed in different ways. Furthermore, there is an inconsistent approach to 50/10 measurement and reporting. How, when, and where internet speeds are measured, and who is doing the measuring, varies widely, contributing to discrepancies in some areas. Service providers report measurements taken from sections in the network they own to confirm 50/10. Yet there may be components along the chain — and outside of the scope of the internet service provider — that affect the consumer experience. The provider's measurement may be accurate but does not reflect the metric that matters most to the consumer: how fast the internet functions using one of their devices.

Specifically the study identified that:

- Definitions intended to guide service providers in their internet speed reporting that help form the map are inconsistent;
- The map relies on reports that are not validated by a third party;
- Map updates may reflect new services before completion of a project. For example, a service provider might be in the midst of a new fibre* project for a community and reports 50/10 Mbps, yet that speed is not available to the consumer at the time of reporting and map update;
- There is no consistent agreement of where along the internet supply chain that 50/10 should be measured; and
- Service speeds alone do not reflect the experience of the end-user, and thus there will, understandably, be dissonance between what the map indicates, and what end-users experience.

In Conclusion

SINCE 2017, THE BC government has invested $190 million into expanding connectivity (internet and cellular), with almost $90 million committed to new connectivity projects throughout B.C. since October 2020 as part of Stronger BC.

The internet speed experience by consumers in B.C. is among the best in Canada, yet similar to other provinces there is a service gap between urban and rural areas where work still needs to be done.

A plan to ensure that all communities are connected with the minimum standard speed of 50/10 will be more complex than ever, and have to address all the factors affecting speed raised in the study, and ultimately require a collective approach spanning all levels government, service providers and, in some instances, the consumer.

REPORT TO THE GOVERNMENT OF BRITISH COLUMBIA MINISTRY OF CITIZENS' SERVICES

Analysis of 106 Select Communities Regarding 50/10 Availability and Comparison to National Broadband Internet Availability Map

Regional District of Bulkley-Nechako

Submitted by:

The Canadian Internet Registration Authority (CIRA)

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BACKGROUND

In 2016, the Canadian Radio-television and Telecommunications Commission (CRTC) established a universal service objective indicating that Canadians in urban, rural, and remote environments should all have access to fixed and mobile wireless internet services at speeds of at least 50 megabits per second (Mbps) download speed and 10 Mbps upload speed ("50/10").[1] The objective was set to ensure all Canadians have access high-quality telecommunications services, recognizing that there is a significant disparity between the service levels available in urban areas and those in rural and remote locations. The decision emphasized that the "…speeds are to be actual speeds delivered, not merely advertised," while also recognizing that a wide range of factors beyond the control of the internet service provider (ISP) can affect performance.[2]

The governments of Canada and British Columbia have both implemented funding programs to help improve broadband connectivity in rural and remote areas. To facilitate broadband expansion projects, Innovation, Science, and Economic Development Canada (ISED) maintains a National Broadband Internet Availability Map ("ISED Map"), which is used to determine whether a given broadband improvement project application can be submitted for funding under its $2.4 billion Universal Broadband Fund. Projects in areas shown as having access to 50/10 speeds on the ISED Map may not be eligible for federal funding.

However, many B.C. communities have reported discrepancies between the level of available broadband service speeds indicated on the ISED Map and the connectivity levels that community stakeholders experience on the ground. In response, the Government of British Columbia's Ministry of Citizens' Services partnered with the Union of BC Municipalities and the Northern Development Initiative Trust to undertake an internet speed study project to, "…better understand all of the factors contributing to the difference between Internet speed data published on the federal government's National Broadband Internet Service Availability Map, and community experiences in BC."[3] The study was conducted by TANEx Engineering ("TANEx study").

The TANEx study reviewed 942 locales in small, rural areas across the province and concluded that:

> "…discrepancies exist in British Columbia and that the magnitude of those discrepancies is large enough to warrant further attention and action. Initial estimates indicate that there are over 100 locales that have higher levels of evidence of a discrepancy based on the methodology used in the Study."

While the TANEx study reviewed aggregated results from across BC locales to determine the *likelihood* of a discrepancy, it did not assess each locale individually to determine whether there was, in fact, a discrepancy within that locale, citing limited time and budget to accomplish this analysis. This latter task has been the focus of this report produced by the Canadian Internet Registration Authority (CIRA) based on data from its CIRA Internet Performance Test.[4]

METHODOLOGY

1. ABOUT CIRA'S INTERNET PERFORMANCE TEST DATA

CIRA operates a comprehensive, internally developed, proprietary application called the Internet Performance Test (IPT) platform based on the Measurement Lab (M-Lab) Network Diagnostic Test (NDT) engine. IPT allows anyone

[1] See Telecom Regulatory Policy CRTC 2016-496 at https://crtc.gc.ca/eng/archive/2016/2016-496.htm
[2] Ibid. See paragraph 81
[3] https://www.ubcm.ca/about-ubcm/latest-news/internet-speed-study-underway
[4] https://performance.cira.ca/bc

with an internet connection to test how fast their connection is under real world conditions. The test lives at performance.cira.ca and takes less than a minute to run. After a user confirms their location and runs a test, they receive a readout on their download and upload speeds, as well as other quality of service metrics including jitter, latency, and packet loss.

The test results are anonymized and added to a national database of internet performance data that can help researchers, policymakers, government departments at all levels and broadband funders assess the need for new broadband projects, or validate that networks are delivering the services they promise. Since its launch in 2015, CIRA has collected over 1,100,000 tests on its platform.

In Canada, ISPs operate their broadband networks on a "best effort" basis. This means that they advertise and sell broadband internet access services "up to" certain performance thresholds, but the speed of the service delivered can deviate from the advertised target based on several factors including ISP network congestion, over-subscription, and other potential network issues inside the home such as outdated Wi-Fi router technologies or competing bandwidth consumption. In the case of fixed wireless access networks, which are prominent in rural areas of Canada, there are numerous environmental conditions outside the home that affect performance including, but not limited to, interference from trees, leaves, hills, rain, snow, and wind.

Given all the factors that affect internet performance and measurement, it is important for the reader of this report to understand that no single internet testing method or technology provides the definitive on word on the state of connectivity. Every test platform available on the market has inherent limitations. For crowdsourced, browser-based tests like CIRA's IPT, the TANEx study notes the following:

> "It is acknowledged that consumer driven speed tests have inherent weaknesses such as competing traffic at the time of the speed test, use of the consumer's network in conducting the speed test, subscribed internet service levels and quality of the equipment among others."

However, despite these limitations, crowdsourced internet performance testing tools such as CIRA's IPT can still provide observers with meaningful data about the relative state of connectivity. The TANEx study goes on to say:

> "However, when comparing aggregated, rather than individual, CIRA test results from BC locales, the aggregated results are consistent with the overall impression of service quality in those locales. In other words, locales that have fibre infrastructure and other generally positive indications of internet performance have CIRA test results that indicate high levels of service. Those that have other evidence demonstrating poor levels of service, generally have low CIRA test results. These trends indicate that speed test results are a valid performance metric to be considered in conjunction with other metrics of the overall scoring for a locale."

CIRA submits that no single testing methodology or data source alone provides the definitive word on connectivity, including its own. The CIRA IPT data in this report should only be read as a relative measure of performance at a given moment in time, and the reader should bear in mind that a variety of factors in and outside the home can impact it.

In addition, CIRA makes no claim in this study as to whether internet consumers are getting the speeds they have paid for. Our analysis did not compare the level of service that consumers have subscribed to with the speeds they received since the subscription information required to do so is unavailable. Instead, CIRA's objective in this analysis was simply to compare individual, geo-located test results in a given locale with the aggregate data indicated in the

ISED Map with regard to service level availability in order to identify potential discrepancies between the two sources.

The absence of 50/10 speed test results in a given locale should not be read definitively that service is unavailable—it simply means that there no tests meeting or exceeding the 50/10 objective are present in the data and that additional testing is required in the locale. CIRA encourages all readers of this report to test their internet connection at performance.cira.ca to contribute additional test data to its growing database.

2. How This Study Was Done

The starting point for this analysis was a list of 106 locales that the TANEx study identified as having a high or medium-high likelihood of discrepancy. CIRA used the same geographic boundaries as those specified by TANEx to assess whether there were test results showing 50/10 speeds within each of the 106 locales.

To assess each of these locales for discrepancies between the service availability indicated by the federal government and service levels experienced by internet users in those areas, CIRA took a series of steps to compare internet availability data contained in the ISED Map with its database of over 1.1 million IPT results.

First, CIRA facilitated comparisons for each of the 106 locales by plotting IPT results gathered between May 2015 and mid-December 2021 down to the building (e.g., home or business) level onto locale-specific maps and filtering the results by the same speed groupings (e.g., 50/10, 25/5, etc.) currently used by the ISED Map.

Second, we compared the locale-specific maps with the road-level availability data contained in the ISED Map to identify whether there are discrepancies between the two data sources.

Third, we drafted a report for each locale containing our evaluation of whether there was a discrepancy using one of three standard responses with additional notes or comments where warranted:

1. **No discrepancy.** CIRA testing has recorded 50/10 connections in areas where the ISED Map indicates 50/10 service availability.
2. **Some discrepancy.** CIRA data has recorded some 50/10 connections, but they do not exactly align with ISED Map data.
3. **Additional testing required.** CIRA data did not receive enough tests to confirm the availability of 50/10 services within the locale where ISED Map data indicates those services exist.

In each locale report, we provided our rationale as well as other considerations that ought to be taken into account, including, but not limited to, the presence and location of test results meeting or exceeding the 50/10 objective, the amount of testing data, the presence of local ISPs, and the presence of older technologies.

Fourth, and finally, we compiled a number of maps for each locale, plotting the speed test results by speed grouping (e.g., just 50/10 tests, all test results) as well as maps drawn from the ISED Map.

The result is 106 individual profiles designed to assist the Province of British Columbia as well as local and regional government stakeholders in understanding whether there are discrepancies between the ISED Map, and the on-the-ground connectivity experienced by businesses and residents in their community.

REGIONAL DISTRICT OF BULKLEY-NECHAKO | 16 LOCALES

1. BURNS LAKE

ISPs Present in Test Results:

- ABC Allen Business Communications Ltd.
- Telus Communications
- Xplornet Communications Inc.

Number of Tests	194
Unique Test IPs	92
Unique Test Locations	78
Number of 50/10 Tests	14
Median Download Speed	9.48
Median Upload Speed	0.93
Maximum Download Speed	284.80
Maximum Upload	242.70

Summary: Burns Lake testing indicates that 50/10 results were recorded from only nine unique test locations and six IP addresses. ISED information indicates that 50/10 service is available throughout the populated area of the townsite.

Evaluation:

- **No discrepancy (with comment).** CIRA testing has recorded 50/10 connections in areas where the ISED Map indicates 50/10 service availability.
    - Additional testing is required to better qualify service levels in the locale.

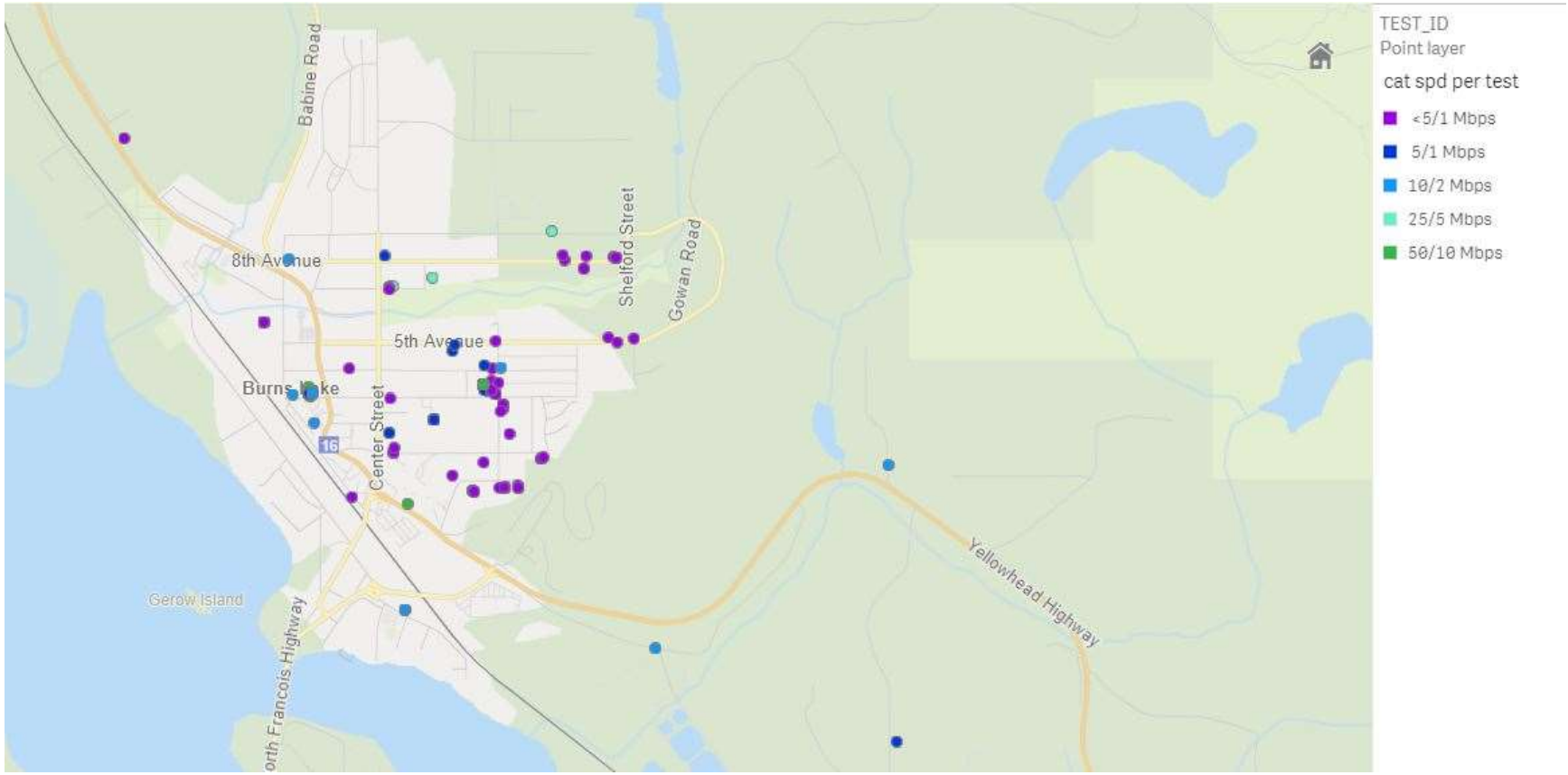
Rationale and Considerations:

- A majority of CIRA data for this locale falls below 50/10 speeds.
- All 14 x 50/10 tests are on Telus services.
- 50/10 tests from inside the townsite are consistent with 50/10 service availability indicated by ISED.
- The first 50/10 test in the locale was recorded in May of 2021 from **Telus**.
- FTTH services from **Telus** are indicated by ISED along with cable from **Mascon** (Telus) and DSL from **Telus**.
- High-capacity transport fibre is indicated by ISED from **Telus** and **ABC**.
- ISED data indicates fixed and mobile wireless services are provided by **ABC** (Telus), **Bell**, **Rogers**, and **Telus**. It does not indicate that 50/10 services are being provided wirelessly.

Attached Maps:

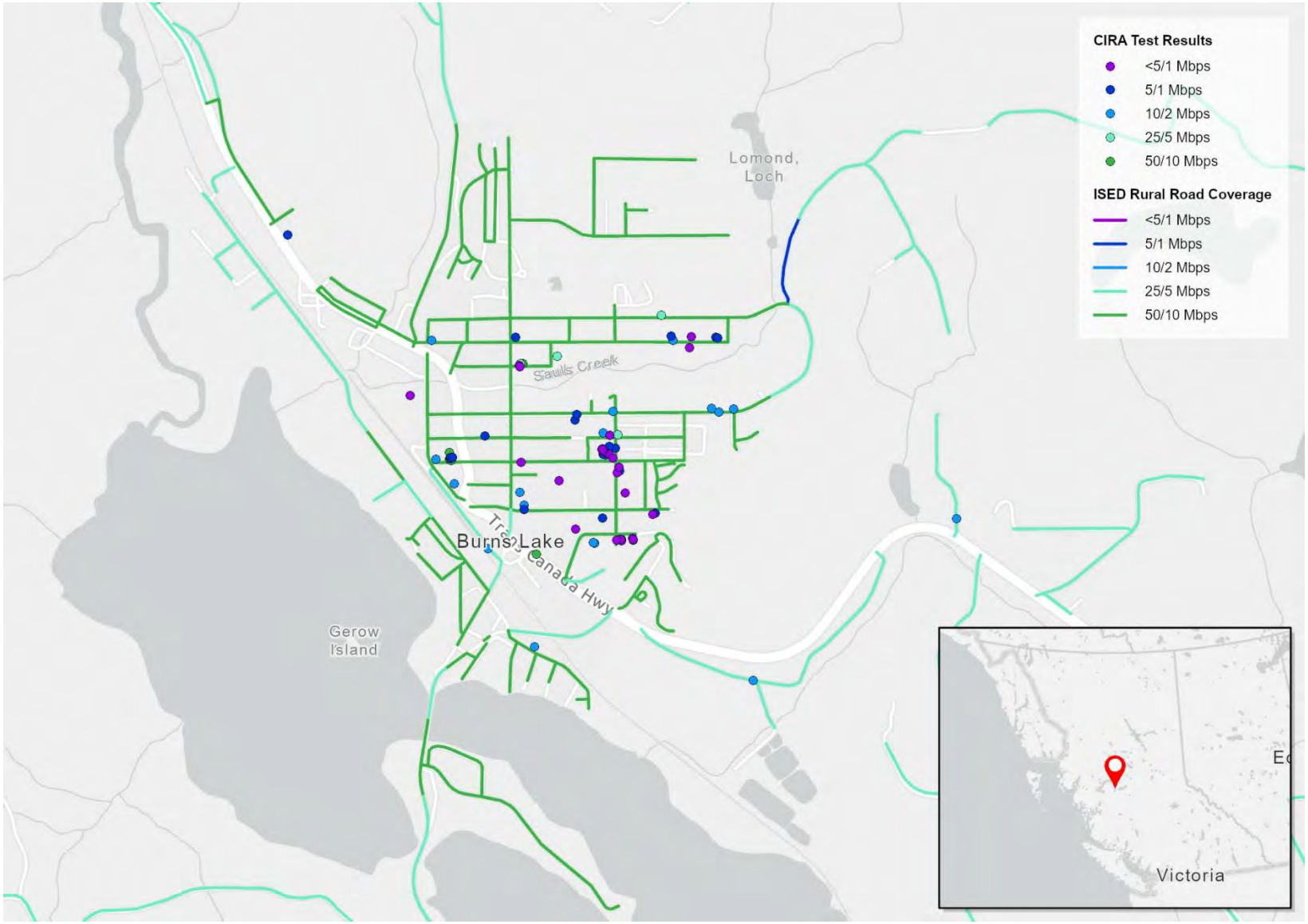
Burns Lake All Tests
Burns Lake 50/10 Tests
Burns Lake CIRA/ISED Data Combined
Burns Lake CIRA/ISED Data 50/10
Burns Lake ISED Data Hex 1
Burns Lake ISED Data Hex 2 Babine Forest Products
Burns Lake ISED Coverage Wireless

Burns Lake All Tests

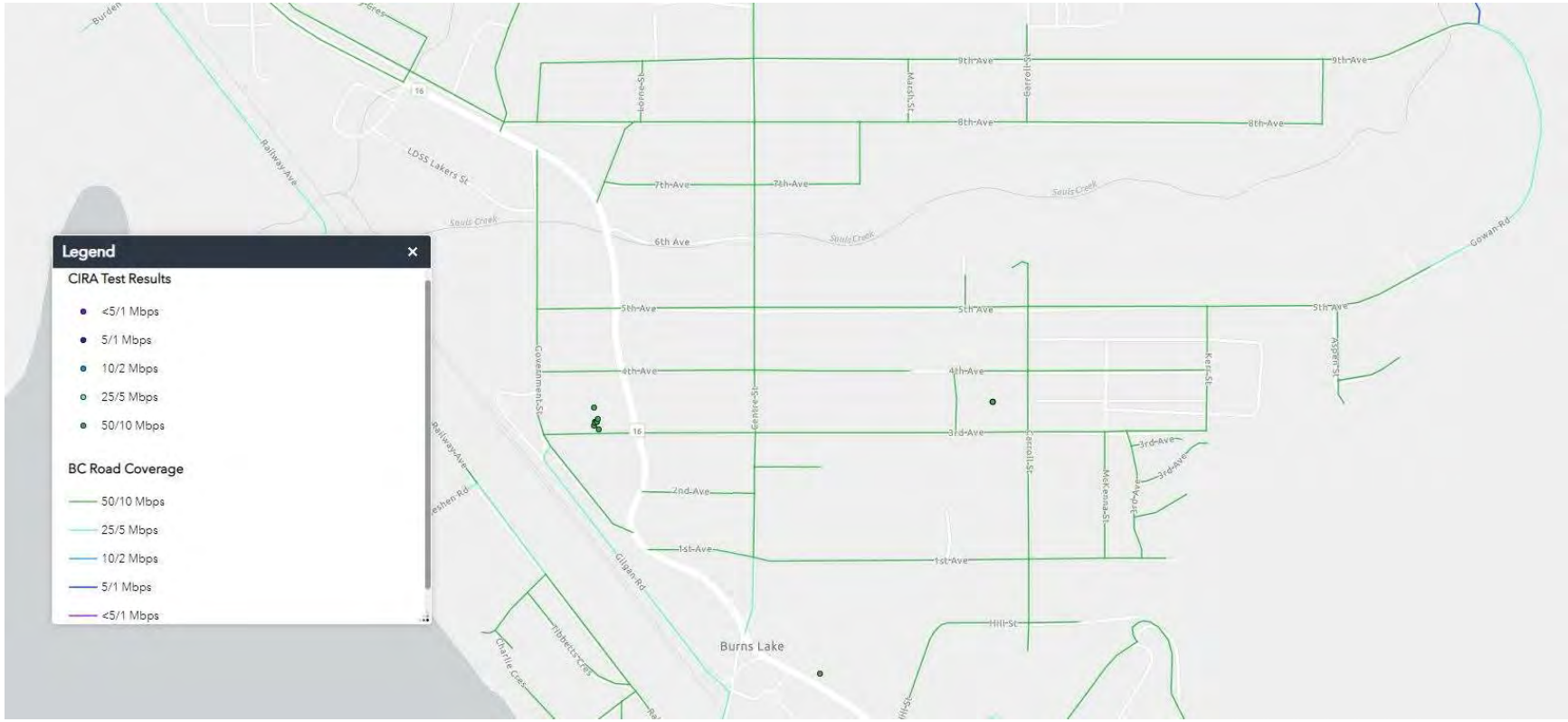


Burns Lake 50/10 Tests

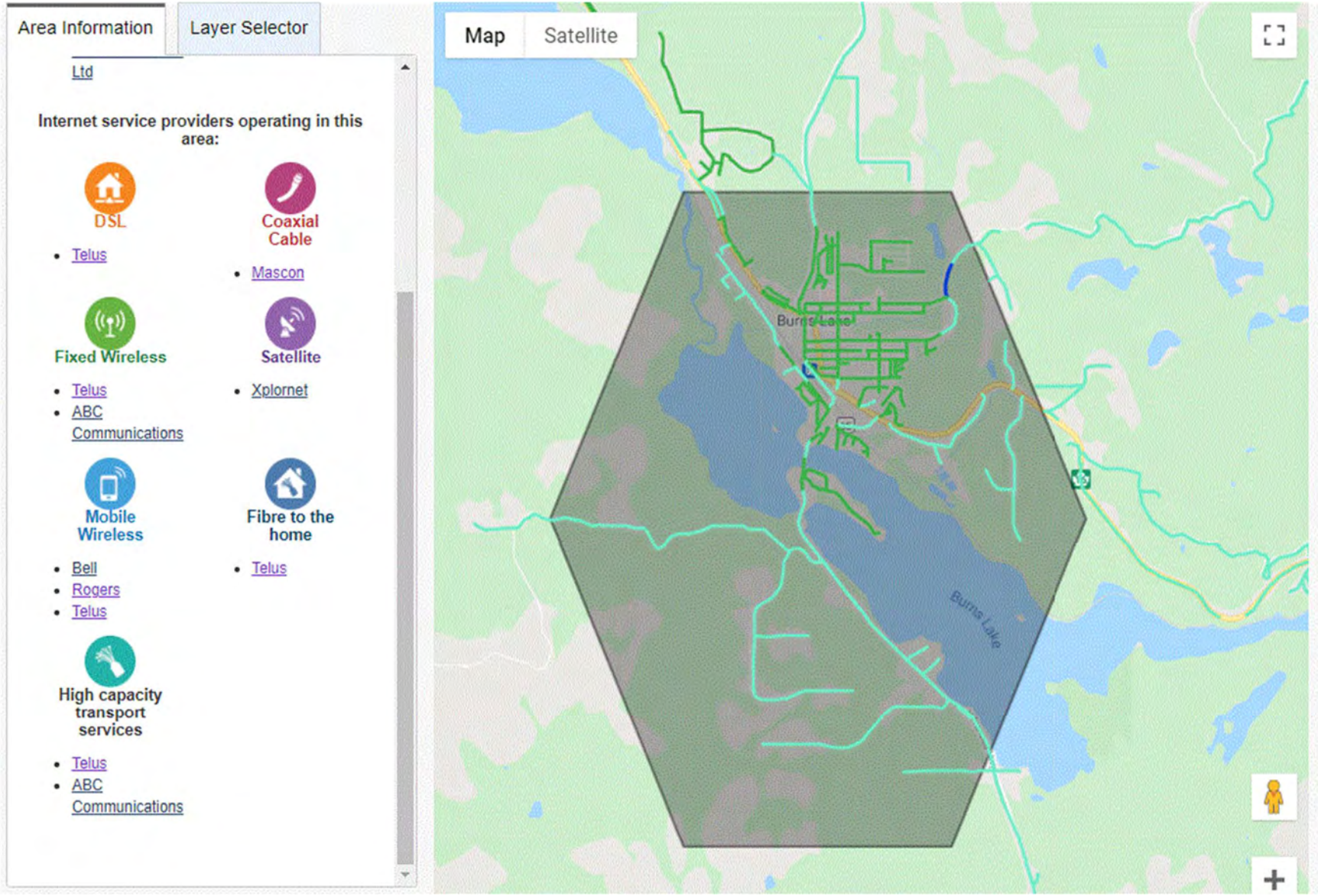
Burns Lake CIRA/ISED Data Combined



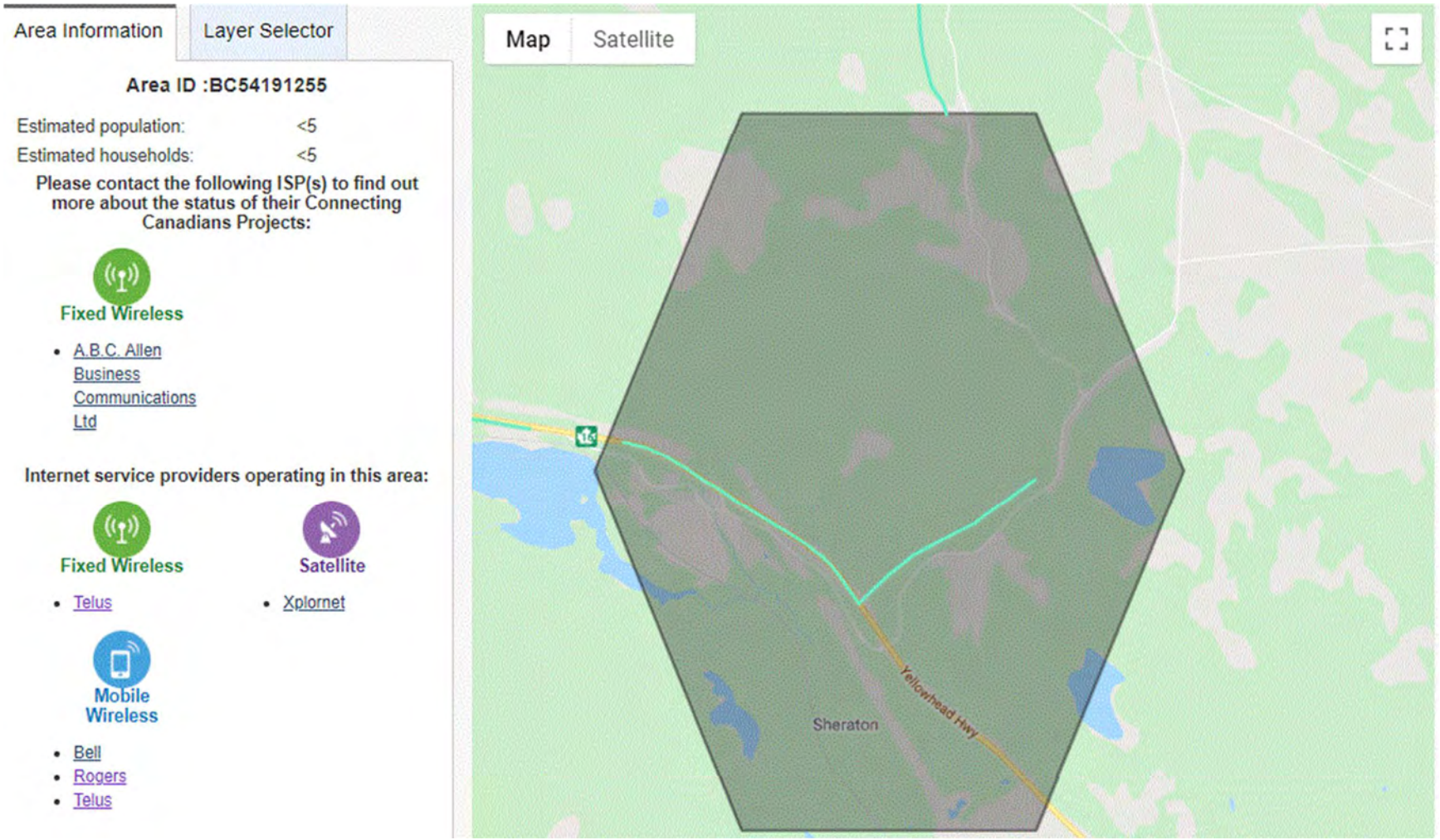
Burns Lake CIRA/ISED Data 50/10



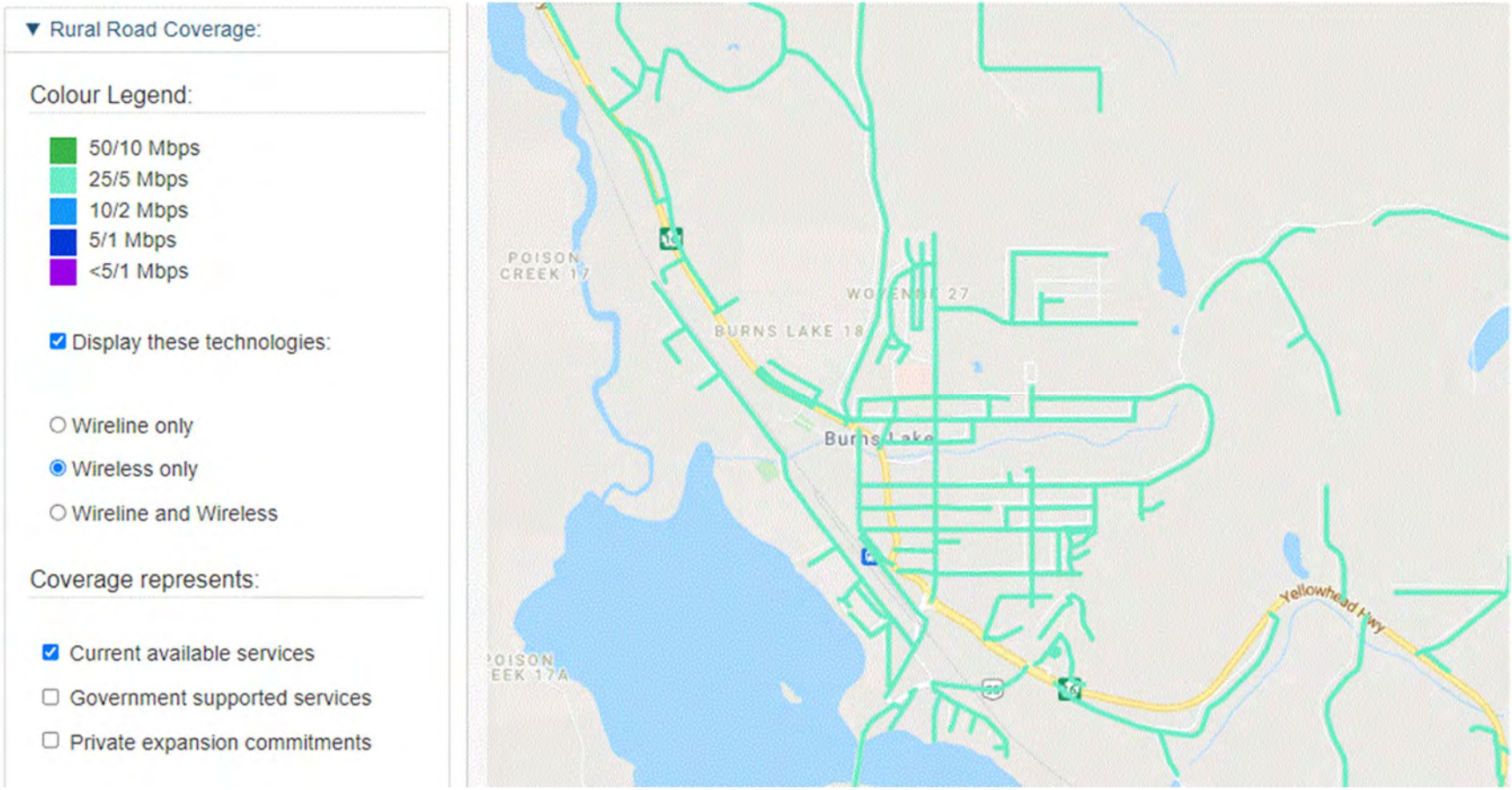
Burns Lake ISED Data Hex 1



Burns Lake ISED Data Hex 2 Babine Forest Products



Burns Lake ISED Data Wireless



2. Fort Fraser

ISPs Present in Test Results:

- ABC Allen Business Communications Ltd.
- Telus Communications
- Xplornet Communications Inc.

Number of Tests	12
Unique Test IPs	4
Unique Test Locations	3
Number of 50/10 Tests	0
Median Download Speed	4.86
Median Upload Speed	3.10
Maximum Download Speed	15.90
Maximum Upload	9.87

Summary: Fort Fraser testing indicates that no 50/10 connections were recorded. ISED information indicates that 50/10 service is available in the center of the populated area of the townsite.

Evaluation:

- **Additional testing required.** CIRA data did not receive enough tests to confirm the availability of 50/10 services within the locale where ISED Map data indicates those services exist.

Rationale and Considerations:

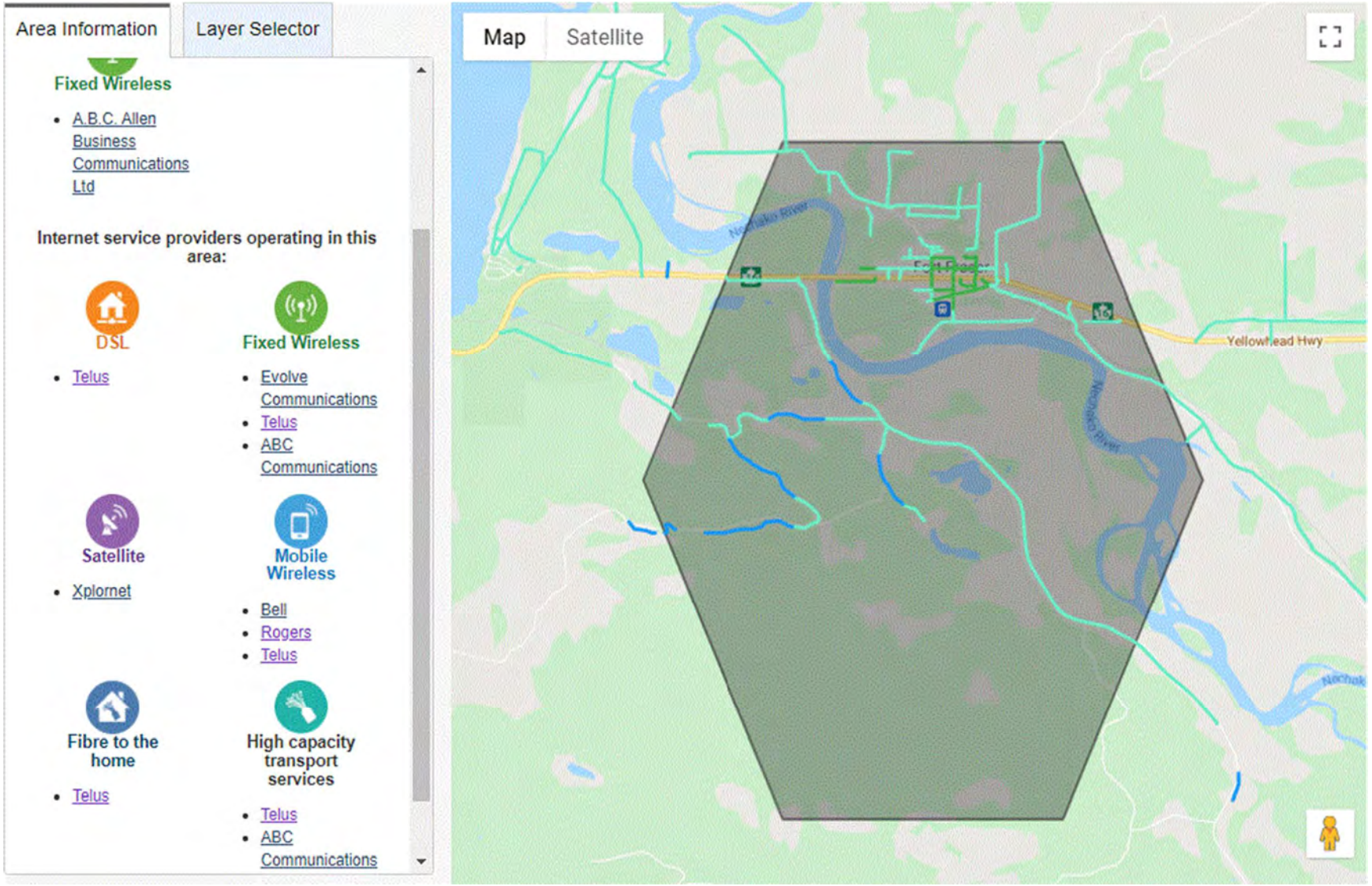
- All CIRA's limited data for this locale falls below 50/10 speeds.
- CIRA testing indicates only <5/1 and 10/1 services are available at three unique test locations.
- FTTH services from **Telus** are indicated by ISED along with DSL from **Telus**.
- High-capacity transport services are indicated by ISED from **Telus** and **ABC** (Telus).
- To the west of the townsite only Fixed Wireless and Satellite services are indicated.
- ISED data indicates fixed and mobile wireless services are provided by **Evolve**, **ABC** (Telus), **Bell**, **Rogers**, and **Telus**. It does not indicate that 50/10 services are provided wirelessly.

Attached Maps:

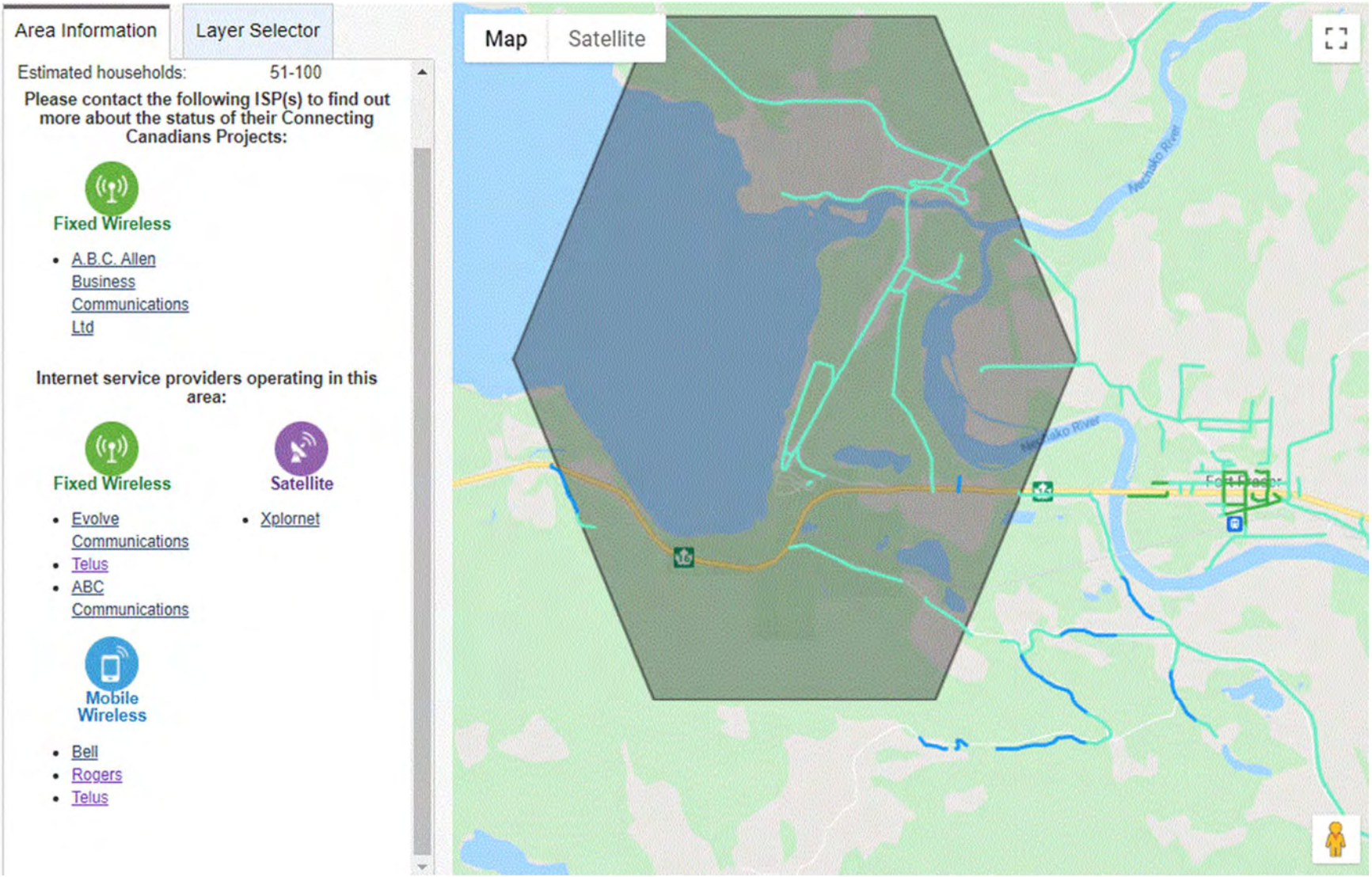
- Fort Fraser All Tests
- Fort Fraser ISED Data Hex 1
- Fort Fraser ISED Data Hex 2
- Fort Fraser ISED Data Wireless

Fort Fraser All Tests

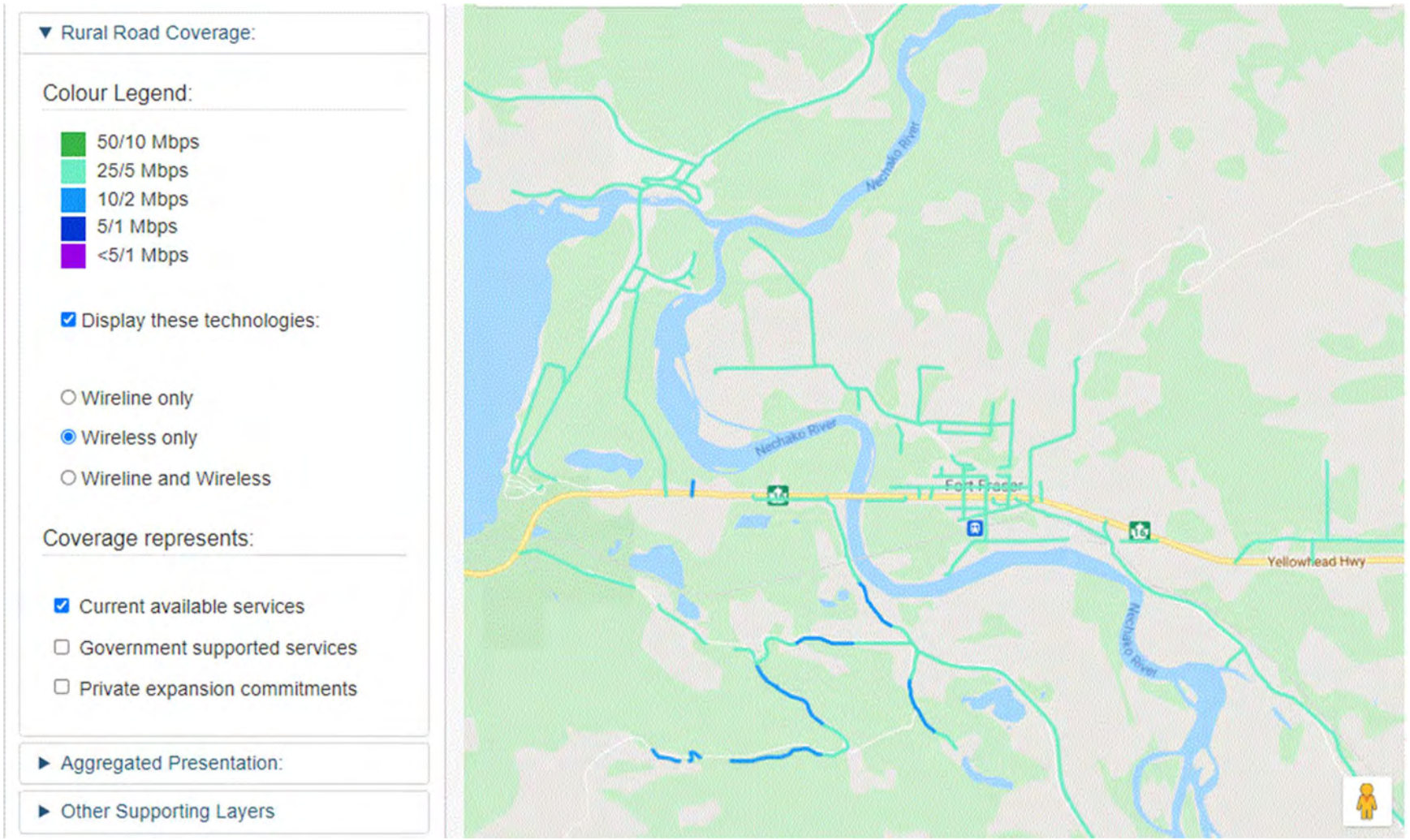
Fort Fraser ISED Data Hex 1



Fort Fraser ISED Data Hex 2



Fort Fraser ISED Data Wireless



3. FORT ST. JAMES (DISTRICT OF)

ISPs Present in Test Results:

- Telus Communications

Number of Tests	304
Unique Test IPs	12
Unique Test Locations	19
Number of 50/10 Tests	2
Median Download Speed	5.77
Median Upload Speed	1.10
Maximum Download Speed	97.47
Maximum Upload	55.61

Summary: Fort St. James testing indicates that 50/10 results were recorded from only one location/IP address. ISED information indicates that 50/10 service is available throughout the populated areas of the locale.

Evaluation:

- **Some discrepancy (with comment).** CIRA data has recorded some 50/10 connections, but they do not exactly align with the ISED Map data.
    - The limited number of test locations and IP addresses indicates a need for additional testing to properly qualify internet service levels in the locale.

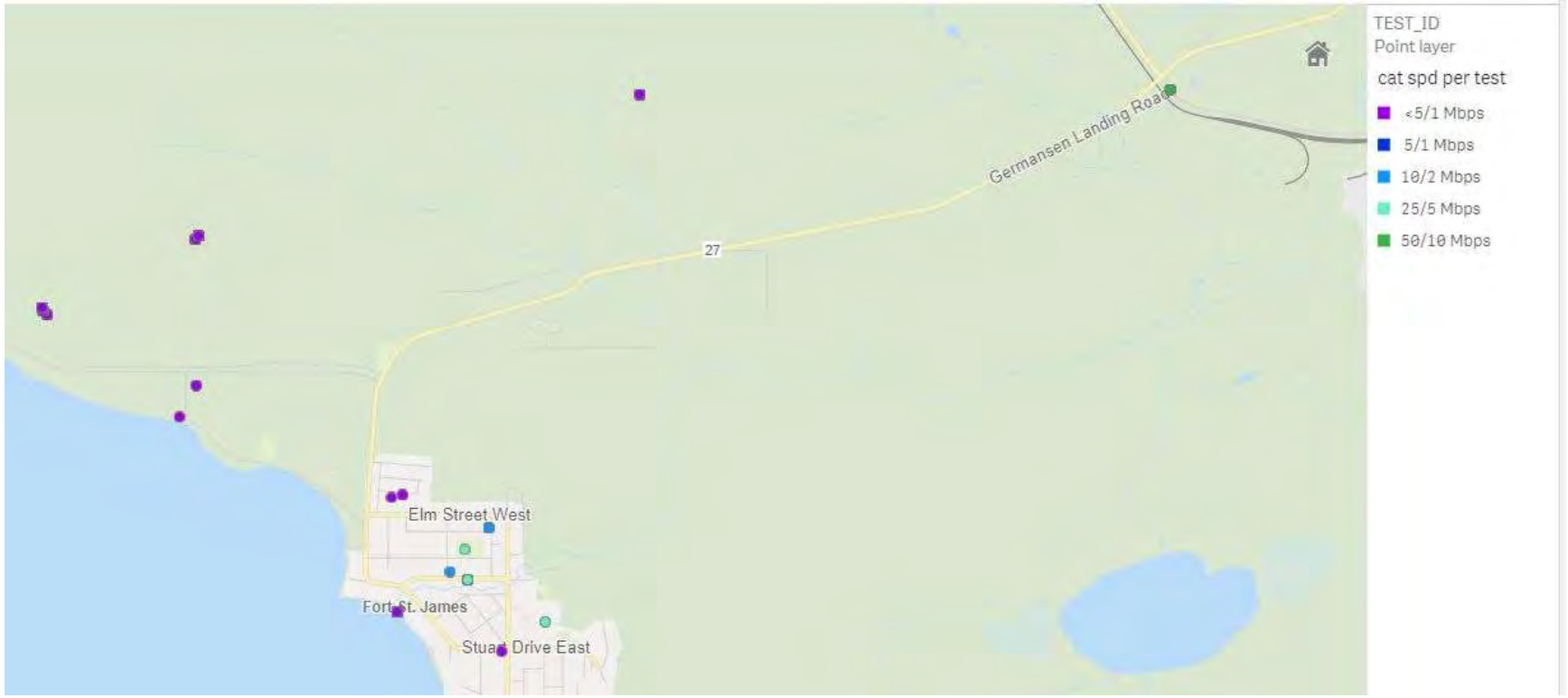
Rationale and Considerations:

- A majority of CIRA data for this locale falls below 50/10 speeds.
- All 304 tests are on **Telus** services across 12 unique IP addresses.
- Only two tests from a single unique location meet or exceed 50/10.
- The first 50/10 test in the locale was recorded in November of 2020 from **Telus**.
- No FTTH services are indicated by ISED, only cable from **Mascon** (Telus) and DSL from **Telus**.
- High-capacity transport services are indicated by ISED from **Telus** and **ABC**.
- ISED data indicates fixed and mobile wireless services, **with one or more claiming to be capable of 50/10**, are provided by **Bell**, **Rogers**, **Evolve Communications**, **Max Internet Technology**, and **Telus**.
- Note: The TANEx report plots several CIRA-attributed 50/10 tests on a map of Fort St. James (see p. 36) that CIRA was unable to verify. It appears the tests meet the 50 Mbps download but not the 10 Mbps upload.

Attached Maps:

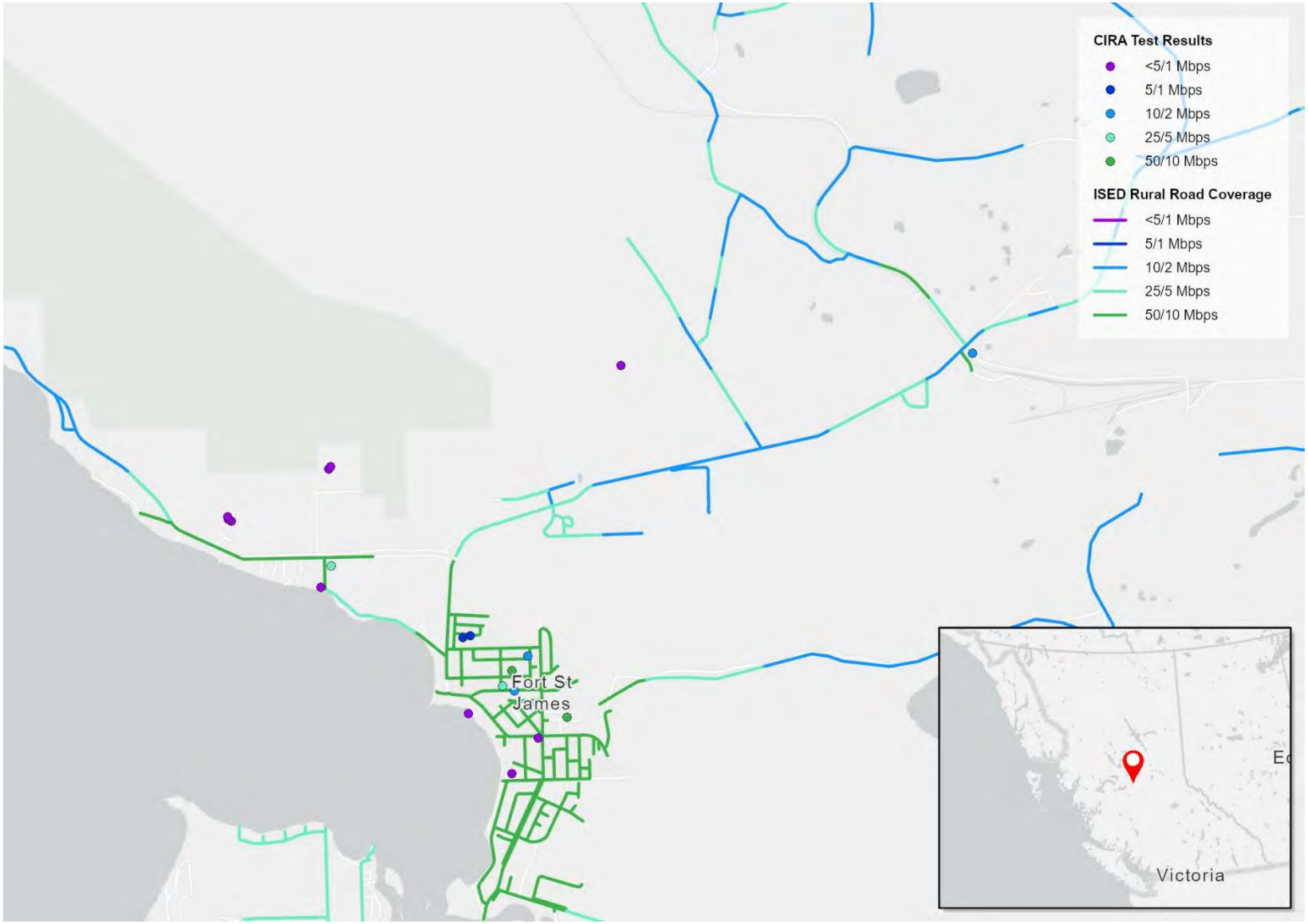
Fort St. James All Tests
Fort St. James 50/10 Tests
Fort St. James CIRA_ISED Data Combined
Fort St. James CIRA_ISED Data 50/10
Fort St. James ISED Data Hex 1
Fort St. James ISED Data Hex 2
Fort St James ISED Data Wireless

Fort St. James All Tests

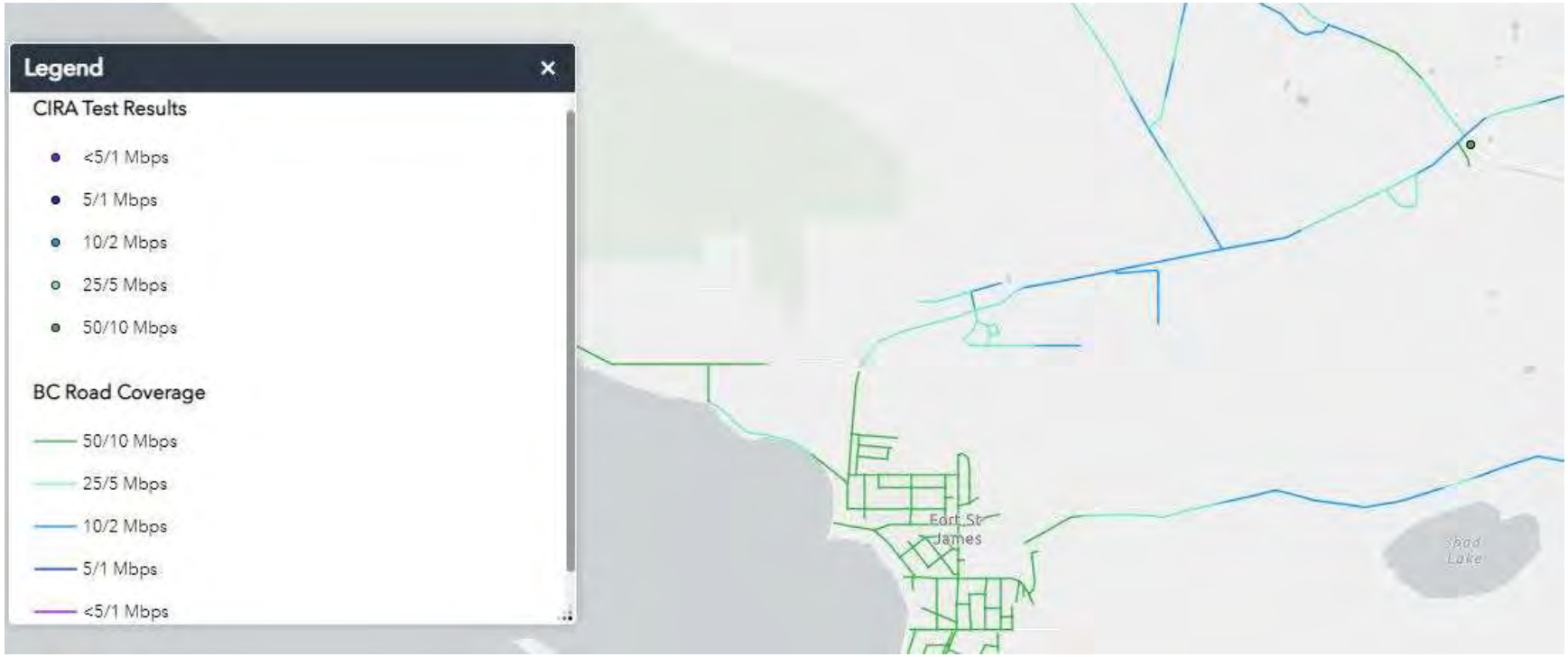


Fort St. James 50/10 Tests

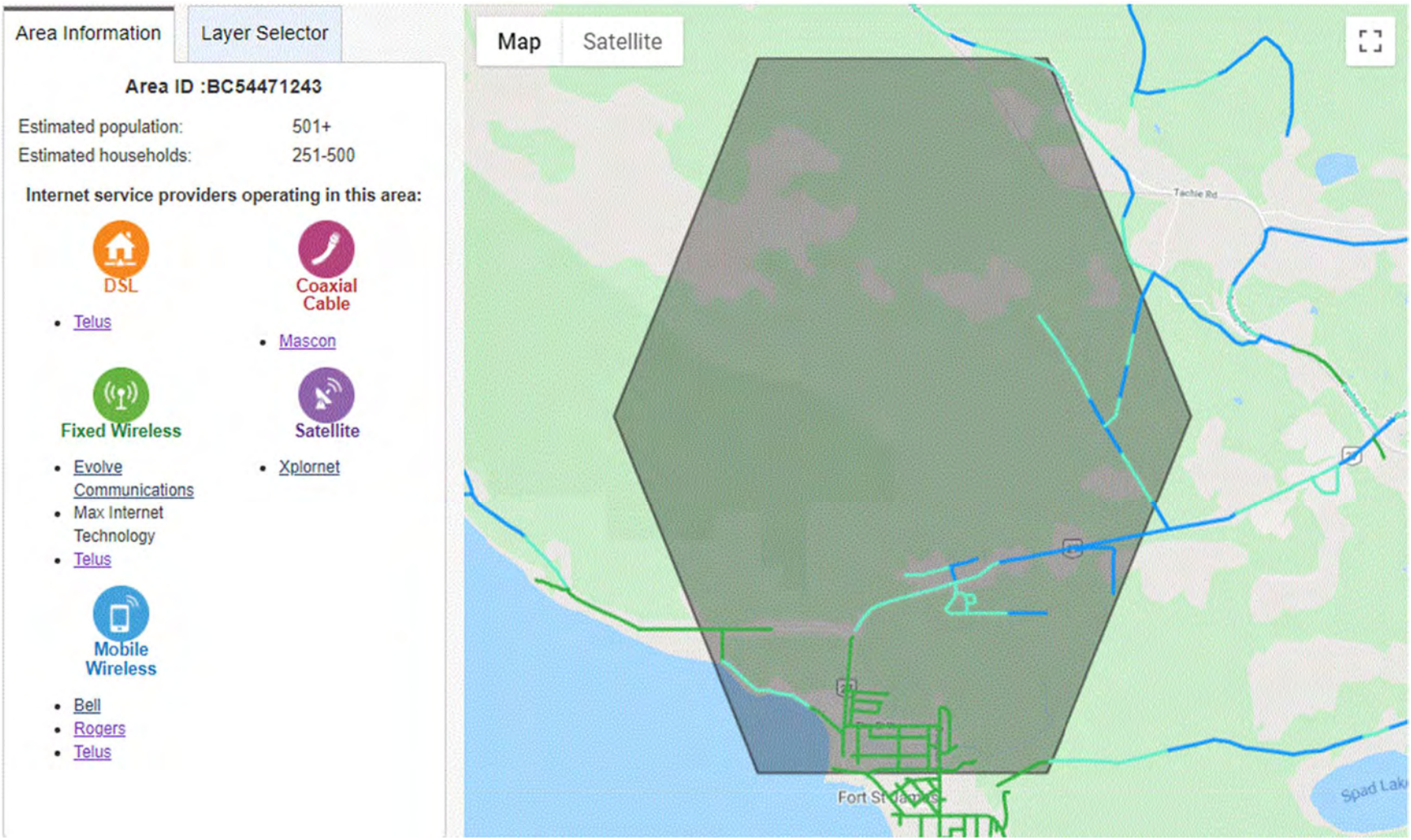
Fort St. James CIRA/ISED Data Combined



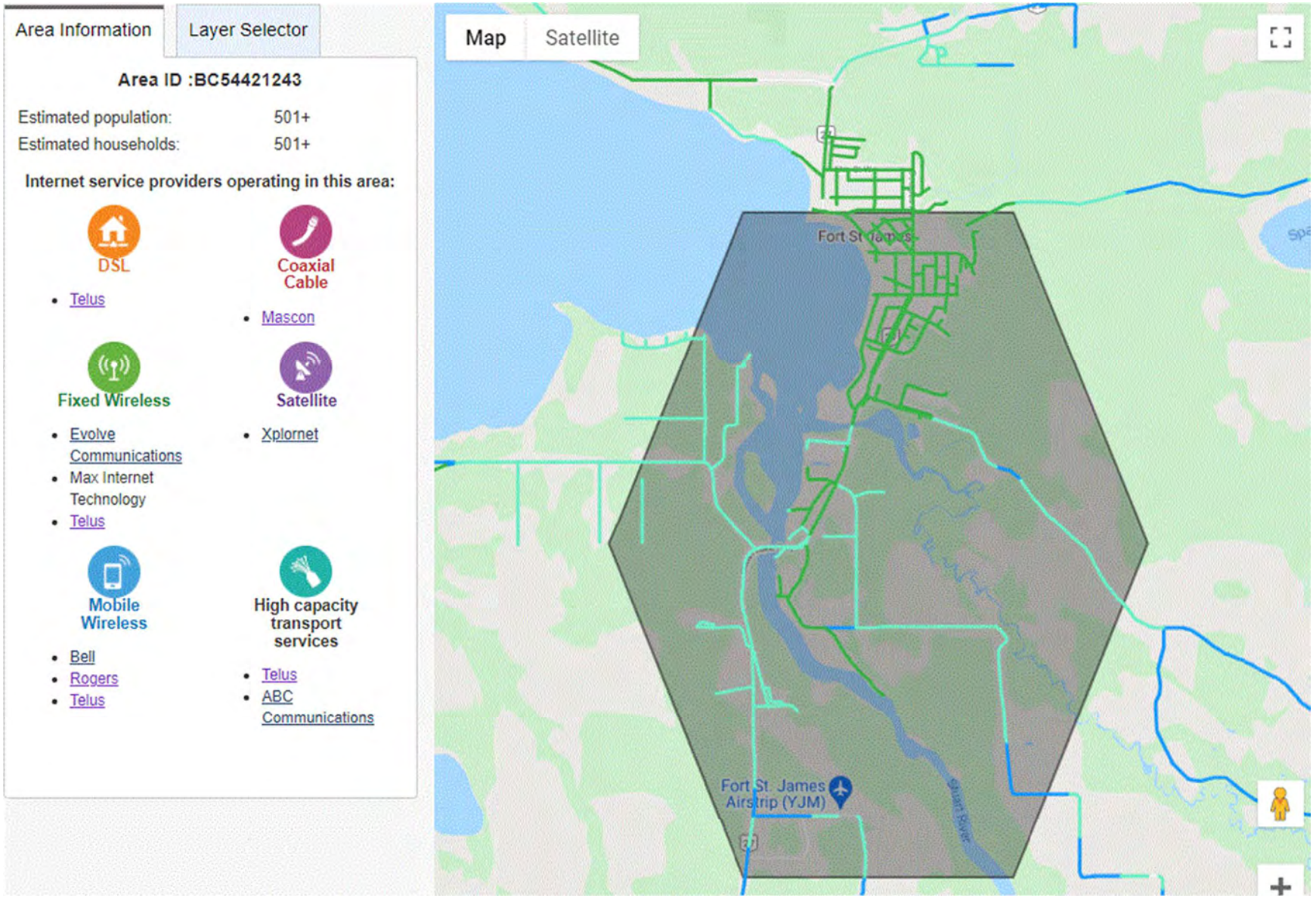
Fort St. James CIRA/ISED Data 50/10



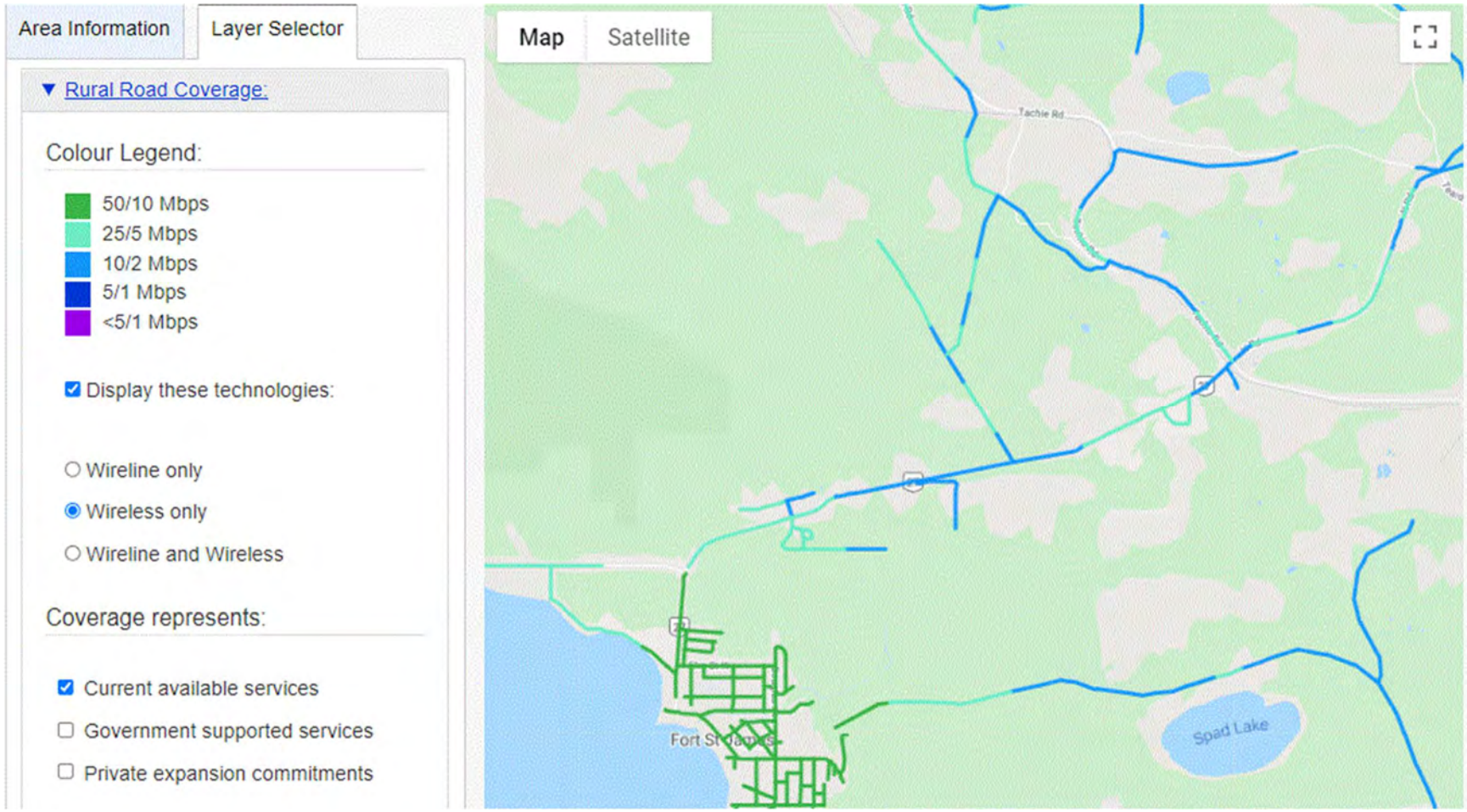
Fort St. James ISED Data Hex 1



Fort St. James ISED Data Hex 2



Fort St James ISED Data Wireless



4. FRASER LAKE

ISPs Present in Test Results:

- ABC Allen Business Communications Ltd.
- Telus Communications

Number of Tests	503
Unique Test IPs	180
Unique Test Locations	280
Number of 50/10 Tests	76
Median Download Speed	14.15
Median Upload Speed	4.42
Maximum Download Speed	434.82
Maximum Upload	39.13

Summary: Fraser Lake testing indicates that 50/10 service is currently available from 41 unique locations and 19 IP Addresses. ISED information indicates that 50/10 service is available throughout the populated areas of the locale.

Evaluation:

- **Some discrepancy (minor).** CIRA data shows there are some 50/10 connections, but they do not exactly align with ISED Map data.

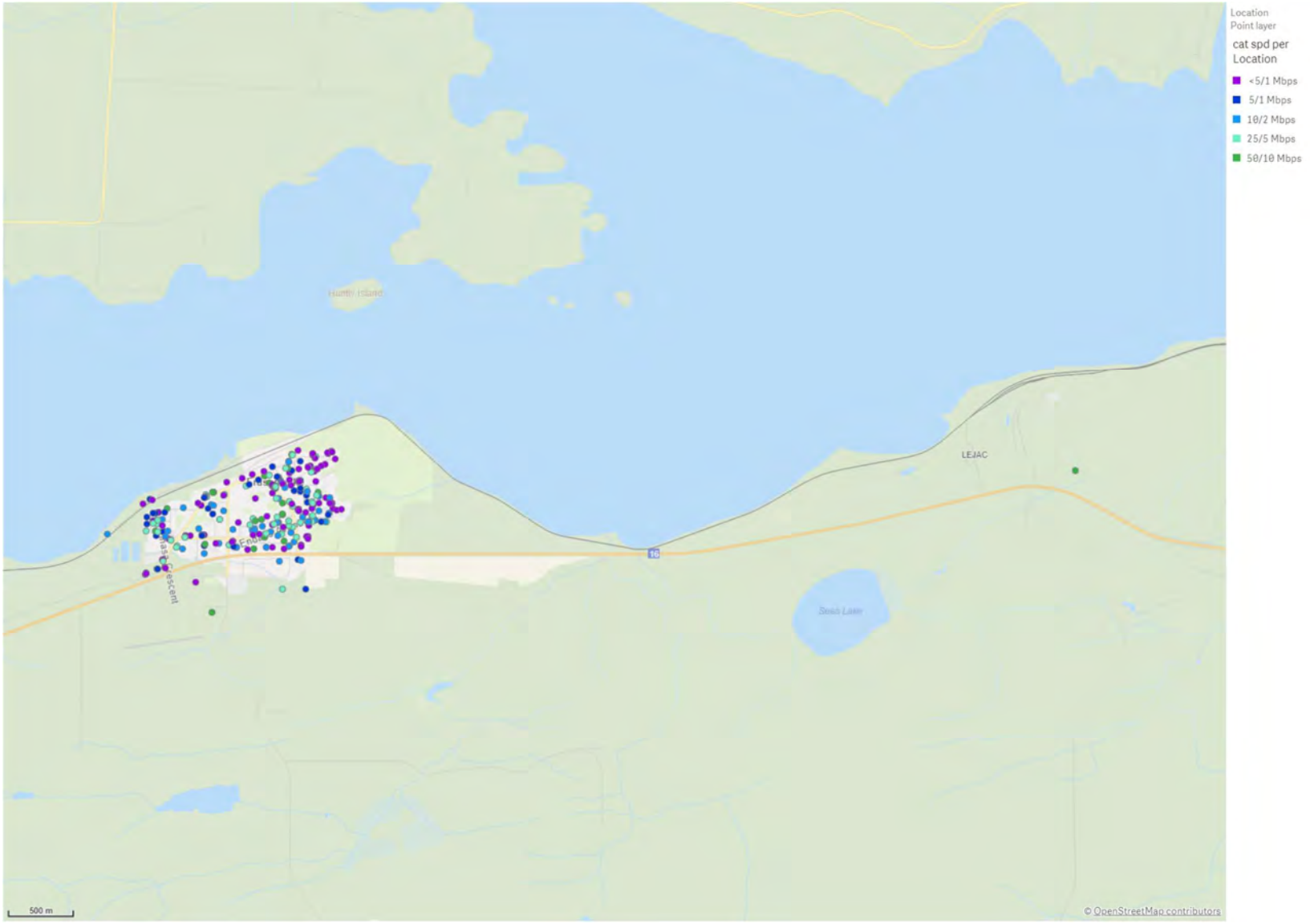
Rationale and Considerations:

- CIRA testing does indicate wide area coverage of 50/10 services in the Fraser Lake townsite and one 50/10 test result near Lejac within the Fraser Lake locale boundaries.
- All 76 tests meeting or exceeding 50/10 were recorded using **Telus** services.
- The first 50/10 test in the locale was recorded in December of 2020 from **Telus**.
- ISED indicates no FTTH services inside the locale, only cable from **Mascon** (Telus) and DSL from **Telus**.
- ISED indicates high-capacity transport fibre provided by **Telus**.
- Fraser Lake locale is covered by two ISED hexes and only Hex 1 indicates 50/10 service.
    - CIRA testing returned 50/10 tests in both Hexes although limited to a single test in Hex 2.
- ISED data indicates fixed and mobile wireless services are provided by **ABC** (Telus), **Bell**, **Rogers**, and **Telus**. It does not indicate that 50/10 services are being provided wirelessly.

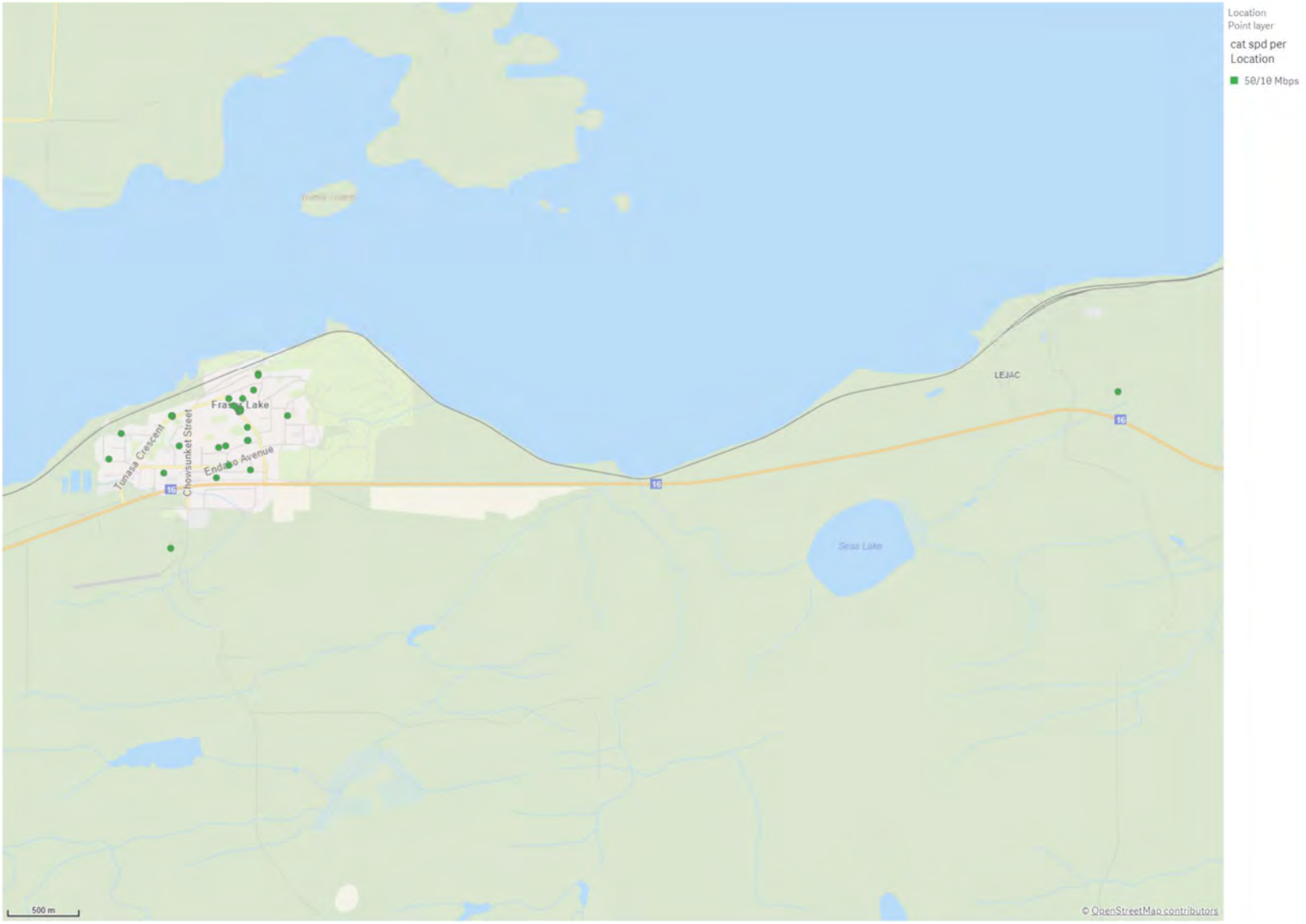
Attached Maps:

Fraser Lake All Tests	Fraser Lake 50/10 Tests	Fraser Lake CIRA/ISED Data Combined
Fraser Lake CIRA/ISED Data 50/10	Fraser Lake ISED Data Hex 1	Fraser Lake ISED Data Hex 2
Fraser Lake ISED Data Wireless		

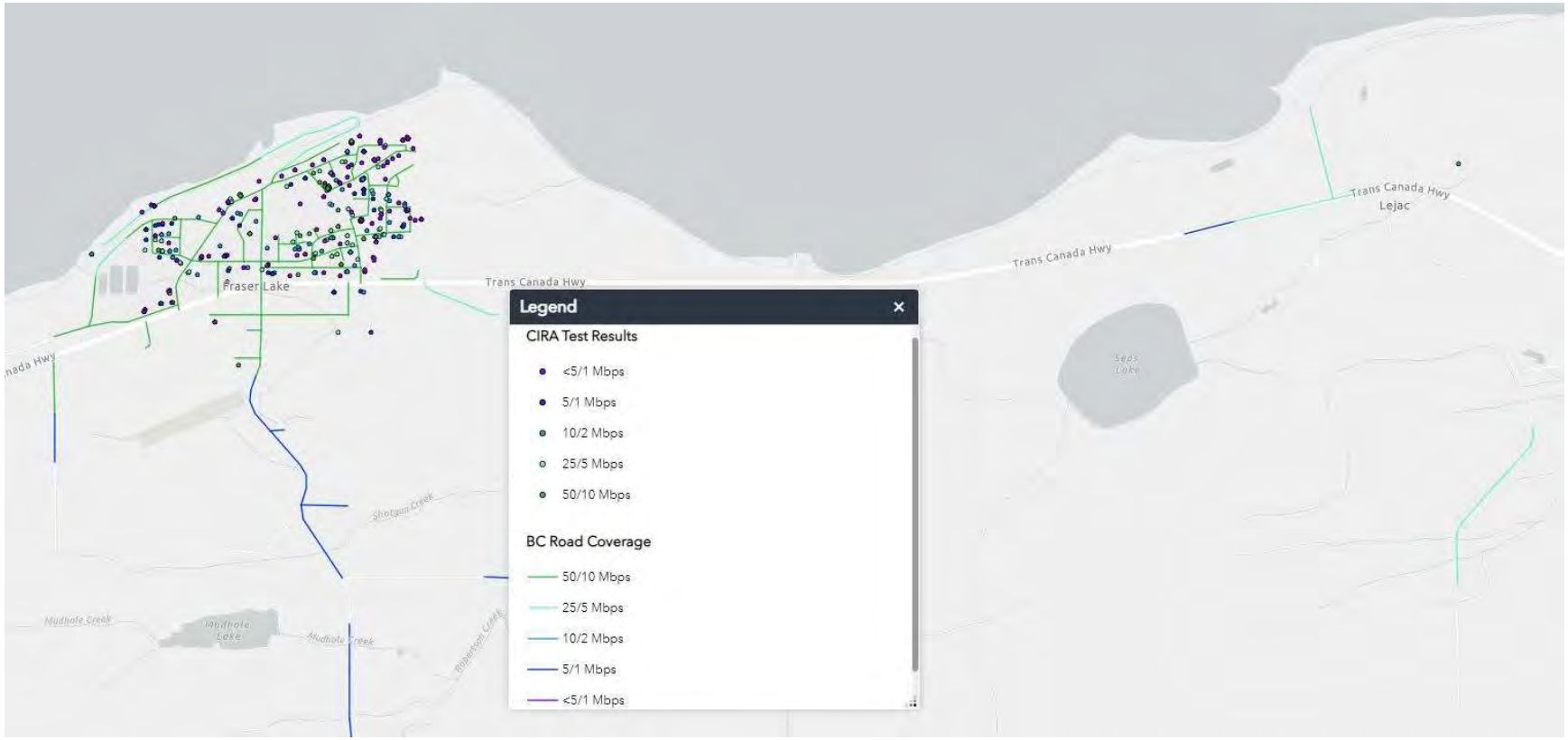
Fraser Lake All Tests



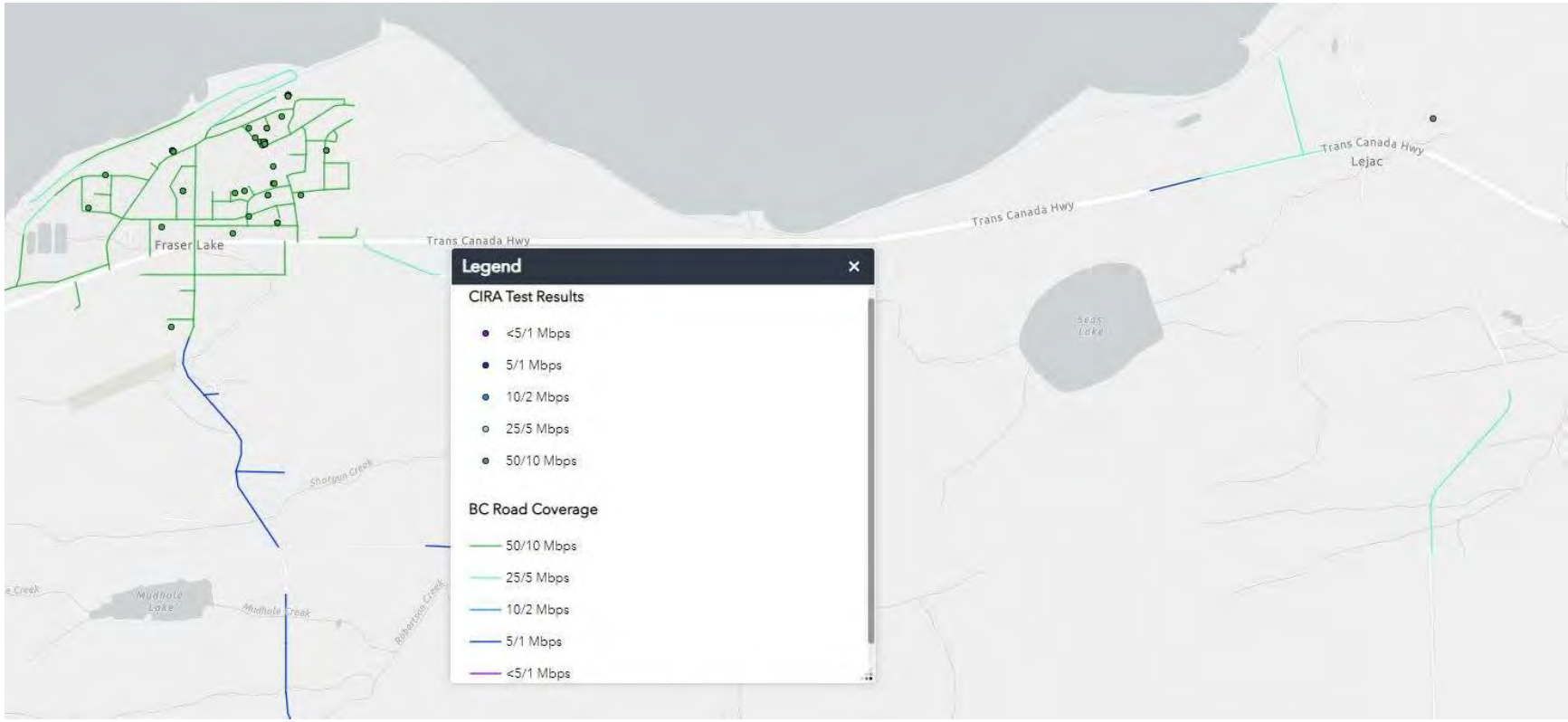
Fraser Lake 50/10 Tests



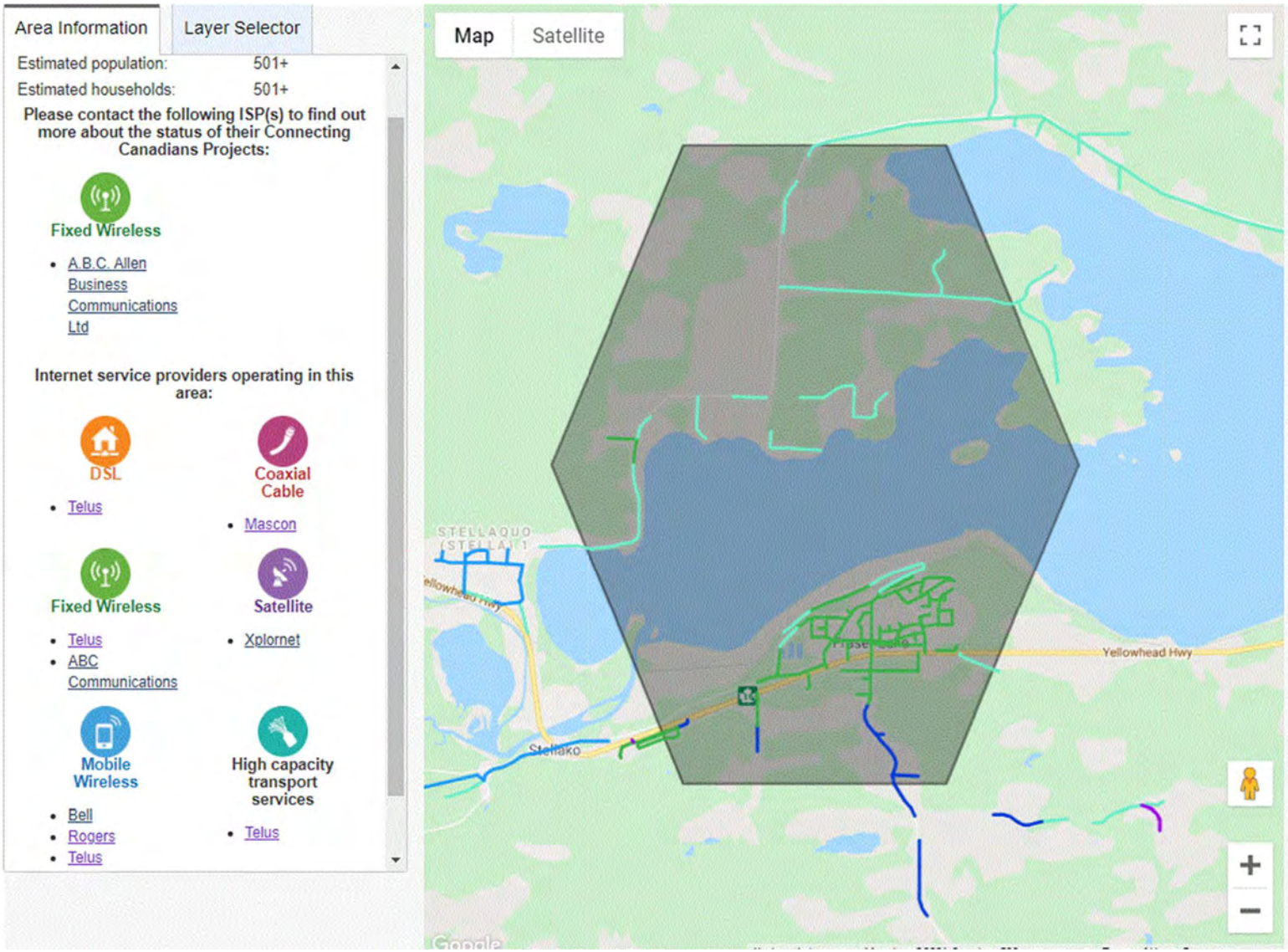
Fraser Lake CIRA/ISED Data Combined



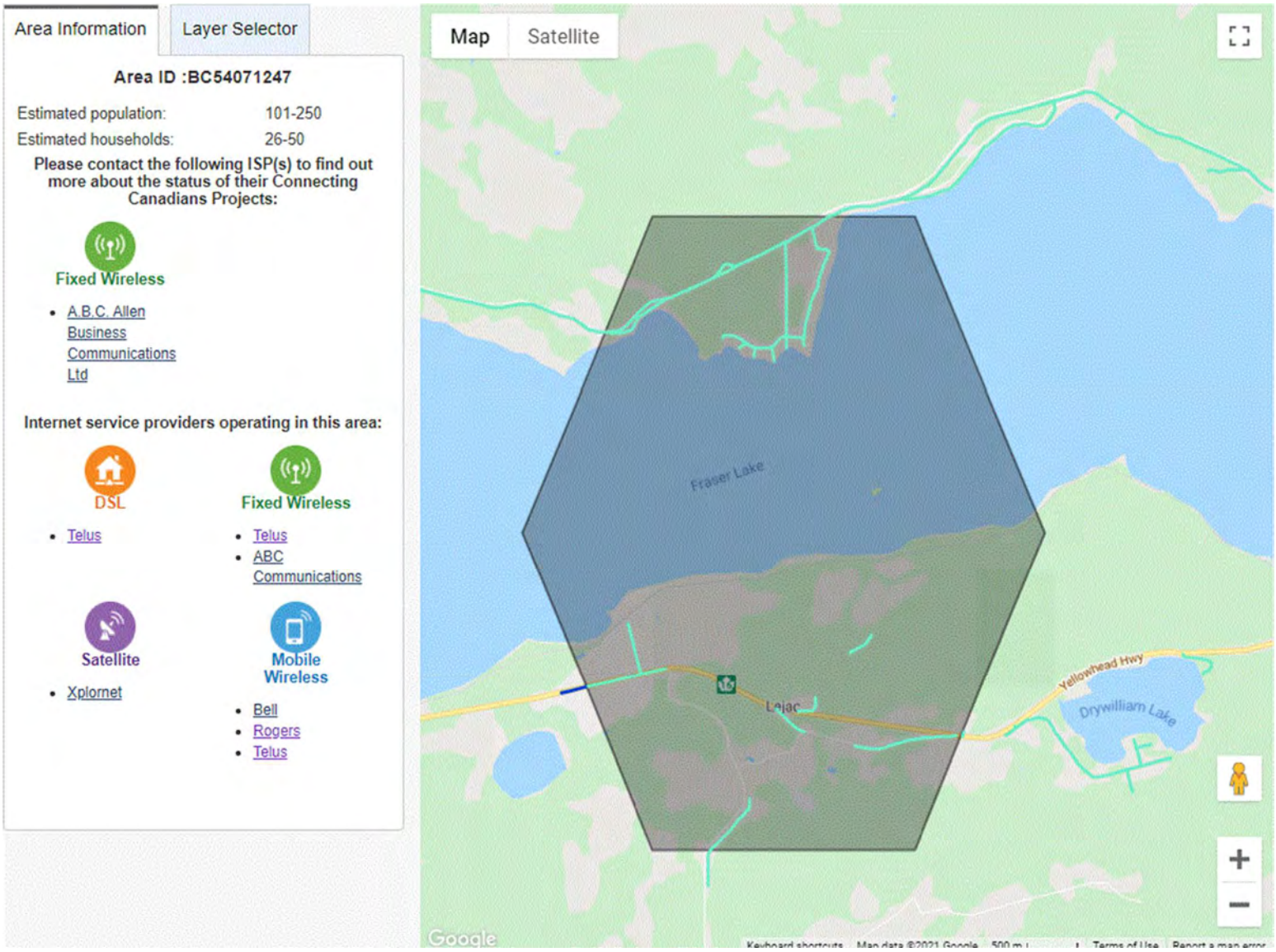
Fraser Lake CIRA/ISED Data 50/10



Fraser Lake ISED Data Hex 1



Fraser Lake ISED Data Hex 2



Fraser Lake ISED Data Wireless

5. GAUVIN CREEK

ISPs Present in Test Results:

- Telus Communications

Number of Tests	10
Unique Test IPs	8
Unique Test Locations	4
Number of 50/10 Tests	0
Median Download Speed	2.39
Median Upload Speed	2.63
Maximum Download Speed	21.69
Maximum Upload	4.11

Summary: Gauvin Creek testing indicates that no 50/10 connections were recorded. ISED information indicates that 50/10 service is available along Hwy 16 extending short distances to the north, south and west.

Evaluation:

- **Additional testing required.** CIRA data did not receive enough tests to confirm the availability of 50/10 services within the locale where ISED Map data indicates those services exist.

Rationale and Considerations:

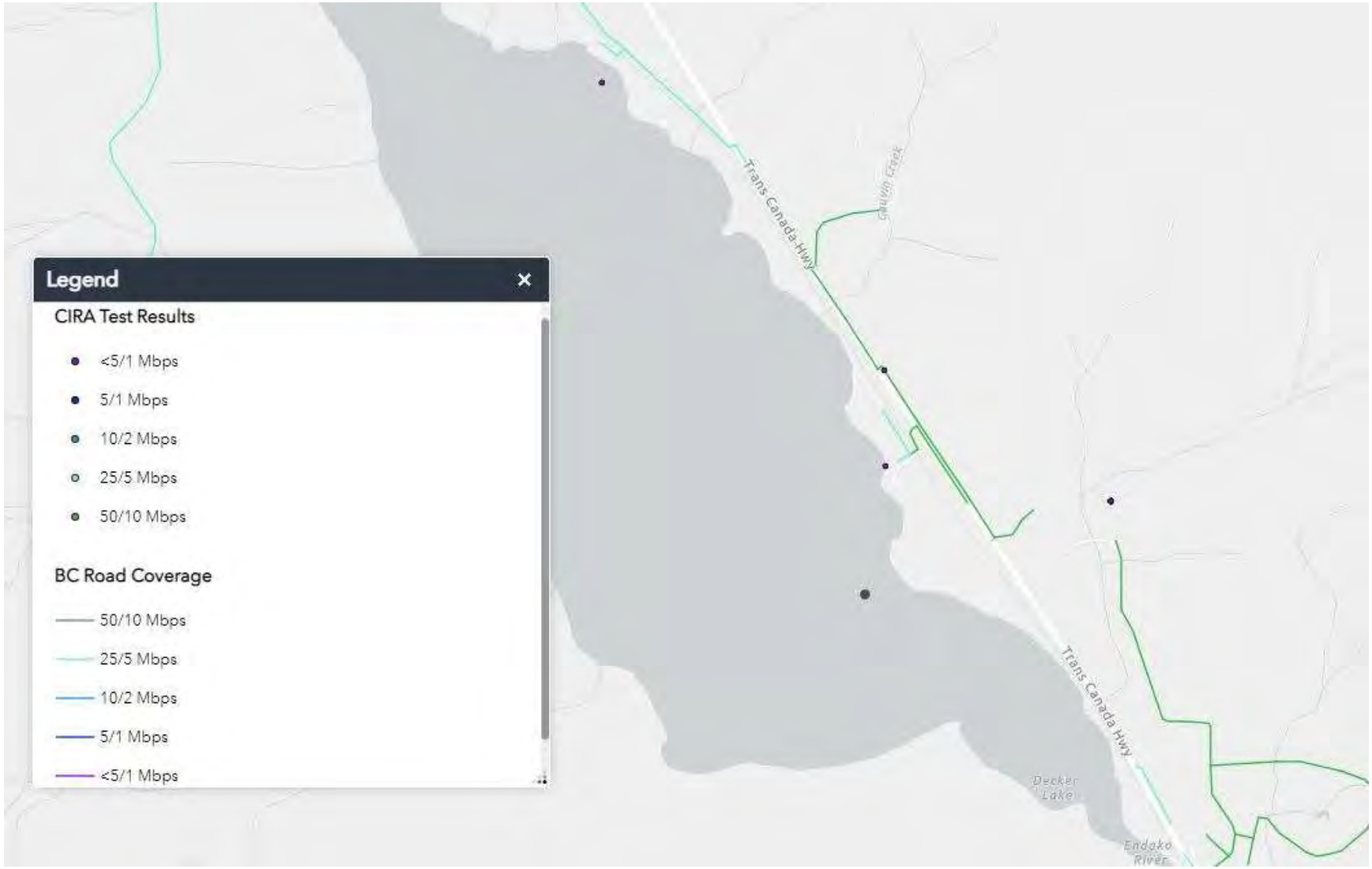
- All CIRA's limited data for this locale falls below 50/10 speeds.
- CIRA testing recorded only <5/1 and 5/1 tests.
- No FTTH services are indicated by ISED only cable from **Mascon** (Telus) and DSL from **Telus**.
- High-capacity transport services are not indicated by ISED.
- ISED data indicates fixed and mobile wireless services are provided by **ABC** (Telus), **Bell**, **Rogers**, and **Telus**. It does not indicate that 50/10 services are being provided wirelessly.

Attached Maps:

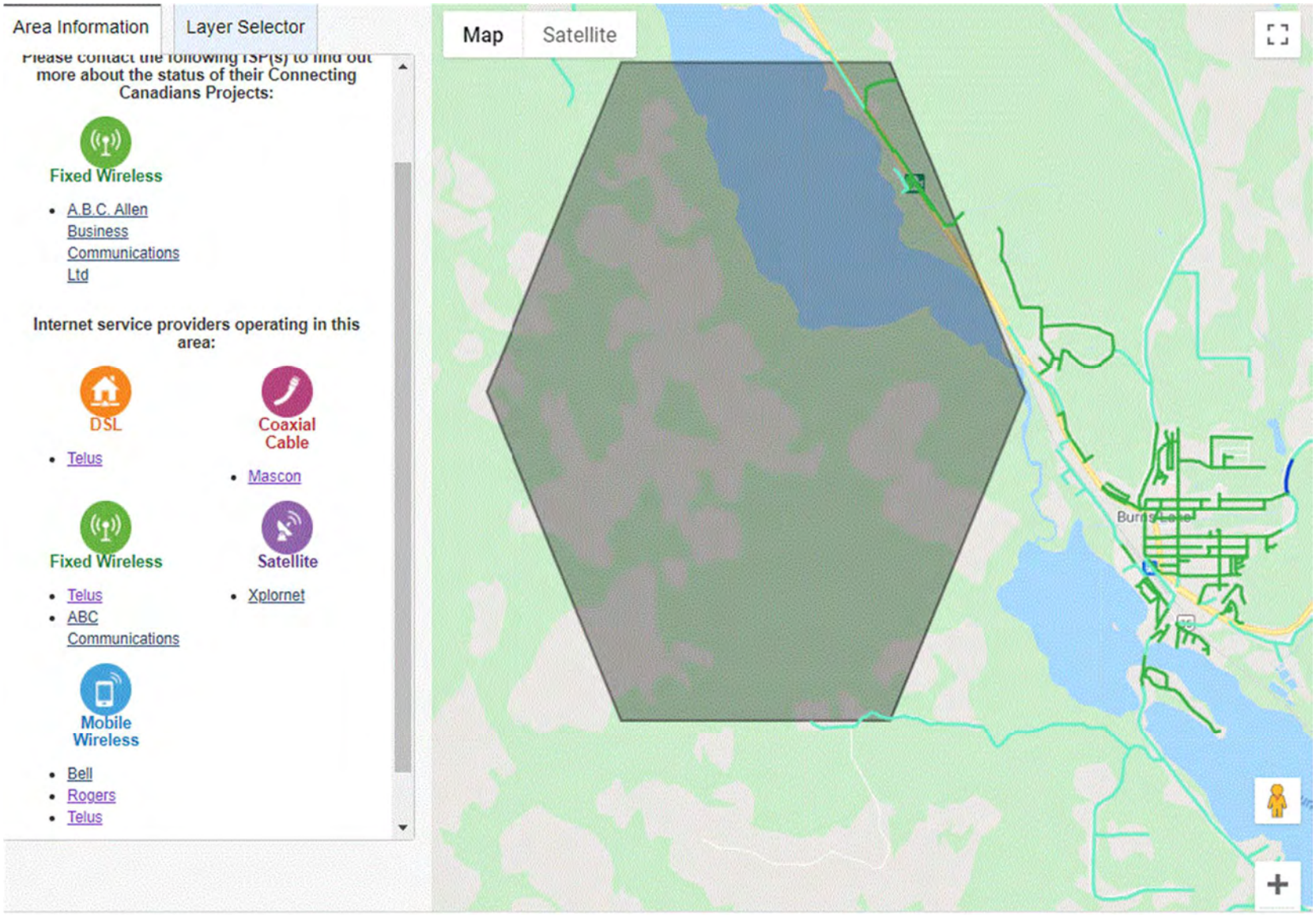
- Gauvin Creek All Tests
- Gauvin Creek CIRA/ISED Data Combined
- Gauvin Creek ISED Data
- Gauvin Creek ISED Data Wireless

Gauvin Creek All Tests

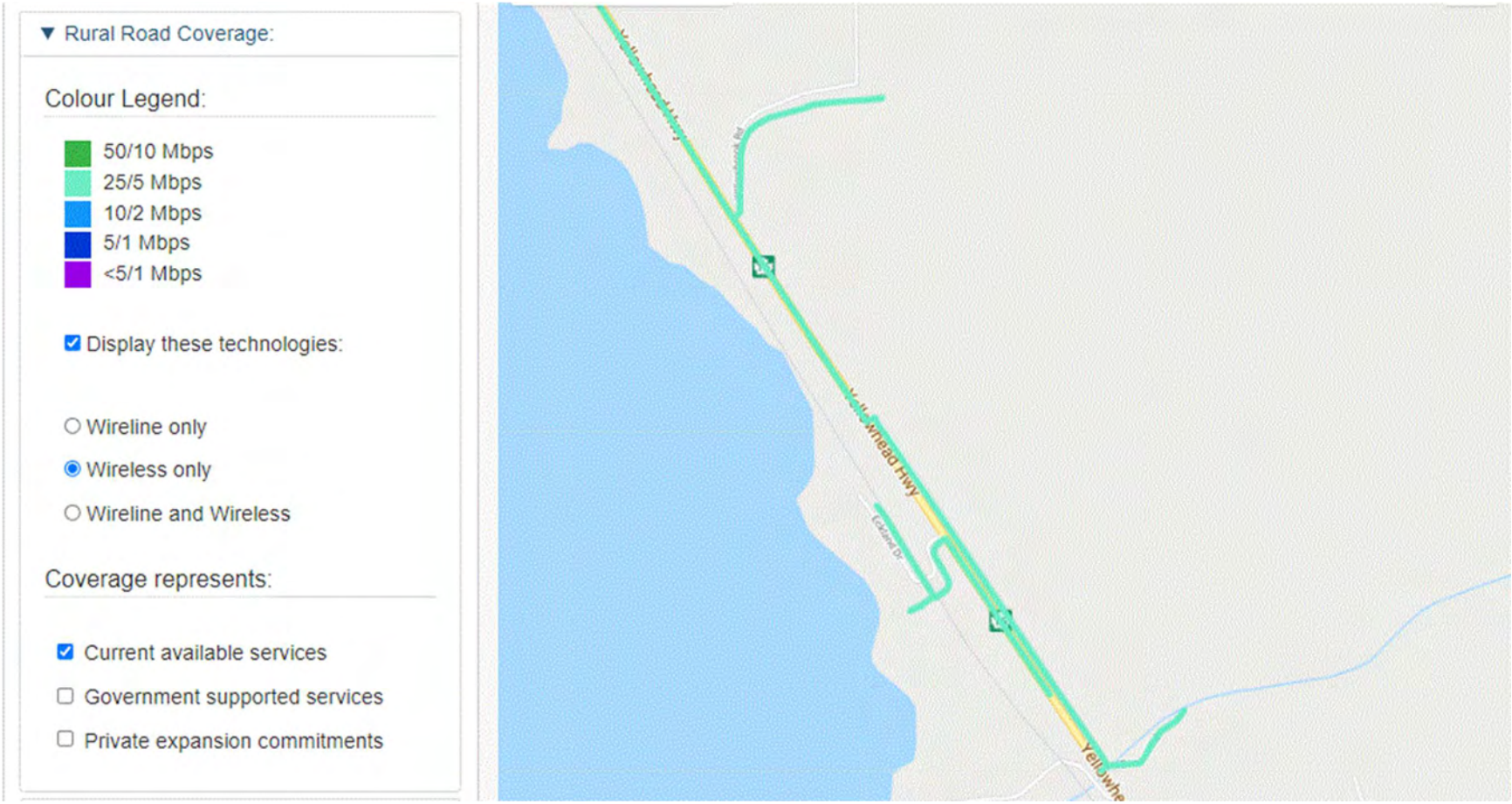
Gauvin Creek CIRA/ISED Data Combined



Gauvin Creek ISED Data



Gauvin Creek ISED Data Wireless



6. HUBERT

ISPs Present in Test Results:

- Telus Communications

Number of Tests	2
Unique Test IPs	1
Unique Test Locations	1
Number of 50/10 Tests	0
Median Download Speed	6.03
Median Upload Speed	0.90
Maximum Download Speed	6.10
Maximum Upload	0.91

Summary: Hubert testing indicates that no 50/10 connections were recorded. ISED information indicates that 50/10 service is available in two small areas along Hwy 16, spreading short distances off the road.

Evaluation:

- **Additional testing required.** CIRA data did not receive enough tests to confirm the availability of 50/10 services within the locale where ISED Map data indicates those services exist.

Rationale and Considerations:

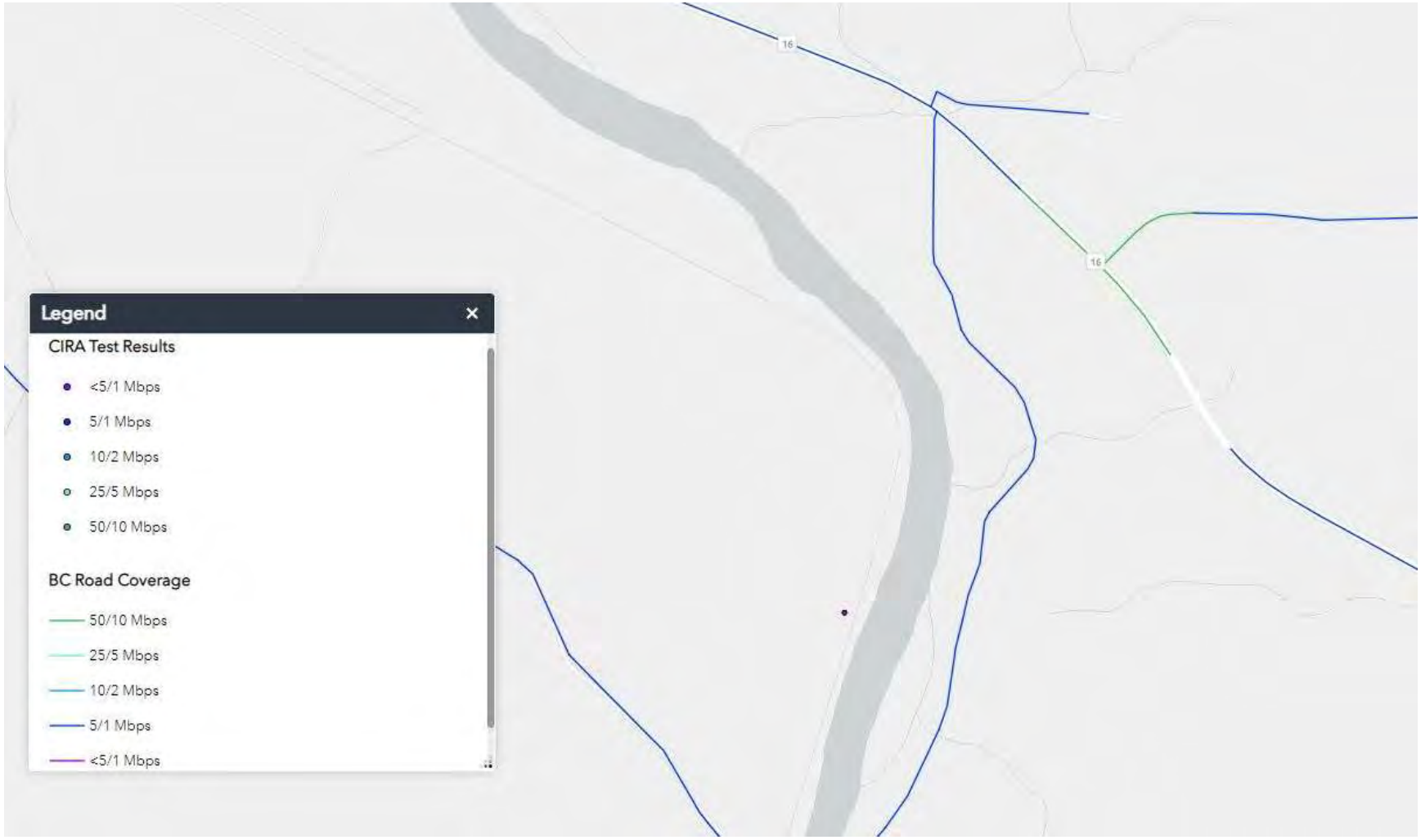
- All CIRA's limited data for this locale falls below 50/10 speeds.
- CIRA tests only return <5/1 from a single test location.
- FTTH services from Telus are not indicated by ISED just DSL from **Telus**.
- High-capacity transport services are not indicated by ISED.
- ISED data indicates fixed and mobile wireless services are provided by **Bell**, **Rogers**, **Telus** and **Cybernet**. It does not indicate that 50/10 services are being provided wirelessly.

Attached Maps:

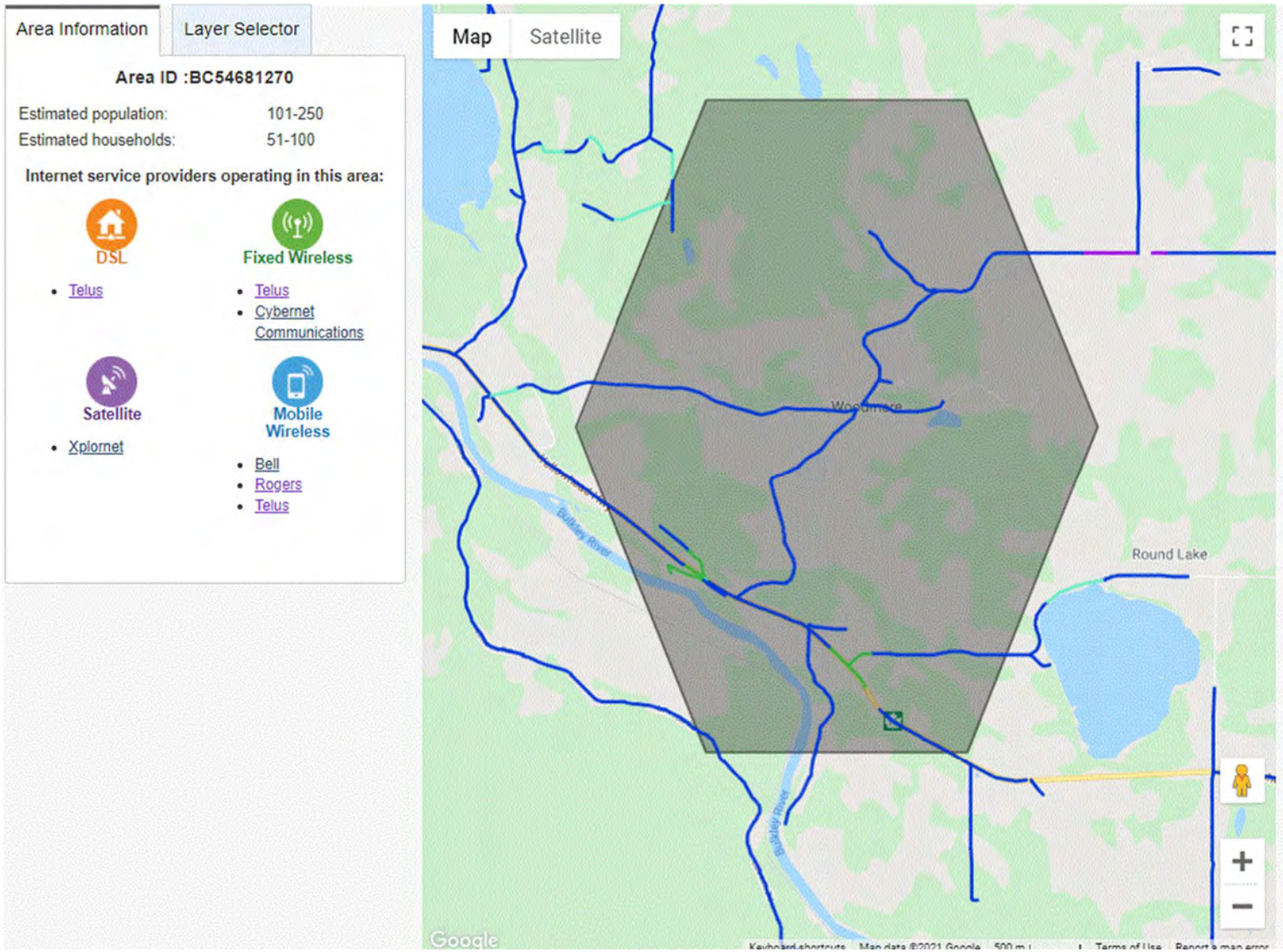
- Hubert All Tests
- Hubert CIRA/ISED Data Combined
- Hubert ISED Data
- Hubert ISED Data Wireless

Hubert All Tests

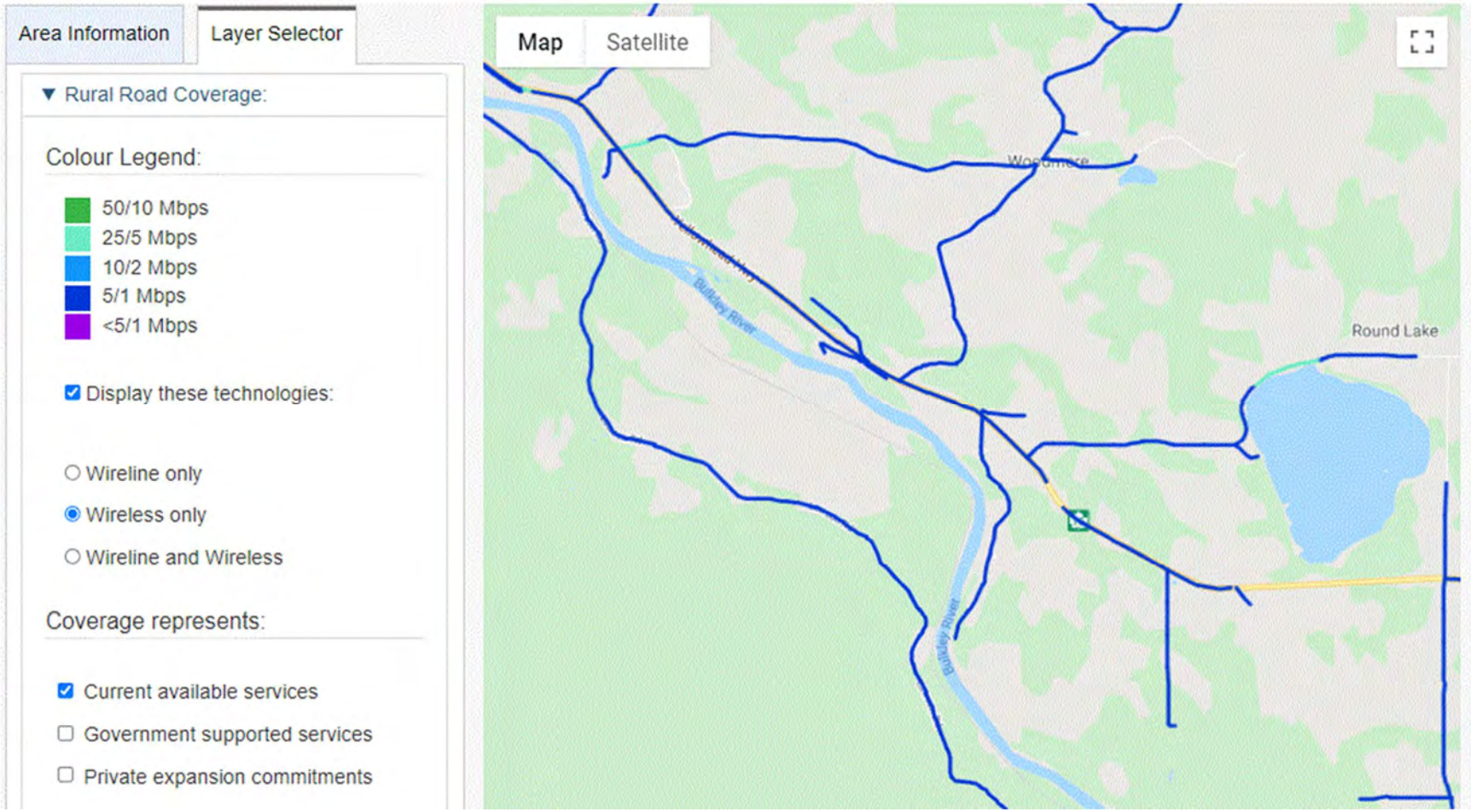
Hubert CIRA/ISED Data Combined



Hubert ISED Data



Hubert ISED Data Wireless



7. LAKE KATHLYN

ISPs Present in Test Results:

- City West cable & Telephone Corp.
- Telus Communications.

Number of Tests	2
Unique Test IPs	2
Unique Test Locations	2
Number of 50/10 Tests	0
Median Download Speed	18.96
Median Upload Speed	8.77
Maximum Download Speed	35.53
Maximum Upload	16.82

Summary: Lake Kathlyn testing indicates that no 50/10 connections were recorded. ISED information indicates that 50/10 service is available over the entire locale.

Evaluation:

- **Additional testing required.** CIRA data did not receive enough tests to confirm the availability of 50/10 services within the locale where ISED Map data indicates those services exist.

Rationale and Considerations:

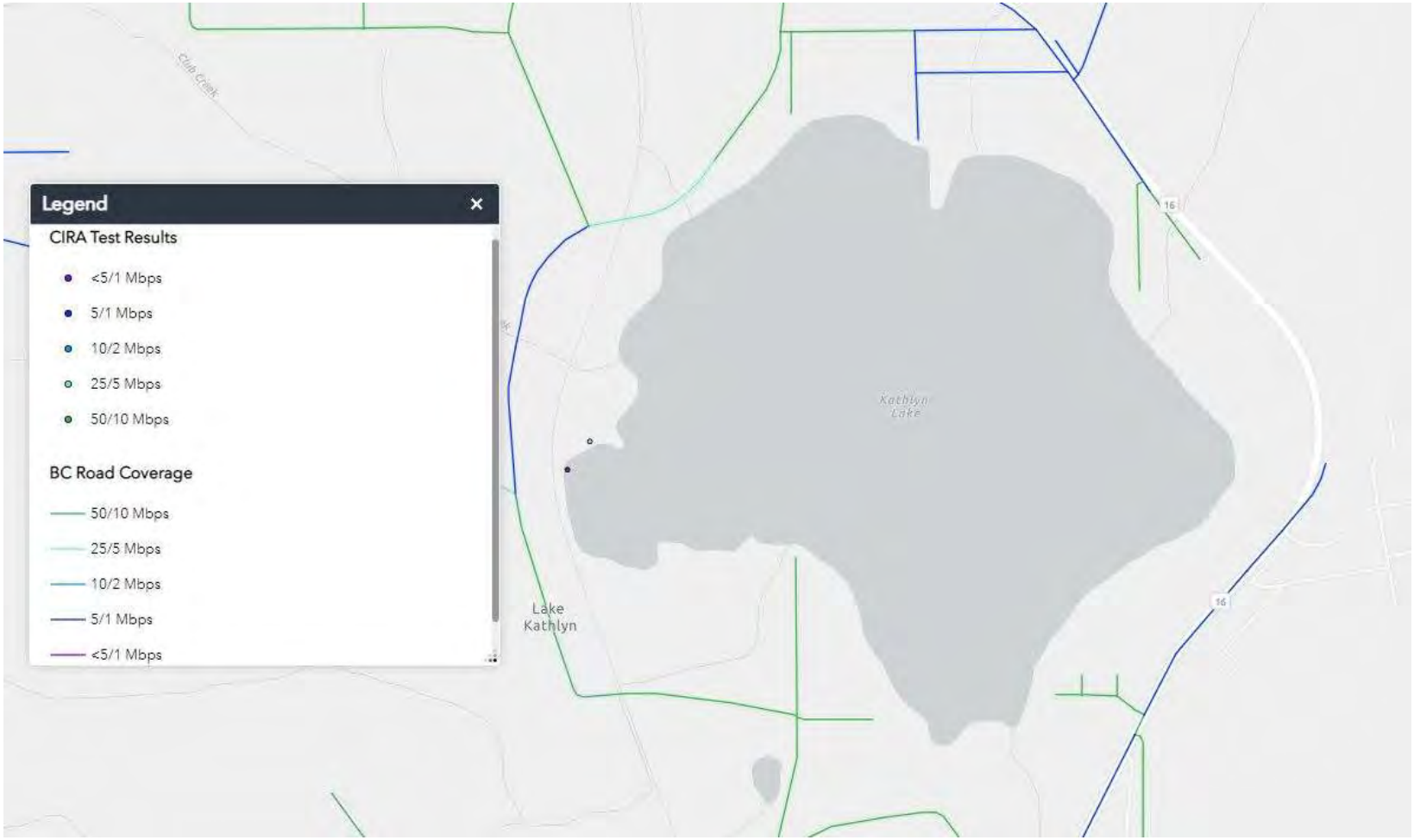
- All CIRA's limited data for this locale falls below 50/10 speeds.
- FTTH services from **Telus** and **City West** are indicated by ISED along with DSL from **Telus**.
- High-capacity transport fibre is not indicated by ISED.
- ISED data indicates fixed and mobile wireless services are provided by **Bell**, **Rogers**, **Telus** and **Cybernet**. It does not indicate that 50/10 services are being provided wirelessly.

Attached Maps:

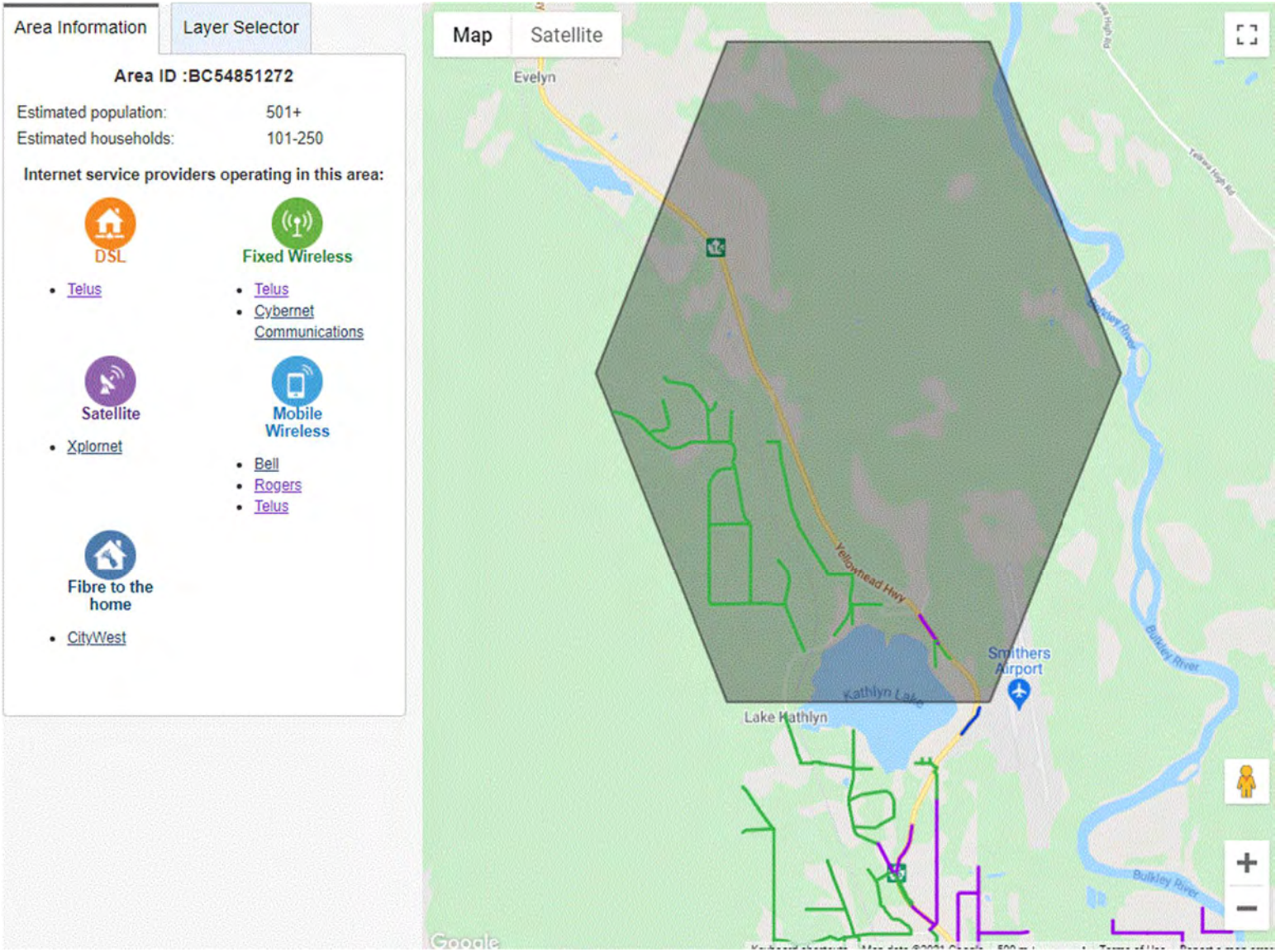
- Lake Kathlyn All Tests
- Lake Kathlyn CIRA/ISED Tests Combined
- Lake Kathlyn ISED Data Hex 1
- Lake Kathlyn ISED Data Hex 2
- Lake Kathlyn ISED Data Wireless

Lake Kathlyn All Tests

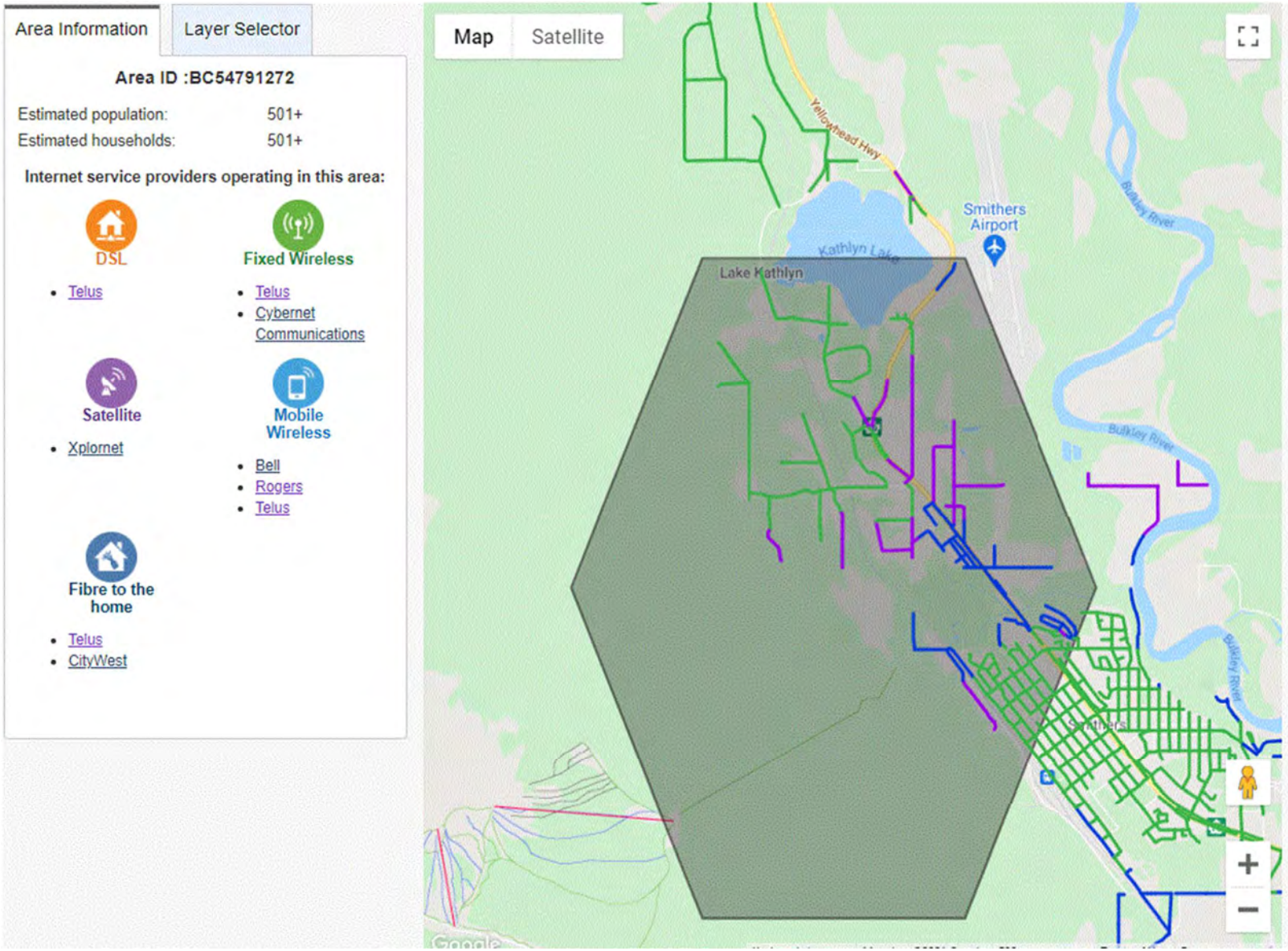
Lake Kathlyn CIRA/ISED Tests Combined



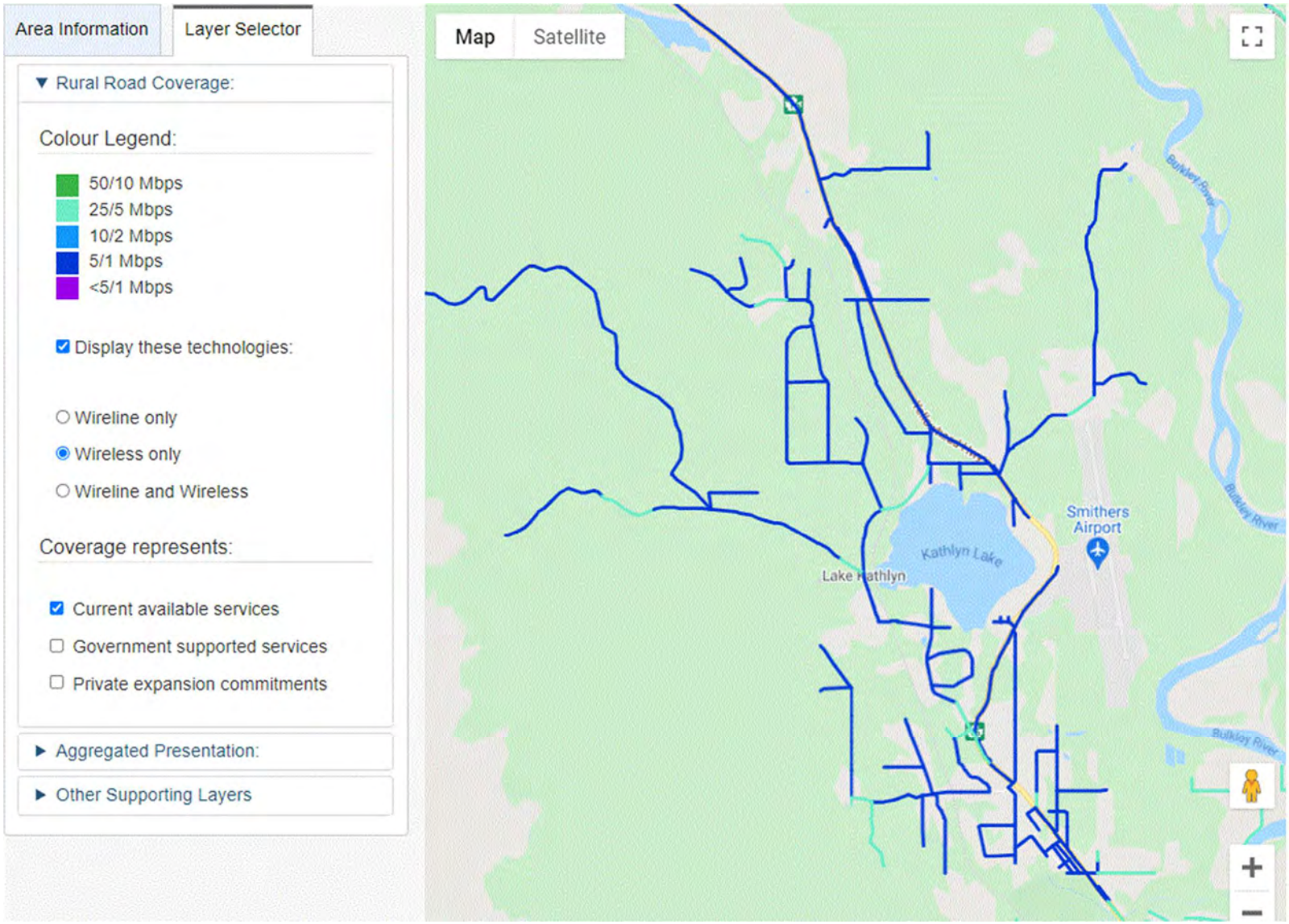
Lake Kathlyn ISED Data Hex 1



Lake Kathlyn ISED Data Hex 2



Lake Kathlyn ISED Data Wireless



8. Mission Lands Indian Reserve No. 17

ISPs Present in Test Results:

- Telus Communications

Number of Tests	2
Unique Test IPs	1
Unique Test Locations	1
Number of 50/10 Tests	0
Median Download Speed	62.72
Median Upload Speed	0.38
Maximum Download Speed	91.82
Maximum Upload	0.41

Summary: Mission Lands testing indicates that no 50/10 connections were recorded. ISED data indicates the locale has 50/10 on the roads surrounding the locale using both wireline and wireless technologies.

Evaluation:

- **Additional testing required.** CIRA data did not receive enough tests to confirm the availability of 50/10 services within the locale where ISED Map data indicates those services exist.

Rationale and Considerations:

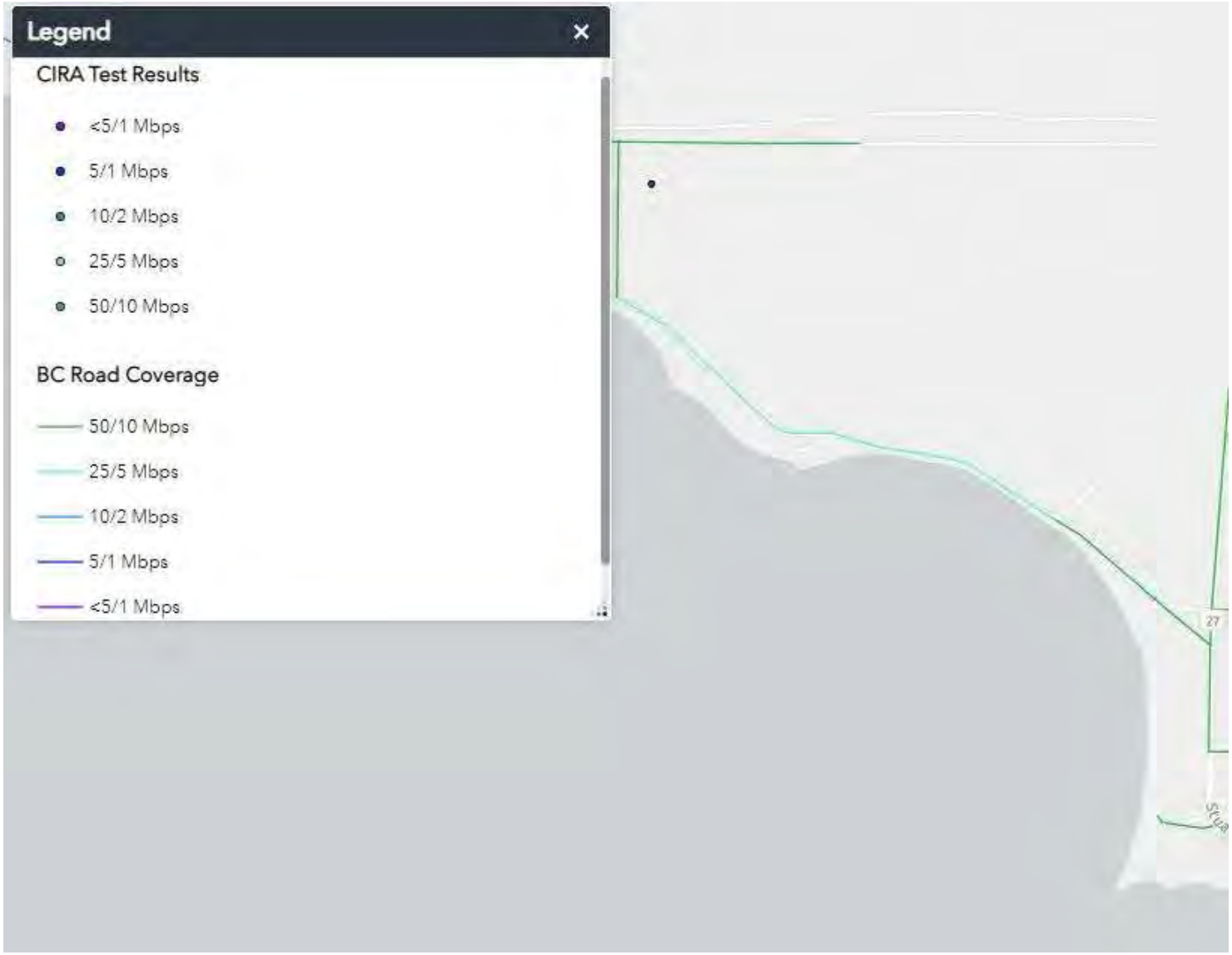
- While one of the two tests reported 91.82 Mbps download speed, the upload speed was only 0.35 Mbps meaning it does not meet either the 50/10 requirement or even 5/1. Tests must meet at least the minimum download/upload speeds to qualify withing a specific category. This specific test did not record a 1 Mbps upload speed so does not meet the lowest possible upload speed of 1 Mbps.
- The ISED data is unclear due to the size of the hex and the fact that it overlaps with Fort St. James, which was already reported. The results are repeated in the next two bullets.
- No FTTH services are indicated by ISED, only cable from **Mascon** (Telus) and DSL from **Telus**.
- High-capacity transport services are not indicated by ISED.
- ISED data indicates fixed and mobile wireless services, **one or more claiming to be capable of 50/10**, are provided on roads to the south and east of the locale by **Bell**, **Rogers**, **Evolve Communications**, **Max Internet Technology**, and **Telus**.

Attached Maps:

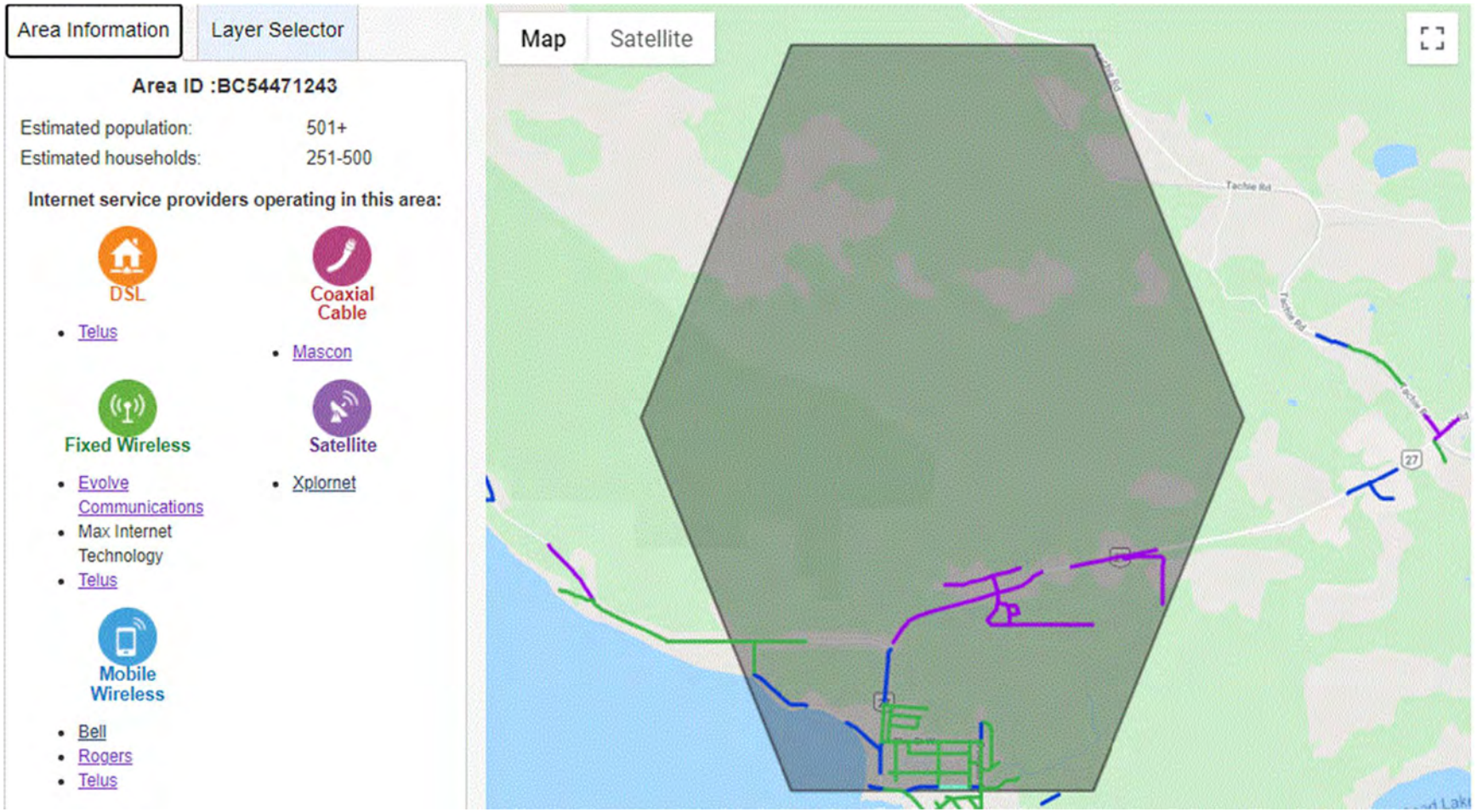
- Mission Lands All Tests
- Mission Lands CIRA/ISED Data Combined
- Mission Lands ISED Data
- Mission Lands ISED Data Wireless

Mission Lands All Tests

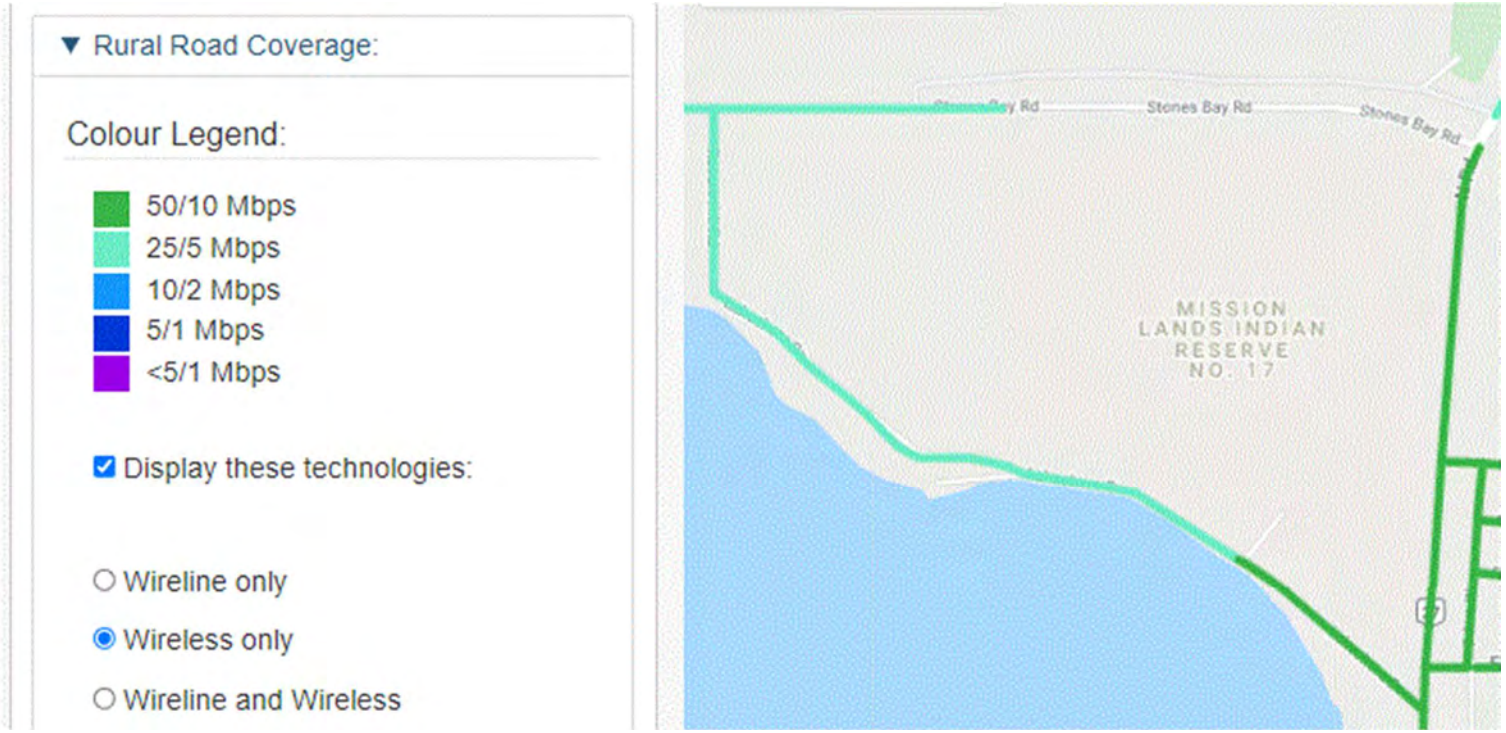
Mission Lands CIRA/ISED Data Combined



Mission Lands ISED Data



Mission Lands ISED Data Wireless



9. NAK'AZDLI WHUT'EN

ISPs Present in Test Results:

- Telus Communications

Number of Tests	276
Unique Test IPs	4
Unique Test Locations	3
Number of 50/10 Tests	0
Median Download Speed	2.78
Median Upload Speed	0.89
Maximum Download Speed	56.63
Maximum Upload	63.39

Summary: Nak'azdli Whut'en testing indicates that no 50/10 results were recorded but the 276 recorded tests cover only three unique test locations. ISED information indicates that 50/10 service is available over the populated areas of the entire locale using both wireline and wireless technologies.

Evaluation:

- **Additional testing required.** CIRA data did not receive enough tests to confirm the availability of 50/10 services within the locale where ISED Map data indicates those services exist.

Rationale and Considerations:

- All CIRA's limited data for this locale falls below 50/10 speeds.
- Of the 276 tests, two were received using **Bell Mobility** and the rest are from **Telus**.
- There are only four unique IP addresses and three unique test locations.
- No FTTH services are indicated by ISED, only cable from **Mascon** (Telus) and DSL from **Telus**.
- High-capacity transport services are indicated by ISED from **Telus** and **ABC**.
- ISED data indicates fixed and mobile wireless services, **one or more claiming to be capable of 50/10**, are provided by **Bell**, **Rogers**, **Evolve Communications**, **Max Internet Technology**, and **Telus**.

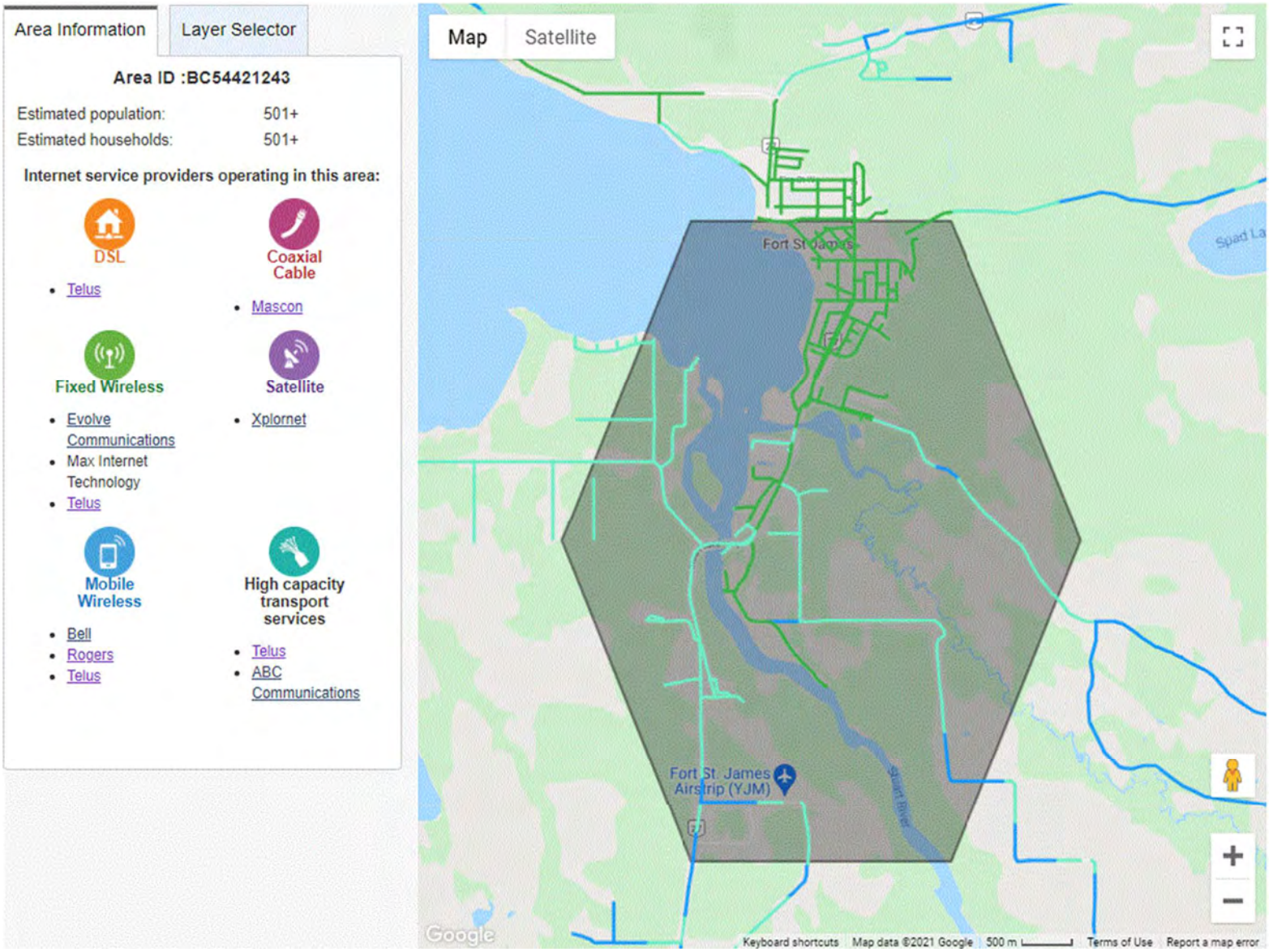
Attached Maps:

- Nak'azdli Whut'en All Tests
- Nak'azdli Whut'en CIRA/ISED Data Combined
- Nak'azdli Whut'en ISED Data
- Nak'azdli Whut'en ISED Data Wireless

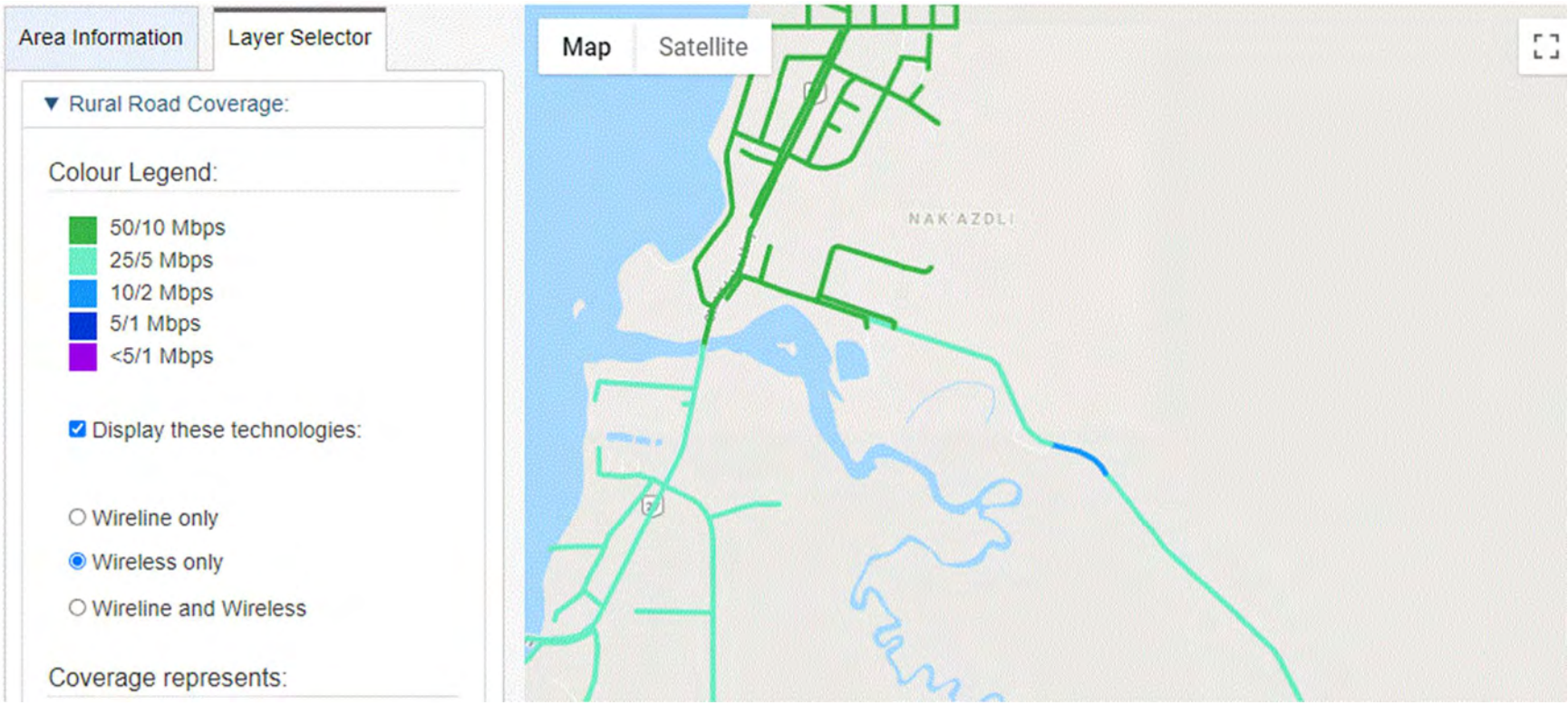
Nak'azdli Whut'en All Tests

Nak'azdli Whut'en CIRA/ISED Data Combined

Nak'azdli Whut'en ISED Data



Nak'azdli Whut'en ISED Data Wireless



10. NECOSLIE RIVER

ISPs Present in Test Results:

Evolve Communications Inc. Telus Communications

Number of Tests	18
Unique Test IPs	10
Unique Test Locations	8
Number of 50/10 Tests	2
Median Download Speed	4.48
Median Upload Speed	0.80
Maximum Download Speed	138.74
Maximum Upload	70.48

Summary: Necoslie River testing indicates that two 50/10 connections were recorded although only from a single location. ISED information indicates that 50/10 service is available over the entire locale using both wireline and wireless technologies.

Evaluation:

- **No discrepancy (with comment).** CIRA testing has recorded 50/10 connections in areas where the ISED Map indicates 50/10 service availability.
    - The limited Number of Tests (18 from only 10 IP addresses and eight locations) indicates a need for additional testing to properly qualify internet service levels in the locale.

Rationale and Considerations:

- A majority of CIRA data for this locale falls below 50/10 speeds.
- Two 50/10 tests from a single location were received from **Evolve Communications**.
- The first 50/10 test was recorded in May of 2020 from **Evolve Communications**.
- The ISED map data overlaps Fort St. James, Nak'azdli Whut'en, and Necoslie River. The ISED data is therefore repeated from the previous other named locales.
- No FTTH services are indicated by ISED only DSL from **Telus** and cable from **Mascon** (Telus) in the ISED Hex for the locale.
- High-capacity transport services are indicated by ISED from **Telus** and **ABC Communications**.
- ISED data indicates fixed and mobile wireless services, **one or more claiming to be capable of 50/10**, are provided by **Bell**, **Rogers**, **Evolve Communications**, **Max Internet Technology**, and **Telus**.

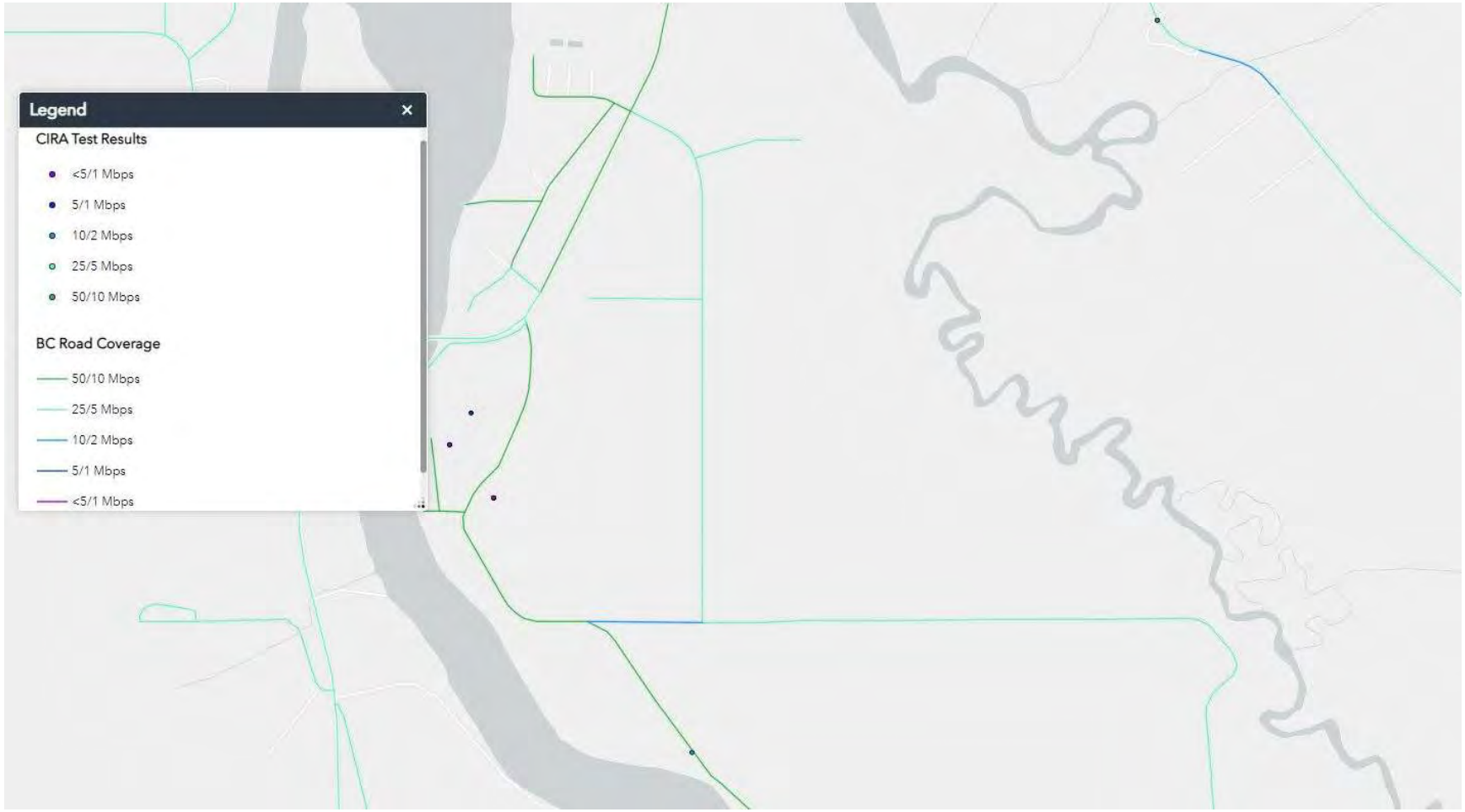
Attached Maps:

Necoslie River All Tests
Necoslie River 50/10 Tests
Necoslie River CIRA/ISED Data Combined
Necoslie River CIRA/ISED Data 50/10
Necoslie River ISED Data
Necoslie River ISED Data Wireless

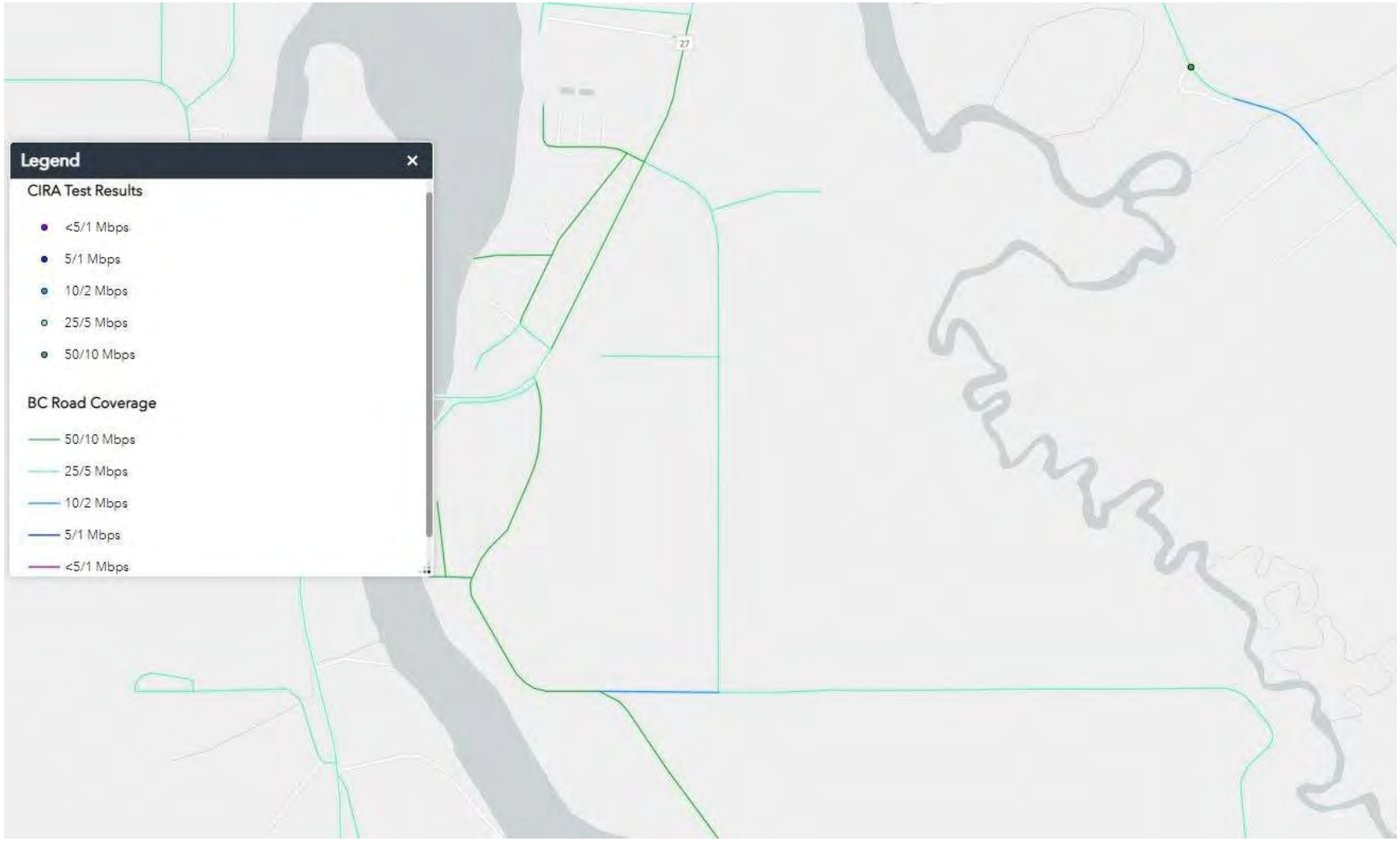
Necoslie River All Tests

Necoslie River 50/10 tests

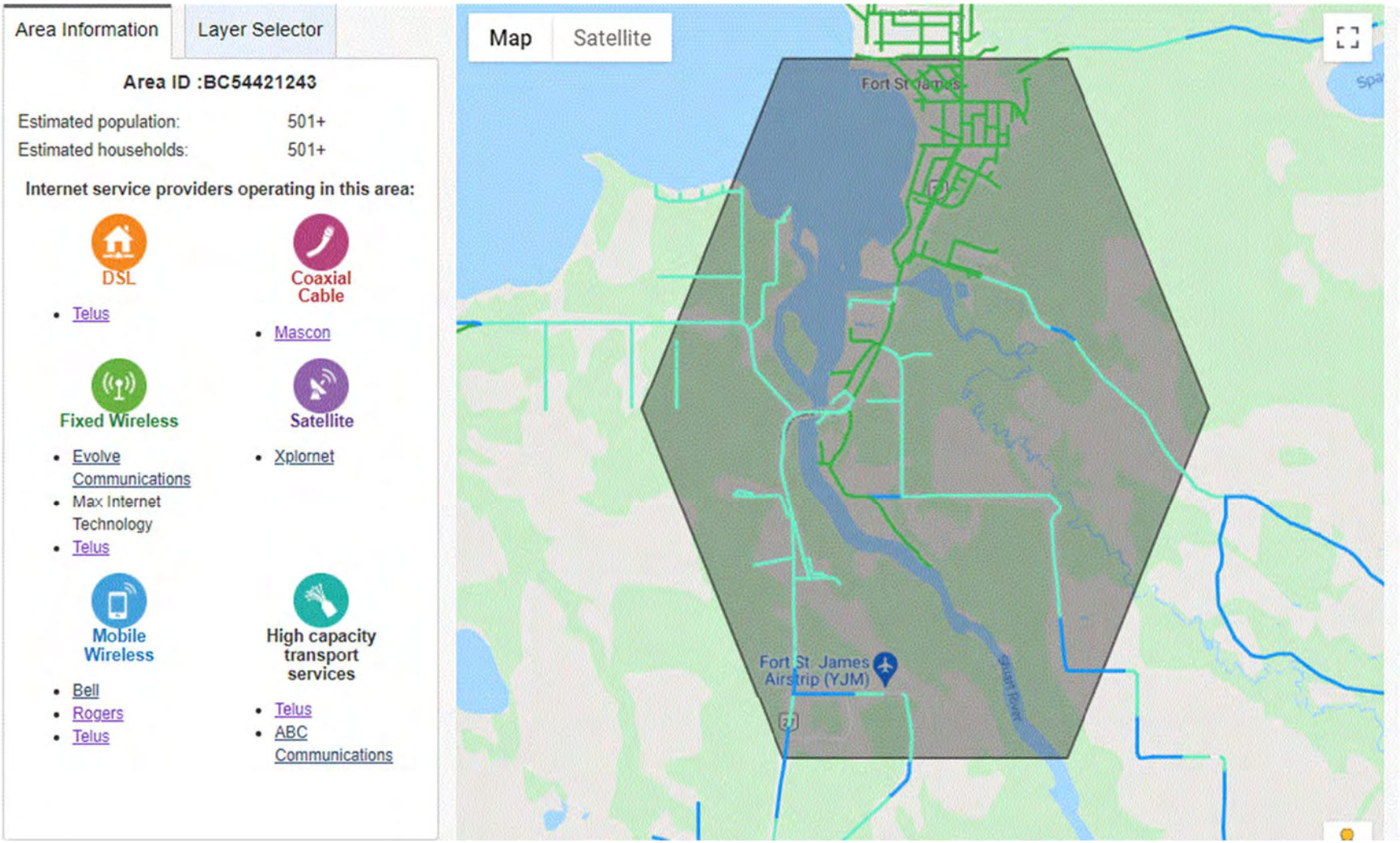
Necoslie River CIRA/ISED Data Combined



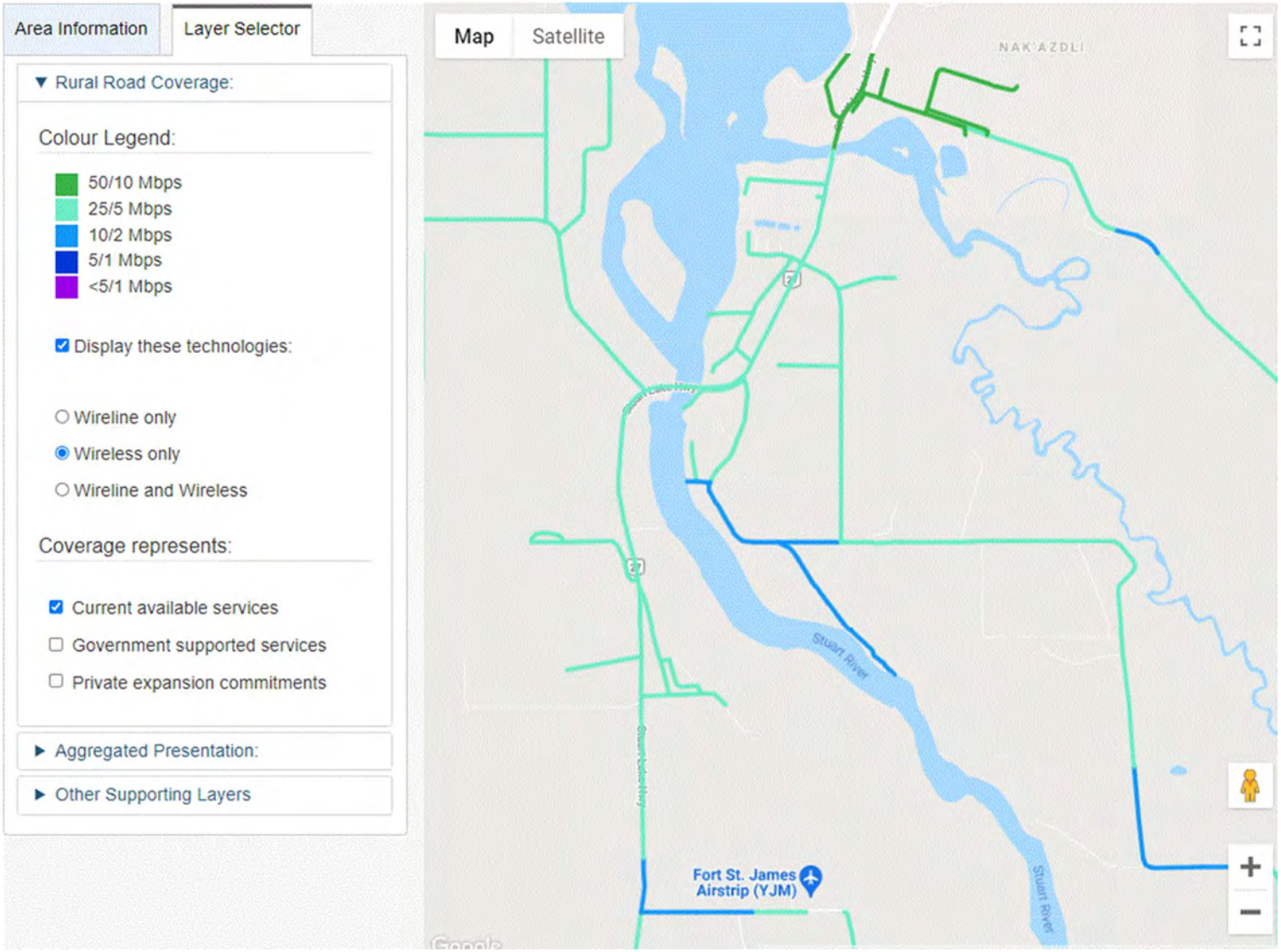
Necoslie River CIRA/ISED Data 50/10



Necoslie River ISED Data



Necoslie River ISED Data Wireless



11. NOONLA 6

ISPs Present in Test Results:

- Telus Communications

Number of Tests	1
Unique Test IPs	1
Unique Test Locations	1
Number of 50/10 Tests	0
Median Download Speed	4.66
Median Upload Speed	0.77
Maximum Download Speed	4.66
Maximum Upload	0.77

Summary: Noonla testing indicates that no 50/10 connections were recorded. ISED information indicates that 50/10 service is available in numerous areas in the locale using both wireline and wireless technologies.

Evaluation:

- **Additional testing required.** CIRA data did not receive enough tests to confirm the availability of 50/10 services within the locale where ISED Map data indicates those services exist.

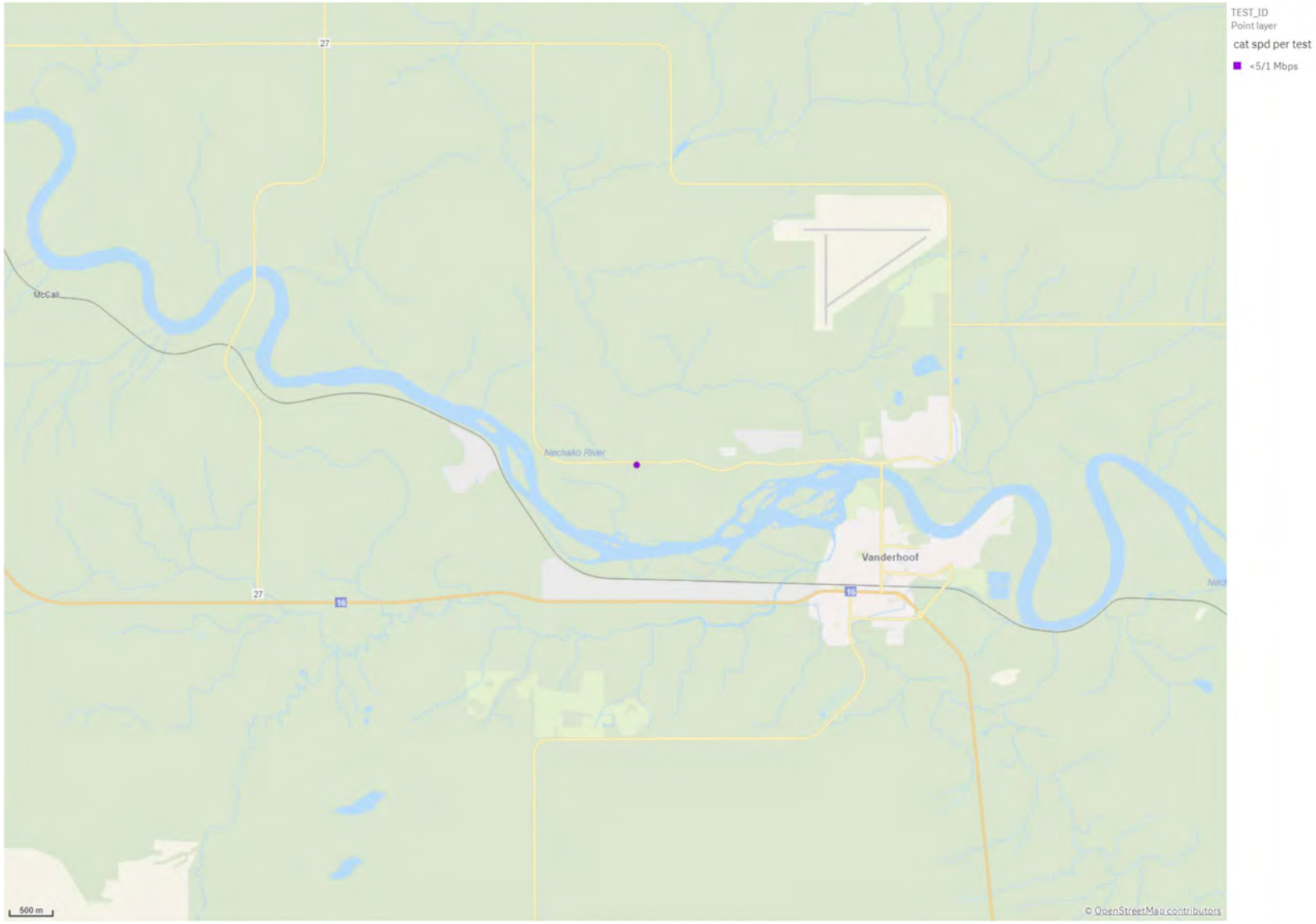
Rationale and Considerations:

- Only a single <5/1 test was recorded in the locale.
- FTTH services from Telus are not indicated by ISED only cable from **Mascon** (Telus) and DSL from **Telus**.
- High-capacity transport services are not indicated.
- ISED 50/10 services are indicated in the eastern areas of the locale along Loop Road with some isolated connections to the south.
- ISED data indicates fixed and mobile wireless services, **one or more claiming to be capable of 50/10**, are provided on roads to the south and east of the locale by **Bell**, **Rogers**, **Telus**, **ABS** (Telus), **Evolve Communications**, **Max Internet Technology**, and **Telus**.

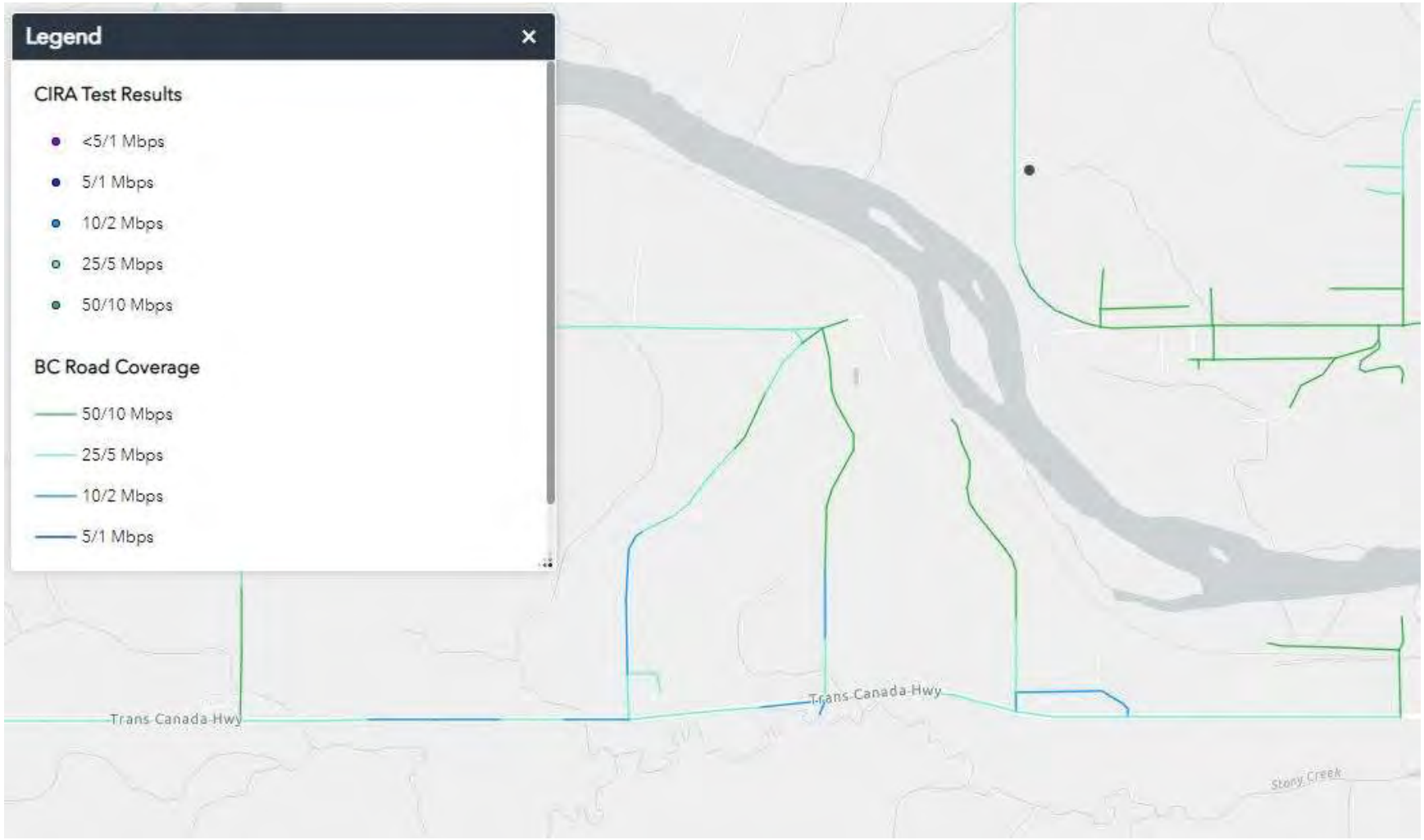
Attached Maps:

- Noonla All Tests
- Noonla CIRA/ISED Data Combined
- Noonla ISED Data
- Noonla ISED Data Wireless

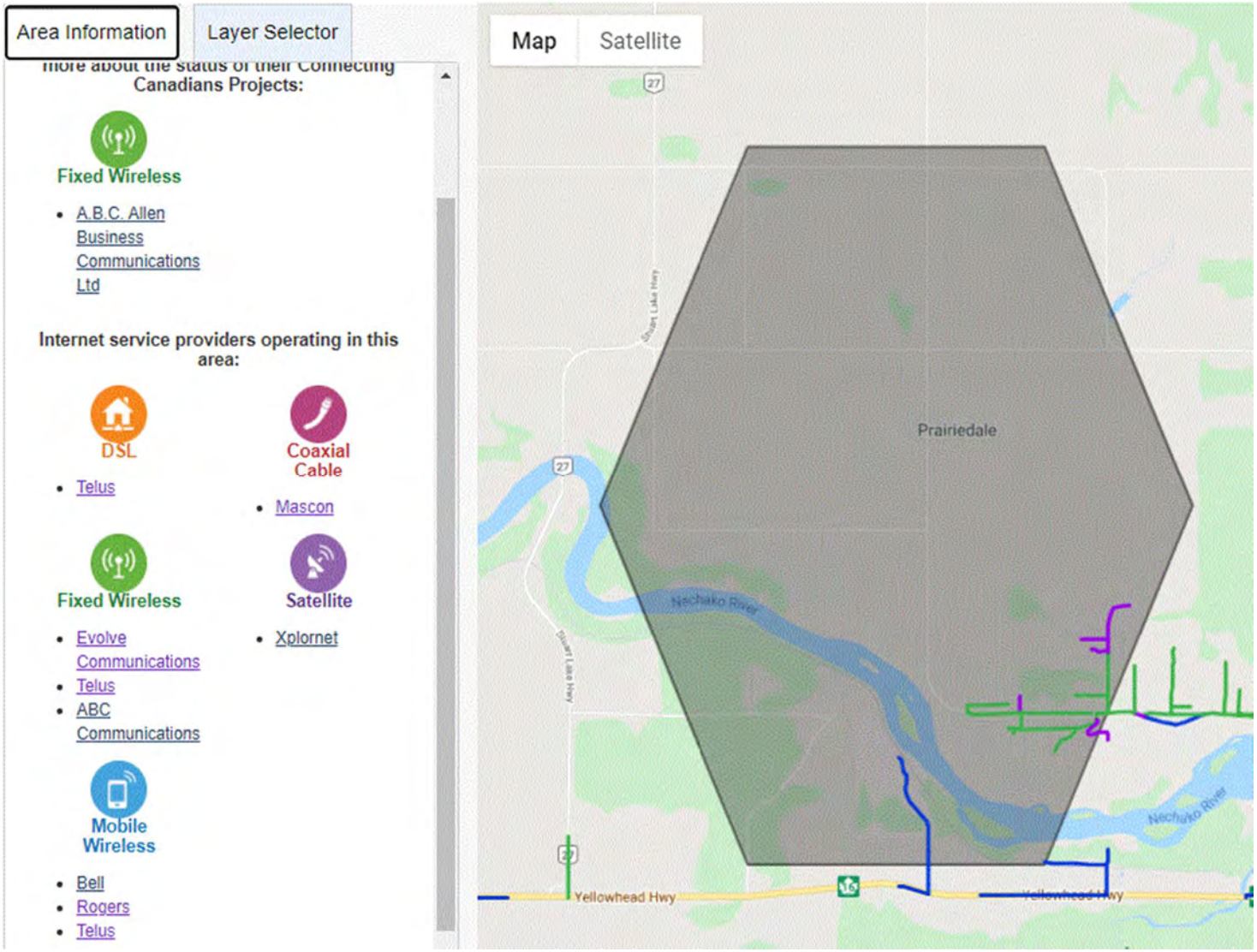
Noonla All Tests



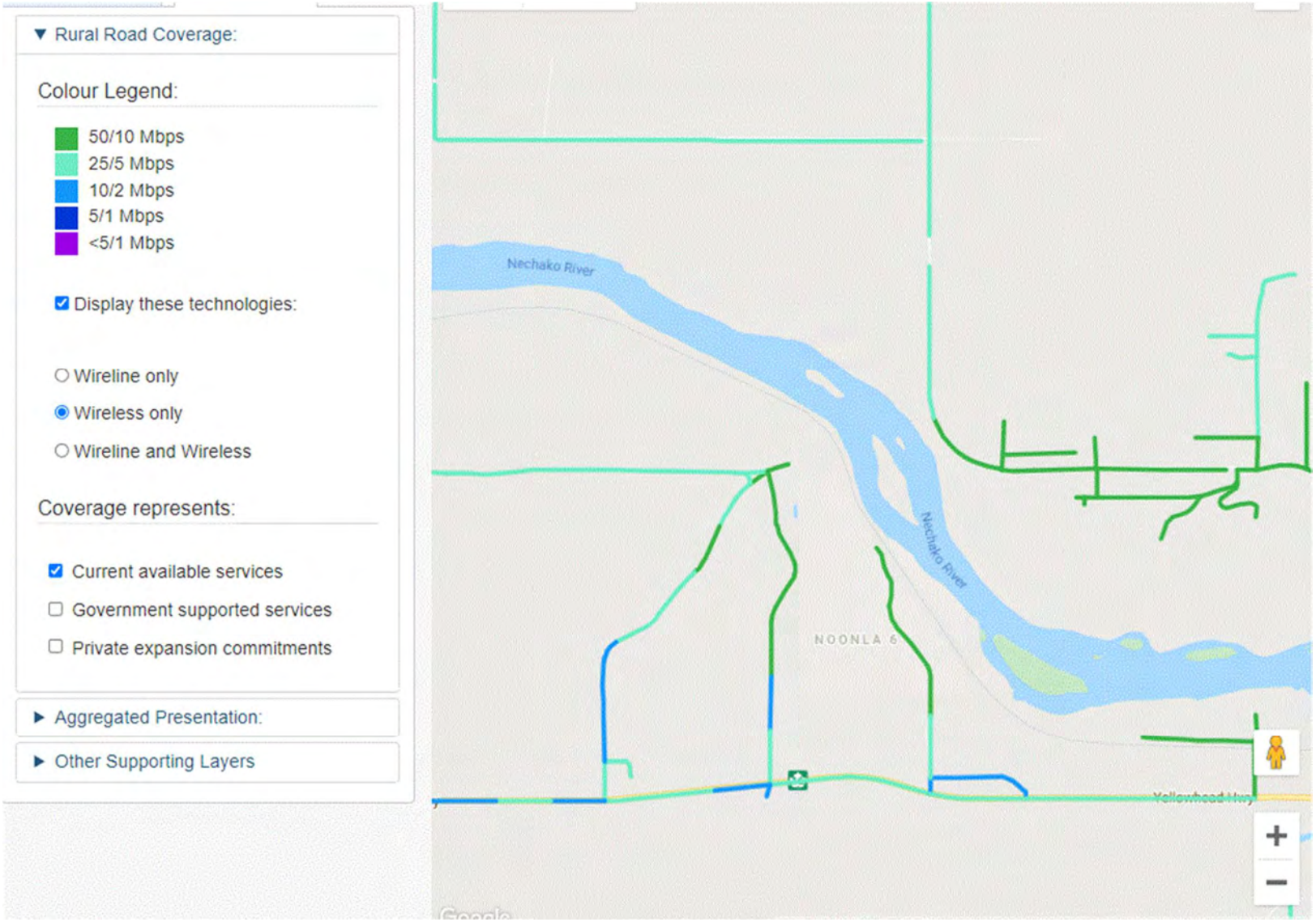
Noonla CIRA/ISED Data Combined



Noonla ISED Data



Noonla ISED Data Wireless



12. PALLING

ISPs Present in Test Results:

Number of Tests	0
Unique Test IPs	0
Unique Test Locations	0
Number of 50/10 Tests	0
Median Download Speed	0
Median Upload Speed	0
Maximum Download Speed	0
Maximum Upload	0

Summary: Palling testing indicates that no 50/10 connections were recorded. ISED information indicates that 50/10 service is available on a short stretch of Palling Road West, north of Hwy 16.

Evaluation:

- **Additional testing required.** CIRA data did not receive enough tests to confirm the availability of 50/10 services within the locale where ISED Map data indicates those services exist.

Rationale and Considerations:

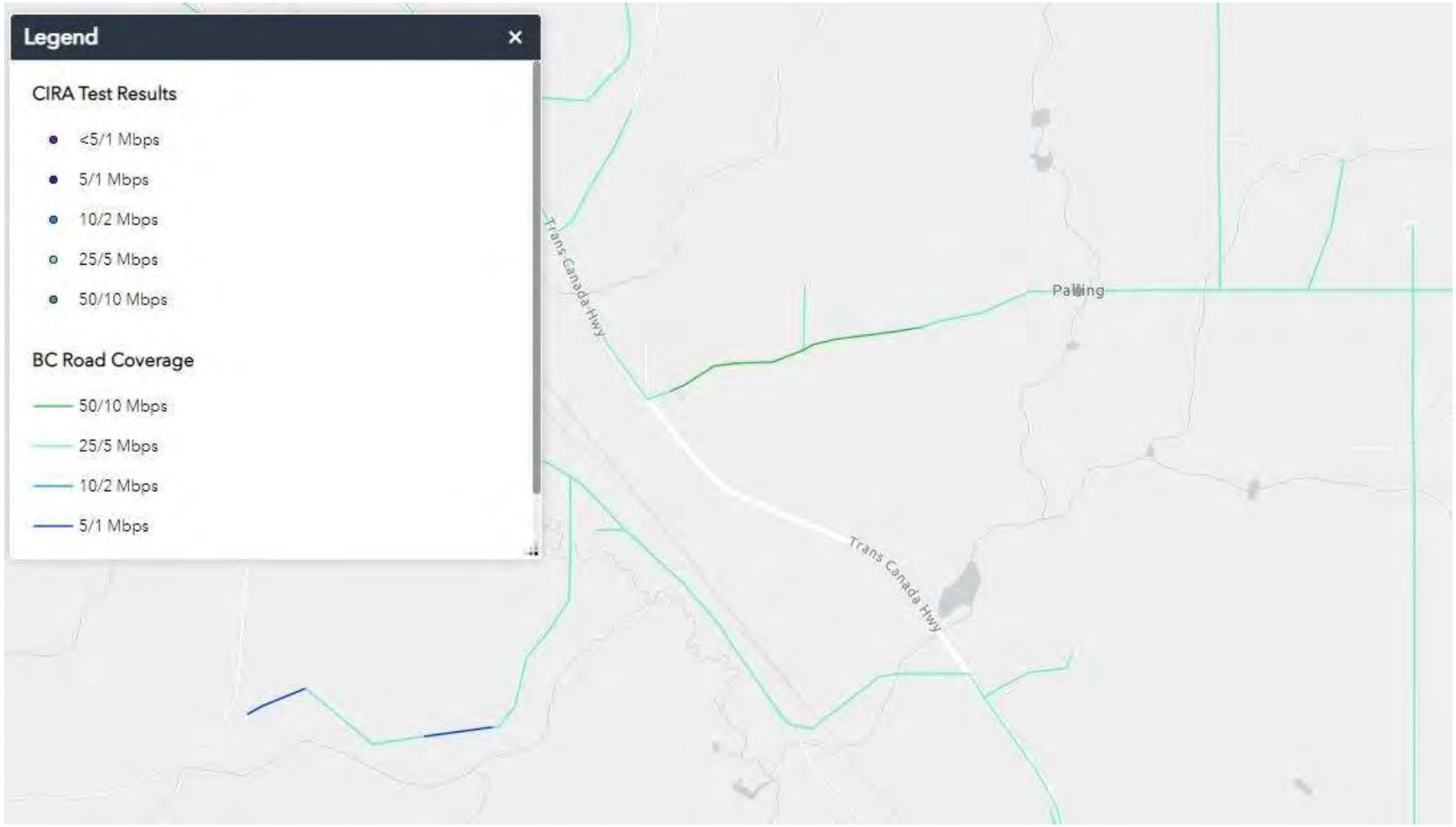
- CIRA recorded no tests for Palling.
- FTTH services are not indicated by ISED, just DSL from **Telus**.
- High-capacity transport services are not indicated by ISED.
- ISED data indicates fixed and mobile wireless services are provided by **ABC** (Telus), **Bell**, **Rogers**, and **Telus**. It does not indicate that 50/10 services are being provided wirelessly

Attached Maps:

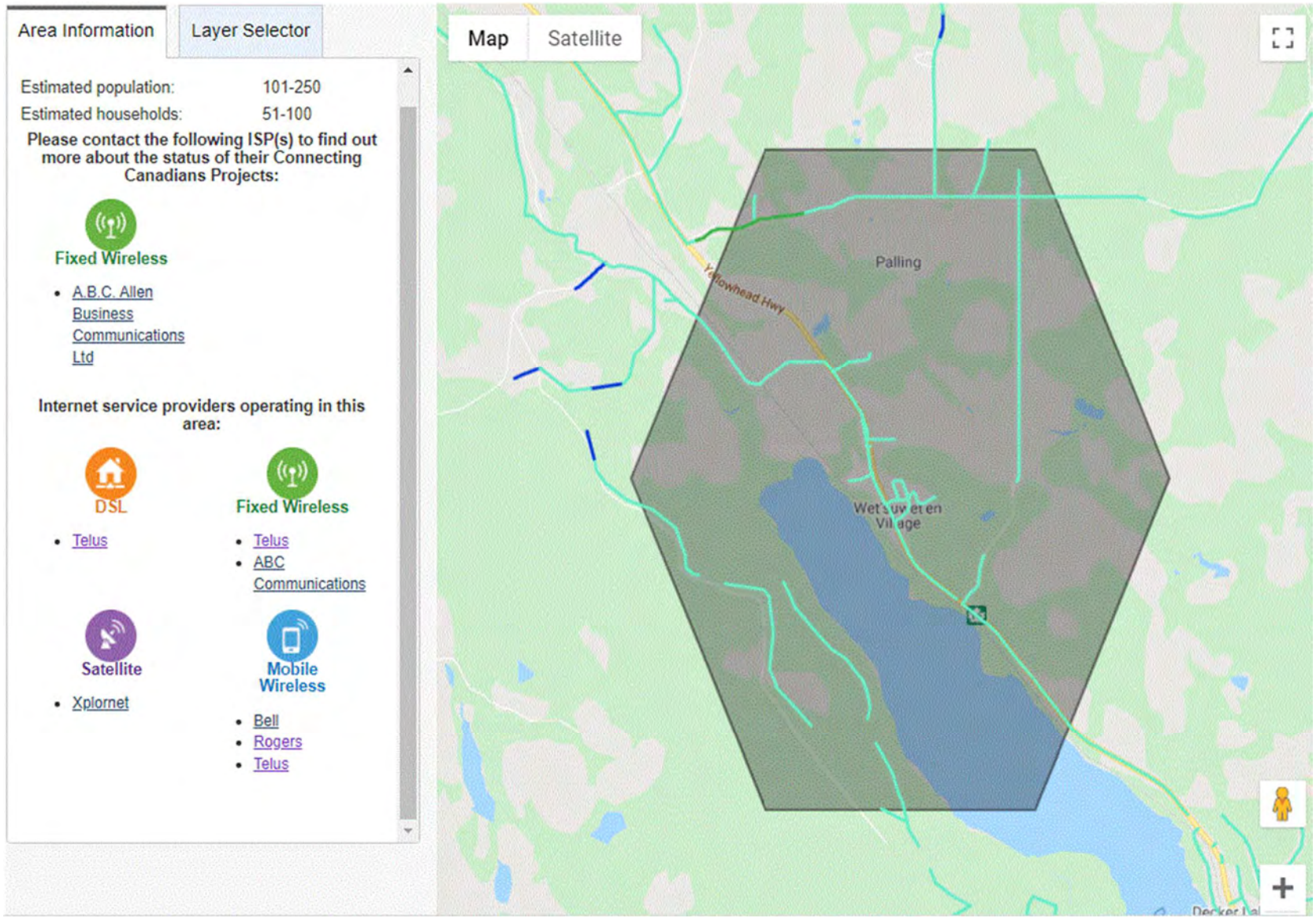
- Palling All Tests
- Palling CIRA/ISED Data Combined
- Palling ISED Data Hex 1
- Palling ISED Data Hex 2
- Palling ISED Data Wireless

Palling All Tests (0)

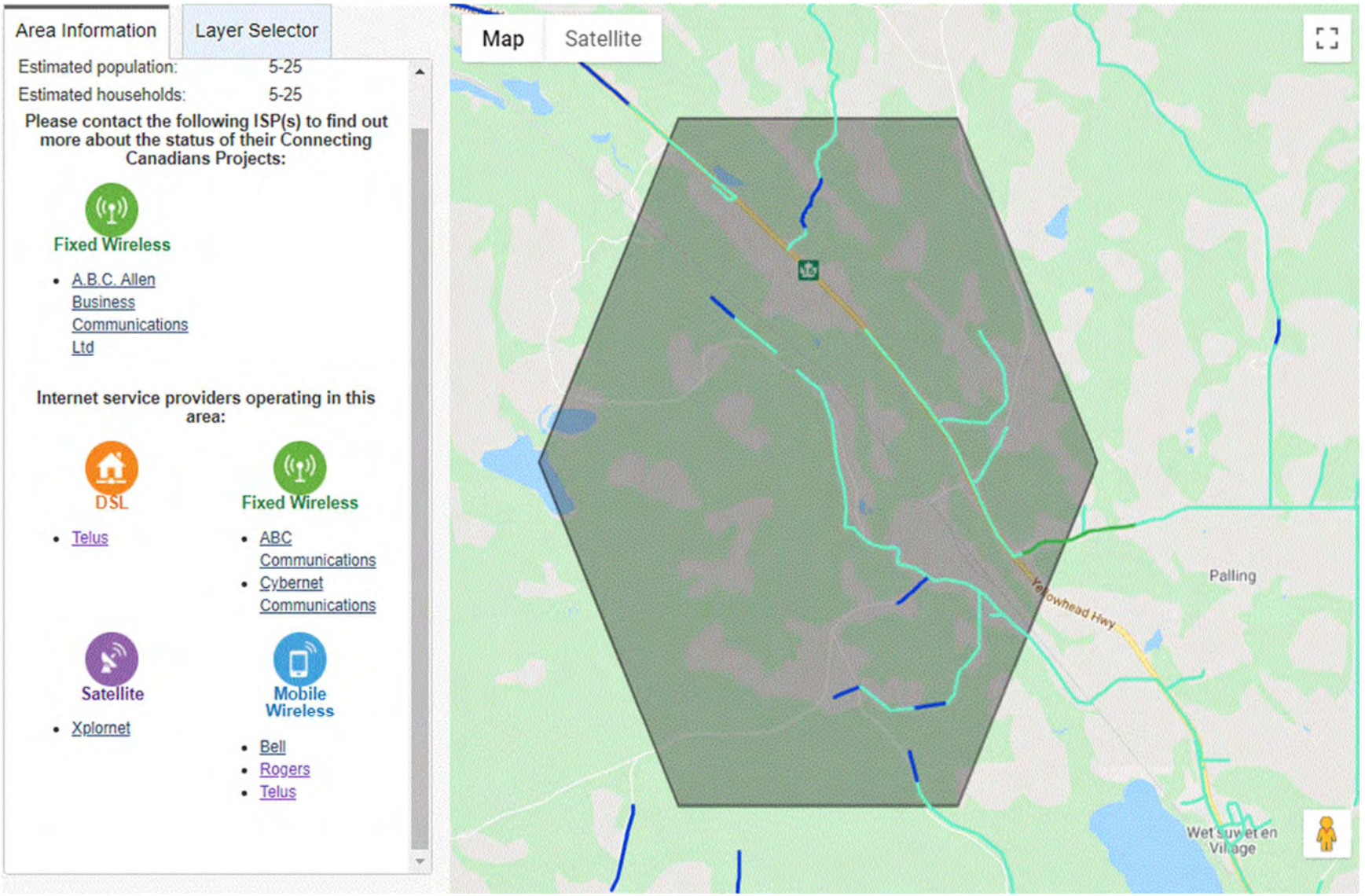
Palling CIRA/ISED Data Combined



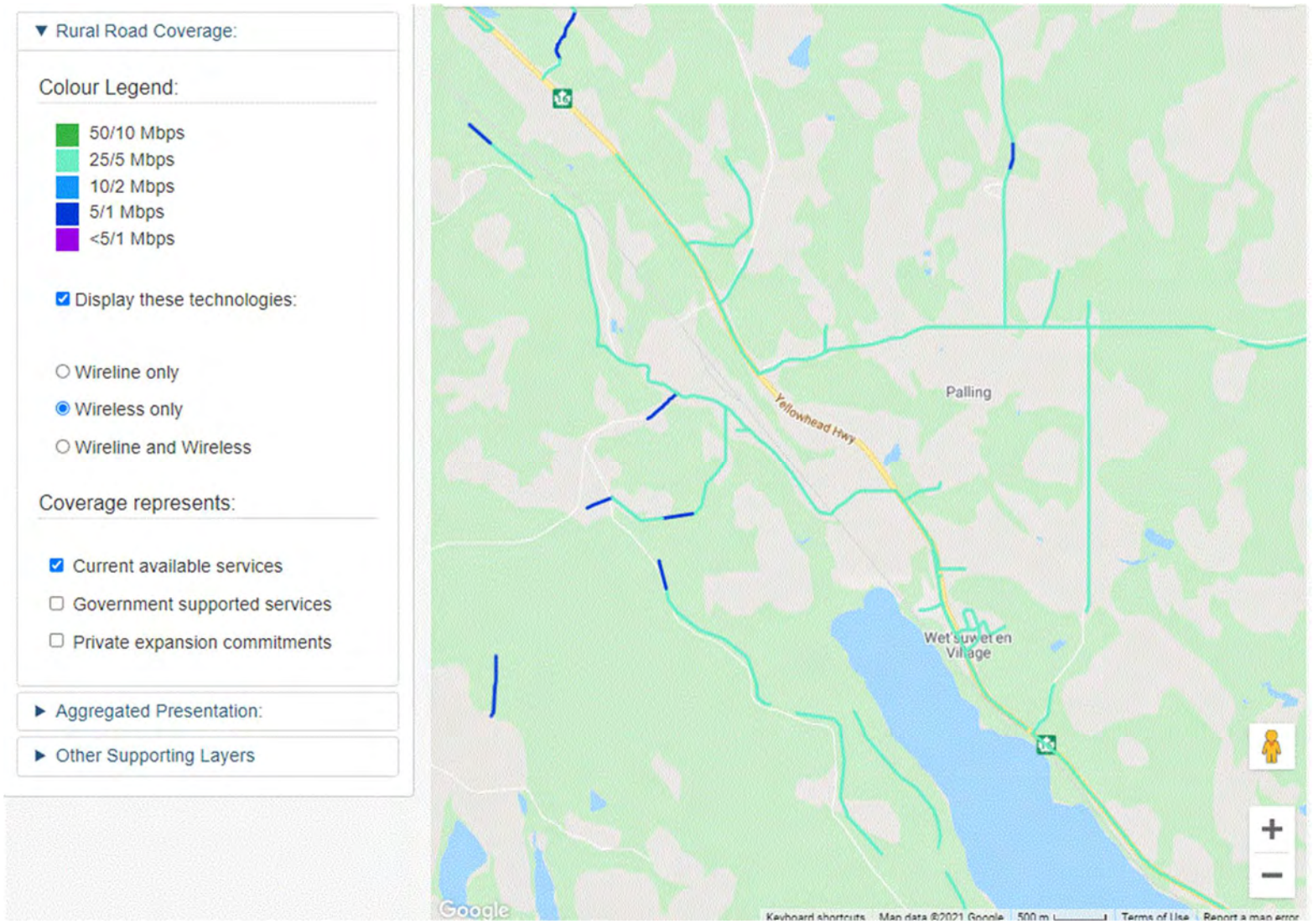
Palling ISED Data Hex 1



Palling ISED Data Hex 2



Palling ISED Data Wireless



13. PITKA CREEK

ISPs Present in Test Results:

- Telus Communications

Number of Tests	147
Unique Test IPs	9
Unique Test Locations	5
Number of 50/10 Tests	0
Median Download Speed	1.51
Median Upload Speed	0.58
Maximum Download Speed	17.18
Maximum Upload	4.64

Summary: Pitka Creek testing indicates that no 50/10 connections were recorded. ISED information indicates 50/10 coverage in a limited area in the center of the locale.

Evaluation:

- **Additional testing required.** CIRA data did not receive enough tests to confirm the availability of 50/10 services within the locale where ISED Map data indicates those services exist.

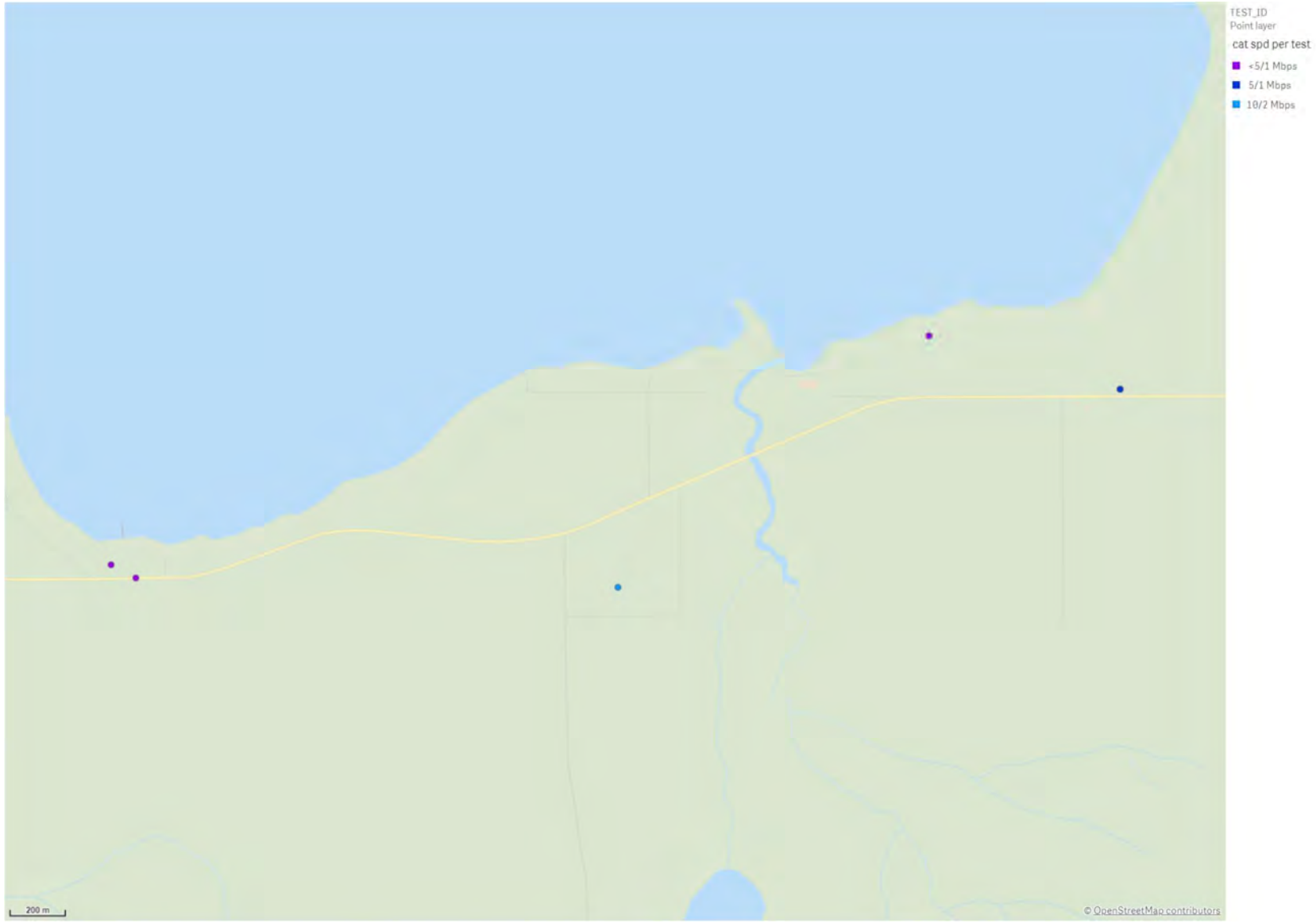
Rationale and Considerations:

- All CIRA's limited data for this locale falls below 50/10 speeds.
- 147 tests were recorded across nine IP addresses and five unique test locations so there is not enough data to confirm the existence of 50/10.
- No FTTH services are indicated by ISED only DSL from **Telus** and cable from **Mascon** (Telus).
- High-capacity transport services are not indicated as available by ISED.
- ISED data indicates fixed and mobile wireless services are provided by **ABC** (Telus), **Bell**, **Rogers**, and **Telus**. It does not indicate that 50/10 services are being provided wirelessly.

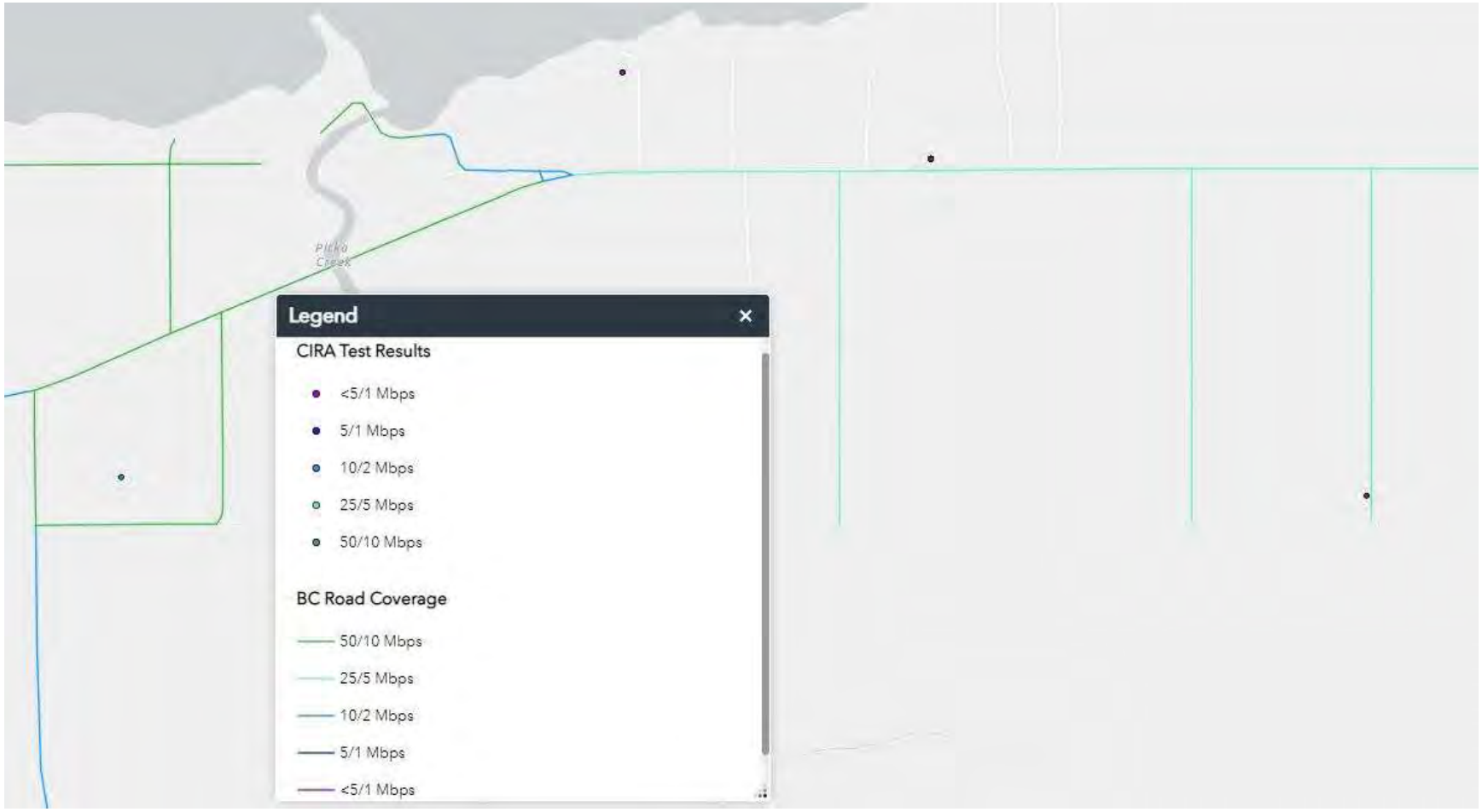
Attached Maps:

- Pitka Creek All Tests
- Pitka Creek CIRA/ISED Data Combined
- Pitka Creek ISED Data Hex 1
- Pitka Creek ISED Data Hex 2
- Pitka Creek ISED Data Wireless

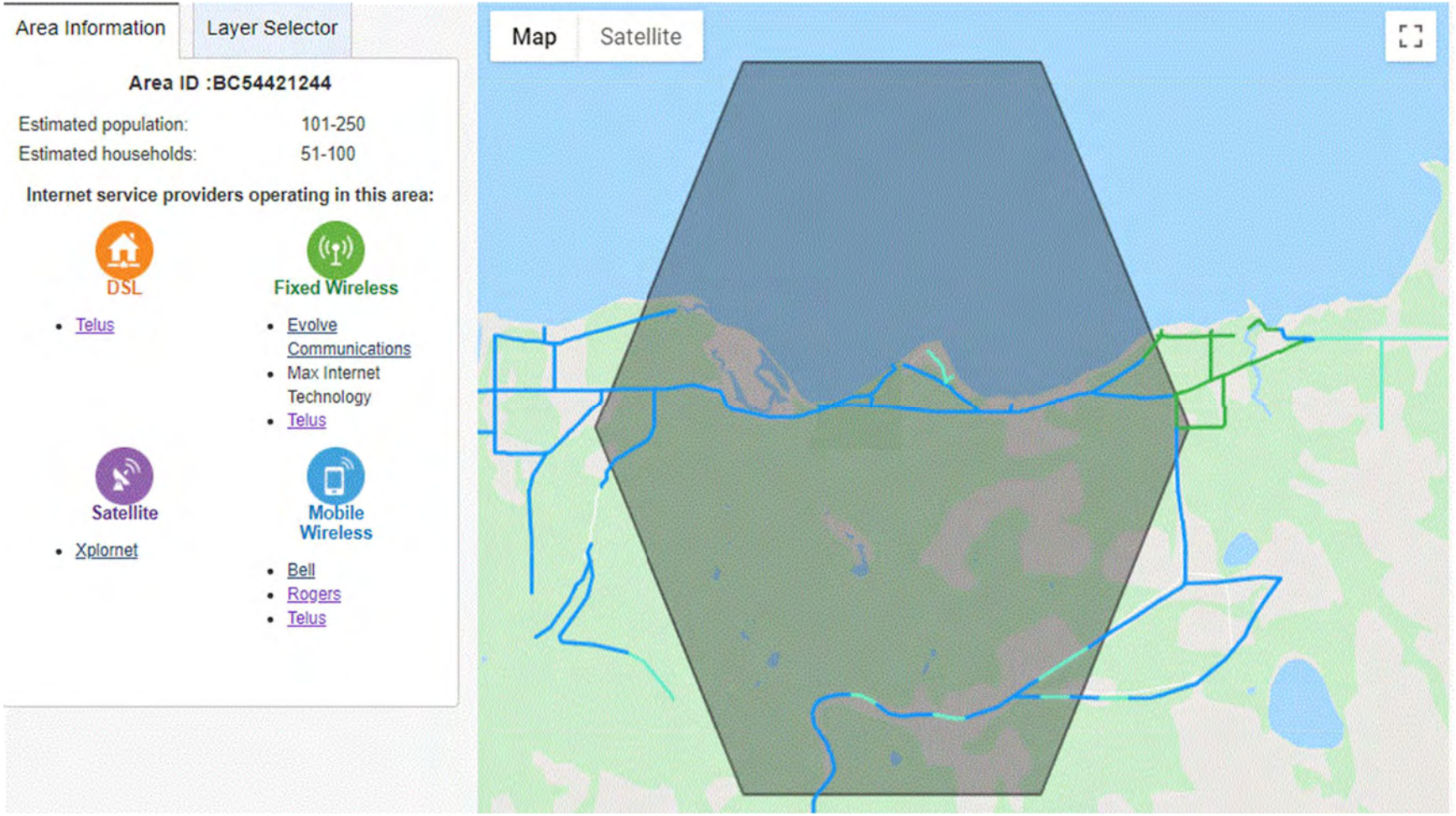
Pitka Creek All Tests



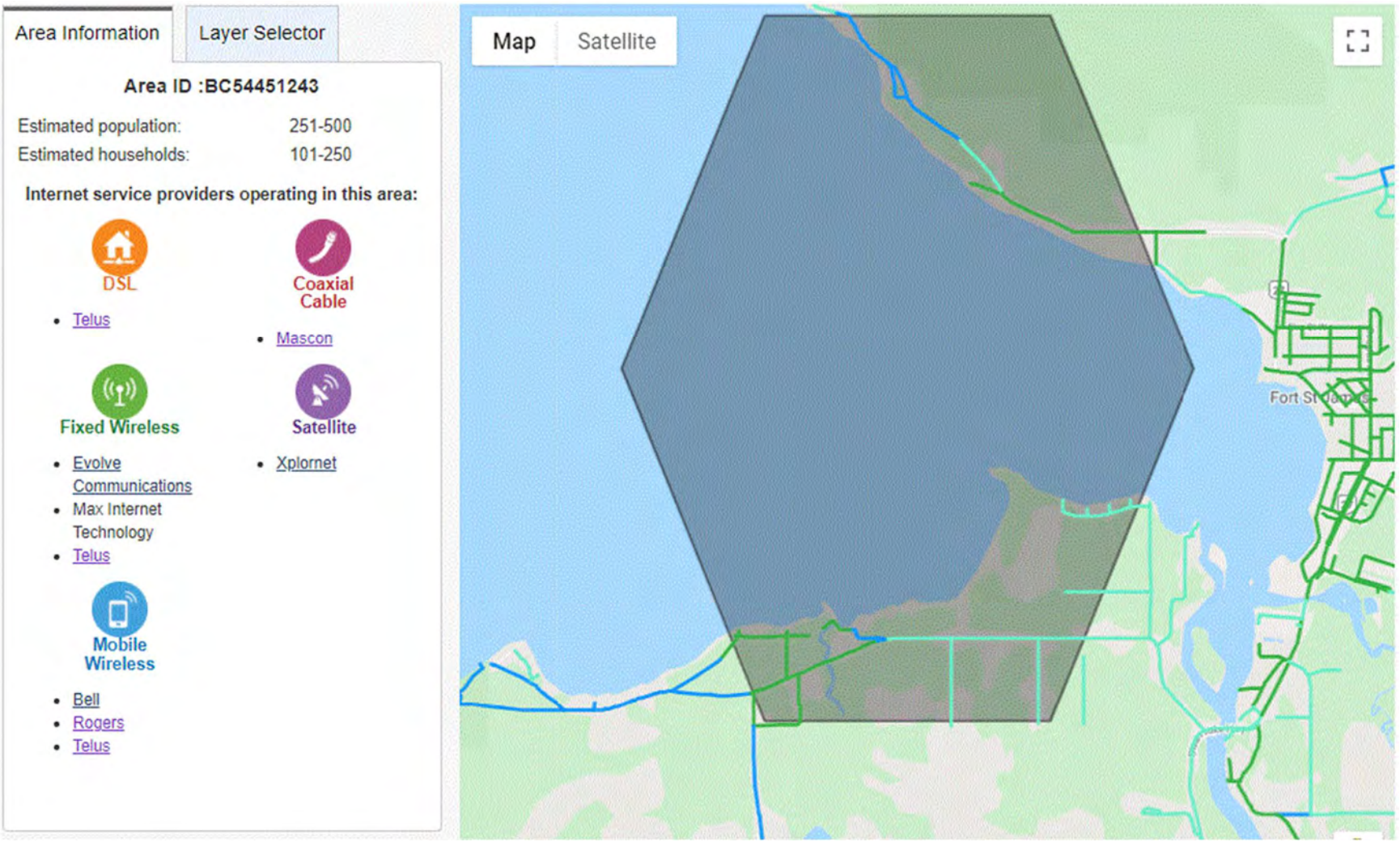
Pitka Creek CIRA/ISED Data Combined



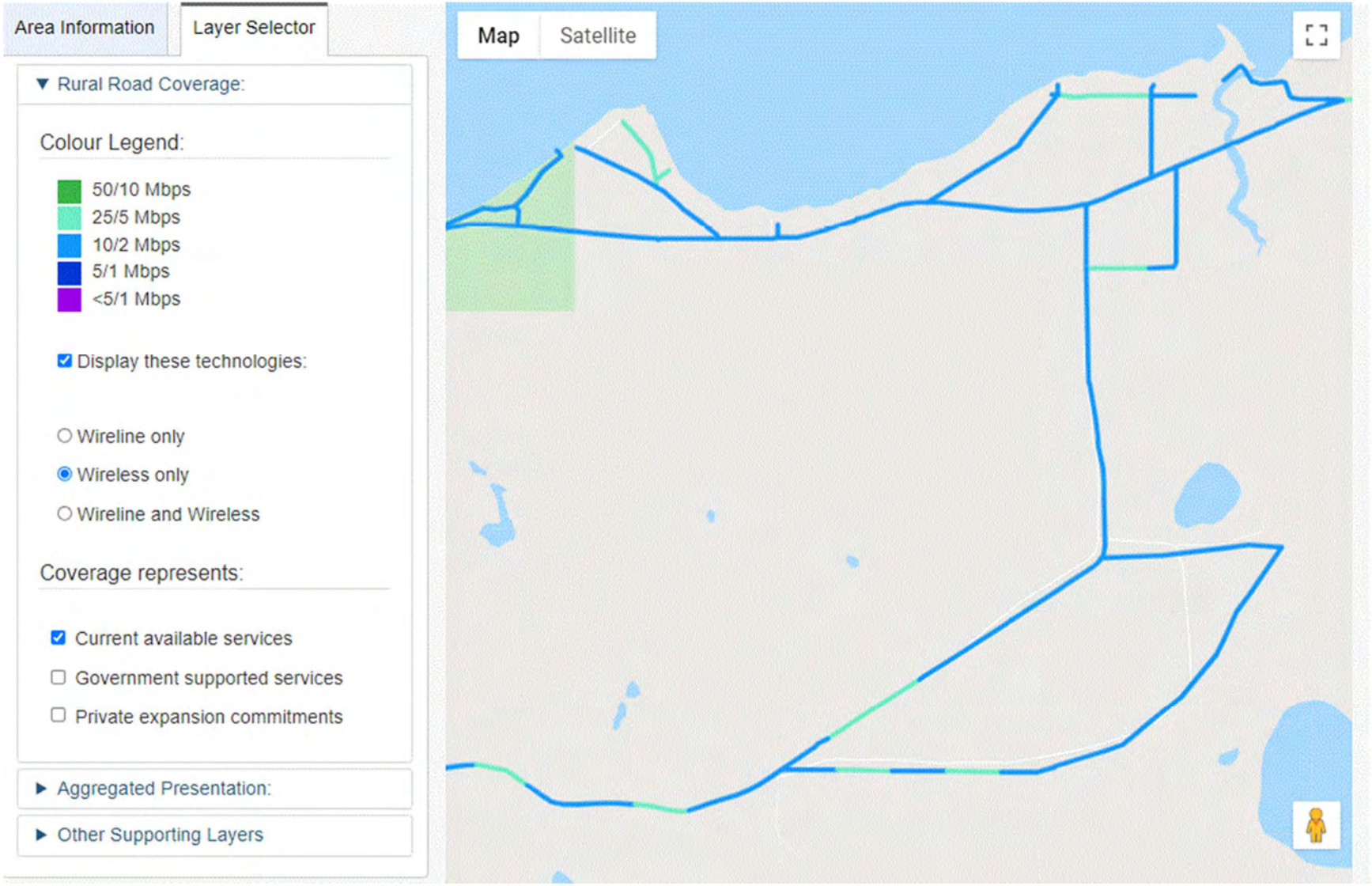
Pitka Creek ISED Data Hex 1



Pitka Creek ISED Data Hex 2



Pitka Creek ISED Data Wireless



14. POPLAR ROAD

ISPs Present in Test Results:

- City West cable & Telephone Corp.

Number of Tests	2
Unique Test IPs	2
Unique Test Locations	2
Number of 50/10 Tests	0
Median Download Speed	9.19
Median Upload Speed	1.50
Maximum Download Speed	15.94
Maximum Upload	1.88

Summary: Poplar Road testing indicates that no 50/10 connections were recorded. ISED information indicates that 50/10 service is available on a short section of Hwy 16 and another short section of Poplar Road.

Evaluation:

- **Additional testing required.** CIRA data did not receive enough tests to confirm the availability of 50/10 services within the locale where ISED Map data indicates those services exist.

Rationale and Considerations:

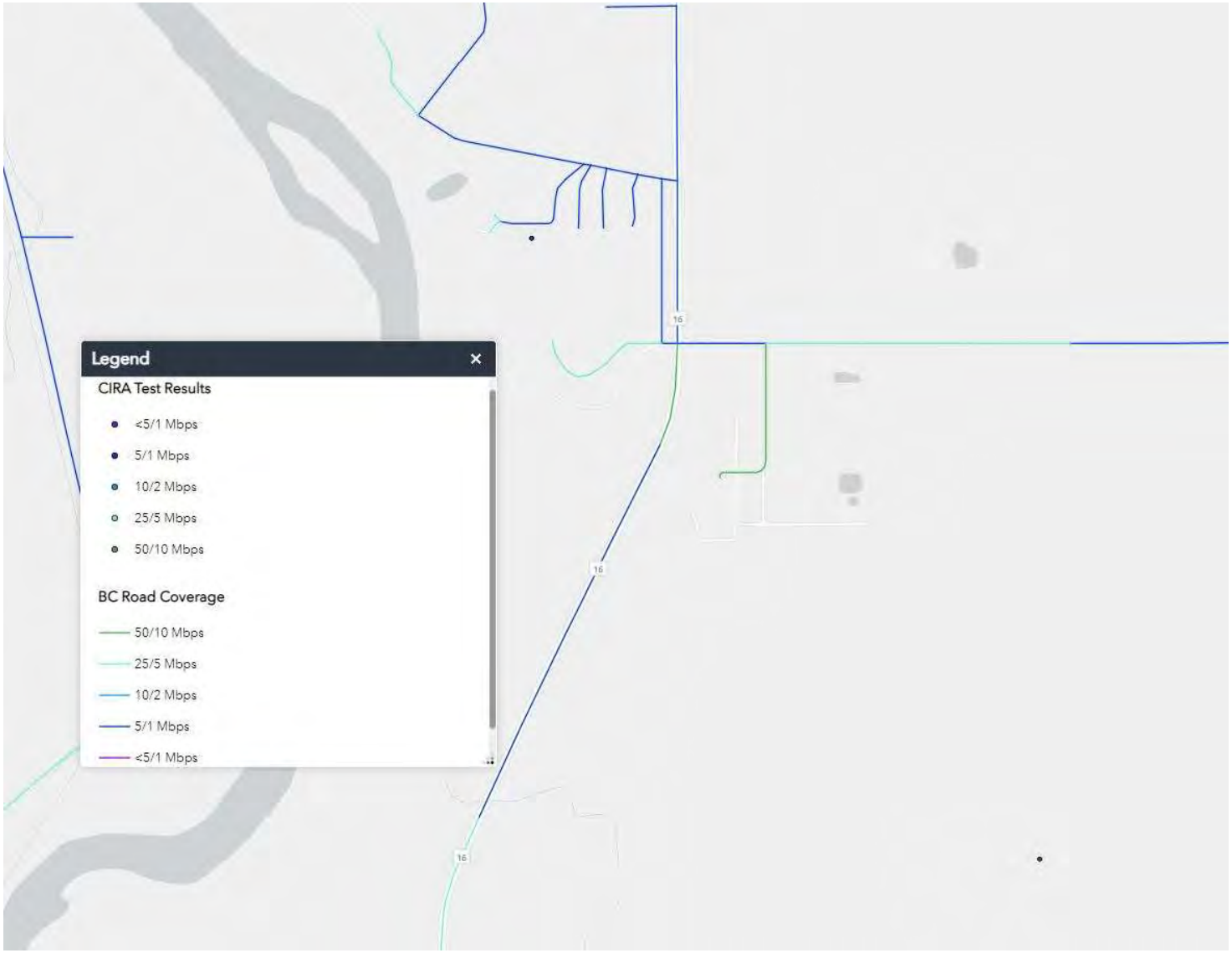
- All CIRA's limited data for this locale falls below 50/10 speeds.
- FTTH services are indicated by ISED from **Telus** along with DSL from **Telus**.
- High-capacity transport services are not indicated by ISED.
- ISED data indicates fixed and mobile wireless services are provided by **Bell**, **Rogers**, **Telus** and **Cybernet**. It does not indicate that 50/10 services are being provided wirelessly.

Attached Maps:

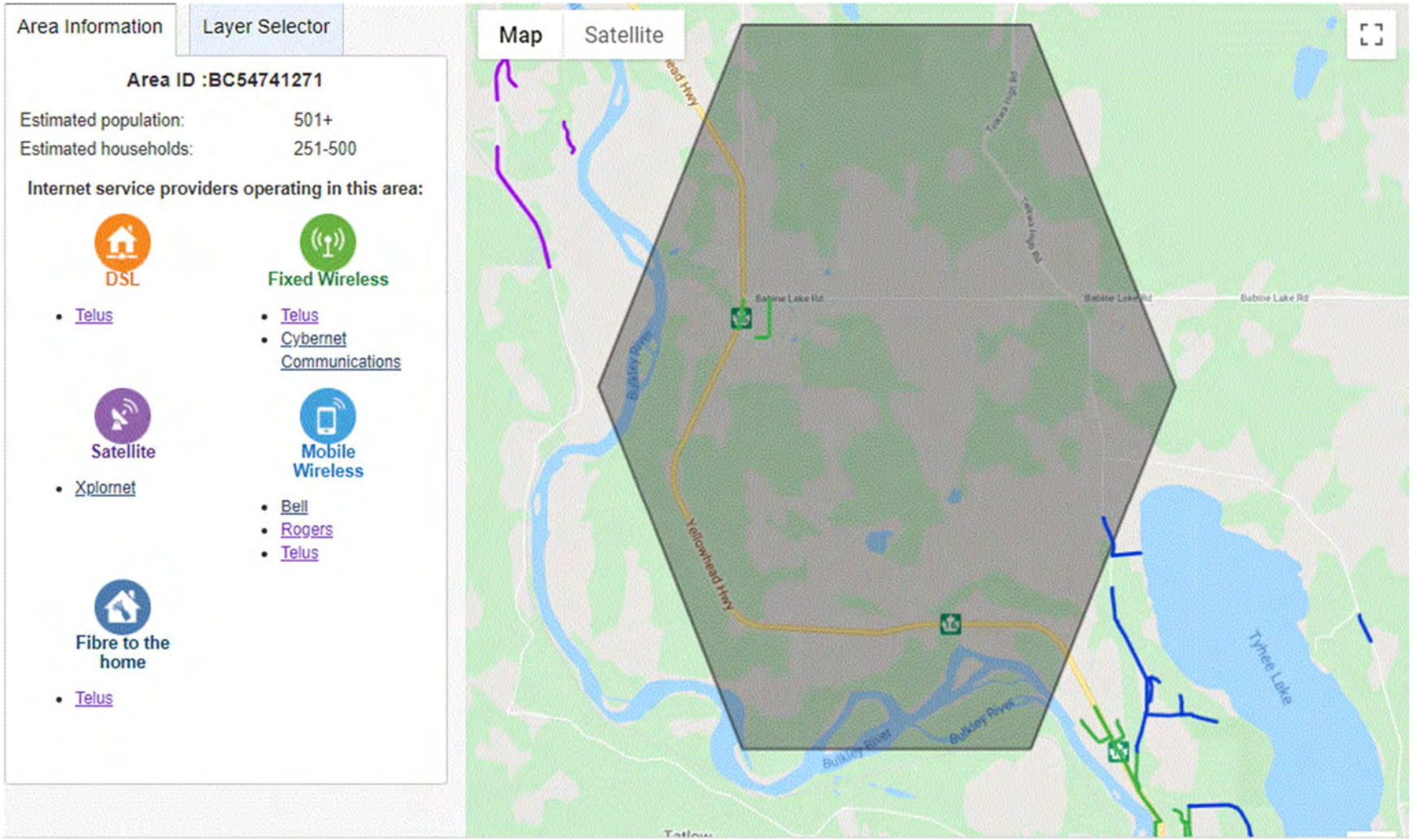
- Poplar Road All Tests
- Poplar Road ISED Data
- Poplar Road ISED Data Wireless

Poplar Road All Tests

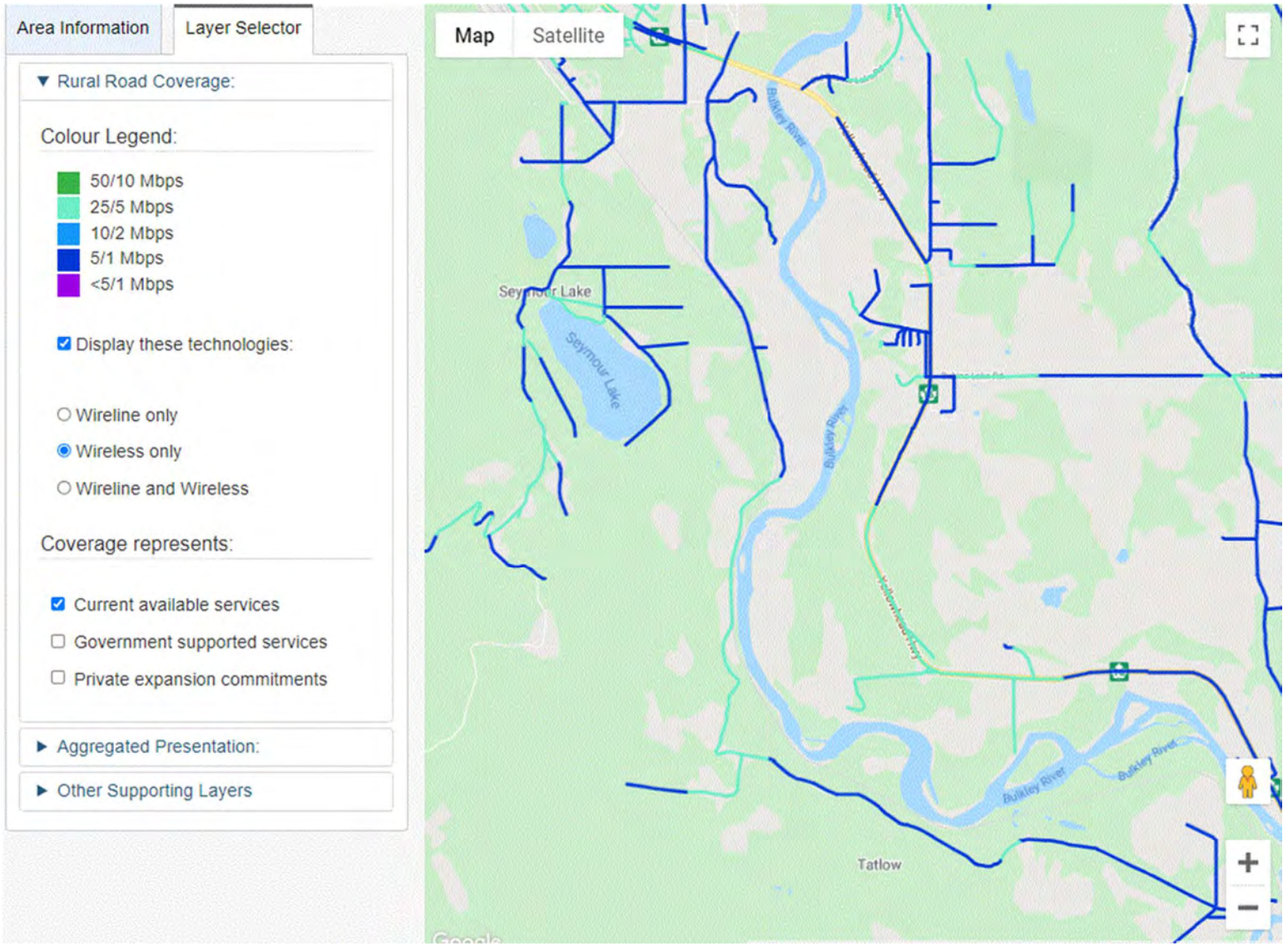
Poplar Road CIRA/ISED Data Combined



Poplar Road ISED Data



Poplar Road ISED Data Wireless



15. SAIK'UZ FIRST NATION

ISPs Present in Test Results:

ABC Allen Business Communications Ltd. Evolve Communications Inc. Telus Communications

Number of Tests	8
Unique Test IPs	6
Unique Test Locations	2
Number of 50/10 Tests	1
Median Download Speed	13.66
Median Upload Speed	1.56
Maximum Download Speed	55.02
Maximum Upload	27.66

Summary: Saik'uz First Nation testing indicates that 50/10 is currently available at a single test location and IP address. ISED information indicates that 50/10 service is available in the center of the populated area of the locale.

Evaluation:

- **Some discrepancy (minor).** CIRA data shows there are some 50/10 connections, but they do not align with ISED Map data.
    - A single 50/10 connection was recorded outside the area where ISED indicates 50/10 services. The limited number of test locations and IP addresses indicates a need for additional testing to properly qualify internet service levels in the locale.

Rationale and Considerations:

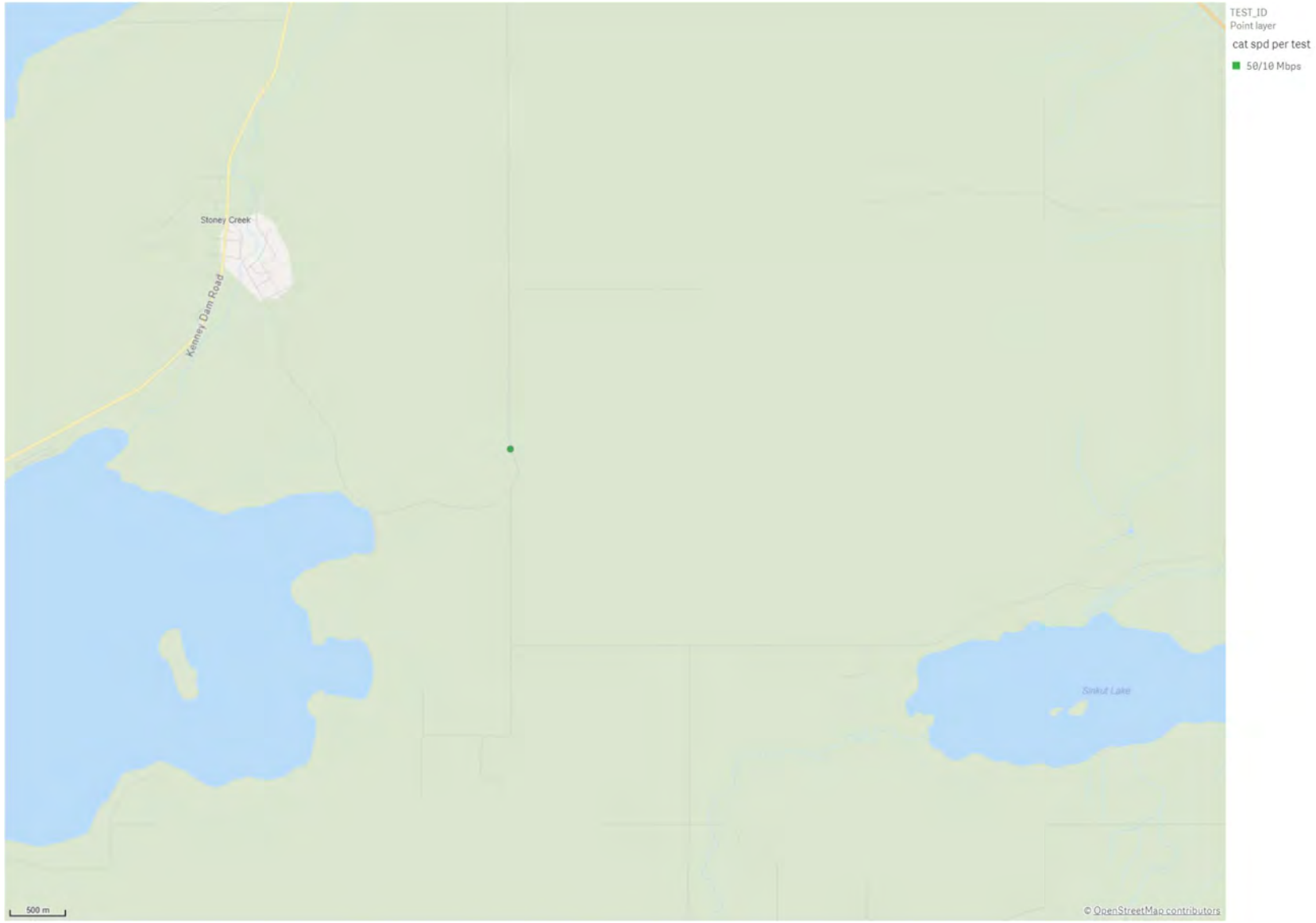
- A majority of CIRA's limited data for this locale falls below 50/10 speeds.
- Only a single 50/10 test was recorded in the locale outside the area where ISED indicates 50/10 services are available.
- The first 50/10 test in the locale was recorded in January of 2021 from **Evolve** using a Fixed Wireless Connection.
- FTTH services from Telus are not indicated by ISED only DSL from **Telus**.
- High-capacity transport services are indicated from **ABC** (Telus) and **Telus**.
- ISED 50/10 services are indicated in the center of the populated area of the locale.
- ISED data indicates fixed and mobile wireless services are provided by **Evolve**, **ABC** (Telus), **Bell**, **Rogers**, and **Telus**. It does not indicate that 50/10 services are provided wirelessly.

Attached Maps:

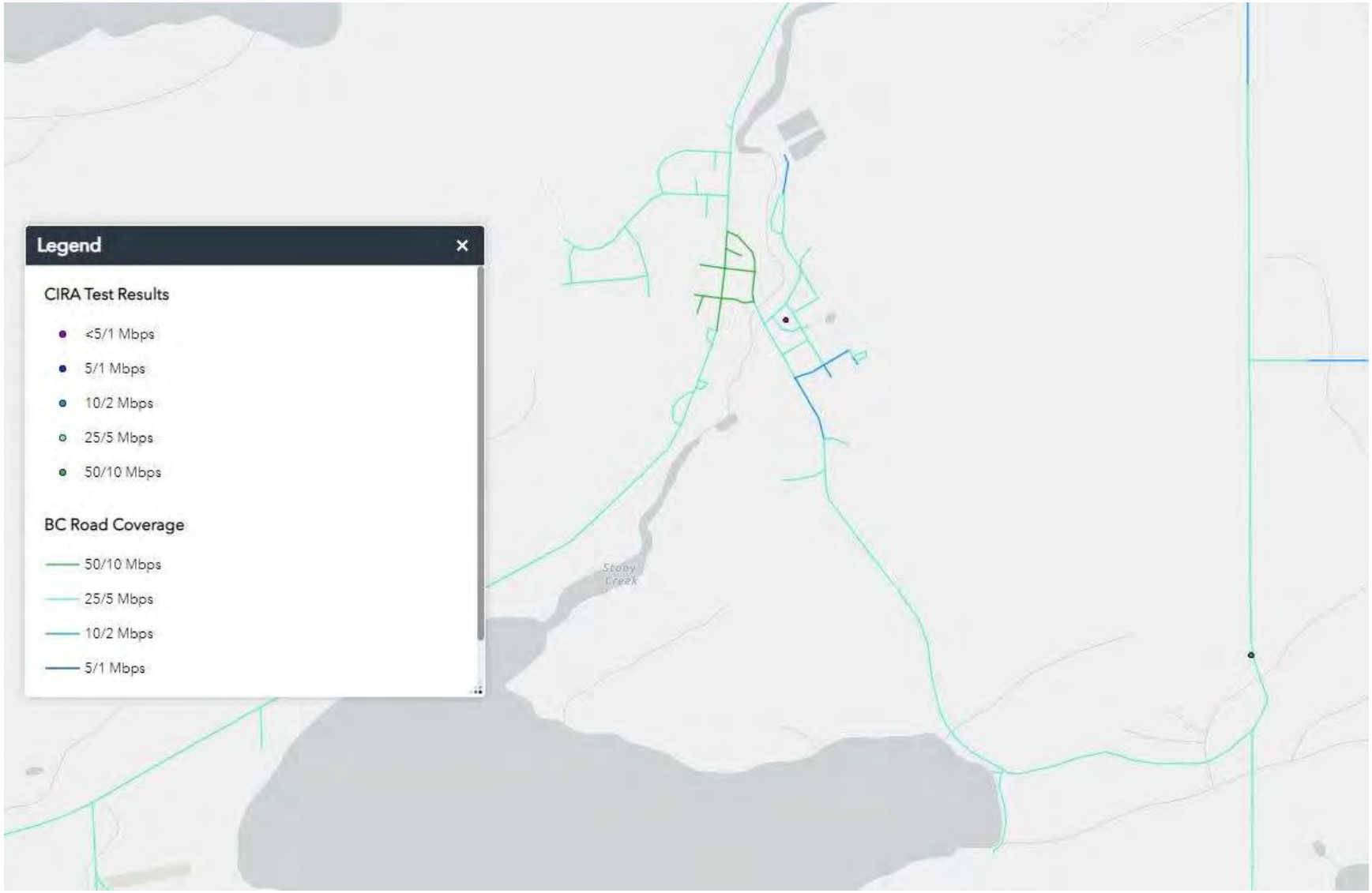
- Saik'uz First Nation All Tests
- Saik'uz First Nation CIRA/ISED Data Combined
- Saik'uz First Nation 50/10 Tests
- Saik'uz First Nation ISED Data Hex 1
- Saik'uz First Nation ISED Data Hex 2

Saik'uz First Nation All Tests

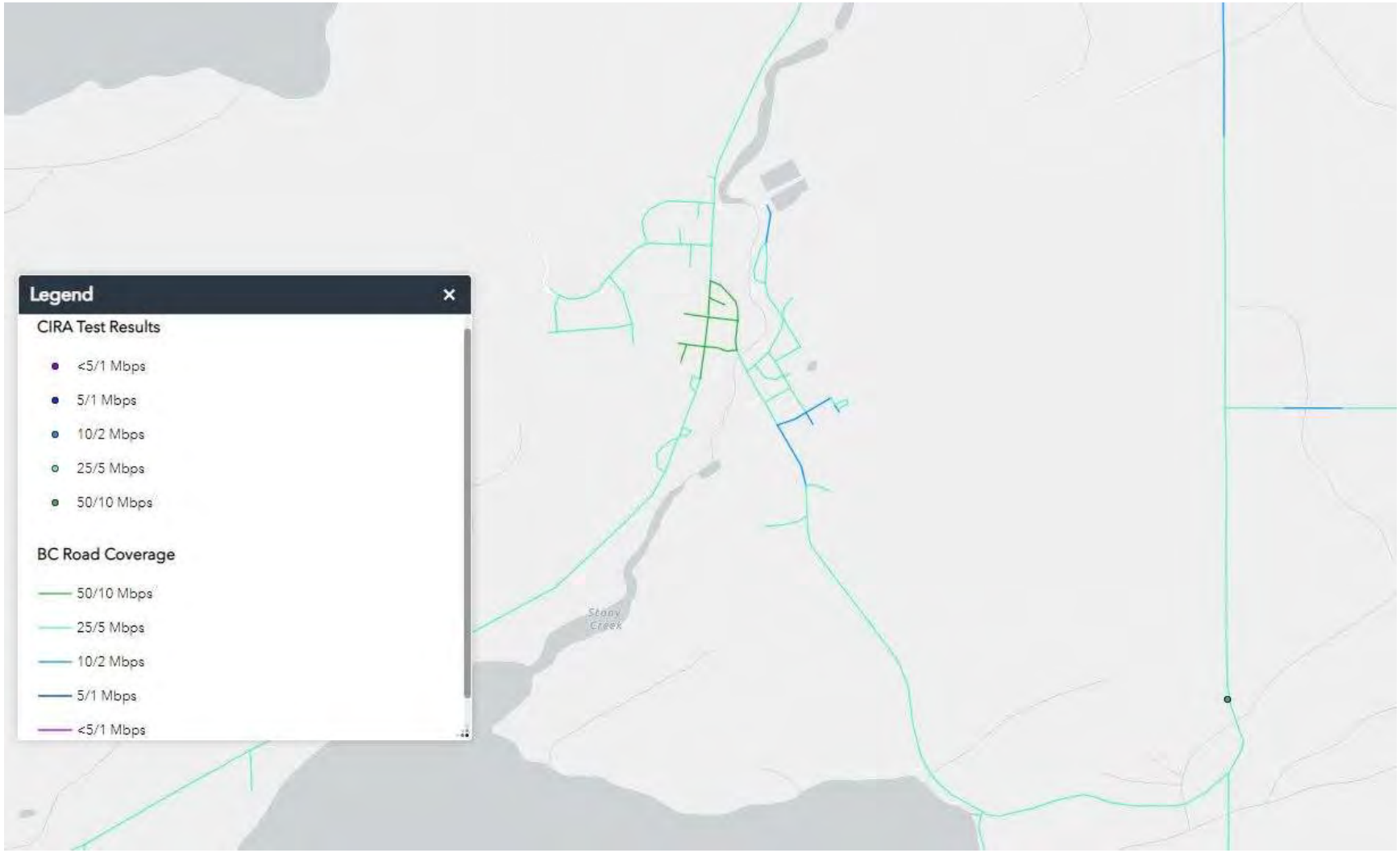
Saik'uz First Nation 50/10 Tests



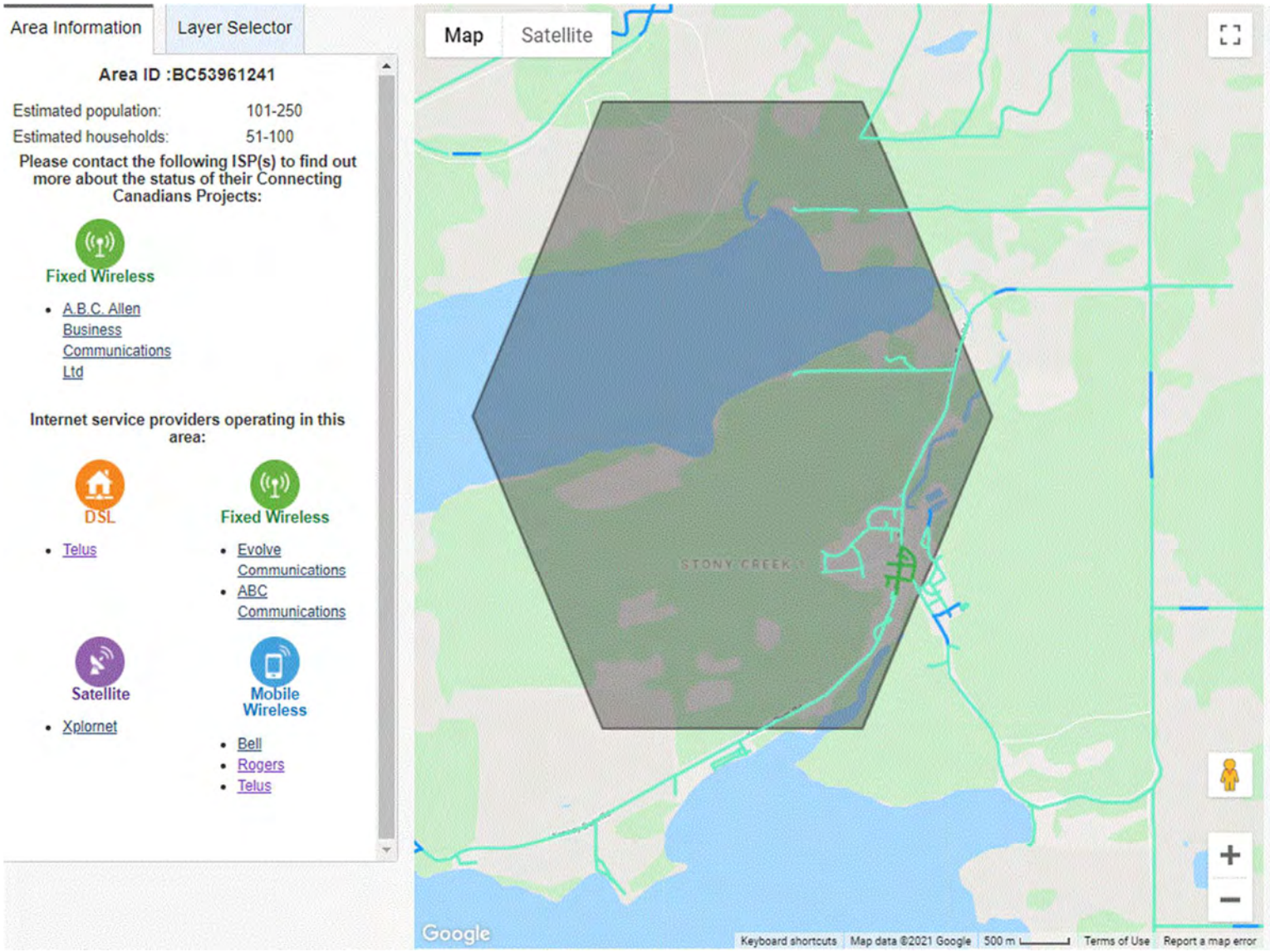
Saik'uz First Nation CIRA/ISED Data Combined



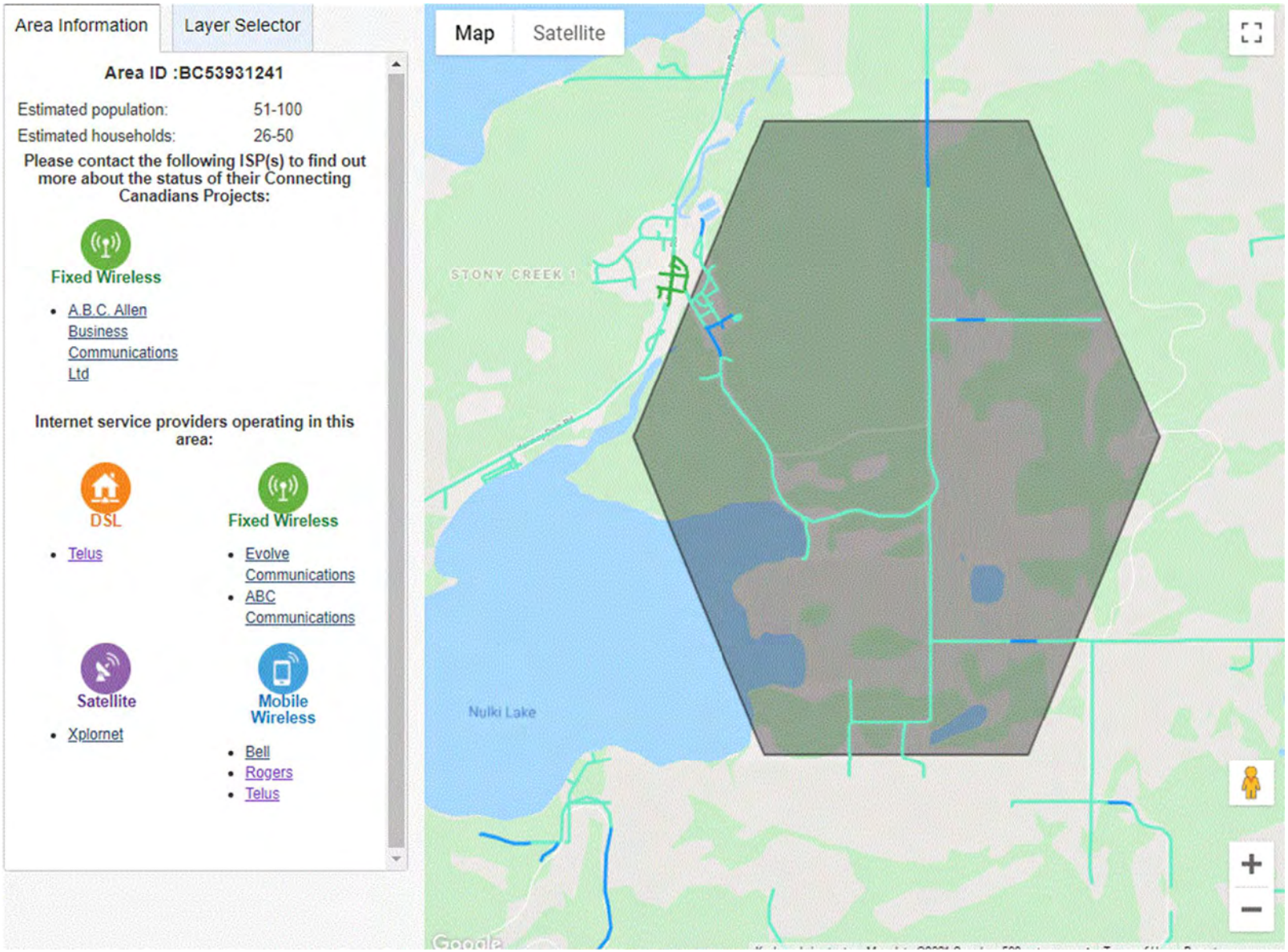
Saik'uz First Nation CIRA/ISED Data 50/10



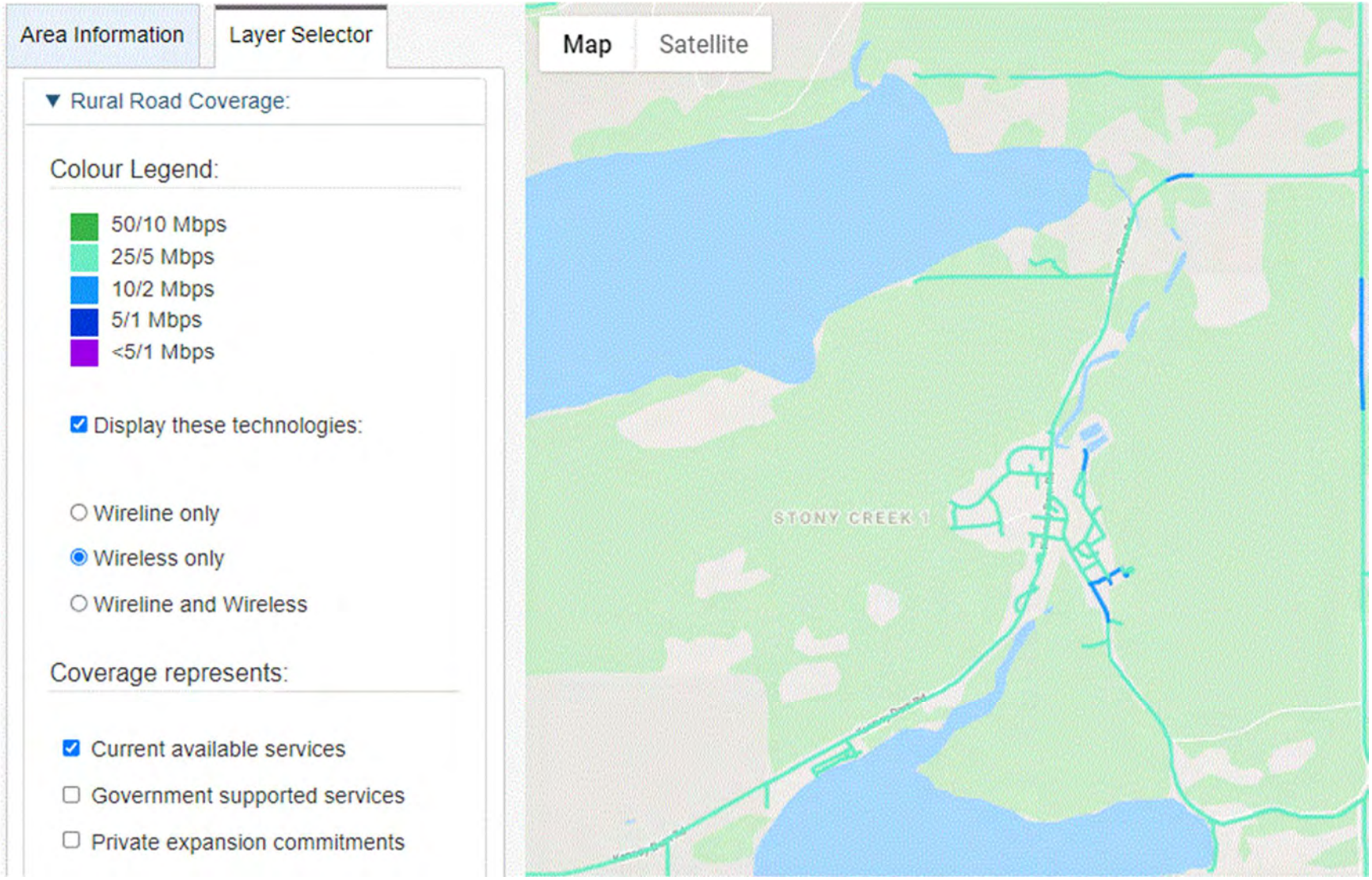
Saik'uz First Nation ISED Data Hex 1



Saik'uz First Nation ISED Data Hex 2



Saik'uz First Nation ISED Data Wireless



16. TELKWA

ISPs Present in Test Results:

- City West cable & Telephone Corp.
- Telus Communications
- Xplornet Communications

Number of Tests	18
Unique Test IPs	6
Unique Test Locations	5
Number of 50/10 Tests	0
Median Download Speed	4.71
Median Upload Speed	1.35
Maximum Download Speed	40.21
Maximum Upload	4.64

Summary: Telkwa testing indicates that no 50/10 connections were recorded. ISED information indicates that 50/10 service is available in the populated areas of the townsite.

Evaluation:

- **Additional testing required.** CIRA data did not receive enough tests to confirm the availability of 50/10 services within the locale where ISED Map data indicates those services exist.

Rationale and Considerations:

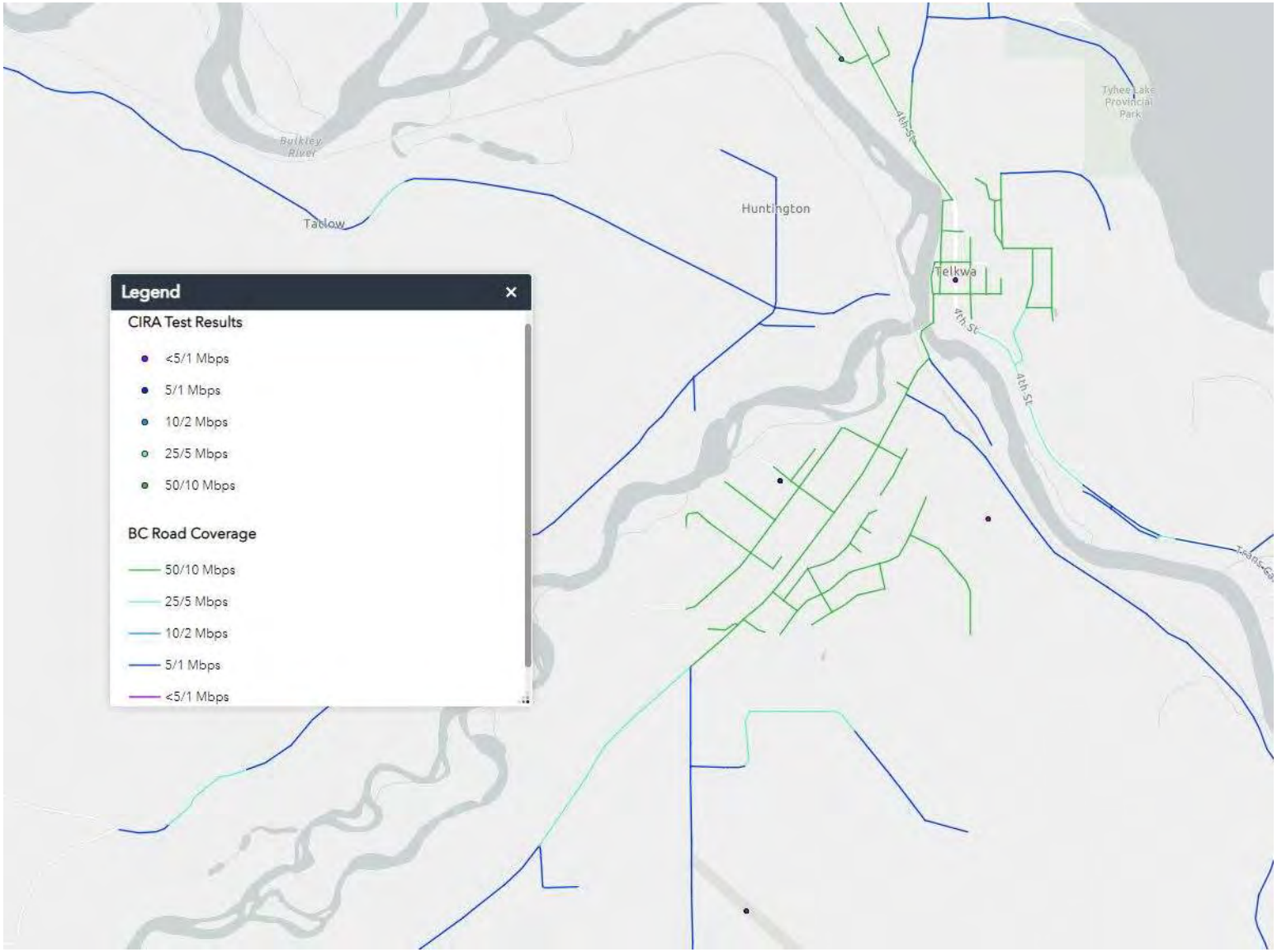
- All CIRA data for this locale falls below 50/10 speeds.
- CIRA tests returned only <5/1, 5/1 and 10/2 from six IP addresses and five locations.
- FTTH services from **City West** are indicated by ISED in the populated areas of the townsite along with DSL from **Telus**.
- High-capacity transport services are not indicated by ISED.
- ISED data indicates fixed and mobile wireless services are provided by **Bell**, **Rogers**, **Telus** and **Cybernet**. It does not indicate that 50/10 services are being provided wirelessly.

Attached Maps:

- Telkwa All Tests
- Telkwa CIRA/ISED Data Combined
- Telkwa ISED Data Hex 1
- Telkwa ISED Data Hex 2
- Telkwa ISED Data Wireless

Telkwa All Tests

Telkwa CIRA/ISED Data Combined



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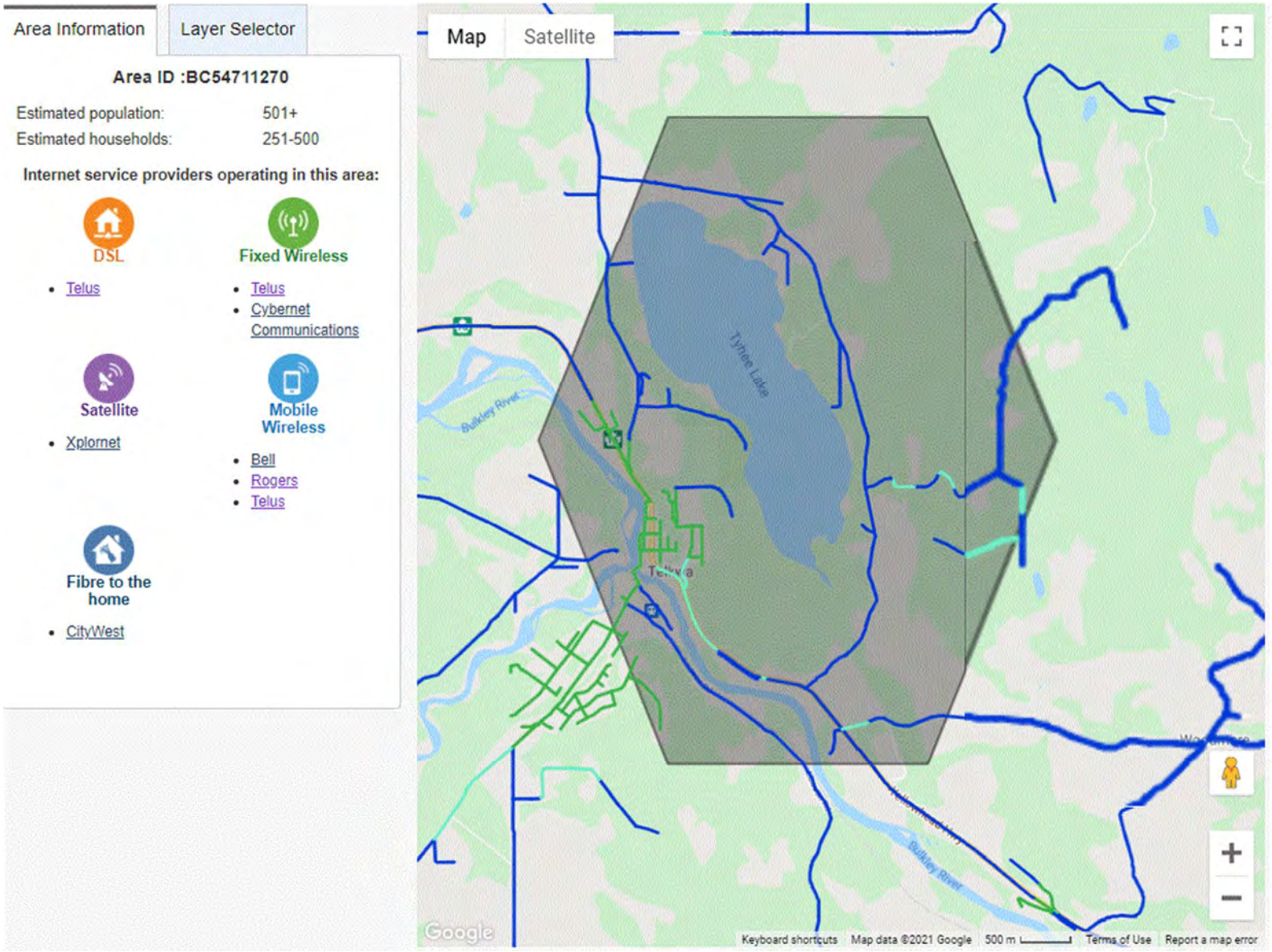

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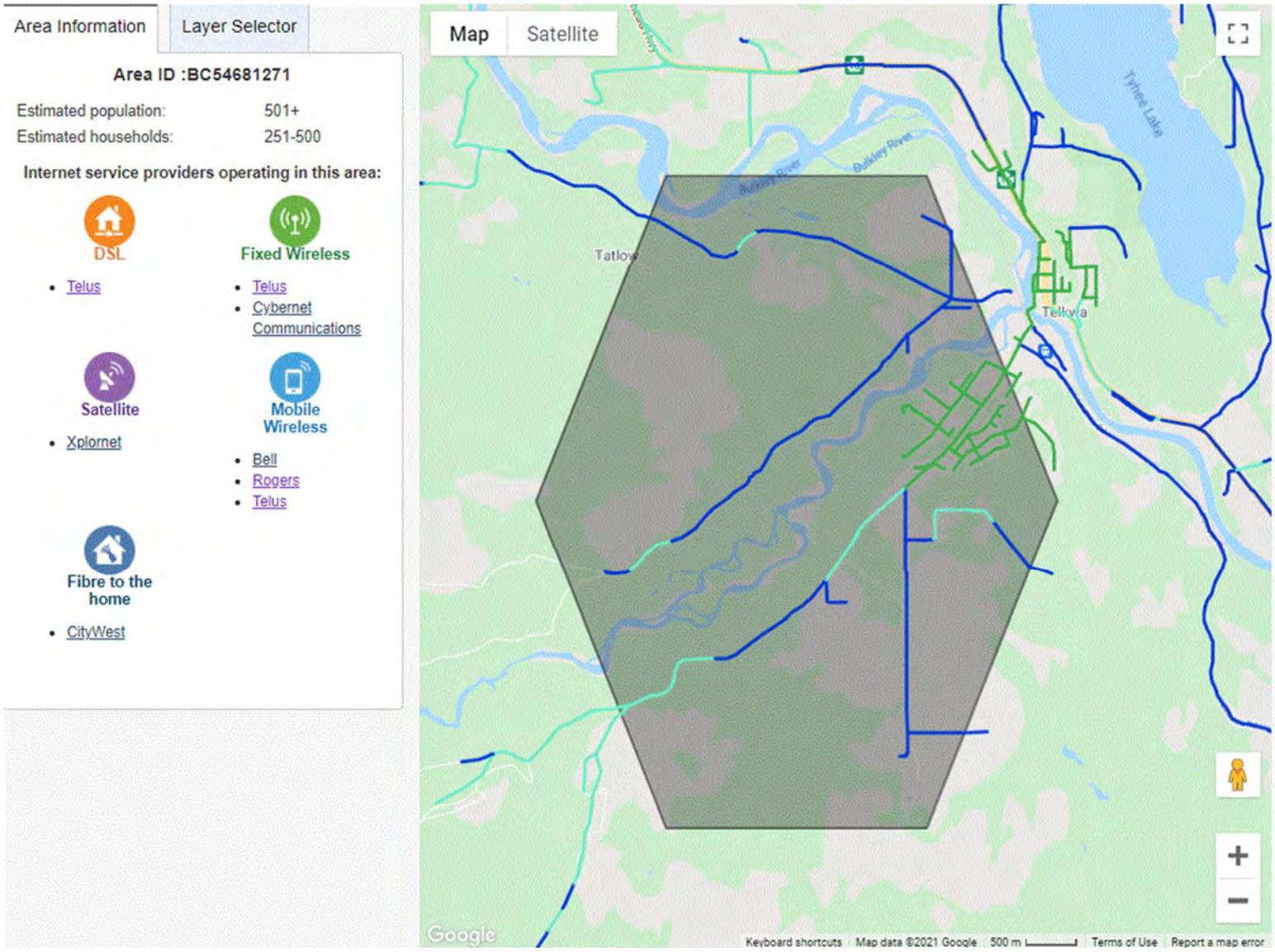
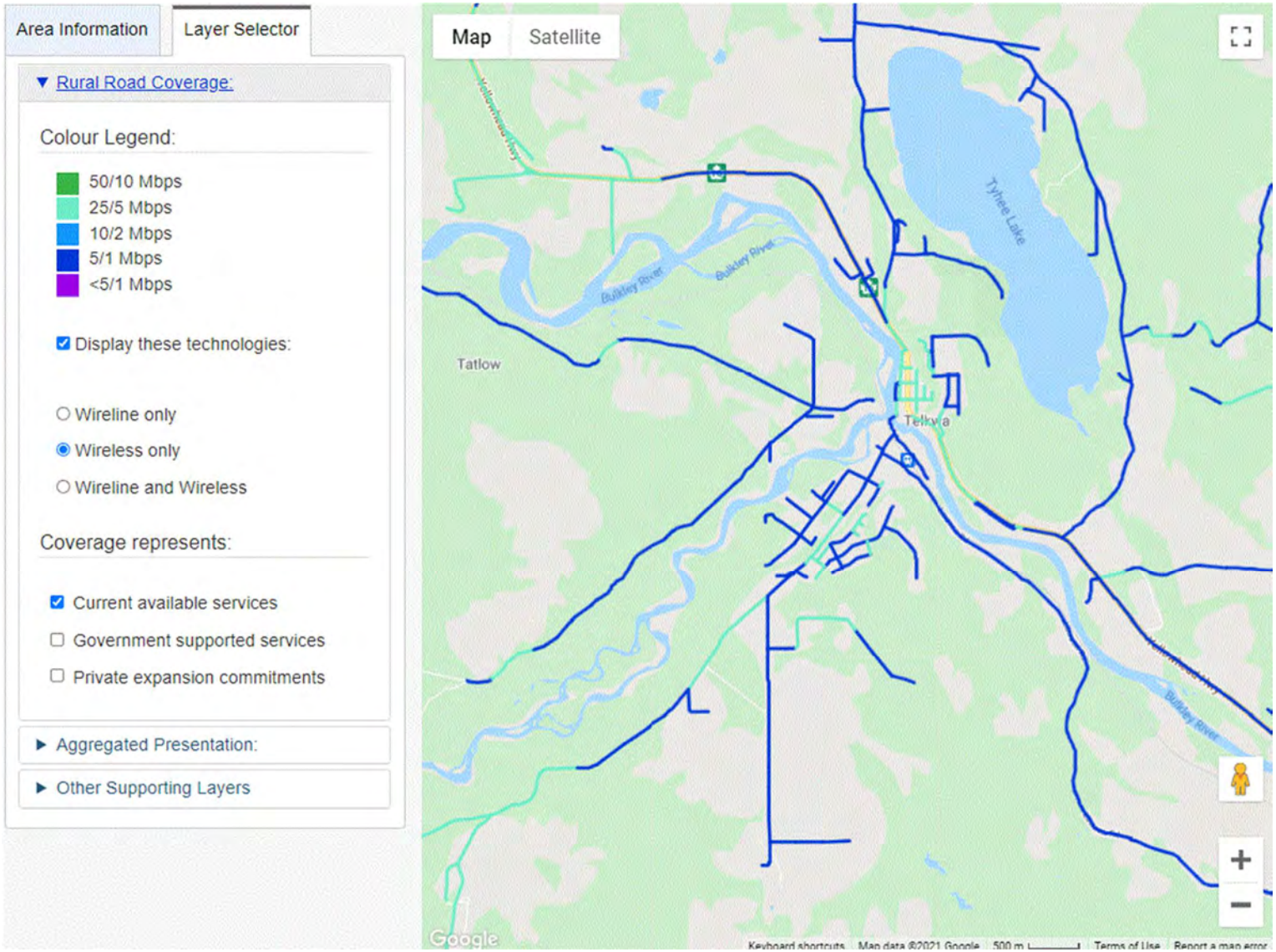


Telkwa ISED Data Wireless



APPENDIX A: SUGGESTED CITATION

"Source: Canadian Internet Registration Authority (CIRA), 2021. Speed test data for each locale was gathered from the CIRA Internet Performance Test database (performance.cira.ca) between May 2015 and mid-December 2021."

Regional District of Bulkley-Nechako
Connectivity Committee

To: Chair and Committee

From: Nellie Davis, Manager of Regional Economic Development

Date: April 14, 2022

Subject: Connecting Remote Communities and First Nation Reserves to High-speed Internet

---

RECOMMENDATION: **(all/directors/majority)**

Discussion

BACKGROUND

On March 14, 2022 the Province of BC released a Request to Participate (RTP) on BC Bid. At the March 31st Board meeting, the RDBN Board resolved to participate as a respondent to the RTP.

In consultation with Ministry of Citizen's Services Staff and ISP partners, it has been determined that it is neither required nor expected that local and regional governments respond to all eight questions. Staff and Chair Riis-Christianson determined that the RDBN's response development will be best served for questions 1, 2, 5 and 6. For Questions 3, 4, 7 and 8 CityWest will be developing responses based on a shared understanding of the RDBN's commitment to serving communities with fibre first, and alternative technology where required. While not available in time for this meeting, those proposed solutions will be presented to Directors for each Electoral Area so that we are aware of and have the opportunity to comment on the information being presented to the Province.

This RTP is not meant to represent future grant applications, but will be used for information verification by the Province as they develop the new connectivity funding program model. Individual projects and applications will receive detailed review as per our current model.

The original RTP questions are included as an attachment to the memo. Proposed responses to the priority questions are included below.

Additional answers relating to accuracy of unserved household data will be presented to Rural Directors to assist in developing a response.

Proposed RTP Responses:

Q1 – Organization Information

Organization Type: Local or regional government
Regional District of Bulkley-Nechako
PO Box 820, Burns Lake, BC V0J 1E0

Nellie Davis, Manager of Regional Economic Development

Q2 – Zone Information

1. We are providing information for Zone 5
2. There are no proposed amendments.

Q5 – Areas of Focus for Local Governments and First Nations

The Regional District of Bulkley-Nechako is very interested in the provision of high-speed internet to all residents of our region. We undertook several high-level studies in 2019 and 2020 and established a Connectivity Committee to specifically address the planning process in August of 2019.

The RDBN has concerns about the accuracy of the pseudo-households served data presented in the RTP files. Our experience with residents reports indicates there are several areas that are considered 'served' that we believe to be incorrect. These areas include: (this information will be reviewed with individual Directors, as is requires access to .kmz files).

The RDBN has recently successfully completed an Alternative Approval Process to establish a Regional Broadband Service. The service was successfully passed with zero responses against the service establishment, indicating the high level of resident support for increasing access to high-speed internet in all areas of the region.

The successful service establishment will enable the RDBN to enter into Partnerships with service providers and contribute to the capital costs of connectivity infrastructure in the region.

Q6 – Additional Internet Connectivity Information

1. At the discretion of ISP partners.
2. To be determined one-on-one with Directors.
3. Same as 2 above

ATTACHMENTS:

1) Request to Participate Document
2) Connecting Communities BC Information Slides
   from Regional Connectivity Knowledge Network

Request to Participate (RTP)

Connecting Remote Communities and First Nation Reserves to High-speed Internet

MINISTRY OF CITIZENS' SERVICES, OFFICE OF THE CHIEF INFORMATION OFFICER,

CONNECTIVITY DIVISION

BCBid NO:	**13183** www.bcbid.gov.bc.ca
Issue Date:	March 14, 2022
Closing Date and Time:	2:00 p.m. PST April 25, 2022
Contact Person:	Rachel Greenspan connectingcommunitiesbc@gov.bc.ca

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1 Introduction

Access to reliable high-speed internet and cellular connectivity for British Columbians is more important than ever before. When all current approved Provincially funded projects are complete, the percentage of rural communities and First Nations reserves with connectivity will have increased from 25% to 60%. However, a digital divide will remain, with over 115,000 households still having access to broadband internet services less than 50/10 Mbps.

The Ministry of Citizens' Services is requesting interested parties' participation to provide information that will assist the Province in planning future connectivity funding programs to secure projects that will extend telecommunications networks that provide high-speed connectivity to remaining underserved households in B.C.

1.1 Overview of the Request to Participate ("RTP")

Interested parties are invited to respond to this RTP process by submitting a response to the Province meeting the requirements set forth below. The RTP process is an opportunity for the Province to obtain regional and market information, validate cost assumptions, and gauge potential market interest in providing connectivity services to underserved regions of the province. Information gathered may be used by the Province as input to future connectivity program design, with the goals of maximizing network expansion to ensure all regions receive benefits from Provincially funded connectivity programs.

The aim of this RTP process is to present the Province's current understanding of the underserved households and to have Respondents provide feedback and insight into what type of technology would be viable in which areas to help the Province meet its connectivity goals.

1.2 RTP Objectives

This RTP process is intended to gather information that could assist the Province in the development of future programs that will provide funding to projects that enhance province-wide high speed internet connectivity. Specific objectives include:

a) Validating Provincial modeling assumptions regarding the scope of the outstanding connectivity gap. This will help ensure service provider interest in future projects to upgrade and expand networks is captured, and that potential areas of opportunity for funding are accurately represented.
b) Confirming that the "zones" shown in Appendix C represent logical geographic areas for expansion of infrastructure and effectively conceptualize the remaining connectivity gaps.
c) Validating market interest in all geographic areas identified as candidates to receive benefits from the Province's connectivity programs, by understanding the types of technology that might be viable to provide a connectivity solution.

d) Validating the Province's internal models on estimated costs by receiving input on the types of technology and where it may be deployed as it relates to the underserved households.

The Province's requirements for responses to this RTP process are described further below.

1.3 Who Should Participate?

The Province is requesting participation in this RTP process from Respondents. Respondents could include:

- Internet service providers (ISPs) and cellular providers;
- Other levels of government with experience in providing connectivity solutions;
- Local governments and First Nations wishing to participate with feedback to this RTP process.

1.4 Deadline for Responses

Responses should be delivered as directed below before the Closing Time specified on the cover page to this RTP document.

2 Organizational Overview

2.1 Ministry Mandate

The Minister of Citizens' Services has a mandate to help ensure connectivity throughout the province until all households have access to high-speed internet services. Connecting underserved rural First Nations communities also supports other key components of the Minister's mandate, including actions in the Declaration on the Rights of Indigenous Peoples Act - Draft Action Plan.

This mandate is also supported by Canada's Connectivity Strategy, which aims to connect 98% of Canadian households by 2026, and the hardest to reach Canadians by 2030.

2.2 B.C.'s Connectivity Program

Including the recent Budget 2022 announcement of $289 million, the Province has allocated over $500 million to the expansion of connectivity to rural communities and First Nations reserves, and has so far improved connectivity in more than 500 communities throughout the province.

Through this investment, and a joint funding arrangement with Canada, the Province will aim to connect the remaining underserved rural communities and First Nations reserves by 2027.

2.3 The Remaining Connectivity Gap

The Province is engaging in this RTP process to inform costing assumptions and future program design to ensure remaining rural and First Nations households have access to a minimum 50/10 Mbps broadband internet service.

To support the development of project proposals for the remaining connectivity gaps, the province has been divided into fourteen (14) zones or areas, depicted in the Internet Zone Map in Appendix C. This zone-based approach takes into account existing infrastructure, approved projects, and geographical constraints, and allows Respondents to "zoom in" in on specific regions that have underserved rural and First Nations households. These zones may serve as the underlying construct for potential future connectivity funding programs and, as such, feedback on the zones should be provided as part of the RTP process.

2.4 Key Attributes of Connectivity Gaps and Supporting Data

An additional goal of this RTP process is to obtain input on key attributes of connectivity gaps in B.C. including:

- Which households remain underserved;
- How much it will cost to connect remaining households, including both backbone and last mile solutions;
- Where the gaps in highway cellular service in B.C. are, and which of these highway segments have power; and
- What technologies might be best suited to reaching underserved households.

Appendix D provides links to KMZ files that contain the current Provincial analysis of these key attributes.

3 The RTP Process

3.1 Response Submission Process

There are eight sections of questions to be answered by Respondents to the RTP process, which are listed in Appendix B. Interested parties are invited to respond to the RTP process by providing a written response online via the Province's form submission page: https://connectivity-rtp.apps.silver.devops.gov.bc.ca/.

It is recommended that Respondents have a copy of this RTP document printed or open as they fill out the form (including the instructions in Appendix A) so that they can reference the document during the submission process. Respondents should also be able to reference the Internet Zone Map (Appendix C) and supporting data (linked in Appendix D) while completing the response.

As part of the RTP process, the Province is requesting that Respondents (where able) submit geographic information commonly contained in data layers, such as KMZ or ESRI files. To ensure this information is received in a normalized, usable format, the Respondents are asked to upload a geographic location into B.C.'s Geomark service, which generates a unique link to include as part of the RTP process.

Instructions on uploading geographic data can be found in Appendix A, Question 8.

3.2 Review of Responses

The purpose of this RTP process is to gather information from interested parties that may inform future Provincial connectivity funding programs. For example:

a) Determining the types and mix of technologies necessary to expand connectivity infrastructure;
b) Changes or modifications to the zones, depicted in Appendix C; and
c) Other elements of program design or implementation.

4 RTP Terms and Conditions

The Province may contact a Respondent for further discussions and/or clarification of their Response.

4.1 Enquiries

All enquiries related to this RTP process are to be directed, in writing, to Rachel Greenspan, Senior Director of Regulatory and Permitting, Ministry of Citizens' Services' Connectivity Division at connectingcommunitiesbc@gov.bc.ca.

4.2 No Subsequent Procurement or Funding

If subsequent competitive funding programs are created or subsequent competitive bidding opportunities are issued, the Province is under no obligation to advise any respondent to this RTP. Respondents are advised to monitor the Connectivity in BC website for any such opportunities, which will be open for application regardless of whether or not a response to this RTP process has been submitted.

4.3 Ownership of Responses

The RTP process will not be used to evaluate, rank, or select candidates for future Provincial funding, nor will it be used to pre-qualify or screen candidates for future funding opportunities or for a subsequent competitive bidding process, if any.

All Responses are non-returnable and become the property of the Province and, subject to the terms of this RTP and the provisions of the *Freedom of Information and Protection of Privacy Act* ("FOIPPA"), will be held in confidence. Respondents to this RTP process consent to the Province incorporating any submitted ideas, concepts, approaches, or strategies into any planning, design, procurement, program, funding or contractual activities related to any aspect of the Ministry's mandate without any obligation, liability, or consideration on the part of the Province. The Province will not be responsible for any costs incurred by any party in responding to this RTP process.

4.4 Collection and Use of Information

The Province does not require submission by Respondents of any personal information in connection with its response to this RTP.

Respondent names and business contact information will not be made public.

The Province acknowledges that responses may contain proprietary or business information of Respondents, which will be kept in confidence by the Province, subject to the terms of this RTP process.

In submitting a response to this RTP process, the respondent agrees that aggregated and anonymized information from their response may be shared by the Province with Information, Science and Economic Development Canada (ISED), as a program funding partner of the Province.

4.5 Costs

Respondents are solely responsible for any and all costs associated with responding to this RTP process, including travel, living, incidental and other out-of-pocket expenses. The Province will not be liable for any costs, expenses, fees, damages, or claims arising as a result of a Respondent's response to this RTP process.

Appendix A: RTP Online Form Instructions

All instructions for the RTP online form are contained in this document. **Please ensure you refer to this document for instructions as you complete the form. Any questions, please email:** connectingcommunitiesbc@gov.bc.ca

Prepare

Before you start, please do the following:

1. Have a copy of these instructions close by.
2. Review the list of questions you will be asked in the RTP process (Appendix B).
3. Download and view the supporting data files. Instructions to do this are in Appendix D.
4. Create a **Basic BCeID** if you do not have one. You will need your Basic BCeID to log on to the form. Please do not enter a Business or Personal BCeID. You can register for your Basic BCeID on the BCeID website.

Note: The BCeID Help Desk is open Monday to Friday (except statutory holidays) from 7:30 am to 5 pm Pacific time / 8:30 am to 6 pm mountain standard time: Please call 1-888-356-2741 (Canada and USA toll free); 604-660-2355 (Within lower mainland or outside Canada and USA), or contact the Help Desk using the online form.

Log In

Visit: https://connectivity-rtp.apps.silver.devops.gov.bc.ca/

Please log in with your **Basic BCeID** to begin.

Note: The RTP process is designed to collect feedback from service providers as well as from local and regional governments and First Nations into a potential new connectivity funding program in the province. **Please complete the fields applicable/relevant to you.**

The form will automatically autosave. You will be able to log back in to resume the form at any time with your Basic BCeID. Any issues with logging into the form, please clear any cookies and restart your browser. It may also help to start the form in an incognito browser.

Note: Open-ended responses have a maximum character limit of 3,500 characters.

If you are experience any issues or have questions, please email: connectingcommunitiesBC@gov.bc.ca.

Instructions for Each Question

Q1. Organization Profile

This section captures contact information about you and your organization. Please fill out the fields indicated. To the best of your ability, please only submit one RTP online form per organization.

Q2. Zone Information

This question indicates which zones or regions of the province you are providing information for in your RTP online response.

In order to encourage a regional approach, the province has been split into 14 zones to allow service providers to consider solutions to connect as many households as possible in each zone.

Referring to the KMZ Internet Zone data linked in Appendix D and/or the Internet Zone Map in Appendix C, indicate which zones you are providing information for (check all zones that apply).

Q3. Areas of Focus for Broadband Technology Viability

This section is for feedback on potential areas for expansion of high-speed internet in zones you have specified.

Respondents are asked to identify areas where connectivity could be expanded using wired broadband (fibre or coax) or fixed wireless. Please estimate household counts based on subject matter expertise, knowledge of existing infrastructure, and geographical constraints. Viability is defined as a feasible business case and technical suitability of a broadband technology to a specific area. All technologies indicated must be able to provide the target speed of at least 50/10 Mbps.

Note: At the end of the RTP online form, Respondents (where able) will be asked to submit geographical areas in Geomark files where they expect each technology is viable.

Q4. Backbone Infrastructure to Support Last Mile

This section focuses on existing backbone infrastructure.

For the information described so far, is there existing backbone infrastructure to deliver the last mile projects as specified? Existing backbone is defined by connecting to a point of presence ("PoP") in the community. New backbone is defined by requiring fibre or microwave transport to access a PoP in another community to support your last mile project.

Please add any details regarding existing challenges and options for addressing gaps (existing or new) in backbone infrastructure needed to reach underserved households. For example, technology considerations, impactive geography, or connections to existing PoP.

If multiple backbone technologies are indicated, please describe at a high level where each backbone technology could be implemented and any transport requirements in the text box.

Q5. Areas of Focus for Local Governments and First Nations

This section is for local and regional governments and First Nations to offer additional feedback on internet connectivity in their communities. Please include any information deemed relevant to your community or Nation based on the zone or zones indicated.

Q6. Additional Internet Connectivity Information

This section provides an opportunity to provide additional specific information on high-speed internet infrastructure that will help meet the objectives outlined in the RTP document.

Q7. Highway Cellular

This section is to provide feedback on gaps in highway cellular coverage in the province.

For reference, the Province has identified gaps in cellular service along highways (with power) in B.C. The gaps are highlighted in the KMZ file for Highway Cellular. Information on how to download and view the KMZ files is in Appendix D.

Q8. Upload Geomarks

This section is for Respondents to upload Geomarks (geographic web data) to the RTP form, based on information provided. Note: This is a recommended step for organizations that have the capacity to create Geomarks but is not mandatory.

Per Section 3.1 of the RTP document, the Province is requesting that Respondents submit geographic information commonly contained in data layers, such as KMZ or ESRI files. To ensure this information is received in a normalized, usable format, Respondents will be asked to upload each data layer into B.C.'s Geomark service, which generates a unique link to uploaded information. Alternatively, Geomarks can be created directly in Google Earth. Information can be uploaded in a wide variety of formats, listed on Geomark's site. If geographic information is to be submitted, it must be submitted through this service.

Geomarks requested are for:

- Wired broadband last mile.
- Fixed wireless last mile.
- New backbone technology possibly needed for last mile.
- Cellular along powered highways for last mile.

All instructions for creating a Geomark can be found at: https://www2.gov.bc.ca/gov/content/data/geographic-data-services/location-services/geomark-webservice

Geomarks can be created at: https://apps.gov.bc.ca/pub/geomark/geomarks

Review Responses and Submit

The Respondent has an opportunity at the end of the form to review all information prior to submission and may go back to edit any information in the form.

Once submitted, a reference number is provided to show proof of submission.

Note: A confirmation email is not sent. Please record your reference number noted on the final screen.

Appendix B: RTP Questions

Here is a list of all the questions in the RTP online form for reference.

Q1. Organization Information

Organization Type:

1. Service provider:
2. Local or regional government:
3. First Nation:
4. Other:

Organization Details:

1. Organization name (legal name):
2. Band number, society number, or business registration number (optional):
3. Unit number (optional):
4. Street number:
5. PO box (optional):
6. Street name:
7. City:
8. Postal code:

Contact information:

1. Primary contact:
2. Position/title:
3. Email:
4. Telephone:
5. Extension (optional):

Q2. Zone Information

This section refers to the areas of the province, or zones, you are providing information for. Details on zones are in the RTP document.

1. Referring to the Internet Zone Map (Appendix C) or the KMZ Internet Zones data (Appendix D), which zones are you providing information for? Please check all zones that apply.

[Zone 1-14 checkbox]

2. Do you have any feedback on the proposed zone boundaries? If you were to apply to a funding program by zone, are there changes to the zone boundaries that would make that process easier? Please list the zone, any proposed amendment and why. (Optional)

Q3. Areas of Focus for Broadband Technology Viability

This section is to provide feedback on technical viability for potential areas for expansion of high-speed internet for zones you have specified. We are looking for respondents to identify areas where fibre, coax or fixed wireless could be expanded. If this is not your area of expertise, please skip to the next section.

1. Based on the household numbers and locations provided in the KMZ file labeled "Underserved Households in B.C." approximately how many of the remaining underserved households in the province could be reached by wired broadband? Please enter a whole number. (Optional)

2. Based on the household numbers and locations provided in the KMZ file labeled "Underserved Households in B.C." approximately how many of the remaining underserved households in the province could be reached by fixed wireless? Please enter a whole number. (Optional)

Q4. Backbone Infrastructure to Support Last Mile

This section focuses on existing backbone infrastructure. If this is not your area of expertise, please skip to the next section. Existing backbone is defined as transport that connects to an existing point of present ("PoP") in the community. New backbone is defined by requiring fibre or microwave transport to access a PoP in another community to support your last mile project.

1. Are there any areas within the zones you have specified that require new backbone infrastructure to deliver services and last mile projects? (Optional)
    - Yes
    - No
2. If yes, what type of new backbone technology would need to be built? Check all that apply. (Optional)
    - Fibre
    - Microwave
    - Satellite
3. Please add any important details for addressing gaps (existing or new) in backbone infrastructure needed to reach underserved households. For example, technology considerations, impactive geography, or connections to existing PoP. (Optional

4. If multiple backbone technologies are indicated, please describe at a high level where each backbone technology could be implemented and any transport requirements. (Optional)

Q5. Areas of focus for local governments and First Nations

This section is for local and regional governments and First Nations to offer additional feedback on internet connectivity in their communities.

1. What additional feedback on internet connectivity would you like to provide about your community? Please include information on areas that are underserved, as well as any other local information considered relevant. This response will be related to the zone(s) specified in your response and could include any particular area of focus, including challenges with infrastructure or information pertinent to the area. (Optional)

Q6. Additional Internet Connectivity Information

This section provides an opportunity to add internet connectivity infrastructure information that will help meet the objectives outlined in the RTP document.

1. Are there any pending projects you would like to inform the Province about? For example, any additional information on planned projects including technology, number of households, communities reached, existing backbone leveraged, new backbone that you like to include, or any consultation on a proposed project taking place. (Optional)

2. In the KMZ file for Household Density Data linked in Appendix D of the RTP document, some areas were proposed to be best served by satellite. How do these proposed areas align with the expectations of your organization or your community? Please provide feedback on the modelling assumptions. (Optional)

3. In underserved areas where your Geomark does not indicate a wired or wireless technology viability to serve those households, how could service providers be incentivized to serve those areas? Please note, Geomark files are uploaded on the final page of this form. (Optional)

Q7. Highway Cellular

This section is to provide feedback on the gaps in highway cellular coverage in the province. The Province has identified gaps in cellular service along highways (with power) in B.C. The gaps are highlighted in the KMZ file for Highway Cellular. Information on how to download the KMZ files is linked in Appendix D.

1. If funding was available for capital costs, which sections of highway would be your priority to be completed? Please consider traffic, consumption and other factors.

2. Please explain why you chose those sections.

Q8. Upload Geomarks

This section is for organizations to upload Geomarks for information mentioned in your response. This is a recommended step for organizations that have the capacity to create Geomarks but is not mandatory. Please paste a Geomark URL for the information you have referred to in earlier sections of your response.

Note: This is for underserved areas where the technology is most viable and suitable. For instructions on creating a Geomark, or for help with creating a Geomark, please refer to the instructions in Appendix A, Q8.

- Wired broadband last mile (paste link to Geomark - Optional)
- Fixed wireless last mile (paste link to Geomark - Optional)
- New backbone technology possibly needed for last mile (paste link to Geomark - Optional)
- Cellular along powered highways for last mile (paste link to Geomark - Optional)

Appendix C: Internet Zone Map

Appendix D: Supporting Materials

The Province is providing additional information in KMZ format to support Respondents in this RTP process. Please download and view the KMZ files, which describe the zones, underserved household data, household density data and gaps in highway cellular.

The KMZ files can be found in the BC Data Catalogue. Please download these files to your computer and open as a project in Google Earth to view.

If you have questions on downloading the KMZ files, or any questions during the RTP process, please contact connectingcommunitiesBC@gov.bc.ca

1. **Internet Zones**

Link: https://catalogue.data.gov.bc.ca/dataset/internet-zones

Description: Geographic boundaries of the zones that the Province has conceptualized for the potential administration of future funding programs.

Purpose: For this RTP process, the province has been split into 14 regions or zones to allow service providers to consider solutions to connect as many households as possible in each region. The zone boundaries are based on current knowledge of existing infrastructure and projects in-flight. This KMZ file is being provided so that Respondents can import this information into their existing planning system and view it vis-a-via the zones.

2. **Underserved Households in BC**

Link: https://catalogue.data.gov.bc.ca/dataset/pseudo-households-underserved

Description: A KMZ file showing pseudo-households that remain underserved in B.C., i.e., those that do not have access to 50/10 Mbps internet.

Purpose: This KMZ file shows households, randomized to protect privacy ("pseudo-households") that remain underserved in B.C. This data is provided so that Respondents can import this data layer into their GIS planning system while they are preparing files to upload into Geomark as part of their RTP online response. The purpose of the RTP process is to understand what technology would be appropriate for these underserved areas. The pseudo-household data is an approximation of underserved homes to support analysis of what technology is deemed to be most appropriate.

3. Household Density Data

Link: https://catalogue.data.gov.bc.ca/dataset/hex-underserved-households

Description: KMZ file showing density of households in areas that remain underserved in B.C. (i.e., do not have 50/10 Mbps service). Areas outlined in blue represent areas that may be difficult to reach with terrestrial solutions, and may require satellite internet for all or part of the $25m^2$ hexagon.

Purpose: A high level view which allows Respondents to get a sense of opportunities at a zone or provincial level, where the densest areas of underserved homes exist. Density may be helpful in analysis of appropriate technology estimated to serve the area. This also allows Respondents to determine opportunities as it relates to current infrastructure or potential new infrastructure. For those hexes which are outlined in blue, these areas may be best served by satellite transport or satellite to the home services. We are interested in validation or alternate proposed technologies that industry (or others) may determine to be viable in these areas.

4. B.C. Highways Without Cellular Service

Link: https://catalogue.data.gov.bc.ca/dataset/bc-highways-without-cell-service

Description: A map file that shows gaps in cellular coverage in B.C. for highways that have available power.

Purpose: This dataset is provided so that Respondents can see gaps in highway coverage in B.C. in segments that have existing power. The Province is looking for feedback on whether these gaps, as well as those near to existing infrastructure, may be candidates for expansion of cellular networks. This map represents segments with power and does not represent all areas where the Province is interested in expanding cellular networks. The Province is looking for feedback on areas that do not currently have cellular connectivity and where the areas may benefit from broadband projects to benefit households. For example, where transport is required to provide broadband to a community, and that transport may also be leveraged to provide cellular along a highway route.

BRITISH COLUMBIA | Ministry of Citizens' Services

Connectivity

Program update to RCKN

March 30, 2022

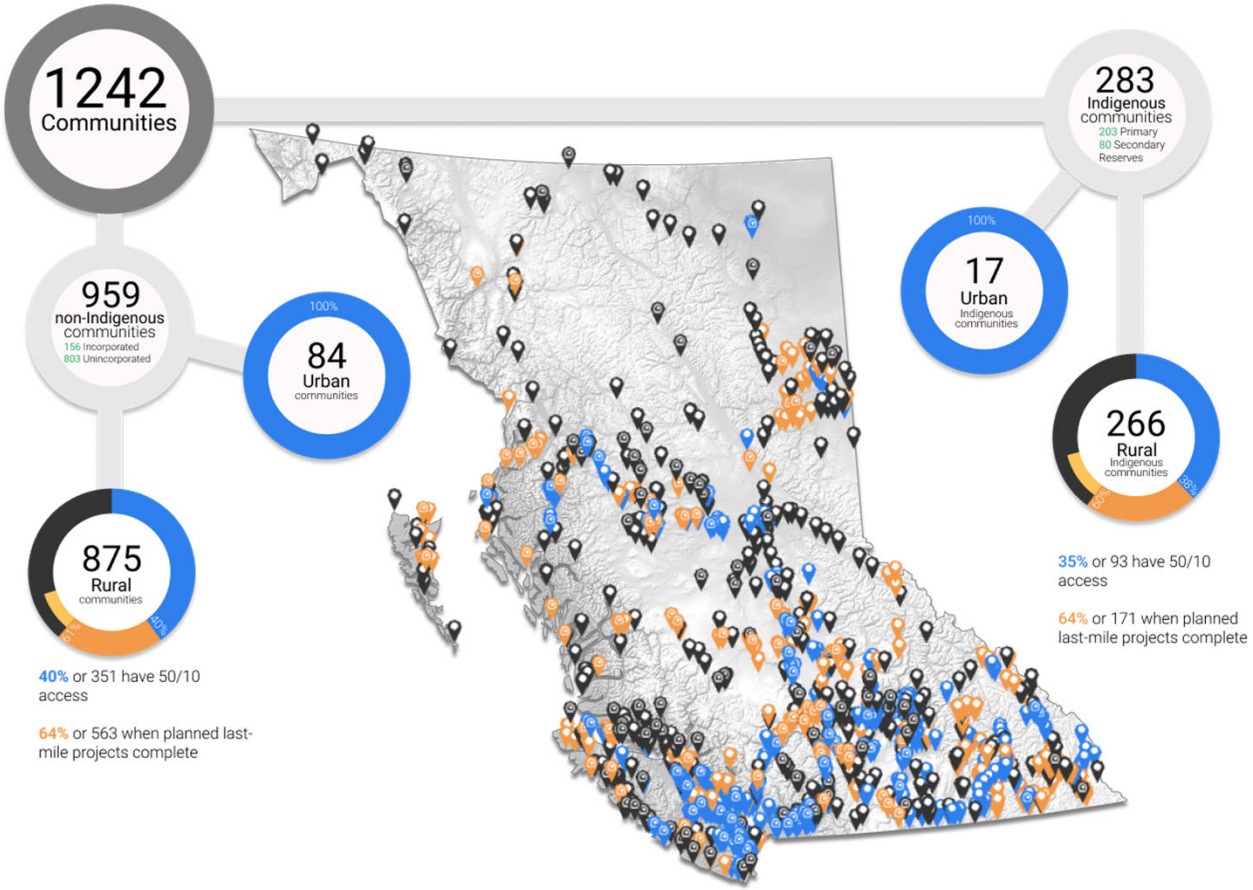
BRITISH COLUMBIA | Ministry of Citizens' Services

BRITISH COLUMBIA | Ministry of Citizens' Services

We've made amazing progress since 2017.

The homes and communities remaining to be connected are throughout the province.

2027 is an ambitious goal to extend connectivity infrastructure to 347 rural and 115 Indigenous communities.



BRITISH COLUMBIA | Ministry of Citizens' Services

Announced funding will complete connectivity in BC by 2027

$830M
Federal / Provincial joint funding agreement

$415M
Provincial funding

$415M
Federal funding

Joint funding will support broadband connectivity to 115,000 homes in 115 Indigenous and 347 rural communities by 2027.

This accelerates connectivity in BC compared to the federal target to connect all Canadian homes by 2030 .

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Rural Connectivity Funding

Phase 2 $40M	Phase 3 $50M	Phase 4 $90M	Phase 4b $10M	Budget 2021 $30M	Budget 2022 $289M
• Matched with Connect to Innovate (CTI) $500M • Focus on transport projects with open access to community providers • E.g. Connected Coast • $144M total project value	• Matched with CRTC $750M fund • Low uptake of CRTC intake • Allocated $15M to CRTC projects • $1.2M to 47 COVID rapid response projects • $217M total project value	• Provincial direct & matched to UBF $2.75B • Oversubscribed • Fully allocated • >$156M in total project value	• Applied to waitlisted projects • Final allocation to Connecting British Columbia Program	• Applied to new Connecting Communities BC program + UBF applications	• Applied to new Connecting Communities BC program + UBF applications

$415M included in MoU
Captures UBF eligible projects since UBF introduced – October 2020

Connecting British Columbia

Connecting Communities BC

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Declaration on the Rights of Indigenous Peoples Act
Draft Action Plan

4.36

Ensure every First Nations community in B.C. has high-speed internet services.

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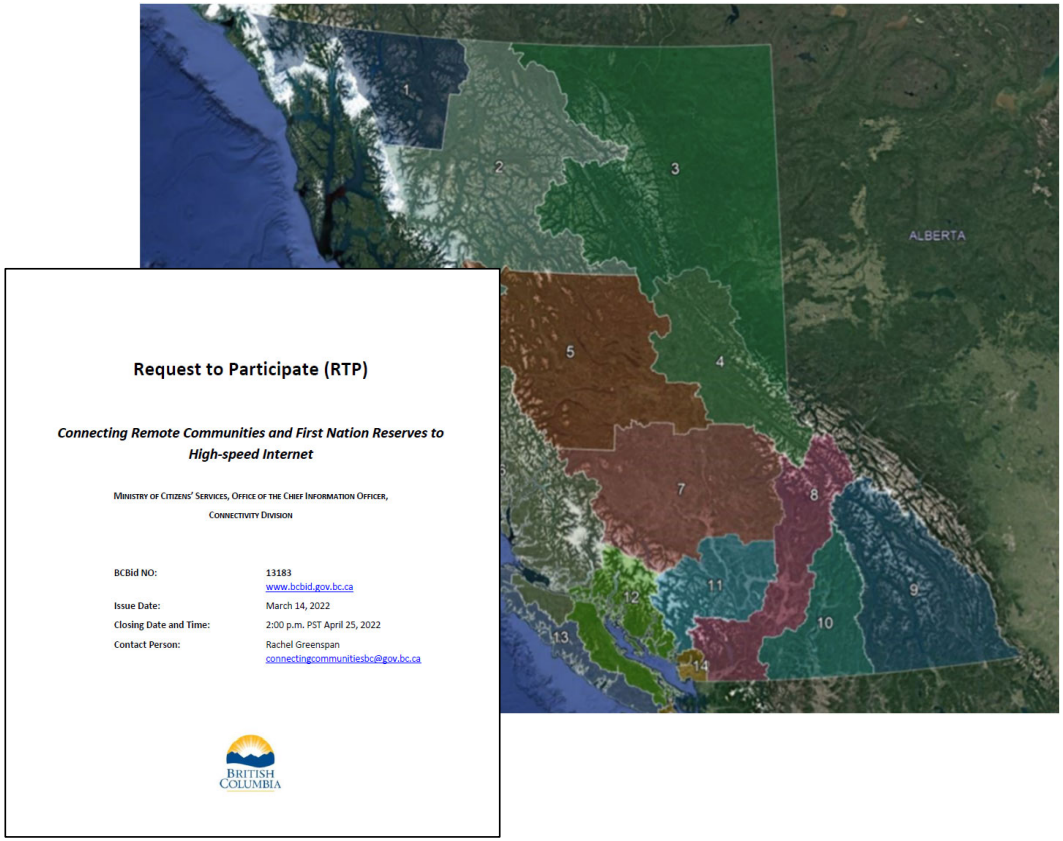
Key Differences Between Provincial Programs

Connecting British Columbia		Connecting Communities BC
Application Intake - Open Service providers submit applications for any eligible locale(s) making comparing overlap and gaps time consuming to process.		**Application Intake - Zones** 14 regional zones clearly identity underserved households as a reverse auction approach.
Community Support Service providers sought project by project support from local and FN governments.		**Regional Coordination** With increased supports, and zones approach local, regional and FN governments may partner with service providers in their region.
Leveraged Funds by Project Funds leveraged were based on the quality of competitive projects nationally.		**Leverage Funds to Connected 100%** Secured federal funding portion based on gap analysis to complete connectivity in the province.
Program Approach Program is project based for connectivity infrastructure that delivers quality and reliable internet services adhering to UBF criteria.		**Program Approach** Program is project based for connectivity infrastructure that delivers quality and reliable internet services adhering to UBF criteria.

Request to Participate

- Posted to BC Bid on March 14th, 2022
- Includes detailed information in digital format for service providers to analyze gap information
- Input through the RTP process will:
  - Provide new, updated or additional information on locales provided by service providers
  - Share a single integrated reference for connectivity gaps at the household level
  - Provide insights to terrestrial v. LEO locales and homes
  - Keep a project focus on programming
  - Help local, regional and First Nations governments review their locales and create a common understanding with service providers



Request to Participate (RTP)

Connecting Remote Communities and First Nation Reserves to High-speed Internet

MINISTRY OF CITIZENS' SERVICES, OFFICE OF THE CHIEF INFORMATION OFFICER,
CONNECTIVITY DIVISION

BCBid NO:	13183 www.bcbid.gov.bc.ca
Issue Date:	March 14, 2022
Closing Date and Time:	2:00 p.m. PST April 25, 2022
Contact Person:	Rachel Greenspan connectingcommunitiesbc@gov.bc.ca

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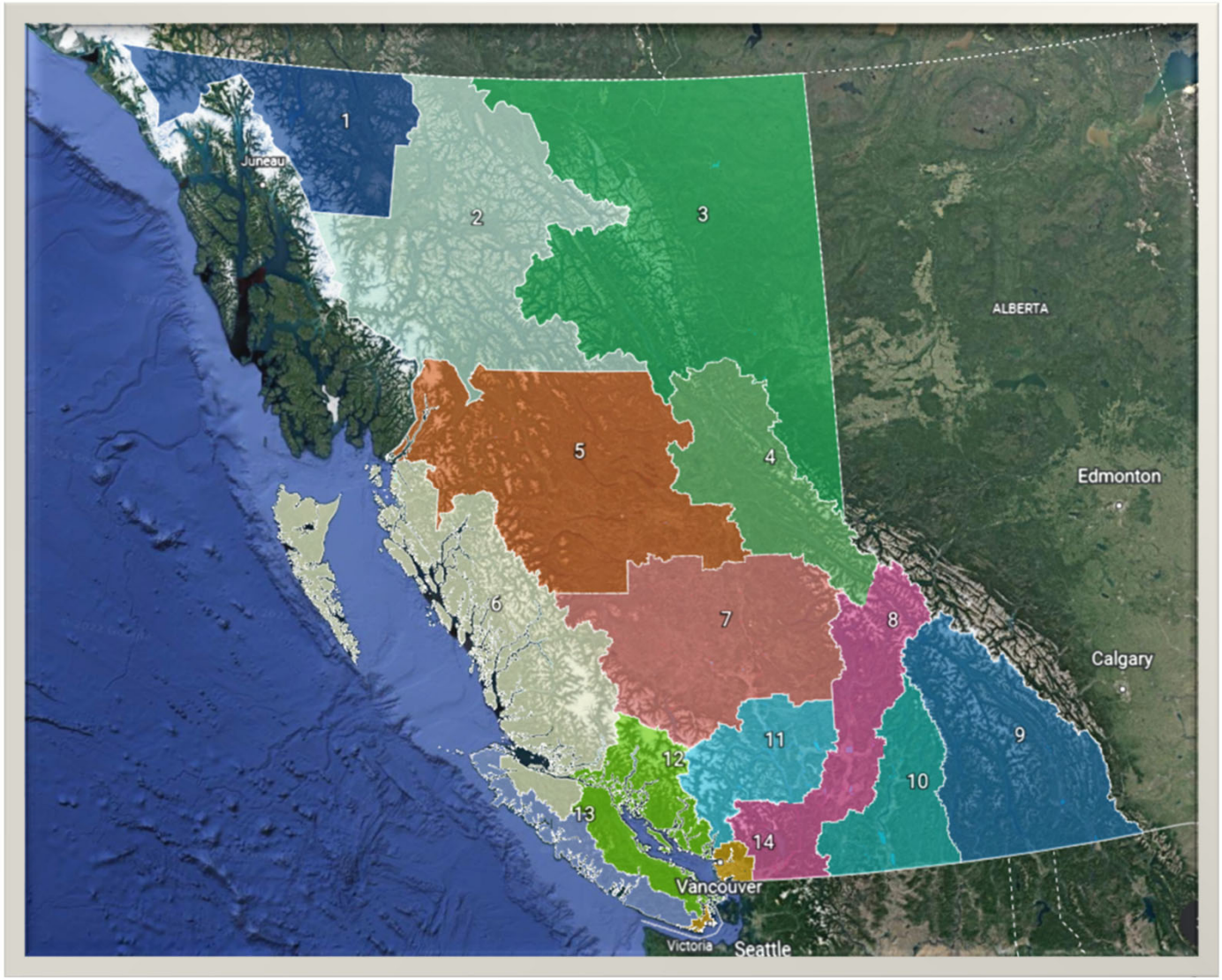
Internet Zones



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Project Lifecycle

Application Submission

Applicant follows application form

Identifies zones and/or locales (clusters of homes)

Application Review

Review against criteria: Technical, Business, Financial, Risk

Applicant engagement for clarity and remediation

Application Approval

Project review

Ministerial project selection

Service provider notification

Project Shared Cost Agreement

Negotiate and finalize agreement for project with applicant/proponent

Project Build

Permitting initiation and tracking

Project monitoring and disbursements (project forecast)

Issues management

Project status reporting

Project completion and Audit

Project completion check (1 – 12 months after turn up date)

Proponent assessment

Thank you

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