October 2019

NORTHWEST BRITISH COLUMBIA
RESOURCE BENEFITS ALLIANCE

INFRASTRUCTURE NEEDS ANALYSIS REPORT FOR NORTHWEST BC LOCAL GOVERNMENTS

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Local governments in Northwest BC can enable the success of major project activity and contribute to shared prosperity across the Province. Outlined in this business case are the key infrastructure and services needed to align local government capacity with Provincial economic initiatives. Given the unprecedented level of industrial activity occurring in the region, this is a once in a generation opportunity to transform a cornerstone of British Columbia and create long-lasting, positive impacts.

MESSAGE FROM THE RBA

LONG-TERM SUSTAINABLE FUNDING IS NEEDED

Investment in local infrastructure and services in Northwest BC is foundational for provincial economic growth and shared prosperity for all British Columbians. The right provincial support would enable local governments to invest in infrastructure required to improve worker attraction and attachment to the Northwest and support economic development. That would, in turn, improve sustainability and livability issues while facilitating the worker recruitment and retention that is critical to successful project development.

Members of the RBA are seeking provincial commitment to:

- Recognize the role that Northwest BC has in the provincial economy.
- Provide long-term, sustainable funding for **capital projects** and **operating costs** to address local infrastructure and servicing needs in Northwest BC.
- Invest in supporting infrastructure outside of the local government purview, including housing, health care, child care and education.

KEY HIGHLIGHTS

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1. Northwest BC has $154 billion of major industrial projects being built or proposed - 60% of the Provincial total. This surge of activity increases the already significant contributions made by Northwest BC to the Province relative to its' size, from stumpage revenue to volume of mined tonnage.

2. Over the past decade, Northwest BC experienced a 19% decline in the per capita value of their non-financial assets while the rest of BC increased by 8%. Per capita operating expenditures are increasing and are significantly higher in RBA communites compared to the rest of BC. With 21% of BC's total landmass, and only 2% of the population, local governments have limited ability to generate tax revenue and as such cannot sustain the operating and replacement costs of infrastructure to support major regional economic development.

3. Existing standards of basic public services in many RBA communities are significantly lower than those enjoyed by other British Columbians, including significantly worse housing conditions compared to the rest of BC.

4. Northwest BC needs $1.3 billion in capital investments in local infrastructure to have the capacity to support major projects - less than 1% of the value of major projects. An additional estimated $113 million in annual operating investment is required to sustain the local government infrastructure.

    - The $77.7 million Northern Capital and Planning Grant funding provided to RBA members in February 2019 was a good start, and the RBA appreciates the Province recognizing there is a significant need in Northwest BC. This funding represents only 6% of the needs outlined in this preliminary report, which supports the RBA's request for ongoing funding.

5. The Resource Benefits Alliance is seeking Provincial commitment to long-term sustainable funding for capital and operating costs to address the needs and support major economic development towards shared prosperity for all British Columbians.

Investment Needs For Northwest BC

$1.3 Billion of Capital Investments Needed in Local Government Infrastructure & Servicing*

$390M

Wastewater

$292M

Transportation

$207M

Drainage and Flood Protection

$183M

Potable Water

$116M

Institutional Infrastructure

$59M

Solid Waste

$44M

Fire Protection

$40M

Recreational Infrastructure

* $1.3 billion of capital investment needs does not include any shortfall in operating dollars. Additional funding of approximately $113 millon in annual operating investment is needed to ensure the sustainability and livability of Northwest BC.

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1.0

INTRODUCTION

1.0 INTRODUCTION

Northwest BC has traditionally been, and continues to be, a great source of revenue for the Province through use of the land base for resource development. However, not enough of the revenue generated has stayed in local communities to maintain them, or provide a quality of life on par with residents in the rest of BC. Local governments in Northwest BC have experienced challenges to survive and grow due to a lack of a sufficient revenue base. Provincial funding programs have been critical to developing many new infrastructure projects in the region, but their narrow focus and limited funds have been insufficient to create the foundation for sustainability and livability.

The inability for local governments in the Northwest to secure sustainable, long-term funding has resulted in detrimental consequences. Residents of Northwest BC are underserved in terms of access and availability of recreational facilities and community amenities; safe and reliable methods of transportation; local social services support; fire and police protection; health care; housing; safe and reliable water services; and other resources that promote community well-being. Aging infrastructure and limited social amenities are often a deterrent to attracting a skilled workforce needed to support industries such as LNG Canada and the expanding Port of Prince Rupert. Not being able to fill vacancies in key sectors limits the ability for organizations to manage projects or facilitate change. Similarly, local governments are often struggling to find skilled workers, which is further compounded by the fact that local government wages in Northwest BC are typically lower than those paid by major industries.

Without key roles filled, including leadership positions, improving the standard of living in Northwest BC is slow to be addressed. It is a cyclical problem.

Vibrant, sustainable communities are the foundation of a strong provincial economy. If Northwest BC is to participate in the government's vision of sustainable economic development, a different approach is needed - one that ensures that basic local government infrastructure can meet the needs of communities and major industries.

PURPOSE

This **Investment Needs Analysis Report for Northwest BC Local Governments** summarizes findings from Phase 1 of the Northwest BC Sustainability and Livability Plan. The objective of this study is to:

- Prepare a high-level program of infrastructure projects and services needed for Northwest BC; and,
- Describe investment needs as they relate to accommodating anticipated growth related to unprecedented major project investment in the region.

APPROACH

From May to October, 2019, the following activities were undertaken to prepare this Investment Needs Analysis Report for Northwest BC Local Governments:

- Reviewed baseline documentation including asset management plans, asset inventories, engineering reports, scoping reports, feasibility studies, master plans, capital plans, environmental impact assessments, and the Province's major projects inventory. This review included implementing a research and data collection plan.
- Issued a comprehensive local government questionnaire to identify key issues related to infrastructure and service issues including asset condition, quantity, quality, reliability, accessibility/availability and capacity.
- Conducted community reconnaissance with key site visits and select infrastructure tours including, but not limited to, water reservoirs, water treatment facilities, lagoon ponds, public works facilities, municipal facilities including town halls, fire halls, recreational facilities, landfills and transfer stations, biomass facilities, airports, terminals, and multi-jurisdictional intersections including overpasses, bridges, and rail lines.
- In-person meetings with local government staff including Chief Administrative Officers, financial officers, planners, engineers, fire chiefs, bylaw enforcement officers, recreation coordinators, and special project coordinators. These meetings were supplemented through telephone interviews.
- Analysis and calculations on order of magnitude cost estimates, informed from direct sources such as asset management plans and augmented through local government estimates and comparable cost estimates. Calculations were also conducted on local government revenues and expenses, referencing the Municipal General & Financial Statistics published online by the Local Government Infrastructure and Finance Branch.

REPORT STRUCTURE

This report is structured as follows:

- A regional context overview.
- An overview of major project investments and macro-level analysis of cumulative impacts on local governments in Northwest BC.
- An overview of the fiscal imbalance experienced in Northwest BC.
- A summary of local government infrastructure and service needs by asset category: drainage and flood protection, fire protection, institutional infrastructure, potable water, recreational infrastructure, solid waste, transportation, and wastewater. Each asset category includes an order of magnitude capital cost estimate and a snapshot of key issues and project types.

2.0

REGIONAL CONTEXT OVERVIEW

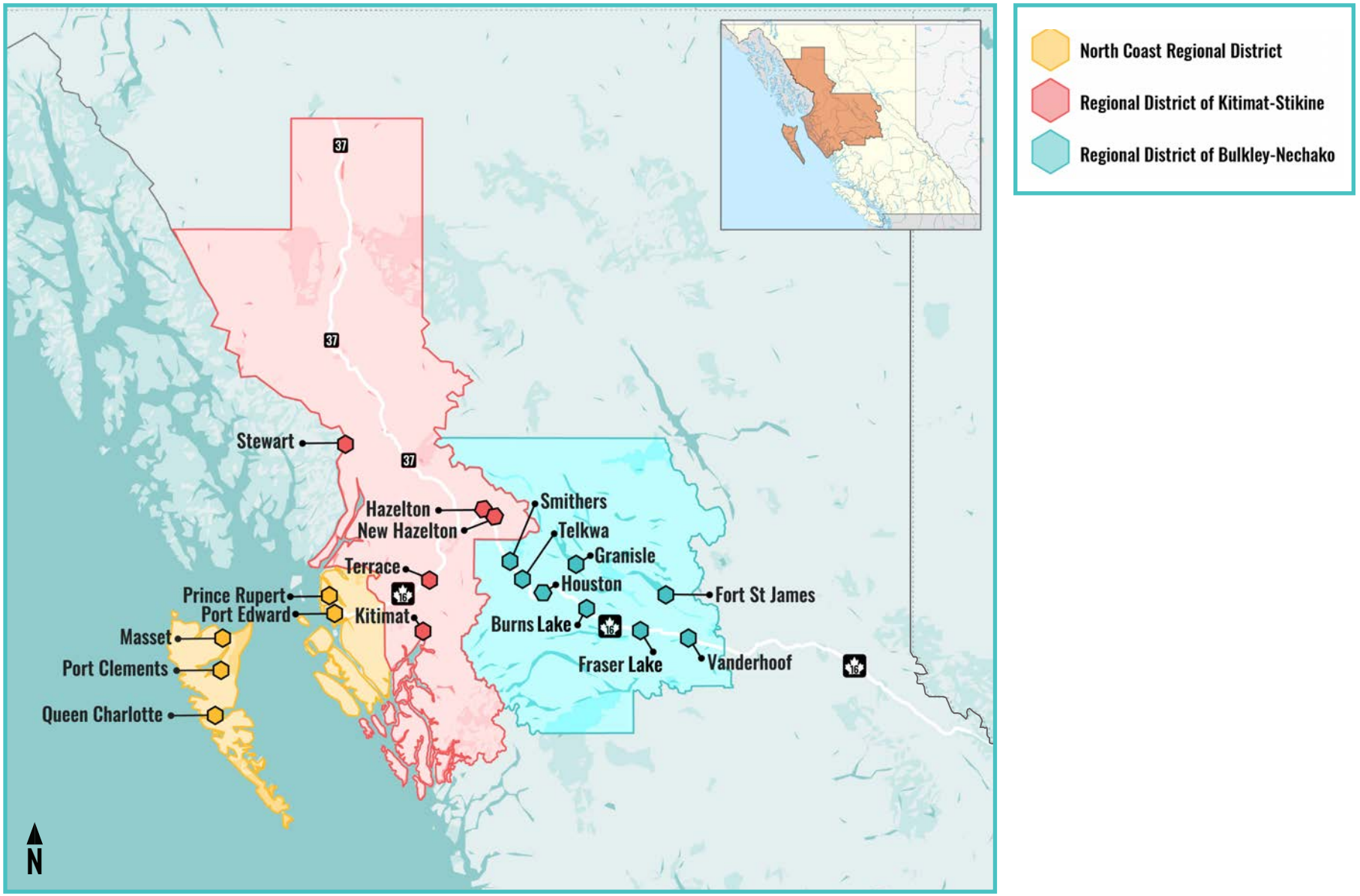
2.0 REGIONAL CONTEXT OVERVIEW

THE RESOURCE BENEFITS ALLIANCE

The Resource Benefits Alliance, made up of 21 local governments in the North Coast, Kitimat Stikine, and Bulkley-Nechako Regional Districts, have been working together since 2014 to ensure their communities can support generational economic opportunities for BC while remaining sustainable, livable communities for both current and future residents. This investment needs analysis is framed within their jurisdictional context.

> Direct benefits of the LNG Canada final investment decision include some $23 billion in new government revenues over the life of the project - new resources for health care, schools, child care and services for the people of BC.
>
> Province of BC Strategic Plan 2019/2020

NORTHWEST BC JURISDICTIONAL CONTEXT



A REGIONAL CORRIDOR WITH PROVINCIAL AND NATIONAL SIGNIFICANCE

Northwest BC holds significant importance for British Columbia and Canada. It is a key regional corridor in a world class supply chain that connects the Asia-Pacific Gateway from the Port of Prince Rupert to the intermodal facility in Prince George, with rail and air access to major markets across North America. The strategic provincial and federal support for economic development in Northwest BC is enabling the coordination of public-private trade between Canada and Asia, which is a significant driver of BC's economic growth[1].

The significance of this region for nation-building and provincial prosperity is not reflected in the current state of local infrastructure. As demonstrated throughout this report, **the existing local infrastructure in Northwest BC is aging and in many cases obsolete, and does not reflect the needs of modern industrialization required for major project investment and international trade**. Historic policy and inherited infrastructure from other entities is part of the root cause. Four RBA communities are "instant towns" that inherited infrastructure from single firm industries: Fraser Lake (Molybdenum, Endako Mine), Kitimat (Aluminum), Granisle (Copper) and Houston (Forestry)[2].

Both Prince Rupert and Masset inherited some or all of their infrastructure from the Department of National Defence (DND) Canada[3], and when installed did not have longevity in mind. Conditions in the Northwest are wide-ranging, from diesel generated power on Haida Gwaii[4] to propane heated homes distributed across the corridor. Jurisdictional issues interface with many of these challenges, adding complexity to addressing need.

Current development proposals in Northwest BC have the potential to bring tremendous benefits not only for Northwest BC but for the whole Province and nation-wide. **The $154 billion of major industrial projects being built or proposed in Northwest BC represents 60% of the provincial total[5]**. This massive investment in BC's potential can be the catalyst to create sustainable and livable communities for all British Columbians.

Investment in local infrastructure and services is key to ensuring industry investment and resource development in Northwest BC is successful. The limited infrastructure and servicing capacity in the Northwest to support major industries should be a shared concern for all British Columbians.

1 Supporting New Investment in Infrastructure to Enhance Canada's Asia Pacific Gateway Initiative, BC Chamber of Commerce.

2 The *Instant Towns Act* of British Columbia (1965) gave municipal status to new resource towns. Some older settlements were granted Instant Town status. The responsibility for urban development shifted from the resource company to the province. This change aimed to ensure that contemporary standards of design and facilities were maintained, as well as addressing social problems associated with living in "company towns".

3 The Village of Masset inherited water and sewer infrastructure, and key community facilities such as the recreational pool, and several other structures when the Canadian Forces Station Masset left in 1997. The Village was unable to maintain the pool which has since been demolished and the site remains vacant.

4 Haida Gwaii is not connected to BC Hydro and relies on diesel generated power. Hydro power and wind energy is currently being explored.

5 Source: Major Project Inventory, Q1 - 2019, Province of BC.

THE FOREST INDUSTRY IS CHANGING

Forestry is one of the long-standing pillars of the Northwest BC economy. Many communities in the region grew up around a sawmill or a pulp mill and the strength of the forest economy and the prosperity of regional communities were closely linked.

Recently, the combination of industry consolidation leading to fewer mills in total, the mountain pine beetle crisis limiting harvest levels for decades to come, and challenging market conditions from U.S. protectionism and rising international competition has lead to curtailment in forestry activity and the curtailment or closing of many regional mills. These include the shutdown of the Conifex mill in Fort St. James and the Abfam mill on Haida Gwaii; and 2019 curtailments or downtime at large mills representing half of regional sawmill capacity, including Canfor's Houston and Plateau (Vanderhoof) mills and the West Fraser mill in Smithers.

Mills and the industrial property taxes they pay have become one of the most important ways that the forestry industry contributes to the communities that it relies on for support. The loss of many mills, some likely gone forever, further severs the link between community prosperity and the resource wealth beyond municipal borders.

3.0

INVESTMENT ON A MASSIVE SCALE

3.0 INVESTMENT ON A MASSIVE SCALE

According to the Province's Major Projects Inventory (MPI), the value of industrial, commercial and infrastructure projects currently under construction or proposed for Northwest BC is a staggering $154 billion[6].

This is 60% of the entire provincial total, meaning that Northwest BC, which comprises 2% of B.C.'s population is punching more than 20 times above its per capita weight. Not all proposed projects will come to fruition, but recent history shows much of the same story.

Over the last seven full years, from 2012 through 2018, the Major Projects Inventory shows Northwest BC with $11.5 billion of completed industrial, commercial and infrastructure projects, an average of $1.5 billion of completed projects per year. This is 27% of the provincial total over this time span, more than 13 times the region's share of provincial population.

The largest projects recently completed include a $4.8 billion smelter modernization by Rio Tinto Alcan in Kitimat, the $1.6 billion Mount Milligan Mine north of Fort St. James, the $800 million Brucejack Mine north of Stewart, and the $643 million Red Chris Mine near Dease Lake. In total, there were 13 completed projects throughout the region with a value of $100 million or more. This includes six power generation or transmission line projects (including the Fort St. James biomass facility), four mining projects, two port terminal expansions in Prince Rupert, and the smelter project in Kitimat.

In total Northwest BC had one $100+ million project for every 7,000 residents. The entire rest of BC had 58 projects of this size, or one for every 79,000 residents.

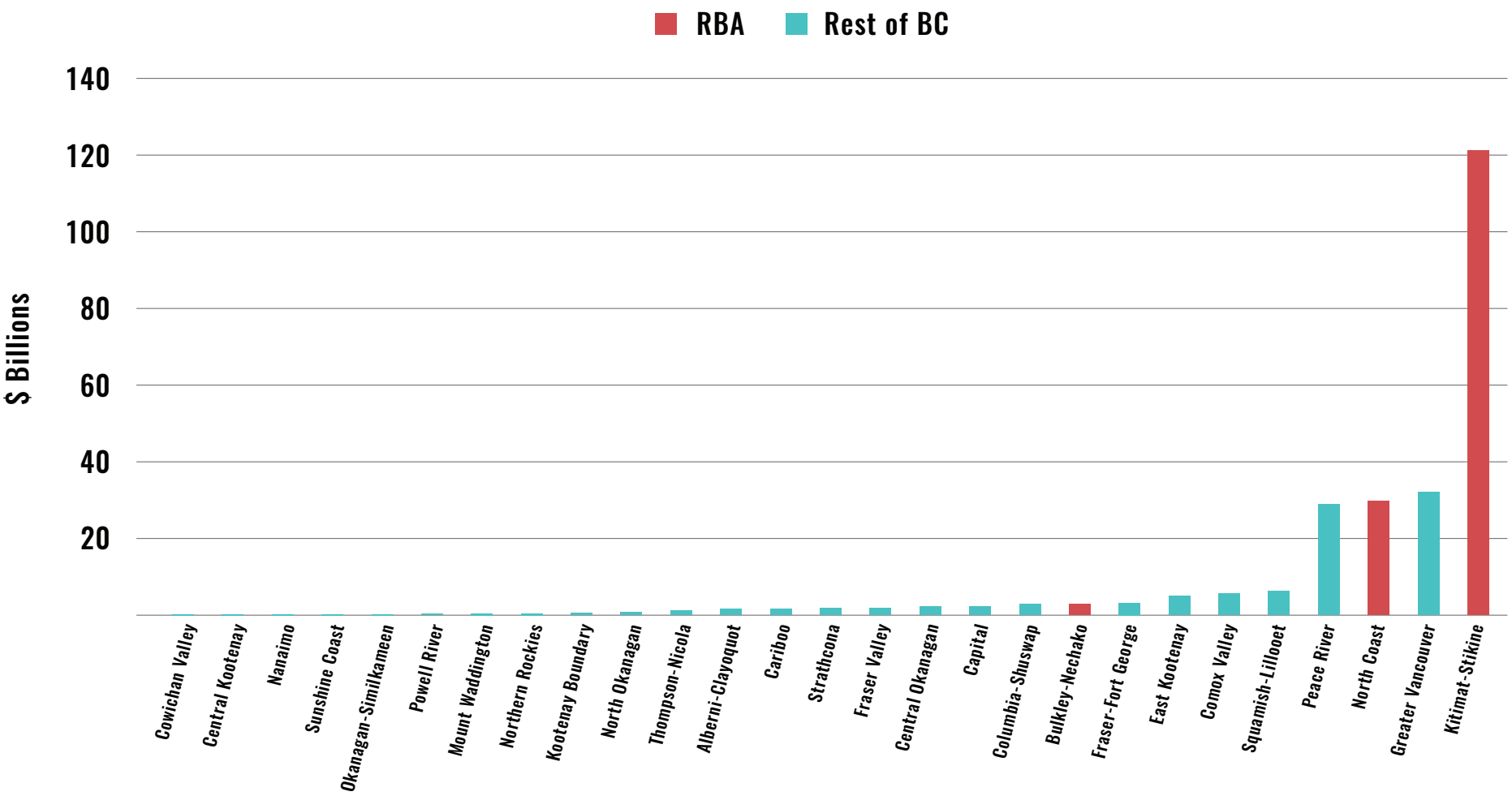
In fact, the scale of activity in Northwest BC is so significant that no one is keeping track of it all.

The Provincial Environmental Assessment Office has information on the impacts of individual projects, but only for those that require environmental certification, and does not maintain a comprehensive database of the cumulative impacts of all projects in Northwest BC. Information that is available is often out of date – once projects have received their environmental approval, subsequent changes to project timelines and other details are no longer tracked (unless they substantively change and require a modified environmental certificate). The Major Projects Inventory provides some basic information on project values and estimated employment, but nothing on other impacts, such as demand for local government services and infrastructure. Its information on project status and construction completion dates is also frequently out of date.

6 As noted later in this report, the Major Projects Inventory is believed to contain a significant amount of outdated information. The figures quoted in this section are taken at face value under the assumption that any bias or systematic errors are similar throughout the province and estimates of Northwest BC's share of provincial activity are reasonably accurate.

Figure 1: Total Industry Project Value Under Construction or Proposed, by Regional District[7]

The major projects inventory are private and public investments with an estimated capital cost of $15 million or more, such as mining and LNG.



7 Excluding Residential and Institutional Projects (Major Projects Inventory, Q1-2019, Province of BC) Note: Cowichan Valley to Squamish-Lillooet- many regional districts have multi-million dollar projects. Regional Districts highlighted in red are RBA communities: RDKS, NCRD, and RDBN.

MACRO LEVEL ECONOMIC IMPACT ANALYSIS

The unprecedented level of investment interest in Northwest BC is plain to see, but exactly how is this interest translating to on-the-ground impacts on the regional and provincial economy? Based on information from the Major Projects Inventory and the B.C. Environmental Assessment Office, and supplemented by other research to correct outdated information, there are/were 31 major industrial or infrastructure projects in Northwest BC either recently completed (2012 or later) or currently under construction.

A further 90 projects are "proposed" or "on hold," meaning they are in the permitting process, undergoing exploration or feasibility analysis, or have reached a certain point in their development and then paused, often due to market conditions (such as mine projects waiting for an increase in mineral prices)[8].

Some of these 90 potential projects will eventually go ahead, but not all, so actual impacts over the next 10-20 years will be somewhere between those currently or recently built (the baseline impacts) and those that are proposed or on hold (the maximum impacts).

How much of the maximum impacts are eventually realized depends, in part, on whether Northwest BC has the supportive infrastructure and services that industry requires, plus the crucial community amenities that attract and retain required workers and their families.

The 31 baseline projects have an estimated construction value of $64 billion, including the **$40 billion LNG Canada project, the largest private investment in Canadian history**.

Once built, these projects will support operations employment of about 2,900 jobs[9], plus additional "spinoff" employment for regional businesses that supply goods and services and regional businesses and organizations that serve the households of new workers[10].

In addition, regional construction employment from projects already underway will range from 5,000 to 7,000 jobs per year between now and 2025, largely driven by LNG Canada, and at peak times will be even higher. Construction employment similarly has "spinoff" employment in the region.

8 The Major Projects Inventory (MPI) lists at least 15 other projects that are "proposed" or "on hold" that have been excluded from these calculations because they have been publicly cancelled or withdrawn from the environmental permitting process. The reasons they continue to appear on the MPI are not known – it may be they are retained in case they are resurrected, or updated project status is not regularly checked.

9 Based on economic impact studies or published employment estimates covering 90% of the capital value of projects, and consultant estimates for the remaining 10% based on employment estimates for comparable projects.

10 Only limited information is available on indirect and induced jobs (the "spinoffs") and only at a provincial level. The available estimates from projects with full economic impact studies show total provincial employment is about 2.9 times greater than the direct employment. Some of this indirect and induced employment occurs in the region, but much of it is from major suppliers and service providers elsewhere in BC.

Placing these numbers in the context of the current regional economy shows how acute the strain on services will be and the massive need for more workers (and the infrastructure, housing, and amenities to attract and retain them).

This analysis shows that labour demand by 2024 will be 18% higher than in 2016, in the context of a region that has recently been losing population. A significant portion of the excess labour demand will be absorbed by temporary workers living in camps, but again, these estimates are based only on projects either recently completed or already underway. Other sources of significant employment growth, notably the rapid expansion of port-related employment in Prince Rupert, are not reflected in these estimates.

TABLE 1[11]

Impact of Projects Recently Completed or Currently Underway	Employment Estimates
Operations (projected as of 2024)	2,300
Construction (projected as of 2024)	6,300
Total Direct Employment (projected as of 2024)	8,600
Regional Indirect/Induced Employment (conservatively estimated at 25% of direct)[12]	2,150
Total Regional Employment (projected as of 2024)	**10,750**
Less Estimated Jobs Already Counted in 2016 Census	(2,300)
Net Increase in Regional Employment (projected as of 2024)	**8,450**
Regional Employed Residents (2016 Census)	48,000
Net Increase in Employment (2024 Projects relative to 2016 Census)	**18%**

11 Source: Combination of project impact summaries from BC Environmental Assessment Office and Major Projects Inventory, supplemented by a research of project websites and media reports; Statistics Canada population and employment data from 2016 Census.

12 As explained in the previous footnote, total indirect/induced employment for projects with available estimates is 290% of direct employment. Assuming approximately 25% of this is a captured in the region is conservative estimate.

MORE INVESTMENT POTENTIAL

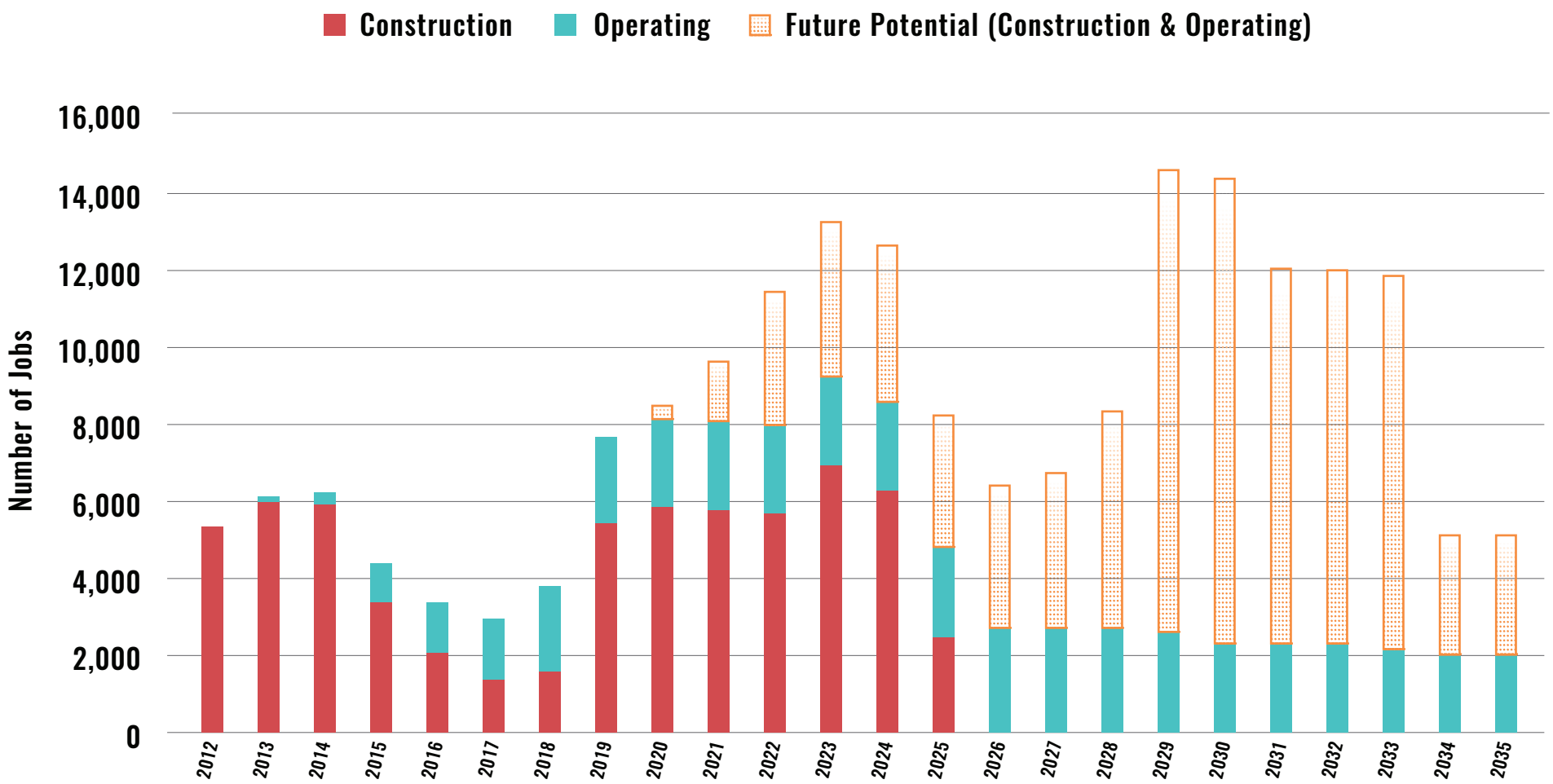
The 90 potential projects (those either “proposed” or “on hold”) have an estimated construction value of $160 billion. The region needs to be prepared for a significant number of these projects to also go ahead.

For purposes of illustration (Figure 2 on the following page), a selection of 14 of these 90 projects are assumed to go ahead in the next decade, including another major LNG project (Kitsault LNG – but any of the larger projects would have similar results)[13]. These 14 projects have a combined capital value of $60 billion, meaning that **all the construction-related impacts being experienced in Northwest BC now and over the next few years will be repeated again, while the number of ongoing operational jobs will continue to climb higher**. The potential employment from realizing these 14 projects is shown in the next chart as “future potential” employment.

These operations jobs are the critical economic development legacy that Northwest BC needs to capitalize on. Looking only at operations jobs for current projects, plus the potential $60 billion of additional investment in the next decade, **would create an ongoing legacy of about 5,200 high-paying, direct jobs by 2035**. Some of these will go away over time as mines and LNG facilities reach the end of their projected lifespan, but creating a critical mass of business suppliers and quality of life amenities will provide a base for the region to leverage new and emerging opportunities going forward.

13 The 14 projects chosen for illustration purposes – partly based on having available employment estimates, but also based on what appear to be favourable signs for investment – are KSM Gold/Copper Project, Kitimat LNG, NaiKun Wind Power Project, Blackwater Gold Project, Pacific Trails Pipeline, Avanti Kitsault Mine, Morrison Copper-Gold Mine, Red Mountain Underground Gold Project, Cedar LNG, Kinskuch Hydroelectric Project & Kinskuch Hydro Project, Kitsault LNG Facility, Snowfield Gold Project, and Vopak Pacific Canada Storage and Export Facility.

Figure 2: Employment Timeline[14]



14 Source: Combination of project impact summaries from BC Environmental Assessment Office and Major Projects Inventory, supplemented by online research of project websites and media reports; Timing of project construction and operation estimated by consultants.

LINK TO PROVINCIAL PROSPERITY

Northwest BC may be the epicentre of major project development, but activity in this region has deep linkages to the rest of the provincial economy and makes a profound contribution to provincial prosperity. These linkages include:

- **Employment:** The direct project employment in Northwest BC is only part of the total employment picture associated with major projects. Businesses supplying goods and services to major projects, during both the construction and operations phases, are located throughout BC. In fact, for those projects that have full economic impact studies, there are nearly three times as many "spinoff" jobs in the provincial economy as there are direct jobs.
- **Tax Revenue:** As noted elsewhere, there are relatively few full economic impact studies of major projects that provide federal and provincial tax estimates. Needless to say, the province receives resource-based revenues such as mining tax and forestry stumpage, as well as corporate, personal and sales taxes from all of the high-value activity.
- **National-Scale Infrastructure:** Northwest BC is a major gateway for not just this province but all of Canada to trade with the world. Investments in terminal capacity, transportation infrastructure (road, rail, airports) and serviced land and infrastructure provide a platform for the rest of BC and Canada to export and import goods.

Northwest BC and the urban parts of the province have a symbiotic relationship. Natural resources are the foundation of much of BC's prosperity, but they require specialized services that tend to concentrate in larger centres. Examples include finance, technical and scientific expertise, major education and training institutions, research and development facilities, specialized services like export brokers, and senior governments. All of these services contribute to bringing natural resource products to market.

INFRASTRUCTURE AND SERVICE IMPACTS

The number of Northwest BC projects that have undertaken a full environmental impact assessment is relatively small, but the results of the completed assessments provide insight into the infrastructure and service impacts being experienced in the region.

Of the projects that have been assessed in detail[15]:

- 67% expect that temporary housing is required during the construction phase of their project.
- 56% expect to generate an increase in permanent population, and thus a need for more permanent housing.
- 44% say they will use local health care facilities.
- 33% say they will rely on local emergency and protective services.
- 33% say they will have impacts on local social services.

Each assessment examines different factors and the impact on local government services will depend, among many things, on proximity to established settlements. Some of the additional impacts mentioned by a smaller number of projects include using the local airport, relying on local bus service, increasing highway traffic, increasing shipments of hazardous waste, creating increased demand on local police services, and requiring increases in local mental health, sexual health and addictions care services.

As these estimates are based on a small number of comprehensive assessments, it is worth noting again how little information is known or being measured on the scale and cumulative nature of these various community, social, and infrastructure impacts.

Without Provincial support to mitigate these increased demands, the level and quality of service available to support both regional residents and major projects will deteriorate. This degrades the safety and quality of life for people living in the region, makes it more challenging for project proponents to complete their work in a safe and efficient manner, and severely limits the potential for regional communities to attract new residents and workers on a permanent basis.

15 Source: Project Impact Summaries from BC Environmental Assessment Office.

FISCAL IMBALANCE

Despite the huge increase in industrial activity in Northwest BC in recent years, local governments in the region have not received nearly enough benefits from this activity to enable them to invest in the infrastructure and services that are badly needed.

Over the last decade from 2008 to 2018, industrial activity in Northwest BC includes:

- Stumpage revenue to the province increased by 290%[16], even though the volume of timber harvested increased by only 2%.
- The volume of mined tonnage has increased several times over with the opening of the Brucejack, Mount Milligan and Red Chris Mines, even though the smaller Huckleberry and Endako Mines ceased operating in this period[17].
- Mineral exploration spending in the region was 44% of the provincial total in the last 7 years (regional data not available prior to 2012) and multiple additional mines are possible in the coming years[18].
- As noted earlier, 27% of the provincial total of completed industrial, commercial and infrastructure projects were in Northwest BC in the last 7 years (data also not available prior to 2012). Including projects currently under construction, such as LNG Canada, and others that are proposed, increases the region's share to more than 40% of all provincial investment.

Municipalities in Northwest BC have struggled to manage the impacts of all this development and also meet the needs of their communities today and for the future. This is illustrated by the change in non-financial assets owned by the region's municipalities.

This figure includes buildings, water and sewer systems, local roads and bridges, vehicles and other equipment, as well as land[19]. These assets are critical for supporting all manner of day to day life, as well as business and industrial activity.

From 2008 to 2018, municipalities in Northwest BC experienced a 19% decline in the per capita value of their non-financial assets while the rest of BC increased by 8%.

Northwest BC had a per capita total asset value 22% higher than the rest of the province in 2008, but it is now 17% lower. Northwest communities have not had the resources available to invest in sustaining and growing their infrastructure and facilities.

16 Source: Data provided by BC Ministry of Forests, Lands, Natural Resource Management and Rural Development.

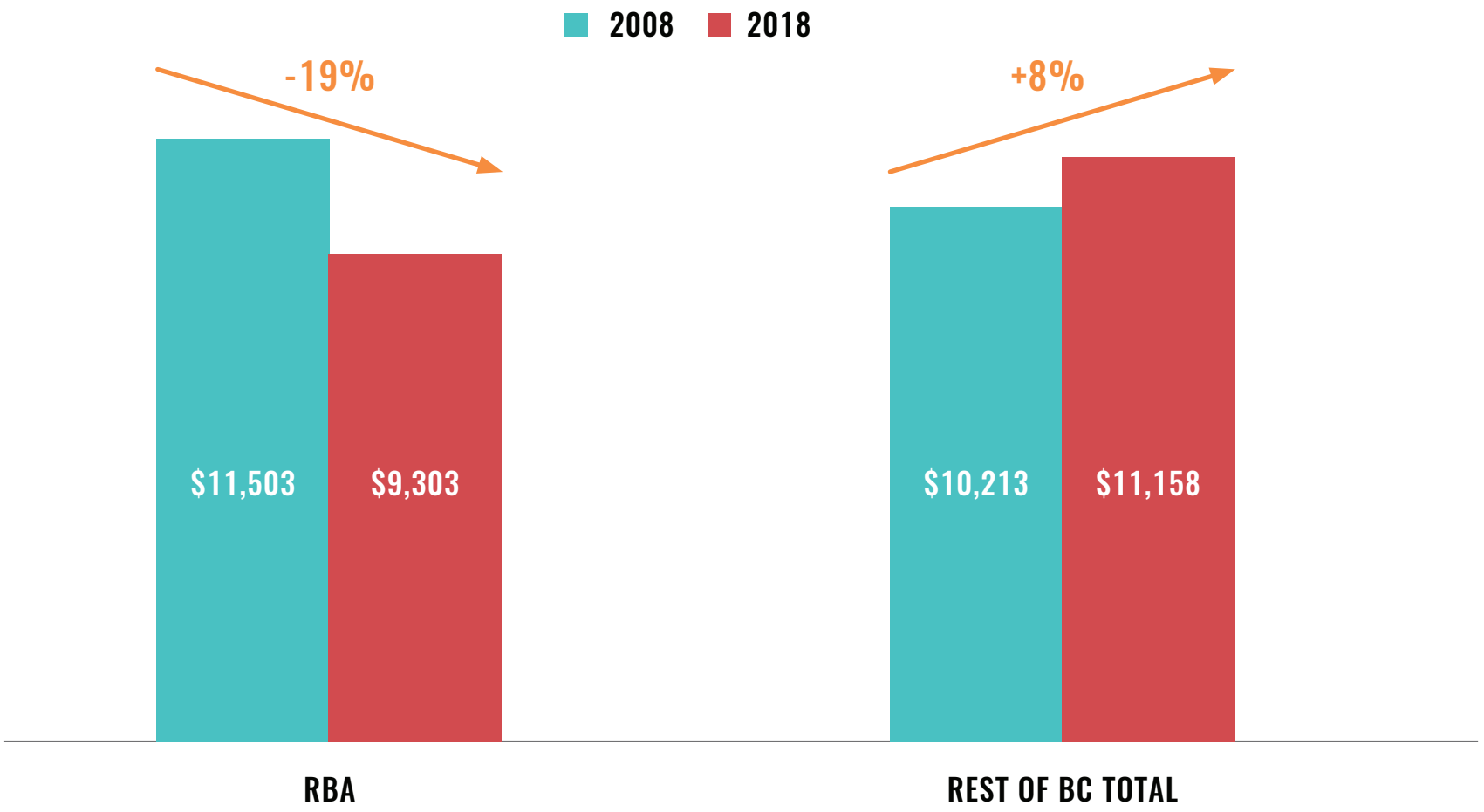
17 Source: MINFILE Production Database, Ministry of Energy, Mines and Petroleum Resources.

18 Source: British Columbia Mineral and Coal Exploration Survey (2016 and later), Ministry of Energy, Mines and Petroleum Resources; Ministry exploration estimates (2015 and previous).

19 The calculations were also prepared by excluding land and the results were very similar. The value of land owned by BC municipalities increased only slightly more than the value of all assets from 2008 to 2018 as many municipalities reduced their land holdings. All data is from Municipal General & Financial Statistics, published online by the Local Government Infrastructure and Finance Branch.

Figure 3: Per Capita Non-Financial Assets, BC Municipalities[20]

Service demands on RBA communities are limiting their ability to invest in infrastructure and other assets, leading to a decline over time in the value of their tangible assets. At the same time, other BC municipalities are expanding their tangible assets[21].



20 Source: Ministry of Municipal Affairs and Housing, 2018.

21 Definition of non-financial assets: All municipal and regional district assets, except financial assets, including land, buildings, equipment, furniture, vehicles, engineering structures (water, sewer, drainage, roads) and any other tangible assets. It is important because these assets are essential for supporting service provision across the full range of local government responsibility.

In addition, **per capita operating expenditures are significantly higher in Northwest BC**. Municipalities spent about $2,800 per resident in 2018 compared to $1,900 in the rest of the province[22]. Partly this is due to the temporary or shadow population that follows resource development and is not included in official population estimates. Some of the difference could also be due to small populations lacking economies of scale in service delivery.

But the strain of resource development is also important. **From 2008 to 2018 the per capita operating expenditures of Northwest BC municipalities increased by $1,040 per person compared to an increase of $680 in BC's other municipalities**. This further illustrates how the dollars have simply not been available for major capital investments.

Figure 4 explores the types of local government services where Northwest BC municipalities have been spending more than the provincial average, and where they are lagging behind. These calculations are relative to the BC average municipal budget and show that the two highest categories are Transportation and Transit and Development Services, both of which are heavily influenced by regional resource development.

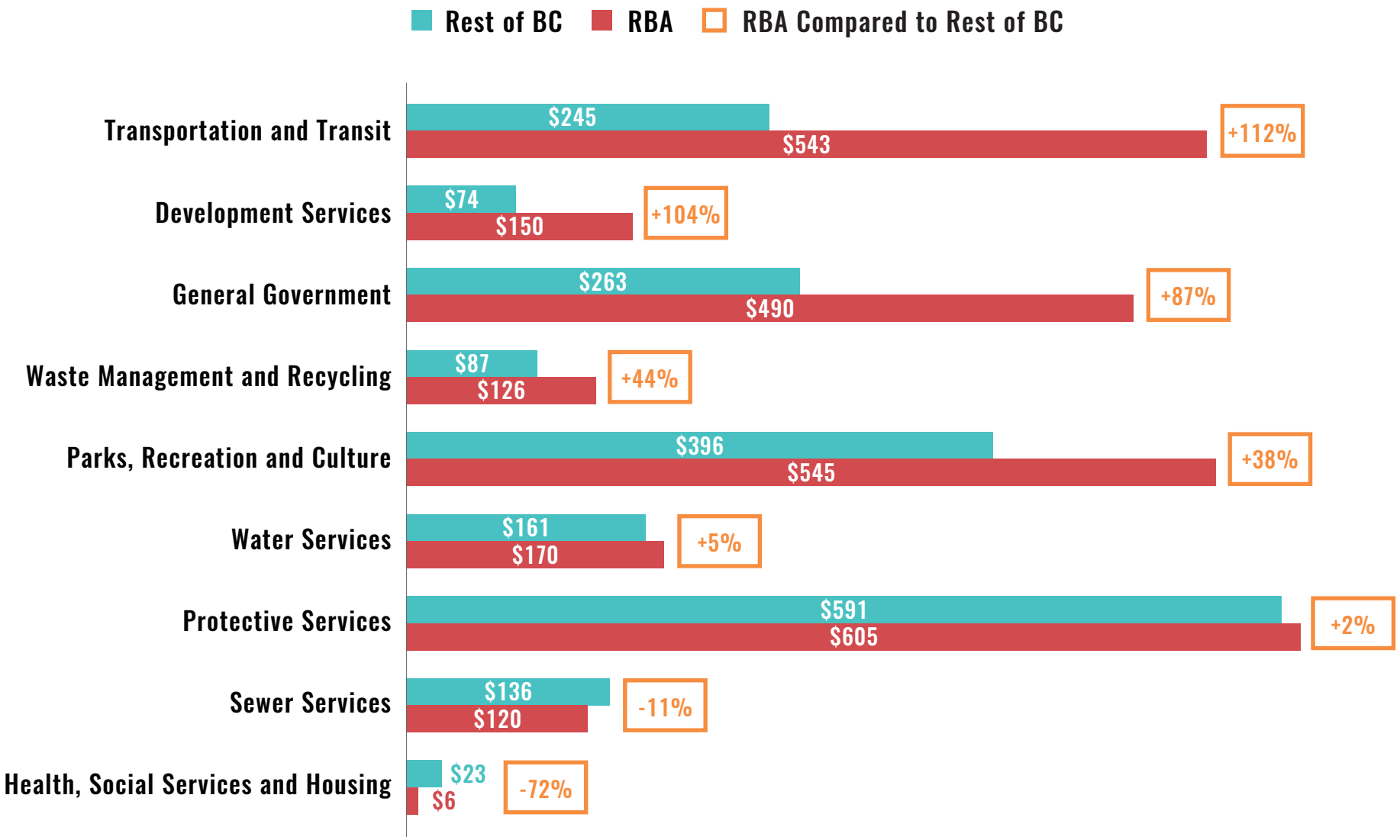
The areas where Northwest BC municipalities are able to dedicate fewer resources include Health, Social Services and Housing, Protective Services, and both Water and Sewer Services. This is a complicated picture and it is acknowledged that lower spending on Protective Services, for example, is at least partly compensated by federal funding towards small community policing.

The fiscal imbalances experienced by local governments in Northwest BC has led to a number of adverse implications. Many communities are not able to implement their asset management plans and in some years are unable to allocate revenue into financial reserves. All RBA communities are highly dependent on grants that are not guaranteed, limiting their ability to implement 5-year capital plans. In order to pay for urgent health and safety projects, some RBA communities are expending nearly 100% of their borrowing capacity leaving them fiscally vulnerable while still not able to address important community infrastructure needs.

Industrial projects located outside local government boundaries do not generate additional property tax revenue to local governments which are home to much of the infrastructure used by industry and its workforce. There has been large scale capital spending in the Northwest in recent years, however this development has not translated into increased local government revenues commensurate with increased demand on infrastructure and services.

22 Source: Municipal General & Financial Statistics, Ministry of Municipal Affairs & Housing; BC Stats annual population estimates.

Figure 4: Per Capita Municipal Expenditures by Category, Last 5 Years Combined (2014 to 2018)[23]



23 Source: Municipal General & Financial Statistics, Ministry of Municipal Affairs and Housing, 2018.

4.0

INVESTMENT NEEDS ANALYSIS

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$1.3 BILLION LOCAL INFRASTRUCTURE AND SERVICING CAPITAL INVESTMENT NEEDED IN NORTHWEST BC

The RBA has prepared an order of magnitude capital cost estimate of local government infrastructure and servicing needs in Northwest BC at $1.3 billion[24], and approximately $113 million in annual operating investment. Supporting future growth and industrial development requires upgrades to existing infrastructure and servicing to meet current standards and legislative requirements such as health, environmental, engineering and building code.

Capital investment needs include transportation, potable water and wastewater, storm water, fire protection, institutional and recreational infrastructure, improvements, and solid waste management to accommodate anticipated development.

$1.3 billion is the minimum financial investment needed in Northwest BC to equip local governments to manage economic change and to support major industry investment.

The $77.7 million Northern Capital and Planning Grant funding provided to RBA members in February 2019 was a good start, and the RBA appreciates the Province recognizing there is a significant need in Northwest BC. This funding represents only 6% of the needs outlined in this preliminary report, which supports the RBA's request for ongoing funding.

24 This is an initial report documenting local government investment needs in Northwest BC. Many of these projects involve further analysis such as site-specific feasibility studies.

PROGRAM SUMMARY AND ORDER OF MAGNITUDE INVESTMENT COSTS

All infrastructure and service needs identified in this report have been allocated an order of magnitude cost. There are limitations associated with the identified infrastructure and service needs, including timing and documentation:

- **Timing:** infrastructure projects typically have a trigger point for anticipated construction and completion dates. In Northwest BC, it is assumed that the trigger point for investing in local government infrastructure would align with the timing of major project construction and operations. However, this is difficult to outline in Northwest BC for two reasons. The first is the uncertainty of timing for proposed projects that are in early stages and have not yet been approved or paused. The second reason is that most local governments in Northwest BC have an infrastructure deficit as a starting point. In reality, there are significant infrastructure upgrades, replacement needs and other investment required in order for RBA communities to meet performance standards and current population needs, even before projects move forward. That said, approved projects such as LNG Canada, the Coastal GasLink pipeline and Port of Prince Rupert Expansion are imminent and local governments must be ready to support industry and accommodate change that has already started.
- **Documentation:** numerous sources were referenced to inform the infrastructure needs analysis and order of magnitude investment costs. These sources include asset management plans, asset inventories, engineering reports, scoping reports, feasibility studies, master plans, and capital plans. These documents were supplemented by a comprehensive local government questionnaire and qualitative interviews and meetings. Across the RBA, there is a substantial information deficiency given the costs associated with undertaking preliminary work such as planning and engineering. The limited financial resources to conduct baseline assessments is an added obstacle for RBA communities to address community and industry infrastructure needs.
- **Operating Costs:** annual operating costs are estimated at 8.5% of the total capital investment, which is half the actual ratio of municipal operating expenditures to tangible capital asset value for all BC municipalities. The BC-wide ratio has been 17% for each of the last five years (based on Municipal Financial and General Statistics, Ministry of Municipal Affairs and Housing), while the actual ratio for RBA municipalities has been 28% to 30% in recent years[25]. The rationale for using half the current provincial ratio is that some of the new capital investment is replacing existing assets, while some represents new assets and will create new operating cost implications.

25 Source: Municipal Financial and General Statistics, Ministry of Municipal Affairs and Housing.

PROGRAM SUMMARY: INFRASTRUCTURE AND SERVICE NEEDS

TABLE 2

	Project Category	Project Types	OOM Capital Cost[26]
1	**Drainage and Flood Protection**	▪ Storm water management ▪ Replace / install ditching, culverts, catch basins, pumping stations and dikes ▪ Address undersized systems ▪ Erosion, flood and emergency protection infrastructure	**$206,980,000**
2	**Fire Protection**	▪ Fleet purchase and replacement (fire rescue trucks, command trucks, pumper trucks, tanker trucks) ▪ Apparatus purchase and replacement ▪ Hydrants ▪ Upgrades and installing communication towers ▪ Fire hall facility upgrades / replacement projects ▪ Equipment and training	**$43,891,000**
3	**Institutional Infrastructure**	▪ Public works facility upgrades / replacement projects ▪ Public works equipment and fleet ▪ Local government office space upgrades / replacement projects including workspace and storage ▪ Local government office equipment upgrades / replacement (e.g. computers and technology infrastructure) ▪ Municipally-owned RCMP detachment buildings upgrades / replacement projects ▪ Administrative support (e.g. building inspection)	**$116,486,000**
4	**Potable Water**	▪ Water treatment facility upgrades / replacement ▪ Main repairs, replacements and looping ▪ Water system quality, capacity and pressure improvements ▪ Water reservoir and storage projects ▪ Exploring / installing new wells and well replacement ▪ Water fill stations	**$183,197,000**

26 Capital and operating costs are order of magnitude. Many of the identified projects require further analysis such as site-specific feasibility studies.

	Project Category	Project Types	OOM Capital Cost*
5	 **Recreational Infrastructure**	▪ Recreational facility upgrades / replacement projects ▪ Recreational equipment purchase / replacement ▪ Accessibility upgrades and retrofits ▪ Power / backup generators and communication tower upgrades / replacement ▪ Emergency services / operations centre integration / upgrades	**$40,117,000**
6	 **Solid Waste**	▪ Equipment and fleet purchase / replacement ▪ Recycling depot upgrades and new structures ▪ Scales and wash stations ▪ Localized landfill capacity improvements / phased expansion ▪ Landfill closures	**$59,250,000**
7	 **Transportation**	▪ Annual paving ▪ Road network upgrades and maintenance ▪ Bridge upgrades / replacement projects ▪ Dust / particulate pollution management ▪ Pedestrian, cycling, and accessibility infrastructure ▪ Municipally-owned airport improvements (e.g. repaving)	**$292,351,000**
8	 **Wastewater**	▪ Wastewater treatment facility upgrades / replacement ▪ Dewatering system upgrades / replacement ▪ Sewer main replacements, relining, twinning and expansion ▪ Transition densified communities from septic to community sewer ▪ Collection systems and lift station upgrades / relocation and / or replacement ▪ Lagoon de-sludging and upgrades	**$389,884,000**
		Total Order of Magnitude Capital Investment Need	**$1,332,156,000**
		Approximate Order of Magnitude Annual Operating Investment Need	**$113,233,260**

STRATEGIC ALIGNMENT WITH PROVINCIAL PRIORITIES

The Infrastructure Needs Analysis responds to a number of Provincial priorities and strategies. Key areas of strategic alignment are outlined as follows:

- **Province of British Columbia Strategic Plan** 2019/2020 priority areas, including:
  - Modernizing Our Infrastructure.
  - Strengthening BC's Resource Industries.
  - Fuelling Job and Industry Growth.
  - CleanBC Program.
  - Fire Management, Community Resilience and Restoring Our Forests.

- **Ministry of Municipal Affairs and Housing Service Plan** 2019/20 - 2021/22:
  - Objective 1.3: Enhance safety, occupant health and accessibility, and sustainability of the built environment.
  - Goal 3: Strong, sustainable and well governed communities.
  - Objective 3.2: Maintain local governments' financial sustainability so they can meet the service needs of their communities.
  - Objective 3.3: Support improvement of community and regional infrastructure and local government planning to further the environmental, economic and social health of communities.

- **Ministry of Advanced Education, Skills and Training Service Plan** 2019/20 - 2021/22:
  - Goal 1: British Columbians are prepared for and connected to current and emerging opportunities in B.C.'s economy.

- **Ministry of Energy, Mines and Petroleum Resources Service Plan** 2019/20 - 2021/22:
  - Goal 1: An energy portfolio powered by clean, renewable energy and supported by technological innovation.
  - Goal 2: A sustainable, responsible and competitive mining sector that creates lasting jobs for British Columbians.
  - Goal 3: B.C.'s low carbon-intensity oil and gas products provide sustainable jobs for British Columbians and projects meet our four conditions.

- **Ministry of Environment and Climate Change Strategy Service Plan** 2019/20 - 2021/22:
  - Goal 1: Effective protection and conservation of the environment.
  - Goal 2: A sustainable, resilient low-carbon economy.

- **Ministry of Forests, Lands, Natural Resource Operations and Rural Development Service Plan** 2019/20 - 2021/22:
  - Goal 1: Economic Benefits for all British Columbians with Thriving and Resilient Rural Communities.
  - Goal 3: Sustainable Natural Resource Management.

- **Ministry of Jobs, Trade and Technology Service Plan** 2019/20 - 2021/22:
  - Goal 1: B.C. businesses are supported to start-up, scale up, grow and stay in B.C.
  - Goal 2: Encourage trade diversification and facilitate investment opportunities that benefit all British Columbians.
  - Goal 3: Deliver programs in B.C. communities that increase participation in the economy and help raise the standard of living.

- **Ministry of Social Development and Poverty Reduction Service Plan** 2019/20 - 2021/22:
  - Goal 2: British Columbians in need have services, supports and opportunities that make life better.

- **Ministry of Tourism, Arts and Culture Service Plan** 2019/20 - 2021/22:
  - Goal 2: Support creative and cultural organizations to help develop British Columbia's creative sector.
  - Goal 3: Promote diversity and inclusion in communities throughout British Columbia.

- **Ministry of Transportation and Infrastructure Service Plan** 2019/20 - 2021/22:
  - Goal 1: Invest in rural and urban infrastructure improvements that help build a strong, sustainable economy.
  - Goal 2: Improve transportation network efficiency to provide British Columbians with safe and reliable access to the services they depend on.
  - Goal 3: Invest in transportation options that enhance network efficiency and support climate change objectives.

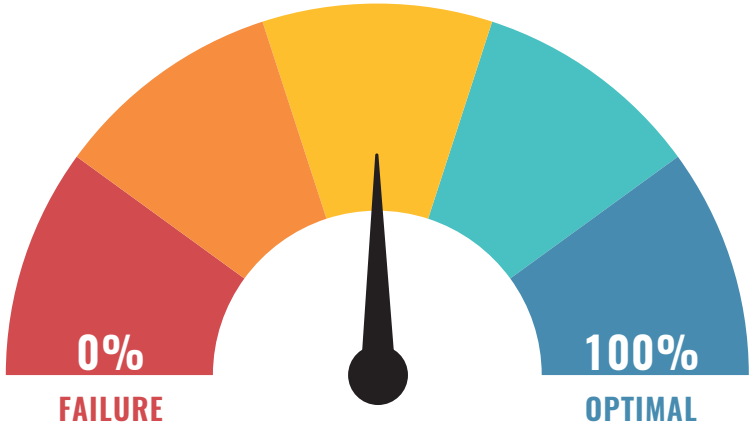
CURRENT PERFORMANCE AND READINESS FOR MAJOR PROJECT INVESTMENTS

The following pages evaluate asset categories by current performance and readiness, defined as follows:

- **Current Performance:** Means the overall performance of local government infrastructure in the RBA, collectively, at present time. The performance spectrum ranges from complete failure (0%) to optimal (100%).
- **Readiness:** Refers to the RBA's collective ability to support major project investment. "Ready" would indicate the identified infrastructure is positioned to support projects. "Strained" would indicate that the identified infrastructure could provide limited support to project investment and related growth. "Not Ready" indicates significant gap between the identified infrastructure situation and what is required to support industry investment.

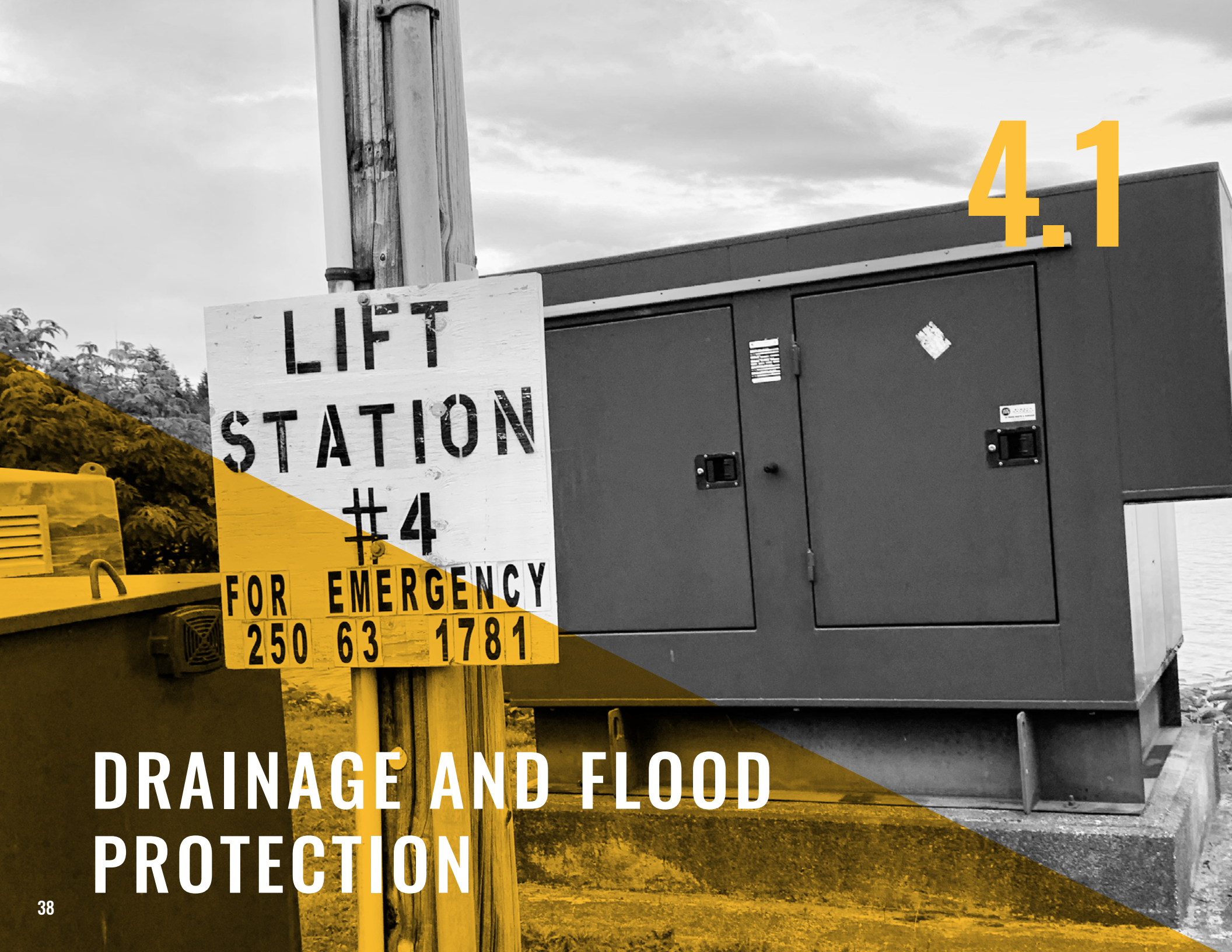
Please refer to **Appendix A: Dashboard Compendium** for further details on asset category performance.

Current Performance Scale:



Readiness For Major Project Investment Scale:

NOT READY	STRAINED	READY



4.1

DRAINAGE AND FLOOD PROTECTION

4.1 DRAINAGE AND FLOOD PROTECTION DASHBOARD

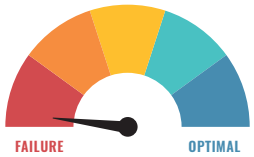
Capital Investment Needed	Current Performance:	Readiness For Major Investment:
$207M	53%	NOT READY

System Capacity

52%

Asset Condition (Storm Water)

39%



Runoff Quality

9%

Level of Protection

54%

Reliability (Storm Water)

72%

Reliability (Flood Protection)

86%

Availability

44%

Asset Condition (Flood Protection)

64%

DRAINAGE AND FLOOD PROTECTION COMPENDIUM

System Capacity: Means the ability of the drainage/stormwater system to meet the service needs of a community. A failing system is one that is significantly undersized in most of the community and unable to meet desired level of service. An optimally performing system is one that is appropriately sized to meet the desired level of service in all areas of the community, and any flooding that occurs is intentional and/or part of an overall drainage plan (e.g. stormwater detention pond).

Runoff Quality: Refers to the quality of water discharge from drainage/stormwater systems. Poor runoff quality means stormwater is discharged with no treatment or existing systems are substantially undersized or in disrepair. Optimal runoff quality mans that stormwater management satisfies Provincial stormwater management guidelines and complies with the Fisheries Act.

Reliability (stormwater): Means the ability of the drainage/stormwater system to handle major storm events. Failure occurs when there is frequent and significant flooding due to overflow and/or backup and as a result could potentially damage property, limit access to critical community services (hospitals, police service, fire protection), and could potentially harm residents. Optimal reliability means flooding due to overflow and/or backup rarely occurs.

Availability: Means connecting residents/properties to the drainage/stormwater system. Poor availability means large areas of the community do not have the opportunity to connect to or benefit from stormwater management (but want/need to). Optimal availability means all residents and properties are connected to and benefit from the stormwater system.

Asset Condition (stormwater): Means the condition of the drainage/stormwater system by replacement value. Failing asset condition means that less than 20% of the stormwater system (by replacement value) is in fair condition or better. Optimal asset condition occurs when 100% of the stormwater system (by replacement value) is in fair condition or better).

Level of Protection: Means the ability of the flood protection system to meet the service needs of a community. A failing system is one that is significantly undersized. An optimally performing flood protection system is one that is appropriately sized to meet the desired level of service in all areas of the community, and any flooding that occurs is intentional (e.g. riparian area).

Reliability (flood protection): Means the ability of the flood protection system to handle major flooding events. Failure occurs when there is frequent and significant failure of key flood protection infrastructure (e.g. dams, berms, dikes). Optimal reliability means flooding flood protection infrastructure rarely occurs.

Asset Condition (flood protection): Means the condition of the flood protection infrastructure by replacement value. Failing asset condition means that less than 20% of the flood protection infrastructure (by replacement value) is in fair condition or better. Optimal asset condition occurs when 100% of the flood protection infrastructure (by replacement value) is in fair condition or better).

DRAINAGE AND FLOOD PROTECTION INFRASTRUCTURE

Drainage and flood protection projects include protecting existing infrastructure from tributary erosion, sudden snow pack melt and significant storm and flooding events. Key drivers to capital and operating needs include aging infrastructure that has not been replaced, the need to reroute storm systems and culverts to protect sensitive ecosystems, and install full stormwater systems in some communities that have no system at all. For RBA communities situated along the North Coast and connected to the sea, long-term sea level rise or potential tsunami events[27] require communities and industries to be prepared for the risk of infrastructure failure.

A key obstacle to getting started is the limited data and information available to local governments to plan for and implement drainage and flood protection. The Regional District of Kitimat Stikine, for example, is referencing flood plain mapping from the 1980s. Even when information is available, implementation costs are high relative to operating revenue. Upgrading critical infrastructure such as storm systems is challenging for communities in Northwest BC - like in New Hazelton, which is installing new storm sewers about two blocks at a time.

On the whole, drainage and flood protection infrastructure within the RBA is inadequate and failing current performance standards, and is not ready to support major economic investment projects. Approximately $207 million capital investment is required to bring drainage and flood protection infrastructure to appropriate condition, system capacity, quality and reliability. Ongoing annual operating investment is also required to maintain and operate drainage and flood protection infrastructure.

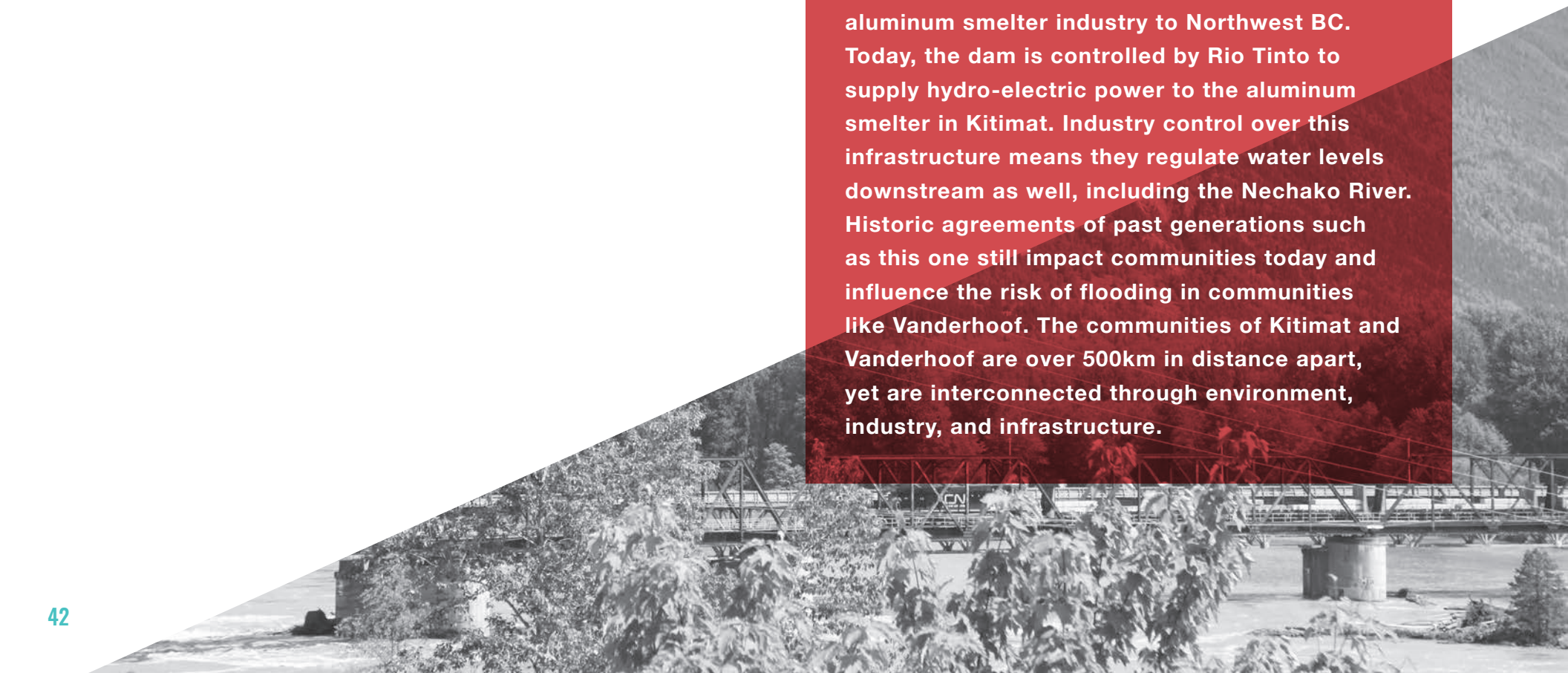
The Stewart World Port is Canada's most northerly ice free port and receives / ships break bulk cargo out of its' deep sea wharf in Stewart, BC. A $70 million investment completed in 2015, it serves key resource industries including mining, forestry, oil and gas, and construction projects. It is also within a tsunami notification zone which is a shared risk with other RBA communities. Investing in drainage and flood protection infrastructure in places like Stewart serves to protect both industrial infrastructure and community assets that are interconnected with provincial resource development initiatives.

27 The Province of British Columbia Tsunami Risk Zone A includes Masset, Port Clements, Queen Charlotte City, Prince Rupert, Port Edward, and Stewart.

INDUSTRY CONTROLLED RIVERS

In 2017, the Nechako River Reservoir was at capacity and a significant volume of water was released, causing mass flooding in Vanderhoof. Several households were displaced, structures were lost, and flood recovery costs were incurred by the local government, property owners, and the Province.

The Nechako River Reservoir and Kenney Dam were constructed in the 1950s to attract the aluminum smelter industry to Northwest BC. Today, the dam is controlled by Rio Tinto to supply hydro-electric power to the aluminum smelter in Kitimat. Industry control over this infrastructure means they regulate water levels downstream as well, including the Nechako River. Historic agreements of past generations such as this one still impact communities today and influence the risk of flooding in communities like Vanderhoof. The communities of Kitimat and Vanderhoof are over 500km in distance apart, yet are interconnected through environment, industry, and infrastructure.



4.2

FIRE PROTECTION

4.2 FIRE PROTECTION DASHBOARD

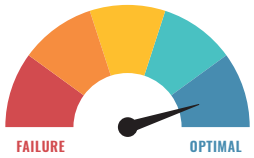
Capital Investment Needed	Current Performance:	Readiness For Major Investment:
$44M	63%	NOT READY

Fire Department Service Level

70%

Emergency Communication System

68%

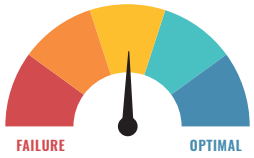


Water Supply

90%

Asset Conditions

64%



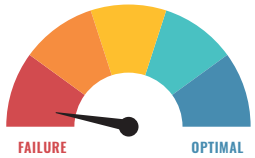
Fire Prevention

50%

Wildfire Protection Plan

35%

33% of major projects expect to
draw on local emergency and protective services



Reliance on Volunteer Firefighters

HIGH

FIRE PROTECTION COMPENDIUM

Fire Department Service Level: Refers to the ability of the fire department to meet the service level required in a community. An inadequate and failing fire department occurs when the department is understaffed, have low volunteer firefighter numbers, personnel are poorly trained, equipment is in poor condition, and where significant service gaps exist. An optimally performing fire department occurs when the service area is well covered, equipment is well maintained, staffing/volunteer firefighter levels are met and personnel have the most up-to-date training.

Water Supply: Refers to the water supply system to support fire protection services, such as fire flow and hydrants. A failing water supply in this context means the water supply is unreliable, and the system is poorly maintained and not designed to handle stress and failures. Optimal water supply means the system is very reliable with redundancies throughout to handle stress or failures, and the system receives frequent maintenance and is capable of providing required flows simultaneously with Maximum Daily Consumption.

Fire Prevention: Includes both fire prevention and fire safety control. Inadequate and failing fire prevention means there is no staff dedicated to prevention, no public education program in place, and there are no bylaws used for managing risk. Optimal fire prevention means there is a proactive approach to fire prevention performed at various levels of the community; qualified staff are assigned to a team focused on fire prevention; community has a well developed fire prevention program with bylaw enforcement; and a public education program is well developed and occurs regularly.

Emergency Communication System: Refers to the communication system required to enable fire protection services. Inadequate and failing emergency communication systems means that telephone systems, lines, staffing and dispatching are inefficient and require immediate upgrades. Optimal emergency communication systems are robust, with facilities and support to handle dispatching fire alarms.

Asset Condition: Means the condition of the fire protection fleet and firehall by replacement value. Failing asset condition means that less than 20% of the fire protection fleet and firehall (by replacement value) is in fair condition or better. Optimal asset condition occurs when 100% of the fire protection fleet and firehall (by replacement value) is in fair condition or better.

Wildfire Protection Plan: A wildfire protection plan is a community resiliency tool used to reduce the risk and impact of wildfire to communities, including determining the level of, and steps to manage, wildfire risk primarily within their jurisdictional boundary. An assessment of critical infrastructure at risk of wildfires is included in a Wildfire Protection Plan.

Reliance on Volunteer Firefighters: Evaluates the personnel composition of a fire department including Fire Chief, paid staff and volunteer firefighters. A high reliance on volunteer firefighters is considered vulnerable / less resilient given the uncertainty of volunteer availability, accessibility and sometimes the level of training / experience.

FIRE PROTECTION INFRASTRUCTURE

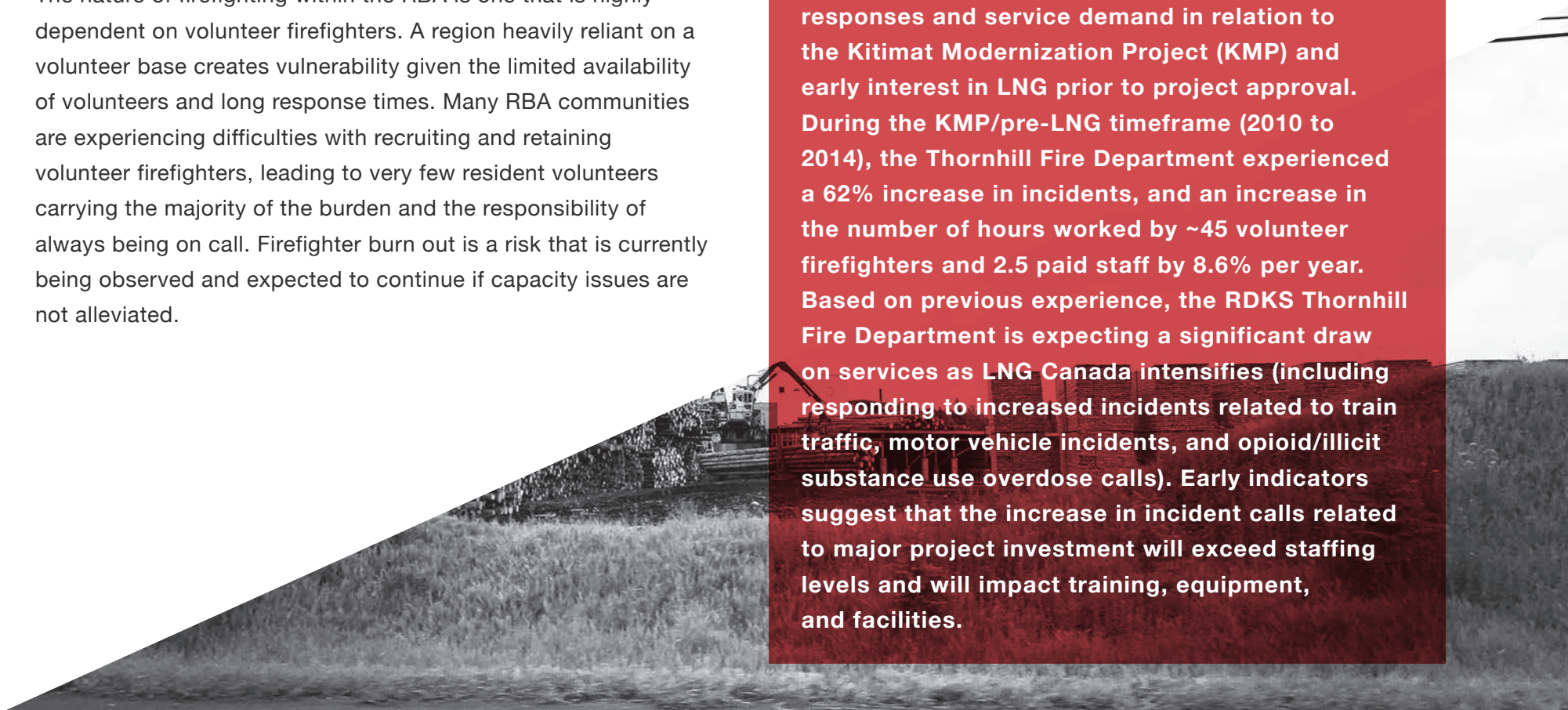
Fire protection infrastructure needs are largely driven by the requirement to meet regulatory standards. This includes replacing equipment and fleet, and ensuring firefighters are adequately trained. Fire hall facility upgrades and replacement projects are also in need within the RBA to address asset deterioration and to fit larger, industry standard size firetrucks and NFPA standard apparatuses. At this time, RBA communities are working within their means but it comes at the cost of equipment fail inspections, increased maintenance costs, and using tools outdated for today's demands.

The nature of firefighting within the RBA is one that is highly dependent on volunteer firefighters. A region heavily reliant on a volunteer base creates vulnerability given the limited availability of volunteers and long response times. Many RBA communities are experiencing difficulties with recruiting and retaining volunteer firefighters, leading to very few resident volunteers carrying the majority of the burden and the responsibility of always being on call. Firefighter burn out is a risk that is currently being observed and expected to continue if capacity issues are not alleviated.

A CASE OF THORNHILL: INDUSTRY DEVELOPMENT DRAWS ON FIRE PROTECTION SERVICES

Services such as fire, health and safety are assumed to be provided by industry for industry workers onsite. In reality, incidents can happen anywhere including within the jurisdiction of local governments.

The RDKS Thornhill Fire Department has documented a direct increase in incident responses and service demand in relation to the Kitimat Modernization Project (KMP) and early interest in LNG prior to project approval. During the KMP/pre-LNG timeframe (2010 to 2014), the Thornhill Fire Department experienced a 62% increase in incidents, and an increase in the number of hours worked by ~45 volunteer firefighters and 2.5 paid staff by 8.6% per year. Based on previous experience, the RDKS Thornhill Fire Department is expecting a significant draw on services as LNG Canada intensifies (including responding to increased incidents related to train traffic, motor vehicle incidents, and opioid/illicit substance use overdose calls). Early indicators suggest that the increase in incident calls related to major project investment will exceed staffing levels and will impact training, equipment, and facilities.



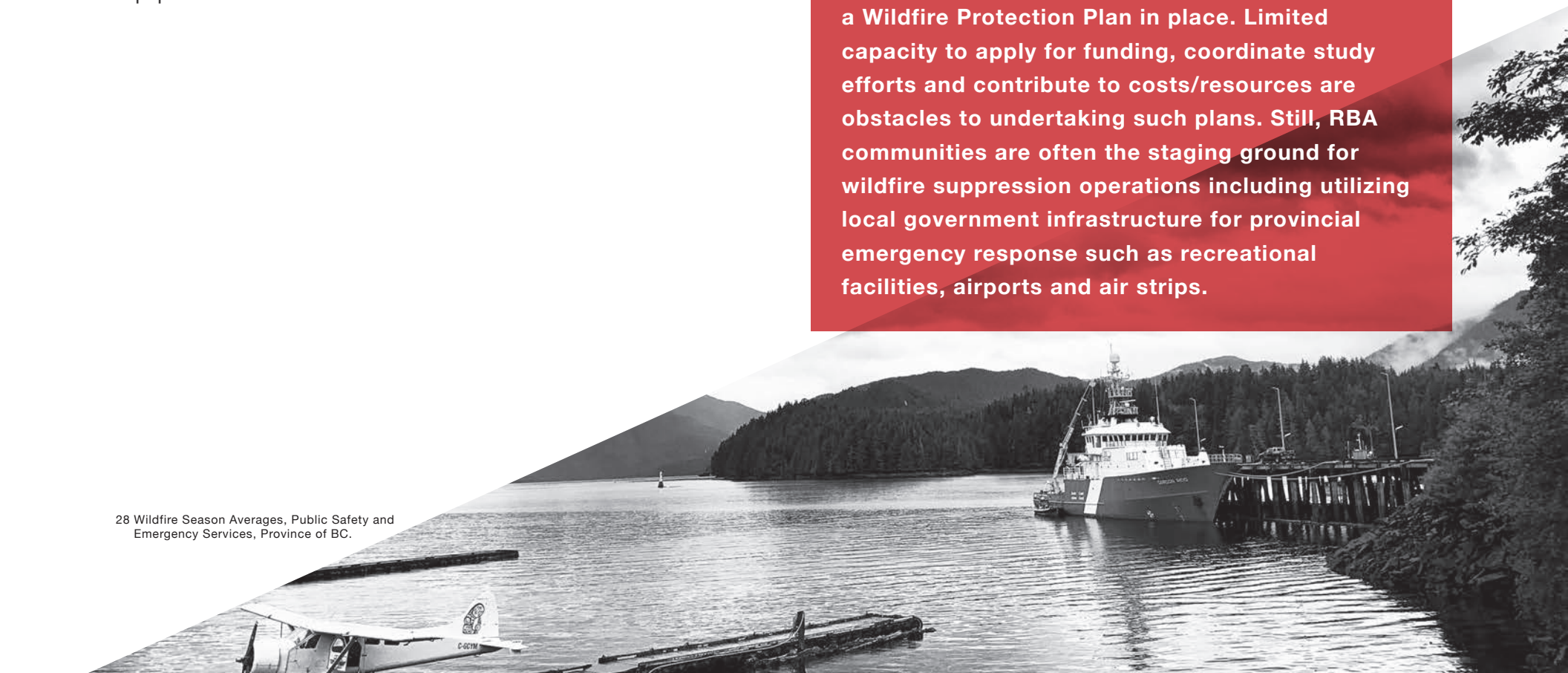
Local governments within the RBA aspire to be resilient and prepared for emergencies, and committed to continue implementing mutual aid agreements with neighbouring Indigenous communities and First Nation bands. This requires infrastructure investment to improve the current situation.

Fire protection infrastructure within the RBA is falling short of meeting industry standards and is not equipped to adapt to temporary and permanent population increases related to major project investment. Approximately $44 million capital investment is required to improve fire protection infrastructure. Ongoing annual operating investment is also required to maintain and operate fire protection infrastructure and related training and equipment.

UNEQUIPPED FOR WILDFIRES

British Columbia has experienced recent record breaking years in wildfire activity, burning over 2.5 million hectares and costing over $1.26 billion during the combined years of 2017 and 2019[28]. Wildfire activity along Highway 16 and 37 has disrupted community and industry activity, requiring large-scale evacuations and provincial fire suppression operations.

Yet, only one-third of RBA communities have a Wildfire Protection Plan in place. Limited capacity to apply for funding, coordinate study efforts and contribute to costs/resources are obstacles to undertaking such plans. Still, RBA communities are often the staging ground for wildfire suppression operations including utilizing local government infrastructure for provincial emergency response such as recreational facilities, airports and air strips.



28 Wildfire Season Averages, Public Safety and Emergency Services, Province of BC.

4.3

INSTITUTIONAL INFRASTRUCTURE

4.3 INSTITUTIONAL INFRASTRUCTURE DASHBOARD

Capital Investment Needed	Current Performance:	Readiness For Major Investment:
$116M	50%	NOT READY

Staff Recruitment and Retention

43%

Public Works Facility Capacity + Equipment

70%

Building Inspection

54%

Asset Condition (Public Works Facility)

25%

Local Government Work Space Capacity

55%

Asset Condition (Local Government Office)

55%

INSTITUTIONAL INFRASTRUCTURE COMPENDIUM

Staff Recruitment and Retention: Refers to the ability of a local government office to meet their human capital needs including filling positions with qualified personnel. Inadequate and failing staff recruitment and retention means that the local government office is understaffed; difficulty recruiting to fill most vacancies, shortage of suitable candidates, challenged to offer competitive compensation; and very high turnover rates. Optimal staff recruitment and retention means staffing levels are excellent, without difficulty filling vacancies or finding suitable candidates; able to offer competitive compensation; and turnover rates are low / staff retention is high.

Building Inspection: Building Inspectors are local government officials primarily involved in new construction and renovation, ensuring structures meet the Building Code and other standards. They are members of the Building Officials' Association of BC. Inadequacy in this context means that a building inspector is not available in a community, or somewhat adequate if building inspection service is part-time / shared with other communities. Optimal levels occur when a full-time in-house building inspector is available to a community.

Local Government Work Space Capacity: Refers to the quantity and type of work space at a local government office. Inadequate or failing work space capacity means there are significant space constraints such as not enough space to accommodate required staffing levels. Optimal work space capacity means there is sufficient quantity and quality of space to accommodate all municipal hall /regional district office needs.

Public Works Facility Capacity and Equipment: Refers to the ability to meet public works service needs in a community. Failing public works facility capacity and equipment means that the public works facility is inadequate; structures and equipment are in poor condition; and significant capacity and service gaps exist. Optimal levels occur when structures and equipment are in excellent condition and well maintained; and capacity issues and service gaps are rare.

Asset Condition (public works facility): Means the condition of the public works facility by replacement value. Failing asset condition means that less than 20% of the public works facility (by replacement value) is in fair condition or better. Optimal asset condition occurs when 100% of the public works facility (by replacement value) is in fair condition or better.

Asset Condition (local government office): Means the condition of the local government office by replacement value. Failing asset condition means that less than 20% of the local government office (by replacement value) is in fair condition or better. Optimal asset condition occurs when 100% of the local government office (by replacement value) is in fair condition or better.

INSTITUTIONAL INFRASTRUCTURE

The unprecedented economic activity across the RBA has increased the volume of inquiries and initiatives presented to local governments. From on-the-ground development applications to meeting with industry representatives and investors requesting informal consultation, site tours and pre-application meetings, the administrative workload is exponentially increasing in tandem with major project investment.

In addition to today's concerns, local government workers are still working on brownfield sites from industry-past, like in Vanderhoof where the highway frontage is lined with vacant contaminated sites. Or in Fraser Lake where the lakefront park, previously a West Fraser Sawmill, still has remnant site issues that need to be addressed if the park were to be further developed. It requires tremendous energy for local government workers to withstand periods of recession and investment, addressing brownfield sites while reviewing new proposals, and balancing community needs with limited resources and capacity.

The North Coast Regional District does not have in-house planning or engineering professionals. Yet, it is responding to unique and complex planning applications including Vopak, Nexen Energy, PNW LNG on Lulu Island[29], and major wind energy projects. These applications typically have a 20 day turnaround time protocol. Even when projects are paused, there is still upfront staff time that is absorbed to review significant projects including evaluating land use implications.

29 Vopak Pacific Canada is exploring the construction and operation of bulk liquids facility on Ridley Island, storing products such as methanol, diesel and propane. Nexen Energy, which was persuing Aurora LNG on Digby Island, and PNW LNG proposed on Lulu Island, were both placed on hold due to changing market conditions.

In addition to the unique industry development within the RBA, meeting basic needs is a challenge under current local government conditions and the provincial funding model. **Limited staff capacity is frequently absorbed to prepare application forms, feasibility studies and business cases to secure the capital and operating dollars required to meet basic community needs**. Local governments within the RBA prioritize their time to manage crisis and urgent situations, often missing opportunities to compete for funding they desperately need. At times when the number of submitted applications exceed available funding, RBA communities may find their efforts spent on preparing unsuccessful funding applications could have been better utilized in other ways. This is further compounded by staff shortages as well as recruitment and retention issues.

Crucial to addressing recruitment and retention issues at the local government level is ensuring that RBA communities are livable and attractive. Key to livability is offering high quality amenities, which includes municipal facilities such as community centres, libraries, museums and art galleries. There is a severe lack of these institutional spaces within the RBA, and existing facilities are often only partially open due to budgetary constraints and staff shortages. Investing in institutional infrastructure has the potential to aid in attracting and retaining local government workers, as well as attracting skilled labour to fill the job vacancies required by industry development.

Internal capacity challenges are coupled with institutional infrastructure needs. These projects include replacing aging public works facilities, purchasing and replacing equipment and fleet, and improving the working conditions of local government employees through modest, sufficient workspace upgrades to accommodate required staffing levels. There is also a severe shortage of Building Inspectors available in the region. With large areas - Regional Districts of Kitimat-Stikine and the North Coast, and all of Haida Gwaii - currently have no building inspection services at all. Some of these areas, like Haida Gwaii, are located in an earthquake zone and would greatly benefit from improved building inspection services as well as seismic upgrades if funding and resource supports were provided.

The cost to purchase new fleet, such as street sweepers, graders and snow plows, are more than what many Northwest communities can afford. Many RBA communities resort to purchasing used vehicles and/or retaining very old vehicles and subsequently incur high costs on fleet maintenance and repairs.

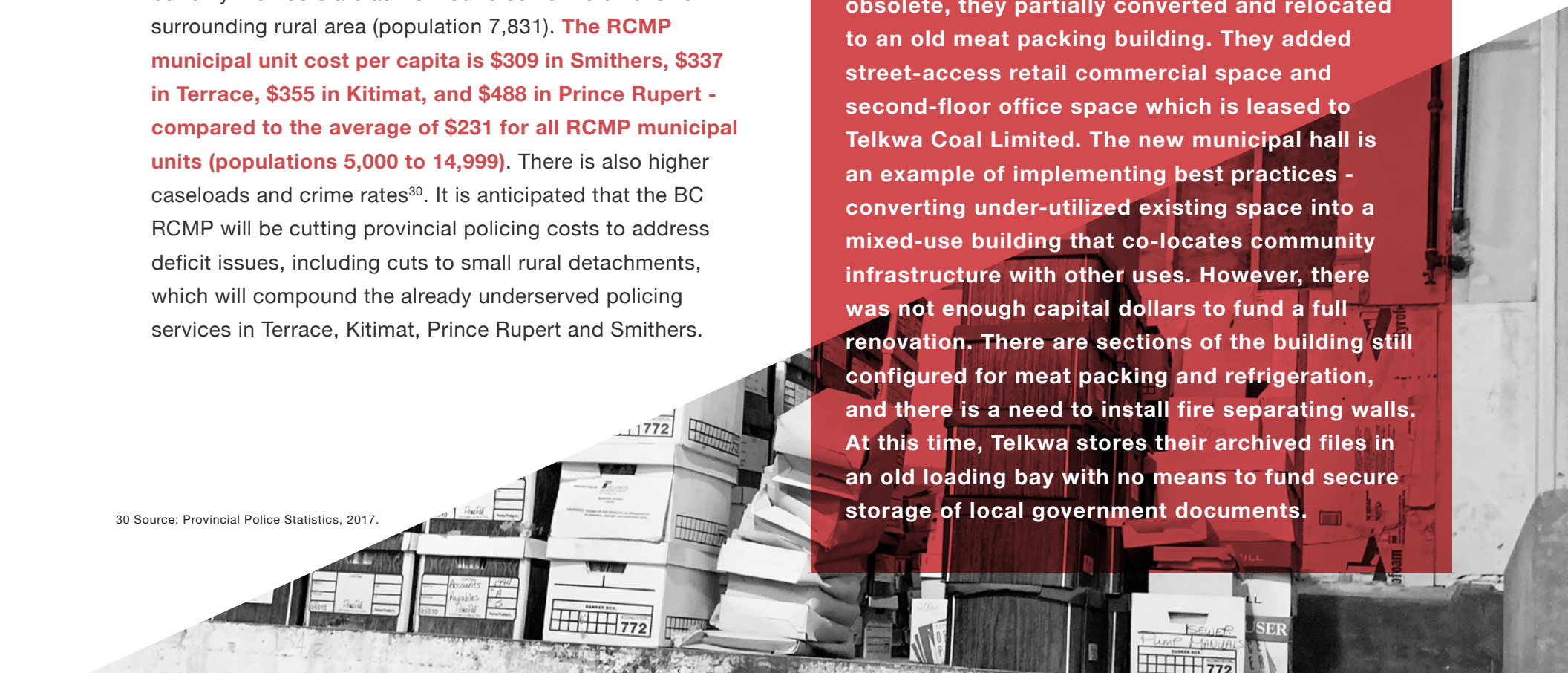
Four local governments in the RBA - Smithers, Terrace, Kitimat, and Prince Rupert - contract with the Province to deliver police services. There are significant costs associated with delivering police services including maintaining municipally-owned RCMP detachment buildings. In addition to policing infrastructure, RBA communities are understaffed and experience frequent turnover of police officers. With anticipated growth in temporary and permanent residents as a result of major project investment, the RBA communities are not ready to address the added draw on local police services.

- For instance, the authorized strength of the RCMP municipal police in City of Terrace is 25 officers (population 10,289), but only 7 officers are authorized to serve the extensive surrounding rural area (population 7,831). **The RCMP municipal unit cost per capita is $309 in Smithers, $337 in Terrace, $355 in Kitimat, and $488 in Prince Rupert - compared to the average of $231 for all RCMP municipal units (populations 5,000 to 14,999)**. There is also higher caseloads and crime rates[30]. It is anticipated that the BC RCMP will be cutting provincial policing costs to address deficit issues, including cuts to small rural detachments, which will compound the already underserved policing services in Terrace, Kitimat, Prince Rupert and Smithers.

Local governments within the RBA do not have the internal resources or capacity to adequately support major project investment in the region. Approximately $116 million capital investment is required to upgrade hard local government infrastructure such as public works facilities and government office space constraints, plus additional ongoing annual operating investment. These figures do not encompass staff capacity issues.

MAKING THINGS WORK

When Telkwa's Municipal Hall was physically obsolete, they partially converted and relocated to an old meat packing building. They added street-access retail commercial space and second-floor office space which is leased to Telkwa Coal Limited. The new municipal hall is an example of implementing best practices - converting under-utilized existing space into a mixed-use building that co-locates community infrastructure with other uses. However, there was not enough capital dollars to fund a full renovation. There are sections of the building still configured for meat packing and refrigeration, and there is a need to install fire separating walls. At this time, Telkwa stores their archived files in an old loading bay with no means to fund secure storage of local government documents.



30 Source: Provincial Police Statistics, 2017.

LOCAL GOVERNMENTS IN NWBC ARE COMPETING WITH PRIVATE INDUSTRY FOR THE SAME TALENT POOL

A senior engineer can earn double or triple the annual salary if they work for private industry compared to a local government in the Northwest. This is the reality of local governments which have limited tools to incentivize professionals and skilled workers to stay employed in government or to initially consider a job posting. Budgetary constraints and unionized environments are typically no match to private industry in the Northwest. At the same time, when collective bargaining agreements come up for negotiation, local governments must consider drawing from their limited financial resources to adjust employee wages to align closer to industry standards. Competing with private industry for qualified workers while simultaneously supporting industry has led to local government staffing shortage, turnover, burnout and loss of institutional knowledge. As a result, local governments in the Northwest have limited capacity to meaningfully contribute to the intense economic development unique to the region, leading to undesirable consequences such as delayed project processing.

4.4

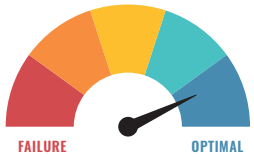
POTABLE WATER

4.4 POTABLE WATER DASHBOARD

Capital Investment Needed	Current Performance:	Readiness For Major Investment:
$183M	77%	NOT READY

Quantity 74%

Reliability 80%



Quality 88%

Accessibility 88%

Aesthetics 68%

Asset Condition 66%

Some RBA Communities are exploring improvements to potable water to meet health standards including removing manganese and arsenic, as well as replacing asbestos pipes and disintegrating clay pipes

POTABLE WATER INFRASTRUCTURE COMPENDIUM

Quantity: Refers to the potable water supply. Failing quantity means there is a total ban on outdoor water use almost every summer (due to supply constraints). Optimal quantity means water restrictions occur rarely (due to supply availability).

Quality: Refers to water quality advisories. Failing quality means that water quality advisories occur consistently (multiple times per year). Optimal quality means water quality advisories do not occur.

Aesthetics: Refers to consumer expectations. Failing aesthetics means the potable water fails to meet consumer expectations on more than one of: taste, colour, odour, or staining year round. Optimal aesthetics means the potable water meets consumer expectations on all of: taste, colour, odour, and staining year round.

Reliability: Refers to service provision of potable water. Failing reliability means there are frequent major disruptions (greater than 24 hours) to service provision to a large number of customers (greater than 10% of connected users). Optimal reliability means there are few minor disruptions to service provision, and no major disruptions.

Accessibility: Means connecting residents/properties to the potable waste system. Failing accessibility means 50% or more of the community does not have the opportunity to connect to potable water service (but want/need to). Optimal accessibility means all residents who want/need potable water are connected to the service.

Asset Condition: Means the condition of the potable water system by replacement value. Failing asset condition means that less than 20% of the potable water system (by replacement value) is in fair condition or better. Optimal asset condition occurs when 100% of the potable water system (by replacement value) is in fair condition or better.

POTABLE WATER INFRASTRUCTURE

Many local governments within the RBA inherited infrastructure from other entities such as single firm companies and the Department of National Defence Canada. The water mains in Fraser Lake, for example, were installed in the 1950s by Endako Mine and had a projected life span of 19 years. The infrastructure of yesterday was not intended to be long-lasting nor meet the needs of the unprecedented economic investment happening today. As a result, infrastructure investment needs such as addressing water main upgrades and water treatment facility projects has been an ongoing challenge in the Northwest - especially given low tax revenue that cannot sustain the costs associated with bringing infrastructure from previous generations up to today's standards.

An unfortunate reality is that replacing underground servicing like water mains is so often an exorbitant cost relative to revenue, that many Northwest local governments make undesirable trade-offs such as investing in new asphalt road surface knowing that the underground servicing is deteriorating. The current funding framework creates an environment where addressing potable water needs is typically a series of patchwork repair. These potable water issues experienced by local governments extend beyond jurisdictional boundaries where servicing agreements with neighbouring First Nations communities exist - including in Hazelton[31], New Hazelton, Fort St. James, Burns Lake, and Masset.

In 2018, the NCRD had a budget of $10,000 for water repairs. During the winter, one water line break had a repair cost of $14,000. Low municipal budgets have led Northwest BC communities to consistently draw from contingencies and reserves to cover basic operational expenses.

31 There are many examples of shared services and mutual aid agreements between local governments and First Nations communities in Northwest BC. The Village of Hazelton, for example, owns the license for water services and First Nations own the water treatment facility - working together to provide potable water to their communities. The Village of Masset has shared service agreements with Old Masset Village Council Band for sewage and water, as well as an informal arrangement to share public works equipment and tools.

CATCHING UP IN PRINCE RUPERT IS NOT RELATABLE TO OTHER PARTS OF BC

In Prince Rupert, a large number of water mains are over 100 years old. Large swaths of infrastructure were also installed during World War 2 and did not have sustainable longevity in mind at the time. Geographical constraints add to the cost: blasting bedrock, stabilizing over muskeg and dealing with acidic soils that dissolve underground pipes. Short construction seasons and freeze-thaw cycles also amplify complexity and cost. Other significant projects, such as replacing Woodworth Dam (currently in pre-construction stage with an estimated capital cost of $16.5 million) are prioritized. Underground servicing needs, including water mains, absorb much of the tax base which prevents investing in other important community infrastructure like recreation and culture.

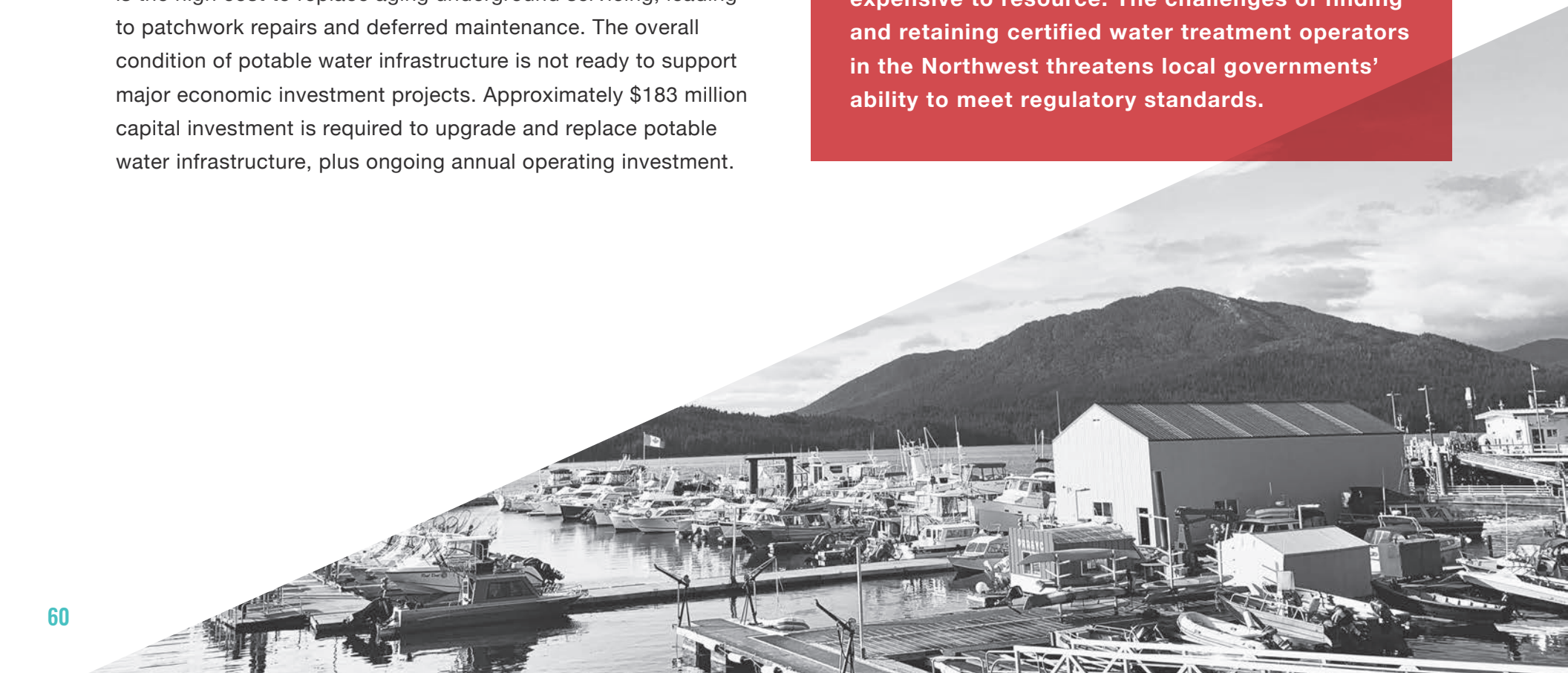
This situation severely limits the city's ability to attract and retain the workforce required to support the Port of Prince Rupert and other major industries that are essential to facilitate BC's product to market via the Asia-Pacific Gateway. Even though the local economy is flourishing, years of economic recession led to deferred maintenance and dipping into reserves. At this time, Prince Rupert is averaging 2.35 water line breaks per week. Catching up in Prince Rupert to meet current needs is difficult, and nowhere near the readiness level required to support major project investment in the region.

It is unclear how much major industries will need to draw on potable water from local governments in the Northwest. Environmental assessments suggest that approximately 56% of major projects expect to generate an increase in permanent population, and thus a need for more permanent housing which needs to be site serviced by water, sewer, and utilities. There are also examples of Coastal GasLink camps entering into agreements with local governments to access water filling stations, such as with Burns Lake and Houston, but the potential forecasted usage is unknown at this time.

The status of potable water infrastructure is wide-ranging across Northwest BC. What is commonly shared by RBA communities is the high cost to replace aging underground servicing, leading to patchwork repairs and deferred maintenance. The overall condition of potable water infrastructure is not ready to support major economic investment projects. Approximately $183 million capital investment is required to upgrade and replace potable water infrastructure, plus ongoing annual operating investment.

THE IMPOSSIBLE TASK OF FINDING CERTIFIED WATER TREATMENT OPERATORS

It is challenging to recruit and retain certified water treatment operators in Northwest BC. It is difficult for water treatment operators to meet their minimum required hours to keep their certification due to not incurring enough eligible hours. Water treatment operators in Masset and Queen Charlotte must travel off island to receive training and obtain eligible hours, which is expensive to resource. The challenges of finding and retaining certified water treatment operators in the Northwest threatens local governments' ability to meet regulatory standards.



4.5

RECREATIONAL INFRASTRUCTURE

4.5 RECREATIONAL INFRASTRUCTURE DASHBOARD

Capital Investment Needed	Current Performance:	Readiness For Major Investment:
$40M	56%	NOT READY

Capacity (Outdoor Recreation)

45%

Capacity (Indoor Recreation)

61%

Asset Conditions (Outdoor Recreation)

55%

Asset Condition (Indoor Recreation)

68%

> Arts and cultural wealth are critical to the well-being of any society. Investments in these areas are investments in the future of British Columbia.
>
> Province of BC Strategic Plan 2019/2020

RECREATIONAL INFRASTRUCTURE COMPENDIUM

Capacity (outdoor recreation): Outdoor recreational amenities includes sports fields, playgrounds, trails, parks, courts, or other. Inadequate and failing capacity means the quantity and/or type of outdoor recreational amenities and infrastructure is insufficient to meet needs of most user groups. Optimal capacity means the quantity and type of outdoor recreational amenities and infrastructure is sufficient to meet needs of nearly all user groups.

Asset Condition (outdoor recreation): Means the condition of the outdoor recreational amenities by replacement value. Failing asset condition means that less than 20% of the outdoor recreational amenities (by replacement value) is in fair condition or better. Optimal asset condition occurs when 100% of the outdoor recreational amenities (by replacement value) is in fair condition or better.

Capacity (indoor recreation): Indoor recreational amenities includes arenas, pools, gymnasiums, fitness facilities, studios, or other. Inadequate and failing capacity means the quantity and/or type of indoor recreational amenities and infrastructure is insufficient to meet needs of most user groups. Optimal capacity means the quantity and type of indoor recreational amenities and infrastructure is sufficient to meet needs of nearly all user groups.

Asset condition (indoor recreation): Means the condition of the indoor recreational amenities by replacement value. Failing asset condition means that less than 20% of the indoor recreational amenities (by replacement value) is in fair condition or better. Optimal asset condition occurs when 100% of the indoor recreational amenities (by replacement value) is in fair condition or better.

RECREATIONAL INFRASTRUCTURE

Recreational infrastructure is more than providing space for residents to be active, play sports or engage in leisure programs. They are also spaces where the community can come together, socialize and build relationships. Recreational infrastructure is key to weaving the social fabric of a community in order for it to become resilient, sustainable and livable.

Recreational infrastructure is also multi-functional. In the RBA, these facilities typically double as emergency operation centres. They are often the staging grounds for firefighters during active wildfires or spaces to mobilize sandbag volunteers during major flood events. **When hotels are block booked by industry companies or where temporary accommodation is unavailable, local government recreational facilities are utilized and transformed into accommodation for out of town support services such as provincial emergency aid**. While many of these facilities have been designated for emergency operations, some have not been equipped to adequately provide this essential service.

Overall, the current state of recreational infrastructure in the region is dire. **Only 20% of RBA communities are meeting the indoor recreational needs of the current population, the remainder are severely falling short on one or more facilities**. In simple terms, the limited financial resources of local governments are prioritized towards health and safety projects first at the sacrifice of recreational facilities.

The arena in Granisle, for example, has not been maintained and is currently used for RV storage. With prospective workers and their families considering relocating to the Northwest for work, the likelihood of not having a swimming pool for their children or learning about closed door facilities due to staff shortages and budget cuts makes it difficult to convince families to relocate and fill the job vacancies required by industry.

Recreational infrastructure within the RBA fall far below standards compared to what residents might find in other parts of BC. Projects under this category include upgrading or replacing arenas and sports complexes, adding accessibility features and retrofits, and adapting facilities to perform during emergency situations. Approximately $40 million capital investment is needed to meet the needs of current residents and to be attractive to recruit workers to fill industry job vacancies. Ongoing investment is also required to maintain and operate recreational infrastructure.

WITHOUT OPERATING DOLLARS, NEW RECREATION FACILITIES MAY CLOSE

The Upper Skeena Recreation Centre officially opened its' doors in September, 2019 in Hazelton after the previous 44-year old building was condemned and closed in 2015. A period of time with no facility led to limited opportunities for the community to gather, and created barriers for youth to access sports: either travelling 75kms to Smithers if they had access to a vehicle, or excluded from playing sports altogether.

The $20 million, 54,000 square foot recreation centre has an ice-rink, multi-purpose gym, fitness centre and meeting rooms to serve the Upper Skeena communities including Hazelton, New Hazleton and eight First Nations communities. Home to a number of remote workers for projects like Brucejack Mine, the Upper Skeena Rereation Centre is a community hub where people can gather especially during the winter season. However, this new facility is at risk of closing its' doors because sufficient long-term operating dollars have not been secured - a need of approximately $900,000 annually to cover basic operations. If a solution is not found, the new Upper Skeena Recreation Centre may close its doors within two years after being constructed.

Communities throughout the RBA benefit from capital investment in recreational infrastructure including attracting skilled labour to meet industry job demand. However, RBA communities are severely challenged to operate and maintain these structures if operational dollars are not supported by outside funding sources. As a result, important community facilities such as the Upper Skeena Recreation Centre can experience deferred maintenance and accelerated deterioration, partial opening hours, and sometimes closed completely before they reach the end of their building life.


THE ROADRUNNER
Let it Snow!
Let it Snow!
Let it Snow?
FIND OUT WHAT'S HAPPENING ONLINE
Granisle
4.6
SOLID WASTE

4.6 SOLID WASTE DASHBOARD

Capital Investment Needed	Current Performance:	Readiness For Major Investment:
$59M	63%	NOT READY

Landfill Capacity

78%

Asset Condition

83%

Waste Diversion Opportunity (Household)

60%

Waste Diversion for Industrial, Commercial, Institutional and Hard to Manage Waste[32]

33%

56% of major projects expect to generate an increase in permanent population, contributing to an increase in both household and employment-based waste

32 Hazardous waste, demolition waste and land clearing waste.

SOLID WASTE INFRASTRUCTURE COMPENDIUM

Landfill Capacity: Refers to the ability of a local government to accommodate waste using a landfill. Failing landfill capacity means the landfill is nearing capacity/end of life and near closure. Optimal landfill capacity means the landfill has capacity to accommodate waste over the next 20+ years.

Asset Condition: Means the condition of the waste management system by replacement value. Failing asset condition means that less than 20% of the waste management system (by replacement value) is in fair condition or better. Optimal asset condition occurs when 100% of the waste management system (by replacement value) is in fair condition or better.

Waste Diversion Opportunity: Refers to the ability to recycle and compost. Failing waste diversion means there is no diversion of recyclables or compositing provided. Optimal waste diversion means there is opportunity for diversion of a full range of recyclables (including appliances, textiles) and composting.

Waste Diversion for Industrial, Commercial, Institutional and Hard to Manage Waste: Refers to non-residential household waste and includes hard to manage waste such as hazardous waste, demolition waste and land clearing waste. Failing waste diversion in this context means that local governments do not provide waste collection, diversion, or disposal services for industrial, commercial, or institutional users. Optimal performance means local governments are able to provide such service.

SOLID WASTE INFRASTRUCTURE

In the RBA, the majority of solid waste management is delivered at the regional district level with the exception of Prince Rupert/ Port Edward, and Kitimat. The landfill capacity for the RDKS and RDBN is high and have decades of life remaining. The NCRD landfill, however, is near capacity. **The Prince Rupert landfill, which is shared with Port Edward and accepts garbage waste from neighbouring First Nations communities, is at crisis-level capacity and is currently not diverting recyclables, not offering composting services, and cannot take in demolition waste**.

Speculation related to LNG and other major project investment has led to a surge in building renovations in the region. This has generated a larger than usual volume of demolition waste that cannot be accommodated in places like Prince Rupert given the landfill is at capacity and does not have the solid waste infrastructure in place to accommodate waste from development activity.

Across the RBA, there is both political will and resident support to be environmental stewards and participate in waste diversion. However, the limited opportunity for residents to participate in waste diversion, and cost constraints to deliver these services to low density and rural populations - often through private contracts[33], makes it nearly insurmountable for RBA communities to contribute to the Provincial solid waste management goals as they relate to action on climate change.

In addition, two-thirds of local governments within the RBA are not able to offer waste collection, diversion, or disposal services for industrial, commercial, and institutional uses or other hard-to-manage wastes (such as hazardous waste, demolition waste, and land clearing waste). Private companies are sometimes contracted by industry to support solid waste management. Specialized waste delivered to landfills, like asbestos, are dealt with on a case by case basis in Kitimat. The Kitimat landfill is also accepting solid waste from two work camps. On the whole, it is unclear the full extent of solid waste that will be directly or indirectly generated by major project investment and spin-off businesses, but there is high likelihood that whatever is generated will be landfilled without alternative options available.

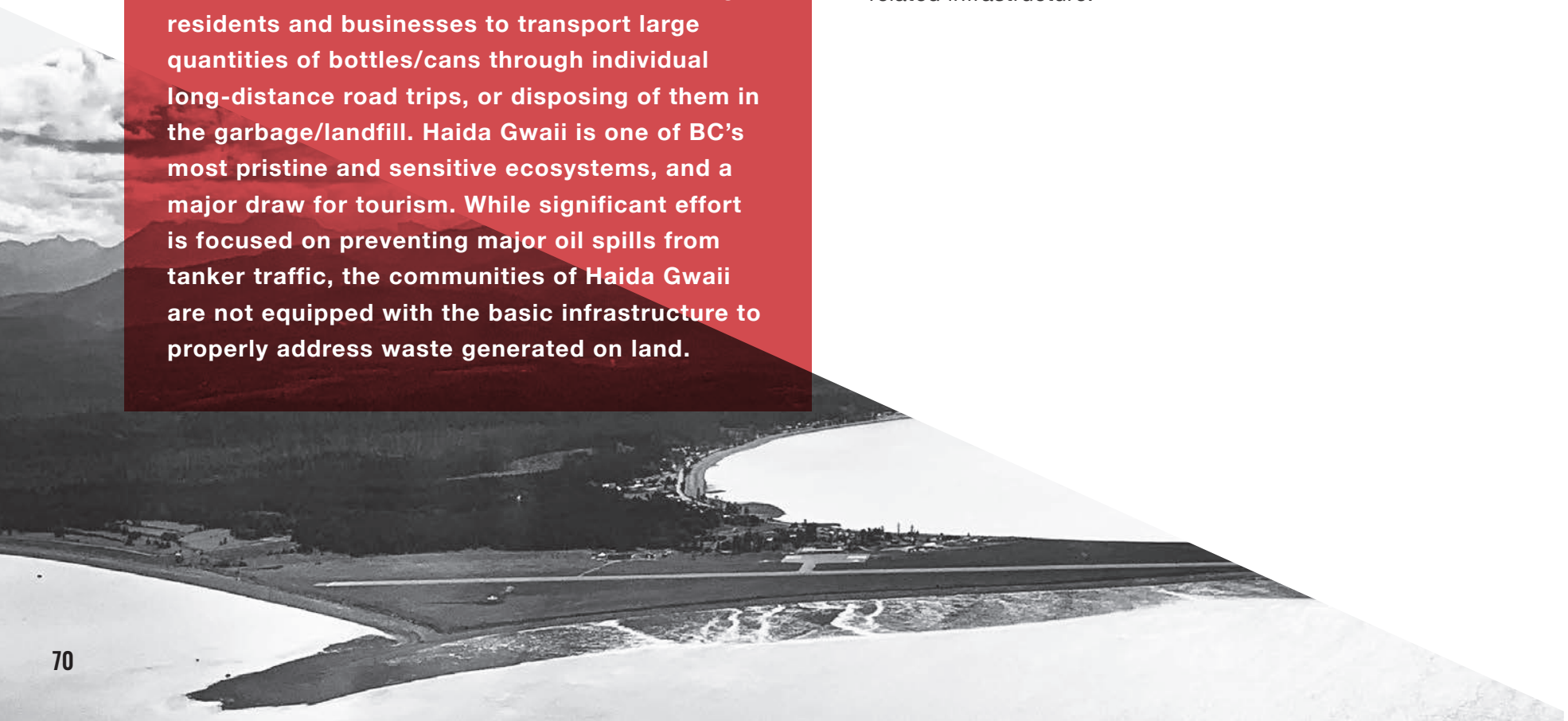
33 Recycle BC is the primary contractor of recycling in regions across the province. Recycle BC offers limited services in many, but not all, RBA communities and does not offer the same level of waste diversion services compared to BC's urban areas.

SOLID WASTE MANAGEMENT ON HAIDA GWAII

On Haida Gwaii, there is significant cost constraints to barge recyclables off island, and as such the majority of goods and materials that are delivered to Haida Gwaii stay there. For example, there are no options for households or businesses to properly dispose of oil, and it cannot be transported off island via BC Ferries due to being a restricted hazardous item not approved for sailing. A recycling depot is only located on the North end of the island, leading residents and businesses to transport large quantities of bottles/cans through individual long-distance road trips, or disposing of them in the garbage/landfill. Haida Gwaii is one of BC's most pristine and sensitive ecosystems, and a major draw for tourism. While significant effort is focused on preventing major oil spills from tanker traffic, the communities of Haida Gwaii are not equipped with the basic infrastructure to properly address waste generated on land.

Solid waste infrastructure projects include equipment and fleet purchase / replacement such as automated equipment, recycling depot upgrades or installing new depots / structures, upgrading and installing scales and wash stations, and closing landfills at capacity.

Solid waste infrastructure within the RBA is extremely limited, and it is unclear how waste diversion and the handling of hazardous waste / project related waste will be addressed by industry during construction through to operations. Approximately $59 million capital investment is required to improve solid waste management within the RBA. Ongoing investment is required to maintain and operate solid waste related infrastructure.



4.7

TRANSPORTATION

4.7 TRANSPORTATION DASHBOARD

Capital Investment Needed	Current Performance:	Readiness For Major Investment:
$292M	48%	NOT READY

Transportation Master Plan in Place

39%

Airport Asset Condition

65%

Snow Removal Capacity

72%

Transit Service

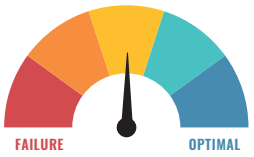
41%

Asset Condition (Road Network)

68%

Pedestrian Infrastructure

26%



Airport Capacity

50%

Cycling Infrastructure

19%

TRANSPORTATION INFRASTRUCTURE COMPENDIUM

Transportation Master Plan: Refers to a long-range planning document that provides guidance for a local government investment in transportation infrastructure and programs. Failing means there is no transportation master plan for a community. Optimal means there is an up-to-date Transportation Master Plan in place, and the local government has sufficient resources / capacity in place to implement the plan.

Snow Removal Capacity: Refers to the ability of a local government to clear snow from the road network. Challenging and failing conditions means there is limited capacity to clear primary routes within a reasonable amount of time following a major snowfall event; stockpiling snow is difficult; and snow removal equipment is inadequate.

Asset Condition (road network): Means the condition of transportation infrastructure by replacement value. Failing asset condition means that less than 20% of transportation infrastructure (by replacement value) is in fair condition or better. Optimal asset condition occurs when 100% of transportation infrastructure (by replacement value) is in fair condition or better.

Airport Capacity: Refers to the ability of the airport to meet the service level required by a community. An inadequate and failing airport capacity occurs when structures, runway and equipment are in poor condition and where significant capacity and service gaps exist. Optimal capacity means the airport facility is very adequate; structures, runway and equipment are in excellent condition and well maintained; and capacity issues and service gaps are rare.

Asset Condition (airport): Means the condition of airport infrastructure by replacement value. Failing asset condition means that less than 20% of airport infrastructure (by replacement value) is in fair condition or better. Optimal asset condition occurs when 100% of airport infrastructure (by replacement value) is in fair condition or better.

Transit Service: Refers to the transit service levels available to a community. Inadequate and failing transit services means there is no public transit service available in the community. Optimal transit service means that public transit services exist with adequate service coverage, and most neighbourhoods within the urban settlement area is serviced at reasonable/frequent times of the day.

Pedestrian Infrastructure: Refers to the walkability of urbanized areas. Inadequate and failing pedestrian infrastructure means that most streets in urbanized areas do not have sidewalks. Optimal pedestrian infrastructure means almost all streets have sidewalks and mostly on both sides of the street.

Cycling Infrastructure: Refers to the cycling infrastructure of urbanized areas (excluding mountain bike trails). Inadequate cycling infrastructure means there are no cycle routes or bike lanes. Optimal cycling infrastructure means there is a community-wide cycling network with cycling options for all ages and abilities.

TRANSPORTATION INFRASTRUCTURE

From roads to airports, the transportation network is the life line that sustains all major project investment and economic initiatives in the Northwest. It is integrated with the Port of Prince Rupert, the Cruise Port Terminal, the Stewart World Port, CN Rail, float plane terminals, countless industries from forestry to aluminum, as well as the movement of goods and services. It is also connected with BC Ferries to Haida Gwaii and neighbouring Alaskan communities like Ketchikan. The transportation system is the foundation for moving people to job sites, home, school, health services and activities.

It is also one of the most expensive costs for communities in the RBA. **Local governments in the Northwest spend 122% more per capita on transportation and transit compared to local governments in BC as a whole**[34]. This is despite limited transportation options and connectivity between communities in Northwest BC. Road network asset conditions are currently performing at fair condition, which is reflective of the significant wear from heavy trucks and equipment. It is unclear what the total impact of increased transportation activity will have on local roads, other than expecting accelerated deterioration without any new revenue to handle the stress.

Airports in the Northwest are critical infrastructure assets to support major project investment in the region. The Northwest Regional Airport, owned and operated by the Terrace-Kitimat Airport Society[35], is a key channel to mobilize workers as regional economic development intensifies. Other airports located in Smithers, Prince Rupert, Masset, and Sandspit - together with the Northwest Regional Airport - collectively serve the regional corridor to support major projects such as LNG Canada, the Coastal GasLink pipeline, mining operations, and forestry. This network is further supplemented by local government airstrips which are utilized for provincial emergency response during floods and wildfires, as well as private companies to move workers and goods.

While airport and airstrip assets are currently in place, the condition and capacity is largely inadequate to serve current needs and not ready to support major project investment in the region. The major airports are mostly well maintained, but have service gaps. Issues vary across the region, from needing to extend water servicing to the Smithers Airport, to exploring an alternative hard-link route to the Prince Rupert Airport on Digby Island currently accessed only by ferry. Airstrips are largely in fair or poor condition, and in some communities are considered more of a liability than an asset given their usage and cost. The current state of airport and airstrip network, combined with roads, pose serious concerns for Medevacs - especially with the added resource development related jobs that have higher than average incident rates[36].

34 Source: Municipal Financial and General Statistics, Ministry of Municipal Affairs and Housing.

35 There are four members of the Terrace-Kitimat Airport Society: the City of Terrace, the Terrace and District Chamber of Commerce, the Kitimat Chamber of Commerce, and the Regional District of Kitimat-Stikine.

36 Top occupations for injury and fatal costs in BC include transport truck drivers, construction trades helpers and labourers, material handlers, heavy equipment operators, welders, carpenters, and machine operators. Industry Claim Analysis 2014-2018, WorkSafe BC.

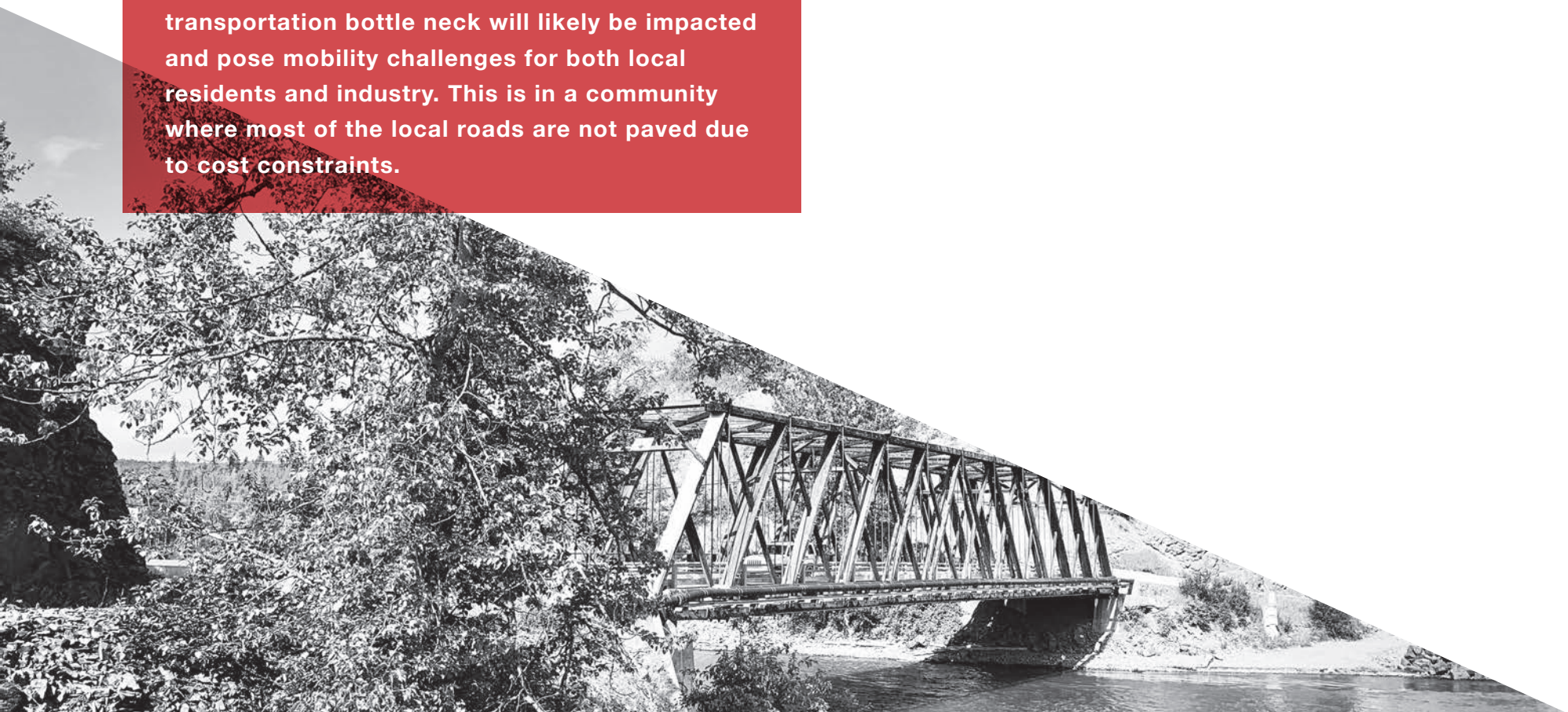
It is also widely known that public transit and the interconnectivity between communities in Northwest BC remain poor. The folding of Greyhound Bus service along Highway 16 has compounded the safety and accessibility issues of residents to travel between communities to access basic centralized services such as health services, social services, employment support, and community programs. Travelling between communities is also required for shopping, business meetings, and accessing airports and ferries. There is no grocery store in Granisle, for example, requiring residents to travel to Houston or Burns Lake for food and miscellaneous items - an hours drive on a snow-free day. The community bus program that receives local government financial contribution is an improvement, but **significant transit service gaps continue and the current situation is inadequate to meet anticipated population growth and migration flows across the region**.

Transportation infrastructure within the RBA is strained, and is not ready to support major economic investment projects. Approximately $292 million capital investment is required to bring transportation infrastructure to adequate condition and capacity, including upgrading roads, bridges, pedestrian and cycling infrastructure, and combating dust and particulates generated by vehicles. Ongoing annual operating investment is required to maintain transportation infrastructure.

The City of Terrace has approximately 100 kilometres of paved roads and is only in the position to rebuild approximately half a kilometer per year within their current budget. With residential growth escalating at a rapid rate due to the economic development in the region, there is a pressing need to reconstruct two of the three primary access roads to provide safe vehicular, cycling and pedestrian infrastructure for residents living in the bench area. As the economic development is all taking place outside of the City's municipal boundary, there is no direct revenue to the municipality and therefore they are forced to rely solely on scarce grants for this $25 million project.

TELKWA COAL, BRIDGES AND RIVERS

In Telkwa, the confluence of the Bulkley River and Telkwa River intersect with a single-lane vehicle trestle bridge as well as a train bridge. The main water line also crosses along the old, single-lane trestle bridge. This transportation convergence already poses challenges with vehicle traffic, increased train traffic, and seasonal flooding. With Telkwa Metallurgical Coal being explored in the vicinity, with proximity to rail and the Port of Prince Rupert, this transportation bottle neck will likely be impacted and pose mobility challenges for both local residents and industry. This is in a community where most of the local roads are not paved due to cost constraints.



4.8

WASTEWATER

4.8 WASTEWATER DASHBOARD

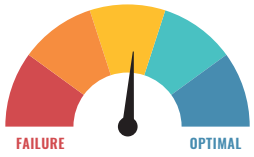
Capital Investment Needed	Current Performance:	Readiness For Major Investment:
$390M	64%	NOT READY

Capacity

52%

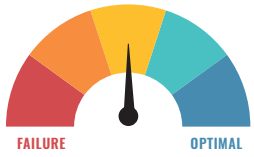
Accessibility

80%



Effluent Quality

53%



Asset Condition

50%

Reliability

86%

WASTEWATER INFRASTRUCTURE COMPENDIUM

System Capacity: Means ability of the wastewater system to meet the service needs of a community. Failing capacity means the treatment plant / facility is operating at less than 60% on one or more design parameters. Optimal capacity means that the treatment plant facility is operating at more than 90% on one or more design parameters.

Effluent Quality: Refers to the quality of effluent discharge. Failing effluent quality means that wastewater does not meet Federal or Provincial regulatory requirements. Optimal performance means effluent quality meets or exceeds Federal and Provincial regulatory requirements.

Reliability: Means the ability of wastewater infrastructure to handle major disruptions. Failing reliability means there are frequent major disruptions (greater than 24 hours) to service provision to a large number of customers (greater than 10% of connected users). Optimal performance means there are few minor disruptions to service provision, and no major disruptions.

Accessibility: Means connecting residents/properties to wastewater infrastructure. Inadequate or failing accessibility means 50% or more of the community does not have the opportunity to connect to wastewater service (but want/need to). Optimal accessibility means all residents who want/need wastewater service are connected to the service.

Asset Condition: Means the condition of wastewater infrastructure by replacement value. Failing asset condition means that less than 20% of wastewater infrastructure (by replacement value) is in fair condition or better. Optimal asset condition occurs when 100% of wastewater infrastructure (by replacement value) is in fair condition or better.

WASTEWATER INFRASTRUCTURE

Wastewater infrastructure is in extreme need of capital and operating investment in Northwest BC. **Only five out of 21 local governments in the RBA are currently meeting provincial or federal regulatory requirements for effluent discharge**. Overall asset condition is poor and in need of significant upgrades and replacement.

Plans to address wastewater infrastructure, including sewer systems, are in various stages of concept planning, feasibility studies and assessments such as lagoon capacity and wastewater treatment facilities. But implementing study findings are difficult for Northwest BC communities given cost and complexity. For example, wastewater infrastructure in some RBA communities are located in vulnerable areas - like in Port Clements where aging lift stations are located close to the high tide line. In Prince Rupert, a new sewer treatment plant could cost upwards of $150 to $200 million.

In Northwest BC, local governments require financial support to implement wastewater infrastructure improvements. Grants are more likely to be secured for capital projects, usually requiring matching funds that cannot always be secured by RBA communities.

System improvements such as lagoon de-sludging can be in excess of half a million dollars, but are less likely to be funded because they are considered an operating expense.

Considering the potential of major projects tapping into the wastewater system, such as Coastal GasLink pump and haul of sewage into the Burns Lake lagoon system, further amplifies the need to improve capacity, condition and quality of local government wastewater infrastructure.

The Village of Queen Charlotte currently pumps untreated sewage into the ocean, and has until the year 2022 to meet regulatory standards outlined by the Department of Fisheries and Oceans. Studies have evaluated various options from a stand-alone system to tying into the Skidegate Landing Treatment Plant - an upgrade that could cost approximately $22 million in capital investment.

4.9

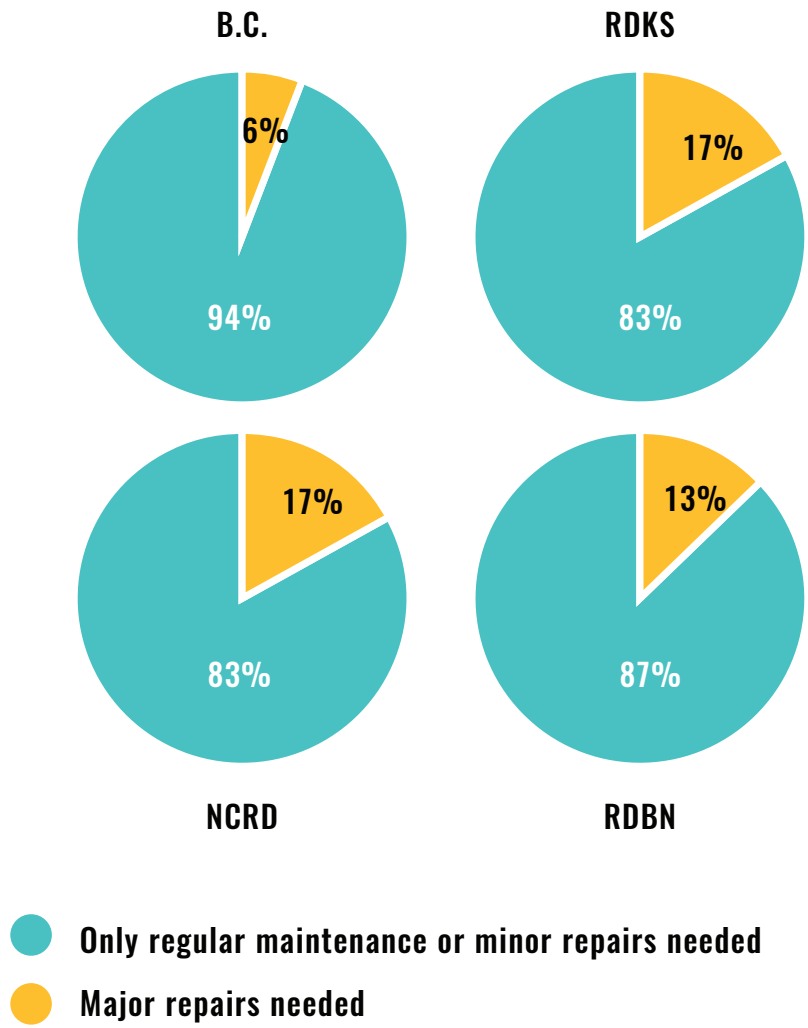
OTHER INFRASTRUCTURE NEEDS

4.9 OTHER INFRASTRUCTURE NEEDS

Infrastructure responsibility outside of the local government purview is also needed to support industry growth and to attract and retain a workforce to fill job vacancies. Broadband infrastructure is a high need, and costly to introduce in the RBA. For example, the RDBN estimates $25 million in investment need to build 500+ km fibre optic cable and distribution infrastructure in their regional district alone[37]. Other infrastructure needs include housing, health care, child care and education. Given the Province is primarily responsible for these sectors, they have been excluded from the Investment Needs Analysis Report. However, they should be investigated as an important *companion consideration*.

The condition of housing in Northwest BC is lagging behind Provincial averages and limits the ability to attract workers to fill job vacancy.

Figure 5: Condition Of Housing In Northwest BC[38]



37 RDBN Broadband study, TANEx Engineering Corporation, 2019.

38 Source: Statistics Canada, Census (2016). The 2016 Census indicates that the housing in Northwest BC is in poor condition compared to the province of B.C. as a whole. Examples of "major repairs" include problems that compromise the dwelling structure (such as structural problems with the walls, floors, or ceilings) or the major systems of the dwelling (such as heating, plumbing, and electrical).

5.0

REGIONAL TRANSFORMATION

5.0 REGIONAL TRANSFORMATION

This Investment Needs Analysis Report summarizes findings from Phase 1 of the Northwest BC Sustainability and Livability Plan. Its' focus is on short-term and immediate infrastructure and service needs to accommodate anticipated growth related to major project investment.

This report also serves as a framework to investigate opportunities for regional transformation towards long term sustainable and livable community development, including:

- **Market Opportunity and Economic Development Analysis**: Looking beyond the infrastructure and service needs to meet anticipated growth in the region, this step would involve investigating the opportunity to leverage the unique regional prosperity into long-term economic development and diversification of the region.
- **Engagement**: Broad engagement with the public and stakeholders to imagine the future of Northwest BC. This component of implementation has the potential to be visionary and pragmatically imaginative, inviting residents of Northwest BC to be strategically involved in a once in a generation opportunity to influence regional change.
- **Guide Growth and Development**: This includes prioritizing infrastructure and service projects and establishing a long-term framework for revenue-sharing amongst RBA communities. Goals, objectives and strategies will be outlined to guide development and growth towards long-term sustainability and livability.
- **Creating a NWBC Sustainability and Livability Plan**: Informed by the market opportunity analysis, community engagement, and established goals, the NWBC Sustainability and Livability Plan will be created including an implementation strategy. Linkages will be made between the Plans' goals, objectives and strategies with infrastructure needs and industry investment. An emphasis on leveraging investment towards regional transformation, social and economic resiliency, revitalization and creating complete communities will be integrated into the plan.

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