WHITEHORSE TRANSPORTATION MASTER PLAN

Whitehorse

Indigenous Acknowledgement

The City of Whitehorse acknowledges that it is situated on the traditional territories of the Ta'an Kwäch'än Council and the Kwanlin Dün First Nation, as defined in the 2002 Ta'an Kwäch'än Council Final and Self-Governing Agreements and the 2005 Kwanlin Dün First Nation Final and Self-Governing Agreements.

We acknowledge that the Ta'an Kwäch'än Council and the Kwanlin Dün First Nation understand their history in what is now Whitehorse since time immemorial and that the two Nations have had, and continue to have, a spiritual, cultural, and economic connection to the land and resources of this area. We acknowledge that these governments and their citizens contribute significantly to city's social, cultural, spiritual, and economic prosperity. The City of Whitehorse has committed to strengthening its relationships with Kwanlin Dün First Nation and the Ta'an Kwäch'än Council through the 2018 Declaration of Commitment.

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EXECUTIVE SUMMARY

Welcome to the Whitehorse Transportation Master Plan (TMP).

The Whitehorse TMP outlines a long-term vision and strategy for guiding transportation decision-making and investments through to the year 2040.

The TMP's overarching goal is to inspire collaborative efforts aimed at improving accessibility, equity, safety, and sustainability of the City's transportation network.

- The commitment to accessibility ensures that transportation services are inclusive and available to all members of the community through all seasons.
- The focus on equity will help address disparities and promote fairness in access to transportation resources.
- Safety is a primary goal of the plan, as the TMP strives to create a transportation network that safeguards the well-being of every individual.
- Embracing sustainability, the TMP aims to minimize environmental footprints, fostering a resilient and eco-friendly transportation system.

Recognizing the complexity of these goals, the TMP acknowledges that trade-offs will be inevitable. Balancing competing interests and priorities, the TMP seeks to find the optimal solutions that meet the unique needs of the community while building a transportation system for a sustainable and equitable future.

To ensure the success of the Whitehorse TMP, the City will need to collaborate with the private sector, development community, and other levels of government and other levels of government including First Nations governments. The Whitehorse TMP will serve as a reference for engaging with residents, businesses, and institutions to enhance transportation options and improve the quality of life in Whitehorse. It will also play a key role in responding to the land use and transportation planning decisions outlined in the Whitehorse 2040 Official Community Plan (OCP).

Key Features of the TMP

The Transportation Vision

Whitehorse's diverse transportation network will establish connections among the city's residents and businesses, and provide links to the broader Yukon Territory and beyond. This system aims to offer appealing and fair transportation options that prioritize safety, comfort, accessibility, and uninterrupted availability for individuals of all ages and abilities. Whitehorse envisions an integrated array of transportation facilities and services that promote cost-effective mobility while encouraging a transition toward more sustainable transportation choices, including active and shared modes. Ultimately, the city's transportation system is designed to underpin a dynamic, inclusive, forward-thinking, livable, healthy, eco-conscious, and affordable northern community.

By 2040, transportation system in Whitehorse will:

- Be accessible and provide well-connected mobility options to people of all abilities and designed to overcome barriers experienced by people with disabilities.
- Be safe and comfortable in order to encourage people of all ages and abilities to walk, cycle, and use transit.
- Be sustainable by creating attractive walking and cycling facilities and providing transit services that will reduce the reliance on automobiles as the primary mode of transportation.
- Provide attractive connections to key activity areas and create opportunities for community engagement through thoughtful street design.
- Support more mixed-use and compact land use patterns through active transportation solutions and ultimately enhance overall community health and well-being.
- Support the City’s climate action initiatives.
- Support the local economy through efficient and reliable movement of goods and services.
- Be affordable based on current revenue streams such as general taxation, development cost charges as well as partnerships with private sector interests and development. Be affordable for users of the transportation system.

High-reaching Goals

The goals of the TMP, which align with the goals in the OCP, include:

- Accessibility and Equity
- Safety and Security
- Sustainable Mobility
- Prosperous Community
- Affordability

Measurable Targets

The three measurable targets are:

1. **Mode Share:** By 2040, 40 per cent of all trips to work or school will be undertaken through active transportation, transit, shared transportation, and other emerging mobility modes, with the remaining 60 per cent or less being made using single occupancy vehicles.
2. **Injuries and Fatalities:** By 2040, there will be no fatalities or serious injuries on Whitehorse's transportation network.
3. **Greenhouse Gas (GHG) Emissions:** By 2040, total GHG emissions will be reduced by 10 per cent (relative to 2014 levels).

Over time, these three Targets will allow the City to monitor advancements, assess the effectiveness of strategies and measures, and encourage both the City and the community to alter their patterns of transportation.

Multi-Modal Transportation System

The TMP aims to offer diverse transportation options, enabling individuals to select the most suitable mode of transportation, thereby reducing reliance on a single mode. The TMP prioritizes and supports five transportation modes:

- Transit
- Walking
- Cycling
- Goods Movement
- Driving

Implementation Strategies

The implementation strategies translate key policy directions into actionable work programs, ensuring alignment with the Vision and Targets of the TMP. This process is guided by a set of eight principles that resonate with the City's core values and industry best practices. These principles, in conjunction with the TMP Goals and the prioritization of transportation modes outlined in this plan, establish a comprehensive framework and structure for plan implementation.

The Implementation Plan recommends strategies and actions for the following ten themes that influence how the City's transportation network will develop and operate through to the year 2040.

- Transportation Policy and Bylaws
- Major Projects
- Active Transportation
- Transit
- Intersections and Crossings
- Parking
- Goods Movement
- New Mobility (See Section 3.8 for definition and details)
- Transportation Demand Management
- Safety, Maintenance and Operations

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1.0
INTRODUCTION

The Whitehorse TMP outlines a long-term vision and strategy for guiding transportation decision-making and investments through to the year 2040. The TMP guides how people and goods move around Whitehorse and sets the City's vision and priorities as a community in shaping a year-round multi-modal transportation system. It sets the direction for a vibrant city where people, goods, and places are conveniently connected by diverse transportation options and works towards developing an accessible, equitable, safe, and sustainable transportation network for people of all ages, abilities and incomes, and through all seasons.

The Plan includes the following seven chapters.

Chapter 1: Introduction

Chapter 2: Plan Context highlights the overall background and purpose, issues and opportunities, the study process, community engagement, and connections to previous plans.

Chapter 3: Whitehorse Today summarizes the current state of the transportation system by examining key performance indicators such as mode share and road safety. It assesses how our transportation network currently functions for transit, walking, cycling, goods movement, and driving.

Chapter 4: Future Needs and Emerging Trends discusses how the City plans to adapt and respond to changing mobility dynamics, ensuring that the City's transportation system remains efficient, sustainable, and responsive to the needs of the community. It also explores how factors such as population growth, trends, and disruptors may shape the City's transportation network in the future.

Chapter 5: Vision, Values and Goals outlines the comprehensive vision for the City's transportation network and expresses the City's dedication to promoting and increasing usage of sustainable travel modes such as transit, walking, and cycling.

Chapter 6: Implementation Plan provides an overview of the guiding principles of the implementation plan, as well as the high priority policies and projects that the City should focus on and put into action by 2040.

Chapter 7: Monitoring and Evaluation is focused on the ongoing assessment and review of the City's transportation initiatives and programs. It aims to track the progress and outcomes of the Whitehorse TMP, ensuring it aligns with the City's transportation objectives. Using the key performance indicators, the effectiveness of transportation projects can be measured and reported to the community.

2.0

PLAN CONTEXT

Transportation decisions affect us all. How people and goods move affects residents, businesses, and visitors alike whether you walk, cycle, take transit, drive, or ship products or have them delivered. Transportation is an integral part of everyone's daily lives as it enables people to travel within the city and beyond to meet their daily needs. It plays a crucial role in Whitehorse's economy by supporting a wide array of businesses, institutions, and industries through the reliable and efficient movement of goods and services. It also provides access to our homes and facilitates the delivery of critical services such as emergency services and utilities such as water, sewage, electricity, solid waste, and other public works.

Transportation has a significant influence on how Whitehorse develops and grows as a city. Transportation investments have a direct impact on how the City manages and directs growth, how communities are shaped over time, and how unique neighborhood characteristics and special places are created. Similarly, transportation is intrinsically linked with land use and is shaped by land use planning and policy decisions.

The Whitehorse TMP will guide transportation planning and policy decisions in Whitehorse. It is the City's long-term vision and strategy for transportation decision-making and investment and is a long-range planning tool that provides a high-level direction and objectives for developing the City's transportation system through the year 2040. The TMP guides how people and goods move around Whitehorse and sets the direction for a vibrant city where people, goods, and places are conveniently connected by diverse transportation options and works towards developing an accessible, equitable, safe, and sustainable transportation network for people of all ages, abilities, and incomes, and through all seasons.

As the vision is set for the TMP, there are important decisions and meaningful discussions to be had as individuals, as a community, and as a City towards developing and shaping an accessible, equitable, safe, and sustainable transportation system and ultimately a vibrant and livable Whitehorse. All the choices we make moving forward will require some give and take, compromises, and trade-offs.

2.1 Why is an Updated Plan Needed

The City is responsible for all the roadways within its boundaries, with the exception of the Alaska Highway and the North Klondike Highway, which are managed by the Government of Yukon Department of Highways and Public Works. The City has previously completed major reviews of its transportation network beginning with the 1992 City-wide Traffic Study and the subsequent 2004 City-wide Transportation Study. At that time, the 2004 study was progressive and strove to achieve a balanced multi-modal approach to the planning of the transportation network. Sustainable modes of transportation were considered and given more weight in the decision-making process than ever before through the identification and creation of pedestrian, cycling, and transit routes through the city, with the goal of maintaining and enhancing the quality of life for Whitehorse residents, businesses, and visitors.

However, there have been many changes since the 2004 study was developed. The City has implemented many changes and initiatives from the previous study. Whitehorse has also now grown into a city of over 30,000 people. By the year 2040, Whitehorse is expected to grow to more than 40,000 people, representing a 36 per cent increase from 2019 levels. On the other hand, Whitehorse's employment opportunities will also grow to approximately 27,500 jobs by 2040, a 36 per cent increase from 2019 levels. The growths will place increasing pressures on the transportation system, and there is a need to reevaluate how people and goods move throughout the city sustainably and equitably.

In addition, several significant plans, studies, and initiatives are in progress or have been completed since the 2004 City-wide Transportation Study was developed.

The TMP builds upon and integrates with these previous and existing plans, studies, and initiatives and provides a unified and holistic approach for how to develop the City's transportation system.

The TMP is a comprehensive and strategic document that serves as a guiding framework for the development, management, and improvement of Whitehorse's transportation network through the year 2040. It is an important tool to work towards an accessible, equitable, safe, and sustainable multimodal transportation system. The TMP aims to guide the City's strategic investments in transportation infrastructure and services across Whitehorse through the year 2040.

One of the central objectives of the TMP is to enhance year-round mobility and accessibility for residents, businesses, and visitors. This involves creating a balanced and multimodal transportation system that considers all who move around whether by transit, walking, cycling, or driving. By improving connectivity and reducing congestion, the TMP aims to enhance the overall quality of life within the city, making it more attractive for economic development and investment.

Sustainability is one of the crucial elements of the TMP. In 2019, Whitehorse has declared a climate change emergency. Transportation is the largest contributor to Whitehorse's greenhouse gas (GHG) emissions, as driving accounts for majority of the City's overall GHG emissions. Maintaining the status quo is not a viable option for sustainable environmental stewardship. As a result, the TMP provides a critical opportunity for the City to contribute to its planning for climate resiliency and adaptation, prioritizing environmentally-friendly practices, and reduce GHG emissions by incorporating strategies for promoting cleaner and more sustainable transportation options, such as walking, cycling, transit, and newer forms of mobility such as electric vehicles, e-bikes and e-scooters.

The City is committed to equity, diversity, and inclusion (EDI), which are fundamental principles that guide the TMP. The TMP recognizes that access to reliable and affordable transportation is a basic human right and aims to ensure that the transportation system benefits all members of the community, regardless of their socio-economic status, race, gender, age, ability, or other characteristics. Equity is strongly connected with transportation, yet transportation planning has often historically disadvantaged people who are disproportionately impacted by transportation projects, such as people with disabilities. By centering equity, diversity, and inclusion in the TMP, it not only promotes social justice but also contributes to a more sustainable, vibrant, and resilient community where everyone can participate fully in its social life and economy.

In summary, the City of Whitehorse TMP is a vital tool for shaping the future of Whitehorse's transportation network. It aims to improve mobility, reduce environmental impacts, stimulate economic growth, and enhance the overall quality of life for residents, businesses, and visitors. Through careful planning, collaboration with stakeholders, and well-executed implementation, the TMP can lead to a more sustainable, efficient, and interconnected transportation system that meets the needs of residents now and into the future.

2.2 The Planning Process

The TMP was developed through a multi-faceted process that required careful planning, extensive data analysis, robust and meaningful community engagement, and collaboration with various stakeholders and interested parties.

A five-phase planning process was used to support the TMP (see **Figure 1**).

- **Phase 1 – Project Initiation:** Understand the current issues and opportunities within Whitehorse's transportation network.
- **Phase 2 – Data Collection and Model Development:** Collect various data sources including land use projections, traffic volumes, transportation infrastructure maps, findings from prior studies, and details on past and present initiatives. Develop a transportation model based on this information.
- **Phase 3 – Assessment of Transportation Network Requirements:** Evaluate the current and future demand for different modes of transportation considering factors such as population growth, land use patterns, and demographic trends. Identify any deficiencies in existing infrastructure and determine future needs to accommodate expected changes in travel behavior and demand.
- **Phase 4 – Implementation Plan and Financial Strategy:** Outline the projects and actions required to achieve the goals outlined in the plan. Prioritize projects based on their potential impact and feasibility, establish detailed timelines, and devise a financial strategy.
- **Phase 5 – Final Transportation Master Plan**

Each phase was complemented with extensive community and stakeholder engagement in person at community events or through online interviews, webinars, and surveys, as outlined in more detail in the next few sections.

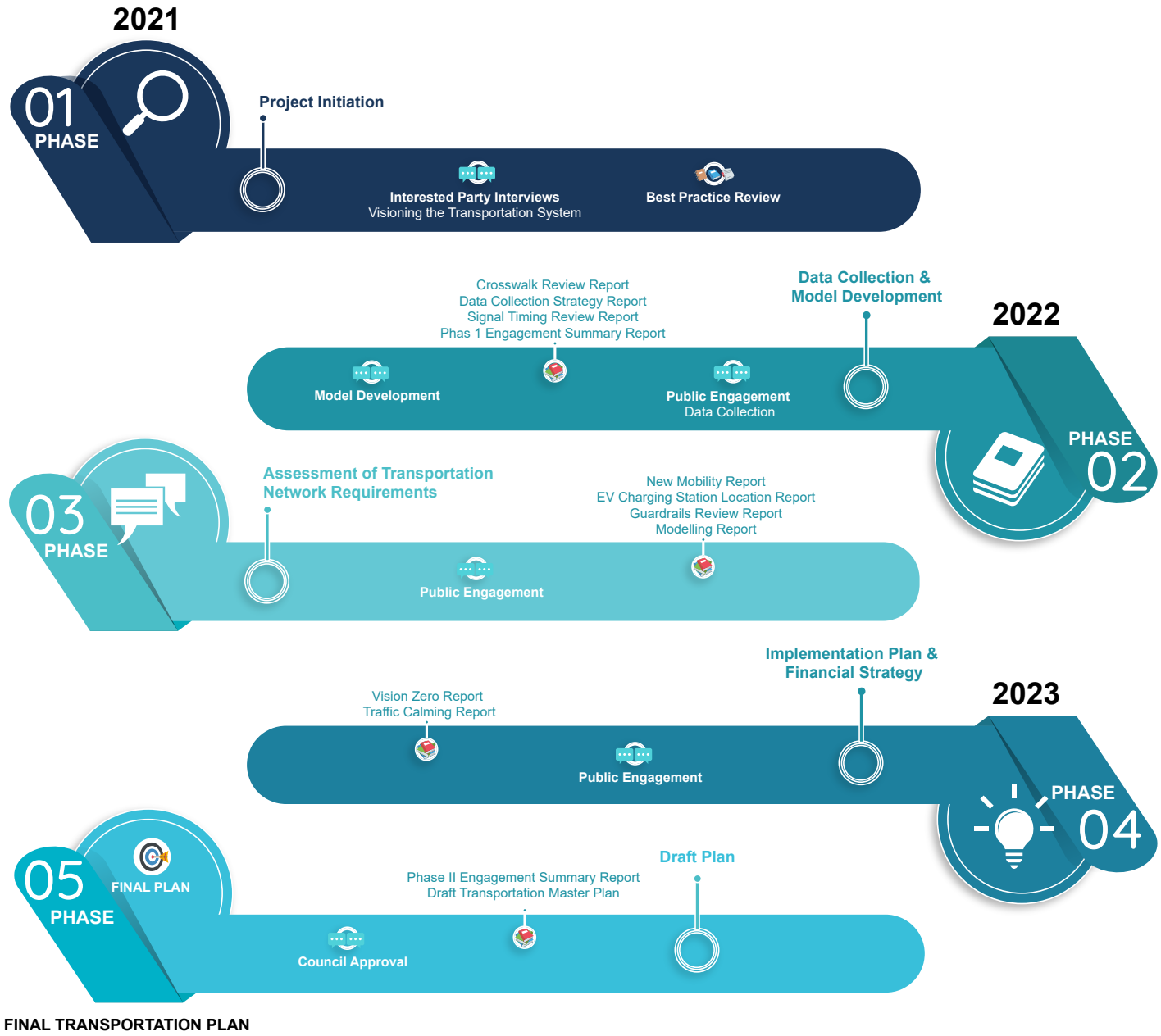


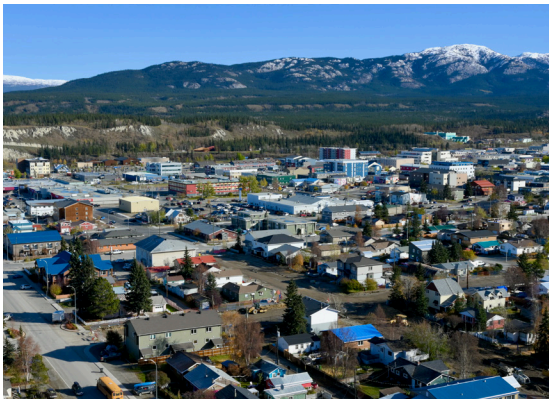
Figure 1. Whitehorse Transportation Master Plan Process

2.2.1 Issues and Opportunities

There are several issues and opportunities that have helped to shape the TMP, including:

Climate Change: Climate change poses significant challenges for the transportation system. Anomalies in weather patterns, escalating temperatures, flooding, forest fires, and other climate-related phenomena are disrupting cities around the world, including Whitehorse. However, there is a close relationship between the transportation choices and the impacts of climate change. To break this cycle, transportation planning must encourage the use of environmentally friendly options, such as increased reliance on public transit, adoption of electric vehicles, and the promotion of other modes such as walking, cycling, or rolling. We all play a role to ensure a more sustainable and resilient future for all.

Housing affordability and Transportation: Housing affordability remains a persistent issue in many cities, including Whitehorse. The transportation network plays a crucial role in affordability, as transportation is typically the second largest household expense. Transportation influences both the cost of living and the overall quality of life for residents. Well-planned and integrated transportation systems can reduce commute times and costs, making areas with affordable housing more accessible. Conversely, urban planning that develops affordable housing options near transit hubs can encourage sustainable transportation choices, mitigating the environmental impact of daily commutes. As cities evolve, a thoughtful and interconnected approach to housing and transportation will foster economically-viable, sustainable, inclusive, and diverse communities.



Equity: An equitable transportation system reduces barriers and ensures that all residents can participate meaningfully in their daily lives. It is essential to ensure the needs of all people, including historically disadvantaged groups, such as women, seniors, children and youth, people with disabilities, visible minorities, low-income households, Indigenous Peoples, the LTBGTQ2 community, and others, are considered as part of all transportation decisions. This entails developing infrastructure and policies that accommodate the unique needs of all residents. For example, the implementation of accessible transit options, pedestrian-friendly infrastructure, and outreach programs aimed at addressing specific mobility challenges faced by these groups is crucial.

Moreover, actively engaging these communities in the decision-making processes related to transportation planning can help identify and address their unique needs. By fostering inclusivity in transportation, Whitehorse can be a city where all residents, regardless of their backgrounds, can have equitable access to opportunities and resources, contributing to a more just and equitable society.

Throughout the planning process, equity was integrated at every stage to ensure that the needs and concerns of all community members were addressed. Stakeholder engagement efforts were designed to be inclusive, reaching out to diverse groups and amplifying the voices of underrepresented communities. Additionally, future project identification and prioritization were guided by principles of equity, with a focus on addressing disparities in access to transportation options and infrastructure. By incorporating an equity lens into the planning process, the TMP aims to create a more inclusive and accessible transportation system that benefits all residents.

Geography: Downtown Whitehorse is a one kilometre wide by 2.5 kilometre long strip of low land bound by the bluffs on the west and the river on the east. This geography limits people's ability to address traffic pinch points at the north and south ends where commuters travel between growing residential areas.

Weather: Whitehorse is a winter city. This means snow fall, snow accumulation, ice and spring melt impacts daily mobility, creating yet further barriers to transportation options and equity. At the same time, cold, stable winter weather creates opportunities for the development and maintenance of good winter surfaces on the transportation network. Long, dark nights in winter coupled with winter weather create additional road safety risks.

2.2.2 Communication and Engagement

Input from the community and interested parties was important to the success of the TMP. Engagement was undertaken in two phases (see **Table 1**). Over 150 residents participated in-person open houses, and more than 340 responses were received through the online surveys. Additionally, more than 20 interested parties were directly consulted by the project team.

Advertising of public engagement events was designed to attract broad-based participation from the public, with notices placed on EngageWhitehorse website and multiple social media platforms. A project website was developed and updated regularly, and media releases were issued to encourage residents to provide feedback.

The Public Engagement Phase I and Phase II What We Heard Reports are included in **Appendix A** and **Appendix B.**

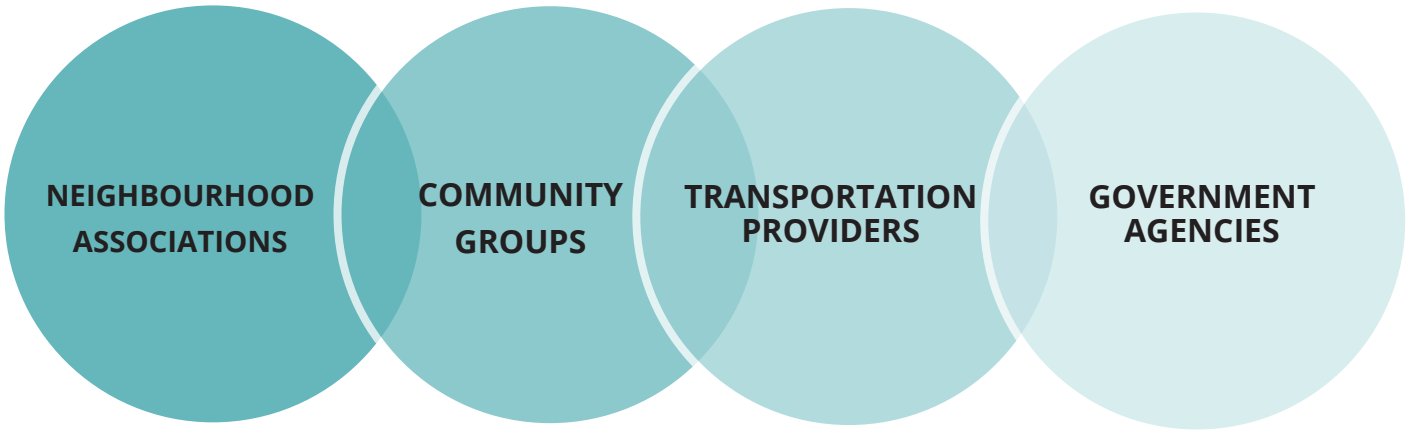
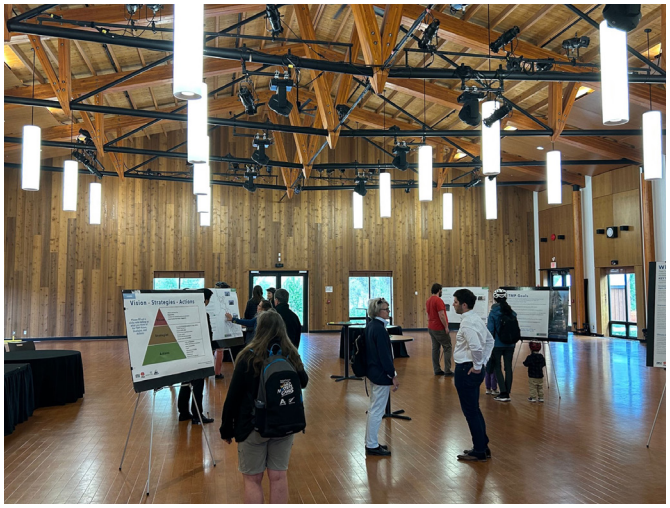


Table 1. Summary of Public Engagement

Phase No.	Phase I	Phase II
Key Themes	**Share Information + Collect Feedback**	**Vision + Plan Direction**
Engagement Timelines	April 2021 to February 2022	November 2022 to July 2023
Engagement Activities	• 1 public open house • 1 information webinar • Over 20 interested party interviews • 1 online survey • 180 completed survey questionnaires • 1 pop-up display	• 1 public open house • 2 information webinars • 1 online survey • 160 completed survey questionnaires

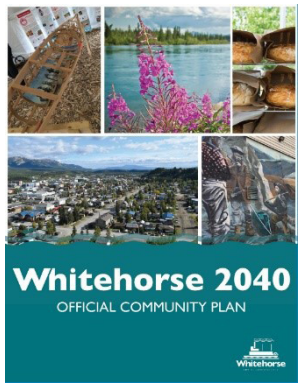
Through this process, the project team engaged a variety of community members including the public and interested stakeholders including City of Whitehorse and Yukon Government departments, First Nations governments, equity-deserving groups, transportation user groups, business community, goods movement groups, tourism associations, the Street Sign and Traffic Committee (SSTC), and youth.

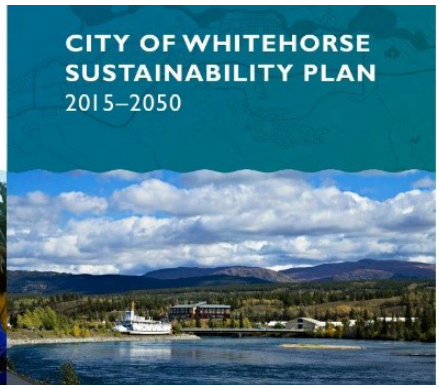


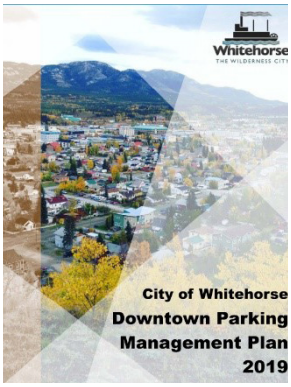
2.2.3 Connections to other Plans

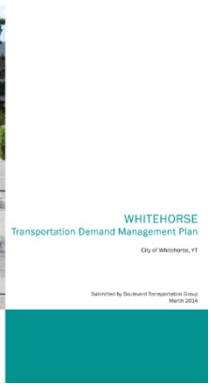
The TMP is guided by several other City policies and plans, some of which include: Whitehorse 2040 Official Community Plan (OCP), City of Whitehorse Sustainability Plan (2015 – 2020), Transportation Demand Management Plan (2014), Bicycle Network Plan (2018), Transit Master Plan (2018), Downtown Parking Management Plan (2019), and Downtown Plan (2018).

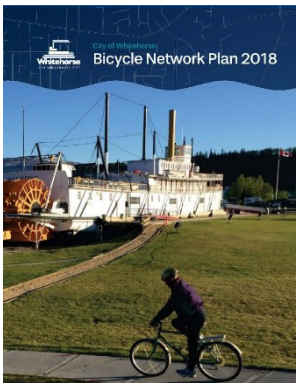
A comprehensive review of these plans ensures that the TMP aligns with existing initiatives and that outcomes can effectively address current and future transportation needs for the community.

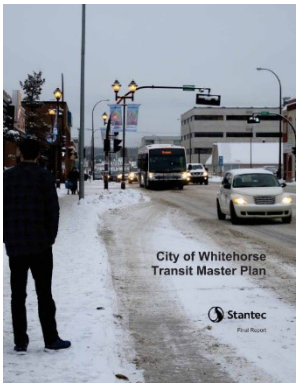






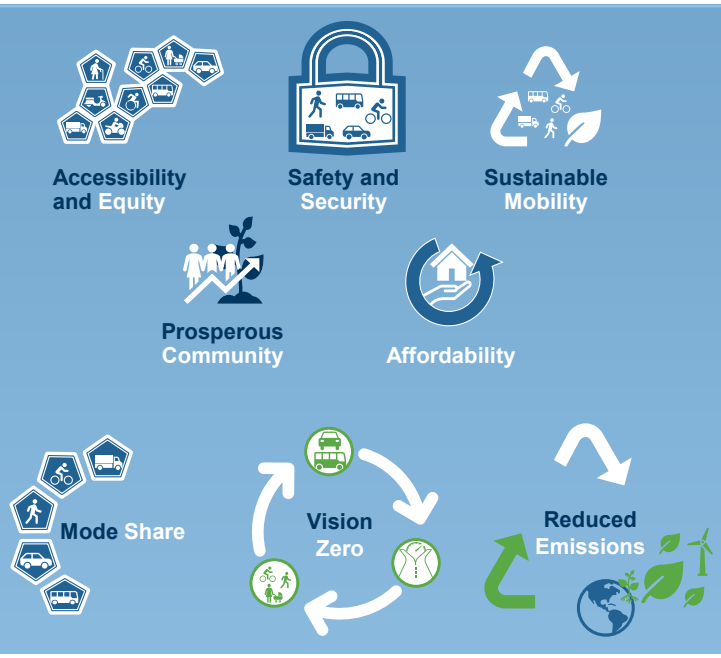






2.3 How to Read the Plan

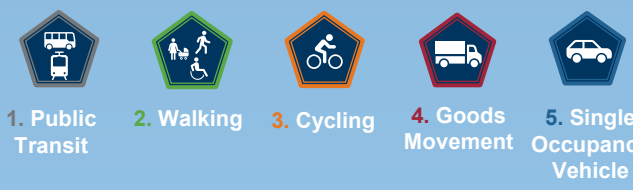
The tree diagram illustrates the hierarchical structure of the TMP. Key features of the TMP includes one transportation vision, five high-reaching goals, three measurable targets, five prioritized transportation modes, and ten implementation themes.



THE TRANSPORTATION VISION

Whitehorse's diverse transportation network will establish connections among the city's residents and businesses and provide links to the broader Yukon Territory and beyond. This system aims to offer appealing and fair transportation options that prioritize accessibility, equity, safety, sustainability, and uninterrupted availability for individuals of all ages and abilities. Whitehorse envisions an integrated array of transportation facilities and services that promote cost-effective mobility while encouraging a transition toward more sustainable transportation choices, including transit, active and shared modes. Ultimately, the city's transportation system is designed to underpin a dynamic, inclusive, forward-thinking, livable, healthy, eco-conscious, and affordable northern community.

PRIORITIZING TRANSPORTATION MODES



IMPLEMENTATION FRAMEWORK

- Transportation Policy and Bylaws
- Major Projects
- Active Transportation
- Transit
- Intersections and Crossings
- Parking
- Goods Movement
- New Mobility
- Safety, Maintenance, and Operations
- Transportation Demand Management

3.0

WHITEHORSE TODAY

The future travel needs within Whitehorse must consider recent and current trends and travel patterns. This section summarizes existing transportation conditions, including information on mode share and collision rates, and an overview of existing walking, cycling, transit, and driving infrastructure.

3.1 Mode Share

Based on Statistics Canada Census data, personal vehicle use is the primary form of transportation for commute trips to work or school, accounting for 85.5 per cent of all commute trips in 2021 (including driving and passengers), followed by walking at 6.8 per cent, public transit at 3.3 per cent, and cycling, and 2.7 per cent (see **Figure 2**). Since 2011, personal vehicle use has increased in Whitehorse, as the proportion of driving trips to commute to work or school has increased by 3.7 per cent per cent between 2011 and 2021. On the other hand, the proportion of commute trips to work or school by sustainable transportation has declined by 2.8 per cent from 15.6 per cent to 12.8 per cent over this period , while walking, cycling, and transit, have declined.

Given that the city's population has increased by roughly 8.5 per cent from 2011 to 2021, this shift towards private vehicle usage has implications for congestion and air quality, and poses a challenge in promoting sustainability and improving quality of life for residents.

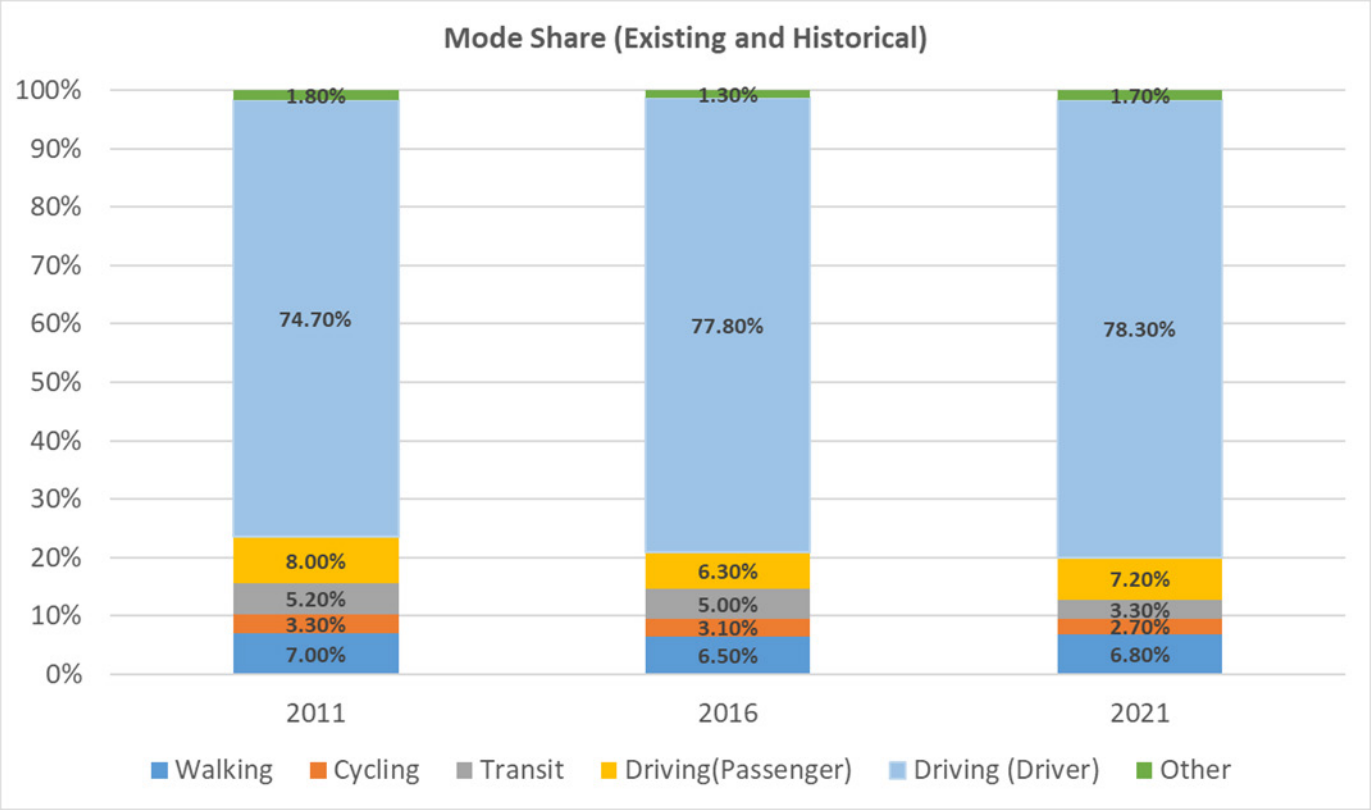


Figure 2. Mode Share (Historical and Current), Statistics Canada Census Data

Mode share, also known as modal share or mode split, refers to the distribution of trips or journeys made by different modes of transportation within a specific geographic area or population. It quantifies the percentage or proportion of total travel attributed to various transportation modes such as walking, cycling, public transit, private car use, or other alternative modes. Understanding mode share is crucial as it helps assess the popularity and effectiveness of different transportation options within a community. Monitoring mode share trends over time can inform decisions about infrastructure investments, urban planning, and sustainability initiatives to promote more balanced and efficient transportation systems.

Over the past decade, the City of Whitehorse has not met its active transportation mode share targets. Since 2011, the use of personal vehicles has been increasing, while the shares of other transportation modes, such as transit, walking, and cycling, have been on a decline. Comparing the 2021 and 2011 data, the mode shares of public transit, walking, and cycling have declined by 1.9 per cent, 0.2 per cent, and 0.6 per cent, while the automobile as driver has increased by 3.6 per cent. Given that the city's population has increased by approximately 8.5 per cent from 2011 to 2021, this shift towards private car usage has had negative implications for congestion, air quality and poses a substantial obstacle to the efforts in promoting sustainability and improving the overall quality of life for residents. Servicing infrastructure for single occupancy vehicles is very costly for the City and thus represent a significant drain on tax payer resources.

3.2 Traffic-Related Injuries and Fatalities

Based on vehicle collision data provided by the Yukon Government, there were approximately 5,960 total reported motor vehicle collisions in the City of Whitehorse between 2011 and 2021, or approximately 542 reported collisions per year. The vast majority of these reported collisions only result in property damage (84.2 per cent) (see **Figure 3**). Over this 11-year period, there have been 19 reported collisions resulting in a fatality (1.7 per year on average), and 921 collisions resulting in an injury (83.7 per year on average).

While there has not been a noticeable trend in the total number of reported collisions since 2011, the number of collisions resulting in injury or fatality increased between 2011 and 2016, but has been continuously decreasing since 2016. As the population in Whitehorse has increased by 21.2 per cent from 2011 to 2021, the City has seen a slight decrease in total collision rates per capita over this period (see **Figure 4**).

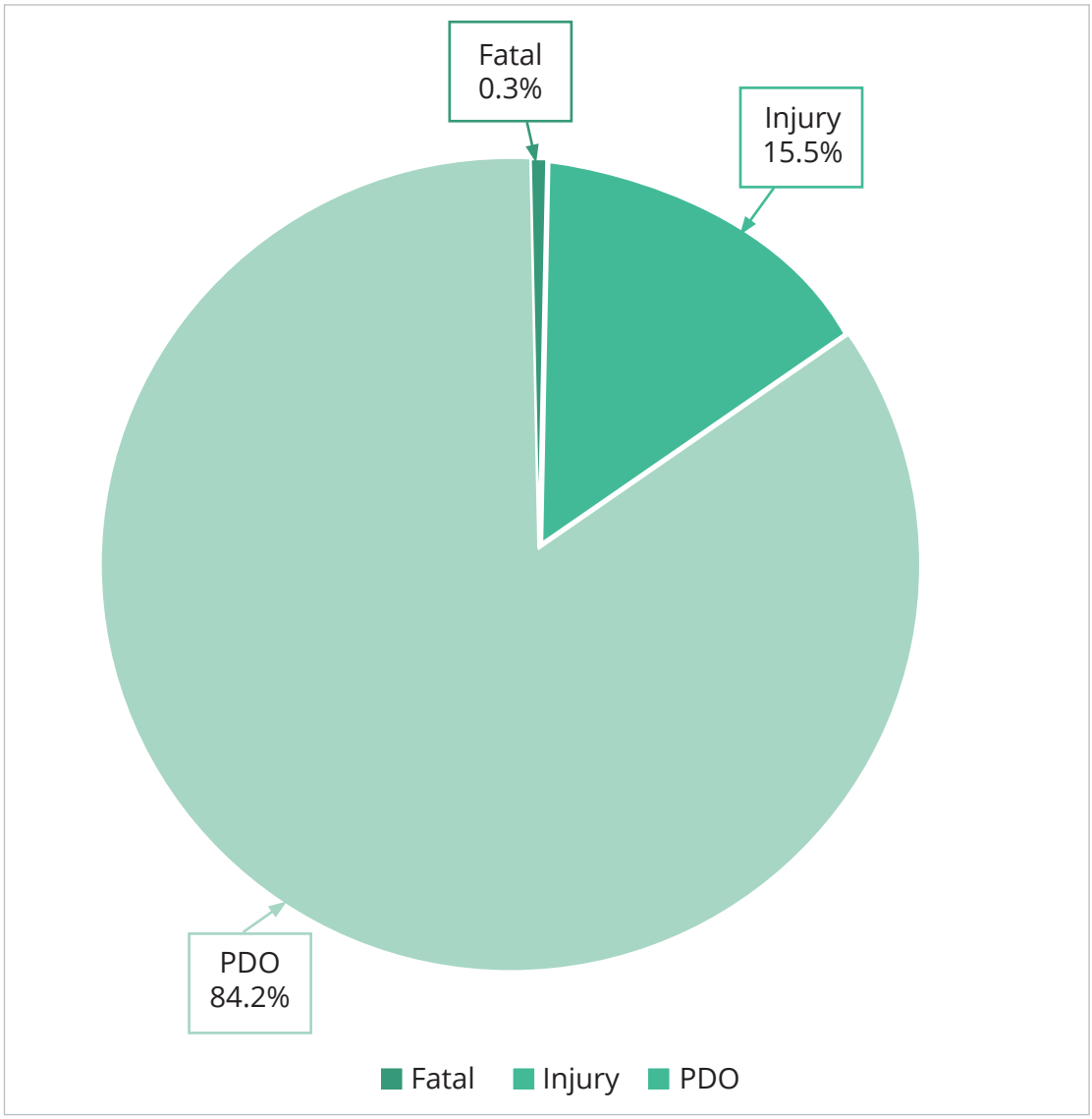


Figure 3. Traffic-Related Collisions by Type (2011-2021)

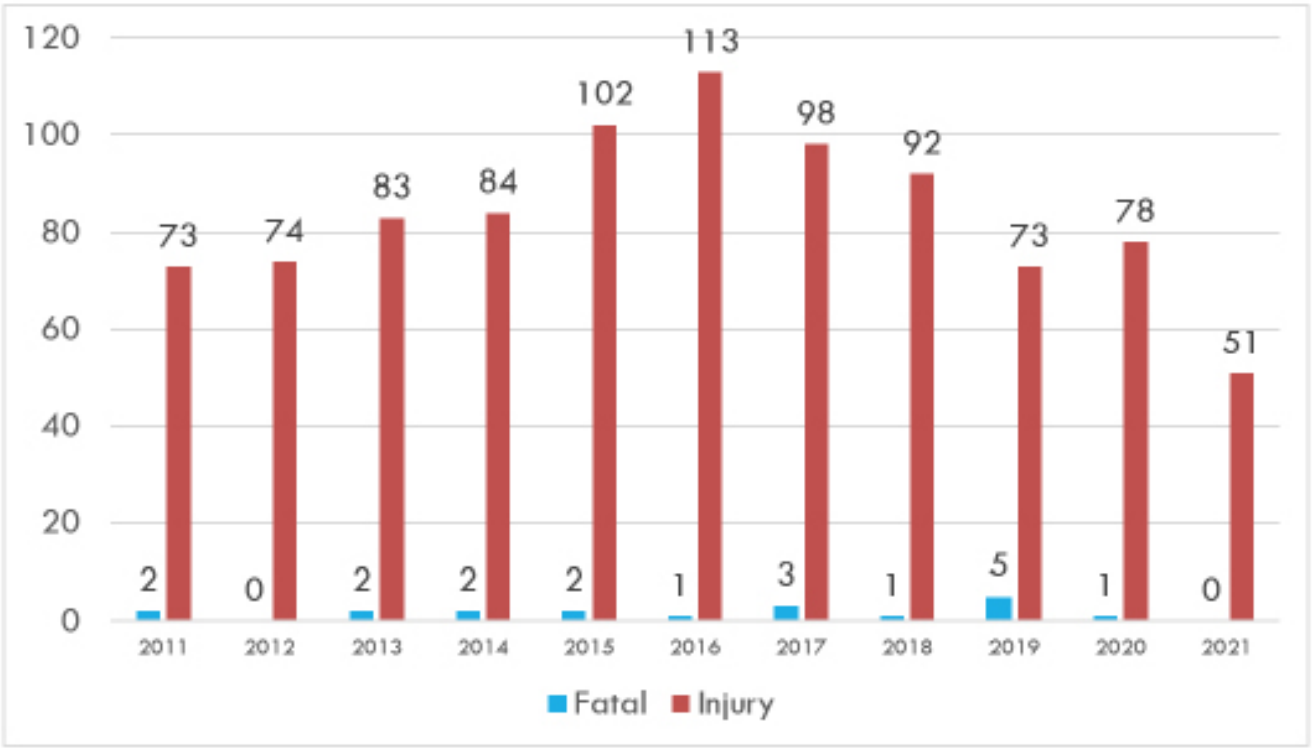


Figure 4. Whitehorse Number of Fatal and Injury Collisions (2011-2021)

There is a strong seasonal pattern of both the number of collisions and the severity in Whitehorse (**Figure 5**). The number of fatal and injury collisions in the winter months (December, January, February) is 8 per cent higher than the summer months (June, July, August), while the number of PDO collisions in the winter months is 48 per cent higher than the summer months.

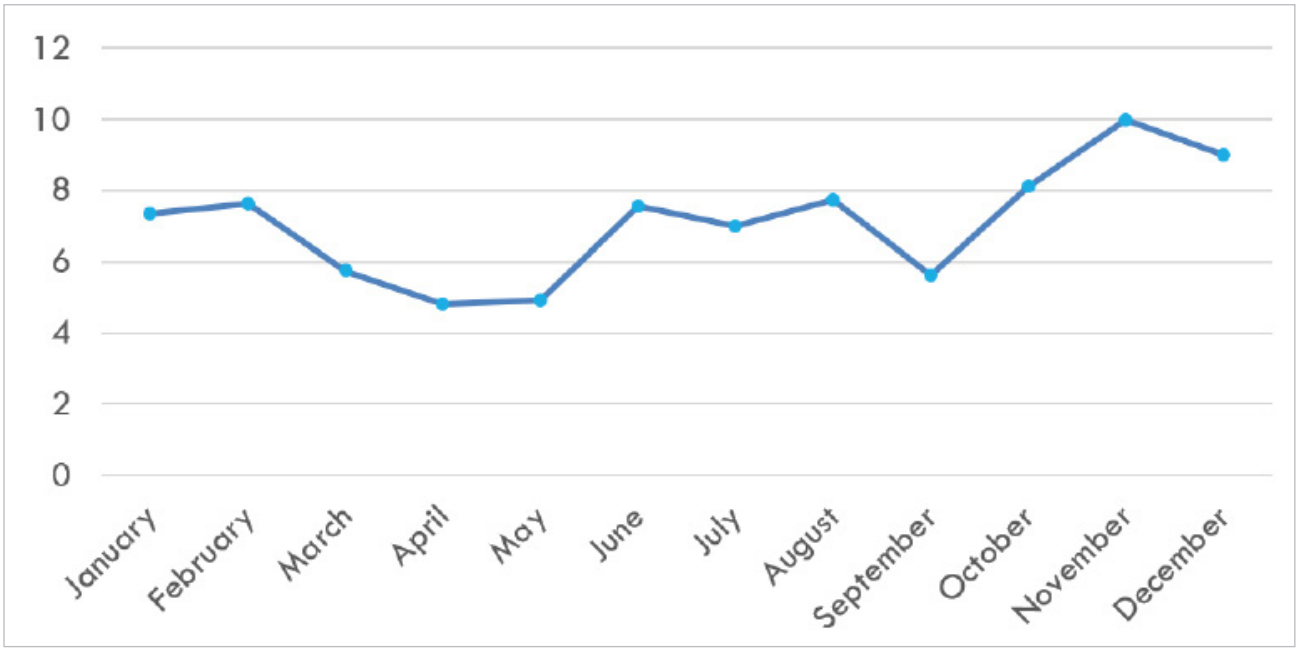


Figure 5. Temporal Distribution of Traffic-Related Injuries and Fatalities by Month (2011-2021 Average)

In general, people who identified as male represented the majority of traffic-related injuries and fatalities in the City between 2011 and 2021, accounting for 79 per cent of fatalities and 54 per cent of injuries between 2011 and 2021.

The age groups that saw the highest number of fatalities were individuals aged 15 to 24 years and 30 to 39 years (**Figure 6**). There is a noticeable decrease in injuries among drivers who are 60 years old and above.

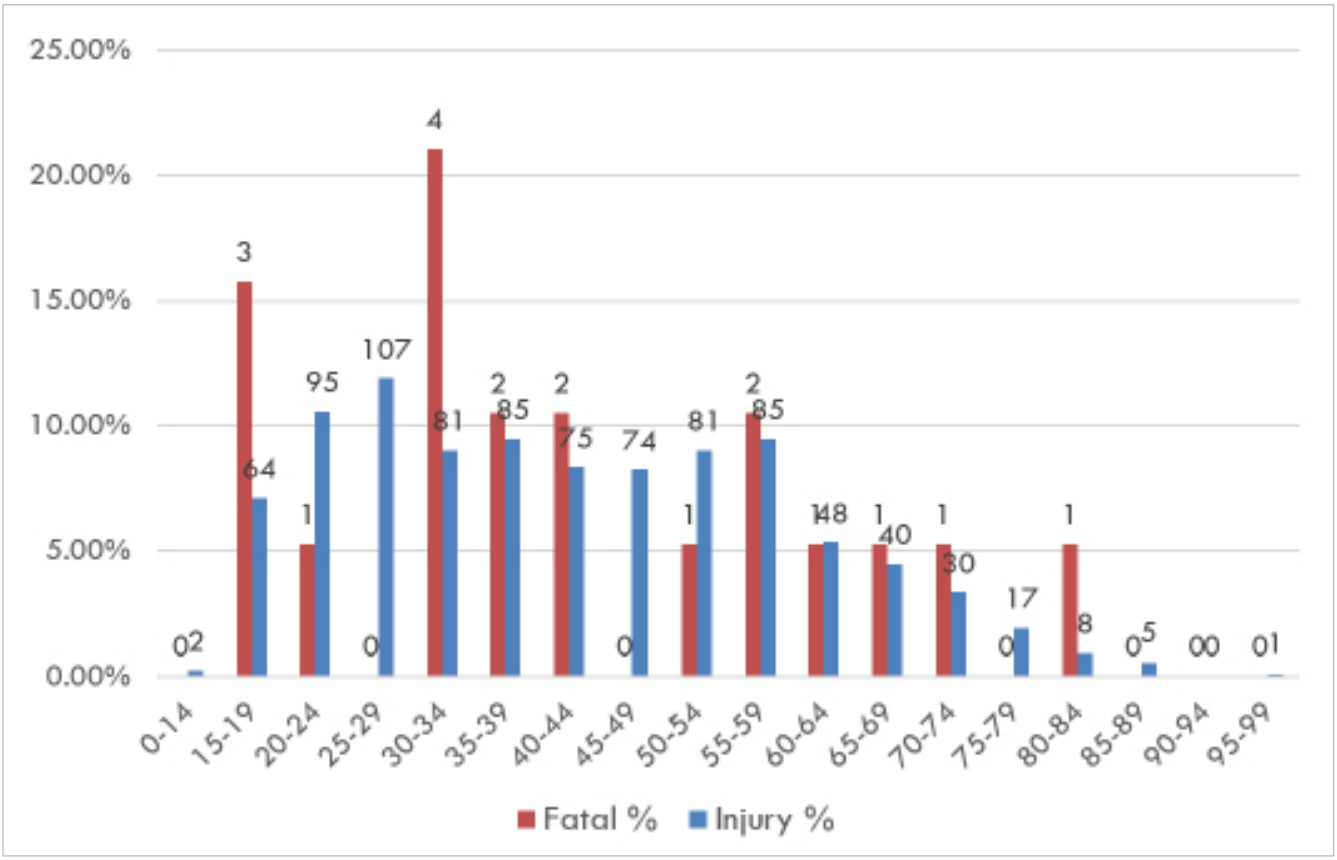


Figure 6. Distribution of Traffic-Related Fatalities and injuries by Age (2011-2021)

Figure 7 summarizes the number of fatal and injury collisions based on collision type between 2011 and 2021. The collision types associated with the highest fatality risk includes: running off road (6), hitting a fixed object (3), side swipe (2) and head-on collisions (2). Under the "other" fatal collision category, two collisions involved a vehicle colliding with a crossing pedestrian, and one collision involved a motorcycle losing control.

The collision types associated with the highest injury risk includes: rear-end (217), running off road (89+65), intersections (132), and right turns (113)

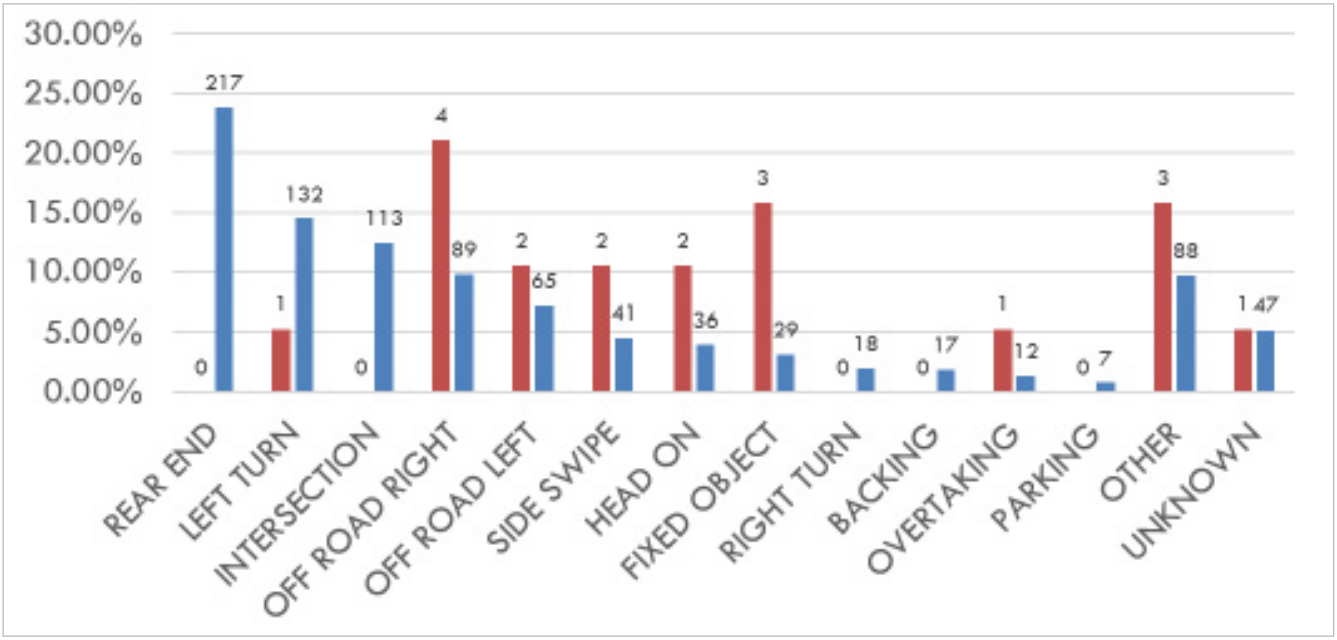


Figure 7. Traffic-Related Fatalities and Injuries by Collision Type (2011-2021)

Figure 8 summarizes the number of reported collisions involving pedestrians or cyclists between 2011 and 2021. Pedestrians were involved in 3 fatal collisions (15.7 per cent of all reported fatal collisions), while there were no reported fatalities involving cyclists over this period. Pedestrians were involved 58 injury collisions (6.3 per cent of all reported injury collisions), while cyclists were involved in 29 injury collisions (3.1 per cent of all reported injury collisions), which are both relatively similar to their respective mode shares of 6.8 and 3.3 per cent.

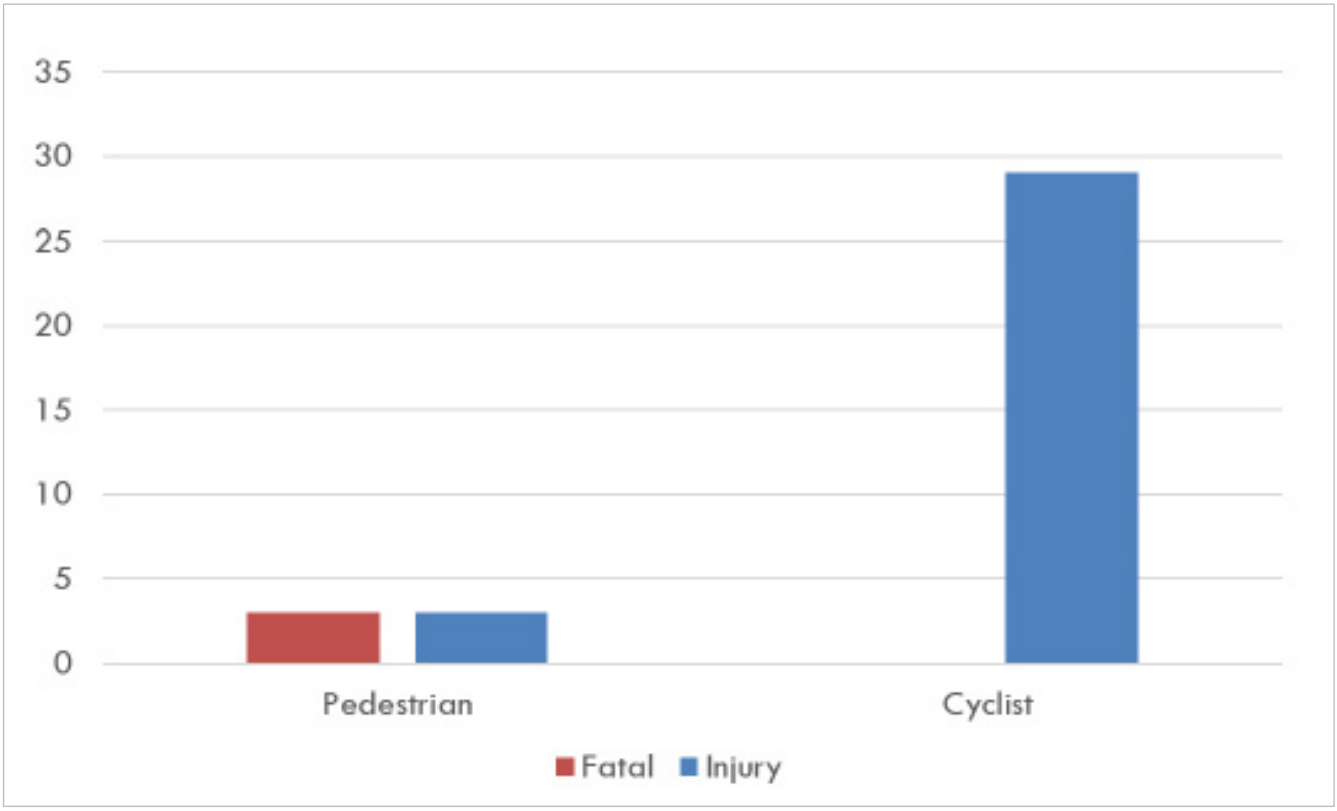


Figure 8. Traffic-Related Pedestrian and Cyclist Fatalities and Injuries (2011-2021)

Figure 9 is a collision heat map that illustrates the frequency of all collisions in different areas of the city, identifying the key areas of concern for traffic safety and potential areas for future improvements. Most collisions occur along 2nd Avenue and 4th Avenue within the Downtown, and major intersections along Two Mile Hill Road and the Mountain View Drive / Copper Road / Quartz Road corridor.

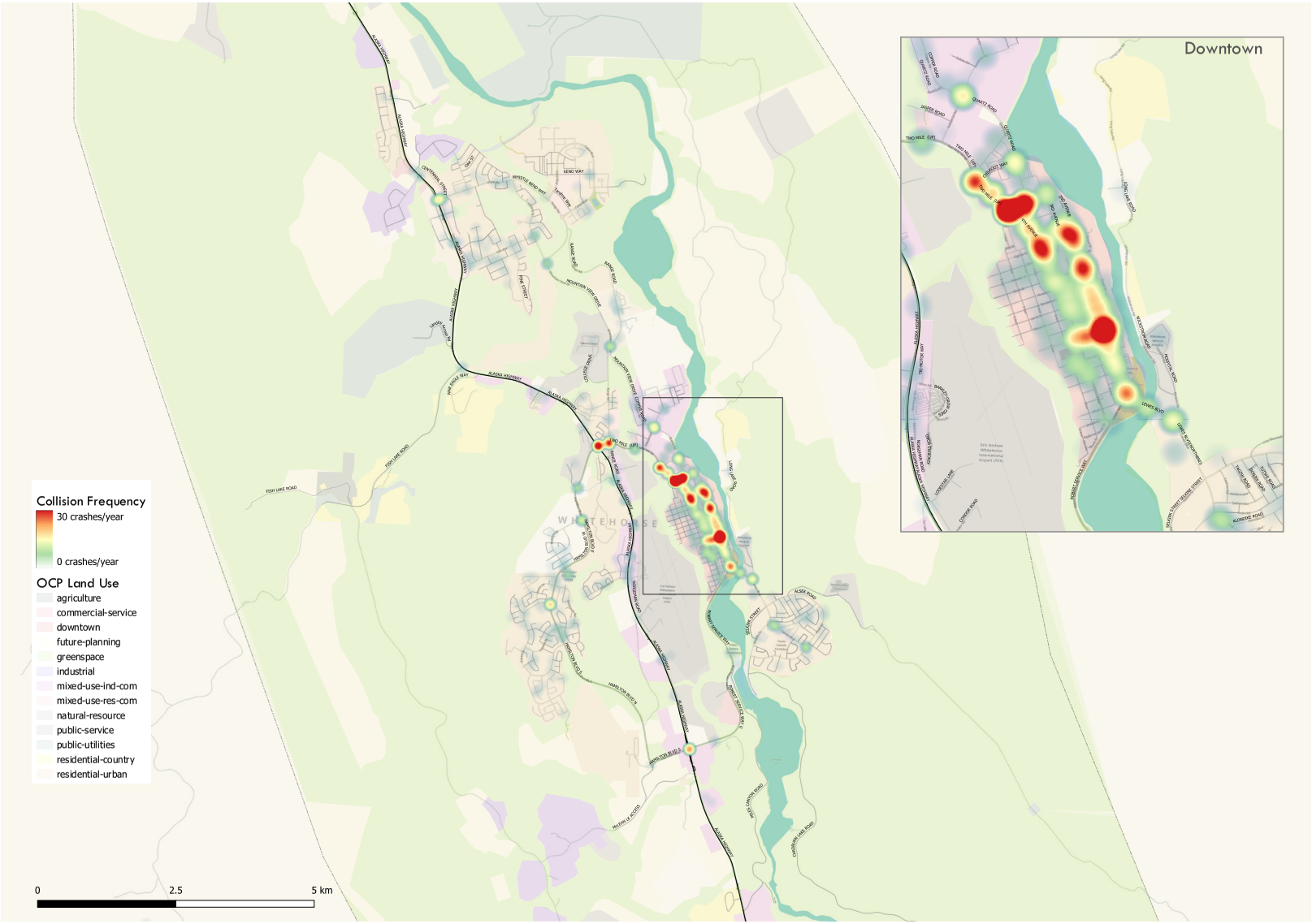


Figure 9. Traffic-Related Collisions by Location (Yukon Government Collision Data, 2015-2019)

3.3 Active Transportation

3.3.1 Walking

Whitehorse's walking network includes sidewalks, paved multi-use pathways, and trails, of which 36 kilometres have been designed for all ages and abilities (AAA) (**Table 2**).

"All ages and abilities active transportation facilities" refers to infrastructure and amenities designed to accommodate pedestrians, cyclists, and other non-motorized travelers of varying ages and physical abilities. These facilities are built with features such as wide sidewalks, separated bike lanes, curb ramps, and accessible crossings to ensure safe and convenient travel for everyone, including children, seniors, and people with disabilities or mobility challenges. The goal is to create a transportation network that is inclusive and accessible to all members of the community, regardless of their age or physical capabilities.

Table 2. Existing Pedestrian Infrastructure by Type

Infrastructure Type	# of total existing kilometres
Sidewalks	99
Multi-Use Pathways	36
Trails	1,080
City of Whitehorse road network	330

Walking Mode Share

The Statistics Canada 2021 Census data found 6.8 per cent of Whitehorse residents reporting walking as their primary means of transportation to get to work or school. Based on the historical Statistics Canada Census data (**Figure 10**), there has been an overall decreasing trend of pedestrian mode share since 1996. It is worth noting that this data is based on a relatively low sample size.

Based on feedbacks from engagement results, a key contributor to this trend might be due to population growth occurring outside of dense urban areas, (such as the Downtown and Riverdale) and the number of residents who walk to work or school is relatively lower than those who live downtown.

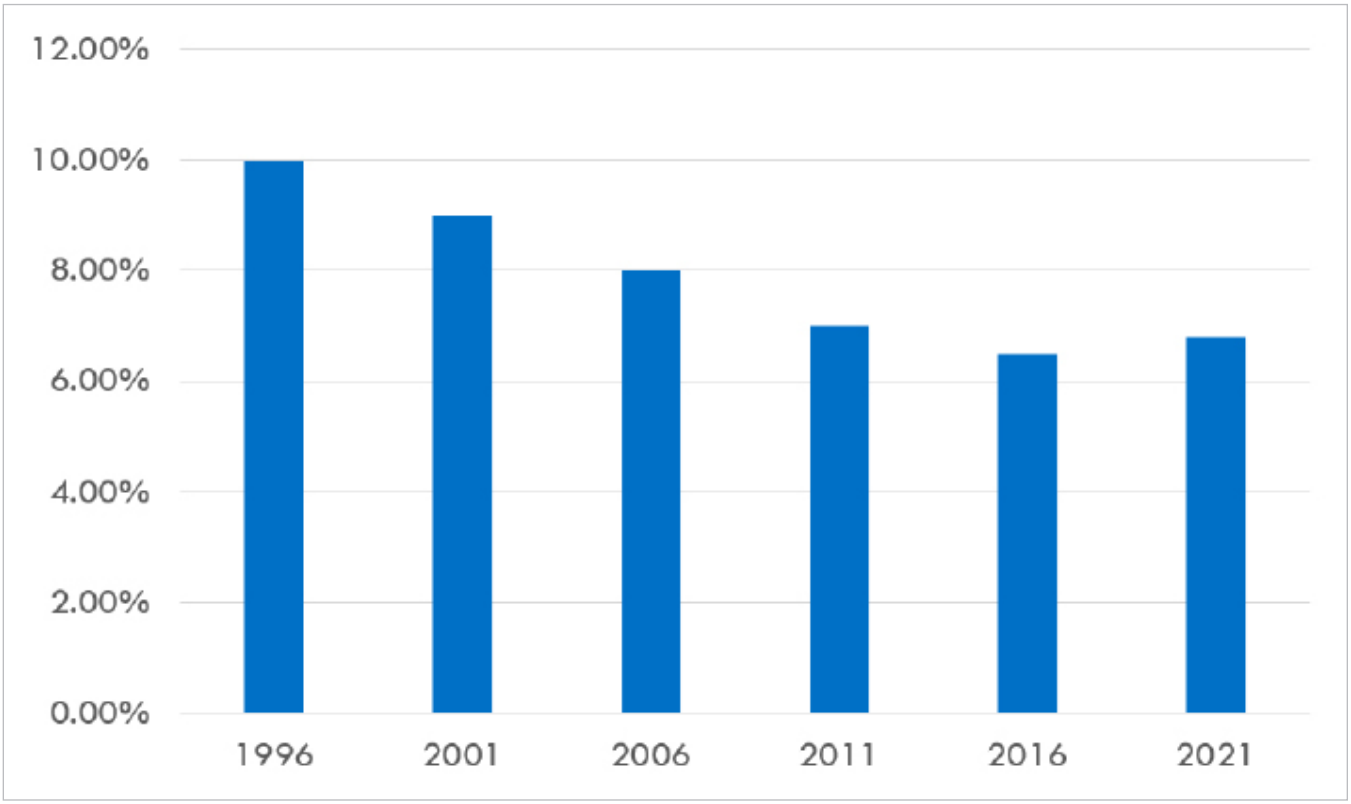


Figure 10. Whitehorse Historical Pedestrian Mode Share (Statistics Canada, National Household Survey)

Winter Maintenance

Currently, property owners bear the responsibility of clearing snow from sidewalks, but if this is not done consistently it can pose significant challenges for Active Transportation. Consequently, this presents a significant obstacle to promoting widespread adoption of active transportation during the winter season in Whitehorse.

3.3.2 Cycling

Whitehorse's cycling network is currently made up of approximately 92 kilometres of on-street and off-street facilities which include painted bicycle lanes (11km), bicycle accessible shoulders (45 kilometres), and paved multi-use pathways (35.9 kilometres). Approximately 39 per cent of the existing cycling network is considered to be All Ages and Abilities ("AAA"), including multi-use pathways and protected bicycle lanes **(Table 3).** These statistics are summer only as a portion of the network is not maintained for cycling in winter months. Active transportation implementation strategies are presented in **Section 6.4.**

Table 3. Existing Cycling Infrastructure by Type

Infrastructure Type	Total Length (Kilometres)
On-street painted bicycle lane	11
Protected bicycle lane	0.4
Multi-Use Pathway	36
Bicycle accessible shoulder	45
City of Whitehorse road network	330
Alaska Highway and Klondike Highway	71

Cycling Mode Share

The Statistics Canada 2021 Census data found 2.7 per cent of Whitehorse residents reporting using a bicycle as their primary means of transportation to get to work or school **(Figure 11).** In 2005, the City installed its first on-street bicycle lane as part of the Transportation Showcase [1], which resulted in an increase in cycling. However, between 2011 and 2021, cycling decreased from 3.3 per cent to 2.7 per cent.

In late 2020 Government of Yukon launched Canada's most progressive e-bike rebate program, and by late 2023 issued over 1000 rebates for e-bikes. This has been one of Government of Yukon's most successful climate action incentive programs to date. This level of uptake means there is almost one e-bike for every 10 households in Whitehorse. There has been observed a significant increase in year-round e-bike usage within the City, and reports of some families replacing one motor vehicle with e-cargo bikes. E-bikes are observed to be enabling a noticeable increase in longer, and year-round (including increased winter), commutes to bike. To date, there is little to no routine data collection on cycling rates and e-bike usage, and as such represents a significant data gap in understanding changing mobility trends in Whitehorse.

[1] The Transport Canada's Urban Transportation Showcase Program (UTSP) supported innovative municipal demonstration projects that could can attract Canadians to sustainable transportation options. The 2006- 2008 UTSP annual review reported that the City of Whitehorse's Showcase was working to reduce automobile use by completing active transportation networks, making roads safer and more attractive to pedestrians and cyclists, enhancing transit services and promoting sustainable transportation behaviours.

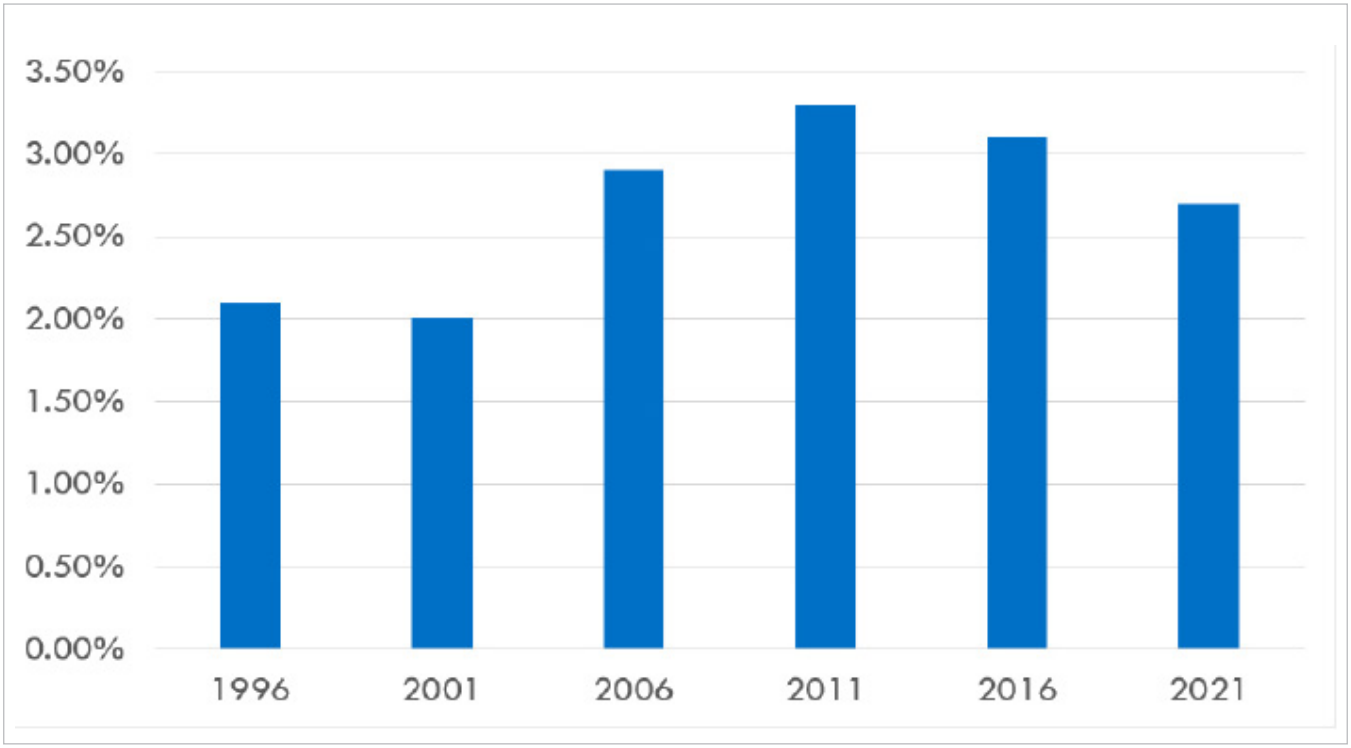
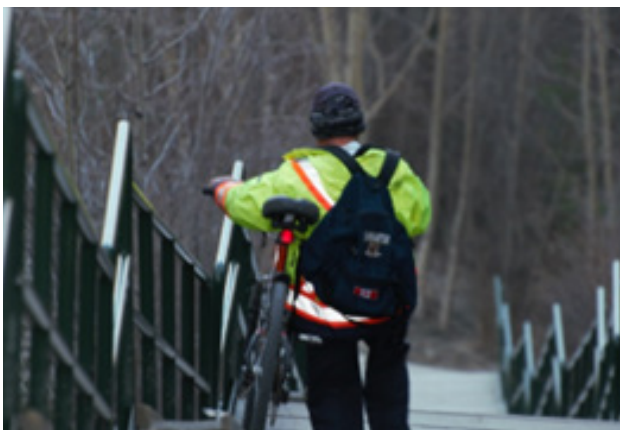


Figure 11. Whitehorse Historical Cycling Mode Share (Statistics Canada, National Household Survey)

Winter Maintenance

Similar to pedestrian infrastructure, the winter maintenance of cycling infrastructure significantly influences year-round cycling rates. Whitehorse offers favorable weather conditions for winter cycling, and below-freezing temperatures that limit melting and icy conditions. Additionally, the city experiences relatively mild temperatures for much of the winter, with few extreme cold periods. However, bike lanes within the city often serve as snow storage during road clearing efforts and do not receive the same level of maintenance as motor vehicle lanes. While the City has notably increased winter maintenance of multi-use paths in recent years, resulting in a corresponding rise in winter cycling rates, inconsistent path conditions and discontinuous maintenance still pose barriers to regular winter cycling for many individuals.



3.4 Transit

Whitehorse's transit system was founded in 1975 and commenced service in early 1976 as the Women's Minibus Society. It was later taken over by the city by 1981. This section summarizes the current conditions of the city's transit system, including transit ridership, transit fleet, transit routes, transit stops, the transit operations centre, marketing and branding, and innovative transit solutions.

Transit Routes

The City of Whitehorse currently has eight transit routes, which typically operate on an hourly schedule, with Route 2 providing additional weekday service during peak hours from August to June (**Figure 12**). The City continuously implements route changes to enhance transit services to encourage ridership. This includes optimizing transit networks, reducing travel times, enhancing accessibility, and providing a more seamless experience for passengers. There is also an opportunity to improve integration and accuracy of transit information in navigation apps.

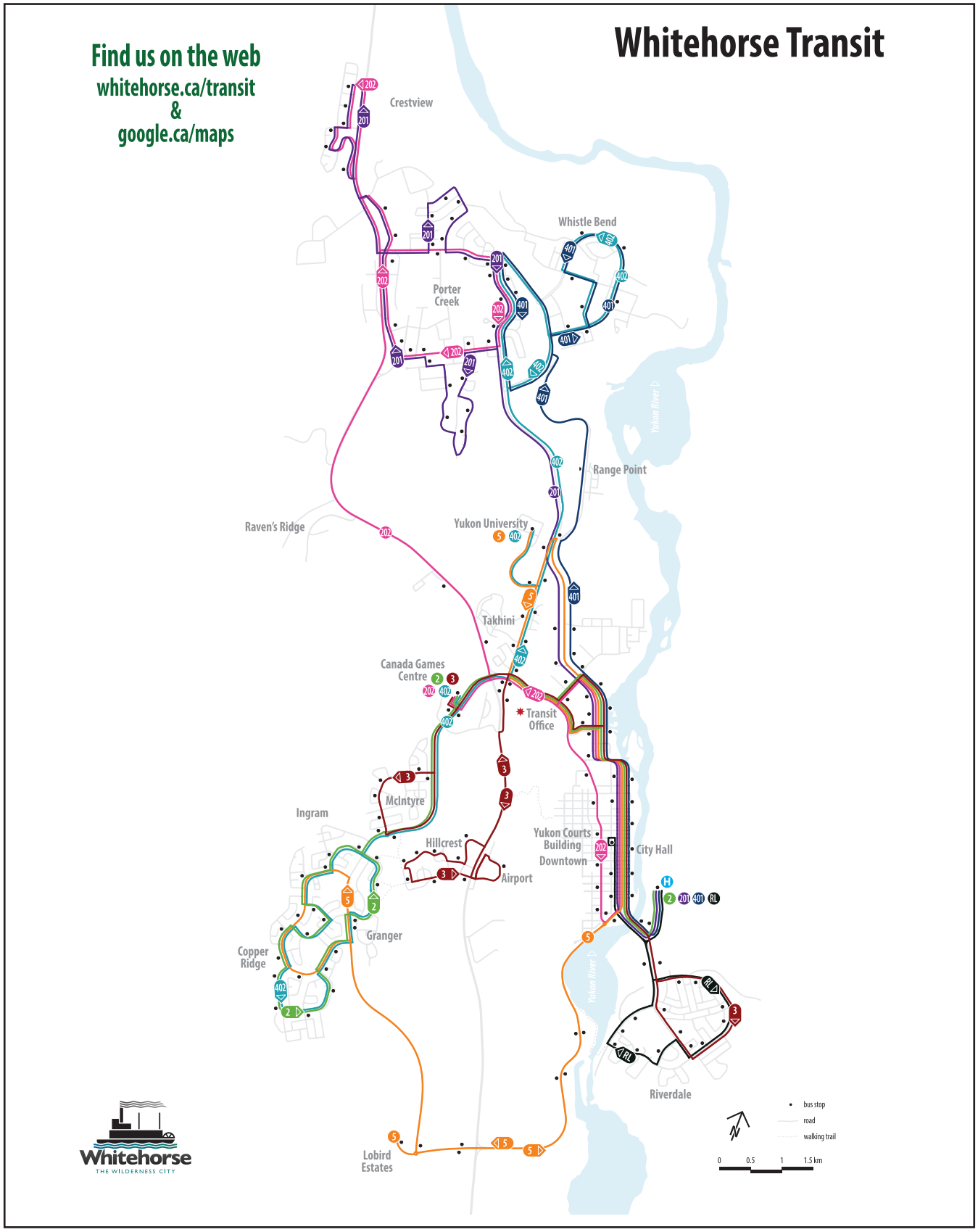


Figure 12. Whitehorse Transit Routes

Transit Mode Share

The Statistics Canada 2021 Census data found approximately 3.3 per cent of Whitehorse residents reporting taking transit as their primary means of transportation to get to work or school. Transit mode share peaked in 2011, with an overall decreasing trend between 2011 and 2021 (**Figure 13**).

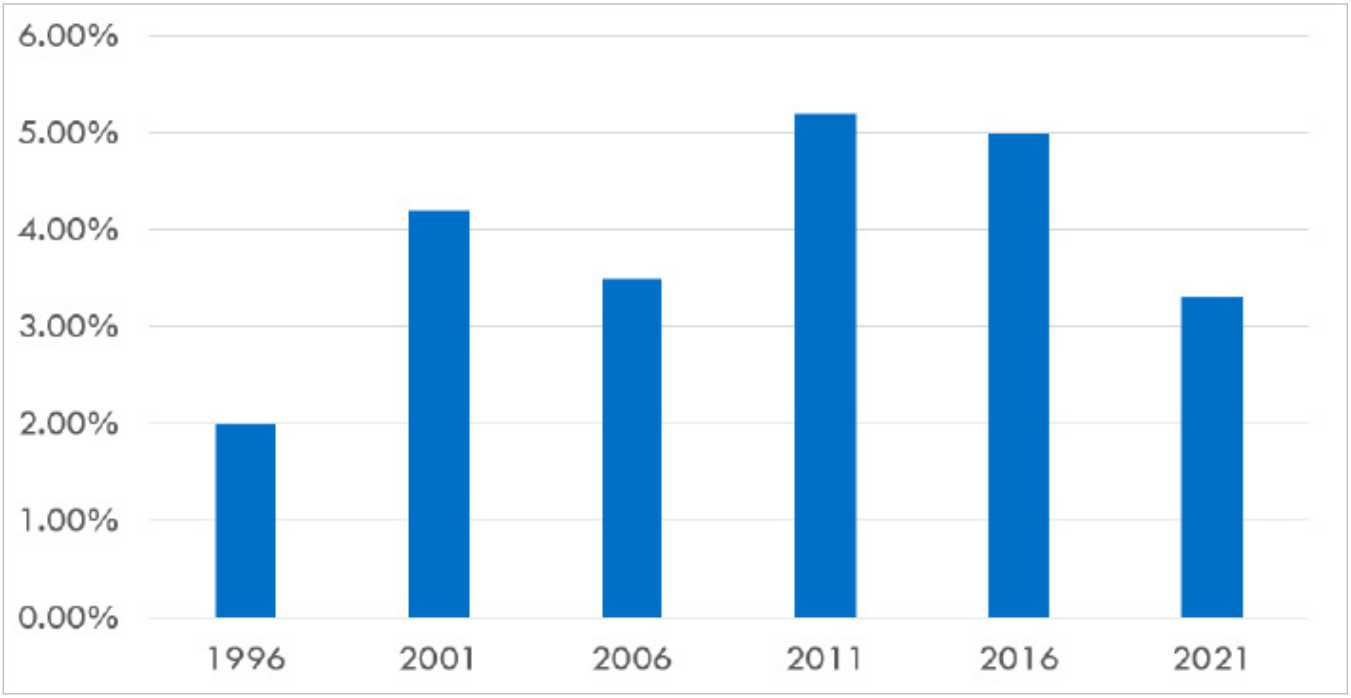


Figure 13. Whitehorse Historical Transit Mode Share (Statistics Canada Census)

Statistics Canada also released the 2023 Passenger Bus and Urban Transit Statistics. Between January and November 2023, Whitehorse Transit accumulated a total of 816,000 passenger trips, with relatively higher ridership in spring and autumn and relatively lower ridership in summer. This could be mainly due to the factors such as reduced demand from students, vacation schedules for regular commuters, and more people using personal vehicles or bicycles for their daily commute in the summer. On the other hand, Whitehorse Transit's total revenue (excluding subsidies) does not follow a clear trend through the eleven months and accumulated a total revenue of 1.145 million CAD.

Generally speaking, the demand for handy bus services throughout a year is relatively stable and shows no obvious trend related to the season or time of year. Despite the impact of Covid-19 on ridership, the demand for handy bus services in recent years has been lower than the demand from 10 years ago.

Transit Fleet

Table 4 summarizes the current fleet of Whitehorse Transit. There are a total of 15 active buses for conventional bus services and 2 active buses for handy bus services.

Table 4. Whitehorse Transit Fleet

Service Type	No. of Buses	Year	Manufacture & Model
Conventional Bus Services	15 Active	2008 - 2022	Nova Bus LFS
Handy Bus Services	2 Active	2020 - 2022	Chevrolet Express 4500

Transit Stops

Whitehorse Transit provides infrastructure and user information at bus stops, but with little consistency or predictability in their placement. Shelters exist at some key destinations or major intersections, such as Yukon College, Canada Games Centre, and at key points along McIntyre Drive and Range Road. However, the condition of some of the shelters is poor, which makes them uninviting.

Many transit users express the need for more shelters throughout the City, with specific concerns for the cold winter weather. Well-designed and heated bus shelters would encourage more residents to use transit system in rainy or cold weather.

Bus stop signage in Whitehorse is not prominent and often blends into the natural environments because of its colour palate. In current form, bus stop signage does little to act as a marketing tool for transit. An advantage of fixed infrastructure such as bus stop signage is that it can be leveraged for dual purposes. Additionally, signage does not convey a welcoming nor inviting environment for would-be transit customers and likely sending the wrong message about transit services in Whitehorse.

Combining a “no parking sign” for automobiles with a bus stop sign can be confusing and is not considered best practice. Lastly, signage is not consistent across the system (different type faces and graphics) which does not foster a holistic customer experience.

Transit Operations Centre

Whitehorse Transit operations transitioned from their previous location in Marwell, to a new centrally located facility. Over the past few years, Whitehorse Transit’s fleet had outgrown the capacity of this garage, resulting in maintenance teams operating from two separate locations and some buses being parked outdoors at night. This situation resulted in higher maintenance costs and lower useful asset lifespans for conventional buses.

The new operations building is centrally located near the Alaska Highway and Two Mile Hill Road. This new facility now accommodates all maintenance, operations, and administration needs for Whitehorse Transit, significantly enhancing operational efficiency. Furthermore, while this central location benefits the transit network, a new transit system has recently been implemented, decreasing travel time without passengers and non-service hours in driver shifts.

Branding and Marketing

There are many opportunities for the City to promote the Whitehorse Transit service. In general, there is limited awareness of transit, except amongst transit-dependent customers (i.e. those with no other means of transport other than transit). This lack of awareness creates barriers to use and weakens the public image of transit: transit is not perceived as favourable in Whitehorse but rather as a last-resort choice.

Current

Previous

Distinct, catchy brands with modern visual and verbal language that speak to its intended audience is increasingly becoming the norm. Transit agencies of other regions that have recently rebranded have seen a five-per cent to eight-per cent increase in ridership. Therefore, one consideration is to invest into a refreshed and dedicated branding strategy specific to transit.

In addition, City currently lacks a formalized marketing plan to encourage transit use. A strategic plan could outline when to engage in marketing initiatives, identify the target audience, messaging, and the appropriate mediums to communicate. Recognizing the motivations of individuals for using transit is an important consideration to encourage use.

Mobile Fare Payment Solutions

The City has begun to make positive steps to improve transit by recently implementing a mobile fare payment solution. This allows residents to purchase a bus pass on their smartphones and board the bus by showing the driver the pass from their mobile device. This system increases the convenience and flexibility of fare payment for all customers and streamlines revenue calculations at the agency level.

3.5 Streets and Roads

Whitehorse has approximately 400 km of road network (330 City of Whitehorse roads and 70 km of Alaska Highway managed by Government of Yukon) , 28 signalized intersections, more than 10 roundabouts or traffic circles, and numerous stop-controlled unsignalized intersections. To understand the performance of the existing road network, traffic analyses were conducted for both network level and intersectional level.

3.5.1 Street and Road Operations

As part of the TMP, an EMME traffic macro-simulation model was established for the base year (2019) and 2040 horizon year to forecast traffic patterns within the City. EMME is software for multimodal transport planning and a complete transportation forecasting system that helps decision-makers plan for infrastructure projects. The model includes consideration of current transit and active transportation rates by considering the impact of these mode shares on the volume of single occupant vehicles. The study area is illustrated in **Figure 14.**

Figure 14. City-Wide Network Level traffic Analysis Study Area

3.5.1.1 City Road Network Performance

Table 5 and **Figure 15** illustrates the traffic assignment during the morning peak hour in 2019, showing how the trips were distributed across the network based on the above method. As shown in the figure, a number of main corridors within the city are expected to perform approaching or over capacity during the morning peak hour, including Two Mile Hill Road, Mountain View Drive / Copper Road / Quartz Road corridor, and Lewes Boulevard.

Table 5. Existing (2019) Performance of Main Road Corridors - AM Peak Hour

Road Corridor	Level of Service
Alaska Highway	A-D
Mountain View Drive	E-F
Two Mile Hill Road	E-F
Hamilton Boulevard	A-D
2nd Avenue	D
4th Avenue	A-C
Range Road	A-E
Lewes Boulevard	D-F
Robert Campbell Bridge	E

Note: In this analysis, Level of Services are determined based on the volume-over-capacity ratios. The "volume-over-capacity ratio" or "v/c ratio" refers to the ratio between the actual volume of vehicles on a roadway and the roadway's capacity to handle those vehicles. It is a measure used to assess traffic congestion and roadway efficiency.

Level of Service A-D or volume over capacity < 0.8 - under capacity;
Level of Service E or volume over capacity between 0.8 and 1.0 - approaching capacity;
Level of Service F or volume over capacity higher than 1.0 - over capacity.

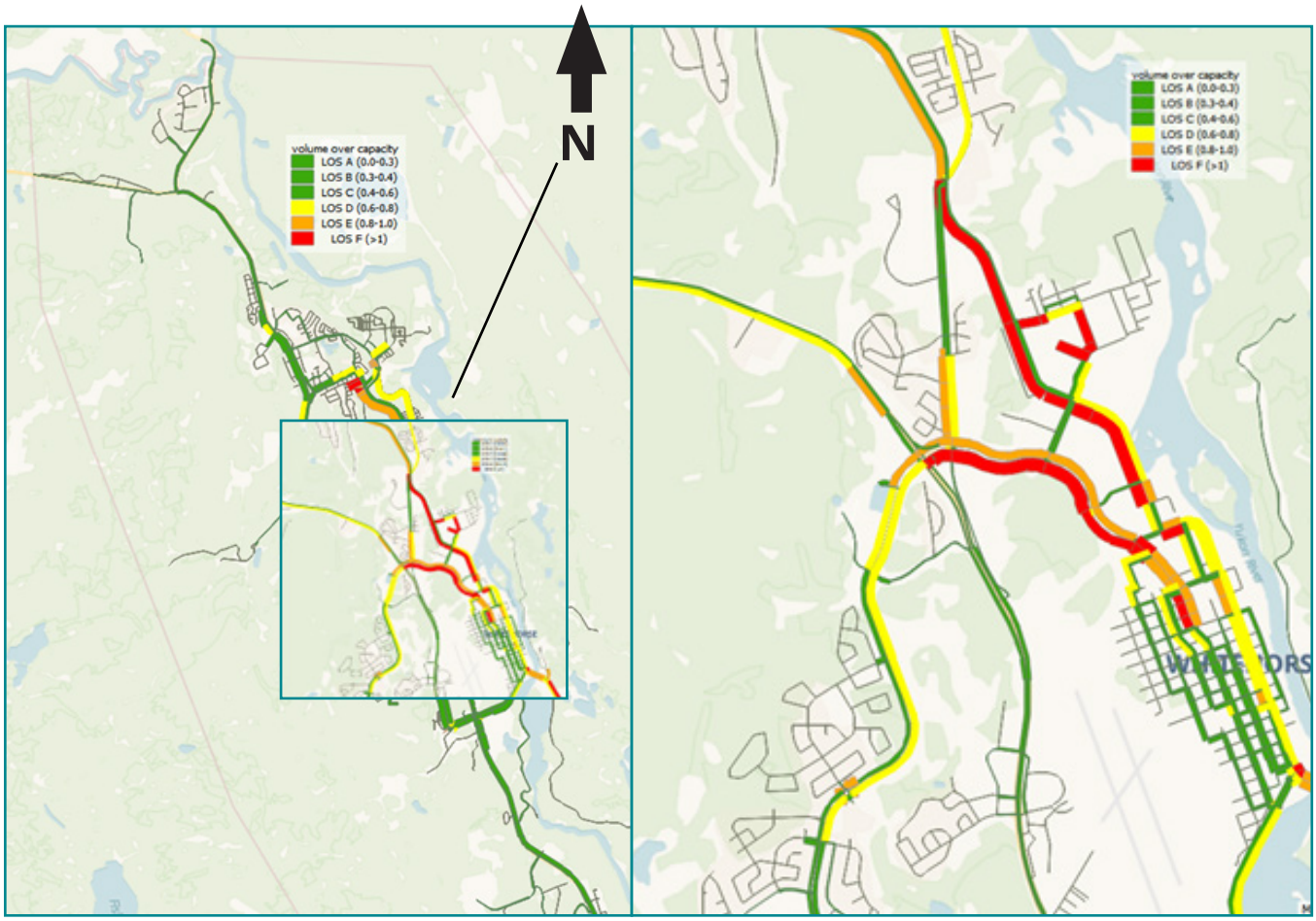


Figure 15. Current (2019) Traffic and Road Network Performance - AM Peak Hour

3.5.2 Intersection Operations

A detailed Synchro traffic operational analysis was carried out at all 28 signalized intersections under current conditions. Due to the COVID, available traffic data varies at different locations. As a result, the year 2022 is used as the base year for the intersectional analysis. As with the roadways, Level of Services (LOS) A-D indicate the intersections are under capacity and performing adequality, LOS E indicates the intersection is near capacity and LOS F indicates the intersection is over capacity.

Table 6 and **Figure 16** below illustrates existing performance of the signalized intersection operations. At an intersectional level, most intersections are performing at acceptable Level of Service today. Intersections that perform at or over capacity include:

Table 6. Existing (2022) Intersection Performance – AM and PM Peak Hours

Intersections	Approaches At or Over Capacity
Alaska Highway / Two Mile Hill Road – Hamilton Boulevard	Hamilton Boulevard Eastbound Alaska Highway Southbound
Two Mile Hill Road / Range Road	Range Road Southbound
Two Mile Hill Road / Chilkoot Way	Two Mile Hill Road Southbound
4th Avenue / Ogilvie Street	Ogilvie Street Eastbound
Industrial Road - Mountain View Drive / Quartz Road	Industrial Road Eastbound Industrial Road Westbound
Lewes Boulevard / Hospital Road	Lewes Boulevard Southbound

Figure 16. Existing Intersection Performance – AM Delay LOS (PM Delay LOS)

3.6 Goods Movement

There are currently no designated truck routes in the city. As a result, commercial vehicles sometimes navigate through streets that are not designed to accommodate their size and weight. This has increased wear and tear on the City's roads and has raised concerns about pedestrian safety.

Local service calls should firstly follow the highway, then arterial / collectors, followed by roads designated industrial collector, then minor collector and local streets to access their final destinations.

In addition, there are limited hazardous material routes, which has raised concerns about the safe transportation of chemicals and other dangerous goods through the city. The current routes provide basic guidelines to truck drivers. However, there are no strict rules, leaving ample room for driver route choice. As the city has grown and evolved, there is a growing need to establish designated goods movement routes.

Trucks carrying hazardous goods should utilize the Alaska Highway and the Klondike Highway only and as set out in the City's Dangerous Goods Bylaw. It is also recommended all local calls (within the City of Whitehorse) regarding hazardous goods follow the most direct truck route (but not Miles Canyon Road).

Without established, controlled pathways for such materials, there's an increased risk of accidents or spills that could have serious environmental and health consequences.

3.7 Parking

Currently, there is a significant over reliance on vehicle parking throughout the city.

Parking should be managed to optimize supply with demand. The availability of short-term parking for customers is perceived as a necessity for most businesses; however, some of the supply is known to be used by staff, business owners, and residents who are competing for space to address their long-term (all-day) parking needs.

Therefore, a multi-faceted approach is needed for the successful implementation of a parking management strategy; one that addresses current needs as well as sets the stage for the implementation of medium and long-term solutions. The City's Transportation Demand Management Plan (2014) provides guidance for managing parking. Ideally, one of the goals of a successful implementation strategy is to minimize the allocation of funding towards temporary solutions that will become obsolete in subsequent stages of the overall strategy. As the Downtown continues to attract more population, there is also a need for the City to promote quality public space to maintain the vibrancy of the area. Addressing parking congestion in the area will be a positive initiative towards achieving this goal.

Reducing future parking demand requires making decisions about future behavioral patterns and choices that may evolve from current practices and how they will be shaped through policy development and infrastructure improvements. With the implementation of the TMP, reliance on personal vehicles is expected to change as more travel options become available to residents and visitors. While vehicular travel will likely continue to be the dominant travel mode in the medium and long-term, the successful implementation of the City's various strategies will decrease that modal share.

The generational change may potentially change how residents utilize the transportation network. For example, the millennial generation (i.e. people born between 1980 and 1995) proportionately owns fewer vehicles than the generations before them, preferring vehicle sharing services, alternative travel modes, and delivery services. This may dramatically alter how curb space and structured parking facilities are used by future workers. In addition, millennials have a more favourable view of transit services than previous generations and higher adoption rates of new information technologies. This may further impact modal choices, payment systems, and the integration of technology into infrastructure such as parking.

Significant technology changes within the transportation industry are expected to occur in the near future that may impact how users, vehicles, and parking interact with one another. These include increased "mobility as a service" through the usage of ride-sharing services, "on-demand" goods movement direct to users, and the potential implementation of autonomous vehicles in some areas.

Changes in the type and size of vehicles may also impact how parking supply is defined – larger vehicles that require more physical space will reduce the parking supply, while smaller vehicles could lead to increases in the parking supply. Fuel prices may also influence modal choice as well as vehicle type – as prices increase, budget-conscious users may choose to take transit, bike, walk, use ride sharing services, or carpool, each impacting how parking is utilized in the future.

A summary of existing available parking stalls in downtown is included in **Table 7**.

Table 7. Estimate of Available Parking Stalls in Downtown

Type of Parking Zone	Estimated Number of Parking Spaces
On-Street, public	1,687 (including approximately 100 accessible parking)
Off-Street, public	126
Off-Street, private	~2,600
Total	**~4,413**

3.8 New Mobility

New mobility refers to innovative and sustainable transportation solutions that have emerged in response to evolving societal needs and advances in technology. New mobility includes ride-sharing, bike-sharing, electric scooters, autonomous vehicles, and other innovative approaches designed to enhance efficiency, accessibility, and environmental sustainability in the transportation sector.

The emergence of new mobility will continue to challenge cities. This is especially true for Whitehorse as the city has a unique character and geographic location that makes it a regional destination. Whitehorse also draws a large tourist population year-round, which cannot be ignored. New forms of mobility need to accommodate the regional and tourism significance of Whitehorse while being mindful to not overwhelm the municipality.

Whitehorse must be prepared to embrace new mobility solutions to meet the evolving needs of its residents and ensure sustainable transportation options for the future. With advancements in technology and changing demographics, the traditional modes of transportation are undergoing transformation. By proactively planning and implementing policies and infrastructure to support these innovations, the City can foster a more efficient, accessible, and equitable transportation system. Embracing new mobility requires collaboration with stakeholders, robust regulatory frameworks, and investments in infrastructure and technology to create a seamless and integrated transportation network that serves the diverse needs of the community.

4.0

FUTURE NEEDS AND EMERGING TRENDS

4.1 Future Issues and Opportunities

Some of the key factors, emerging opportunities and challenges that influence Whitehorse's transportation network through 2040 are described below:

4.1.1 Land Use and Growth Management

Land use and growth management are fundamentally interrelated with transportation planning.

The allocation of land for residential, commercial, industrial, and recreational purposes shapes the density and distribution of urban activities. For instance, compact, mixed-use developments with urban centres can encourage walking, cycling, and the use of public transportation, while sprawling low density development will likely increase dependence on private vehicles for commuting.

Conversely, the availability and quality of transportation infrastructure can shape where people choose to live and work. Efficient and accessible transportation options can encourage higher-density housing near transit hubs and, limit urban sprawl. In contrast, inadequate or inappropriate transportation infrastructure may lead to congestion, longer commute times, and discourage development in underutilized areas of Whitehorse. The implementation of the TMP is key to achieving the sustainability and growth goals of Whitehorse, as expressed in the Official Community Plan,

Regular review of the City's OCP, Downtown Plans, Zoning Bylaw, and other land use plans should be conducted to ensure that land use and transportation planning work together. These reviews ensure that policies are updated and respond to the community as it grows; it can help to address issues like accommodating for population growth, housing availability, and supporting the local economy.

One of the key priorities of land use and growth management is to enhance transportation options for growing neighbourhoods outside the Downtown. This involves developing infrastructure for public transportation, cycling, and pedestrian access to ensure that these communities remain connected to economic opportunities and essential services. By addressing the transportation needs of outlying areas, Whitehorse can reduce congestion, minimize air pollution, and improve the overall quality of life for their residents.

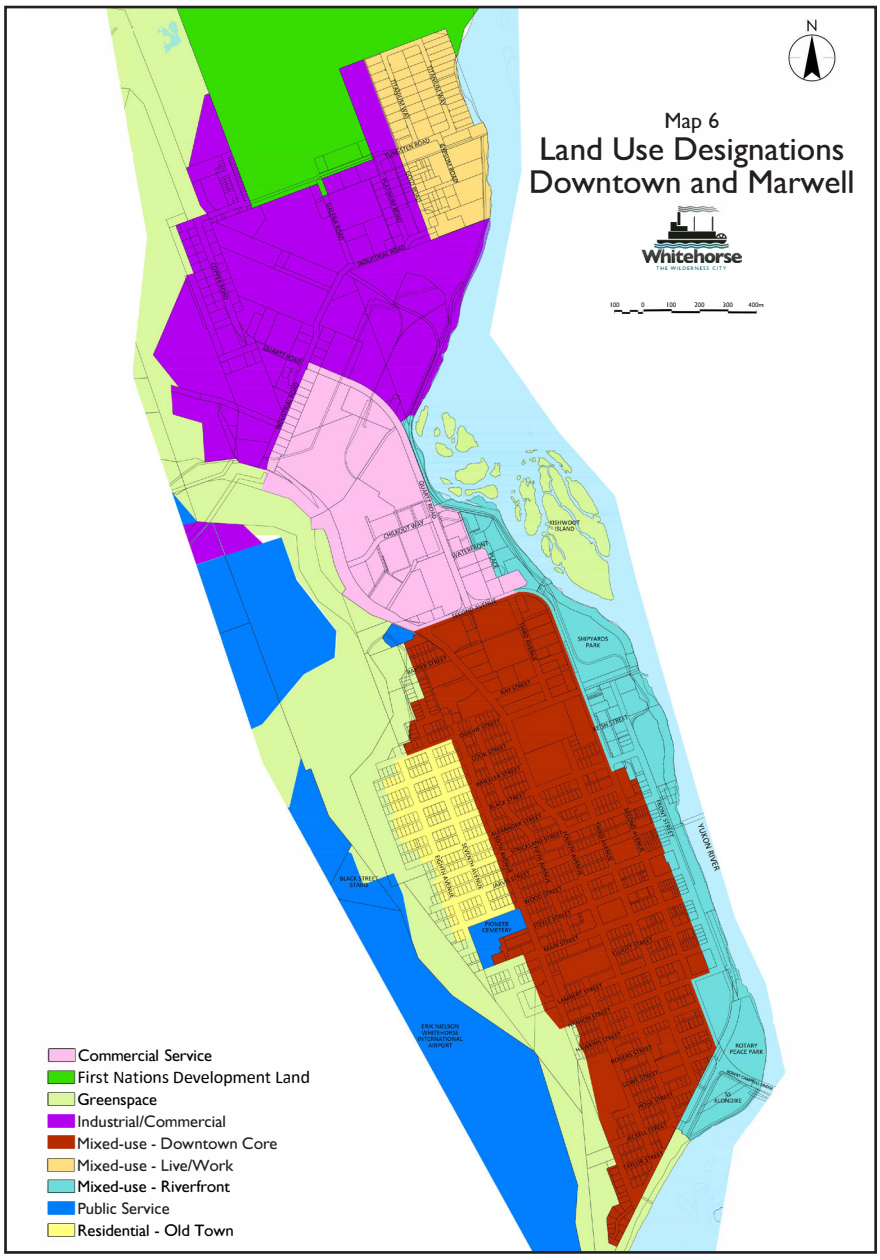


Figure 17. Land Use Designations Downtown and Marwell

4.1.2 Transportation Equity

Transportation equity is a fundamental concept in urban planning, recognizing that access to reliable and affordable transportation is a basic need for everyone. Transportation policies, infrastructure investments, and the distribution of mobility services have a significant influence on people's lives. These impacts, however, are not uniform and are experienced differently by individuals and neighbourhoods. Therefore, it is vital for Whitehorse to prioritize equity in transportation to work towards a future where all citizens, regardless of their demographic characteristics, have equitable access to transportation services, allowing them to fully engage in city life, access employment opportunities, and reach essential services and amenities.

Populations in Canada and the Yukon are aging, and accessibility, through all seasons, will be paramount for the transportation system. Whitehorse must takes proactive steps to create policies and invest in infrastructure that addresses existing and historical disparities in transportation access. This can involve accessibility improvements, expanding public transportation networks to reach underserved neighborhoods, implementing fare structures that accommodate low-income riders, and promoting active transportation options like walking and cycling through the development of safe and accessible pathways year-round.

4.1.3 Building Resilience

Transportation resilience is the ability of a city's transportation system to function effectively and safely, even in the face of unexpected challenges such as collisions, extreme weather events, or construction disruptions. It also encompasses building a transportation system that provides transportation options and choice, and has the flexibility to respond to changes, uncertainties, and challenges at the individual, group, and community level.

A resilient city should have a diverse and interconnected transportation system. This means providing multiple modes of transportation, including transit, pedestrian walkways, cycling lanes, and efficient road networks. Diverse options allow people to choose the most suitable means of transportation, reducing the dependency on a single mode. This flexibility not only enhances daily mobility but also proves invaluable during times of crisis when one mode may be disrupted. The acknowledgment and reinforcement of transportation resilience is crucial in preparing a city for future.

4.1.4 Affordability

Housing and transportation costs are often the most substantial expenses for households. Addressing the relationship between these two factors is essential for creating more inclusive, affordable, and sustainable communities.

The availability and quality of transportation options play a vital role in housing affordability. Access to reliable and cost-effective transportation, particularly public transit, can reduce the need for multiple vehicles within a household. This can lead to significant cost savings, as car ownership is a substantial ongoing expense. In communities with limited or inefficient transit, residents may be forced to own and maintain vehicles, which can be a financial burden, especially for low-income households. E-bike also have potential to reduce private motor vehicle dependency and there are observations of some households replacing one vehicle with an e-bike which reduces household costs.

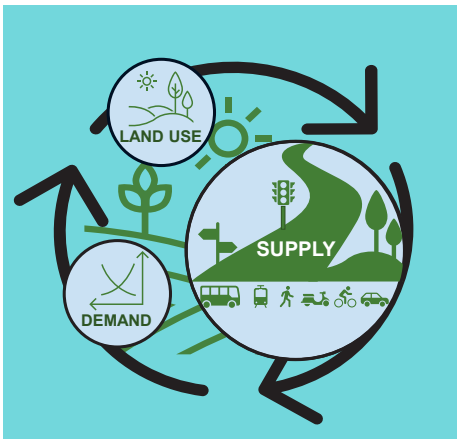
The concept of "location efficiency" is also important. This refers to housing that is situated in areas with easy access, mostly by walking or cycling, to essential services, amenities, and employment centers. When housing is in proximity to these facilities, residents can reduce their transportation costs, as they can meet their daily needs without extensive travel. This can make housing more affordable in practice, as it mitigates the need for long and costly journeys for necessities.

4.1.5 Climate Change

Whitehorse's Sustainability Plan 2015-2050 sets targets to achieve a 16 per cent reduction in total GHG emissions (tonnes of CO2/year) by 2050 compared to the 2014 level. Transportation is often a major contributor to GHG emissions in urban areas and accounts over 70 per cent of Whitehorse's total GHG emissions. As a result, transportation can play an important role in achieving the City's climate action targets. For context, Yukon's overall emission reduction target is a 45 per cent reduction from 2010 levels. Given transportation in Whitehorse accounts for almost 40 per cent of the Yukon's total greenhouse gas emissions (based on 2019 data), there is a good basis for partnership and support from Government of Yukon to achieve the goals and implementation of the TMP.

By prioritizing sustainable and low-emission transportation options, enhancing transit efficiency, promoting active transportation, investing in electric vehicles, and integrating land use and transportation decisions, Whitehorse can make substantial progress toward reducing GHG emissions from the transportation sector. Climate Adaptation and Mitigation is a Strategic Council Priority and Climate Emergency was declared by the City in 2019. The success of these planning decisions will not only lead to a more sustainable and environmentally-friendly city but will also be crucial in achieving long-term climate goals.

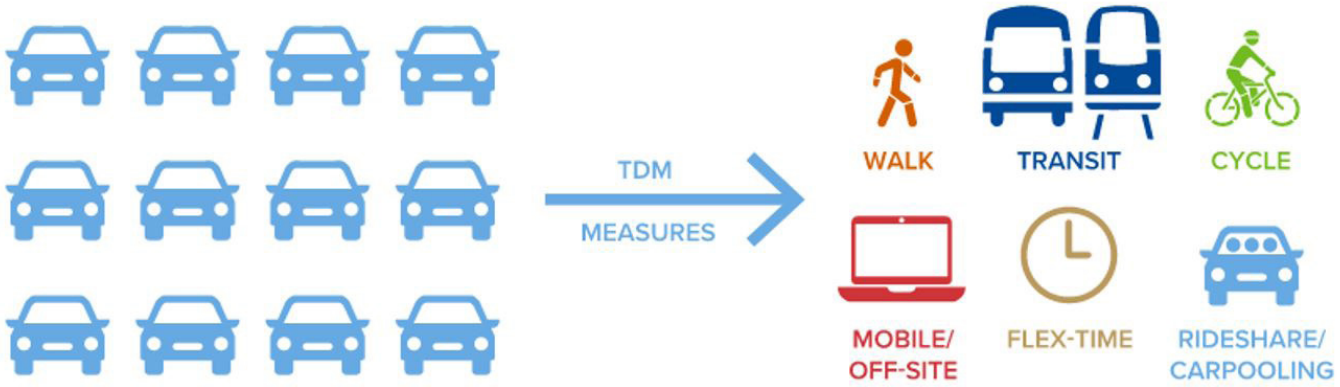
4.1.6 Transportation Demand Management



Mobility within the transportation system comprises three essential components: transportation supply, transportation demand, and land use:

- **Transportation Supply:** Infrastructure and services used by travelers to facilitate movement such as roads, active transportation pathways, and transit systems, on- and off-street parking facilities, and shared transportation services.
- **Transportation Demand:** Individuals' travel preferences and the choices available to them that shape their behaviour and mode of transportation.
- **Land Use:** Origins and destinations people travel to and from.

Managing transportation demand is a crucial aspect of urban planning, especially in growing cities like Whitehorse. The goal of the City's future transportation system is to meet the diverse requirements of residents, businesses, and employment sectors while emphasizing sustainable transportation options.



4.1.7 Public Health

People's travel behaviour, their safety and comfort during travel and their ability to meet their daily needs are all related to public health. Transportation plans can substantially improve residents' health by promoting active and sustainable modes of transport, creating safer and more comfortable travel environments, and mitigating environmental impacts. By designing infrastructure, implementing regulations, and fostering partnerships that support public health, Whitehorse can enhance the overall well-being of its communities, creating a healthier and more livable urban environment.

4.1.8 Economic Development

The TMP can have a profound impact on the economy of Whitehorse. A well-connected transportation network ensures that goods can be transported to and from the city reliably and efficiently, reducing costs and increasing market access for businesses. This, in turn, promotes trade, stimulates economic activity, and generates employment opportunities within the city. Additionally, adequate infrastructure and connectivity ensure that local businesses can easily access suppliers, distributors, and customers, while a reliable and efficient transportation system is a key factor in attracting businesses to the area, as it reduces operating costs and enhances the overall business environment. Lastly, a properly planned transportation system also contributes to economic resiliency. Transportation networks that promote and facilitate densification make more efficient use municipal infrastructure (reducing net cost to taxpayers) and increase property tax revenue.

4.1.9 Sharing Economy

The emergence of the sharing economy in transportation represents a significant and transformative trend that is reshaping the way people access and use transportation services. This shift is characterized by a shift away from traditional ownership models in favor of shared consumption of transportation resources. This change is driven by several factors, including a desire for increased sustainability, cost savings, and greater access to transportation options.

One of the most prominent aspects of the sharing economy in transportation is the proliferation of shared mobility services, which encompass various modes of transport, including cars, bicycles, and scooters. Car-sharing programs, for instance, allow individuals to access vehicles on a short-term basis, eliminating the need for private vehicle ownership. This not only reduces the number of vehicles on the road, thus alleviating traffic congestion and reducing GHG emissions, but also provides cost-effective alternatives to traditional car ownership.

Similarly, bike-share programs have gained popularity in many urban areas. They offer residents and visitors the opportunity to rent bicycles for short trips, promoting a more sustainable and healthier mode of transportation while reducing reliance on personal vehicles. These programs contribute to enhanced urban mobility, as they often integrate seamlessly with public transit systems, making it easier for people to navigate the city efficiently.

The sharing economy in transportation not only enhances convenience and sustainability but also fosters a sense of community. This trend aligns with the principles of resource efficiency and minimization of waste, which are fundamental aspects of sustainable urban development.

4.1.10 Technology

Transportation technology is at the forefront of reshaping urban mobility and revolutionizing how people move within cities. Ongoing technological advancements are drastically transforming the transportation landscape, resulting in significant changes to travel patterns and the way people connect and interact with the city.

The notable advancements, such as the rise of Mobility as a Service (MaaS), autonomous vehicles, micro-transit, and sharing services, not only enhance convenience and efficiency but also have the potential to reduce congestion, improve safety, and promote more sustainable transportation options. As technology continues to evolve, Whitehorse will need to adapt and plan for these changes to create more efficient and resilient transportation systems.

4.2 Future Needs

Whitehorse's urban planning structure and land use plan in the OCP places a focus on the Urban Core, which includes the Downtown and surrounding neighbourhoods, supported by multiple Urban Centres around the city, including the Riverdale, Takhini, Valleyview, Whistle Bend, Copper Ridge, and Porter Creek areas. The Downtown area and the Riverdale, Marwell, Takhini, and Valleyview neighbourhoods form the Urban Core of Whitehorse (see **Figure 18**).

Based on the City's projections for population and employment growth (medium growth scenario), it is expected that Whitehorse will grow to over 40,000 people in 2040, representing a 50 per cent increase from 2019 levels. Whitehorse's employment opportunities will also grow to approximately 27,500 jobs, a 36 per cent increase from 2019 levels (**Figure 19** and **Figure 20**). The key neighbourhoods with relatively high population and employment growths are summarized in **Table 8.**

Table 8. Key Neighbourhoods with Relatively High Population and Employment Growths

Neighbourhood	Projected Population Growth By 2040 From The 2019 Level (per cent)	Projected Employment Growth By 2040 From The 2019 Level (per cent)
Downtown	60	35
Valleyview	1,300	
Copper Ridge	20	
Takhini / Range Point	40	
Whistle Bend	550	
Airport		30
Kulan & Taylor		50
Highway, South of RSW		250

This significant growth will present substantial challenges to the City's transportation system; many key transportation corridors are projected to experience deteriorating traffic conditions in the 2040 horizon year if no transportation improvements are implemented. These corridors include Mountain View Drive / Copper Road / Quartz Road, the Alaska Highway (between Porter Creek and Two Mile Hill Road), Two Mile Hill Road, Robert Service Way, and the Robert Campbell Bridge (**Figure 21**). This figure illustrates the traffic impacts if the current transportation system were maintained into the future with no changes.

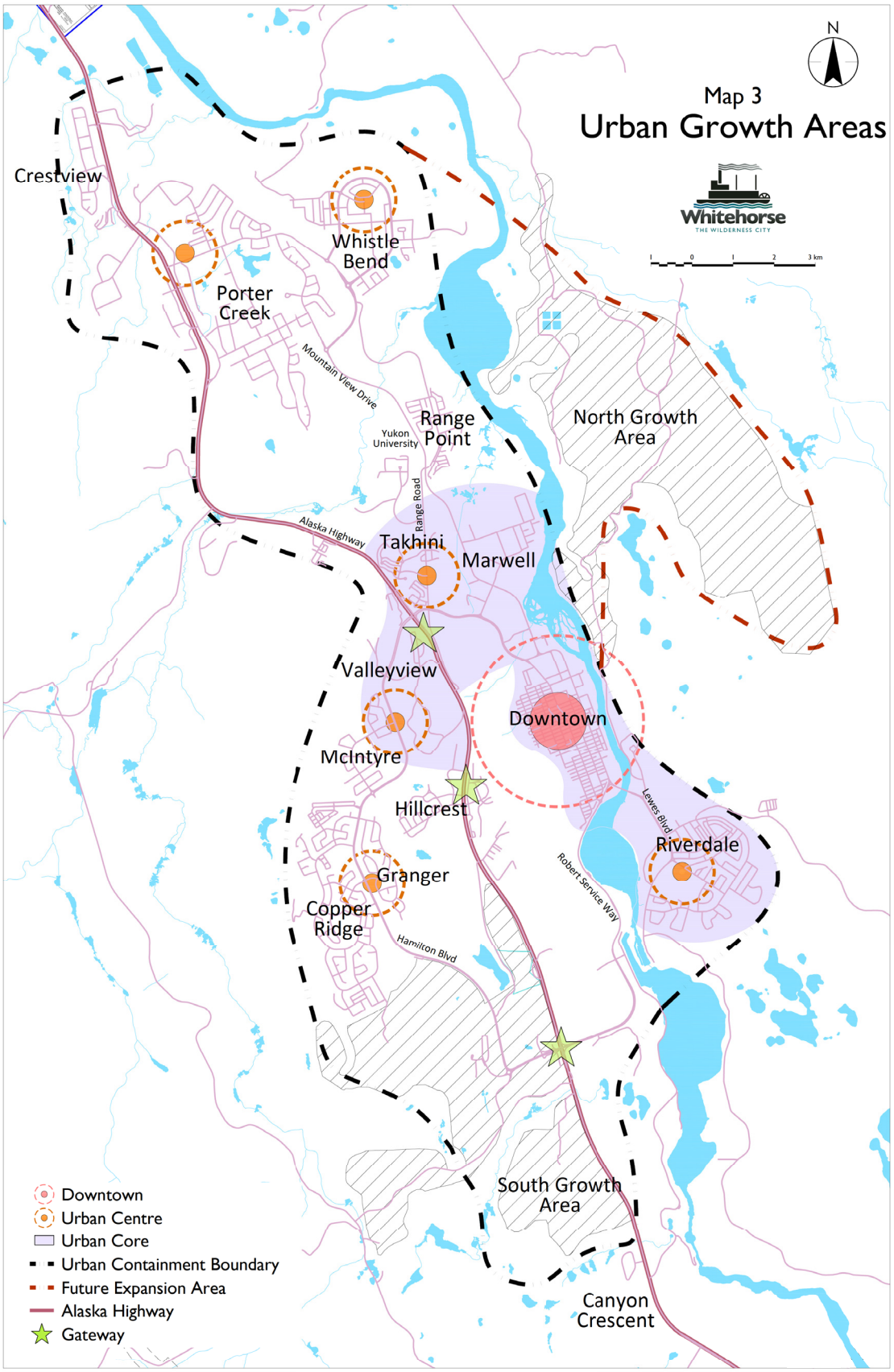


Figure 18. City Of Whitehorse Urban Growth Areas (Source: Whitehorse 2040 Official Community Plan)

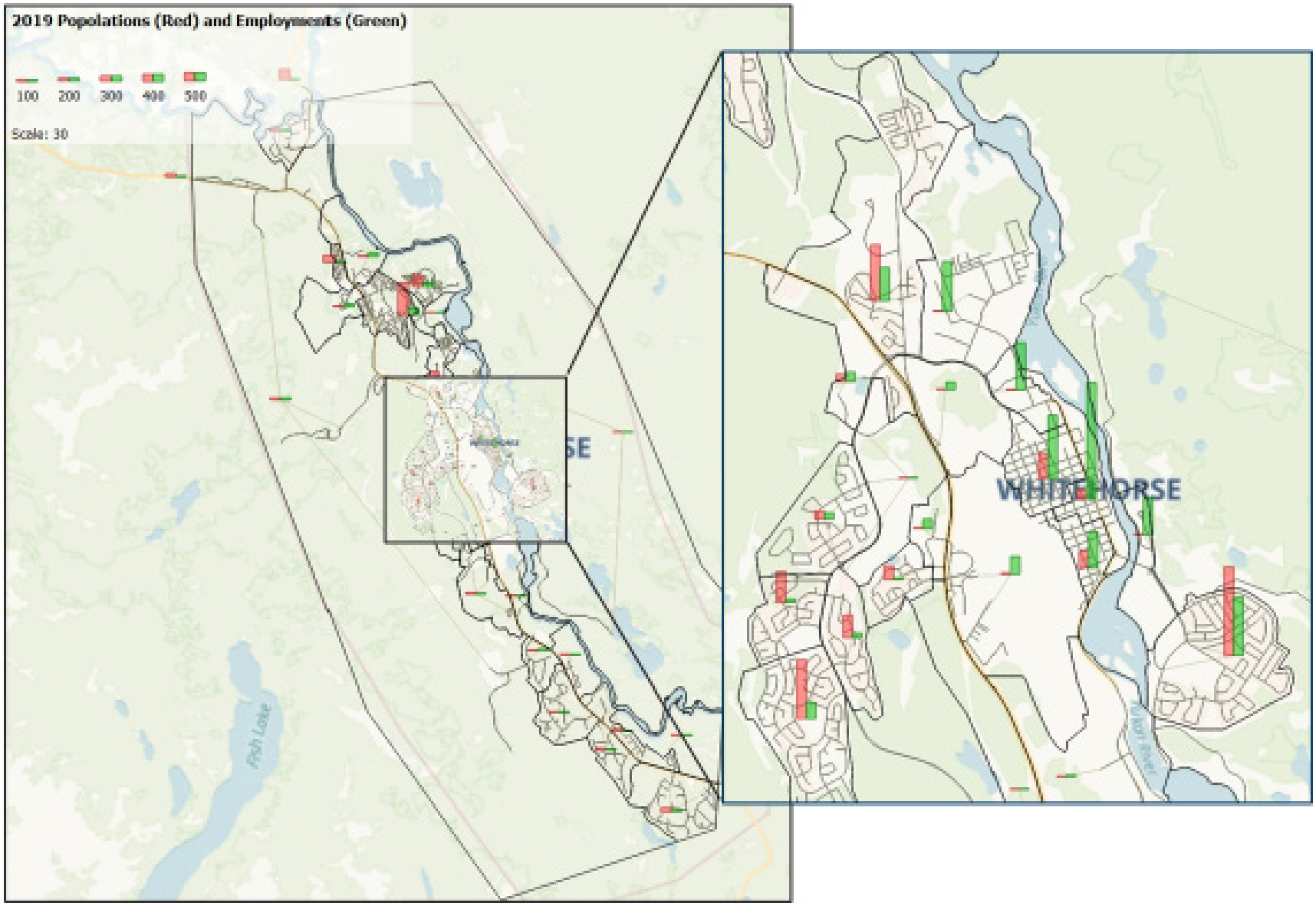


Figure 19. 2019 Population and Employment

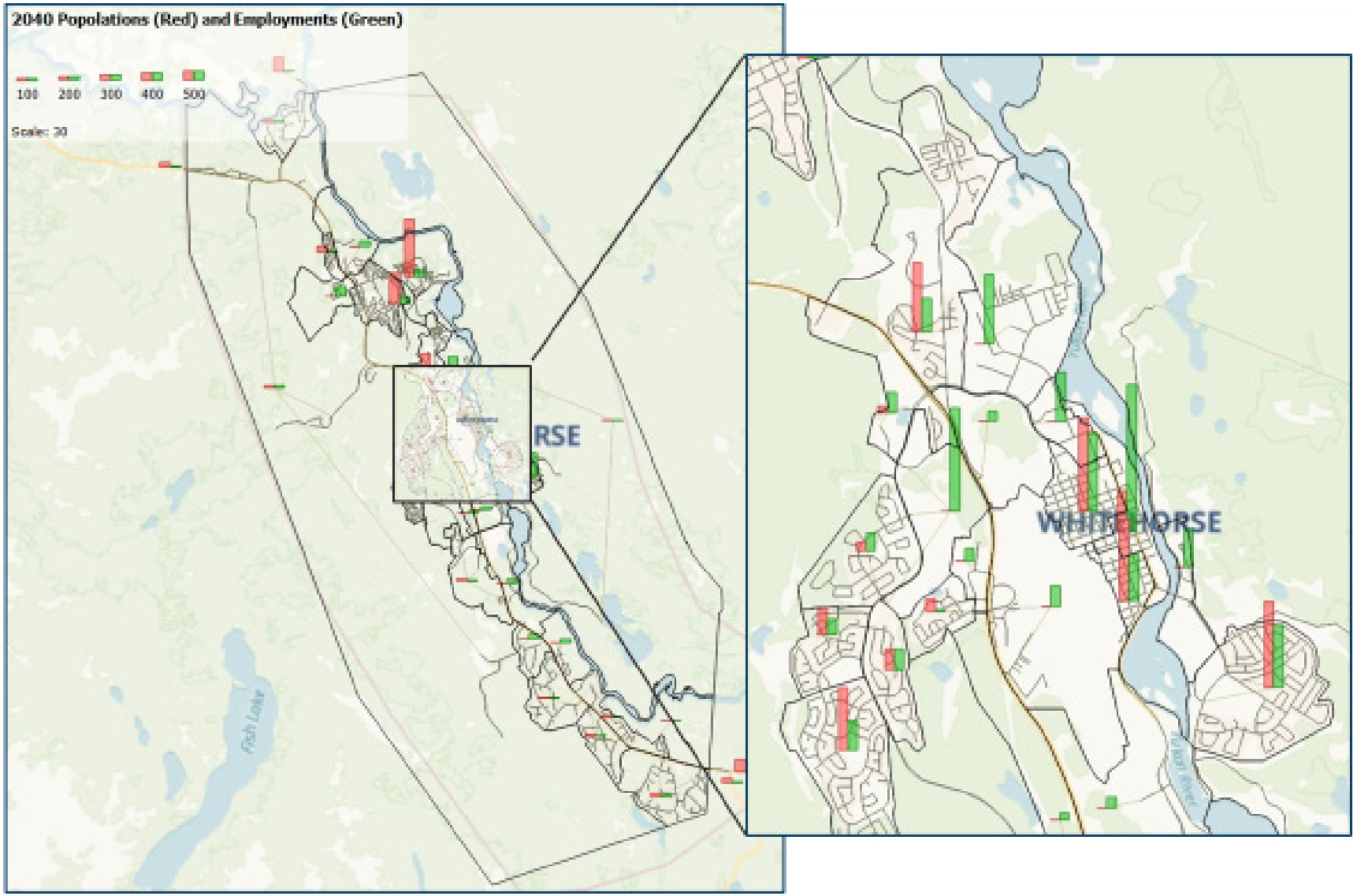


Figure 20. 2040 Population and Employment

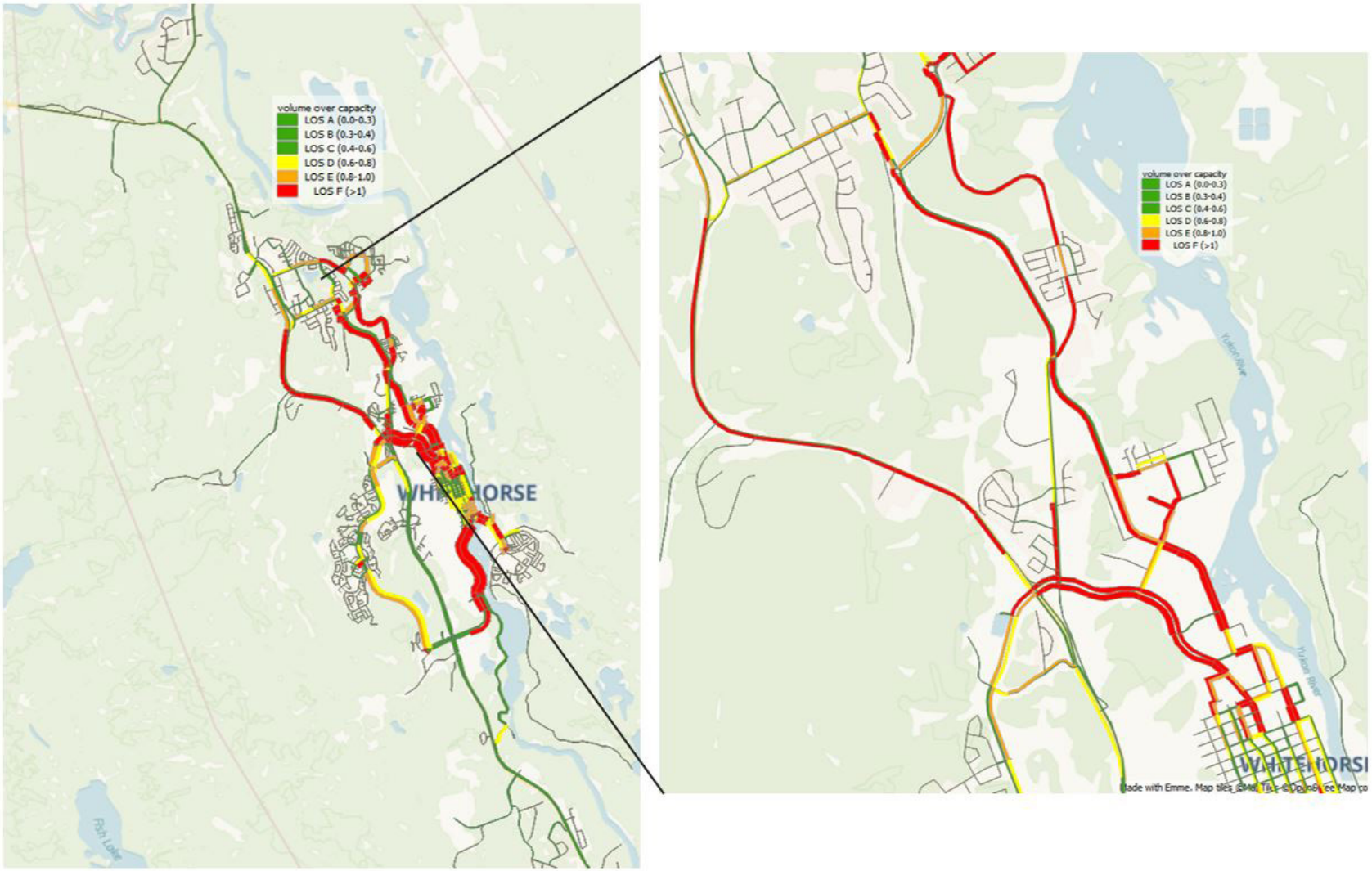
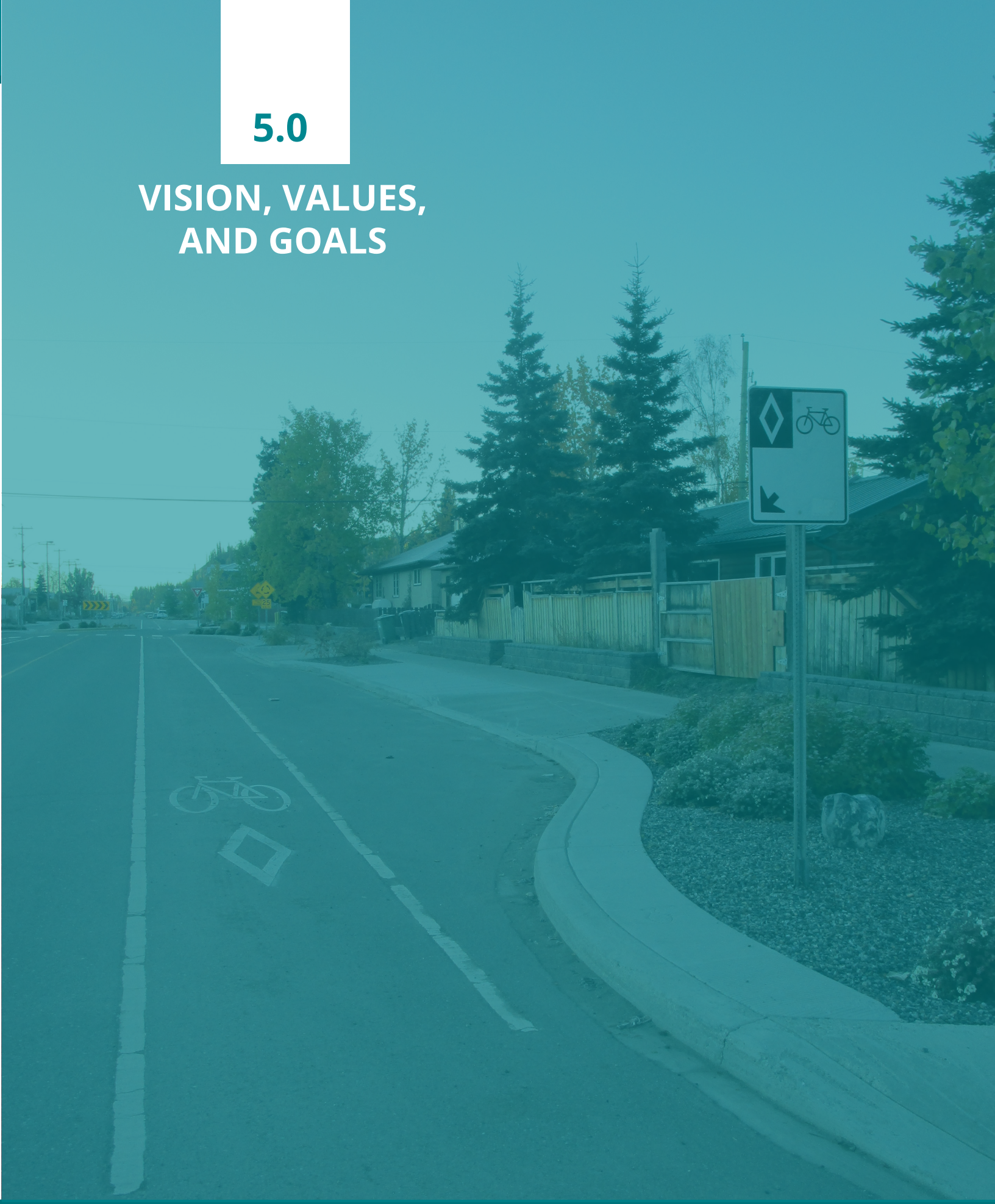


Figure 21. 2040 Performance of Major Transportation Corridors (Status Quo)

5.0

VISION, VALUES, AND GOALS



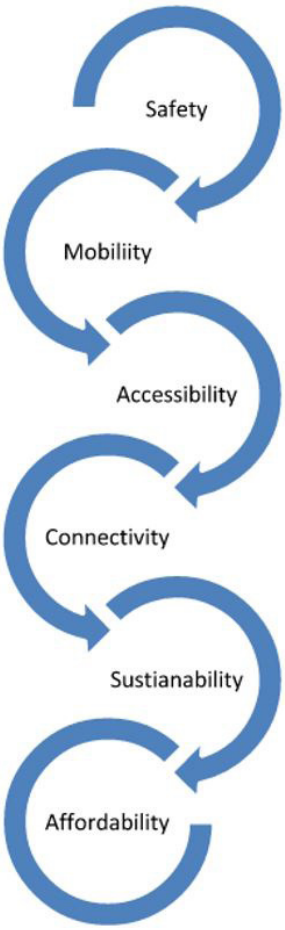
5.1 The Transportation Vision Statement

The Transportation Vision

Whitehorse's diverse transportation network will establish connections among the city's residents and businesses, and provide links to the broader Yukon Territory and beyond. This system aims to offer appealing and fair transportation options that prioritize accessibility, equity, safety, sustainability, and uninterrupted availability for individuals of all ages and abilities. Whitehorse envisions an integrated array of transportation facilities and services that promote cost-effective mobility while encouraging a transition toward more sustainable transportation choices, including transit, active and shared modes. Ultimately, the city's transportation system is designed to underpin a dynamic, inclusive, forward-thinking, livable, healthy, eco-conscious, and affordable northern community.

The TMP sets out a long-term vision for the future of transportation in Whitehorse that is designed to support the City's OCP commitments towards a vibrant, inclusive, innovative, entrepreneurial, and resourceful northern community and to ensure Whitehorse residents, businesses, and visitors have attractive and equitable transportation choices to move around the City. These choices must:

- Be accessible and provide well-connected mobility options to people of all abilities and designed to overcome barriers experienced by people with disabilities.
- Be safe and comfortable in order to encourage people of all ages and abilities to walk, cycle, and use transit.
- Be sustainable by creating attractive walking and cycling facilities and providing transit services that will reduce the reliance on automobiles as the primary mode of transportation.
- Provide attractive connections to key activity areas and create opportunities for community engagement through thoughtful street design.
- Support more mixed-use and compact land use patterns through active transportation solutions and ultimately enhance overall community health and well-being.
- Support the City's climate action initiatives.
- Support the local economy through efficient and reliable movement of goods and services.
- Be affordable based on current revenue streams such as general taxation, development cost charges as well as partnerships with private sector interests and development. Be affordable for users of the transportation system.



Wordcloud Based on TMP Engagement

5.2 Goals

Figure 22. TMP Transportation Goals

The goals of the TMP (**Figure 22**), which align with the goals in the OCP, include:

5.2.1 Accessibility and Equity

Provide accessible and equitable year-round transportation options for people of all ages and abilities, and create an affordable transportation system in which all people can travel with dignity and relative ease, irrespective of age, abilities, gender, or race. Reduce or eliminate potential barriers to transportation access, by creating a complete and connected active transportation network, providing convenient and attractive transit services, and minimizing the need for daily personal vehicle use.

5.2.2 Safety and Security

Enable the safe and secure movement of all people, goods, and services across all modes of transportation year-round. This includes building a safe, reliable, and convenient roadway system, active transportation network, and transit services. Transportation safety and security can be managed through well-designed transportation infrastructure that encourages people to travel at safe speeds, along with education to the system users and enforcement.

Through establishing a safe and secured transportation system, people's comfort when travelling should be enhanced. Through working towards a Vision Zero strategy, steps can be taken to eliminate traffic fatalities and serious injuries and promote safe and respectful behaviour by all users of the transportation system.

Emergency response times can be prioritized through efficient and reliable infrastructure development and emergency vehicle priority measures.

5.2.3 Sustainable Mobility

Reduce the environmental impact of transportation by increasing the use of sustainable modes of transportation including walking, cycling, transit, encouraging a switch to low- and zero emission vehicles, and reducing the total distances driven, overall. The City's transportation network and infrastructure investments will be geared towards fostering more environmentally-friendly transportation infrastructure. It is designed to support multi-modal movement and choice year-round.

Prioritize shared and energy efficient vehicles (EV) and forms of goods movement. Encourage residents to increasingly choose active or shared modes of transportation when moving through the community. Transportation and mobility decisions also support the City's climate action goals.

Sustainable mobility will also support the health and well-being of the community by encouraging, enabling and empowering people to choose active modes of transportation to meet daily needs.

5.2.4 Prosperous Community

Support Whitehorse's economic, environmental and social prosperity. The City will support safe, efficient, reliable, and sustainable goods movement locally and to other areas of the Yukon. The City will also aim to reduce congestion at peak times using TDM strategies to shift residents' travel towards more sustainable modes of transportation, such as walking, cycling, and transit. Supporting a prosperous community also includes being responsive to the emerging technologies and actively embracing them in the transportation system.

5.2.5 Affordability

Support projects that facilitate affordable modes of transportation, ease the financial burden on residents, and foster inclusivity. Such a system supports social equity and enhances the overall quality of life within Whitehorse.

5.3 Transportation Targets

5.3.1 Mode Share

Increase Sustainable Transportation Mode Share to 40 per cent of All Commute Trips by 2040

A new set of 2040 mode share targets is established for the City to achieve reasonable mode splits by 2040 (**Table 9**). Interim targets are also provided to help the City work towards these 2040 targets

Table 9. City of Whitehorse 2040 Mode Share Targets

	2021	2026	2031	2036	2040
Transit	3.3%	5%	8%	12%	15%
Walk	6.8%	7%	8%	9%	10%
Bicycle	2.7%	3%	4%	5%	6%
Vehicle (Passenger)	7.2%	7%	7%	7%	7%
Vehicle (Driver)	78.3%	76%	71%	65%	60%
Other	1.7%	2%	2%	2%	2%

The new Mode Share Target is slightly different from those outlined in the City's Transportation Demand Management (TDM) Plan (2014), which aimed to decrease the percentages of trips made by driving to work or school from 75 per cent in 2011 to 50 per cent by 2036. This means, that as the population in Whitehorse grows, more people will get to work or school by walking, cycling, transit, and carpooling. As the population grows, it will take an increased amount of residents to switch to sustainable modes of transportation to achieve the mode share targets. As outlined in the 2014 TDM Plan, the 2036 mode share targets of non-automobile modes were 15 per cent for walking, 6 per cent for cycling, 15 per cent for transit, and 12 per cent for passenger vehicle use.

The City is facing challenges in meeting its sustainable transportation mode share targets as the use of personal vehicles has been increasing, while the share of sustainable modes of transportation has been declining since 2011. Simply put, Whitehorse mode share has been going the wrong direction.

One of the key factors contributing to the growth of vehicle mode share is the greater convenience and flexibility offered by private automobiles compared to other modes at this time. The low-density suburban growth that has been planned without adequate active transportation connections has made more attractive for residents to choose cars as their preferred mode. This shift is a result of historic infrastructure investment choices and comes at the cost of worsening traffic congestion, increased GHG emissions, a growing reliance on fossil fuel resources, negative human health impacts, and higher capital and operational costs of the transportation system.

To reverse this trend, the City must take a proactive approach. Strategies aimed at enhancing active transportation infrastructure, promoting the use of public transit, and making the urban environment more pedestrian and cyclist-friendly are critical.

Mode Shares in Canada

A review of existing mode shares of other Canadian cities has been conducted to determine a practically achievable mode share target (see **Table 10**). Based on the review, a city like Vancouver (City) and Toronto (City) would need to achieve close to 25 per cent increase of public transit mode share to get close to the 50 per cent mode share target for vehicle use as a driver. Achieving this goal for the City of Whitehorse would require investing enormously in public transit infrastructure and fostering a change in travel habits. Both the Town of Canmore and the Town of Whistler, both of which are winter communities, have well-established walking and cycling infrastructure and are recognized for the high rates of active transportation modes within their communities. Whistler reached a 60 per cent mode share for vehicle use as a driver with a moderate, but still robust, public transit system, while Canmore has just dropped below the 70 per cent mark, primarily due to its relatively less attractive transit system.

Table 10. Review of Existing Mode Share (2021) of Select Canadian Cities

	Whitehorse (City)	Vancouver (City)	Vancouver (Metro)	Toronto (City)	Toronto (Metro)	Canmore (Town)	Whistler (Population Centre)
Walk	6.8%	13.1%	6.4%	7.7%	4.7%	13.2%	13.5%
Bicycle	2.7%	5.2%	1.9%	2.0%	1.0%	6.7%	8.3%
Public Transit	3.3%	22.9%	14.9%	26.2%	15.6%	2.5%	10.7%
Vehicle (Passenger)	7.2%	5.4%	6.6%	7.2%	7.6%	5.3%	3.8%
Vehicle (Driver)	78.3%	50.8%	68.1%	53.7%	68.4%	69.3%	60.8%
Other	1.7%	2.6%	2.1%	3.2%	2.7%	3.0%	2.9%

Therefore, to reach the TDM Plan's original 2036 mode share targets, Whitehorse would need to establish an active transportation network on par with the Town of Canmore and the Village of Whistler, foster a public transit system close to the level of the cities of Vancouver and Toronto, and maintain a well-sustained carpooling system within the next 15 years.

Considering the negative trend since 2011, achieving all these objectives in such a short timeframe may not be feasible. Yet, Whitehorse is similar to both Whistler and Canmore given a strong outdoor and active-lifestyle culture which makes relative high rates of active transportation more likely. Establishing realistic goals helps Whitehorse prioritize resources on the most achievable and crucial objectives, while preventing the dispersion of efforts on unattainable ones. As a result, new mode share targets for 2040 horizon were established, with a target that 40 per cent of all commute trips by 2040 be made by sustainable transportation, including walking, cycling, transit, carpooling, and other modes. This represents roughly doubling of the existing sustainable transportation mode share. Note that because there is more mode shift potential with transit relative to active transportation, transit is prioritized in this plan, which represents a modest change from the hierarchy of modes identified in the OCP.

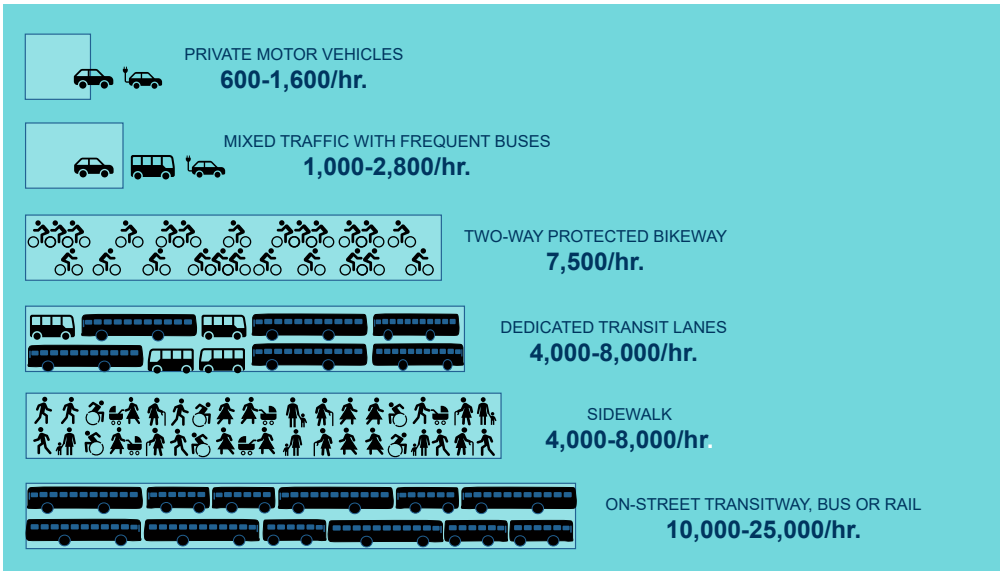


Figure 23. Capacities of Different Transportation Modes

Achieving these mode share targets form the basis to achieving the 2040 goals of this TMP and are used in the future system analysis.

5.3.2 Vision Zero

No fatalities or serious injuries on Whitehorse's transportation network by 2040.

For Whitehorse, the following interim Targets have been set towards achieving Vision Zero:

By 2030 Achieve a 25 per cent reduction in number of serious injuries or death, compared to 2011-2021 average baseline data.

By 2040 50 per cent reduction

By 2040 and beyond 100 per cent reduction

As outlined previously, Whitehorse recorded 19 collisions resulting in fatalities (averaging 1.7 per year) and 921 collisions causing injuries (averaging 83.7 per year) between 2011 and 2021. Notably, there has been a consistent decline in the number of fatal and injury collisions since 2016. Additionally, the data indicates that collisions resulting in fatalities or injuries are more prevalent during the winter months compared to the summer months. Analysis by age groups reveals that individuals aged 15 to 24 years and 30 to 39 years experienced the highest number of fatalities. Regarding collision types posing the highest injury risk, rear-end incidents, running off-road, intersections, and right turns were the most frequent. Pedestrians were involved in 15.7 per cent of all fatal collisions and 6.3 per cent of injury collisions, while cyclists accounted for 3.1 per cent of injury collisions, with no reported fatalities among cyclists during this period.

Vision Zero

In recent years, many places worldwide have improved collaboration among agencies and groups to enhance road safety. They aim to reduce serious injuries and fatalities caused by traffic accidents by combining engineering, education, and enforcement efforts. This approach, known as Vision Zero, prioritizes eliminating deaths and serious injuries from crashes. Unlike previous strategies, Vision Zero focuses specifically on preventing these severe outcomes rather than reducing all types of collisions.

At the heart of Vision Zero is the belief that no one should be killed or seriously injured from using the road network. A Vision Zero framework reflects two key concepts:

- Human life and health are prioritized within all aspects of the transportation system and that they can never be exchanged for other societal benefits; and
- Deaths and serious injuries are preventable.

Safe System Approach and Good Street Approach

Collaboration and partnerships with transportation professionals, transportation authorities, RCMP, health authorities, and other community stakeholders is needed to achieve Vision Zero. The TMP identifies two approaches for Vision Zero: Safe System Approach and Good Street Approach.

The World Health Organization describes the Safe System Approach as a public health approach to road traffic injuries. It involves injury surveillance, research, prevention and control, evaluation, policy, services and advocacy. Such an approach involves a cross-sectoral strategy and significant collaboration. The Transportation Association of Canada (TAC) defines the Safe System Approach as one that can dramatically improve road safety through an integrated, comprehensive process that recognizes the fallibility and vulnerability of human beings.

The underlying principles of the Safe System Approach include:

- *"Deaths and serious injuries are unacceptable: the Safe System Approach focuses on crashes that result in deaths and serious injuries.*
- *People make mistakes: people inevitably make mistakes that can lead to crashes, but the transportation system can be designed and operated to prevent death and serious injury by accommodating human mistakes and considering injury tolerances.*
- *People are vulnerable. It is critical that the transportation system be designed and operated in a way that is human-centric and accommodates human vulnerabilities.*
- *Responsibility is shared. All transportation system stakeholders (e.g., designers, operators, vehicle manufacturers, users) share the responsibility.*
- *Safety is proactive. Proactive tools can be used to identify and mitigate latent risks in the transportation system, rather than waiting for crashes to occur and reacting afterwards.*
- *Overlapping measures are crucial. Reducing risks requires that all parts of the transportation system are strengthened, so that if one part fails the other continues to protect people."*

The centre of the system is people – people that are unpredictable and will at times make mistakes that can lead to crashes. With that understanding, the road system needs to put layers of protection in the form of safe roads, vehicles, and speeds around people in order to prevent deaths and serious injuries[2].

[2.] Towards Zero Foundation, 2021

The Good Street Approach, a Dutch framework for designing high-quality streets and coherent transportation networks, offers a systematic way of thinking about how various forms of mobility can fit into our existing cities and street networks. The Good Street Approach could be an important implementation strategy for the Safe System Approach and ensure each of the vehicle types has its place in the public realm. In this approach, the wide range of vehicles available to meet transportation needs is broken down into six vehicle families ranging from pedestrians to rail-based vehicles. These vehicle families are categorized by both mass and achievable speed – the two factors influencing kinetic energy - so that the various modes within each family have similar energy. Kinetic energy is important because in case of a crash between vehicles with a significant difference in kinetic energy, the chance of injury is much greater. By grouping vehicle types by kinetic energy, we ensure these vehicles can be safely operated in the same physical space, and thus can be treated equally for the purpose of planning, design, and policy.

5.3.3 Greenhouse Gas (GHG) Emissions

Reduce total GHG emissions in Whitehorse by 10 per cent from the 2014 levels by 2040

By 2030 Achieve a 6 per cent reduction in total GHG emissions, compared to the 2014 levels.
By 2040 10 per cent reduction.

Table 11. Greenhouse Gas (GHG Emissions)

	Reduce City GHG emissions (tonnes of CO2/year from 2014 levels	Reduce per capita GHG emissions from 2014 levels	Reduce Whitehorse total GHG emissions from 2014 levels
By 2030	25%	20%	6%
By 2040	50%	30%	10%

The GHG emission targets aim to reduce emissions from transportation and achieve the City's overall GHG emission targets outlined in the 2015-2050 Whitehorse Sustainability Plan. These reductions can come from various emission sources, including transportation, buildings, and water and sewer infrastructure. Given 70 per cent of Whitehorse's GHG emissions are from to the on-road transportation sector, it is critically important to reduce emissions by transitioning away from the use of fossil fuels and promoting active and shared modes of transportation.

The approaches designed to help Whitehorse achieve these GHG emissions targets through transportation planning will include:

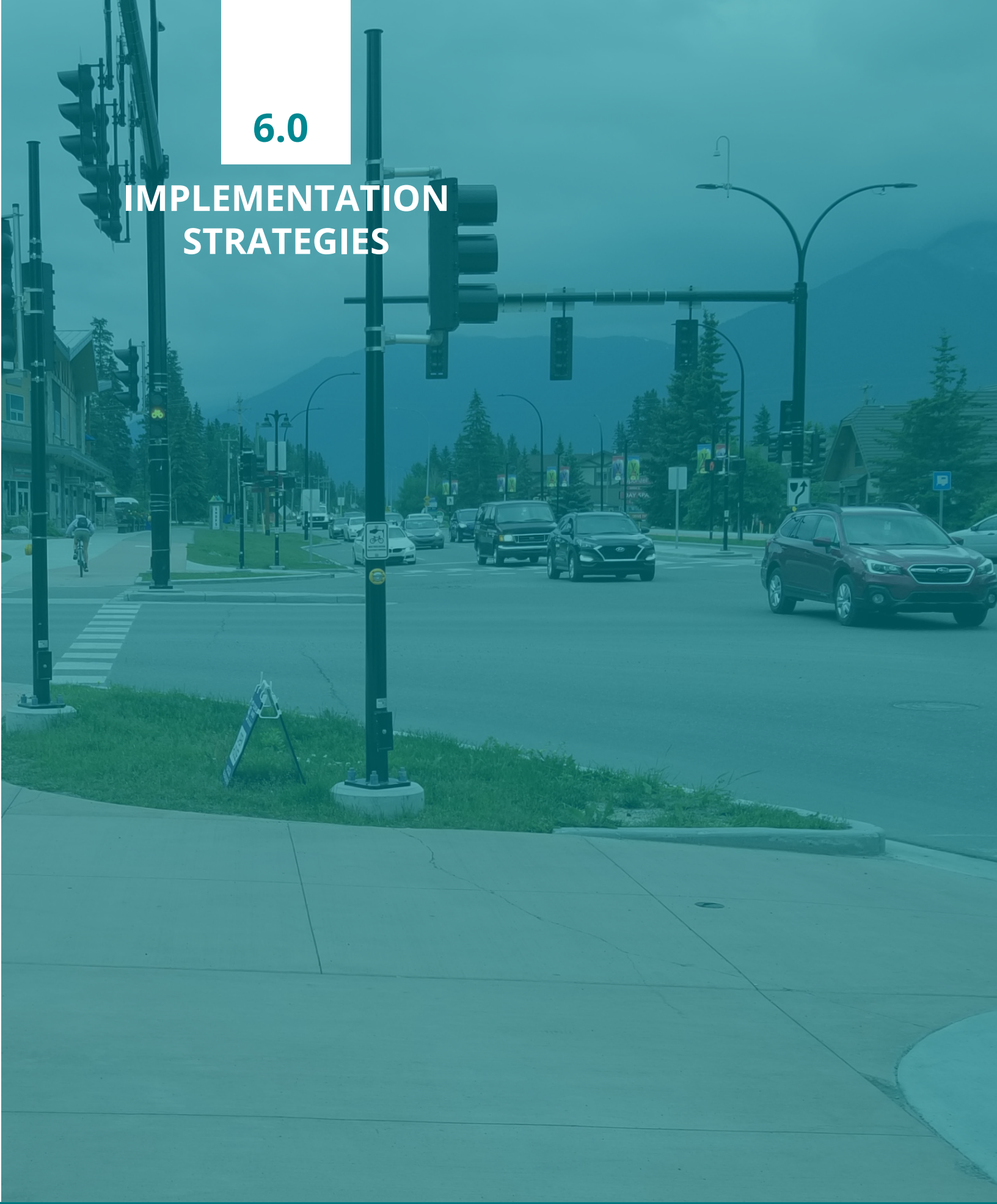
- Coordinating transportation and land use planning to reduce overall travel distances while still meeting daily needs.
- Implementing TDM strategies.
- Promoting active transportation and the use of public transit.
- Enabling green technology, like zero emissions vehicles, not only for City services (such as transit) but also across all sectors of society.


TAXI


WHITEHORSE
FIRE DEPT.

6.0

IMPLEMENTATION STRATEGIES



6.1 Guiding Principles

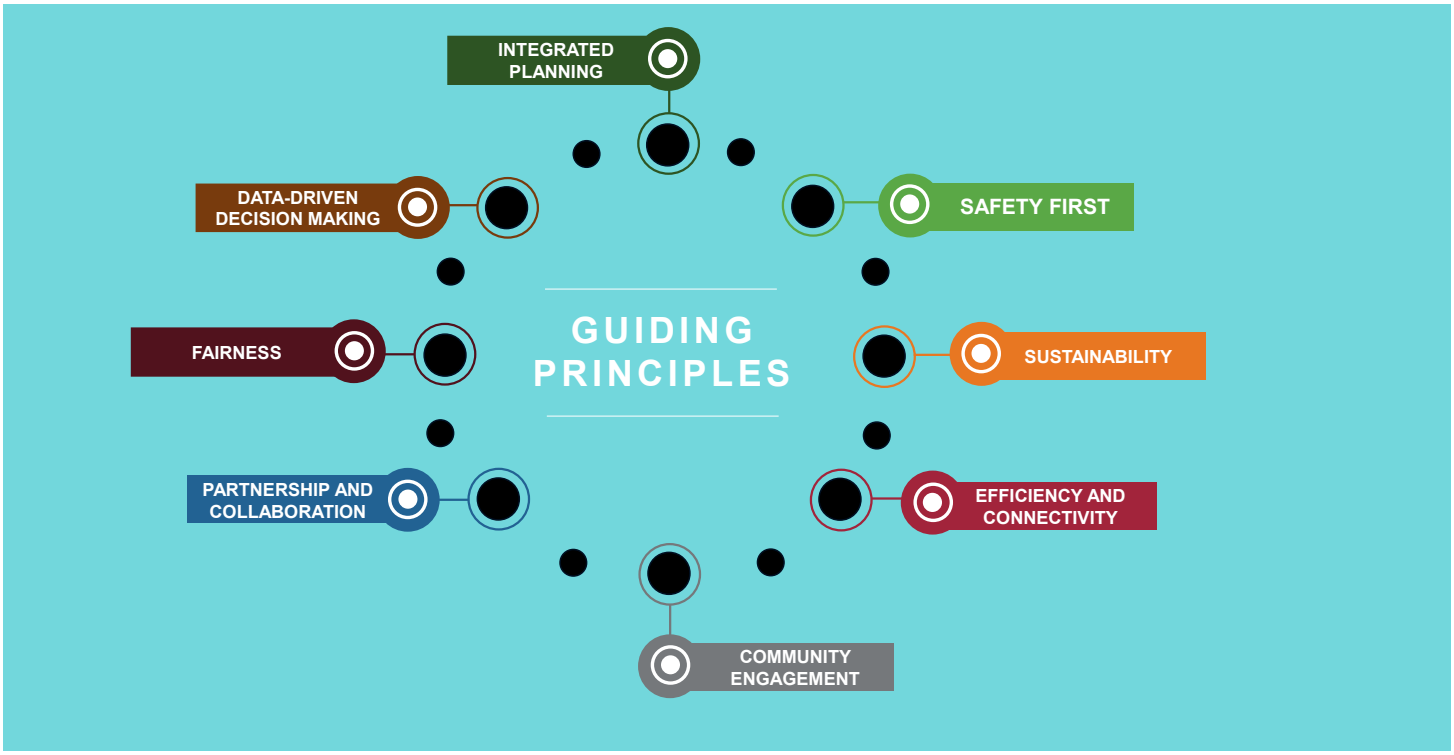


Figure 24. Guiding Principles

The implementation strategies transform key policy directions into work programs. This transformation is guided by a set of eight principles aligned with the City's core values and best practices. While transportation visions and goals offer a broad framework for initiatives and investments, guiding principles provide specific guidelines and values to shape strategies and actions for goal attainment (**Table 12**). These principles play a crucial role in establishing priorities, identifying needs, and devising solutions.

Table 12. Guiding Principles of the Implementation Strategies

Integrated Planning	Design transportation infrastructure to seamlessly accommodate multiple modes of transportation, including transit options, cycling lanes, pedestrian pathways, and roads. Promote safe and convenient connections between different modes, ensuring smooth transitions for users. Ensure that transportation planning is integrated with land use, urban development, and environmental planning to create a seamless and interconnected system. Consider the impact of transportation decisions on other aspects of community life, such as housing, employment, and public spaces. Integrate with other Whitehorse planning documents. Promote consistency, coherence, and cooperation across different aspects of city planning, which can lead to more effective and sustainable outcomes for the city.
Safety First	Make safety a top priority by implementing measures to reduce accidents and protect vulnerable road users. Prioritize infrastructure and programs that protect all users, with an emphasis on enhancing the safety of vulnerable road users, such as pedestrians and cyclists. Mitigate conflicts with motor vehicles. Reduce the potential for accidents and injuries through well-designed infrastructure and traffic management.
Sustainability	Prioritize all season sustainable transportation options such as transit, cycling, and walking, electric vehicles, and shared transportation to reduce the impact on the environment. Sustainable transportation options can enhance the overall quality of life by reducing traffic congestion, improving air quality, and promoting active and healthy lifestyles. It also considers the potential impacts of climate change and other external factors, leading to the development of resilient transportation infrastructure.
Efficiency and Connectivity	Promote efficiency in transportation systems year-round by optimizing routes, reducing congestion, and enhancing connectivity between different modes of transportation. Encourage multi-modal transportation year-round to provide users with a variety of options. Improve efficiency and connectivity to increase ridership by making transit a more convenient and attractive option.
Community Engagement	Encourage public and user participation to provide feedback on project implementation to ensure community needs are well represented.
Partnership and Collaboration	Collaborate with all levels of government, public and private stakeholders, and relevant agencies to create a seamless and interconnected transportation network. Leverage partnerships to share resources, expertise, and funding.
Fairness	Ensure equitable access to transportation services and infrastructure for all members of the community, regardless of socioeconomic status, age, season, or location. Address transportation-related disparities and consider the needs of under-served populations.
Data-Driven Decision Making	Use data and analytics to inform transportation planning, optimize routes, and assess the impact of policies and projects. Make decisions based on evidence and performance metrics.

The guiding principles, along with the TMP Goals and the prioritization of transportation modes defined in this plan provide a framework and structure to the implementation of this plan. Thus, the strategies presented are generally organized to embody these principles and goals, providing a generalized prioritization for actions. Mode share trends in the past decade have been going in an unsustainable direction and the implementation plan looks to increase focus on bringing greater sustainability and equity to mobility. Achieving the mode share goals identified in this plan are foundational to the success of the planned mobility network. These mode share goals will help the City avoid higher costs of a single-mode share dominated system and improve resident's mobility opportunities.

The following sections introduce the 10 themes of the TMP's implementation strategy, covering policy and bylaw, major projects, active transportation, transit, intersections and crossings, parking, goods movement, new mobility, transportation demand management (TDM), and safety, maintenance, and operations. Detailed implementation measures are summarized in **Section 6.12.**

6.2 Policy and Bylaws

The theme of Policy and Bylaws refers to a number of recommended changes to the City's policy documents related to Complete Streets, Vision Zero and the Safe System Approach, design standards, and neighbourhood traffic calming.

6.2.1 Street Network Classification

The street network classification map serves as a vital tool in urban planning, offering a comprehensive overview of the road network within a specific area. An updated street network classification map can be found in **Figure 25.** By categorizing roads based on their function, capacity, and importance, this map provides valuable insights into transportation infrastructure. From major highways facilitating regional connectivity to local streets serving neighborhood access, each road type plays a distinct role in supporting the movement of people and goods. This map not only aids in understanding the hierarchy and distribution of roads but also informs decision-making processes related to maintenance, development, and traffic management. Through clear visualization and categorization, the street network classification map serves as a foundational resource for urban planners, policymakers, and transportation professionals alike.

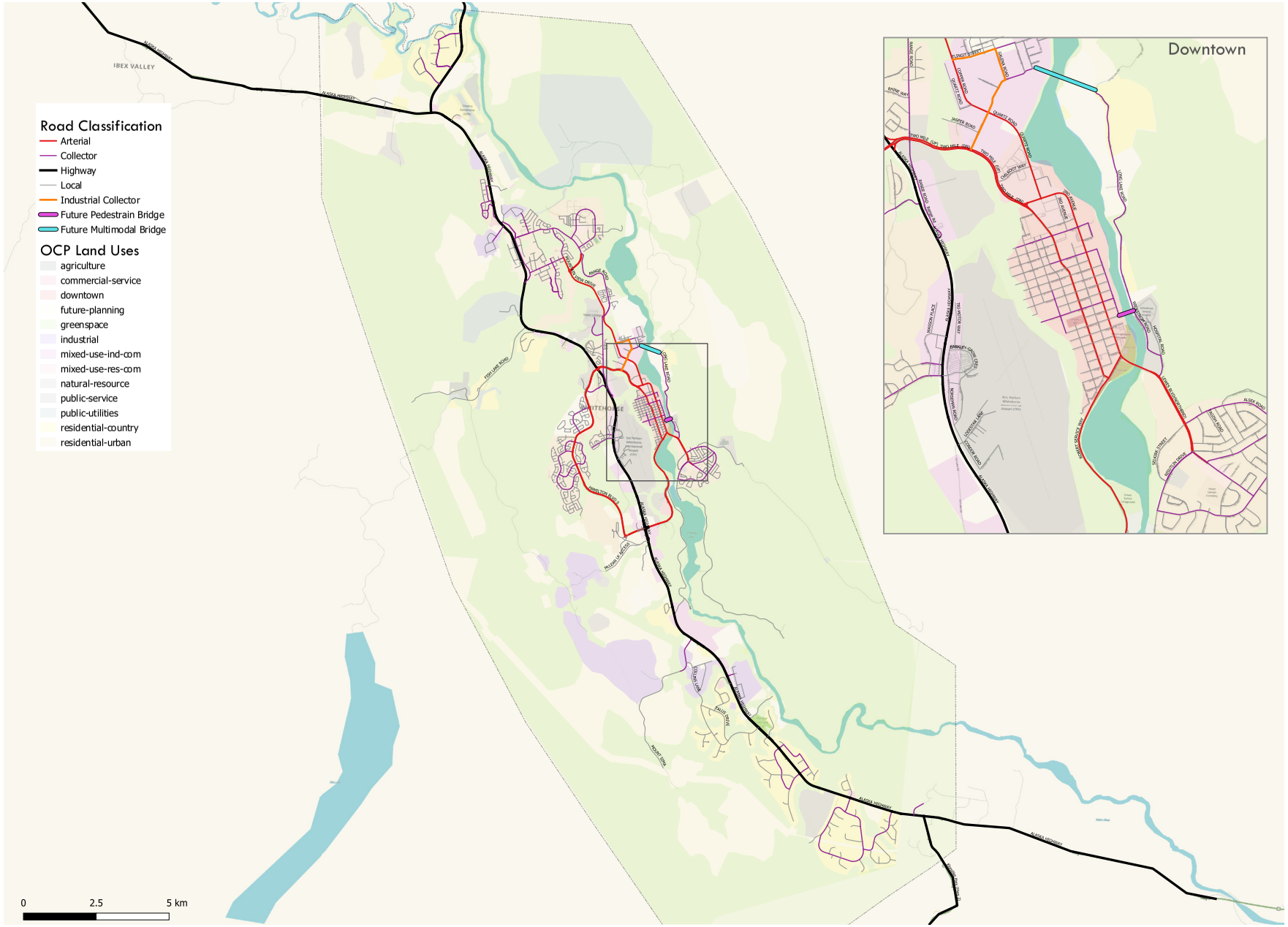


Figure 25. Whitehorse Street Network Classification

6.2.2 Complete Streets Policy

Complete Streets are multi-modal streets that are designed to be safe for all users, regardless of age, ability, income, race, ethnicity, or mode of travel. Complete Streets design creates spaces where all users can thrive – not only motorists. Complete Streets often include human-scale design such as street furniture, greenery, and wide pedestrian rights-of-way.

Implementing Complete Streets in Whitehorse is a comprehensive approach to urban planning and transportation that prioritizes the safety, accessibility, and usability of streets for all users year-round, including transit, pedestrians, cyclists, and drivers. To achieve this, the TMP advocates for the development and adoption of a Complete Streets Policy by 2030. Complete Streets ensures that streets are designed and maintained to accommodate diverse transportation needs and are accessible for everyone. It promotes inclusivity and enhances mobility and connectivity, fostering vibrant communities where individuals can easily access essential services, employment opportunities, recreational amenities, and social activities.

The policy guidelines for implementing Complete Streets in Whitehorse include developing and adopting a comprehensive Complete Streets policy document, updating design standards, providing professional training and development, ensuring inclusive design practices, integrating multimodal transportation options, engaging the public, conducting pilot projects, and implementing monitoring and adaptation mechanisms.

Implementing Complete Streets is a long-term commitment that transforms a city's infrastructure to create more equitable, sustainable, and livable communities. It requires collaboration between various stakeholders and a commitment to prioritizing the safety and well-being of all residents and visitors.

6.2.3 Vision Zero and Safe System Approach

Implementing Vision Zero and the Safe System Approach is a comprehensive strategy aimed at eliminating traffic fatalities and reducing severe injuries on the road. This approach underscores the shared responsibility of road safety among various stakeholders, including government agencies, engineers, law enforcement, and the public. The policy guidelines for implementing Vision Zero and the Safe System approach in Whitehorse include developing and adopting a Vision Zero policy document and Safe Mobility Action Plan (by 2030), updating design standards, establishing a multi-agency Vision Zero task force, collecting and analyzing collision data regularly, implementing speed management measures, conducting education and awareness campaigns, enhancing enforcement efforts, and evaluating and monitoring performance.

6.2.4 Design Standards

The City of Whitehorse Servicing Standards Manual (SSM) underwent revision in November 2020. To ensure alignment with the transportation visions and goals outlined in the OCP and the TMP, it is advisable to update the SSM whenever feasible. Key focus areas for updating include Vision Zero, Complete Streets, winter city design, speed limits, traffic calming, transit-oriented design, New Mobility, and pavement markings.

6.2.5 Neighbourhood Traffic Calming

Traffic calming has gained popularity in North America for its effectiveness in promoting road safety. Unlike traditional traffic regulations enforced by police, traffic calming relies on physical measures designed to naturally slow down vehicle speeds and enhance pedestrian safety. These measures include speed bumps, traffic islands, chicanes, and raised crosswalks, among others. By reducing vehicle speeds, traffic calming measures increase reaction time for drivers and decrease the severity of accidents involving pedestrians and cyclists. Recognizing these benefits, the TMP proposes for the development and adoption of a Traffic Calming Policy by 2030.

While traffic calming is commonly associated with urban neighborhoods, its application extends to various street types and areas. Given the diverse road classifications, operational characteristics, and land uses in the City of Whitehorse, it is imperative to establish a clear process for planning, evaluating, and implementing traffic calming initiatives across the city.

6.3 Major Projects

The theme of Major Projects refers to an integrated approach to delivering major, multi-modal capital projects (**Figure 26**). As a forward-thinking city that values sustainability, efficiency, and affordability, the City embraces a holistic approach to implementing its capital projects. This approach involves carefully coordinating and synchronizing the construction of various infrastructure projects, such as roads, water mains, and sanitary pipes, along the same corridor or in the same area, while simultaneously addressing the needs of transit users, cyclists, pedestrians, motorists, and other roadway users. By doing so, the City is not only streamlining the development process and optimizing its investments and managing its finances, but also enhancing safety, accessibility, and overall quality of life for its residents.

Implementing capital projects holistically means looking beyond individual, isolated improvements and, instead, considering the broader picture. When constructing a new roadway, for example, the City ensures that bicycle lanes and pedestrian facilities are incorporated into the design from the outset. This approach minimizes the need for subsequent disruptions and costly retrofits, resulting in a more efficient and cost-effective development process.

One of the key advantages of this approach is its positive impact on mobility and accessibility. By creating a unified network of roadways, and active transportation facilities, the city encourages more sustainable modes of transportation while also prioritizing safety. Residents and visitors can more easily move from place to place, reducing congestion and improving overall quality of life. Moreover, the holistic approach aligns with broader goals of reducing GHG emissions and promoting active transportation, further contributing to a cleaner, healthier, and more vibrant urban environment. The major projects presented are a combination of both projects identified through the future network needs analysis and projects requested by the City.

6.4 Active Transportation

Cities across North America are expanding their active transportation networks as a key strategy to reducing vehicle travel. A complete, connected network that is maintained year-round is necessary to support and encourage more walking and cycling. It is important that sidewalks and bicycle routes are direct, safe and provide connections to key destinations within the community. Walking and cycling has been shown to reduce stress, increase physical health, reduce vehicle infrastructure demands, improve air quality, provide equity in transportation and foster livable communities.

Actions to improve walking and cycling include implementing the projects shown in **Figure 27** and **Figure 28.**

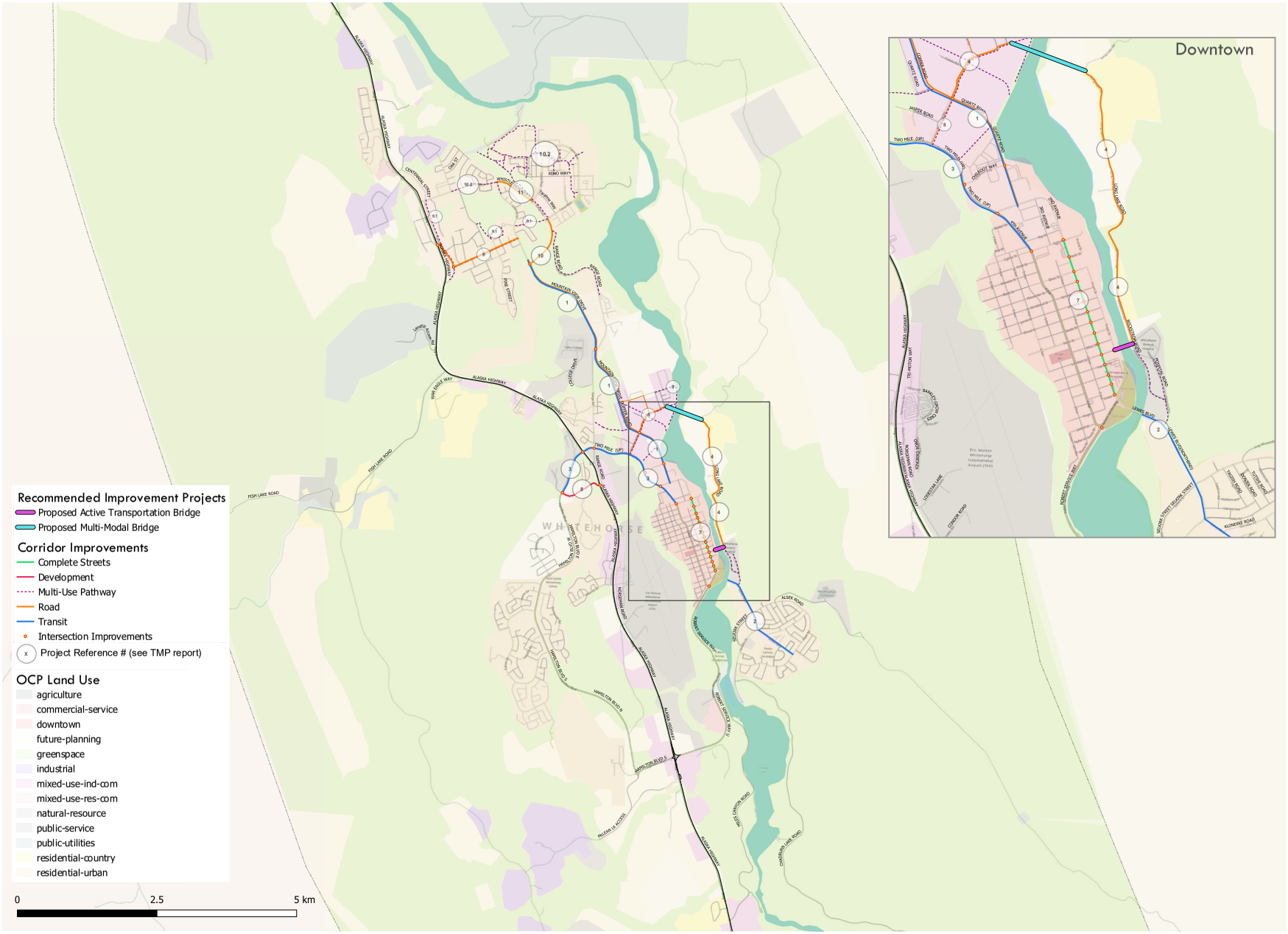


Figure 26. Major Projects

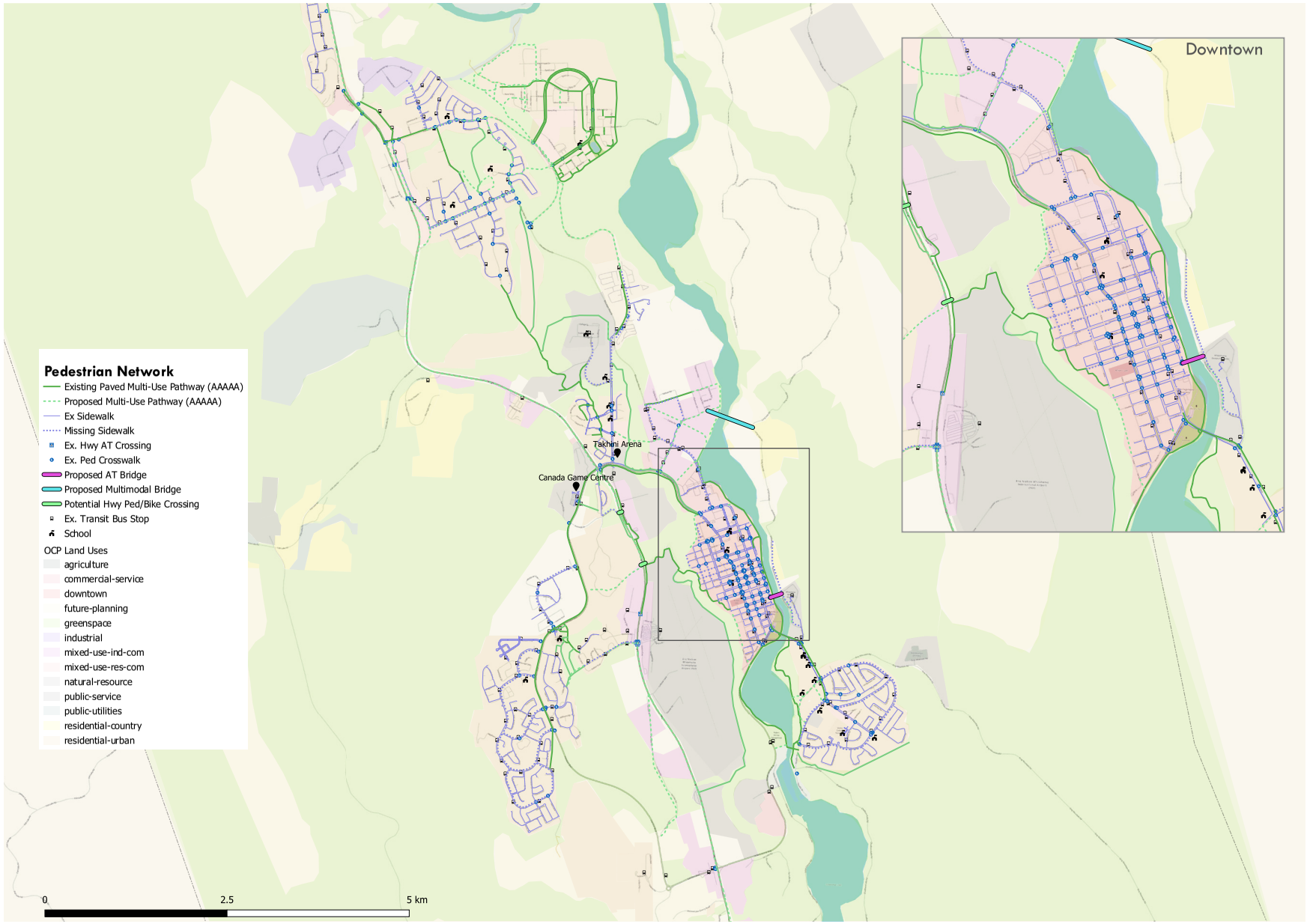


Figure 27. Existing and Proposed Walking Network

Figure 28. Existing and Proposed Cycling Network

6.5 Transit

Public transit is a vital element within Whitehorse's transportation network, fostering the creation of compact, fully developed communities. This mode of transportation embodies sustainability, offering accessibility, efficiency, affordability, safety, and reliability, which facilitates access to employment, education, community services, shopping centers, entertainment, recreational opportunities, and daily necessities. Moreover, it stands out as one of the most space-efficient modes capable of moving many individuals across greater distances than any other mode. Encouraging transit ridership provides the greatest opportunity to achieve the TMP targets. By making public transit more appealing and accessible, the number of vehicles on the road can be reduced, leading to safer, less congested roads and lower emissions.

It is recommended that the City of Whitehorse 2018 Transit Master Plan serves as a reference point for guiding the implementation of transit improvements. The insights and recommendations outlined in the report provide a valuable foundation for addressing current challenges and enhancing overall transit operations. The intention of this TMP is not to supersede the existing plan, but rather to provide additional high-level guidance to inform the next transit master plan.

6.6 Intersections and Crossings

Intersections and crossing play an important role in shaping mobility and accessibility in Whitehorse; when they are properly designed and maintained, they can enhance daily commutes and contribute to the safety, efficiency, and connectivity of the urban environment. Planning and development of these projects are key considerations in the city's ongoing efforts to promote sustainable, vibrant, and accessible transportation systems.

6.7 Parking

Parking improvements are crucial to addressing the evolving needs of urban environments and enhancing the overall functionality and accessibility of urban spaces. As cities experience population growth and increased vehicular traffic, the demand for parking infrastructure has intensified. Inefficient parking strategies and insufficient parking facilities can lead to congestion, decreased economic activity, and a compromised quality of life for residents. Moreover, the rise of shared mobility, electric vehicles, and alternative transportation modes necessitates innovative solutions to accommodate diverse parking requirements. By investing in parking improvements, the City can optimize land use, alleviate traffic congestion, promote economic vitality, and foster sustainable transportation options.

6.8 Goods Movement

The need to establish designated goods movement routes within the City will involve comprehensive planning, infrastructure development, and stakeholder engagement.

The truck route network ensures that goods-generating land uses are connected to each other and to the major transportation network (i.e., Alaska Highway, airport; rail station, river), while avoiding sensitive areas such as residential neighbourhoods, protected environments, hospitals, schools, bike paths and more.

At a high level, the purpose of a truck route system is to balance the needs of commerce, while minimizing impacts to the community. As such, a truck route system does not prohibit trucks from using any road within Whitehorse, but does require that they use roads most suitable to the greatest extent possible, and limit their intrusion into the sensitive areas to the minimum possible. The purpose of truck route planning is to define the street network that is

- Safest for the movement of large vehicles.
- Supports local and regional commerce.
- Provides enough capacity and adequate design features to accommodate the anticipated volumes, size and weight of vehicles.

It is recommended that the City adopt the following truck route network as part of the bylaw, as illustrated in **Figure 29.**


39

Figure 29. Proposed Truck Route Map

6.9 New Mobility

New forms of mobility may arise in a given location through various means. Private companies will occasionally approach municipalities to offer their service or product and expand their market. In many cases however, municipalities seek out providers for specific services they wish to implement in their community. The City of Whitehorse should assess mobility options they wish to explore further. The exploration of the feasibility of New Mobility should be conducted before 2030 so that new forms of mobility can be introduced to the city network between 2030 and 2040.

Shared Micro-mobility

Explore the feasibility of a bike share system (particularly one offering e-bikes) or an e-scooter sharing system by 2030. The case studies of Aspen, Colorado (bike share) and Cochrane, Alberta (e-scooter share) may be of particular interest due to their comparable characteristics of being tourist destinations and also being small municipalities. While partnerships with surrounding municipalities may not be possible in Whitehorse, working with local businesses such as large employers and tourist locations (museums, visitor information centres), may present opportunities to locate stations or offer incentives for the use of shared mobility devices. There are also opportunities to compensate users for relocating scooters to specific locations, enabling anyone to retrieve a scooter from less favorable spots and receive payment for returning it to a more desirable location.

Figure 30. Left: Bixi Docked E-bikeshare system in Montreal, QC (Source: CBC News)
Right: Spin Dockless E-bikeshare in Kelowna, BC (Source: Summerland Review)

Figure 31. Bird E-scooter in Calgary, AB (Source: Global News)

Partnerships

Another important theme that has emerged is the value of strong partnerships, both internally and externally, to develop mobility systems that fit within the existing context and are sustainable in the long term. Partnerships can provide access to funding for the municipality or in some cases, eliminate the need for municipal funding altogether. In many cases, strong partnerships with other internal departments, large companies, local entrepreneurs, and other levels of government allowed cities to implement projects that would not be possible on their own.

Pilot Projects

Pilot projects were originally used to test new mobility options for a set period (often two years) before making a longer-term commitment. This is a valuable step in introducing new mobility as pilots allow the municipality and all stakeholders involved, including the public, a low-risk opportunity to learn about the benefits and challenges. Their flexibility allows for adjustments to be made on the fly and if, after the pilot is complete, it is determined that the system is not suited to the local context, the innovation does not need to be adopted at that time.

Bylaws

Bringing in new mobility forms is a common area of concern for municipalities when developing and amending of bylaws. Some forms of mobility will likely be regulated at the federal or provincial/territorial level such as connected and autonomous vehicles. Furthermore, some forms of micromobility, such as e-scooters, are currently regulated at the provincial/territorial level, but many local governments enact more detailed and context-specific regulation. Research and communication with other municipalities that have implemented the technology can be invaluable to ensuring the proper policies and bylaws are in place before introducing new mobility. This relates to the importance of developing trusted partnerships where both parties can learn from one another. In the case of micromobility, technology also allows for some regulations to be enacted without the need for enforcement as speed caps on devices and geofencing can physically prevent users from operating in an undesirable manner. Ultimately, the regulations and bylaws that are put in place should always put the public interest first.

Data Collection

Data collection is a valuable aspect when new technologies are introduced. This data will inform future decisions on the technology and can be used to influence decision-makers, such as city council, and the public, building support for new mobility if it has been shown to be successful. Partnerships should include provisions for data sharing, so all parties are informed.

Curbside Management

New mobility forms interact with curbside space in a variety of ways, from parking to pick-up and drop-off, to through movement. Strategic planning and policy development regulating the use of curbside space at various scales will be crucial to ensure the smooth operation of city streets that help to achieve overarching goals and objectives for the transportation system.

Integrated Mobility

Regardless of mode, the transportation system within a community must operate holistically to ensure the needs of all road users are being met. Policies and actions taken by the City should consider the impacts on all forms of transportation to create an environment that supports a multi-modal transportation network and allows the public to combine travel modes to meet their daily travel needs.

Figure 32. Bikeshare and Transit Integration in Pittsburgh, PA (Source: Better Bikeshare Partnership)

6.10 Transportation Demand Management (TDM)

As Whitehorse grows and transportation infrastructure becomes strained, transportation demand management (TDM) is an essential tool to promote a sustainable, efficient, and equitable transportation system.

TDM focuses on reducing the reliance on single-occupancy vehicles, which can decrease congestion and mitigate the environmental impacts of transportation. It optimizes existing resources and the promotion of alternative modes such as transit, carpooling, cycling, and walking.

A list of key components of the City's Transportation Demand Management Plan are summarized below, delving into strategies aimed at reducing traffic congestion, enhancing air quality, improving access to affordable and efficient transportation options, and fostering a more sustainable and livable urban environment for all residents.

This plan is instrumental in ensuring that the City's transportation system evolves in harmony with its growth, embracing innovative solutions to meet the diverse and changing mobility needs of its population.

6.11 Safety, Maintenance and Operations

The strategies below will serve as a blueprint for how transportation infrastructure should be managed, maintained, and enhanced.

The proposed actions encompass strategies to prevent accidents, reduce risks, and improve emergency response capabilities. Efficient operations will keep transportation networks running smoothly, reducing congestion, and optimizing the use of resources.

The recommended short-term, medium-term, long-term, and ongoing strategies will support a safe, well-maintained, and smoothly operating transportation system in Whitehorse.

6.12 Detailed Implementation Measures

Detailed implementation measures are essential components of any comprehensive plan, providing the roadmap for turning strategies and goals into actionable steps. These measures encompass a wide range of detailed action plans, tactics, and initiatives designed to achieve specific objectives outlined in the overarching plan. A list of detailed implementation measures are included in **Table 13.**

TABLE 13. DETAILED IMPLEMENTATION MEASURES

Implementation Measures		Time Frame			Method of Implementation			Cost	Primary Responsibility
		Short (2024 - 2030)	Medium (2030 - 2035)	Long (2035 - 2040)	Capital	Operations Maintenance	Policy Program		
Policy, Bylaw, and Studies									
1	Adopt the updated Street Network Classification map	✓					✓		Engineering; Planning and Sustainability
2	Develop and adopt a Complete Street Policy	✓					✓	$50k	Engineering; Planning and Sustainability
3	Develop and adopt a Vision Zero Policy with Safety System Approach	✓					✓	$50k	Engineering; Planning and Sustainability
4	Update City's Servicing Standards Manual (SSM)	✓					✓	$50k	Engineering
5	Develop and adopt a Traffic Calming Policy	✓					✓	$50k	Engineering; Planning and Sustainability
6	Conduct a Whistle Bend Traffic Study to assess the internal traffic management strategies.	✓					✓	$50k	Engineering, Planning and Sustainability
Major Projects									
1	1.0 Mountain View Drive / Quartz / Copper corridor upgrade: Widening southbound direction to two lanes (4.9 km)	✓			Road			$12 m	Engineering
	1.1 Mountain View Drive / Quartz / Copper corridor transit infrastructure improvements, including transit signal priority and queue jump lanes at intersections; update Transit Master Plan and consider increasing transit frequency to 15-minute frequency during peak hours and 30-minute frequency during off-peak hours along the corridor.	✓			Transit			$3 m	Engineering; Transit

1	1.2 Intersection improvements along Mountain View Drive	✓			Intersection			To be determined*	Engineering
	1.3 Mountain View Drive / Copper Road / Quartz Road separated bicycle path project	✓			Separated Bicycle Path		✓	$6.2 m	Engineering
2	2.0 Lewes Boulevard transit priority lane between Robert Campbell Bridge to Alsek Road (North) (0.72 km)	✓			Transit		✓	$1.3 m	Engineering
3	3.0 Hamilton Boulevard / Two Mile Hill Road / 4th Avenue corridor transit infrastructure improvements, including transit signal priority and queue jump lanes at intersections; update Transit Master Plan and consider increasing transit frequency to 15-minute frequency during peak hours and 30-minute frequency during off-peak hours along the corridor		✓		Transit		✓	$4 m	Transit and Engineering
	3.1 Two Mile Hill Road and Alaska Highway, and Two Mile Hill Road and Range Road intersection improvements in collaboration with YG		✓		Intersection		✓	To be determined **	Engineering
	3.2 Hamilton Boulevard separated bicycle path Project (between Alaska Highway and Sumanik Drive (0.9 km)		✓		Separated Bicycle Path		✓	$1.1 m	Transit and Engineering
	3.3 Other intersection improvements along Hamilton Boulevard / Two Mile Hill Road		✓		Intersection			To be determined*	Engineering
4	4.0 New bridge crossing of the Yukon River (potentially in the Marwell area, including roadway improvements of both Industrial Road and Long Lake Road) (~1 km)		✓		Road			$30 m	Engineering
5	5.0 New connection between Hamilton Boulevard and Alaska Highway (detailed alignment is contingent on the finalization of the Valleyview South Master Plan) (~1.1 km)		✓		Development			$4 m	Engineering

6	6.0 Pedestrian bridge connects the Downtown and hospital (0.12 km)			✓	Pedestrian Bridge			$7.5 m	Engineering
	6.1 Hospital area multi-use pathway system (refer to Bicycle Network Plan 2018) (2.3 km)			✓	Separated Bicycle Path / Multi-Use Pathway			$2.6 m	Engineering
7	7.0 2nd Avenue Roadway Space Reallocation Project (1.4 km)			✓	Complete Streets			$6 m	Engineering
	7.1 Intersection improvements along 2nd Avenue			✓	Intersection			To be determined*	Engineering
8	8.0 Marwell area multi-use pathway system (refer to Bicycle Network Plan 2018) (2.1 km)			✓	Multi-Use Pathway			$3.15 m	Engineering
9	9.0 Roadway improvement along 12th Avenue between Alaska Highway and Mountain View Drive (1.3 km)			✓	Road			$2 m	Engineering
	9.1 12th Avenue multi-use pathway project between Centennial Street and Hickory Street (1.3 km)			✓	Multi-Use Pathway			$0.8 m	Engineering
10	10.0 Roadway improvements along Whistle Bend Way between Casca Boulevard (S) and Mountain View Drive (0.9 km)			✓	Road			$3 m	Engineering
	10.1 Whistle Bend Way and Mountain View Drive roundabout improvement project			✓	Intersection			$2 m	Engineering
	10.2 Whistle Bend Way multi-use pathway (refer to Bicycle Network Plan 2018) (4.54 km)			✓	Multi-Use Pathway			$1.3 m	Engineering
11	11.0 Roadway improvements along Whistle Bend Way / Wann Road between Casca Boulevard (N) and Hickory Street (0.7 km)			✓	Road			$3 m	Engineering

Active Transportation Infrastructures									
The Downtown North – South Corridors Active Transportation Projects									
1.1	3rd Avenue Always Available for All Ages and Abilities (AAAAA) Bicycle Route (2nd Ave to Hoge St/Roberts Service Way) (1.9 kilometres)	✓			AAAAA			$0.13 m	Engineering
1.2.1	4th Avenue unidirectional separated bicycle path project between 2nd Avenue and Black Street (0.72 kilometres)	✓			Separated Bicycle Path			$0.9 m	Engineering
1.2.2	4th Avenue unidirectional separated bicycle path project between Black Street and Robert Service Way (1.34 kilometres)	✓			Separated Bicycle Path			$1.7 m	Engineering
1.3	6th Avenue AAAAA Bicycle Route (Ogilvie to Robert Service Way) (3.5 kilometres)	✓			AAAAA			$0.7 m	Engineering
1.4	Multi-use pathway project between Two Mile Hill Road and Ogilvie Street (Close to Ogilvie St., Alignment TBD) (0.52 kilometres)	✓			Multi-Use Pathway			$0.4 m	Engineering
The Downtown East – West Corridors Active Transportation Projects									
2.1	Chilkoot Way separated bicycle path project between Two Mile Hill Road and Quartz Road – Completed in 2023 (0.38 kilometres)	✓			Separated Bicycle Path			$0.5 m	Engineering
2.2	2nd Avenue AAAAA Bicycle Route project between Two Mile Hill Road and Yukon River (Alignment TBD) (0.5 kilometres)	✓			AAAAA			$0.6 m	Engineering
2.3	Ogilvie Street AAAAA Bicycle Route (8th Ave to Riverfront Multi-use Pathway) (1.1kilometres)	✓			AAAAA			$0.8 m	Engineering
2.4	Black Street AAAAA Bicycle Route (9th Ave to Front Street) (1 kilometres)	✓			AAAAA			$0.6 m	Engineering
2.5	Wood Street AAAAA Bicycle Route (8th Ave to Front Street) (0.8 kilometres)	✓			AAAAA			$0.5 m	Engineering

2.6	Hanson Street AAAAA Bicycle Route between 6th Avenue and Yukon River (0.6 kilometres)	✓			AAAAA			$30k	Engineering
2.7	Hoge & Lowe Streets AAAAA Bicycle Route between 5th Avenue and 2nd Avenue (0.5 kilometres)	✓			AAAAA			$30k	Engineering
Alaska Highway Active Transportation Projects									
3.1	Alaska Highway multi-use pathway project between Wann Road and Range Road (6.79 kilometres) in collaboration with YG	✓			Multi-Use Pathway			$4.1 m	Engineering
3.2	Alaska Highway multi-use pathway project between Robert Service Way and Canyon Crecent (2.91 kilometres) in collaboration with YG	✓						$1.8 m	Engineering
3.3	Squanga Avenue multi-use pathway project between 1.53 km north of Kathleen Road and Laberge Road (3.03 kilometres)	✓						$1.9 m	Engineering
3.4	Alaska Highway multi-use pathway project between 350 m north of Sumanik Road and Airport Trail (1.1 kilometres) in collaboration with YG	✓						$0.7 m	Engineering
Valleyview Neighbourhood Active Transportation Project									
4.1	Valleyview neighbourhood multi-use pathway project between Hamilton Boulevard and Airport Trail / Alaska Highway (0.9 kilometres)	✓			Multi-Use Pathway by Development			$0.6 m	Development
4.2	Other Valleyview neighbourhood active transportation corridors	✓			Refer to the Valleyview South Master Plan				Development

Active Transportation Infrastructures									
McIntyre Neighbourhood Active Transportation Project									
5.1	McIntyre Drive buffered bicycle lane project between Hamilton Boulevard (N intersection) and Hamilton Boulevard (S intersection) Committed project (1.27 kilometres)		✓		Buffered Bicycle Lane			$0.3 m	Engineering
Selkirk Street Active Transportation Project									
6.1	Selkirk Street multi-use pathway project between Lewes Boulevard and Nisutlin Drive (0.7 kilometres)		✓		Multi-Use Pathway			$0.45 m	Engineering
Hamilton Boulevard Active Transportation Projects									
7.1	Hamilton Boulevard AAAAA separated bike path project between Sumanik Drive and Robert Service Way (6.74 kilometres)		✓		AAAAA			$8.1 m	Engineering
Millennium Trail Active Transportation Projects									
8.1	Multi-use pathway between Miles Canyon Rd/Robert Service Way and Millennium Trail (0.6 kilometres)		✓		Multi-Use Pathway			$0.4 m	Engineering
Takhini Neighbourhood Active Transportation Projects									
9.1	Range Road separated bicycle path project between Mountain View Drive and Two Mile Hill (1.8 kilometres)		✓		Separated Bicycle Path			$2.2 m	Engineering
9.2	Takhini neighborhood greenways (Normandy Road, Vimy, Dieppe and Falaise) (0.5 kilometres)		✓		Neighbourhood Greenway			$30k	Engineering
9.3	Multi-use pathways between Range Road and Yukon University (including along University Drive) (1.4 kilometres)		✓		Multi-Use Pathway			$0.9 m	Engineering

Range Road North Active Transportation Project									
10.1	Multi-use pathway between Whistle Bend Way and Mountain View Place North (alignment adjacent to Range Road North) (1.93 kilometres)		✓		Multi-Use Pathway			$1.2 m	Engineering
Riverdale Neighbourhood Active Transportation Projects									
11.1	Alsek Road separated bicycle path project between Lewes Boulevard and Nisutlin Drive (3.06 kilometres)		✓		Separated Bicycle Path			$3.7 m	Engineering
11.2	Lewes Boulevard separated bicycle path project between Teslin Road and Alsek Road (0.78 kilometres)		✓		Separated Bicycle Path			$1 m	Engineering
11.3	Nisutlin Drive separated bicycle path project between Alsek Road and Lewes Boulevard (0.74 kilometres)		✓		Separated Bicycle Path			$0.9 m	Engineering
11.4	Multi-use pathway between Selkirk Street and Nisutlin Drive (Enchanted Learning Forest shared-use path alignment) (0.26 kilometres)		✓		Multi-Use Pathway			$0.15 m	Engineering
11.5	Teslin Road neighbourhood greenway project between Lewes Boulevard and Alsek Road (0.93 kilometres)		✓		Neighbourhood Greenway			$50k	Engineering
11.6	Multi-use pathway between Selkirk Street and Millennium Trail (shared-use path to the west of Selkirk Street alignment) (0.15 kilometres)		✓		Multi-Use Pathway			$0.1 m	Engineering
Black Street Stairs									
12.1	Black Street Stairs expansion between Airport Trail and Black Street (0.15 kilometres)			✓	Multi-Use Pathway			$0.3 m	Engineering

Robert Service Way Active Transportation Projects									
13.1	Robert Service Way separated bicycle path project between Alaska Highway and 2nd Avenue (4.24 kilometres)			✓	Separated Bike Path			$5.1 m	Engineering
Porter Creek Neighbourhood Active Transportation Projects									
14.1	Multi-use pathway between 135 m north of 14th Avenue and Pine Street and 13th Avenue intersection (0.47 kilometres)			✓	Multi-Use Pathway			$0.3 m	Engineering
14.2	Pine Street separated bicycle path project between 13th Avenue and 160 m south of Grove Street (1.35 kilometres)			✓	Separated Bicycle Path			$1.7 m	Engineering
14.3	Multi-use pathway between Pine Street and 13th Avenue intersection and Porter Creek School (0.28 kilometres)			✓	Multi-Use Pathway			$0.2 m	Engineering
14.4	Multi-use pathway between Porter Creek school and 13th Avenue (0.24 kilometres)			✓	Multi-Use Pathway			$0.2 m	Engineering
14.5	Fir Street multi-use pathway (east side) and sidewalk (west side) project between 12th Avenue and 14th Avenue (0.31 kilometres)			✓	Multi-Use Pathway			$0.4 m	Engineering
White Pass Rail Alignment Active Transportation Study									
15.1	White Pass Rail alignment between 2nd Avenue and Quartz Road			✓			✓	$50k	Engineering
Ice Lake Road Active Transportation Project									
16.1	Ice Lake Road separated bicycle path project between Hamilton Boulevard and Alaska Highway (2.1 kilometres)			✓	Separated Bicycle Path			$2.5 m	Engineering

Copper Ridge and McIntyre Active Transportation Project									
17.1	Lazulite Drive Bicycle Lane project between Hamilton Boulevard and Falcon Drive (1.52 kilometres)			✓	Buffered Bicycle Lane			$0.35 m	Engineering
17.2	Heron Drive / Thompson Road / Lazulite Drive separated bicycle path project between Falcon Drive and Hamilton Boulevard (2.5 kilometres)			✓	Separated Bicycle Path			$0.3 m	Engineering
17.3	Multi-use pathway west of Gillis Place between Thompson Road and Park Lane (0.39 kilometres)			✓	Multi-Use Pathway			$0.3 m	Engineering
17.4	Sunset Drive / Park Lane / Hillcrest Drive neighbourhood greenway project between Dalton Trail and Kluane Crescent (0.55 kilometres)			✓	Neighbourhood Greenway			$30 k	Engineering
17.5	Hillcrest Drive multi-use pathway between Kluane Crescent and Alaska Highway (0.49 kilometres)			✓	Multi-Use Pathway			$0.3 m	Engineering
Other Active Transportation Project									
18.1	Multi-use pathway between Range Road and Quartz Road (alignment unknown) (~0.57 kilometres)			✓	Multi-Use Pathway			$0.4 m	Engineering
Transit Infrastructure									
1	Improve existing route alignment and scheduling to better match demand	✓				✓		Unknown	Transit
2	Review and explore opportunity to increase transit service and frequency during peak traffic hours. Implement transit priority measures to improve reliability and speed of buses	✓				✓		Unknown	Transit

3	Improve customer experience and branding at transit stops. Provide transit-supportive amenities to increase ridership. Improve the safety, security, and comfort of public transit. Make public transit accessible to all people. By 2030, the City will upgrade 50 per cent bus shelters and bus seating to increase transit passenger comfort.	✓				✓		Unknown	Transit
4	Install on-board technology to improve scheduling and fare payment.	✓				✓		Unknown	Transit
5	Improve the overall efficiency of the Handy Bus program	✓				✓		Unknown	Transit
6	Improve the interplay between public transit and active transportation in Whitehorse, encouraging multi-modal trips.	✓				✓		Unknown	Transit
7	Plan for rebranding and marketing efforts	✓					✓	$100k	Transit
8	Procure and maintain vehicles tailored to the needs of the route network.	✓				✓		Unknown	Transit
9	Explore the feasibility of On-Demand Transit (ODT)	✓					✓	$100k	Transit
10	Continue to improve customer experience and branding at transit stops. Provide transit-supportive amenities to increase ridership. Improve the safety, security, and comfort of public transit. Make public transit accessible to all people. By 2035, the City will upgrade 75 per cent bus shelters and bus seating to increase transit passenger comfort.		✓			✓		Unknown	Transit

11	Analyze network success and increase service as resources become available	✓				✓		Unknown	Transit
12	Continue installing infrastructure to support multi-modal cycling and transit trips	✓				✓		Unknown	Transit
13	Procure and maintain vehicles tailored to the needs of the route network.		✓			✓		Unknown	Transit
14	Continue adding infrastructure to bus stops, as funding becomes available.		✓			✓		Unknown	Transit
15	Develop policies and procedures to improve performance		✓				✓	$100k	Transit
16	Implement marketing plan and associated recommendations		✓			✓		Unknown	Transit
17	Continue to improve customer experience and branding at transit stops. Provide transit-supportive amenities to increase ridership. Improve the safety, security, and comfort of public transit. Make public transit accessible to all people. By 2040, the City will upgrade 100 per cent bus shelters and bus seating to increase transit passenger comfort.			✓		✓		Unknown	Transit
18	Continue expanding transit coverage and services			✓		✓		Unknown	Transit
19	Continue improving transit customer experience and branding			✓		✓		Unknown	Transit

Intersections and Crossings									
1	2nd Avenue and Main Street traffic signal replacement, curb extension, signal timing optimization	✓			✓			Unknown	Engineering
2	2nd Avenue and Wood Street Half Signal	✓			✓			Unknown	Engineering
3	4th Avenue and Main Street traffic signal replacement, curb extension, signal timing optimization	✓			✓			Unknown	Engineering
4	Hamilton Boulevard and Falcon Drive (S) roundabout	✓			✓			Unknown	Engineering
5	Hamilton Boulevard and CGC Access intersection improvements	✓			✓			Unknown	Engineering
6	Hamilton Boulevard and McIntyre Drive (N) Intersection improvements / Roundabout (By development)	✓			✓			Unknown	Engineering
7	Lewes Boulevard and Alsek Drive (N) intersection improvements	✓			✓			Unknown	Engineering
8	Two Mile Hill Road and Range Road intersection improvements	✓			✓			Unknown	Engineering
9	Two Mile Hill Road and Industrial Road signal improvement	✓			✓			Unknown	Engineering
10	Two Mile Hill Road and Chilkoot Way signal improvement	✓			✓			Unknown	Engineering
11	Two Mile Hill Road / 4th Avenue and 2nd Avenue intersection improvements	✓			✓			Unknown	Engineering
12	Intersection Improvements along Sumanik Dr (By development)	✓			✓			Unknown	Engineering
13	Alaska Highway and 15th Avenue Signalization (By Yukon Government)	✓			✓			Unknown	Engineering

14	Hamilton Boulevard & Sumanik Drive Intersection improvements (By development)	✓			✓			Unknown	Engineering
15	2nd Avenue and Keish Street half signal		✓		✓			Unknown	Engineering
16	2nd Avenue and 3rd Avenue half signal		✓		✓			Unknown	Engineering
17	4th Avenue and Ogilvie Street protected intersection to tie in with 4th Ave improvements		✓		✓			Unknown	Engineering
18	4th Avenue and Wood Street half signal		✓		✓			Unknown	Engineering
19	4th Avenue and Hanson Street half signal		✓		✓			Unknown	Engineering
20	12th Avenue E and Centennial Street intersection improvements		✓		✓			Unknown	Engineering
21	Intersection improvements along Lewes Boulevard		✓		✓			Unknown	Engineering
22	4th Avenue and Robert Service Way roundabout improvements		✓		✓			Unknown	Engineering
23	2nd Avenue and Ogilvie Street intersection improvements		✓		✓			Unknown	Engineering
24	Other city-wide crosswalk improvements		✓		✓			Unknown	Engineering
25	Casca Boulevard & Aksala Drive / Olive May Way half signal			✓				Unknown	Engineering
26	Hamilton Boulevard & Falcon (N) Road widening, sidewalk upgrades, traffic signal upgrades, pavement markings improvement			✓				Unknown	Engineering
27	Hamilton Boulevard & Lazulite Drive Roundabout			✓				Unknown	Engineering

28	Hamilton Boulevard & Thompson Drive / Heron Drive Roundabout			✓	✓			Unknown	Engineering
Parking									
1	Accessible Parking Stalls Upgrades	✓			✓			Unknown	Engineering
2	Continue to implement the strategies outlined in the Downtown Parking Management Plan 2019	✓	✓	✓	✓	✓	✓	Unknown	Engineering
Goods Movement									
1	Adopt the updated truck route map	✓					✓	-	Engineering
New Mobility									
1	The exploration of the feasibility of New Mobility options, such as bike-share program, micromobility, integrated mobility, etc..	✓					✓	$100k	Engineering
Transportation Demand Management									
1	Consider adopting a holistic approach to implementing ride-sharing services.	✓	✓	✓			✓	$50k	Planning and Sustainability
2	Construct cycling end-of-trip facilities at all City buildings. Include cycling end-of-trip facilities as a requirement for new developments.	✓	✓	✓	✓			Unknown	Engineering
3	Continue to expand bulk rate and discount transit pass programs to encourage transit ridership	✓	✓	✓		✓		Unknown	Transit
4	Organize TDM marketing events periodically throughout the year, such as Bike to Work Week.	✓	✓	✓		✓		Unknown	Planning and Sustainability; Strategic Communications

5	Facilitate alternative work arrangements and advocate for flexibility in start times amongst major employers.	✓	✓	✓		✓		Unknown	Planning and Sustainability; Strategic Communications
6	Upgrade the City's vehicle fleet to include more environmentally friendly options, such as hybrid or electric vehicles, compared to traditional gasoline or diesel vehicles.	✓	✓	✓	✓			Unknown	Fleet and Transportation Maintenance
7	Continue managing the Downtown parking to ensure demand is met, but also encourage sustainable commuting and reduce parking and traffic demand.	✓	✓	✓		✓		Unknown	Planning and Sustainability
Safety, Maintenance and Operations									
1	Develop a winter weather response plan and snow removal standards to guide ice and snow removal operations for both active transportation infrastructure and roadways, providing accessible and equitable year-round transportation options for people of all ages and abilities.	✓					✓	$50k	Fleet and Transportation Maintenance
2	Develop year-round active transportation routes, complete with wayfinding signage, and winter maintenance program.	✓					✓	$50k	Fleet and Transportation Maintenance Engineering
3	Develop and implement a regular active transportation data collection program.	✓					✓	$50k	Fleet and Transportation Maintenance
4	Upgrade traffic signal detection system at key intersections with known issues	✓			✓			Unknown	Engineering
5	Implement Lead Pedestrian / Bicycle Interval (LPI/LBI) Programs	✓			✓			Unknown	Engineering

6	Develop emergency response route / emergency evacuation routes mapping	✓					✓	$50k	Engineering
7	Upgrade all traffic signals to include bicycle friendly pushbuttons, bicycle signal heads, and Accessible Pedestrian Signals (APS)		✓		✓			Unknown	Engineering
8	Create interactive maps to help residents familiarize with the City's transportation network.		✓			✓		Unknown	Strategic Communications
9	Develop an on-street EV charging network		✓		✓			Unknown	Property Management
10	Implement a new fire pre-emption system on the City's traffic signal network			✓		✓		Unknown	Fleet and Transportation Maintenance
11	Conduct a comprehensive inventory of the City's transportation infrastructure and assets			✓			✓	$100k	Engineering
12	Implement the winter weather response plan and adhere to snow removal standards to maintain active transportation infrastructure and roadways within the city, providing accessible and equitable year-round transportation options for people of all ages and abilities.	✓	✓	✓		✓		Unknown	Fleet and Transportation Maintenance
13	Implement the active transportation data collection program.	✓	✓	✓		✓		Unknown	Fleet and Transportation Maintenance
14	Review signal timing every three years	✓	✓	✓		✓		Unknown	Engineering

*: The corridor improvement project is expected to cover the majority of the costs. Nevertheless, there might be additional expenses related to other necessary improvements.
**: The City is currently in the initial stages of designing the two intersections and the overall project cost hinges on the specific design adopted for these intersections.

6.13 Funding the Plan

Developing a robust funding strategy is paramount to the successful implementation of the TMP. With the TMP serving as a comprehensive blueprint for enhancing transportation infrastructure and services, securing adequate funding is essential to realize its goals and objectives. The funding strategy not only ensures financial resources are available but also facilitates effective budget allocation, prioritization of projects, and timely execution of initiatives outlined in the TMP. By exploring various funding sources, the city can establish a sustainable financial framework to support the TMP's implementation and contribute to the long-term mobility and livability of the community.

The list below provides a summary of the funding sources anticipated to be available:

- **Property Tax:** Property tax serves as a primary source of funding for many municipal projects, including transportation initiatives outlined in the TMP. By levying taxes on property owners based on the assessed value of their properties, the city generates revenue that can be allocated towards road maintenance, infrastructure upgrades, and transit services. Property tax provides a stable and predictable source of funding, although it may require periodic adjustments to align with changing budgetary needs and economic conditions.
- **Development Cost Charges (DCC):** Development cost charges are fees levied on developers by municipalities to help offset the costs associated with infrastructure upgrades necessitated by new development projects. In the context of the TMP, DCCs can provide funding for expanding road networks, enhancing transit services, and improving active transportation infrastructure to accommodate growth and development. These charges are typically collected at the time of building permit issuance and are earmarked for specific transportation-related capital projects within the city.
- **Transit Fare Revenue:** Transit fare revenue represents the income generated from ticket sales and fares collected from passengers using public transit services. By encouraging increased ridership through reliable and efficient transit services, the city can enhance fare revenue while simultaneously reducing traffic congestion and environmental impacts.
- **Senior Government Grants:** Senior government grants refer to financial assistance provided by higher levels of government, such as provincial or federal authorities, to support municipal transportation projects and initiatives. These grants may be allocated for specific purposes outlined in the TMP, such as road construction, transit expansion, or active transportation infrastructure improvements. Securing senior government grants can significantly augment the city's financial resources and enable the implementation of priority projects.
- **Canada Community Building Fund (CCBF):** is a permanent source of funding provided up front, twice-a-year, to provinces and territories, who in turn flow this funding to their municipalities to support local infrastructure priorities. Municipalities can pool, bank and borrow against this funding, providing significant financial flexibility.

7.0

MONITORING AND EVALUATION

7.1 Key Performance Indicators

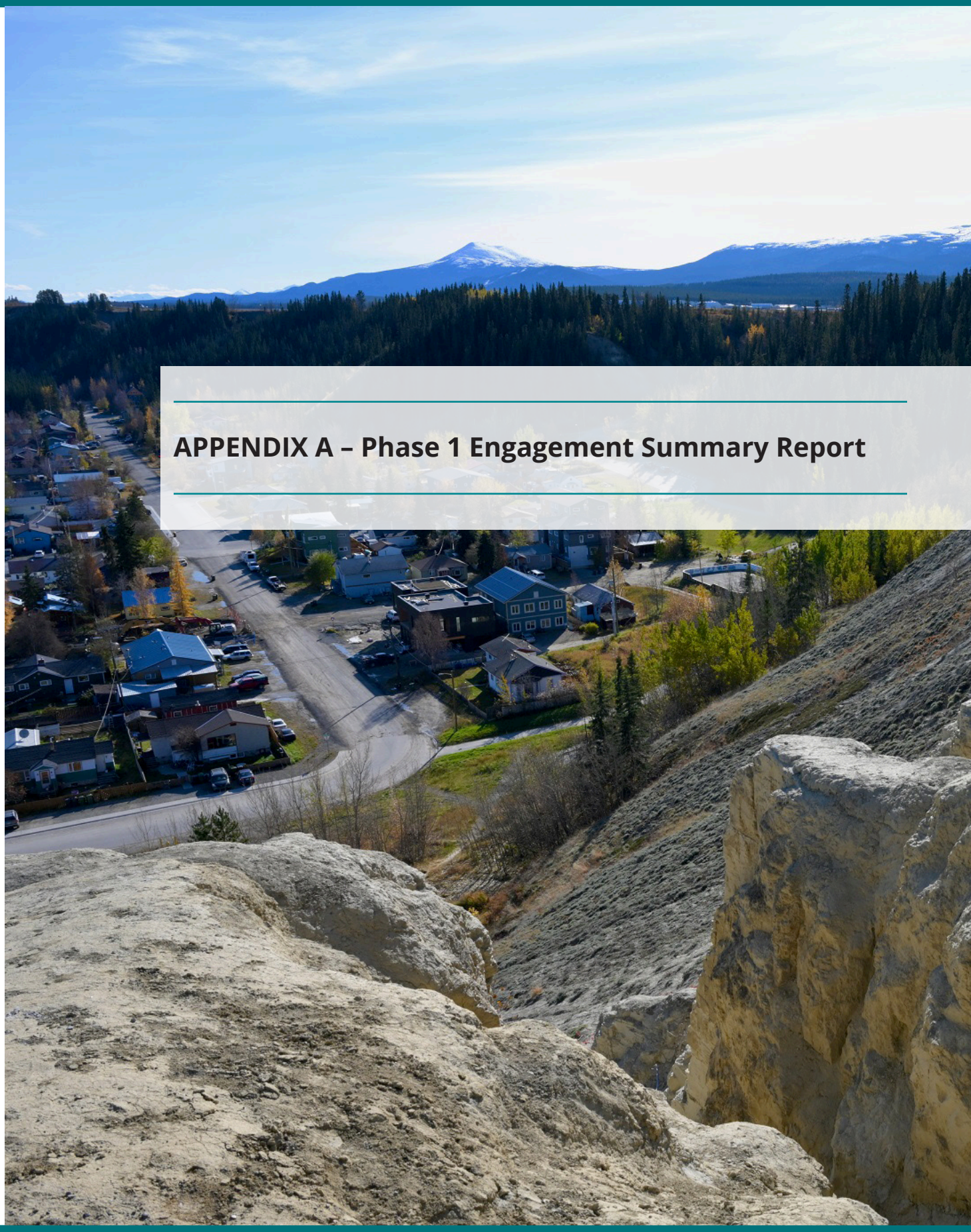
The following performance indicators are included for consideration, to the measure the success of the Plan (**Table 14).** These include Key Performance Indicators (KPIs) which align with the visions, objectives, and policy area indicators.

TABLE 14. MEASURE THE SUCCESS OF THE PLAN

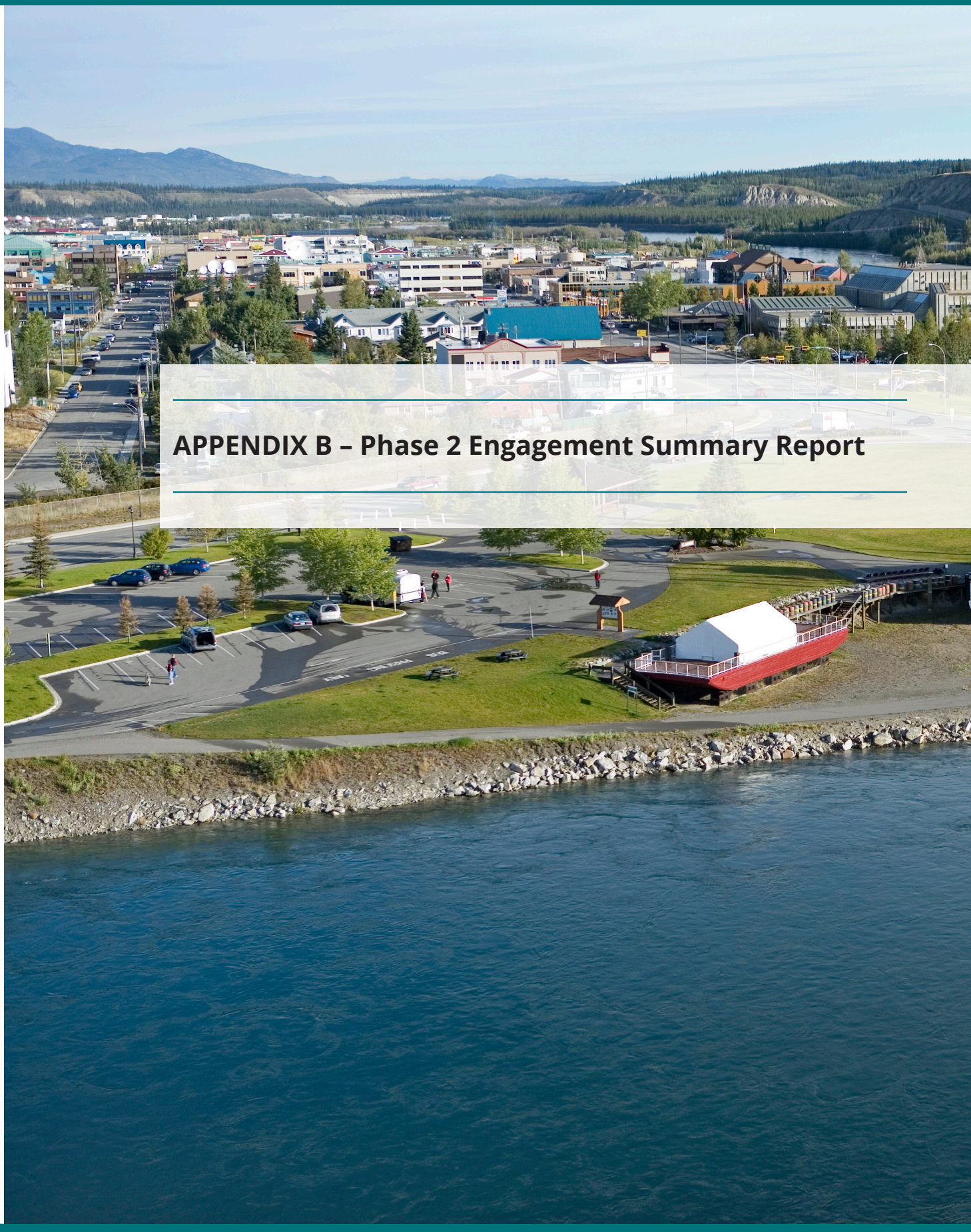
			Indicator		Performance Trend	Data Source
Active Transportation	Target	By 2040, 16% of the trip to work or school in Whitehorse will be taken by walking or cycling	Percent of residents walking or cycling to work or school	⤴	Upward trend indicates more people are willing to take active transportation as their main transportation mode	Statistics Canada Census of Population Data
	Policy Indicators	11.17 The City will ensure that new developments are designed and connected to the active transportation network in a way that supports the hierarchy of transportation modes included above.	Number of new lots/ units connected to active transportation network	⤴	Upward trend indicates net increase in active transportation infrastructure	Engineering (GIS + PM)
		11.18 Initiatives that remove physical barriers, address safety concerns, close route gaps, improve winter maintenance, and improve lighting for active transportation modes throughout the community will be supported, where feasible.	Km of active transportation infrastructure with no concerns	⤴	Upward trend indicates completion of the active transportation network	Engineering (GIS + PM)
		11.19 Improvements that address year-round convenience, safety, comfort, and attractiveness of active transportation modes will be promoted through infrastructure development and redevelopment.	Km of always available for all ages and abilities (AAAAA) active transportation infrastructure	⤴	Upward trend indicates completion of the AAAAA active transportation network.	Engineering (GIS + PM)

Active Transportation	Policy Indicators	11.20 The City will ensure that the active transportation network is designed with connections to support year-round multi-modal movements.	Km of always available for all ages and abilities (AAAAA) active transportation infrastructure	⤴	Upward trend indicates completion of the AAAAA active transportation network.	Engineering (GIS + PM)
		11.21 The City will work with community partners to enhance the overall active transportation network connectivity to destinations such as schools, hospital, and major workplaces.	Completion of active transportation network connected to key destinations.	⤴	Upward trend indicates completion of the active transportation network	Engineering (GIS + PM)
Transit	Target	By 2040, 15% of the trip to work or school in Whitehorse will be taken by public transit	Percent of travel taking public transit to work or school	⤴	Upward trend indicates more people are willing to take public transit as their main transportation mode	Statistics Canada
	Policy Indicators	11.22 The City will support the ongoing provision of public transit as an essential municipal service that enhances equitable movement throughout the city.	Public transit coverage and frequency. The number of transit stops accessible to all people.	⤴	Upward trend indicates improvement to the public transit service	Whitehorse Transit
		11.23 The design of public transit infrastructure will recognize and prioritize the needs of those with limited mobility independence.	The number of transit stops accessible to all people.	⤴	Upward trend indicates improvement to universally accessible public transit service	Whitehorse Transit
			The usage of handy bus services	⤴	Upward trend indicates improvement to handy bus service	Whitehorse Transit
		11.24 The City will continue to invest in public transit improvements or expansions that increase accessibility, convenience, reliability, comfort, and/or safety for users.	Completion of public transit infrastructure (the number of safe, enclosed, and heated shelter, seating, signage, etc. installed in the City)	⤴	Upward trend indicates increasing of accessibility, convenience, reliability, comfort, and safety	Whitehorse Transit

Parking	Policy Indicators	11.26 Parking options in the Downtown and in the Urban Centres will support a range of different mobility choices and vehicle types (e.g., bicycles, motorcycles, personal automobiles, electric vehicles).	Number of parking stalls for other mobility choices and vehicle types		Upward trend indicates more parking options	Engineering (GIS + PM)
		Bicycle and electric vehicle charging stations will be considered in the design of new high-density residential buildings, parkades and commercial uses.	Number of new high-density residential buildings, parkades and commercial uses with sufficient bicycle parking, or electric vehicle charging stations, or both		Upward trend indicates more bicycle parking and electric vehicle charging stations	Engineering (GIS + PM)



APPENDIX A – Phase 1 Engagement Summary Report



APPENDIX B – Phase 2 Engagement Summary Report