

Yellowknife Public Transit Review

City of Yellowknife



ACKNOWLEDGEMENTS

In collaboration with the City of Yellowknife, Watt Consulting Group would like to thank all those elected officials, municipal staff, and transit staff who provided their feedback and ideas into this process.

In particular, we are grateful to the contributions of the project key members who represented the City and who provided guidance and input:

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EXECUTIVE SUMMARY

Introduction

At the request of the City of Yellowknife, Watt Consulting Group undertook the development of the Yellowknife Public Transit Review to explore opportunities to improve the performance of the City's transit services. This Review provides a detailed and comprehensive analysis of all aspects of Yellowknife's conventional transit system to create a model that provides efficient peak hour service to users, while maintaining off-peak services that are not in excess such that buses are empty. This analysis also included a high-level review of Yellowknife's Accessible Transit Service (YATS) and assessment of strategies and synergies to make the service more effective.

Through this process the project team carefully considered all opportunities to improve the overall efficiency and effectiveness of service, including service design, service delivery models, fare structure, ridership and promotion strategies, infrastructure/asset management and integration with the City's overall economic development objectives.

In alignment with the project goals defined at right, this Review assessed how existing transit in Yellowknife compares against its peers, analyzed future trends and community goals that may impact service and determined transit system issues and opportunities.

The Public Transit Review was undertaken from March to December 2019, and involved the consultant project team:

- Reviewing past transit studies and survey results.
- Analyzing demographic and system performance data, relevant policy and community planning documents.
- Conducting a site visit, including field work and conversations with City staff, transit staff and passengers.

This document provides the outcomes and recommendations of the Public Transit Review process, including service change options and supporting measures that can be considered to further improve the performance of transit in Yellowknife now and in the future.

Public Transit Review Goals

- Summarize existing issues and opportunities of the transit service, with a **primary focus on maximizing efficiency of the existing budget and comparing the system with peer municipalities.**
- Determine a suite of service options and supporting recommendations that will **improve the existing transit service.**
- Deliver a final report that describes **service types, options and associated cost and performance** projections.
- Provide guidance on **supporting operational aspects**, such as infrastructure, fares, policies and marketing/customer information.

Yellowknife's Existing Transit Performance and Key Issues and Opportunities

This review examined the detailed ridership of the system, including analysis by route, trip, stop, time of day and season. Additionally, it examined ridership trends for both the fixed route and YATS services over a 10-year period and also compared Yellowknife's transit performance against that of 13 representative Canadian peer municipalities.

Highlights of the analysis undertaken showed that:

- **Yellowknife's fixed route** portion of its transit system experienced significant ridership growth after the last major transit system change in 2014. Ridership over more recent years has been relatively flat, with some routes substantially outperforming others and higher ridership experienced during commuter times than in the midday period. However, the system performs in line with its peers.
- **YATS** annual ridership has generally been growing over time, with some fluctuations over the past five years. The service underperforms in comparison to its peers, mainly due to the comparatively longer hours of service it offers and fewer group trips.



Summary of Transit System Issues and Opportunities

Based on the analysis, site visit and outreach undertaken, the key issues and opportunities identified for Yellowknife Transit are:

1. Easy to understand transit system, due to its **“flat” approach** to service levels. However, this also makes it harder to match service to demand at lower ridership times.
2. **Areas of duplication** on the system's routes where service could be reallocated to improve frequency or connections.
3. **On-time issues** with specific routes in the system that require adjustments to routing or schedules to address.
4. An opportunity to improve connections and **access to key destinations** especially **during the midday**.
5. Ways to further improve the system's already very graphical and easy to read **information materials** to make them even easier to understand for new users.
6. The opportunity to better promote use of the system by visitors to Yellowknife through **visitor-specific transit system communication materials**.
7. **Additional fare strategies** to encourage use of the system and reward regular users.
8. Closely related to the previous two points, an opportunity for the system to introduce a **day pass**.
9. Areas where **snow removal and parked vehicles could be addressed to improve system safety and ease of use**.

Service Options

Based on the analysis and identified transit issues and opportunities, the project team developed a comprehensive set of alternative approaches to service delivery and design for the system that were then evaluated on a preliminary basis. This evaluation was then discussed with City staff and the service options that appeared to be the most feasible were then refined based on the feedback received.

The options that are presented in detail in the report for further consideration include **Service Options for Immediate Consideration**--which can be undertaken within the existing transit system operating budget--and **Service Options for Longer Term Consideration** which would require further funding. These options are summarized here and discussed in further detail with maps in **Sections 5.1-5.3**.

Options for Immediate Consideration

These service improvements could be considered immediately and each could be implemented within the existing allocated operating budget for the transit system. These options represent priorities for the system to improve overall ease of use and effectiveness.

1. **Minor Route Restructuring** – This option retains the existing route structure for the majority of the system but include minor routing changes to address on time performance.
2. **Revised Routing + Offset Midday Schedules** – This option builds off Option 1 and makes further changes to the network to improve route directness and connections. It reduces frequency during Weekday middays, Saturdays

and evenings after 6:00pm to hourly service but offsets the departure times between routes serving similar areas, resulting in 30-minute service between key destinations.

3. **Rerouting to Better Match Service to Demand** – Introduces a hierarchy of service, with one route providing more direct and frequent service to the highest ridership stops and another route providing connecting service to lower ridership neighbourhoods.
4. **Flex-Route Service** – Similar to Option 1, but would change one or more conventional transit routes from using a regular transit bus to an accessible shuttle that would operate as flex-routed service.
5. **Group some YATS passenger trips by trip windows** – This option discusses how YATS could group trips that have similar destinations or which meet the same need (e.g., shopping trips) by promoting specific “trip windows” or days and times when those trips would take place.

Options for Longer Term Consideration

These are service improvements that could be considered for the future to build towards community development plans. These options would require additional budget for the transit system in order to be realized.

6. **Service to Kam Lake Community** – Implementation of introductory-level service to the Kam Lake community.
7. **Service to the Airport** – Implementation of service to Yellowknife’s airport to serve commuters working in that area and/or visitors.

Immediate Service Option Recommendations

The table below summarizes the estimated impacts on costs and ridership for each of the service options presented for immediate consideration, as well as an overall assessment of their feasibility for implementation in Yellowknife.

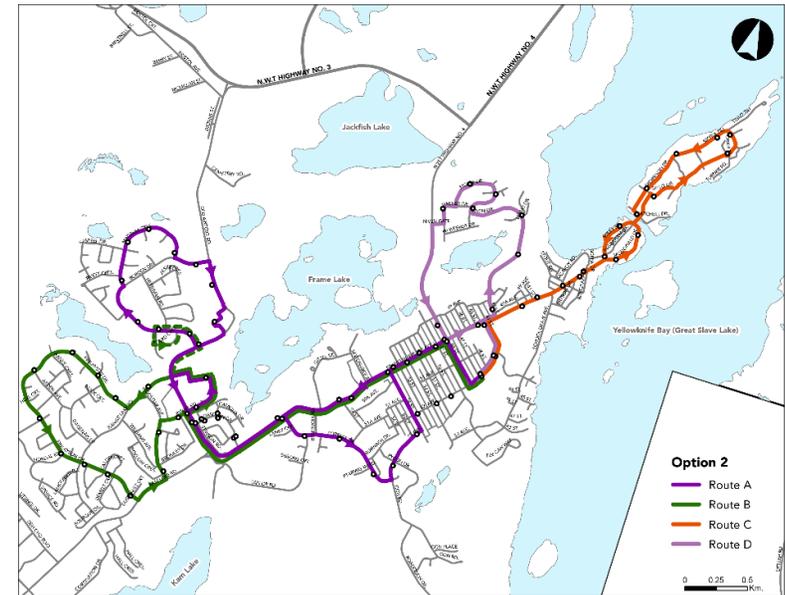
From the perspective of improving the overall effectiveness and efficiency of the Yellowknife Transit System, it is recommended that the City implement Option 5 for the YATS service and either Option 2 or 3 for the fixed route portion of service.

For the largest longer term ridership gain, Option 3 is the preferred approach of the fixed route options but its implementation should include further outreach and engagement with existing transit passengers and front line staff to be as successful as possible.

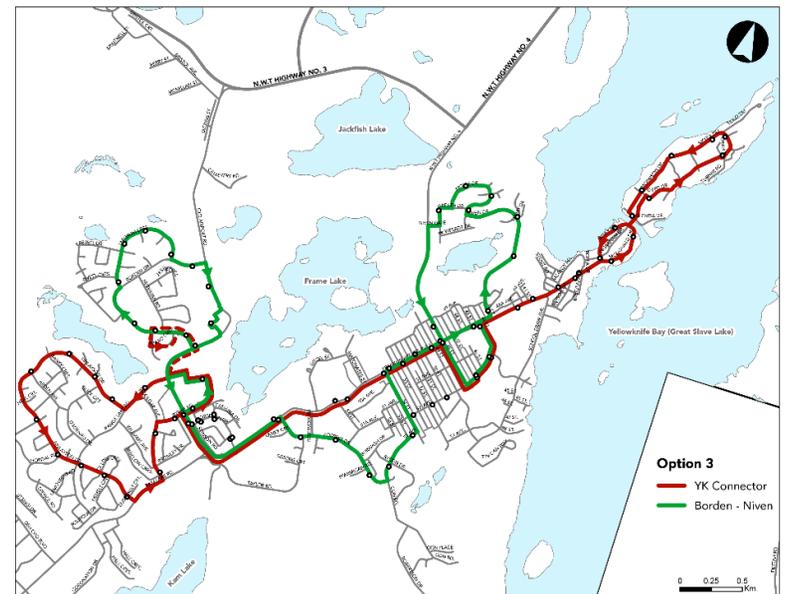
Summary of Estimated Impacts: Service Options for Immediate Consideration

Options	Impacts against existing service		Overall assessment of feasibility of option
	Costs	Ridership	
1. Minor route restructuring	-	✓	✓
2. Revised routing + offset midday schedules	✓	✓	✓
3. Revised routing to better match service to demand	-	✓	✓
4. Flex-routed service	-	-	-
5. Group some YATS passenger trips by trip windows	-	✓	✓

✓ Meets Criteria Well
 - Somewhat Meets Criteria
 ✗ Does Not Meet Criteria / Attribute



Immediate Service Option 2. (See Section 5.1 for larger map)



Immediate Service Option 3. (See Section 5.1 for larger map)

Supporting Measures

Complementing infrastructure, policy, fare and customer information priority measures that support the service options are also proposed. An overview is presented here with further details provided in **Section 6.0**.

Summary of Supporting Measure Recommendations



Infrastructure Priorities

- Ensure accessibility for transit vehicles to bus stops and pick-up / drop-off locations.
- Increase visibility of transit in downtown through improved passenger waiting facilities.
- Other bus stop consolidation and improvements.



Fare Priorities

- Introduce a unified cash fare.
- Introduce a day pass option.
- Provide further longer term pass options.
- Holiday “On the Bus Day Pass”.
- Family travel program.
- Further fare technology.



Policy Priorities

- Consider reviewing YATS policies, procedures and guidelines.
- Consider future implementation of an in-person registration process for YATS.
- Alignment with planning documents and development process.
- Ongoing performance monitoring.



Customer Information Priorities

- Clarify existing maps and schedules.
- Create visitor information specific materials.

Conclusions and Recommendations

The City of Yellowknife's transit services are a key part of its community and ongoing success. Through its existing policy direction in terms of transit fares, service levels and coverage, the City has already shown great leadership in creating a transit system that seems to reflect the values of inclusivity, equity and connection.

The Yellowknife transit system already generally performs in line with its peers, which means it offers a solid foundation of existing ridership. Likewise, the community itself also already presents the conditions that tend to support strong transit performance (relatively compact land use, good potential for commuter and visitor ridership, clustering of jobs and schools, policies that support transit and active transportation, etc.)

As outlined in this review, there are many opportunities to build on these foundations to make the service even more efficient, effective and valuable to the community. With very feasible and practical further adjustments, the transit system can continue to evolve and support the City's success for many years to come.

It is recommended that the City of Yellowknife:

- Receive this report for information;
- Approve in principle this report's overall service and supporting strategy priority recommendations for further exploration and implementation where feasible; and,
- Consider selecting one or a combination of the Service Options for Immediate Consideration presented in **Sections 5.1** and **5.2** and approve those to move forward to implementation.



1.0 INTRODUCTION

At the request of the City of Yellowknife, Watt Consulting Group undertook the development of the Yellowknife Public Transit Review to explore opportunities to improve the efficiency of the City's transit services. This Review provides a detailed and comprehensive analysis of all aspects of Yellowknife's conventional transit system to create a model that provides efficient peak hour service to users, while maintaining off-peak services that are not in excess such that buses are empty. This analysis also included a high-level review of Yellowknife's Accessible Transit Service (YATS) and determined strategies and synergies to make the service more effective.

Through this process the project team carefully considered all opportunities to improve the overall efficiency and effectiveness of service, including service design, operating structure, revenue sources, ridership and promotion strategies, infrastructure/asset management and integration with the City's overall economic development objectives. This document aims to create a base for future decision making, including comparisons against peers and recommendations on policies that can be considered to further support transit.

The study was conducted by Watt Consulting Group in collaboration with the City of Yellowknife. Since we have found that front line transit staff typically have some of the best ideas and perspective on potential improvements to transit service, this process also included involvement with the staff of the transit system's operating company, First Canada Ltd. This

involvement included conversations with management staff, roundtable discussions held with transit operators at the system's garage and ride alongs on conventional transit and YATS trips.

In line with the project goals defined below, this Review seeks to assess how existing transit in Yellowknife compares against its peers, analyze demographic trends and community plans that may impact services, and determine potential ways to improve the efficiency and effectiveness of the service to meet current and future community goals.

This document provides the outcome of that assessment and identifies the service changes and supporting measures that could be feasible to support identified needs and opportunities.

Public Transit Review Goals

- Summarize existing issues and opportunities of the transit service, with a **primary focus on maximizing efficiency of the existing budget and comparing the system with peer municipalities.**
- Determine a suite of service options and supporting recommendations that will **improve the existing transit service.**
- Deliver a final report that describes **service types, options and associated cost and performance** projections.
- Provide guidance on **supporting operational aspects**, such as infrastructure, fares, policies and marketing/customer information.

1.1 Project Process, Involvement and Timeline

Undertaken from March to December 2019, the Public Transit Review was guided by City of Yellowknife staff.

As part of the first phase (March – April 2019) to understand the existing transit system and assess issues and opportunities, the consultant project team:

- Reviewed past transit studies and survey results.
- Analyzed demographic and system performance data, relevant policy and planning documents to better understand the community context and identify opportunities and issues.
- Conducted a site visit, including field work and conversations with City staff, transit staff and passengers.

In the second phase (April – May 2019), the project team shared and refined these findings and preliminary service concepts through workshops with City staff and transit staff.

In the third phase (June – September 2019), more detail was developed and provided on the various service delivery methods and system design approaches that could be considered to improve the efficiency and effectiveness of service. These were further refined and prioritized based on conversations with City staff.

The findings were then further shaped through a presentation to the City’s Governance and Priorities Committee on October 15, 2019 and the feedback and questions they provided during that time.

Based on this input and further analysis, the preliminary recommendations were then refined and finalized to shape this final project report and recommendations.



2.0 COMMUNITY CONTEXT

2.1 Community Overview

The City of Yellowknife is the capital of the Northwest Territories and is located 400km south of the Arctic Circle. Although, a small to medium sized community (with a population of almost 20,000), the City has a number of amenities and characteristics that provide it with a different transit service market potential and community profile than one might see in other smaller communities of a similar population.

Yellowknife was settled 85 years ago after gold deposits were found in the area, but now has transitioned from a mining town to a centre of government services. As the Territorial capital and a service centre for the region, Yellowknife has a vibrant and compact downtown core with diverse businesses and a number of jobs related to government and administrative sectors. From a transit perspective, having larger numbers of commuters who are regularly working typical office hours is easier to serve than in many other smaller communities where a larger proportion of employment may be related to shift work in the resource or service industry sectors.

Yellowknife also attracts large numbers of visitors throughout the year and particularly in the late summer and early fall. The city is situated on the Great Slave Lake which attracts visitors during both summer and winter for fishing, kite skiing, ice road driving among other things. Yellowknife also becomes frequented by visitors wishing to see the Northern Lights (Aurora viewing). As most visitors typically fly to the community



and may come from international destinations, they usually don't have access to a self-owned car or may not be able to (or wish to) drive in Canada. Therefore, transit can be a potential means to get around, especially since it is a 1.5-2.0km distance between the City's Old Town (where many visitor attractions are) and other services and accommodation in downtown and its vicinity.

Building on this overview, the following **Sections 2.2-2.3** will present demographic trends and policies that are related to transit.

2.2 City Population and Demographic Trends

According to Statistics Canada, the City of Yellowknife in 2016 had a population of almost 20,000, which represents a 2% increase from the 2011 census. The City is growing slightly faster than the Territory as a whole, which experienced a 1% increase since 2011. The average age of the population is 34.6, which is lower than the national average of 41. A younger demographic can often indicate a latent demand for transit by youth and younger adults who need to travel around town but do not have the means or ability to drive. Further, available data from Statistics Canada **indicated that 15.2% of individuals aged 15 and over had one or more disabilities** in the Northwest Territories (NWT) in 2017.

The table below presents population grouped into age categories that roughly align with typical transit market types. The table also compares the City of Yellowknife to the Northwest Territories at large. Key takeaways are as follows

- The proportion of older seniors age **75 years and over** is increasing at a faster rate in the City of Yellowknife than the NWT average (24% versus 18%). The 75+ age category tends to be the transition point between younger and older seniors. Within this age category, there is typically greater demand for accessible transit (both conventional and YATS) due to mobility or cognitive disabilities or feeling uncomfortable driving in variable weather conditions.

- The sub-arctic nature of Yellowknife’s winter weather also impacts this group’s ability to take conventional transit throughout the year and impacts operational considerations for the YATS service as well in terms of serving a population that may be frailer.
- The population group between **60 to 74 years** represents younger seniors, which in turn provides a sense of the outlook for older seniors. The growth of younger seniors in the City of Yellowknife is much higher when compared to the Territory (49% versus 34%). The large increase in the proportion of younger seniors may set the stage for the City requiring transportation services to support the needs of these seniors in the future as they age and either can no longer drive or don’t feel comfortable driving.
 - Continuing to improve and promote city-wide transit service can be a way to build a “transit habit” that encourages use of transit by these residents, particularly as they age.

POPULATION COMPARISONS BY TYPICAL TRANSIT MARKET AGE GROUPINGS

Characteristics	City of Yellowknife			Northwest Territories (Territory)		
	2011	2016	% Change	2011	2016	% Change
Total private dwellings	7,286	7,758	6%	17,175	17,666	3%
Total Population	19,235	19,570	2%	41,460	41,785	1%
Average age of the population	32.6	34.6	6%	32.3	37.7	17%
Population by Age Group						
0 to 14 years	3,825	3,915	2%	9,010	8,875	-1%
15 to 24 years	2,995	2,570	-14%	6,730	5,780	-14%
25 to 59 years	11,725	11,975	2%	23,320	23,900	2%
60 to 74 years	1,215	1,810	49%	3,240	4,335	34%
75 years and over	210	260	24%	840	990	18%

- Promoting the accessible nature of most of the existing conventional transit fleet can also help encourage use of that service rather than the more expensive to operate YATS service by those who are able to do so some or all of the time.
- The growth in adults aged **25-59 years** in the City is aligned with the NWT growth of 2%.
 - This population group tends to encompass commuters, as well as non-working adults who use transit to access goods and services, such as parents with children, lower income residents or people with a disability.
 - Building quality transit service at peak commuting times is key to attracting this market, particularly with messaging about saving on household transportation costs, gaining personal time (reading, email, etc.) or as part of a sustainable lifestyle.
 - To attract non-working adults and their families, transit ideally provides consistent schedules across the day.
- Similar to the Territory, the City is experiencing a 14% decrease in the number of youths aged **15 – 24 years**. The decline in this age group could be indicative of individuals leaving the NWT for educational purposes. The positive is that the 25 – 59 age group is still growing (typically the main working group), which indicates that there are work opportunities available as individuals migrate or return to the area.
 - This youth group (15 – 24 years) includes some of the most frequent users of transit. In Yellowknife this is primarily secondary students, with some attendees to Aurora College. Besides travel to and from school, younger youth may want transit for more flexibility to travel to extracurricular activities, work and in general have some sort of independence.
 - Likewise, older youth will seek transit to access post-secondary education and jobs. As their schedules will be more variable than those of adults, they require reliable transit at commuter times and consistent service across the day and evening.
- The growth in the age group containing children (**0 – 14 years**) in the City is slightly higher than the NWT which are facing a decline in this age bracket (2% versus -1%).
 - This group is a predictor of future transit demand among youth, meaning that creating a system that better serves the needs of youth now will continue to serve this market in the future. Providing transit throughout the day better enables positive outcomes for children whose families do not have access to a car (either by choice or for economic reasons) to access various destinations.

Population Key Conclusions

- The proportion of both older and younger seniors is growing at a faster rate in Yellowknife than NWT. These trends, in conjunction with the overall estimates for people with disabilities across all age categories, indicates further potential demand for accessible transportation services in the region that will only grow as younger seniors age.

2.3 Community Planning Framework

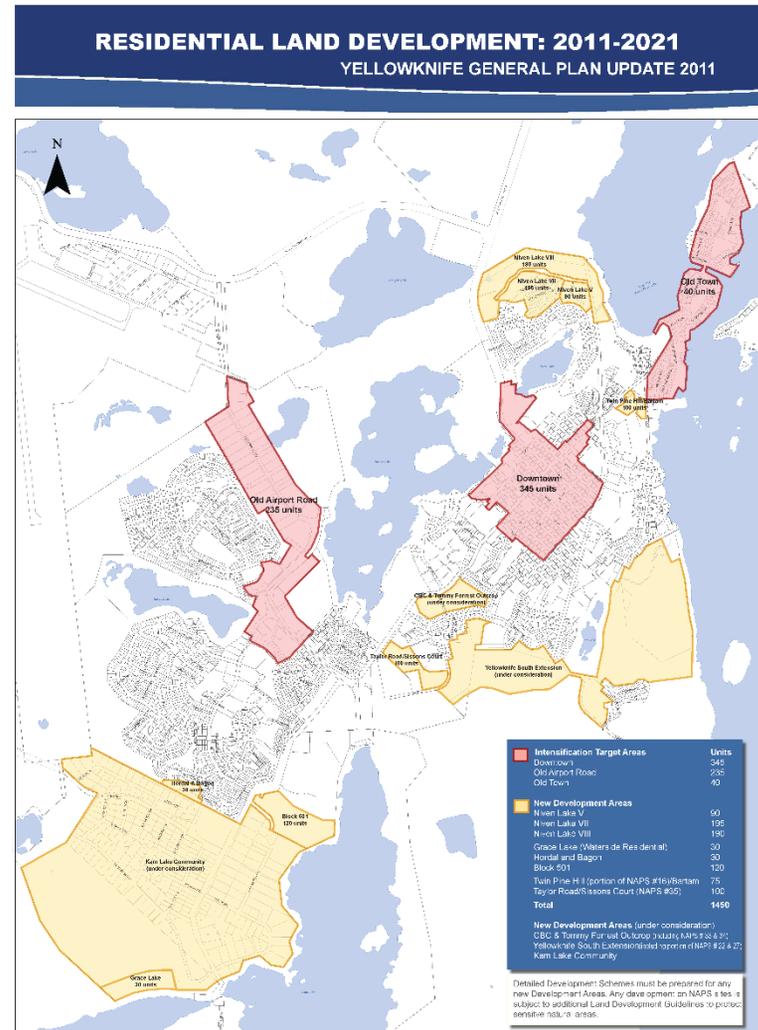
Established community policies, plans, and strategies from the City of Yellowknife provide the framework for direction on how best to develop transit service to complement larger objectives.

Through this review it was identified that the specific objective of improving transit, roads, sidewalks, recreation facilities and trails with an emphasis on active transportation, appears to be a common theme and consistent goal across the various plans that the City of Yellowknife has developed over time.

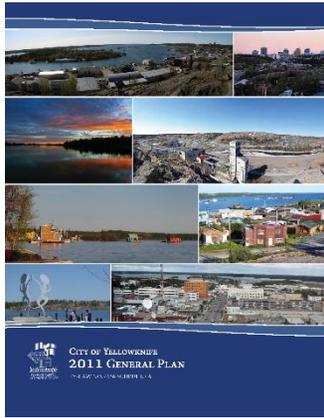
Apart from planning documents, the project team reviewed surveys that have been conducted over time and are relevant to this review, such as the 2010 Origin Destination Survey and the 2017 Transit Customer Survey and also spoke with staff from the City's Planning department about future development.

Through this process it became clear that a number of areas have been identified where a significant growth in population is expected, those areas are:

- Kam Lake Community
- Lakeview subdivision
- Hall Crescent subdivision
- South-west of the airport
- Proposed hotel next to Chateau Nova



Map excerpt from the General Plan identifying future growth



2011 General Plan

The General Plan is based on the 50-year growth and development framework set out in the Smart Growth Development Plan. The General Plan focuses on strategies and actions for the first 10-year planning horizon. One of the four priority goals that have been identified in the plan and consistent with other City plans is to improve

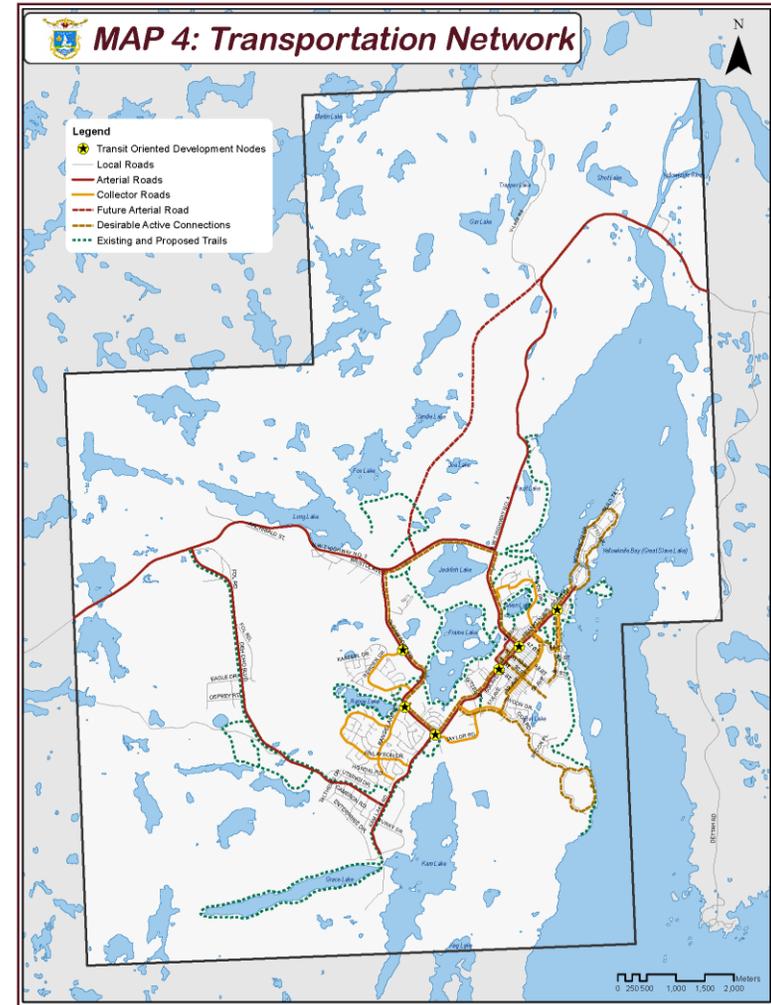
active transportation, including transit. One of the highlights in the document is the provision of Transit Oriented Design Nodes (TOD), which aim to increase transit ridership by promoting transit-supportive land uses and amenities. In the plan six locations have been identified as TOD Nodes. (See further information on this, at right and below).

Yellowknife's Transit Oriented Design Nodes

Properties that are located 120 metres from the transit stop in the six locations across the City are considered to be within the designated TOD Node. The six nodes are shown in the map at right.

The City has identified the following policies for the properties that are within the TOD Nodes:

1. Encourage mixed-use and medium to high density development
2. Discourage auto related development
3. Install all-season transit shelters and wait areas for transit users
4. Seek opportunities to integrate bus waiting areas into new development as mentioned earlier in the highlighted policies
5. Encourage ground floor retail
6. Provide excellent pedestrian connectivity



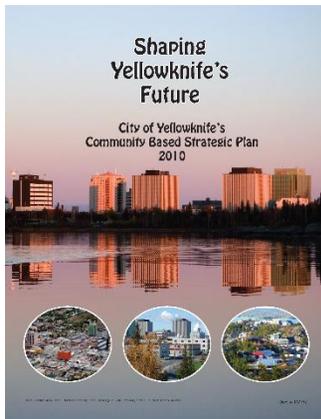
Map highlighting the six TOD Nodes



2010 Smart Growth Development Plan (SGDP)

The SGDP sets the stage for the future of Yellowknife providing long-range growth and development strategies. This Plan provides direction

for future expansion and the guiding principles for many aspects of the City including transportation.



2010 Shaping Yellowknife's Future

This community based strategic plan provides overall guidance and direction for all City's plans, programs and services. This plan initially set out through one of the four goals ("Enhancing Our Built Environment") the specific objective of improving transit, roads, sidewalks, recreation

facilities and trails with an emphasis on active transportation, which has remained consistent across other municipal plans.

The Case to Support Public Transit in Yellowknife

The City of Yellowknife has set in place a number of policies that support transit and ensure citizen mobility and increase community sustainability.

Investment in transit offers the following benefits:

- Improving economic and social development by enabling access to employment, education, healthcare and services.
- Providing businesses with better access to employees and markets.
- Contributing to a strong and resilient population bases and real estate climate by providing the transportation services that retain existing residents as they grow older as well as attract new residents to the City, particularly seniors and families.
- Contributing to local jobs since public transportation services are inherently local and people-driven; this means that local investment in improved transportation tends to stay within the community as wages and benefits for local providers or through partnerships with local organizations.
- Improving the development of Yellowknife as livable communities by encouraging more efficient and pedestrian friendly land use patterns that reduce automobile dependence.
- Improving mobility, independent living, accessibility, and civic participation for all citizens, regardless of age, ability or income.
- Reducing environmental impacts and congestion since an average transit trip results in less energy use and pollution per person than the same trip made by private automobile.
- Reducing infrastructure costs by decreasing the land, construction, and maintenance costs for expanded roadways and parking facilities.

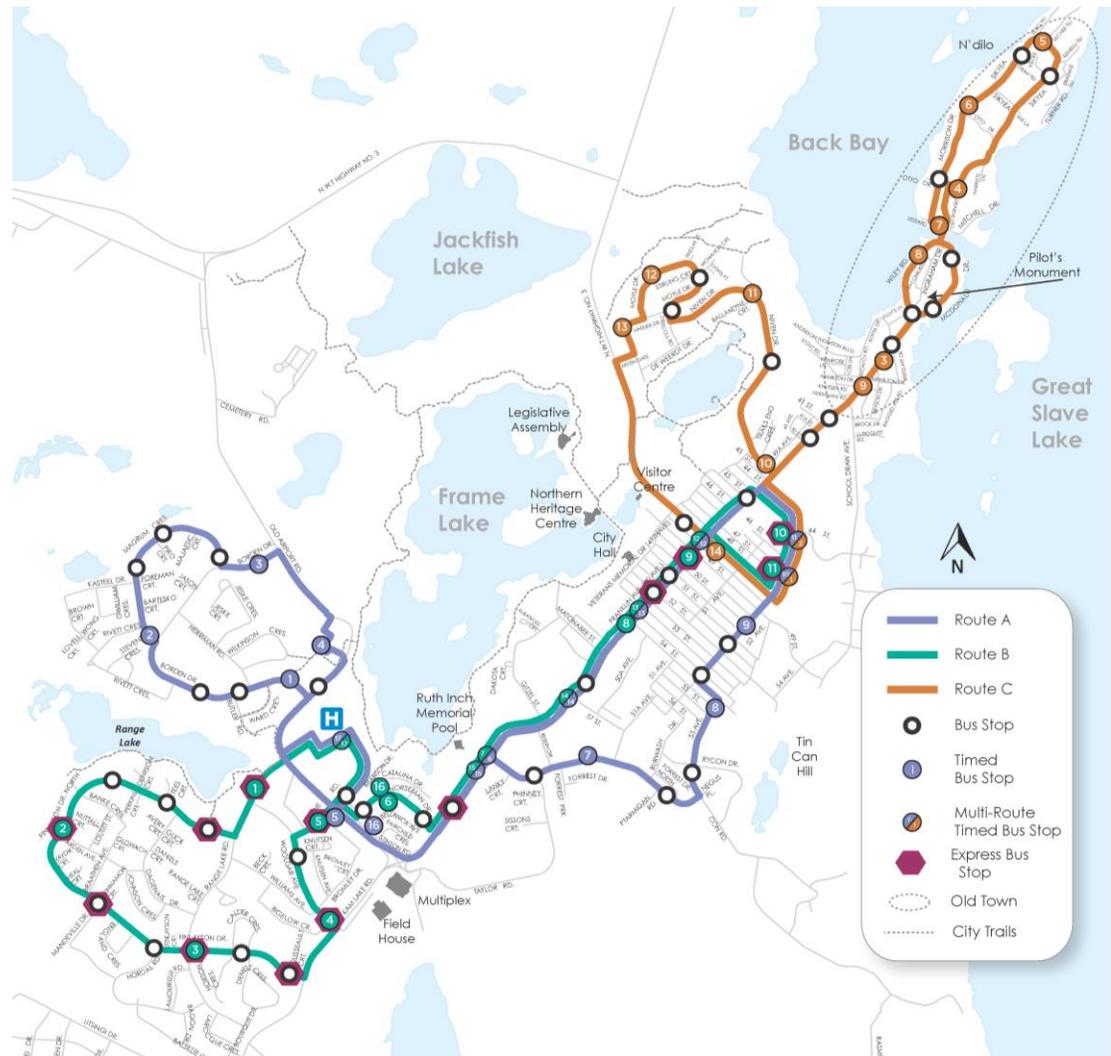
3.0 EXISTING TRANSIT SYSTEM

3.1 Transit System Overview

Yellowknife Transit operates Monday – Saturday (except for Statutory holidays) and includes two types of service:

- **Fixed route service** (also known as “Conventional Transit”), which serves bus stops in most built-up areas of the City using published routes and schedules
- **Yellowknife Accessible Transit Service (YATS)** that provides specialized, accessible door-to-door service for persons who are unable to board, ride, or disembark the fixed route transit system with safety and dignity due to a temporary or permanent physical or functional disability.

The following sections provide an overview of the services as well as their performance.



Yellowknife Transit existing route map.

3.1.1 Fixed Route Service

Yellowknife Transit operates scheduled service across the City of Yellowknife, with three regular routes and one express route.



- **Route A – Borden / Forrest**
- Route A operates from 7:15 AM to 7:30 PM, with 40 minute service and a 15 minute break in transit service between 11:55 AM and 12:10 PM. (The 15 minute break shown in the midday for routes A, B and C realigns the schedule to better meet school and work end times in the afternoon peak and it also injects more buffer time into the system).
- **Route B – Frame Lake / Northlands** - Route B operates from 7:10 AM to 7:25 PM, with 40-minute service and a 15-minute break in transit service between 11:50 AM and 12:05 PM.
- **Route C – Old Town / Niven** - Route C operates from 6:55 AM to 7:10 PM, with 40-minute service and a 15-minute break in transit service between 12:15 PM and 12:30 PM.
- **Route B – Express Bus** - The express service supplements Route B and operates during weekday peak periods only with two trips in the morning and two in the afternoon, primarily servicing students from École St.

Patrick High School and École Sir John Franklin High School. The morning service at 7:50 AM and 8:00 AM starts from the Frame Lake Area with three drop-off locations at Centre Square Mall, St. Patrick School and Sir John Franklin School. The afternoon service at 3:40 PM and 3:50 PM starts from the two high schools with drop-off locations across Northlands and Frame Lake. Currently, the Express Bus runs from Monday to Friday and only during the school year (September to June). The Express busses are not accessible as they are high floor vehicles with steps and do not have wheelchair accessible ramps or lifts.

3.1.2 YATS Service

Yellowknife Accessible Transit (YATS) offers door-to-door transit within the City of Yellowknife and is available to people



with a temporary or permanent physical or functional disability. Trips operate as a shared ride service, with the driver, who is also the system's dispatcher, working to group trips as much as possible, by time and destination. YATS operates by subscription trips (trips that may be scheduled for recurring events like dialysis or therapy appointments) and on-demand. Service operates from 6:40 AM to 7:10 PM Monday to Friday, and from 8:00 AM to 7:00 PM on Saturday (excluding Statutory holidays).

3.1.3 Fares

Currently, there are four distinct ways that customers can pay their fare to ride Yellowknife Transit. These fares are available for both the fixed route and YATS service and include:

1. Cash Fares

- a. \$3 for Adults
- b. \$2 for Students, People with Disabilities and Seniors (60 years and older)
- c. \$2 for YATS
- d. Fixed route service is free for Registered YATS users and Children (5 years and younger)

2. Unlimited Monthly Pass

- a. \$75 for Adults
- b. \$50 for Students, People with Disabilities, Seniors (60 years and older) and YATS

3. Punch Pass (11 rides for the price of 10)

- a. \$30 for Adults
- b. \$20 for Students, People with Disabilities, Seniors (60 years and older) and YATS

4. Unlimited Annual Pass

- a. \$750 for Adults
- b. \$500 for Students, People with Disabilities, Seniors (60 years and older) and YATS
- c. \$5 for Pass Replacement

The Monthly and Punch Passes can be purchased at specific locations, which are: 1) City Hall, 2) Direct Charge Co-op, 3) Downtown Reddi Mart, 4) Fieldhouse, 5) Ruth Inch Memorial Pool, 6) Sutherland's Drugs, and 7) Village Reddi-Mart.

YATS passes and annual passes are only available at 1) City Hall, 2) Ruth Inch Memorial Pool, and 3) Fieldhouse.

Things in Yellowknife's favour as a smaller community with transit:

Relatively compact form

Population is not spread out but is instead in a fairly compact form that keeps transit effective.

Geographic concentration of "regular work hour" jobs

Jobs that operate on more predictable hours and which are physically located close together (as they are in Yellowknife's core) are easier to serve with transit and to build a base of regular commuter customers.

School transportation policies that emphasize transit

Students already comprise a large proportion of the system's commuter ridership; building on this base by encouraging youth use of transit at other times can also sustain the effectiveness of the system.

Incentives to take transit through a price on some parking

Typically communities of this size do not offer that incentive, which promotes the use of transit over personal automobiles.

Visitors

Yellowknife has a lot of visitors that are trying to use the transit system and as such it is considered a big opportunity to even further capitalize on that ridership group to make transit more effective.

3.2 Existing System Performance

Yellowknife’s fixed route service appears to have a strong ridership during commuter time periods both for youth and adults that creates a strong foundation for the transit system.

Historical Trend: A look at transit in the community since 2007 shows that fixed route ridership had been increasing since 2010 where it peaked and then decreased until 2013.

In 2014, a spike in ridership was observed with approximately an increase of 30,000 annual riders, which was also the year that the transit system underwent a major restructuring and a modest increase in service. That increase in tandem with a service change is notable since it indicates that when the City makes a change to the transit system, people respond and tend to use transit more.

Since 2014, ridership on the fixed route service has been relatively flat. Changing demographics may be a key factor contributing to this static ridership, since, during this time the number of youth between the ages of 15 and 24 in the community decreased (and therefore that share of potential transit users decreased). However, the transit system ridership has been stable over the past three years, illustrative of base ridership that uses transit on a regular basis.

For the YATS service, ridership has been increasing over the past 3 years. It appears that YATS has a “healthy” foundation to work with and together with identified opportunities, YATS’ ridership could grow over time.



Historical Ridership Trend for Yellowknife’s Transit System (2007-2017)

Yellowknife Transit detailed historical performance 2007-2017 for both the fixed route (top) and YATS (bottom) portions of service.

Historical Trend: Yellowknife Conventional Transit											
Year	Municipal Population	Service Area Population	Adult Local Cash Fare	Total Passengers (Boardings)	Passenger Revenue	Total Operating Cost	Total Fleet	Scheduled Revenue Hours	Passengers Carried per Hour	Operating Cost per Passenger	Operating Cost Recovery
2007				162,171	272,065	820,699	8	9,209	17.61	\$5.06	33.15%
2008	19,155	19,155	\$ 2.50	167,958	284,321	977,297	9	9,286	18.09	\$5.82	29.09%
2009	19,711	19,711	\$ 2.50	190,807	336,353	774,822	8	8,981	21.25	\$4.06	43.41%
2010	19,927	19,927	\$ 2.50	199,914	332,109	802,503	8	8,981	22.26	\$4.01	41.38%
2011	19,888	19,888	\$ 2.50	192,630	313,302	828,348	8	9,131	21.10	\$4.30	37.82%
2012	19,888	19,888	\$ 2.50	172,460	304,291	860,004	8	9,132	18.89	\$4.99	35.38%
2013				165,226	297,430	897,497		9,064	18.23	\$5.43	33.14%
2014	19,234	19,234	\$ 3.00	196,427	334,108	1,041,151	8	9,836	19.97	\$5.30	32.09%
2015	20,637	20,637	\$ 3.00	189,505	372,549	1,188,688	8	11,871	15.96	\$6.27	31.34%
2016	19,269	19,569	\$ 3.00	182,623	391,118	1,254,790	8	12,440	14.68	\$6.87	31.17%
2017	19,269	19,569	\$ 3.00	191,053	378,659	1,227,405	8	12,372	15.44	\$6.42	30.85%

Historical Trend: Yellowknife Accessible Transit Service (YATS)											
Year	Municipal Population	Service Area Population	Adult Local Cash Fare	Total Passengers (Boardings)	Passenger Revenue	Total Operating Cost	Total Fleet	Scheduled Revenue Hours	Passengers Carried per Hour	Operating Cost per Passenger	Operating Cost Recovery
2007		18,700	\$ 2.50	3,124	7,100	168,022	2	3,598	0.87	\$53.78	4.23%
2008	19,155	19,155	\$ 2.50	5,289	8,405	193,244	2	3,618	1.46	\$36.54	4.35%
2009	19,711	19,711	\$ 2.50	5,985	9,898	204,308	2	3,870	1.55	\$34.14	4.84%
2010	19,927	19,927	\$ 2.50	6,995	12,360	207,663	2	3,866	1.81	\$29.69	5.95%
2011	19,888	18,352	\$ 2.50	6,843	13,434	214,752	2	3,861	1.77	\$31.38	6.26%
2012	19,888	19,888	\$ 2.50	7,220	16,505	234,248	2	3,861	1.87	\$32.44	7.05%
2013		19,752	\$ 2.50	6,029	12,645	235,282	2	3,861	1.56	\$39.03	5.37%
2014	19,234	19,234	\$ 3.00	7,337	15,193	272,953	2	3,871	1.90	\$37.20	5.57%
2015	20,637	20,637	\$ 3.00	6,513	13,476	273,632	2	3,549	1.84	\$42.01	4.92%
2016	19,269	19,569	\$ 3.00	7,110	12,050	277,607	2	3,572	1.99	\$39.04	4.34%
2017	19,269	19,569	\$ 2.00	7,893	10,560	281,499	2	3,549	2.22	\$35.66	3.75%

Detailed Current Ridership: This study also analyzed ridership by route, trip, stop, service day and season. The goal of this analysis was to determine where service was not operating as effectively because service levels were not appropriately matched to demand (i.e. there is too much or too little service to meet the number of passengers being carried).

The charts on the following page provide an overview of this analysis for 2017 ridership and service data. These charts present the average number of passengers carried per hour of service (sometimes know as “rides per hour”) by time period: morning commuter peak or “AM peak” running from the start of service to 8:55am; midday “Base” from 8:55am to 3:00pm; afternoon commuter period “PM Peak” from 3:00pm to 6:00pm; and then “Evening” service after 6:00pm.

Ideally, rides per hour would be generally flat throughout the day because the level of service would be adjusted to meet demand, for instance reducing service during the middle of the day when ridership tends to also be lower. However, Yellowknife’s current structure maintains the same service levels throughout the day and therefore the ridership per hour tends to be lower and less effective during the middays and evenings than during the commuter periods.

Some other conclusions from looking at the detailed ridership include:

- The route B Express shows the highest productivity amongst the routes, primarily due to the limited number of trips and the high demand from students that use the service.
- Among the regular routes, route B is the most well-utilized. Even during the lower ridership period in the



middy the route is still serving 20 passengers per hour of service on average, meaning that this route is carrying more passengers than could effectively be transitioned to a smaller vehicle or another model of service delivery.

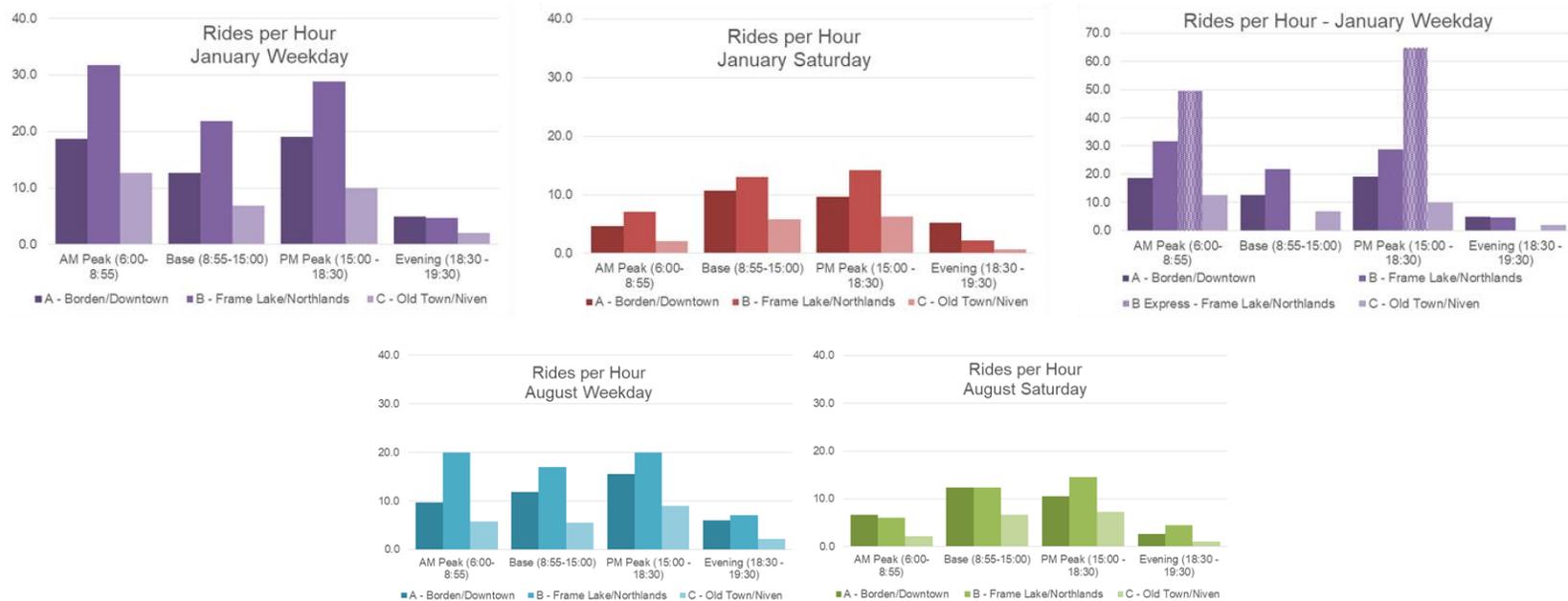
- Route A is the second-highest performing of the regular routes. Its routing overlaps quite a bit with Route B and in the midday it owes much of its ridership to serving a number of commercial destinations, in particular

Walmart and to some degree the Co-op and Canadian Tire. (Conversely, during middays ridership on other stops on the terminating Borden Drive / Magnum Crescent loop of the route is extremely low, often averaging 0-1 passengers in the segment per trip).

- Route C is the least-well performing of the regular routes, potentially due to its extremely circuitous routing. In addition, its schedule does not currently

“officially” line up with those of the other routes to enable transfers to take place to other areas of the City. (Transit operators delay departures on Route C to try to make these transfers take place).

- When comparing winter (January) and summer (August) ridership, weekday ridership is more flat across the day in summers than in winter while Saturday ridership is almost identical.



Yellowknife Transit Average Ridership per Hour on Weekdays and Weekends, 2017 (Top Row: January, Bottom Row: August)

3.3 Peer Comparison

Yellowknife’s transit system was compared with that of 13 representative peer municipalities across Canada. The municipalities were selected based on two main criteria: 1) similar population size and 2) similar compact urban form. Experience of a more northern or colder winter climate was also taken into account. The municipalities ranged across six provinces and one territory and Communities that were between 14,000 and 33,000 in population were used for comparative analysis. An additional five communities that were larger in population were also critically considered as they had some similarities with Yellowknife, such as similar climate or other smaller cities (Whitehorse, YT and Charlottetown, PEI) that also are territorial or provincial capitals.

The tables on the following pages present the results of this comparison using 2017 Canadian Urban Transit Association (CUTA) performance information for fixed route and specialized transit services similar to those in Yellowknife.

For **Yellowknife’s fixed route** portion of its transit system, this comparison shows that service is performing in line with peers:

- Although, it has a lower number of passengers carried per hour of service (*15.4 vs. 19.2 average*), Yellowknife’s fixed route service also carries those passengers at a lower cost per passenger than its peers (*\$6.42 vs. \$6.45 average*). This means that the community’s costs for transit are already on par with other systems and would get even better if there was an ability to increase the number of passengers carried per hour of service.
- The overall level of investment in transit is also lower than its peers (*0.63 service hours per capita vs. 0.74 service*

hours per capita average), which likely reflects the City’s relatively compact nature when compared to its peers but which would also suggest that service levels should not be dropped further.

- Ultimately, Yellowknife’s operating cost recovery is considered “healthy” at 30.9% which is within the range of typical transit systems (*vs. 31.1% peer average*).

On the other hand, **YATS** underperforms in comparison to its peers. It carries fewer passengers per hour of service (*2.2 vs. 2.7 total average*), likely due to offering longer hours of service and fewer group trips than its peers. Its operating cost recovery is also significantly lower at 3.7% (*vs. 7.2% total average*). YATS fares are identical to those of the fixed route service and its hours of service are also in alignment. Fare and service hour parity is not the case amongst all of the peers, although the Canadian trend is to move to that direction.

List of Municipalities Used for Peer Comparison

Terrace, BC	Nelson, BC
Miramichi, NB	Cranbrook, BC
Whitehorse, YT	Kootenay Boundary (Trail), BC
Timmins, ON	North Bay, ON
Grande Prairie, AB	Fort St. John, BC
Charlottetown, PE	Prince Albert, SK
Bow Valley, AB (Banff / Canmore)	

Conventional Transit Peer Comparison: 2017 Canadian Urban Transit System Statistics for Selected Systems											
Community	Service Area Population	Service Area Population	Total Passengers (Boardings)	Passenger Revenue	Total Operating Cost	Total Fleet	Scheduled Revenue Hours	Passengers Carried per Hour	Operating Cost per Passenger	Operating Cost Recovery	Service Hours per Capita
Terrace, BC	14,063	14,063	153,916	\$ 173,961	\$ 756,032	5	8,253	18.65	\$4.91	23.01%	0.59
Nelson, BC	16,038	16,038	340,211	\$ 418,594	\$ 1,382,088	6	11,633	29.25	\$4.06	30.29%	0.73
Miramichi, NB	17,811	17,811	50,000	\$ 191,000	\$ 456,000	6	8,892	5.62	\$9.12	41.89%	0.50
Cranbrook, BC	18,602	18,602	203,430	\$ 220,552	\$ 1,168,746	5	11,917	17.07	\$5.75	18.87%	0.64
Fort St. John, BC	19,378	19,378	127,087	\$ 157,504	\$ 1,579,493	5	10,984	11.57	\$12.43	9.97%	0.57
Yellowknife, NT	19,569	19,569	191,053	\$ 378,659	\$ 1,227,405	8	12,372	15.44	\$6.42	30.85%	0.63
Bow Valley, AB (Banff / Canmore)	22,463	22,463	926,780	\$ 1,588,380	\$ 2,979,161	16	29,646	31.26	\$3.21	53.32%	1.32
Whitehorse, YT	29,529	22,847	644,589	\$ 1,127,872	\$ 3,482,258	12	25,114	25.67	\$5.40	32.39%	1.10
Kootenay Boundary (Trail), BC	32,492	32,492	363,633	\$ 388,472	\$ 2,447,402	13	19,660	18.50	\$6.73	15.87%	0.61
Prince Albert, SK	35,926	35,926	392,833	\$ 584,445	\$ 1,518,561	10	18,661	21.05	\$3.87	38.49%	0.52
Timmins, ON	43,165	38,622	834,637	\$ 1,650,291	\$ 4,654,670	19	41,154	20.28	\$5.58	35.45%	1.07
North Bay, ON	51,553	47,084	1,411,937	\$ 2,783,822	\$ 5,936,350	8	62,400	22.63	\$4.20	46.89%	1.33
Charlottetown, PE	49,000	49,000	535,549	\$ 1,003,225	\$ 2,102,901	14	23,300	22.98	\$3.93	47.71%	0.48
Grande Prairie, AB	63,166	63,166	638,686	\$ 556,486	\$ 5,397,336	24	42,127	15.16	\$8.45	10.31%	0.67
Average of Systems 14,000 - 33,000 Population								19.23	\$6.45	28.49%	0.74
Average of All Systems Shown								19.65	\$6.00	31.09%	0.77

In Focus: What is a “Revenue Hour” of Service?

A revenue hour is the unit by which the supply of transit service is measured. One revenue hour is equal to one vehicle on the road for one hour of service, excluding deadhead time travelling to/from garage, maintenance and training. (Definition is from the Canadian Urban Transit Association).

Specialized Transit Peer Comparison: 2017 Canadian Urban Transit System Statistics for Selected Systems											
Community	Municipal Population	Service Area Population	Total Passengers (Boardings)	Passenger Revenue	Total Operating Cost	Total Fleet	Scheduled Revenue Hours	Passengers Carried per Hour	Operating Cost per Passenger	Operating Cost Recovery	Service Hours per Capita
Terrace, BC	14,063	16,743	7,063	\$ 12,984	\$ 173,011		2,122	3.33	\$24.50	7.50%	0.13
Cranbrook, BC	18,602	21,246	8,506	\$ 33,917	\$ 280,657		3,611	2.36	\$33.00	12.08%	0.17
Fort St. John, BC	19,378	22,195	26,015	\$ 46,569	\$ 682,264		8,056	3.23	\$26.23	6.83%	0.36
Yellowknife, NT	19,269	19,569	7,893	\$ 10,560	\$ 281,499	2	3,549	2.22	\$35.66	3.75%	0.18
Whitehorse, YT	29,529	23,027	7,591	\$ 9,856	\$ 243,662	2	2,943	2.58	\$32.10	4.04%	0.13
Kootenay Boundary (Trail), BC	32,492	34,938	9,791	\$ 15,459	\$ 423,471		4,445	2.20	\$43.25	3.65%	0.13
Timmins, ON	43,165	36,622	13,259	\$ 25,783	\$ 437,577	6	5,023	2.64	\$33.00	5.89%	0.14
North Bay, ON	51,553	47,084	30,396	\$ 96,825	\$ 703,711	5	9,913	3.07	\$23.15	13.76%	0.21
Average of Systems 14,000 - 33,000 Population								2.65	\$32.46	6.31%	0.18
Average of All Systems Shown								2.70	\$31.36	7.19%	0.18

3.4 Summary of Key Issues and Opportunities

In addition to the review of current detailed ridership, historical performance and peer comparisons, this project also included the project team riding all routes and services, speaking with passengers and transit drivers, field visits to key stops, and outreach to City staff and transit staff. Based on this analysis, field work and discussions, the following are the key issues and opportunities noted for Yellowknife's transit system:

1. The existing transit system is easy to understand, due to its **"flat" approach** to service levels. However, this also means that there is little hierarchy of services or variation in schedules across the day to match service levels to ridership.
2. There are **on time issues** with the fixed route service, particularly on the system's highest performing route B. Due to how the system is currently structured (with one vehicle doing the same route all day) there is less ability to address late trips while also keeping the same schedule and route structure. If the system does not address on time performance, there is a risk that ridership will erode as the least that passengers expect from a system is that it will be on time.
3. **Duplications** on the fixed-route transit service have been identified and the project team has identified opportunities to reduce that duplication to offer improved frequency. For instance, routes A and B leave within eight minutes of each other and cover many of the same key destinations.
4. There is an opportunity through this process to improve connections and **access to key destinations** especially **during mid-day**, such as between routes serving Old Town/N'Dilo and the rest of the City, as well to Walmart.
5. Yellowknife's transit **information materials** although very graphical and relatively easier to read when compared to other systems have opportunities to improve and become even easier to understand and read for new users particularly in terms of layout of schedules, accessible transit information and other customer information.
6. Due to the significant number of visitors throughout the year that come to Yellowknife, **visitor-specific communication materials** could be considered to further attract visitors to use transit.
7. Currently, Yellowknife Transit has four types of fares but there could be an opportunity to consider **additional fare approaches**.
8. Closely related to the previous two points, an opportunity for the system that could benefit both riders and Yellowknife Transit is the **introduction of a day pass**.
9. Through discussions with transit staff, issues were identified regarding **snow removal and parked vehicles**. Therefore, opportunities have been identified on policies that would deal with those two issues so transit can operate more smoothly even on the more difficult conditions.

4.0 SERVICE CONCEPTS

Building from analysis and fieldwork undertaken and the identification of issues and opportunities, the project team also considered different service design approaches that could be considered to improve the effectiveness of transit services in Yellowknife. The following section describes potential service design types that were considered.

4.1 The Transit “Toolbox” - Service Design Types

The design of public transit systems—and transportation options in general—draws from a suite of service types. These range based on the degree that service is fixed or flexible, with that difference summarized as follows:

- **Fixed route services** – operate using a published schedule and route map with set bus stops.
This includes the existing conventional transit system operating within the City of Yellowknife.
- **Flexible demand responsive services** – offer service between specific locations and times as need arises.
Examples of this include typical taxi trips and services like Uber, as well as the existing Yellowknife Accessible Transit Service already operating within the city.

Between these two ends of the spectrum, there are a number of other possibilities which work well for small to medium-sized municipalities like Yellowknife.

Each of these service design types may be used to serve specific community needs based on expected ridership and commonality of travel patterns, the land use and layout of communities and the level of physical mobility for passengers.

The service types may also be layered together. Using several different types has advantages since services that are more

“fixed” in terms of either routing or schedule will normally carry more passengers for a lower cost than fully demand responsive options but will not meet all community needs.

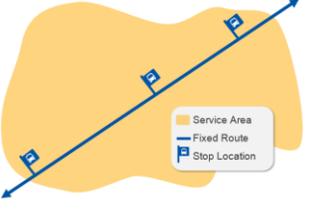
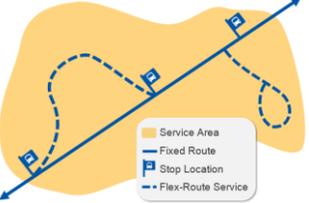
As a foundation for the proposed service options and supporting measures presented in subsequent sections, the following table provides an overview of the palette of service design types typically used in similar communities that could be applied in Yellowknife.

In Focus: Transit Service Design Principles

Service options developed for this project are based on the following transit service design best practice principles.

- Where feasible, **be as consistent as possible** as consistency across services (including policies, routes, schedules and fares) is usually easier to understand and attracts higher ridership.
- Rather than treating all areas equally, **focus highest levels of service on corridors that have greater population density** (relative to their surrounding rural or urban contexts) and major destinations.
- Where possible, **build from existing transportation patterns** and consider an incremental approach. For instance, this may mean seeking approaches that use existing resources in new ways and feathering in other changes over a series of improvements.

THE PUBLIC TRANSPORTATION “TOOLBOX”: GENERAL SERVICE DESIGN TYPES

Service Type	Description	Notes and Application
 <p>Conventional / Fixed Route</p>	<p>Service operates on a fixed route and schedule, with regular stop spacing approximately every 400m in more urban areas or to key destinations and neighbourhoods in more rural areas.</p>	<p>Offers clarity and ease of use for passengers but is less flexible to accommodate other passenger needs, particularly people with disabilities who may not be able to access stops. This is also the most expensive of the service design types and so can be cost-prohibitive for smaller communities.</p>
 <p>Flex-Route</p>	<p>Service operates on a general route or schedule, but may deviate off route <i>at multiple points as needed</i> to provide service.</p>	<p>Provides the general clarity of service of fixed route service to key points but also enables the bus to provide door-to-door service for people with disabilities unable to reach stops (or extension to specific destinations on request) as part of its route.</p>
 <p>Demand Responsive with Trip Windows</p>	<p>Service operates fully door-to-door, but is clustered around specific “trip window” times to help passengers align travel together. For instance, service may be published as operating on specific weekdays to a particular area or available from 8:00am to 9:00am and 2:00pm to 3:00pm.</p>	<p>Particularly for trips that have a longer intervening travel time (such as longer distance travel between communities), this style of demand responsive service is generally a more efficient way to provide service with a demand responsive component since it clusters similar trips together. It also better enables passengers to plan their appointments around when transit service is available.</p>
 <p>Fully Demand Responsive</p>	<p>Service is dispatched as needed and serves door-to-door locations. Trips are booked ahead of time by clients.</p>	<p>Can be the most expensive type of public transportation to operate since it often carries only one passenger at a time. However, depending on service delivery model, can be a viable solution in smaller communities since service is often only paid for as it is needed.</p>

4.2 Development of Service Options for the City of Yellowknife

Selecting from the general service design types presented above in **Section 4.1** and the identified issues and opportunities, existing travel patterns, and projected demand, several transportation improvement options were developed for Yellowknife.

These options built from a suite of service types commonly used by communities of a similar size to Yellowknife to improve community mobility. Some of these are not the “traditional” style of transit that one might see in larger centres (routes and stops served by scheduled larger vehicles).

Instead, these more mid-sized community transportation options make use of existing resources and programs where possible. They also typically use smaller vehicles (taxis, minibuses) and include a component of on-demand service, which means that trips are scheduled as needed to and from resident homes. Many services also specify “trip windows”—the times and days when service is available—to ensure that trips can serve as many people as possible in an efficient manner.

The following provides an overview of the service options considered, including demand-responsive and flex-route options that could be delivered by YATS smaller vehicles or taxi/Uber. The tables also include a high-level assessment of cost and ridership impacts against the current status quo as well as assessment of overall feasibility.

Alternative Service Delivery: Opportunities & Constraints

Many communities are curious about whether alternative service delivery options—particularly those using taxi or ride hailing companies—could potentially offer a less expensive way to deliver public transportation. A prominent Canadian example is the use of Uber to deliver public transportation in a pilot project taking place in Innisfil, ON.

One important thing to remember about this is that there is no “one size fits all” solution to transportation that fits all community types and needs. On demand services that may be operated by the system itself or taxis, ride hailing companies and other third-party transportation providers often have a place in meeting ridership demand. However, they may work best when layered with other services and their feasibility depends on the following considerations:

- **Market** – who is being served and what degree of accessibility is required? For instance, taxis and ride hailing vehicles may be less able to serve seniors or people with a disability using mobility aids or families with strollers and small children.
- **Ridership Patterns** – how common are travel patterns and times? If ridership tends to be higher in specific areas or times of day, smaller vehicles may not meet the required capacity, especially if the community already has established fixed route transit.
- **Resources** – what are the vehicles, hours and staff available? Operating a single more consolidated approach may be less costly overall than multiple fleets and operations for different markets.
- **Community form** – how spread out is the community? On demand services using taxis and ride-hailing vehicles may make a lot of sense in communities like those in the Prairies that tend to be spread out in all directions (with less commonality between passenger trips) but may have less application in Yellowknife where the majority trips all layer along a single linear path.

Innisfil, Ontario sticks with its Uber-as-public-transit plan, extending its pilot project

The town turned to the global ride-sharing giant to help bridge a public transit gap in May 2017



'Uber Was Supposed To Be Our Public Transit'

Alternative Transportation Service Approaches Evaluated for Yellowknife

Options	Description	Benefits	Challenges	Impacts against existing service		Overall assessment of feasibility of option
				Costs	Ridership	
On-demand by YATS to the entire system	Service would be operated to the entire system (across City of Yellowknife) on-demand by an accessible shuttle, such as the one currently operating as Yellowknife Accessible Transit Service (YATS), either as a door-to-door service or to numbered bus stops.	<ul style="list-style-type: none"> • If door-to-door service model for all passengers was used, that would mean less exposure to winter weather. • Door-to-door model would also no longer require bus stop maintenance. 	<ul style="list-style-type: none"> • Given the number of passengers at commuting times it would be prohibitively expensive. • Challenging to provide enough service to meet demand. • Travel times would be slow in door-to-door model and likely even less feasible. 	×	×	×
On-demand by YATS at specific hours of the day	Fixed routes (conventional transit) would operate during commuting hours and the rest of the weekdays and Saturdays service would be provided on-demand by an accessible shuttle, such as the one currently operating as Yellowknife Accessible Transit Service (YATS).	<ul style="list-style-type: none"> • Potentially perceived as more convenient by more users. 	<ul style="list-style-type: none"> • There would be additional capital costs to the system, as two fleets required. • Additional non-productive time and added operating costs related to exchanging fleets over the day, as well as maintenance and storage. • Potentially confusing for some passengers. • May still be challenging to provide enough service to meet demand. • May have longer wait times. 	×	×	×
On-demand by YATS in specific areas (e.g. N'dilo & Niven)	Fixed routes (conventional transit) would operate into some parts of the City where there are high ridership volumes and areas of the City would be serviced on-demand by an accessible shuttle, such as the one currently operating as Yellowknife Accessible Transit Service (YATS).	<ul style="list-style-type: none"> • Better matches service levels to demand. 	<ul style="list-style-type: none"> • Requires structural change to other routes to implement. • Some additional operating costs. • May still be challenging to provide enough service to meet demand at commuter times. • May be harder to connect to other parts of the system. 	×	-	-

 Meets Criteria Well
 Somewhat Meets Criteria
 Does Not Meet Criteria / Attribute

Options	Description	Benefits	Challenges	Impacts against existing service		Overall assessment of feasibility of option
				Costs	Ridership	
On-demand by Taxi / Ride-hailing service to the entire system	Entire system would be operated (across City of Yellowknife) on-demand by a Taxi company and/or a ride-hailing service (e.g., Uber), either door-to-door or to numbered stop locations.	<ul style="list-style-type: none"> • <i>Door-to-door service for all passengers, meaning improved convenience particularly into winter weather.</i> • <i>Depending on format used it would no longer require bus stop maintenance.</i> 	<ul style="list-style-type: none"> • <i>Given the number of passengers at commuting times would be prohibitively expensive.</i> • <i>Challenging to provide enough service to meet demand.</i> 	X	X	X
On-demand by Taxi / Ride-hailing service to specific hours of the day	Fixed routes (conventional transit) would operate during commuting hours and the rest of the weekdays and Saturdays service would be provided on-demand by a Taxi company and/or a ride-hailing service (e.g., Uber).	<ul style="list-style-type: none"> • <i>Potentially perceived as more convenient by more users.</i> 	<ul style="list-style-type: none"> • <i>Even in midday, likely prohibitively inefficient and costly to use this method on main linear path of City covered by Route B.</i> • <i>Depending on vehicles used, may be less able to carry people with a disability or parents with small children.</i> • <i>Two service models may be confusing to some passengers.</i> • <i>May still be challenging to provide enough service to meet demand.</i> • <i>May have longer wait times.</i> 	X	X	X
On-demand by Taxi / Ride-hailing service in specific areas (e.g. N'dilo & Niven)	Fixed routes (conventional transit) would operate into some parts of the City where there are high ridership volumes and areas of the City would be serviced on-demand by a Taxi company and/or a ride-hailing service (e.g., Uber).	<ul style="list-style-type: none"> • <i>Better matches service levels to demand.</i> 	<ul style="list-style-type: none"> • <i>Requires structural change to other routes to implement.</i> • <i>Some additional operating costs.</i> • <i>May still be challenging to provide enough service to meet demand at commuter times.</i> • <i>May be harder to connect to other parts of the system.</i> • <i>Might not improve operating savings.</i> 	-	✓	-

 Meets Criteria Well
 Somewhat Meets Criteria
 Does Not Meet Criteria / Attribute

Options	Description	Benefits	Challenges	Impacts against existing service		Overall assessment of feasibility of option
				Costs	Ridership	
Use Taxi service to do portion of the YATS service	YATS would operate with the same schedule, however for the late afternoon / evening hours or portion of Saturday service that are typically less busy a Taxi provider would be contracted to commission any on-demand YATS service there might be needed.	<ul style="list-style-type: none"> • This can reduce the operating costs, which can be taken as a savings or reallocated (such as to provide a portion of service on Sunday mornings which YATS users have requested). 	<ul style="list-style-type: none"> • Need to ensure that drivers are meeting Yellowknife Transit standards and can provide the same level of service as YATS. • Ideally wheelchair-accessible vehicles required for this. 	✓	—	✓
Group some YATS passenger trips by trip windows	YATS could group trips that have similar destination or meeting the same need (e.g., shopping trip) by promoting specific days and times that those trips would take place.	<ul style="list-style-type: none"> • Provide less trips with the same level of users. • Can be an opportunity for people to socialize during regularly programmed trip. • Frees up trips at other times for YATS users that may have more restrictive schedules, such as doctor's appointments. 	<ul style="list-style-type: none"> • Takes time to set up. • Users need to get used to it. 	✓	—	✓
Revised routing during non-peak times	This type of service would provide frequent service along a key corridor and during off-peak the route would be able to deviate into key destinations that commuters might want to access at mid-day.	<ul style="list-style-type: none"> • Allows for the transit system to provide service to key destinations during commuter (peak) hours as well as provide access to destinations to riders that are commuting off-peak hours (e.g. shopping destinations). 	<ul style="list-style-type: none"> • Can be confusing to new users of the transit service. 	—	✓	—
Flex-routed service	This option would change one or more conventional transit routes from using a regular transit bus to an accessible shuttle that would allow to deviate from the route and provide on-demand door-to-door service.	<ul style="list-style-type: none"> • Provides door-to-door service for passengers that require it, especially convenient for winter weather. 	<ul style="list-style-type: none"> • Maybe harder to connect to other parts of the system. • Might not improve operating savings. 	✓	—	—

 Meets Criteria Well
 Somewhat Meets Criteria
 Does Not Meet Criteria / Attribute

Options	Description	Benefits	Challenges	Impacts against existing service		Overall assessment of feasibility of option
				Costs	Ridership	
On-demand with trip windows	Yellowknife Transit could explore servicing areas on-demand for specific times and days (e.g., on-demand service in Kam Lake neighbourhood on Tuesdays and Thursdays between 7-9am & 12-2pm & 4-6pm).	<ul style="list-style-type: none"> • <i>Enables more neighbourhoods in the City to be serviced by some form of transit.</i> 	<ul style="list-style-type: none"> • <i>Additional operating costs.</i> 	✘	✓	✘
Restructure routing	Change the routing of the existing transit routes to make them more efficient by reducing their running time (time needed to complete a cycle) and/or servicing more people and/or enabling more frequent service on key destinations.	<ul style="list-style-type: none"> • <i>More reliable service.</i> • <i>Reduction of costs.</i> • <i>Ability to reallocate costs between routes.</i> • <i>Provide better service.</i> 	<ul style="list-style-type: none"> • <i>Change might be confusing to existing passengers of the Yellowknife Transit system.</i> 	✓	✓	✓
Create route hierarchy	Change the routes so that there is a hierarchy in terms of frequency. A core route typically would provide frequent service and would be the backbone of the transit system. Neighbourhood routes would be the feeders to that core route that would provide less frequent service.	<ul style="list-style-type: none"> • <i>Allows more frequent service along highly utilized corridors.</i> • <i>Providing a system hierarchy can ensure a more efficient transit system.</i> • <i>Better positions the system to then implement demand-responsive services using taxis/Uber and/or use smaller vehicles to deliver a portion of service at a later date.</i> 	<ul style="list-style-type: none"> • <i>Change might be confusing to existing passengers of the Yellowknife Transit system.</i> 	✓	✓	✓

 Meets Criteria Well
 Somewhat Meets Criteria
 Does Not Meet Criteria / Attribute

5.0 SERVICE OPTIONS

Building from the preliminary evaluation of alternate approaches to service delivery developed and feedback received from City staff, the following sections outline the service and capital improvements that appear to be the most feasible for implementation within the City of Yellowknife.

Options are divided into two sections:

5.1 Service Options for Immediate Consideration presents service improvements that could be considered immediately. These changes represent priorities for the system to improve overall ease of use and effectiveness. All of these options could be implemented within the existing allocated operating budget for the transit system.

5.2 Service Options for Longer Term Consideration presents a high-level outline of service improvement that could be considered for the future to build towards the long term route network and community development plans. Those options would require additional budget for the transit system in order to be realized.

Since all Immediate Options are designed to work within existing operating budgets, a high-level sense of cost, ridership and overall feasibility is provided. For the Longer Term Options, a cost range is provided where appropriate based on 2018 transit system actuals and peer averages for other providers. In both cases, more detailed cost and performance estimates could be provided if there is further feedback from the City on service priorities and potential delivery models.

Section 7.0 Path for Moving Forward outlines the proposed approach to confirm the implementation strategy for these options should the City wish to move forward with a selection of them.

5.1 Service Options for Immediate Consideration

Service Option 1

Minor Route Restructuring

Overview: This option retains the existing route structure for the majority of the system but changes how routes B and C serve the corridor of Franklin Avenue, 44 Street, 52 Avenue and 48 Street. Rather than each route separately doing a loop around this corridor, one route would turn into the other (or be “interlined”) at a specific point such as at Sir John Franklin High School. Route B would also no longer serve the lower ridership stops on Norseman Drive to further address on-time performance.

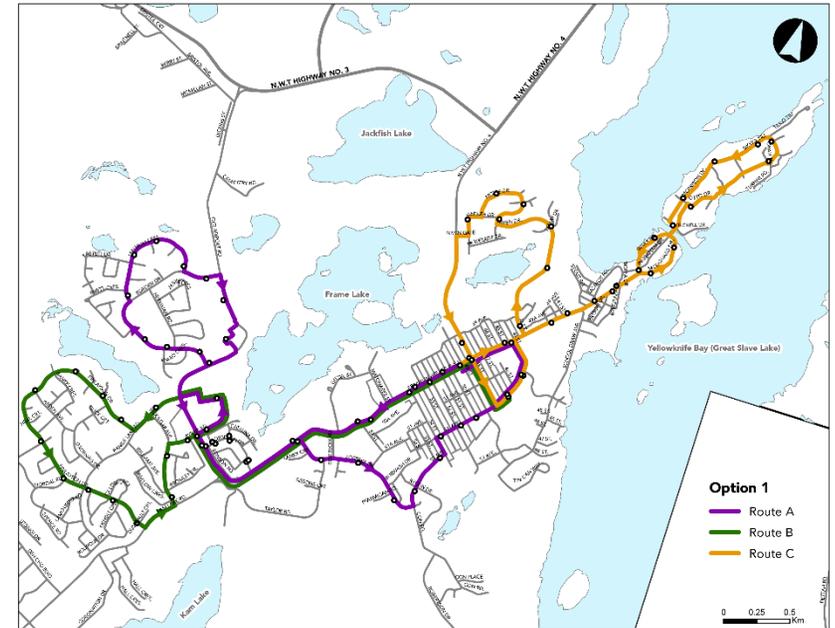
Key Benefits:

- The proposed changes reduce duplication on the 52nd Avenue loop and enables time to be shared between routes B and C to improve connections from one end of the City to the other and mitigate on-time issues.
- This option improves on-time performance with little disruption to the existing route structure.

Considerations:

- Core corridor of stops (schools, YK Centre / Centre Square) needs to be thoughtfully depicted in schedules and maps and a single “terminus point” selected.
- No change to service frequency and “flat” approach to level of service means that there would still likely be excess service to ridership demand in the midday.

Cost and Performance Implications: This option will use the existing budget and is expected to have a moderately positive impact on ridership due to improved connections and on-time performance.



Option 1 Frequency: In minutes

	AM Peak	Midday	PM Peak	Evening	Saturday
	7AM - 9AM	9AM - 3PM	3PM - 6PM	6PM - 7PM	7AM - 7PM
Route A	40	40	40	40	40
Route B	40	40	40	40	40
Route C	40	40	40	40	40
Route B Express	2 trips (no change)		2 trips (no change)		

Service Option 2

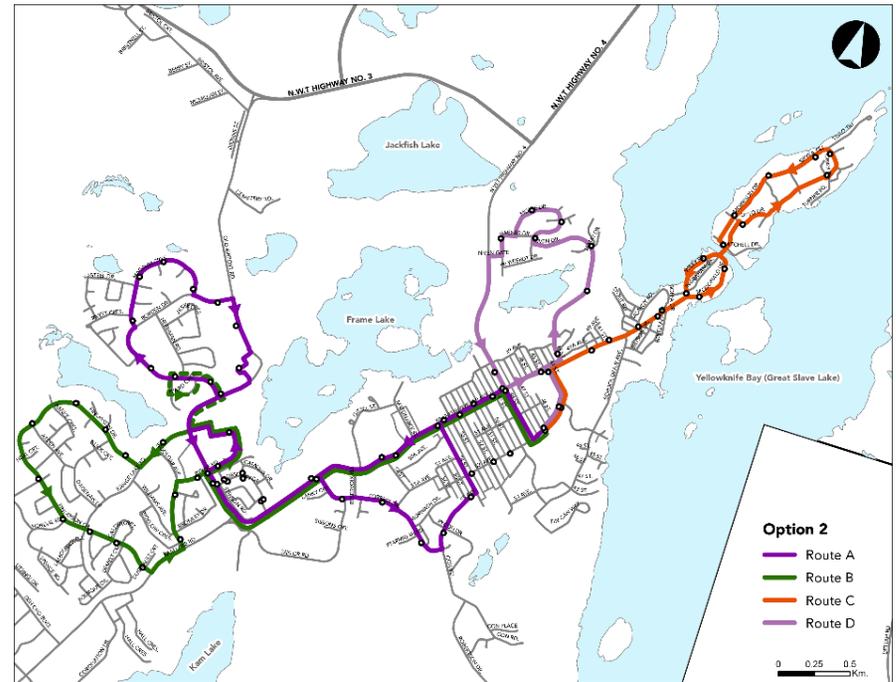
Revised Routing + Offset Midday Schedules

Overview: This change makes similar adjustments to Route B as shown in Service Option 1, but also changes the routing of Route A so that it passes along Franklin Avenue in both directions (instead of a loop) and splits Route C into two routes that are each more direct. The new Route C would route only to Old Town and N'Dilo and Route D would serve Niven. This change would also:

- Extend Route B to the Walmart area during middays since access to that destination and surrounding commercial areas tends to be a key driver of midday ridership in smaller communities.
- Reduce frequency on all routes during Weekday middays, Saturdays and evenings after 6:00pm to hourly service. However, schedules during these times would offset their departure times by a half hour. For instance, Route A might offer trips between Downtown, the hospital and Walmart at 9:00am, 10:00am, 11:00am, etc. and Route B would also serve those destinations at 9:30am, 10:30am, 11:30am, etc. This would result in half-hour service between key points (high schools, downtown, Ruth Inch Memorial Pool, Hospital, Walmart area).

Key Benefits:

- This change enables each route serving the west side of the city (i.e. Routes A and B) to be interlined or scheduled to turn into one of those serving the east (Route C and D) at a terminus point in the core. This improves connections since now passengers travelling



Option 2 Frequency: In minutes

	AM Peak	Midday	PM Peak	Evening	Saturday		
	7AM - 9AM	9AM - 3PM	3PM - 6PM	6PM - 7PM	7AM - 11AM	11AM - 6PM	6PM - 7PM
Route A	40-50*	60**	40-50*	60**	60**	60**	60**
Route B	40-50*	60**	40-50*	60**	60**	60**	60**
Route C	40-50*	60	40-50*	60	60	60	60
Route D	40-50*	60	40-50*	60	60	60	60
Route B Express	2 trips (no change)		2 trips (no change)				

* Commuter service would align as much as possible with existing trip arrive / departure times.

** Trips on Routes A & B would be offset during the midday to offer 30 min service between major destinations.

from N'Dilo, Old Town or Niven to other places in the core, the hospital and commercial areas to the west would no longer have to physically get off one bus and onto another.

- Reduces duplication and makes routing more consistent through the core.
- Makes service on time, more direct.
- Enables the system to reduce cost or reallocate savings to other times/days through reduced service in middays and on Saturdays that better matches ridership levels.

Considerations:

- Frequency on weekday middays and evenings and Saturdays would reduce from 40 minute service to 60 minute service.
- This change would be more disruptive to existing users than Option 1 since it involves a larger change to the existing route structure. However, it better matches service levels to ridership at lower demand times and would likely attract more riders over the longer term.
- Depending on the approach to scheduling and frequency, may require one of the vehicles used for Express bus service to operate additional trips during the commuter period. The operating costs for this are

more than covered by the savings from the reduction in service at other times. However, if one of the existing non-accessible vehicles that are used for Express service are used, this could mean two to four commuter trips per weekday are not accessible.

Cost and Performance Implications: This option will use less operating budget than the existing service and have a positive impact to ridership since it makes service more direct, on-time and connected through all times of the day and also provides more options for midday travellers.

- The City could retain these operating savings for the system or could “reinvest” them by reallocating time saved to additional service at other times, such as one additional trip per evening Monday to Saturday, service to 10pm on Friday nights throughout the year, or extended evening service to 10pm in the summer months.
- Potentially the reallocation of service could also add additional commuter trips on Route B, but again this would either require use of the existing non-accessible Express Route vehicles to do so or additional accessible vehicles.

Service Option 3

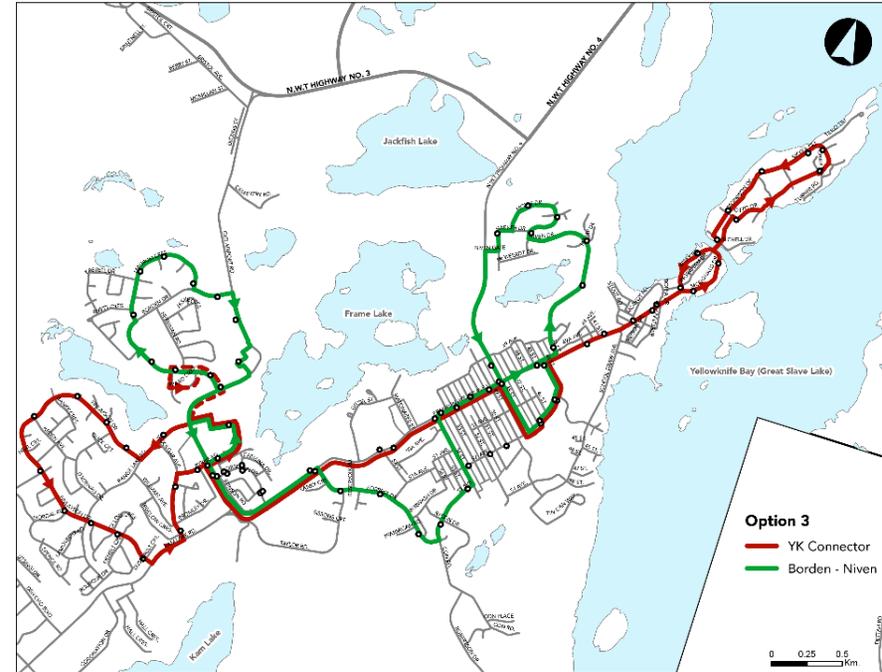
Rerouting to Better Match Service to Demand

Overview: This option builds on the route changes shown in Option 2. However, instead of portraying service as two separate sets of east and west routes that link together at the core, it permanently joins specific routes together to create more of a hierarchy of service.

- The new YK Connector (shown in red in the map) would serve the highest ridership destinations in the City, including downtown, Ruth Inch Memorial Pool, the Hospital, Range Lake area, vicinity of the Multiplex, Old Town and N'Dilo. It would also serve Walmart at non-commuter times. It would offer 30-minute service at weekday morning and afternoon peak commuter times, and potentially Saturday afternoon peak times.
- The Borden – Niven route would serve those two neighbourhoods (which tend to have lower ridership), as well as many of the major destinations also served by the YK Connector. It would offer commuter service as similar as possible to existing schedules but would then reduce to 60-minute frequency at other times. Similar to Option 2, there would be the ability to offset trips on the YK Connector and Borden-Niven routes by 30 minutes at lower frequency times to provide more options for midday travellers to major destinations.

Key Benefits:

- Creates service hierarchy of routes that are easier to explain to new users and which better match service to demand.



Option 3 Frequency: In minutes

	AM Peak	Midday	PM Peak	Evening	Saturday		
	7AM - 9AM	9AM - 3PM	3PM - 6PM	6PM - 7PM	7AM - 11AM	11AM - 6PM	6PM - 7PM
YK Connector	30	60**	30	60**	60**	30	60**
Borden - Niven	40-50*	60**	40-50*	60**	60**	60**	60**
Route B Express	2 trips (no change)		2 trips (no change)				

* Commuter service would align as much as possible for Borden and Niven areas with existing trip arrive / departure times.

** Trips on the YK Connector and Borden - Niven routes would be offset during the midday to offer 30 min service between major destinations.

- Allows more frequent service (30 min peak service) along highly utilized corridors.
- Introduces 30-minute service on the most heavily used route. Increasing frequencies to 30 minutes at commuter times was the top request of existing users on the most recent transit system customer survey. This change also will make it easier for commuter trips to align with typical work start times (7:30am, 8:00am, 8:30am, 9:00am, etc.) and end times than the present 40 minute service.
- Creates a structure that could then enable alternate methods of service delivery at lower ridership times in future if the City desires. By separating out the Niven-Borden route, the City would be better positioned to consider alternate service delivery methods to meet ridership if it remains lower, such as flex-routed service.

Considerations:

- This change offers more clarity to new users and improved frequency to many existing users, but causes a larger disruption to the existing structure. Passenger outreach and engagement prior to the change is recommended to minimize confusion to existing passengers and to ensure that the new routes and schedules meet needs.
- Frequency on weekday middays and evenings and Saturdays would reduce from 40 minute service to 60

minute service, particularly on routes serving the Borden, Niven and Forrest Drive neighbourhoods.

- Similar to Option 2, depending on the approach to scheduling and frequency, may require one of the vehicles used for Express bus service to operate additional trips on the Niven – Borden route during the commuter period. The operating costs for this are more than covered by the savings from the reduction in service at other times. However, if one of the existing non-accessible vehicles that are used for Express service are used, this could mean two to four commuter trips per weekday are not accessible.

Cost and Performance Implications: This option at the frequencies shown is designed to work within the existing operating budget for the system. It would likely produce the largest overall long-term gain in ridership for the system since it not only makes service more direct, on-time and connected but also higher frequencies to areas with more ridership. However, it would also be the biggest change to the service structure over the short term.

- Prior to implementing the change, it is strongly recommended that the City consider a process where by transit passengers and front line staff can learn about the proposed changes and help shape draft routes and schedules before they are finalized and implemented.

Service Option 4

Flex-routed Service

Overview: This option builds on a structure similar to that presented in Option 1, but would change one or more conventional transit routes from using a regular transit bus to an accessible shuttle that would operate as flex-routed service.

- Flex-route means that the vehicle would still serve stops in an area but would only do so at passenger request, either by asking the transit driver when they board at the terminus (or connect from other services) or by request via app or phone call to dispatch.
- Service could also potentially deviate off-route to pick up YATS users within the area unable to get to a stop.

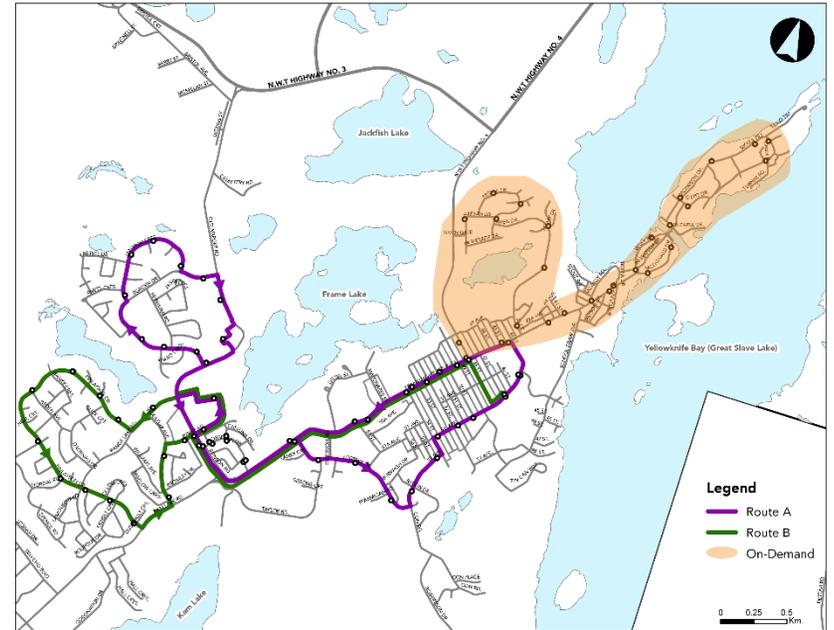
Key Benefits:

- Provides door-to-door service for passengers that require it, especially convenient for winter weather.
- Still somewhat scheduled leave times (“trip windows”).

Considerations:

- Since the rest of the system would still be operating using scheduled routes, it may be harder to connect to other City areas.
- If connections are preserved, this option would likely not offer improved operating savings.
- Would not address on-time performance, service duplication or the alignment between service levels and ridership demand in the rest of the system.

Cost and Performance Implications: This option works within the existing operating budget—with the potential for some operating savings—but would require the system’s fleet composition to change to include an additional smaller vehicle. Overall this option would likely have little or no impact on system ridership.



Option 4 Frequency: In minutes

	AM Peak	Midday	PM Peak	Evening	Saturday
	7AM - 9AM	9AM - 3PM	3PM - 6PM	6PM - 7PM	7AM - 7PM
Route A	40	40	40	40	40
Route B	40	40	40	40	40
Route C	*	*	*	*	*
Route B Express	2 trips (no change)		2 trips (no change)		

*On-demand Service

Service Option 5

Group some YATS passenger trips by trip window

Overview: YATS could group trips that have similar destinations or meeting the same need (e.g., shopping trips) by promoting specific “trip windows” or days and times when those trips would take place.

- This practice is used in many other communities of a similar scale to Yellowknife. For instance, a community that generally sees less usage of their specialized service on a Tuesday may promote that day for shopping trips to several commercial areas. Users then pre-book to be part of those trips on the hours and day specified for shopping or errands.

Key Benefits:

- The key benefit of this option is that it makes use of days or times that are typically less-utilized to instead use it for travel that tends to be more discretionary, such as shopping. In turn, this frees up trips at other times for YATS users that may have more restrictive schedules, such as doctor’s appointments. It therefore offers a way to serve more passenger trips with the same amount of service.
- It can also offer more certainty for YATS users since they know this trip is happening at specific times and can plan around it.
- Other communities have also found this type of group travel offers other positive benefits since it provides a regular opportunity for people to socialize.

Considerations:

- This option takes time to set up since ideally it builds around existing regular “subscription” trips on the service.
- Similarly, users need to get used to it. Ideally, the driver/dispatcher would help promote it to users and encourage them to try it for their shopping trips.

Cost and Performance Implications: This option offers a way to improve the effectiveness of the YATS service by providing more passenger trips within the same operating and capital budget.



5.2 Immediate Consideration Service Options Summary and Recommendations

The table at right summarizes the estimated impacts on costs and ridership for each of the service options presented for immediate consideration, as well as an overall assessment of their feasibility for implementation in Yellowknife.

- **All of the options are designed to work within the existing system operating budget, with *Option 2 Revised routing + offset midday schedules* also offering the most opportunity for system savings or reallocation.**
- **Of the options presented, *Option 4 Flex-routed service* is the least favourable** as it would likely only offer marginal savings and changes in ridership and would not address existing system issues.
- **Of the remaining three options that focus on the fixed-route portion of service, *Option 1 Minor route restructuring* and *Option 2 Revised routing + offset midday schedules* are considered less disruptive** retain the main characteristics of the existing service with minor alterations that will make service more efficient and attract additional riders. However, while ***Option 3 Revised routing to better match service to demand* offers a more radical change compared to the existing service that might require a transition period, it will likely offer the largest ridership gain over time.**
- **In terms of the YATS service, *Option 5 Group some YATS passenger trips by trip windows* is considered a quick-win that can help YATS potentially deliver more passenger trips within the same costs and with minimal disruption.**

Therefore, from the perspective of improving the overall effectiveness and efficiency of the Yellowknife Transit System, it is recommended that the City implement *Option 5* for the YATS service and either *Option 2* or *3* for the fixed route portion of service. For the largest long term ridership gain, *Option 3* is the preferred approach of the fixed route options but its implementation should include further outreach and engagement with existing transit passengers and front line staff to be as successful as possible.

Summary of Estimated Impacts: Service Options for Immediate Consideration

Options	Impacts against existing service		Overall assessment of feasibility of option
	Costs	Ridership	
1. Minor route restructuring	-	✓	✓
2. Revised routing + offset midday schedules	✓	✓	✓
3. Revised routing to better match service to demand	-	✓	✓
4. Flex-routed service	-	-	-
5. Group some YATS passenger trips by trip windows	-	✓	✓

 Meets Criteria Well
  Somewhat Meets Criteria
  Does Not Meet Criteria / Attribute

5.3 Service Options for Longer Term Consideration

These options present additional services that could be considered to meet community requests and growth of the City but which would require additional budget.

Service Option 6

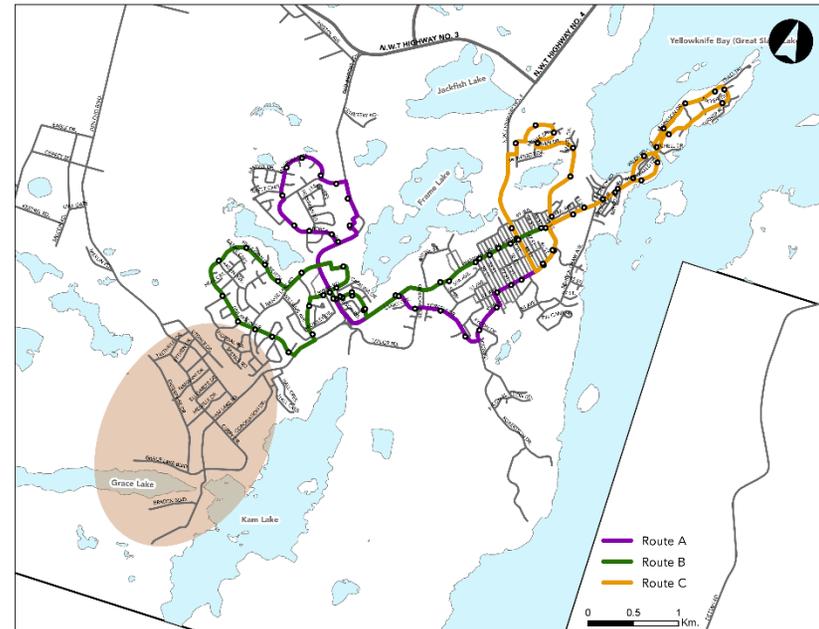
Service to Kam Lake Community

Overview: This option proposes the implementation of introductory-level service to the Kam Lake community.

- It is proposed that the introductory level service be established as flex-routed trips that would operate 2-3 times per day Monday to Saturday.
- Service would be available during specified “trip windows,” such as from 7:00am to 8:00am, noon to 1:00pm and 4:00pm – 5:00pm.
- Service would be to specified stops or intersections within the flex-route area, with potentially the ability to also provide door-to-door service to registered YATS users living within the same area.
- Service could be delivered by either a smaller vehicle transit system vehicle (such as those used for YATS service) or by a third-party contractor like a taxi or ride hailing company.

Key Benefits:

- This option will allow more residents of Yellowknife to have access to the transit system.
- Enables some service to be introduced to this area in a timely and cost-effective way; once density increases and hits a critical mass, the City could consider the expansion of fixed route service in the area.



Considerations:

- Potentially uses alternate service delivery provider (which would require coordination with the transit system operator) or may require an additional YATS vehicle.

Cost and Performance Implications: This option will require additional budget. The preliminary operating budget estimate is \$25,000 - \$45,000 depending on the operating model used. Potentially this figure would decrease if considered in tandem with other system schedule and route changes.

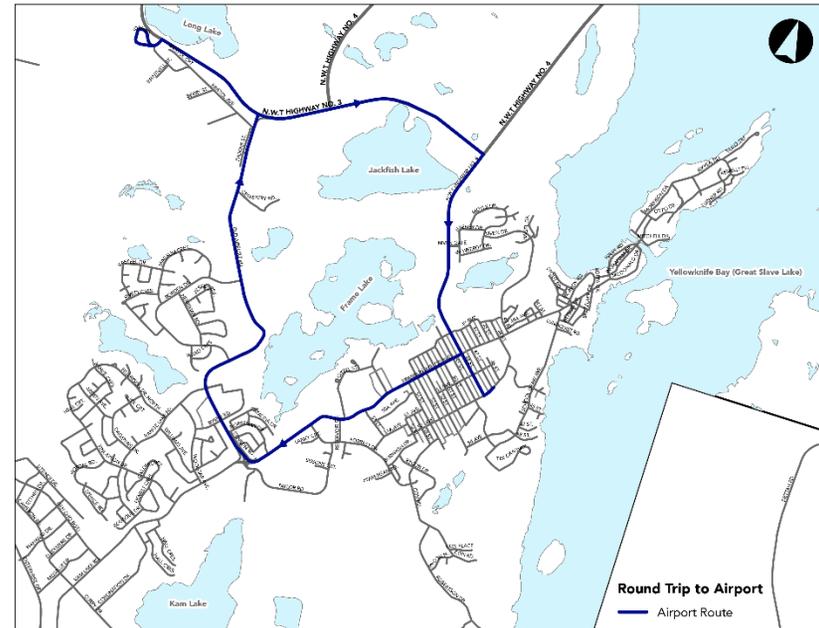
Service Option 7

Service to the Airport

Overview: This option examines opportunities to implement service to Yellowknife's airport to serve commuters working in that area and/or visitors. Currently, transportation services to and from the airport area consist of taxi companies and hotel shuttles.

Yellowknife's airport attracts a significant number of people that work at the airport itself and its surrounding industrial area. The number of businesses within the vicinity are expected to grow. Depending on further information on work shifts, it may be possible to implement a loop route (as shown at right) that would serve both the residential areas of the City as well as the hotels. This route could be operated at specific commuter times by the transit system or through partnership with taxi, ride hailing or shuttle operators.

Apart from commuters, service to the airport would also benefit visitors travelling to the city, particularly since many of those arriving from larger centres are used to having a public transit option between the airport and their destination's core. However, operating airport service can be harder for public transit systems because it either [a] needs to be frequent enough throughout the day (30-minute service or better) so that it doesn't matter if flight schedules change or are delayed, or [b] needs to be scheduled separately.



Key Benefits:

- A potential source of some ridership.
- Potential to offset costs through hotel contribution.

Considerations:

- Routing ultimately depends on focus of market served: via neighbourhood or via hotels. Routing shown balances these; however, could be done completely on-demand
- Contribution towards existing shuttle providers and coordination with them would likely be the most cost-effective way to provide service.

Cost and Performance Implications: This option will require additional budget, with costs depending on the extent of service and the operating model chosen.

6.0 SUPPORTING MEASURES

The following presents complementing policy, fares, customer information, fleet and infrastructure priority measures that support the service options presented.

6.1 Infrastructure Priorities

This section presents the infrastructure investments that could be considered to support the transit system in Yellowknife. Those identified priorities could be implemented through funding opportunities provided by the Federal Government for infrastructure improvements. These priorities could all be considered over the short term, over the next 5 years.

Infrastructure Priority 1

Ensure accessibility for transit vehicles to bus stops and pick-up / drop-off locations

Overview: During winter, Yellowknife experiences snow that hinders the access of transit vehicles to the curb, therefore making some stops inaccessible for a portion of the ridership. Throughout the year, locations along the transit routes have been identified where parked vehicles are causing issues for transit vehicles to maneuver, especially adjacent to bus stops.

Recommendation: The City should prioritize snow removal for transit routes, especially at bus stops.

YATS could benefit from designated parking at: 1) Primary Care (48th Street), 2) Barrier Free Building (53rd Street).

Fixed route transit stops that can be prioritized for snow removal are: 1) Centre Square Mall, 2) Aven Manor, 3) Byrne Rd & Reddi Mart.

Approximate Cost Estimate: This is expected to have minimal impact on the City's snow removal budget.

Infrastructure Priority 2

Increase visibility of transit in downtown through improved passenger waiting facilities

Overview: Through their field work and conversations with transit staff, the project team identified the lack of shelters and/or more visible demarcation of transit in the downtown core as one of the significant challenges for the system. The existing condition makes it harder for new users to identify the locations of main stops in downtown Yellowknife. While building awnings and overhangs in locations such as in front of Centre Square Mall provide some protection from the weather, there is limited to no covered passenger waiting facilities at stops on Franklin Avenue in the direction that majority of users would be using to travel back to neighbourhoods in the Borden and Frame Lake neighbourhoods.

Discussion: While respecting that downtown may have its challenges with infrastructure placement within the existing sidewalk space, the City could consider using available Federal infrastructure funding for enhanced shelters and facilities. Even cantilevered shelters could be helpful in areas with limited right of way.

Approximate Cost Estimate: The cost could range significantly depending on the type of facility and the amenities provided, but typically the cost for a Type 3 or Type 4 bus shelter (Harsh Weather Series) ranges between \$25,000 to \$40,000.



Yellowknife's existing main downtown stop on Franklin Avenue outside the YK Centre (top) and example of a cantilevered shelter design used in narrow sidewalk spaces within the City of Kelowna (bottom).

Other bus stop consolidation and improvements

Overview: The City has been proactive in making ongoing improvements to customer amenities like shelters, benches and accessible landing pads at stops, as well as adjusting the placement of stops. For instance, over the past year bus stop changes have included improved customer amenities at a stop on Franklin Avenue at Old Airport Road to offer better access to the Multiplex, an additional stop on Route C at Sikyea Tili at She La to provide improved passenger access, and movement of a Route B bus stop on Franklin Avenue at 44 Street to 45 Street to improve sight lines.

The City should continue working with the system's operating company staff as well as the Yellowknives Dene First Nation and other stakeholders to identify and implement bus stop changes as required to improve system safety and passenger ease of use. This will be particularly important if the City moves forward with implementing any of the route structure changes outlined here, at which time there may be a need to move, close, or re-sign some stops.

Recommendation: If the City moves forward with route structure changes, part of the implementation process should also include creation of a detailed bus stop plan that indicates which stops may need to move, close, be added or re-signed to support the changes. (As the route structure options have been designed to work using as much of the existing system as possible, it is expected that the number of stops required to change will be minimal).

This work should also assess and prioritize future stop changes that would be helpful for the system. Some of the suggestions that arose from this Review process include:

- Creation of a stop in the vicinity of **48 Street at the access road to the Legislative Assembly and Northern Heritage Centre** as access to this area is a frequent request by visitors. (An inset map of the core area on transit system materials showing how visitors can access these destinations from downtown via the trail network may also be helpful).
- Further improvements such as a shelter and accessible landing pad to the southbound stop at **Old Airport Road at Byrne Road** to serve residents of the western end of Norseman Drive.
- Consideration of an additional stop on **Niven Drive** near the intersection of the Niven Lake Trail access and the trail to the Racquet Club.

Approximate Cost Estimate: Varies depending on the work done.



6.2 Policy Priorities

This section identifies policies to be considered by the City of Yellowknife that will help the operation of transit in the city run more smoothly and efficient. Further analysis might be required for each of those options.

- **Consider Reviewing YATS Policies, Procedures and Guidelines** – The YATS Service Guidelines were created in 2005 and were updated in 2013. A key change since the creation of the Guidelines has been the introduction of low-floor accessible vehicles on the fixed-route system. The system already does a good job of conveying its fare structure across the fixed-route and YATS services in an integrated way. Ideally, this integrated approach should also be carried through to how accessible service options are communicated to users in the City.

This review would include:

- Looking at the current YATS Service Guidelines document to see where updates should be considered to align with best practices and also recognize accessible options available on the fixed route system.
- Likewise, consider updates to the YATS User Guide, Yellowknife Transit Schedule guide and the online Accessible Transit section of the system’s website to reflect these policy updates and the “family of accessible services” available in the City. (i.e. both YATS and the accessible fixed route service).
- Revisions as required to the registration process to ensure it reflects best practice and also includes an opportunity to cross-promote or make prospective YATS users aware of the accessible features of the fixed-route system.

- The process for requesting accessible bus stop and sidewalk improvements from the City and prioritizing those requests.
- The potential process for mobility aid users to be able to “test out” the ramp features and practice boarding and alighting accessible fixed route features.
- The potential process for groups to request a presentation on the suite of accessible transportation services available within the City.
- The potential consideration of a group trip or charter policy to enable individuals and groups to hire a YATS vehicle outside of regular hours of service under a full cost recovery model (subject to driver and vehicle availability).
- **Consider Future Implementation of an In-Person Registration Process for YATS** – To help manage future demand and service effectiveness, coordinated improvements to accessible transit service should also outline a future intake process that focusses on in-person assessment by a third party assessor (usually an occupational or physiotherapist) rather than paper-based forms. This revised process ensures that YATS is available and reserved for those who need it most. It can also include a travel training component for the accessible fixed-route system for those passengers who may be able to use it.

- **Alignment with Planning Documents and Development Process** – Yellowknife’s 2011 General Plan and its outline of Transit Oriented Design Nodes already provides a great starting point with respect to supporting the long-term effectiveness of transit by aligning further development with transit and offering good pedestrian connections through where development is encouraged. Likewise, the policies outlined for the properties that are within the TOD Nodes also conform with best practices.

Some additional policy details that might be helpful to include as part of future updates are the following:

- Cluster higher density developments on or closer to arterial or collector roads (i.e. closer to the edge of the new neighbourhood not deep within it).
- Keep collector and arterial roads within any new development area as straight and direct as possible.
- Design neighbourhoods ideally to have more than one access point, i.e. not create a neighbourhood or key destination at the end of a long road which serves as the single entrance and exit to the neighbourhood.
- As part of ensuring good pedestrian connection, ensure that it is easy to walk from the centre of neighbourhoods to the collector or arterial intersections that are typically the location for transit stops. In addition to sidewalks, this also means including pedestrian cut throughs and multi-use paths to enable access.

In addition to the above, it would also be useful to ensure that the planning and development process explicitly includes transit if it does not already do so. This could include updates to the development application and review process that includes the following:

- **What is the development’s proximity to an existing transit stop?**
- **Will an additional stop or extension of service be required to serve the new development?** If so, are there additional community amenities that should be considered as part of the development application and design (sidewalks and stop pad, shelter, incorporation into building overhang)?
- **Is the development higher density in nature or related to passenger market that typically has higher transit usage?** (i.e. larger residence for seniors or people with a disability, use related to health care, school or youth activity, larger employer). If so, then a specific process should be created and followed to refer the development to the department overseeing transit within the City to determine the longer term transit system implications for the development from an operating and capital cost perspective.

- **Ongoing Performance Monitoring** – The Yellowknife Transit System already receives a substantial amount of actual ridership information on an ongoing basis from its operating company. It also provides an annual summary of transit system performance and financial statistics at the whole system level to the Canadian Urban Transit Association (CUTA) once per year.

Building from these processes already in place and the historical performance tracking spreadsheets that were

developed for this Service Review (and which will be shared with the City), it is recommended that the City update these spreadsheets on an annual basis during the same timing as the CUTA statistics submission. Doing so would enable service to be monitored in a consistent way.

Suggested monitoring metrics for system- and route-level performance are listed below. If possible it would also be useful to repeat the analysis of route performance by time period as shown in the charts in **Section 3.2**.

In Focus: Typical Transit Service Measures

The following describe measures that are typically used to monitor the efficiency and effectiveness of transit at either the system level or in terms of specific routes and or services in the case of YATS. (Source of definitions: CUTA).

Typical System-Level Measures:

- **Operating cost per revenue hour** (efficiency indicator): measures total operating cost of operating service per revenue hour provided.
- **Passenger trips per revenue hour** (effectiveness indicator): measures the total volume of ridership as compared to the supply of transit service.
- **Operating cost per passenger trip** (efficiency indicator): measures the average cost to provide service per passenger trips generated.
- **Operating cost recovery** (efficiency indicator): measure the financial performance of the transit system, usually expressed in terms of total operating revenue/total operating expense.
- **Passenger trips per capita** (effectiveness indicator): measures the ratio between transit trips and the population of the service area to provide a sense of the level of resident use of transit.
- **Service hours per capita** – measures accessibility to transit based on the level of investment and provision of service related to the population.
- **Bus Stop Accessibility** - In addition to the above, it would likely be useful for the City of Yellowknife to also monitor the proportions of its transit stops that [a] are accessible/have an accessible landing pad, [b] have a shelter, and [c] have a connecting sidewalk.

Typical Route or Service-Level Measures:

- **Average boardings per revenue hour** – measures the total volume of ridership as compared to the supply of transit service.
- **Average boardings per trip** – measures the total volume of ridership compared to each trip. In the case where services may be delivered by alternate service providers or where service operates a mix of long, regional trips and short local trips, this metric can provide a useful counterpoint to average boardings per revenue hour.
- **Unmet trips** – specifically for specialized transit and other demand-responsive services, measures each case where a client calls to book a trip and their request cannot be met. This measure is important for measuring demand against available supply in those types of services.

6.3 Fare Priorities



For the most part, the fare structure used in the Yellowknife Transit system aligns with best practices across Canada and has a healthy operating cost recovery. However, there are some additional fare products and fare structure adjustments that could be considered to further improve the cost recovery and transit passenger ease of use of the system.

Based on the transit fare considerations outlined below and best practices from other systems, the City could consider the following changes:

- **Concession Fare** – The discount offered for concession fares (fares for seniors, youth and people with a disability) is lower than what is typically found in other transit systems. Also, many systems are moving towards offering a single cash and ticket fare to improve the simplicity of their fare structure and reserving deeper discounts for bus passes as a way of rewarding regular users. Adjusting the balance between full and concession fares could be considered as part of the next fare change, with the \$3 adult fare moving down and the \$2 concession fare moving up to a unified cash fare of \$2.50.
- **Day Pass** – The introduction of a day pass would be especially beneficial for visitors, as well as others who may have errands to run within a single day. This pass could be in the form of a scratch pass and it could also include a map of Yellowknife with key destinations. The fare for a day pass could be set at \$6.
- **Provide Further Incentives to the Commuters and Regular Users** – Currently Yellowknife Transit provides the option for an unlimited annual pass that is \$750 for adults and \$500 for students, seniors, people with a disability and YATS users. When calculated on a monthly basis, this amount works out to an approximate 17% discount off the cost of the corresponding monthly pass price.

In Focus: Considerations When Setting Transit Fares

Based on established best practices, the following considerations should be taken into account when setting transit fares:

- **The appropriate fare should balance passenger ability to pay and the marketability of the service with cost recovery goals.** Too high and no one will ride; too low and the service may not be financially sustainable. In this regard, fares should also generally align with pricing in other nearby jurisdictions.
- **Fares should be as consistent as possible to be easy to understand and help promote ridership.** One fare applied across a region or several passenger groups will ultimately be easier to understand and attract more riders than a more complex system based on multiple passenger group types.
- **Use as few coins as possible for cash fares to promote physical ease of handling.** For people with arthritis, quarters, loonies and toonies are easier to handle than dimes.
- **Consider a discounted pre-paid fare option such as tickets or passes to reward regular customers and generate up front revenue for the system.** Tickets also provide the ability for organizations to pre-purchase fares for lower income individuals. However, also requires printing, distribution network, and monitoring/reporting processes.

Having an ongoing annual pass is positive. However, for many users the upfront cost of \$750 or \$500 may not be feasible. Other transit systems have looked at other approaches to break down this cost into more manageable pieces. It would be worthwhile for the City to consider exploring whether some of these approaches might work in Yellowknife. Some of the options other systems have used include the following:

- **Setting up an employer-based program** whereby larger employers with a certain number of participating employees (a 5 or 10 person minimum is often set for administrative purposes) can pay for their pass through automatic payroll deduction each pay period.
- **Incorporating payment towards as part of a rental agreement**, whereby residents of participating buildings could add an additional amount to their rent to cover a monthly amount towards the annual pass.
- **Setting up an automated monthly transaction** using a credit card.

The above options work best in systems with electronic fareboxes since they provide a way to confirm whether a pass is paid up and therefore valid when a passenger boards. However, other smaller communities have managed to make this process work—albeit with slightly higher risk of fraud—by using photo ID passes and updating the transit operating company with a list of any “unpaid cards” that should be reclaimed if passengers try to use them.

- **Consider a semester pass program if none of the other longer-term pass payment options are feasible.** Semester passes bundle sets of four monthly passes

together at a discounted rate. Often used for student passes in other systems, this program is particularly popular among students and families as it offers a deeper discount from monthly passes, uses existing printed passes and requires pass purchase just once per four months. Charging an amount of \$250/\$165 per semester pass pack would be in line with fare best practices and the existing \$500/\$750 annual pass costs.

- **Holiday “On the Bus Day Pass”** – Currently Yellowknife offers free transit on both the fixed route and YATS services for one week over the holiday period. (In 2019/20 this period was from December 23, 2019 to January 1, 2020). An alternate approach used by some systems has been to instead offer a holiday day pass available for purchase on the bus by the passenger paying for their return fare when they first board. In other words, if a passenger pays twice the cash fare or uses two tickets, they get pass good for that day. Typically this program is available for a longer period (December 10 to January 1).
- **Family Travel Program** – A family travel program enables any adult or senior travelling with a Day Pass, Monthly Pass or Annual Pass to bring up to four children age 12 and under on board the bus for free. This type of program generally has little negative revenue impact but creates a lot of positive perception within the community, especially when implemented with other fare changes.
- **Further Fare Technology** – As a longer term priority the transit system could consider updating its fare technology to better accommodate electronic fare payment, contactless smart/debit/credit cards and payment by cell phone.

6.4 Customer Information Priorities

- **Clarify Existing Maps and Schedules** – Through the project team’s conversations with customers and transit drivers, as well as by reviewing the Yellowknife Transit Schedule it became clear that there are some features that hinder the legibility of the schedule. The City could consider a number of smaller changes to how existing maps and schedules are portrayed to improve clarity.



Recommended changes for consideration are:

- Include arrows to indicate the direction of the route on the maps.
- Instead of using numbers for some significant bus stops, consider adding timepoint letters that can be shared across the three routes, to reduce the amount of numbers on the map and more easily convey which destinations are served by multiple routes.
- Divide the schedule tables and identify the inbound and outbound direction to make it more intuitive for new users.
- Include information on bus etiquette and key information for new users that is available on the transit website within the transit schedule.
- Add information on system accessibility. For instance, note which trips are guaranteed to use low floor vehicles, provide information on the YATS service within the fixed route schedule and describe how both services work together to serve people with a disability in the community.

- **Create Visitor Information Specific Materials** – Yellowknife has a significant number of visitors that visit the City throughout the year, both in the summer and winter. Visitors are primarily interested in specific destinations (downtown, Old Town) and different information than what the existing Yellowknife Transit schedule provides.

As such, the City could produce a visitor-specific version of the Yellowknife Transit brochure that would be a smaller and more focused item than the existing full transit schedule. For instance, this item could be a double-sided “rack card” that is typically 10.2 cm by 22.9 cm (4 inches by 9 inches) and sized to fit in hotel lobby and visitor information centre brochure racks.

7.0 PATH FOR MOVING FORWARD

Drawing from the many observations and recommendations within this document, there are several priority actions that the City of Yellowknife can take to make transit more effective and also more convenient and comfortable for its users.

It is recommended that the City of Yellowknife approve, in principle, the overall recommendations of the Public Transit Review for further exploration and implementation where feasible. In particular, it is recommended that the City consider selecting one or a combination of the Service Options for Immediate Consideration presented in **Sections 5.1** and **5.2** and approve those to move forward to implementation.

7.1 Typical Implementation Steps

If approved, the next steps in the path to service implementation would typically be as follows:

- **Create an Implementation Team** made up of key staff from the City and the transit operating company to meet on a regular basis and guide the implementation process. This team would typically encompass the staff most closely associated with the transit system at the City and the operating company transit manager. It is also often useful to include where applicable and feasible one to two transit operators (particularly if they also fill safety and training or union leadership roles), the person responsible for providing customer information and the key staff person responsible for bus stop changes.
- **Undertake the Detailed Implementation Plan.** This document provides a high-level outline of the route structure and schedule changes recommended. However, a follow up detailed implementation plan is then usually developed to support the finalization and implementation of service changes. This detailed implementation plan would usually be undertaken by the system's implementation team, with additional outside assistance if required.

A detailed implementation plan would normally include the following activities and components:

1. **Testing and confirmation of all routes** by operating company personnel (including their Safety and Training lead) using a system bus. This step would also confirm running times to be used for the new schedules.
2. **Creation of a bus stop and infrastructure change plan** that outlines for each route which stops need to move, be added or closed, as well as any signage changes.
3. **Creation of a communications and promotion plan** that outlines how the various stages in implementation will be communicated to the public, Council and stakeholders.
4. **Development of draft revised trip schedules**, including development of draft vehicle blocking (which shows which vehicles are operating which trips) and driver shifts.
5. **Development of draft revised route maps** and messaging about the change.

- **Refresh all Supporting Customer Information Materials.** Based on the outcomes of the detailed implementation planning, draft revised individual route schedules and maps would be prepared, as well as a revised system-wide map. As part of this task, it is also useful to take the opportunity to refresh supporting customer information materials to update formats, language and content to make them as user-friendly as possible as outlined in **Section 6.4**.
- **Undertake Final Phase of Pre-Implementation Public Engagement.** For extensive route restructurings and service changes similar in scale to that proposed for Yellowknife, the consultant team has found it helpful to provide draft schedules and materials first to front line transit staff and then to the public for their review and feedback prior to implementation. Often referred to by our team as a service “Sneak Peek”, this process essentially enables the crowd-sourced checking of all routes, trips and connections prior to their implementation. In addition to enabling issues to be addressed at the draft stage where possible, the other key benefit to undertaking this pre-implementation engagement is that it also helps to promote the change and familiarize staff and passengers with how the changes will affect them.
- **Update and Finalize Implementation Plan and Materials.** Based on the “Sneak Peek” engagement outcomes, the implementation plan and schedules would be revised and finalized.
- **Undertake Implementation Activities and Outreach.** This final part of the process undertakes the last of the actual implementation activities, including:
 - Driver shift finalization and sign up.
 - Printing and online uploads of all revised schedule, route and customer information materials.
 - Updates as required to any internal materials (driver route guides, dispatch sheets, etc.)
 - Update and upload to vehicle destination signs.
 - Installation of any revised bus stops and signage.
 - Distribution of revised schedule materials.
 - Advertising on traditional and social media about the change, news releases and on-bus posters.
 - Outreach by transit ambassadors for at least the first week of service at key locations throughout the system. This outreach generally consists of staff or volunteers (identifiable by uniform, t-shirt or safety vest) approaching waiting passengers to see if they need revised schedule materials or assistance. Many systems also provide perks for passengers on these days, such as cookies or promotional give-aways, etc.

As the implementation of the Public Transit Review takes shape over the next few years, there will likely be adjustments made from time to time, which is normal. It is also recognized that transit cannot be perfect to all people. The recommendations presented here have been designed to maximize ridership within existing resources while negatively impacting as few current transit customers as possible. However, some will be impacted. Closely tracking the impact of the transit service changes using available means will be important to further adjust routes and schedules to ensure the system operates as efficiently and effectively as possible.

7.2 Service Change Monitoring

The implementation of restructured transit services in Yellowknife represents a comprehensive change. While the typical implementation process outlined in **Section 7.1** has been developed over many communities and service changes to mitigate any problems that may arise, it is likely that the system will experience some issues immediately following the start of the new service. It is typical that issues would be experienced and most of these should be addressed to the extent possible within the first two weeks after the change.

Once revised transit routes network and schedules have been in place, City and transit staff should closely monitor the service performance and obtain public input using the implementation monitoring process described below. Some of the public input will involve requests for service. Some requests may be minor and may be accommodated while others more complex and could involve additional costs. In either case, these requests and their responses should be documented.

In Focus: Monitoring the Implementation of Restructured Service

The following describes key sources of information and processes that are recommended to be used to monitor the success of the implementation of revised service, as well as take action as needed:

- Creation of a master Issues and Concerns spreadsheet to keep track of all issues arising by route, type (customer information, scheduling, operational, etc.), risk level, proposed solution and any actions taken.
- Feedback heard through on-street ambassadors that will be captured by a “Key Themes and Concerns” check out sheet to be filled in at the end of each outreach shift.
- Customer comments received through the transit phone information line and website.
- Service comment sheets available for completion by transit operators and other front-line staff.
- Existing data sources: system ridership information and farebox revenues.

These materials are used to gauge the success of the service change and determine immediate and longer-term actions necessary to support its success. The actions required are usually determined collaboratively through Implementation Team meetings held at the following intervals:

- One day after the implementation.
- Four days after the implementation.
- Two weeks after the implementation.
- One month after implementation.

8.0 CONCLUSION AND RECOMMENDATIONS

8.1 Conclusions

The City of Yellowknife's transit services are a key part of its community and ongoing success. Through its existing policy direction in terms of transit fares, service levels and coverage, the City has already shown great leadership in creating a transit system that seems to reflect the values of inclusivity, equity and connection.

The Yellowknife transit system already performs in line with its peers, which means it offers a solid foundation of existing ridership. Likewise, the community itself also already presents the conditions that tend to support strong transit performance (relatively compact land use, good potential for commuter, student and visitor ridership, clustering of jobs and schools, policies that support transit and active transportation, etc.)

As outlined in this review, there are many opportunities to build on these foundations to make the service even more efficient, effective and valuable to the community. With very feasible and practical further adjustments, the transit system can continue to evolve and support the City's success for many years to come.

8.2 Recommendations

It is recommended that the City of Yellowknife:

- Receive this report for information;
- Approve in principle this report's overall service and supporting strategy priority recommendations for further exploration and implementation where feasible; and,
- Consider selecting one or a combination of the Service Options for Immediate Consideration presented in **Sections 5.1** and **5.2** and approve those to move forward to implementation.



