Town of Aurora
Committee of the Whole
Meeting Revised Agenda

Date: Tuesday, July 2, 2024
Time: 7 p.m.
Location: Council Chambers, Aurora Town Hall

Meetings are available to the public in person and via live stream on the Town's YouTube channel. To participate, please visit aurora.ca/participation.

Pages

1. Call to Order

   Note: Added items are marked with an asterisk (*).

2. Land Acknowledgement

3. Approval of the Agenda

4. Declarations of Pecuniary Interest and General Nature Thereof

5. Community Presentations

   5.1 Mayor Mrakas; Re: Presentation to the Aurora 2023 Boys U15 OPDL Gary Miller Charity Shield Champions

   5.2 Mandy Cronin, You Can Play; Re: You Can Play Partnership 1

6. Delegations

   *6.1 Trish Lear, Resident; Re: 65 St. John's Sideroad Zoning By-law *3*

7. Consent Agenda

8. Advisory Committee Meeting Minutes

   8.1 Active Transportation and Traffic Safety Advisory Committee Meeting Minutes of May 22, 2024 4

   1. That the Active Transportation and Traffic Safety Advisory Committee Meeting Minutes of May 22, 2024, be received for information.

13.1 OPS24-016 - Windrows Pilot Program Extension – Service Delivery Options

1. That Report No. OPS24-016 be received; and
2. That the continuation of the Windrow Removal Pilot Program for Seniors and Individuals with Disabilities for the 2024/2025 winter season, to be funded from the Tax Rate Stabilization reserve, be approved; and
3. That, if approved, direction be provided to staff on the service delivery models presented.

13.2 OPS24-018 - Sidewalk Winter Maintenance – Service Delivery Review 289

1. That Report No. OPS24-018 be received; and
2. That staff increase the number of sidewalk routes from of eight to ten for the 2024/2025 winter season; and
3. That the length of individual sidewalk routes be reduced and maintained at approximately 25 kilometres to maintain current approved service level standards.

14. Planning and Development Services Committee Agenda

14.1 PDS24-079 - Natural Capital Asset Management Plan 297

(Presentation to be provided by Elaine Change, SLBC Inc.)

1. That Report No. PDS24-079 be received; and
2. That Council adopt and approve the draft Natural Capital Asset Management Plan, including all proposed levels of service therein.

14.2 PDS24-053 - Bike Share Feasibility Study 396

1. That Report No. PDS24-053 be received; and
2. That staff be authorized to issue a Request for Information (RFI) for the Bike Share Program as detailed in this report and report back to Council with the results.

14.3 PDS24-067 - Request for Increased Capital Budget Authority for Capital Project GN0163 – Design of Active Transportation Facilities - Yonge Street: Bloomington Road to Rail Bridge 460

1. That Report No. PDS24-067 be received; and

2. That the total approved budget authority for Capital Project No. GN0163 be increased to $329,200, representing an increase of $129,200; and

3. That $20,000 in previously approved capital budget authority for Project No. GN0056 and its associated funding be transferred to Project No. GN0163; and

4. That the remaining proposed budget authority increase of $109,200 for Project No. GN0163 be funded with $98,300 from Roads & Related development charges and $10,900 from the Growth & New reserve.

14.4 PDS24-078 - Heritage Permit Application HPA-2024-03 – 23 Mark Street 467

1. That Report No. PDS24-078 be received; and

2. That Heritage Permit Application HPA-2024-03 be approved to permit a rear garden suite at 23 Mark Street as shown in Attachment 2 of this report.

14.5 PDS24-080 - Official Plan and Zoning By-law Amendment Applications, Gervais Development (Centre) Corp., 180, 182 Centre Cres, Part of Lot 105, Registered Plan 246, File Number: ZBA-2022-05, Related File Number: OPA-2022-03 and SP-2022-12 477

1. That Report No. PDS24-080 be received; and

2. That Official Plan Amendment application OPA-2022-03 be approved to amend Schedule 'H' of the Town of Aurora Official Plan to identify a new Site Specific Policy for the subject lands. The site specific policy will permit buildings taller than four storey or 15 metres in height are subject to a front yard step back at the second storey and the angular plane provisions as outlined in Appendix "A"; and

3. That Zoning By-law Amendment application ZBA-2022-05 be approved to rezone the subject lands to "Second Density Apartment Residential Exception RA2(XX) Zone" as outlined in Appendix "B"; and

4. That a total of 330 persons worth of servicing allocation be granted to facilitate the proposed development of 193 apartment dwelling units; and

5. That the implementing By-laws for the Official Plan and Zoning By-law Amendment be brought forward to a future Council meeting for enactment.

***14.6 PDS24-041 - Request for Non-Standard Procurement Approval for Capital Project No. AM0332 – Aurora Promenade Streetscape Detailed Design**

1. That Report No. PDS24-041 be received; and
2. That Council approve the award of a Non-Standard Procurement for Capital Project No. AM0332, Detailed Design of the Aurora Promenade Streetscape to CIMA+ in the amount of $578,927.80 excluding taxes.

15. Member Motions

16. Regional Report

17. New Business

18. Public Service Announcements

19. Closed Session

20. Adjournment

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Delegation Request

This request and any written submissions or background information for consideration by either Council or Committees of Council is being submitted to Legislative Services.

Council or Committee (Choose One) *

Committee of the Whole

Council or Committee Meeting Date *

2024-5-28

Subject *

You Can Play Partnership

Full Name of Spokesperson and Name of Group or Person(s) being Represented (if applicable) *

Mandy Cronin, You Can Play

Brief Summary of Issue or Purpose of Delegation *

Details surrounding the MOU signed with You Can Play and the Town of Aurora.

Have you been in contact with a Town staff or Council member regarding your matter of interest? *

- (•) Yes
- ( ) No

Full name of the Town staff or Council member with whom you spoke

Hailey Jones

Date you spoke with Town staff or a Council member

2024-5-13

I acknowledge that the Procedure By-law permits five (5) minutes for Delegations. *

- [x] Agree


YOU
CAN
PLAY

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aurora.ca

Delegation Request

This request and any written submissions or background information for consideration by either Council or Committees of Council is being submitted to Legislative Services.

Council or Committee (Choose One) *

Committee of the Whole

Council or Committee Meeting Date *

2024-7-2

Subject *

65 St.Johns Sideroad Zoning By-Law

Full Name of Spokesperson and Name of Group or Person(s) being Represented (if applicable) *

Trish Lear

Brief Summary of Issue or Purpose of Delegation *

Following the agreement of the Town to a second CMC at OLT and the undisclosed direction to staff following a controversial closed door session, I am requesting action to uphold the zoning bylaw for 65 St John's Sideroad. I would like to ensure council is aware of public sentiment supporting the upholding of the bylaw.

Have you been in contact with a Town staff or Council member regarding your matter of interest? *

- (•) Yes
- ( ) No

Full name of the Town staff or Council member with whom you spoke

Wendy Gartner

Date you spoke with Town staff or a Council member

2024-7-1

I acknowledge that the Procedure By-law permits five (5) minutes for Delegations. *

- [x] Agree

Town of Aurora
Active Transportation and Traffic Safety Advisory Committee
Meeting Minutes

Date:	**Wednesday, May 22, 2024**
Time:	**7:00 p.m.**
Location:	**Holland Room, Aurora Town Hall**
Committee Members:	Steve Fleck Owen Heritage (Vice Chair) Lil Kim Gino Martino Klaus Wehrenberg
Members Absent:	Giovanni Turla
Other Attendees:	Michael Bat, Traffic and Transportation Analyst Michael de Rond, Town Clerk Emily Freitas, Council/Committee Coordinator

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1. Call to Order

The Chair called the meeting to order at 7:00 p.m.

2. Land Acknowledgement

The Committee acknowledged that the meeting took place on Anishinaabe lands, the traditional and treaty territory of the Chippewas of Georgina Island, recognizing the many other Nations whose presence here continues to this day, the special relationship the Chippewas have with the lands and waters of this territory, and that Aurora has shared responsibility for the stewardship of these lands and waters. It was noted that Aurora is part of the treaty lands of the Mississaugas and Chippewas, recognized through Treaty #13 and the Williams Treaties of 1923.

3. Approval of the Agenda

Moved by Gino Martino
Seconded by Steve Fleck

That the agenda as circulated by Legislative Services be approved.

Carried

4. Declarations of Pecuniary Interest and General Nature Thereof

There were no declarations of pecuniary interest under the *Municipal Conflict of Interest Act, R.S.O. 1990, c. M.50*.

5. Receipt of the Minutes

5.1 Active Transportation and Traffic Safety Advisory Committee Meeting Minutes of March 27, 2024

Moved by Steve Fleck
Seconded by Gino Martino

1. That the Active Transportation and Traffic Safety Advisory Committee Meeting Minutes of March 27, 2024, be received for information.

Carried

6. Delegations

None.

7. Matters for Consideration

7.1 Memorandum from Traffic and Transportation Analyst; Re: Bike Share Feasibility Study

Staff provided a brief presentation on the Bike Share Feasibility Study, discussing the implementation plan consisting of three phases, possible partnerships with private bike share providers, and locations for bike share stations.

The Committee and staff discussed various aspects of the report and suggestions were made regarding consideration for: the costs of implementing a bike share program and funding availability, selecting a private operator, location recommendations near main roads and schools, focusing on the infrastructure such as concrete pads for private operators to station their bikes, stationing both bikes and eBikes, the possibility of joining with neighbouring municipalities, and the operation of the bikes including speed limits.

The Committee further discussed how the Town should accommodate non-motorized vehicles, the possibility of accidents and liability, and the option of establishing bike share stations seasonally due to weather conditions.

Staff noted that the next phase of the report is focused on implementing the bike share program, and feedback is needed from residents during phase one before the next phases can begin. They further noted that locations are high level and have been strategically selected for phase one, and Staff intends to select a private operator and consult with them to select the type of bike and appropriate operation times. Staff also clarified that the bike share program will be operated in the municipality as York Region is not implementing a region-wide program, and the Town will oversee infrastructure costs.

Moved by Klaus Wehrenberg
Seconded by Steve Fleck

1. That the memorandum regarding Bike Share Feasibility Study be received; and
2. That the Active Transportation and Traffic Safety Advisory Committee comments regarding Bike Share Feasibility Study be received and referred to staff for consideration and further action as appropriate.

Carried

8. Informational Items

None.

9. New Business

The Committee discussed the idea of creating incentives to encourage residents to cycle more during the summer season, and installing more infrastructure such as bike racks outside of businesses.

The Committee requested an update from Staff on implementing yield signs and when the Committee can expect to view a future report on the subject matter that was initiated by the committee members. It was communicated that the report is expected to be presented in September.

10. Adjournment

Moved by Steve Fleck
Seconded by Gino Martino

That the meeting be adjourned at 8:11 p.m.

Carried

Town of Aurora
Heritage Advisory Committee
Meeting Minutes

Date: Monday, June 10, 2024
Time: 7 p.m.
Location: Holland Room, Aurora Town Hall

Committee Members: Bob McRoberts, Honourary Member (Vice Chair)
Cynthia Bettio
David Heard
John Green, Aurora Historical Society Representative
Rocco Morsillo

Members Absent: Kevin Hughes

Other Attendees: Adam Robb, Manager, Policy Planning and Heritage
Linda Bottos, Council/Committee Coordinator

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1. Call to Order

The Council/Committee Coordinator called the meeting to order at 7 p.m.

Vice Chair Bob McRoberts assumed the chair at 7:03 p.m.

1.1 Appointment of Committee Vice Chair

Moved by Cynthia Bettio
Seconded by Rocco Morsillo

1. That Bob McRoberts be elected as Vice Chair of the Heritage Advisory Committee for the remainder of the two-year term (2023-2024).

Carried

2. Land Acknowledgement

The Committee acknowledged that the meeting took place on Anishinaabe lands, the traditional and treaty territory of the Chippewas of Georgina Island,

recognizing the many other Nations whose presence here continues to this day, the special relationship the Chippewas have with the lands and waters of this territory, and that Aurora has shared responsibility for the stewardship of these lands and waters. It was noted that Aurora is part of the treaty lands of the Mississaugas and Chippewas, recognized through Treaty #13 and the Williams Treaties of 1923.

3. Approval of the Agenda

Moved by Cynthia Bettio
Seconded by John Green

That the revised agenda as circulated by Legislative Services be approved.

Carried

4. Declarations of Pecuniary Interest and General Nature Thereof

There were no declarations of pecuniary interest under the *Municipal Conflict of Interest Act, R.S.O. 1990, c. M.50*.

5. Receipt of the Minutes

5.1 Heritage Advisory Committee Meeting Minutes of April 8, 2024

Moved by John Green
Seconded by Cynthia Bettio

1. That the Heritage Advisory Committee Meeting Minutes of April 8, 2024, be received for information.

Carried

6. Delegations

6.1 Christopher Watts, The Aurora Heritage Authority; Re: Doors Open Event

Item 6.1 was considered following consideration of item 7.1.

Christopher Watts provided a presentation in support of reinstating Aurora's participation in the annual Doors Open Ontario program, noting the last in-person Doors Open Aurora event was held in 2019, and made

recommendations including to re-establish a sub-committee working group, collaborate with other departments, improve marketing, and measure successes toward building meaningful experiences.

The Committee expressed support for the initiative and promotion of heritage tourism in Aurora, provided background, and discussed options. Staff advised that a report would be submitted for Council consideration in the fall for approval of a Doors Open Aurora event in 2025.

Moved by David Heard
Seconded by John Green

1. That the comments of the delegation be received; and
2. That the Heritage Advisory Committee comments regarding the delegation and presentation be received and referred to staff for consideration and further action as appropriate.

Carried

7. Matters for Consideration

7.1 Memorandum from Manager, Policy Planning and Heritage; Re: Heritage Permit Application HPA-2024-03 - 23 Mark Street

Staff provided an overview of the memorandum and proposal to add a rear garden suite to the property, noting there is no proposed work to be done to the primary heritage structure and no tree removal.

The Committee expressed no opposition to the proposal and discussed various aspects with staff including: access and purpose of the garden suite; exterior material; setting a precedent in the heritage conservation district (HCD); neighbourhood consultation; Bill 23, The More Homes Built Faster Act, intensification, and enforcement of zoning by-laws in the HCD; lot coverage; fire services access; registration; and infrastructure capacity.

Moved by Rocco Morsillo
Seconded by John Green

1. That the memorandum regarding Heritage Permit Application HPA-2024-03 - 23 Mark Street be received; and

2. That the Heritage Advisory Committee comments regarding Heritage Permit Application HPA-2024-03 - 23 Mark Street be received and referred to staff for consideration and further action as appropriate.

Carried

7.2 Memorandum from Manager, Policy Planning and Heritage; Re: Establishment of a Heritage Grant Program

Staff provided an overview of the memorandum and development status of the Heritage Grant Program.

The Committee expressed support for the program and discussed various options with staff including: prioritization of building façade restoration/ improvements; calculation method of eligible grant amounts; prioritization of different property classes; categorization of types of restoration; long-term planning and annual budgets; opportunities to reach out to local businesses/suppliers to provide discounts to designated heritage property owners; determination of eligibility and heritage conservation agreement; outreach to owners to consider designation; potential to include historic buildings damaged by graffiti to ease the owner burden; potential emergency fund for non-heritage permit types of work; and suggestion to start the program with limited eligibility criteria and allow more in the following years.

Moved by David Heard
Seconded by Cynthia Bettio

1. That the memorandum regarding Establishment of a Heritage Grant Program be received; and
2. That the Heritage Advisory Committee comments regarding Establishment of a Heritage Grant Program be received and referred to staff for consideration and further action as appropriate.

Carried

8. Informational Items

None.

9. New Business

The Committee and staff discussed options to hold a Committee-run event in 2024, such as a walking tour, in the absence of participation in Doors Open Ontario. Concerns were expressed regarding other external groups potentially offering, possibly duplicating, Committee heritage events and programming. Staff noted the benefit of the Doors Open Ontario structure and the formal registration of Doors Open Aurora and its events including the walking tour.

The Committee requested to meet with staff and review potential heritage properties to be included on a list for the interactive mapping and research pilot project in partnership with local schools. Staff agreed to provide information as required.

The Committee referred to the June 4, 2024 staff report and delegation by former mayor Geoffrey Dawe regarding the future of the Hillary House and suggested that public consultations and discussions should include the historical information and challenges of both the Hillary House and the Aurora Museum. Staff noted the Heritage Advisory Committee will be included in the consultation process.

The Committee commented on the slow progress of the Aurora Pet Cemetery restoration and suggested that increased attention and funding should be applied to facilitate its progress. The Committee recommended that a portion of the Heritage Fund could be directed to both the Pet Cemetery, a designated heritage site, and the Hillary House, a national historic site, to address their safety and security.

10. Adjournment

Moved by Cynthia Bettio
Seconded by John Green

That the meeting be adjourned at 9:05 p.m.

Carried

Town of Aurora
Finance Advisory Committee
Meeting Minutes

Date: Tuesday, June 11, 2024
Time: 5:45 p.m.
Location: Holland Room, Aurora Town Hall

Committee Members: Mayor Tom Mrakas (Chair)
Councillor Michael Thompson
Councillor Ron Weese

Other Attendees: Rachel Wainwright-van Kessel, Director, Finance
Jason Gaertner, Manager, Financial Management
Emily Freitas, Council/Committee Coordinator

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1. Call to Order

The Chair called the meeting to order at 5:45 p.m.

2. Land Acknowledgement

The Committee acknowledged that the meeting took place on Anishinaabe lands, the traditional and treaty territory of the Chippewas of Georgina Island, recognizing the many other Nations whose presence here continues to this day, the special relationship the Chippewas have with the lands and waters of this territory, and that Aurora has shared responsibility for the stewardship of these lands and waters. It was noted that Aurora is part of the treaty lands of the Mississaugas and Chippewas, recognized through Treaty #13 and the Williams Treaties of 1923.

3. Approval of the Agenda

Moved by Councillor Thompson
Seconded by Ron Weese

That the agenda as circulated by Legislative Services be approved.

Carried

4. Declarations of Pecuniary Interest and General Nature Thereof

There were no declarations of pecuniary interest under the *Municipal Conflict of Interest Act, R.S.O. 1990, c. M.50*.

5. Receipt of the Minutes

5.1 Finance Advisory Committee Meeting Minutes of May 14, 2024

Moved by Councillor Thompson
Seconded by Ron Weese

1. That the Finance Advisory Committee Meeting Minutes of May 14, 2024, be received for information.

Carried

6. Delegations

None.

7. Matters for Consideration

7.1 Memorandum from Financial Management Advisor; Re: Budget Review Aurora Public Library

Bruce Gorman, CEO, and Julia Rocca, Finance Manager, from Aurora Public Library, provided a brief overview and answered questions regarding Aurora Public Library's budget review and 2022 audited financial statements. Further details were provided regarding the cost-effective strategies used, including its capital plan and reserves that will ensure the growth of the facility, current financial position and key operational pressure drivers including inflation, staff salary and benefits, and future programming at Aurora Town Square.

The Committee and Staff discussed the revenue differences between the library's audited financial statements due to accrual-based accounting and variances in the budget over the years such as expenditures for digital collections, potential budgetary pressures and impacts due to Town Square.

Moved by Councillor Thompson
Seconded by Ron Weese

1. That the memorandum regarding the Budget Review of the Aurora Public Library be received; and
2. That the Finance Advisory Committee comments regarding the Budget Review of the Aurora Public Library be received and referred to staff for consideration and further action as appropriate.

Carried

7.2 Memorandum from Financial Management Advisor; Re: Community Partner Reserve Fund Policy

Staff presented an update on the Community Partner Reserve Fund Policy, highlighting the policy's proposed reserve regulations and guidelines for reserve balances to ensure financial stability and to offer guidance in the management of any excess reserve balances.

The Committee expressed support for the draft policy and further discussed about various aspects such as the criteria for an acceptable reserve and the requirements for boards to improve the creation of reserves. There was further discussion regarding the calculation of the total value of operating reserves, possibility of growing operating expenses, analysis of expenditures by auditors, timelines of notifying the organizations prior to the implementation of the policy, and the adjustment of Community Partner reserves. Staff confirmed that the Town's applicable Community Partners will be consulted on the proposed policy prior to its presentation to Council for consideration in the fall.

Moved by Councillor Thompson
Seconded by Ron Weese

1. That the memorandum regarding Community Partners Reserves Management Policy be received; and
2. That the Finance Advisory Committee comments regarding Community Partners Reserve Management Policy be received and referred to staff for consideration and further action as appropriate.

Carried

8. New Business

None.

9. Adjournment

Moved by Ron Weese
Seconded by Councillor Thompson

That the meeting be adjourned at 6:25 p.m.

Carried

Town of Aurora
Environmental Advisory Committee
Meeting Minutes

Date:	**Monday, June 17, 2024**
Time:	**7:00 p.m.**
Location:	**Holland Room, Aurora Town Hall**
Committee Members:	Councillor Rachel Gilliland (Chair) Councillor Wendy Gaertner (Vice Chair) (arrived at 7:30 p.m.) Shun Chen Nicole Arsenault Denis Heng Kristen Martens Ken Turriff
Members Absent:	Pippette Eibel Alain Godin
Other Attendees:	Natalie Kehle, Analyst, Energy and Climate Change Matt Volpintesta, Manager, Parks and Fleet Emily Freitas, Council/Committee Coordinator

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1. Call to Order

The Chair called the meeting to order at 7:07 p.m.

2. Land Acknowledgement

The Committee acknowledged that the meeting took place on Anishinaabe lands, the traditional and treaty territory of the Chippewas of Georgina Island, recognizing the many other Nations whose presence here continues to this day, the special relationship the Chippewas have with the lands and waters of this territory, and that Aurora has shared responsibility for the stewardship of these lands and waters. It was noted that Aurora is part of the treaty lands of the

Mississaugas and Chippewas, recognized through Treaty #13 and the Williams Treaties of 1923.

3. Approval of the Agenda

Moved by Kristen Martens
Seconded by Ken Turriff

That the agenda as circulated by Legislative Services be approved.

Carried

4. Declarations of Pecuniary Interest and General Nature Thereof

There were no declarations of pecuniary interest under the *Municipal Conflict of Interest Act, R.S.O. 1990, c. M.50*.

5. Receipt of the Minutes

5.1 Environmental Advisory Committee Meeting Minutes of May 13, 2024

Moved by Ken Turriff
Seconded by Nicole Arsenault

1. That the Environmental Advisory Committee Meeting Minutes of May 13, 2024, be received for information.

Carried

6. Delegations

None.

7. Matters for Consideration

7.1 Memorandum from Energy and Climate Change Analyst; Re: Natural Capital Asset Management Plan Draft Presentation

Elaine Chang, SLBC Inc., and Amy Taylor, Green Analytics, provided a descriptive presentation of the Natural Capital Asset Management Plan,

which included; defining an asset management plan regarding its priorities, tactical planning, and work delivery, natural area assets and natural enhanced assets including inventory, state of infrastructure and the condition of natural assets, and the levels of service, and detailed the asset management strategy, highlighting the risk ratings and risk management including environmental, climate, and human-induced hazards. They further presented three asset management strategies involving status quo activities and costs with scenario B being identified as the recommended strategy due to costs and funding.

The Committee and Staff discussed various matters including; the preference of scenario B in terms of levels of service and mitigating risks, establishing a target once a scenario has been selected by the Town, how carbon sequestration can be included in the natural capital asset management plan, how the plan's recommendations compare to other surrounding municipalities which Staff explained that the plan includes an advanced assessment, the requirement for municipalities to report their current levels of service, identifying natural assets and managing the risks in the plan's framework, types of vulnerabilities and threats such as phragmites, and meeting green development standards established by the Town.

Moved by Ken Turriff
Seconded by Nicole Arsenault

1. That the memorandum regarding Presentation of the Draft Natural Capital Asset Management Plan be received; and
2. That the Environmental Advisory Committee comments regarding Presentation of the Draft Natural Capital Asset Management Plan be received and referred to staff for consideration and further action as appropriate.

Carried

8. Informational Items

None.

9. New Business

Staff provided an update on the Dog Waste Pilot Project and the goal to install 6 dog waste bins throughout the Town beginning July 2024.

10. Adjournment

Moved by Kristen Martens
Seconded by Nicole Arsenault

That the meeting be adjourned at 8:36 p.m.

Carried

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Town of Aurora

Committee of the Whole Report

No. CMS24-022

Subject:	**Community Reflection Space Location**
Prepared by:	**Michelle Johnson, Collections and Exhibitions Coordinator**
Department:	Community Services
Date:	July 2, 2024

Recommendation

1. **That Report No. CMS24-022 be received; and**
2. **That Town Hall be approved as the location for the Community Reflection Space; and**
3. **That staff report back to Council with a proposed design, timeline, and budget implications.**

Executive Summary

The mandate of the Community Reflection Space will be to provide a consistent location for the community to come together in times of sorrow, with a unified purpose of paying respects to those affected by tragic events. Following Council direction, staff began public consultation in January 2024, the results of which are being shared in this report.

- Staff completed consultation with Council advisory committees, members of the public, and community organizations.
- Consultation did not result in a definitive consensus regarding the preferred location.
- Because community parks serve multiple functions they present a challenging environment for a Community Reflection Space.
- Residents have raised concerns about re-defining the purpose of an area within an existing community park.

- Although a preferred location was inconsistent across groups, there remains support for the creation of the Community Reflection Space.
- Considering all feedback, staff recommend Town Hall as the most viable option out of the four locations explored.
- As the municipal headquarters, Town Hall presents unique challenges and opportunities that will be considered during the design phase.

Background

The concept of a Community Reflection Space was first discussed on January 16, 2023, by the Town's Indigenous Relations Committee. Initially, it was in relation to matters related to Truth and Reconciliation, but following feedback from the Committee, the scope was expanded to include reflection for all tragic situations regardless of their location and cause.

As a result of inter-department consultation, staff identified the eastern parkette within the Queen's Diamond Jubilee Park as an ideal location for a Community Reflection Space. On November 21, 2023, a report was submitted to Council, which contained the following recommendations:

1. That Report No. CMS23-050 be received; and
2. That Council approve proceeding with the design of a Community Reflection Space; and
3. That Council approve the eastern portion of the Queen's Diamond Jubilee Park as the preferred site for the Community Reflection Space.

The first two recommendations passed, and the third did not. Council requested that staff engage in public consultation prior to an area being selected.

Prior to beginning consultation, staff identified four areas to be considered as locations for the Community Reflection Space, including Lambert Willson Park, Queen's Diamond Jubilee Park, Town Hall, and Town Park (see Attachments 1-4). Within Lambert Willson Park (Attachment 1) and Town Park (Attachment 4) there were two areas that were identified as possible locations.

Queen's Diamond Jubilee Park, Town Hall and Town Park were previously selected and discussed by the Indigenous Relations Committee, while Lambert Willson Park was a new addition for the purposes of this consultation.

Analysis

Staff completed consultation with Council advisory committees, members of the public, and community organizations.

Consultation began in January 2024 and included the Accessibility Advisory Committee, Parks and Recreation Advisory Committee, York Regional Police, Oasis Bereavement, and members of the public.

A memorandum was issued to the Accessibility Advisory Committee and the Parks and Recreation Advisory Committee concerning the location of a Community Reflection Space. Staff attended the committee meetings to provide an overview of the memorandum and a visual review of the four proposed locations for the Committee's consideration.

Members of the public were asked for feedback during a public consultation campaign that ran from March 4 to April 8, 2024. This consultation utilized Engage Aurora, Town newsletters, social media, digital ads, and in person engagement at Hello Spring. A combined 172 people provided feedback during the public consultation campaign.

Staff met with representatives from Oasis Bereavement and the York Region Police to provide an overview of the project and review possible locations. Oasis Bereavement provided unique subject matter expertise regarding grief and gathering. Consultation with York Region Police was focused on gaining insight about creating an inclusive and equitable space that honoured complex sentiments while prioritizing peaceful gatherings.

Consultation did not result in a definitive consensus regarding the preferred location of a Community Reflection Space.

The following tables provide a summary of location preferences gathered from committees, community groups, and members of the public.

Table 1
Advisory Committee and Community Group Consultation Results

	Lambert Willson Park	Queen's Diamond Jubilee Park	Town Hall	Town Park
Accessibility Advisory Committee		X	X	
Parks and Recreation Advisory Committee		X		
Oasis Bereavement		X		
York Regional Police			X	
Total	**0**	**3**	**2**	**0**

Table 2
Public Consultation Results

	Lambert Willson Park	Queen's Diamond Jubilee Park	Town Hall	Town Park
Engage Aurora	13	12	5	10
Social Media Poll	10	17	14	33
Hello Spring – Outreach	14	20	14	10
Total	**37 (3rd)**	**49 (2nd)**	**33 (4th)**	**53 (1st)**

As identified in Table 1, each committee and community group expressed a distinct preference for Queen's Diamond Jubilee Park, or Town Hall. Table 2 demonstrates how most of the public voted in favour of having the Community Reflection Space located in Town Park, followed by Queen's Diamond Jubilee Park, Lambert Willson Park, and Town Hall.

During the consultation, participants had the opportunity to express their opinions about the proposed locations. From this process, several consistent insights emerged across groups, which are outlined in the sections that follow.

Because community parks serve multiple functions they present a challenging environment for a Community Reflection Space.

A designated Community Reflection Space acknowledges the complexity of emotions evoked during tragic circumstances. These sentiments are not consistent with those expressed during casual recreation activities, sport competitions, special events or celebratory gatherings. During consultation, staff heard that the juxtaposition of uses would not be conducive to the goals of the Community Reflection Space.

This concern is especially relevant for Town Park, where the density of existing amenities makes it challenging to re-define an area. Staff also heard this concern when discussing Lambert Willson Park, which has an active trail system, a playground, multiple types of sport fields, and regularly hosts baseball tournaments.

To a much lesser extent, this concern was shared when discussing Queen's Diamond Jubilee Park, which contains a playground, soccer field, and landscaped pathway. The layout and design of Queen's Diamond Jubilee Park tempered this concern as the recreation-based features are largely located at the west side, and the area being considered is at the far east side.

Residents have raised concerns about re-defining the purpose of an area within an existing community park to create a Community Reflection Space.

During consultation, staff heard from community members who expressed some hesitancy about having the Community Reflection Space located near their residence. Of the four locations identified, three are community parks that already have a history and pattern of use. Resident feedback consistently highlighted several common themes, including:

- An existing park should not have its functional purpose altered.
- Concern about the nature of gatherings.

- Altering existing amenities that presently have no concerns.
- Some residents selected other locations simply because they were not in their neighbourhood.

Town Hall is the only location out of the four that is not a community park and would not greatly alter the functionality of the existing area.

Although a preferred location was inconsistent across groups, there remains support for the creation of the Community Reflection Space.

During consultation, staff heard that the creation of a Community Reflection Space was a step in the right direction. The Accessibility Advisory Committee, Parks and Recreation Advisory Committee, and many residents were supportive of the creation of such a space.

Creating space in public areas for expressions of shared grief is important for social wellbeing, as summarized by Inspector Kolin Alexander from York Regional Police:

> “The creation of a reflection space provides a chance to express support for those directly affected by these situations. Through action, the Town can demonstrate intentional acts towards showing compassion to its citizens”.

The importance of gathering as a community in times of grief was also expressed by Michelle Nye, Chair, Oasis: A Centre for Bereavement and Healing. Ms. Nye spoke mindfully about the grief process and how important it is to make space for expressing these sentiments:

"A community reflection space is a valuable place for those who are grieving. Grief affects every member of our community at one time or another and everyone processes loss differently. This space can be a comfort to the bereaved, however they choose to grieve, and a catalyst for opening up the much needed conversation to normalize grief as a healthy human process."

Considering all feedback, staff recommend Town Hall as the most viable option out of the four locations explored.

During consultation, staff learned that selecting a location that is publicly connected and provides a level of privacy best supports the mandate of the Community Reflection Space. The area being considered at Town Hall (Attachment 3) provides close parking, nearby staff oversight, and a secluded space within a larger connected area. Town Hall is less impacted by the recreation-based activities that frequently occur at the other

locations, and the area identified does not have a pattern of use that is misaligned with the function of a Community Reflection Space.

As the municipal headquarters, Town Hall presents unique challenges and opportunities that will be considered during the design phase.

During conversation with Oasis, the importance of de-politicizing grief was shared. Ms. Nye cautioned about the confluence of shared grief and political protest. Ms. Nye shared concerns gatherings could be affected by political motivations in a space that is meant for shared grief. Concerns of this nature were also expressed by a member of the Parks and Recreation Advisory Committee.

In contrast, during consultations with the York Regional Police, staff heard that Town Hall should be selected specifically because it is the municipal headquarters. Inspector Alexander believed that this location would show that the mandate of the Community Reflection Space is aligned with the values of the municipality. Members of the Accessibility Advisory Committee also shared this opinion. On the topic of protest, Inspector Alexander didn't believe that Town Hall would necessarily be an attractor or detractor of any protest and mentioned that in today's rapidly changing world, protests can happen anywhere.

To best convey the purpose of the space, Inspector Alexander recommended incorporating words of Peace in the naming to help set the tone for the functionality of the space. Ms. Nye recommended including cross-cultural references to grief and loss to help create a more welcoming and inclusive space.

These important insights will be taken into consideration during the design phase of this project.

Advisory Committee Review

During the consultation phase, staff met with the Accessibility Advisory Committee and the Parks and Recreation Advisory Committee. Their feedback has been incorporated into this report. As the project progresses into the design phase, staff will continue to engage with the appropriate committees.

Legal Considerations

None.

Financial Implications

The Town adopted $25,000 in budget authority for Project No. AM0337 – Town Hall – Community Reflections Space as part of its 2024 Budget. The sufficiency of this existing budget authority will be determined as part of staff's report back to Council which will include a proposed design, timeline, and budget implications.

Communications Considerations

As mentioned, Communications assisted with engaging members of the public during a public consultation campaign that ran from March 4 to April 8, 2024 utilizing the Engage Aurora platform and surveys. A combined 172 people provided feedback during the public consultation campaign. Communications will inform members of the public regarding the final location chosen.

Climate Change Considerations

The recommendations from this report do not immediately impact greenhouse gas emissions or impact climate change adaptation; however, if approved, when the project progresses to detailed design, green infrastructure and green procurement will be considered to minimize the impacts of a changing climate.

Link to Strategic Plan

The Community Reflection Space supports the following Strategic Plan goals and key objectives:

Supporting an exceptional quality of life for all in its accomplishment in satisfying requirements in the following key objectives within these goal statements:

- Celebrating and promoting our culture
- Strengthening the fabric of our community
- Encouraging an active and healthy lifestyle

Alternative(s) to the Recommendation

1. That Council provide further direction.

Conclusions

Staff recommend that Town Hall be selected as the location for the Community Reflection Space. This recommendation is informed by a community consultation campaign that took place from January to April 2024. Although consultation did not produce a definitive consensus concerning the ideal location, it did provide several shared insights across groups, many of which centered on whether not an established community park was the appropriate location. This led staff to recommend Town Hall as the location for the Community Reflection Space, while recognizing that as a municipal headquarters it presents its own set of unique challenges and opportunities.

Attachments

Maps of potential sites:

Attachment 1 - Lambert Willson Park

Attachment 2 - Queen’s Diamond Jubilee Park

Attachment 3 - Town Park

Attachment 4 - Town Hall

Previous Reports

CMS23-050, Outdoor Community Reflection Space, November 21, 2023

Pre-submission Review

Agenda Management Team review on June 12, 2024

Approvals

Approved by Robin McDougall, Director, Community Services

Approved by Doug Nadorozny, Chief Administrative Officer

Lambert Wilson Park / the Arboretum :
Proposed Reflection Space &
Pathways Requiring Additional Service

Path Distance (41 Metres)
Pathways Requiring Additional Service
Aurora Community Arboretum Boundary
Lambert Willson Park Boundary
Proposed Reflection Space (Option#1)

AURORA
You're in Good Company

Map created for the Town of Aurora Community Services Department, 2023-12-14. Base data provided by York Region & the Town of Aurora. Air Photos taken Spring 2023, © First Base Solutions Inc., 2023 Orthophotography.

Document Path: J:\data\data\Other Various Projects\Maps for Customer and Legislative Services\Reflection Space Maps for Michelle J\Reflection Space Maps.aprx

Queen's Diamond Jubilee Park: Proposed Reflection Space & Pathways Requiring Additional Service

Path Distance (110 Metres)

Pathways Requiring Additional Service

Proposed Reflection Space

N

0 10 20

Metres

AURORA

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Document Path: J:\data\data\Other Various Projects\Maps for Customer and Legislative Services\QueensDiamondJubileePark\QueensDiamondJubileePark.aprx

Aurora Town Park:
Proposed Reflection Space &
Pathways Requiring Additional Service

Path Distance (25 Metres)
Path Distance (97 Metres)
Pathways Requiring Additional Service
Proposed Reflection Space (Option#1)
Proposed Reflection Space (Option #2)

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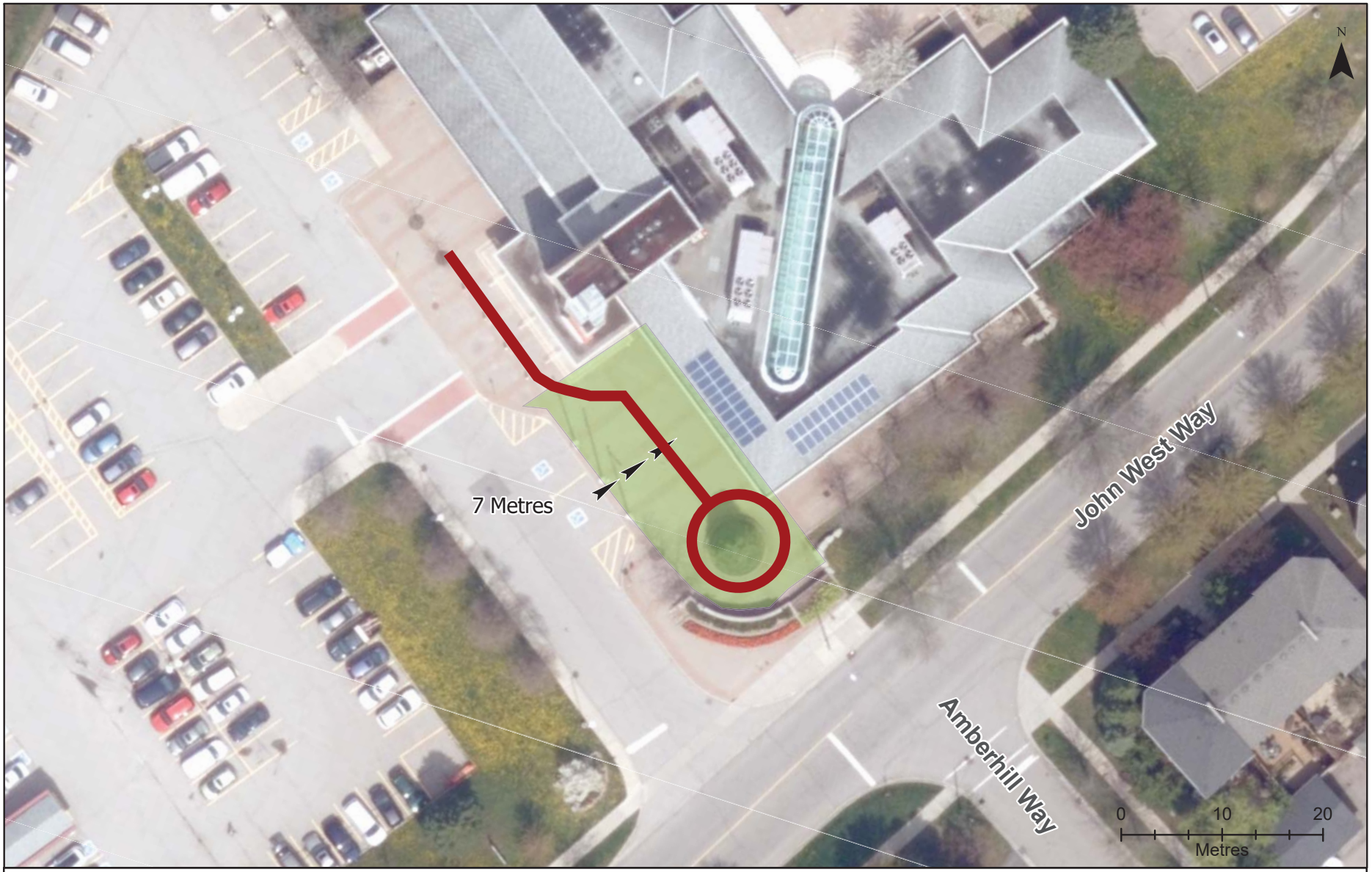
Document Path: J:\data\data\Other Various Projects\Maps for Customer and Legislative Services\Reflection Space Maps for Michelle J\Reflection Space Maps.aprx



Aurora Town Hall:
Proposed Reflection Space &
Pathways Requiring Additional Service

Path Distance (7 Metres)

Pathways Requiring Additional Service

Proposed Reflection Space (Option#1)

AURORA
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Document Path: J:\data\data\Other Various Projects\Maps for Customer and Legislative Services\Reflection Space Maps for Michelle J\Reflection Space Maps.aprx

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Town of Aurora

Committee of the Whole Report

No. FIN24-034

Subject:	**Updated Corporate Asset Management Plan**
Prepared by:	**Jason Gaertner, Manager, Financial Management**
Department:	Finance
Date:	July 2, 2024

Recommendation

1. **That Report No. FIN24-034 be received; and**
2. **That the updated Corporate Asset Management plan for the Town of Aurora be approved; and**
3. **That the proposed capital asset levels of service measures and targets be approved.**

Executive Summary

The proposed Corporate Asset Management Plan (AMP) represents a significant step forward for the Town, putting it on a path toward a financially sustainable asset renewal program, while ensuring a consistent level of service to its users. The proposed AMP ensures the Town's compliance with the final remaining major milestone of Ontario Regulation 588/17 (O. Reg 588/17).

- The Town has consistently met all requirements of O. Reg 588/17
- The state of the Town's infrastructure has declined slightly since the last AMP update
- This AMP is built upon defined levels of service for each capital asset category
- The Town's present funding strategy will not achieve the recommended capital asset levels of service

- While this AMP meets all requirements under O. Reg 588/17 through July 1, 2025, the AMP is considered a dynamic document that will be updated continuously as new data becomes available

This AMP's complimentary Natural Capital Asset Management Plan (NCAMP) will be presented to Council this evening under a separate report to the Committee of Whole (PDS24-079).

Background

The Town has consistently met all requirements of O. Reg 588/17

As part of the *Infrastructure for Jobs and Prosperity Act, 2015*, S.O. 2015, c. 15, the Ontario government filed Ontario Regulation 588/17 - Asset Management Planning for Municipal Infrastructure (O. Reg 588/17). O. Reg 588/17 facilitates asset management best practices by providing a degree of consistency to asset management plans and leveraging asset management planning to optimize infrastructure investment decisions.

O. Reg 588/17 outlines several key milestones and requirements for municipal asset management plans in Ontario between July 1, 2022 and July 1, 2025. The Town has met all key milestones and requirements under this regulation to date. The proposed AMP within this report ensures the Town's compliance with the final remaining key milestone requirement under this regulation being the achievement of an approved AMP which includes the following components for all of its asset categories:

- Proposed levels of service for the next 10 years
- Updated inventory analysis
- Lifecycle management strategy
- Financial strategy, including a plan to address all identified shortfalls
- Discussion of how growth assumptions impacted lifecycle and financial strategies

Every AMP must present the outcomes of a municipality's asset management program and identify the resource requirements needed to achieve a defined level of service. An AMP typically includes the following content:

- State of Infrastructure
- Asset Management Strategies
- Levels of Service
- Financial Strategies
- Continuous Improvement

This AMP is aligned with the Town's Strategic Asset Management Policy and is guided by the key principles of the Town's corporate strategic goals and priorities.

Also, this AMP represents a snapshot in time and is based on the best available processes, data, and information at that time. Strategic asset management planning is an ongoing and dynamic process that requires continuous improvement and dedicated resources. As a result, an AMP is a living document that should be updated regularly as additional asset and financial data becomes available. These regular reviews also allow the Town to re-evaluate the state of infrastructure and identify how the organization's asset management and financial strategies are progressing. The regulation requires each municipality to undertake a review and update of the AMP a minimum of every 5 years.

Analysis

The state of the Town's infrastructure has declined slightly since the last AMP update

Since the Town's last AMP update, its assets and their replacement costs have grown significantly. The overall average condition of the Town's assets remains good, but have declined slightly over this same period, falling from an average condition of 79 percent in 2020-21 to 74 percent as of the end of 2023. The total estimated replacement cost for all assets has grown from $1.5 to $2.35 billion over the past few years. Table 1 presents a summary of the state of the Town's infrastructure as of today.

Table 1
Current State of Infrastructure for the Town of Aurora

Asset Category	Average Asset Category Condition (%)	Current Estimated Replacement Cost ($'s)
Road Network	65	845,639,000
Bridges & Culverts	63	38,412,000
Buildings	54	187,055,000
Fleet	42	10,770,000
Machinery & Equipment	38	4,862,000
Park Facilities	65	60,803,000
Water Network	61	330,688,000
Sanitary Sewer Network	63	299,590,000
Stormwater Network	64	569,195,000
	74	**2,347,014,000**

Table 2 presents a summary of the Town's condition rating criteria to assist in the interpretation of the presented average asset category condition assessments in Table 1.

Table 2
Condition Rating Criteria

Condition	Average Asset Condition Rating (%)
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

This AMP is built upon defined levels of service for each capital asset category

A level of service (LOS) is a measure of what the Town is providing to the community and the nature and quality of that service. The LOS is the driver for the identification of asset needs and is the basis for investment decisions.

O. Reg 588/17 requires that all proposed LOS are demonstrated to be appropriate based upon an assessment of:

- Proposed LOS options (i.e., increase, decrease, or maintain current LOS) and the risks associated with these options (i.e., asset reliability, safety, affordability) when considering the long-term sustainability of the municipality
- How the proposed LOS may differ from current LOS
- Whether the proposed LOS is achievable
- The municipality's ability to afford proposed LOS

The proposed LOS measures include a combination of prescribed measures under O. Reg. 588/17 in addition to performance measures identified by the Town as worth measuring and evaluating. The Town's measures are defined at two levels: Community Levels of Service, and Technical Levels of Service.

Community levels of service are a simple, plain language description or measure of the service that the community receives. For the most part these measures are qualitative in nature. Technical levels of service are a measure of the key technical attributes of the service being provided to the community. These include mostly quantitative measures and tend to reflect the impact of the Town's asset management strategies on the

physical condition of assets or the quality/capacity of the services they provide. Technical metrics and qualitative descriptions that measure both technical and community levels of service have been established and measured for each asset category within the attached AMP as data is available.

In addition, O Reg. 588/17 requires that a lifecycle management and financial strategy be developed in support of proposed LOS' for a period of at least 10 years with specific reporting on:

- The identification of lifecycle activities needed to provide the proposed LOS
- An estimate of the annual cost of meeting the proposed LOS for a period of 10 years, separated by capital and operating expense

The following three scenarios were considered in the determination of the recommended LOS:

- Scenario 1: Maintain existing asset condition and level of service/estimated service life (status quo)
- Scenario 2: Allow asset category average condition/estimated service life to decrease by 5 percent
- Scenario 3: Increase asset category average condition/estimated service life by 5 percent

Table 3 and 4 present a summary of the LOS scenario analysis that was undertaken in support of the recommended asset LOS' for both the Town's tax levy and rate funded assets, respectively.

Table 3
Summary of LOS Scenario Analysis Impacts
by Asset Category Tax Levy Funded

	Maintain Current Condition		Current Condition +5%		Current Condition -5%	
Category	KPI Value (%)	Est. Annual Capital Cost ($)	KPI Value (%)	Est. Annual Capital Cost ($)	KPI Value (%)	Est. Annual Capital Cost ($)
Bridges & Culverts	63	750,000	68	752,000	58	560,000
Buildings	54	5,764,000	59	5,767,000	49	5,728,000
Fleet	42	736,000	47	821,000	37	658,000
Machinery & Equipment	38	705,000	38	705,000	38	705,000
Parks Facilities	65	1,605,000	65	1,605,000	65	1,605,000

Road Network	46	14,322,000	51	15,023,000	41	12,756,000
Tax Funded Average/Total	49	**23,882,000**	54	**24,673,000**	44	**22,012,000**

Table 4
Summary of LOS Scenario Analysis Impacts
by Asset Segment Rate Funded

	Maintain Current Condition		Current Condition +5%		Current Condition -5%	
Category	**KPI Value (%)**	**Est. Annual Capital Cost ($)**	**KPI Value (%)**	**Est. Annual Capital Cost ($)**	**KPI Value (%)**	**Est. Annual Capital Cost ($)**
Sanitary Network	63	4,227,500	68	4,745,500	58	3,815,000
Stormwater Network	64	8,405,000	69	9,082,900	59	7,382,000
Water Network	61	5,720,200	66	6,526,300	56	4,836,000
Rate Funded Average/Total	63	**18,352,700**	68	**20,354,700**	58	**16,033,000**

Informed by this LOS scenario sensitivity analysis and other considerations, recommended LOS' have been defined for all of the Town's asset categories. A complete list of all the recommended LOS' by asset category, along with any supporting details can be found within Section 7 of the AMP under Attachment #2. A summary of the recommended LOS impacts compared to existing LOS' by asset category for both tax levy and rate funded assets can be found under Tables 5 and 6, respectively.

Table 5
Summary of Recommended LOS Impacts by Asset Category
Tax Levy Funded

Category	Maintain Existing Condition Est. Annual Capital Cost ($)	Recommended Target Condition Est. Annual Capital Cost ($)
Road Network	14,322,000	15,454,000
Bridges & Culverts	750,000	739,000
Buildings	5,764,000	5,767,000
Fleet	736,000	869,000
Machinery & Equip.	705,000	705,000
Park Facilities	1,605,000	1,892,000
	23,882,000	**25,426,000**

For the most part the recommended LOS' align with present values. Under the Road Network asset category, it is recommended that the roads asset segment's present pavement condition target of 70 be maintained with proposed increases to barriers & railings, sidewalks, streetlights and parking lots. Minor LOS increases are proposed under the Bridges & Culverts, Buildings and Fleet asset categories.

Table 6
Summary of Recommended LOS Impacts by Asset Category
Rate Funded

Category	Maintain Existing Condition Est. Annual Capital Cost ($)	Recommended Target Condition Est. Annual Capital Cost ($)
Sanitary Network	4,227,500	4,227,500
Stormwater Network	8,405,000	8,414,500
Water Network	5,720,200	5,746,300
	18,352,700	**18,388,300**

Similar to tax levy funded assets, most recommended rate funded LOS' align with existing asset segment performance. An increased LOS is proposed for sanitary equalization tanks under the sanitary network asset category. Increased LOS' are also proposed to headwalls and oil grit separators under the stormwater network category. Minor LOS increases are proposed under the water network category to hydrants and other water system supporting components as well.

The Town's present funding strategy will not achieve the recommended capital asset levels of service

Based upon the recommended capital asset LOS, the average annual capital costs are estimated to be $25,426,000 and $18,388,300 for tax levy and rate funded assets, respectively. Currently, the Town has approximately $10,536,600 and $5,674,600 available from sustainable revenue sources for tax and rate funded asset renewal. The resultant annual funding gaps are $14,889,400 and $12,713,700 for tax and rate funded assets.

The Town's present funding strategy includes an annual tax rate increase of 1 percent in support of its fiscal strategy. Of this increase, approximately 0.2 percent is contributed toward the growth & new and studies & other reserve. The remaining 0.8 percent annual increase is allocated in support of asset management reserves.

As per the AMP's recommended LOS, an estimated total tax rate increase of 27.5 percent would be required to address the Town's current identified infrastructure deficit of $14,889,400. This tax rate increase may be mitigated through phasing it in over an extended period. Table 7 presents a summary of possible phase-in periods for the tax levy increase.

Table 7
Possible Tax Levy Increase Phase-in Period Options

Phase-in Period Duration (Years)	Required Tax Rate Increase (%)	Present Funding Strategy (%)	Additional Tax Rate Increase (%)
5	4.97	0.80	4.17
10	2.45	0.80	1.65
15	1.63	0.80	0.83
20	1.22	0.80	0.42

It is recommended that the Town consider a 15-year phase-in period for its required tax increase, meaning that an increase of the existing dedicated annual tax increase of 0.8

to 1.63 percent be adopted, which will sufficiently mitigate the tax burden while addressing the Town's associated infrastructure deficit as promptly as possible.

As per the 2021 AMP's recommendations, the Town adopted dedicated annual user rate increases of 2.2, 0.4 and 11.0 percent for water, sanitary sewer and stormwater services, respectively. This strategy has continued to present.

As per this AMP's recommended levels of service, it is estimated that a total user rate increase of 32.9, 18.0 and 161.4 percent would be required to address the current identified infrastructure funding deficit for the water, sanitary and stormwater networks. Similarly, these user rate increases may be mitigated through a multi-year phase-in period. Table 8 presents a summary of possible phase-in periods for each of these services.

Table 8
Possible User Rate Increases Phase-in Period Options by Service Type

Service	Required Annual User Rate Increase (%)			
	5 Years	10 Years	15 Years	20 Years
Water Network	5.86	2.89	1.92	1.45
Sanitary Network	3.37	1.67	1.11	0.83
Stormwater Network	21.19	10.09	6.62	4.92

It is recommended that the Town adopt phase-in periods of 15 for water, 10 for sanitary and 20 years for stormwater networks resulting in dedicated annual rate increases of 1.92, 1.67 and 4.92 percent for water, sanitary and stormwater, respectively. These recommended increases try to find a balance between the annual burden placed on each service's user rate(s), while minimizing the time needed to reach a state of infrastructure affordability.

An infrastructure deficit will continue to exist over the phase-in period in all instances. Therefore, the need to prioritize planned capital project work and seek out alternative funding sources will continue to exist.

New asset growth and further unplanned inflationary pressures are not considered in the presented model, this model's focus is on ensuring the Town's affordability for current capital asset holdings. As growth-related assets are constructed or acquired, they will be integrated into the Town's AMP as part of subsequent scheduled reviews and updates.

Debt may be strategically used as an interim funding source in the management of the Town's infrastructure deficit. At this time the use of debt for this purpose is not recommended.

While this AMP meets all requirements under O. Reg 588/17 through July 1, 2025, the AMP is considered a dynamic document that will be updated continuously as new data becomes available

Under Reg 588/17, municipalities are required to formally update AMP documents every five years. In addition, staff will conduct an annual review of its progress in implementing the AMP and will report back to Council with its findings.

The AMP provides recommendations and next steps that will allow the Town to continue enhancing their asset management maturity level. Key recommendations include:

- Continuing to review and validate capital asset inventory data, assessed condition data and replacement costs for all assets upon the completion of assessments, studies, or inspections as data becomes available.
- Enhancing organizational efficiency and optimizing resource utilization through automating the merging and reconciling of all existing active capital asset registries as much as possible across the organization.
- Implementing a formal condition assessment program and strategy for all municipal infrastructure.
- Continuing to operationalize risk-based decision-making frameworks by configuring the Town's asset management system to intuitively calculate risk as part of asset management planning and budgeting processes.
- Reviewing assets that have surpassed their estimated useful life to determine if immediate replacement is required.
- Evaluating the efficacy of the Town's lifecycle management strategies at regular intervals to determine the impact cost, condition, and risk.
- Continuing the review of asset replacement costs to ensure they are up to date.
- Continuing to review and update risk and service level models to ensure they remain relevant.

A comprehensive list of all recommended next steps can be found under Section 9 of AMP under Attachment 2.

Advisory Committee Review

Not applicable.

Legal Considerations

O. Reg. 588/17 requires all municipalities in Ontario to have a comprehensive AMP that identifies current LOS in place for all municipal infrastructure assets by July 1, 2024, and a plan that includes proposed LOS by July 1, 2025.

Financial Implications

A key requirement under the O. Reg 588/17 is that the Town must adopt levels of service for all core and non-core capital assets that are affordable. The recommended capital asset levels of service which mostly reflect what is currently being provided to users, are unaffordable in the long term based upon the Town's current funding strategy.

As a result, the following phased in rate increases are recommended as presented in Table 9.

Table 9
Asset Renewal Financial Sustainability Strategy
by Funding Source Type

Funding Source	Required Tax Rate Increase (%)	Required Phase-in Period (Years)
Tax Levy	1.63	15
Water Network	1.92	15
Sanitary Network	1.67	10
Storm Network	4.92	20

These recommended increases do not consider the Town's on-going funding of the Growth & New and Studies & Other reserves. As of the 2024 budget review, the annual tax rate increase requirement for these two reserves combined was 0.2 percent per year.

Finance will present to Council in the fall, a comprehensive funding strategy which will consider both this AMP and the NCAMP's identified funding requirements as well as all other known tax levy, water, sanitary and stormwater network pressures.

Communications Considerations

In accordance with the requirements of O. Reg. 588/17, the AMP will be posted on the Town's website, along with related background documents for the public to access.

Climate Change Considerations

To achieve the sustainable delivery of services, climate change considerations have been incorporated into asset management practices. The integration of asset management and climate change adaptation observes industry best practices and enables the development of a holistic approach to risk management. Climate vulnerability risks from the Climate Change Adaptation Plan by WSP (2022) have been integrated into various categories within the AMP.

Link to Strategic Plan

This updated AMP represents the foundation upon which all future multi-year capital plans will be based, this plan supports all aspects of the Strategic Plan. In particular, the AMP contributes to achieving the Strategic Plan's guiding principle of "Leadership in Corporate Management" and improves transparency and accountability to the community.

Alternative(s) to the Recommendation

1. Council may choose to accept, amend, or reject any or all recommendations of this report.

2. Council may provide alternative directions with respect to the presented draft AMP.

Conclusions

With the assistance of Public Sector Digest, an extensive review and update of the Town's asset management was undertaken to enable to comply with the final July 1, 2025 key milestone requirement of O. Reg 588/17. This AMP includes several enhancements such as the introduction of defined LOS' for all Town capital asset categories. This AMP also includes a necessary financial strategy which ensures its recommended LOS' are affordable and can be achieved.

Attachments

Attachment 1 – Presentation: Public Sector Digest

Attachment 2 – Proposed Asset Management Plan Final v5

Previous Reports

FIN22-015, Continued Advancement of the Second-Generation Asset Management Plan, May 3, 2022

FIN21-037, Second Generation Asset Management Plan, September 21, 2021

Pre-submission Review

Agenda Management Team review on June 12, 2024

Approvals

Approved by Rachel Wainwright-van Kessel, CPA, CMA, Director, Finance

Approved by Doug Nadorozny, Chief Administrative Officer

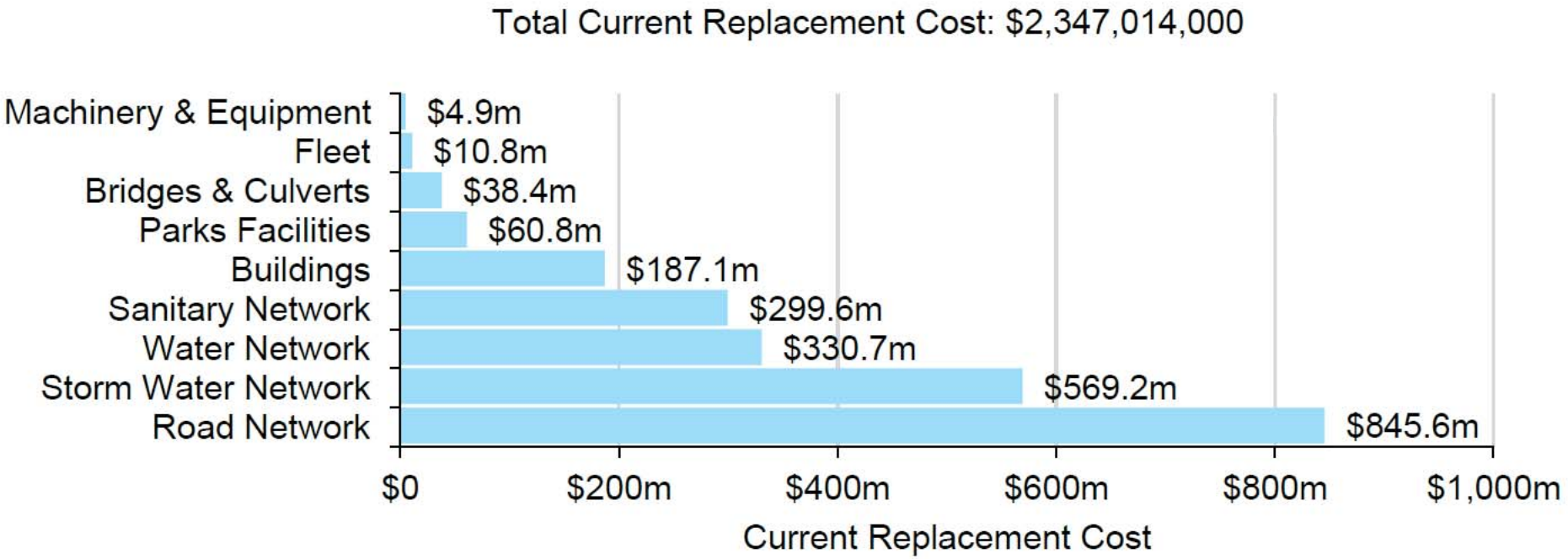
Attachment 1

Town of Aurora

2024 Asset Management Plan

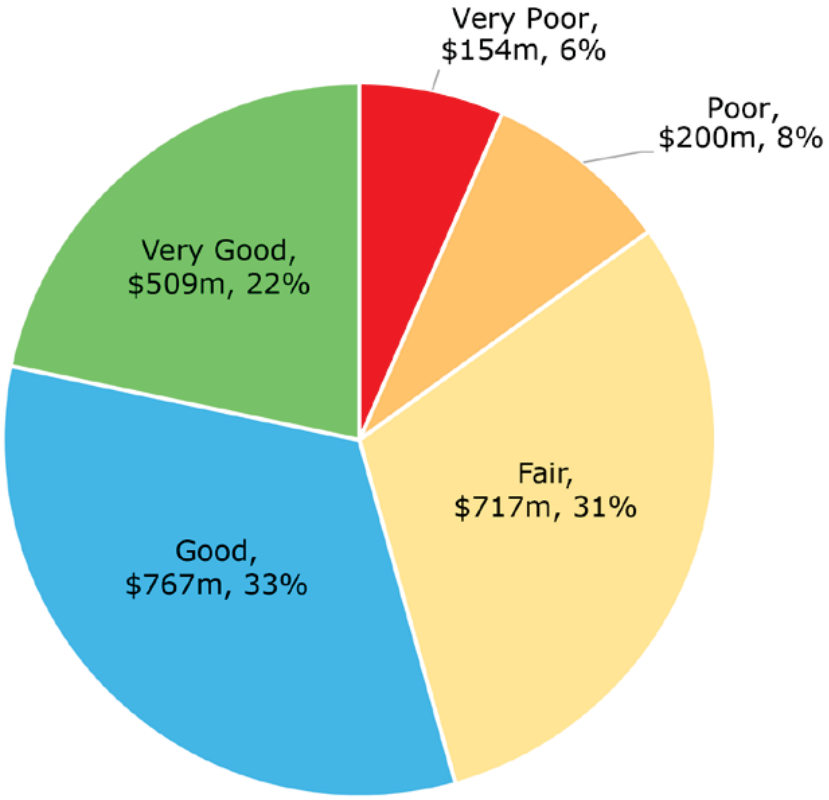
Presented by:
Chris Vanderheyden, Director Asset Management Advisory, PSD

Total Replacement Cost of Asset Portfolio



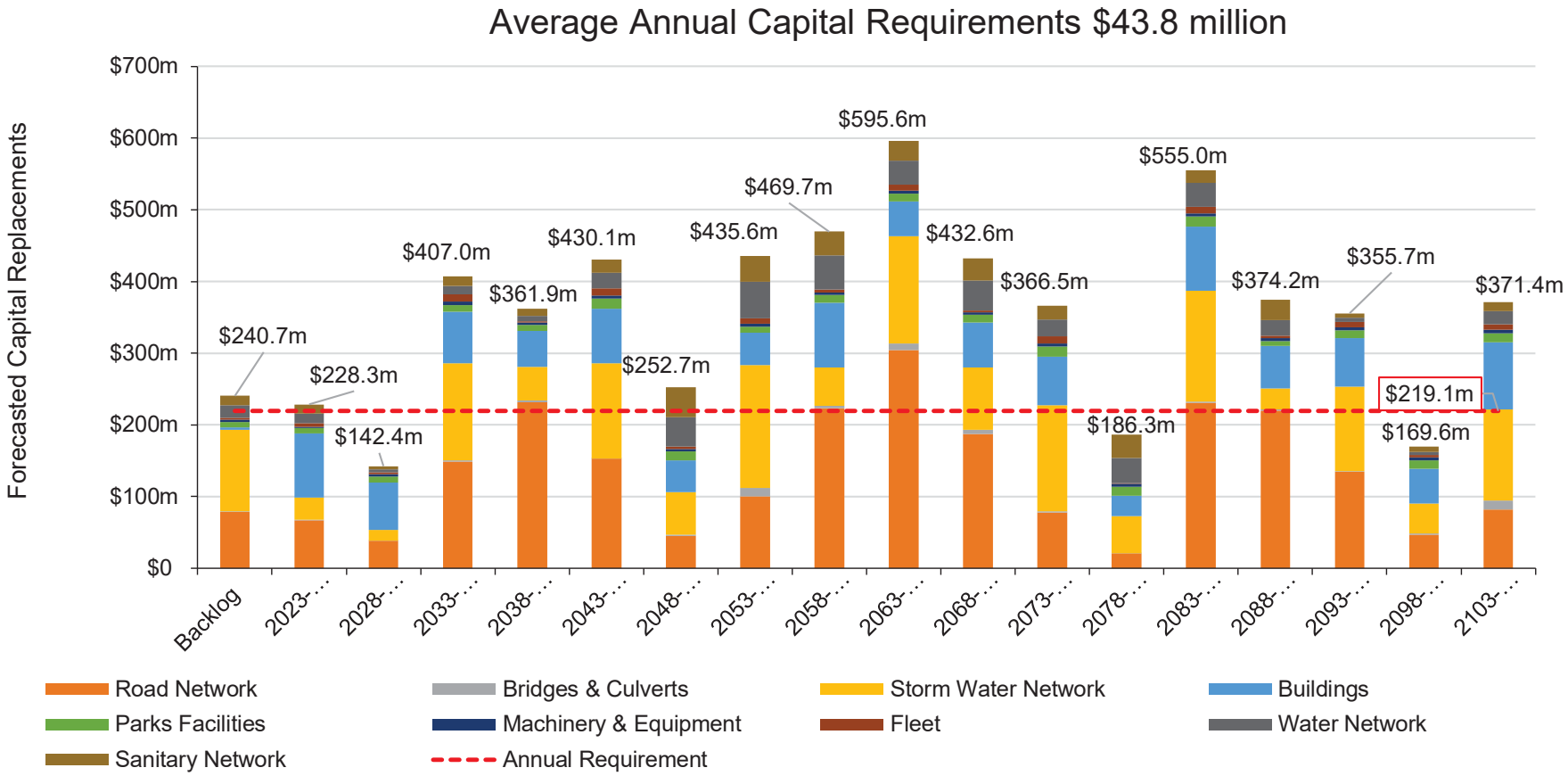
Replacement costs based on a combination of user-defined costs and historical cost inflation.

State of the Infrastructure - Condition



85%
of all assets are in fair or better condition

Forecasted Capital Requirements



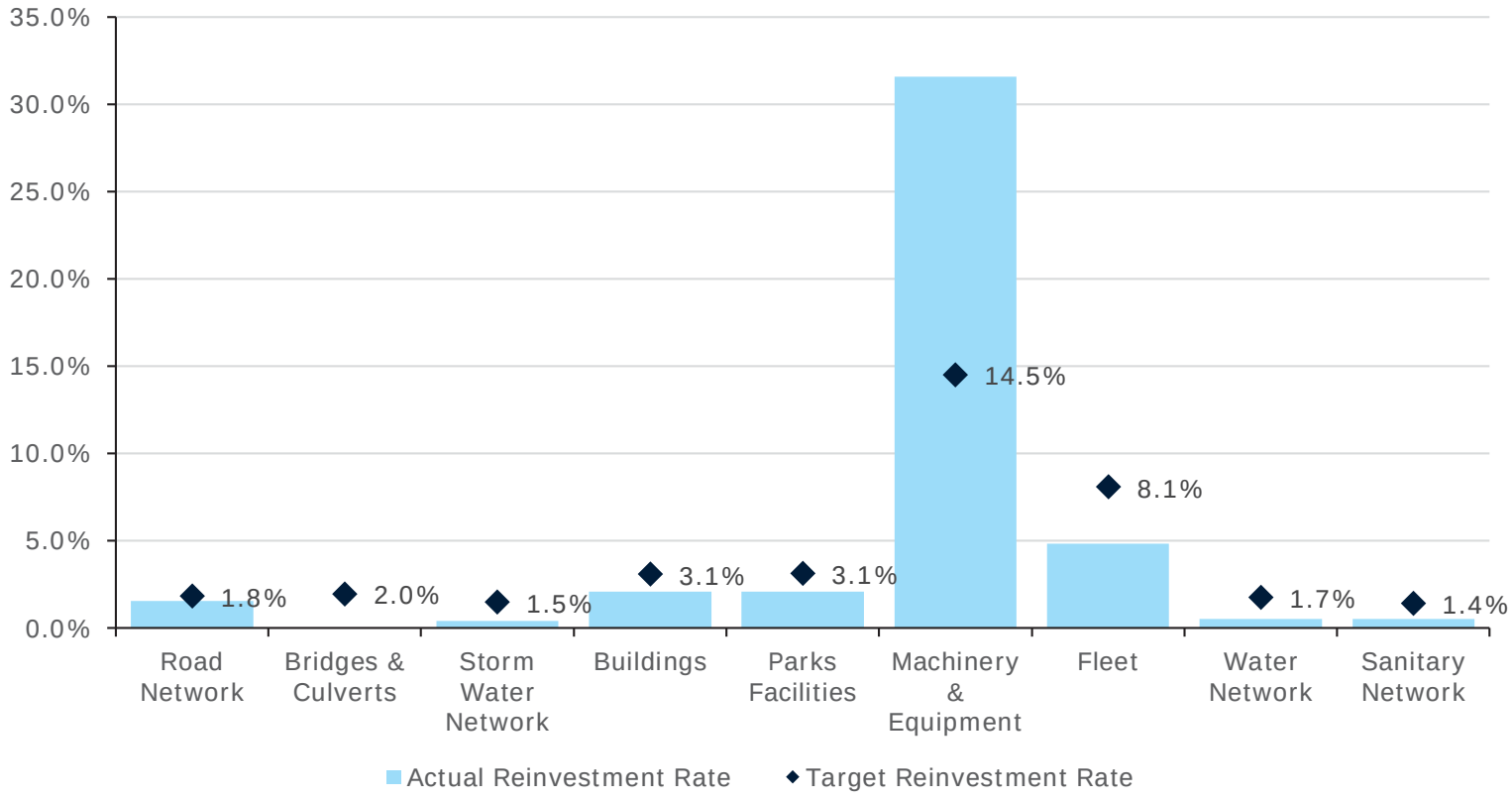
Categorical Analysis of Tax Funded Assets

	Maintain Current Condition		Current Condition +5%		Current Condition -5%	
Category	**KPI Value**	**Expected Capital Expenditure**	**KPI Value**	**Expected Capital Expenditure**	**KPI Value**	**Expected Capital Expenditure**
Bridges & Culverts	63%	$750,000	68%	$752,000	58%	$560,000
Buildings	54%	$5,764,000	59%	$5,767,000	49%	$5,728,000
Fleet	42%	$736,000	47%	$821,000	37%	$658,000
Machinery & Equipment	38%	$705,000	38%	$705,000	38%	$705,000
Parks Facilities	65%	$1,605,000	65%	$1,605,000	65%	$1,605,000
Road Network	46%	$14,322,000	51%	$15,023,000	41%	$12,756,000
Tax Funded Average / Total	49%	**$23,882,000**	54%	**$24,673,000**	44%	**$22,012,000**

Categorical Analysis of Rate Funded Assets

	Maintain Current Condition		Current Condition +5%		Current Condition -5%	
Category	**KPI Value**	**Expected Capital Expenditure**	**KPI Value**	**Expected Capital Expenditure**	**KPI Value**	**Expected Capital Expenditure**
Sanitary Network	63%	$4,227,512	68%	$4,745,512	58%	$3,815,000
Stormwater Network	64%	$8,405,000	69%	$9,082,857	59%	$7,382,000
Water Network	61%	$5,720,214	66%	$6,526,309	56%	$4,836,000
Tax Funded Assets Totals	63%	**$18,352,726**	68%	**$20,354,678**	58%	**$16,033,000**

Categorical Reinvestment Rates



Financial Analysis of Tax Funded Assets

Currently funded at 40.4% of long-term requirements

Tax change required for full funding 27.5%

Increase tax revenues by an additional 0.83%

15-year financial strategy recommendation

	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	14,889,374	14,889,374	14,889,374	14,889,374
Tax Increase Required	27.5%	27.5%	27.5%	27.5%
Annually	**4.97%**	**2.45%**	**1.63%**	**1.22%**

Financial Analysis – Water Network

Rate change required for full funding 32.9%

Decrease water rates by 0.28% to 1.92% from the previous 2.2%

15-year financial strategy recommendation

Water Network				
	5 Years	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	4,046,309	4,046,309	4,046,309	4,046,309
Rate Increase Required	32.9%	32.9%	32.9%	32.9%
Annually:	**5.86%**	**2.89%**	**1.92%**	**1.45%**

Financial Analysis – Sanitary Network

Rate change required for full funding 18%

Increase sanitary rates from the previous 0.40% to 1.67%

10-year financial strategy recommendation

Sanitary Network				
	5 Years	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	2,690,987	2,690,987	2,690,987	2,690,987
Rate Increase Required	18.0%	18.0%	18.0%	18.0%
Annually:	**3.37%**	**1.67%**	**1.11%**	**0.83%**

Financial Analysis – Storm Network

Rate change required for full funding 161.4%

Decrease water rates by 6.08% to 4.92% from the previous 11%

20-year financial strategy recommendation

Storm Network				
	5 Years	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	5,976,396	5,976,396	5,976,396	5,976,396
Rate Increase Required	161.4%	161.4%	161.4%	161.4%
Annually:	**21.19%**	**10.09%**	**6.62%**	**4.92%**

Key AM Program Recommendations

1. Asset Inventory, Data Review & Validation
   - Continuous review and validation
2. Condition Assessment Strategies
   - Invest in condition assessments for all core infrastructure (water, sanitary, storm, and roads)
   - Prioritize and implement formal condition assessment processes for infrastructure and assets
3. Lifecycle Management Strategies
   - Evaluate lifecycle management strategies at regular intervals
   - Acquire and apply current replacement values for all assets using industry standards
4. Levels of Service
   - Regular review and of service level tracking strategies

Next Steps

2030 AMP

- 2028 year-end inventory and data
- Report on proposed levels of service annually
- Updated 10-yr lifecycle and financial plan to meet adjusted proposed targets
- Updated AMPs are required every 5 years, as per O.Reg. 588/17

Questions

psdcitywide

Attachment 2

Asset Management Plan

Town of Aurora

2024

This Asset Management Program was prepared by:

Empowering your organization through advanced asset management, budgeting & GIS solutions

The preparation of this project was carried out with assistance from the Government of Canada and the Federation of Canadian Municipalities. Notwithstanding this support, the views expressed are the personal views of the authors, and the Federation of Canadian Municipalities and the Government of Canada accept no responsibility for them.

Key Statistics

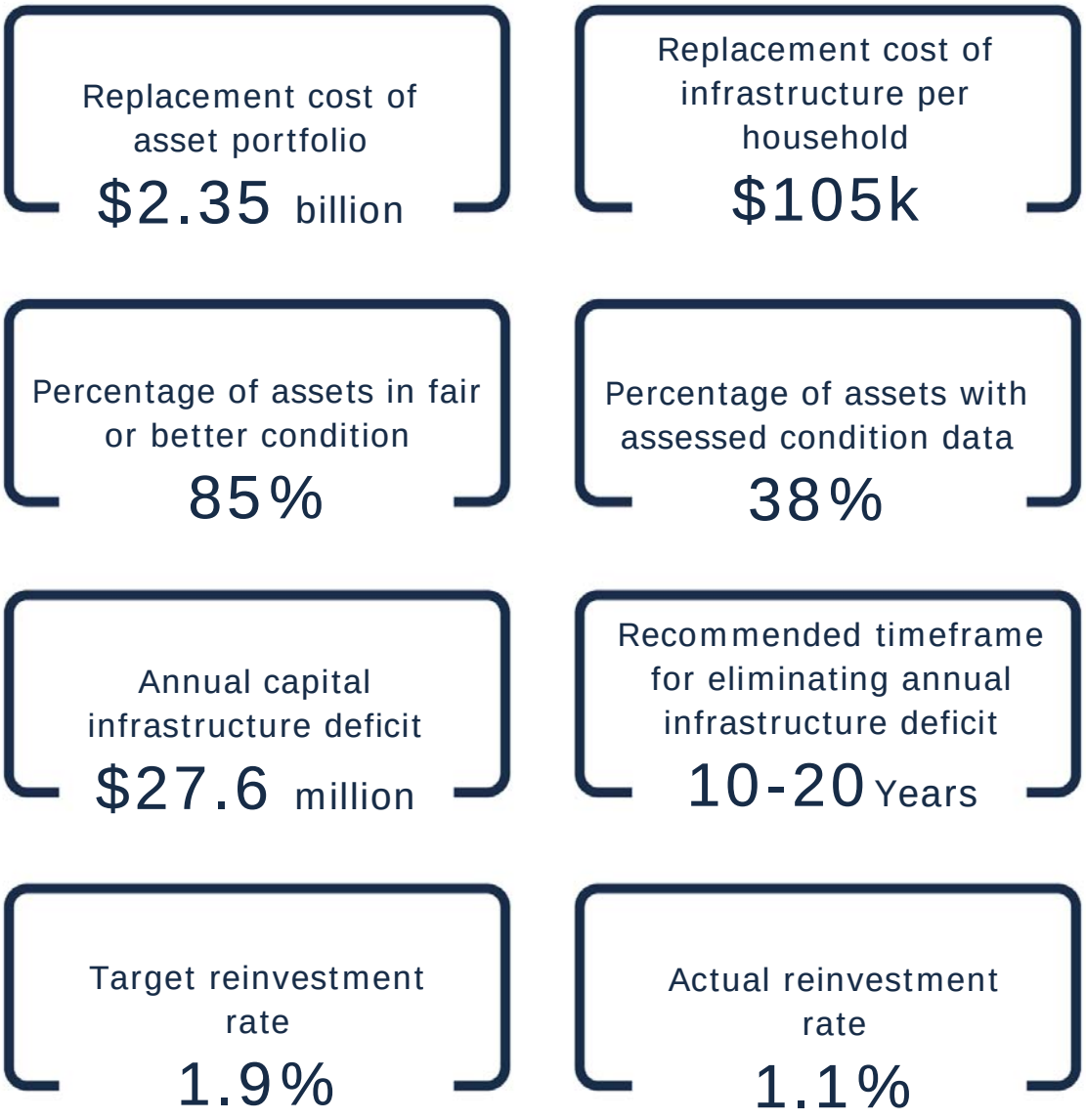


Figure 1 Key Statistics Summary

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Executive Summary

Municipal infrastructure provides the foundation for the economic, social, and environmental health and growth of a community through the delivery of critical services. The goal of asset management is to deliver an adequate level of service in the most cost-effective manner. This involves the development and implementation of asset management strategies and long-term financial planning.

Scope

This Asset Management Plan (AMP) summarizes the current state of infrastructure within the Town's asset portfolio. It establishes the existing levels of service and proposes enhancements to these levels, accompanied by relevant technical and customer-oriented key performance indicators (KPIs). The plan outlines lifecycle strategies designed for optimal asset management and performance, and offers financial strategies aimed at achieving sustainability for the following asset categories:

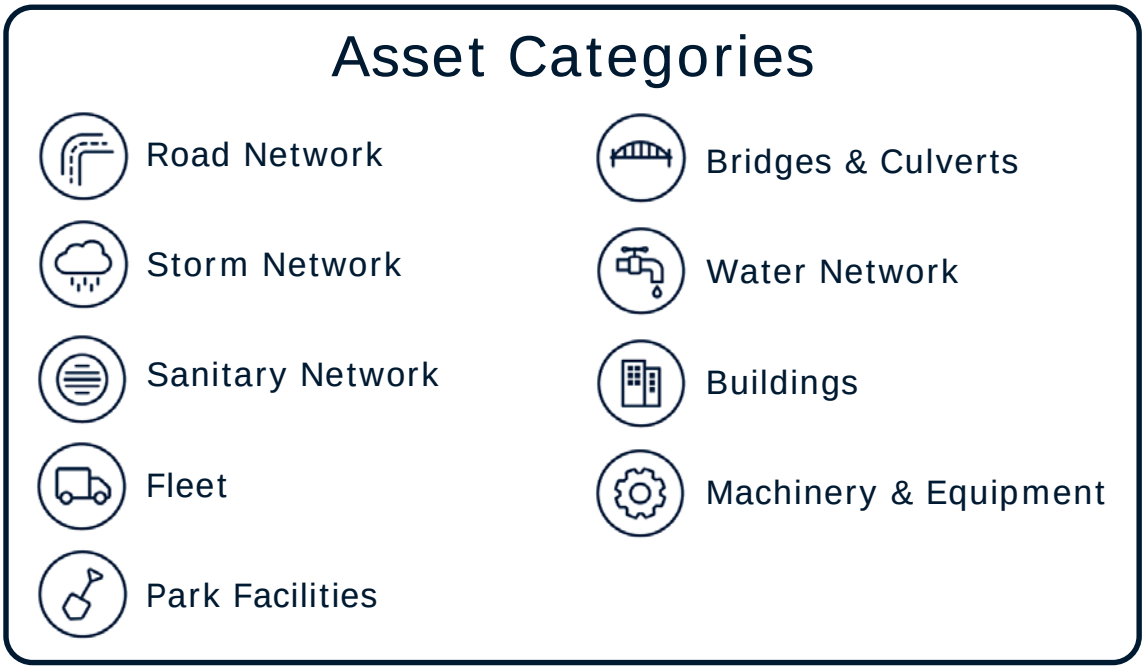


Figure 2 AMP Asset Categories

Findings

The overall replacement cost of the asset categories included in this AMP totals $2.3 billion. 85% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 38% of assets. For the remaining 62% of assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP.
The development of a long-term, sustainable financial plan requires an analysis of whole lifecycle costs. This AMP uses a combination of proactive lifecycle strategies (paved roads) and replacement only strategies (all other assets) to determine the lowest cost option to maintain the current level of service.

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Town's average annual capital requirement totals $43.8 million. Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately $16.2 million towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $27.6 million.

It is important to note that this AMP represents a snapshot in time and is based on the best available processes, data, and information at the Town. Strategic asset management planning is an ongoing and dynamic process that requires continuous improvement and dedicated resources.

Figure 3 Average Annual Requirements per Household

A financial strategy was developed to address the annual capital funding gap. The following graphics shows annual tax/rate change required to eliminate the Town's infrastructure deficit based over the period modelled and includes the 0.8% already being collected:

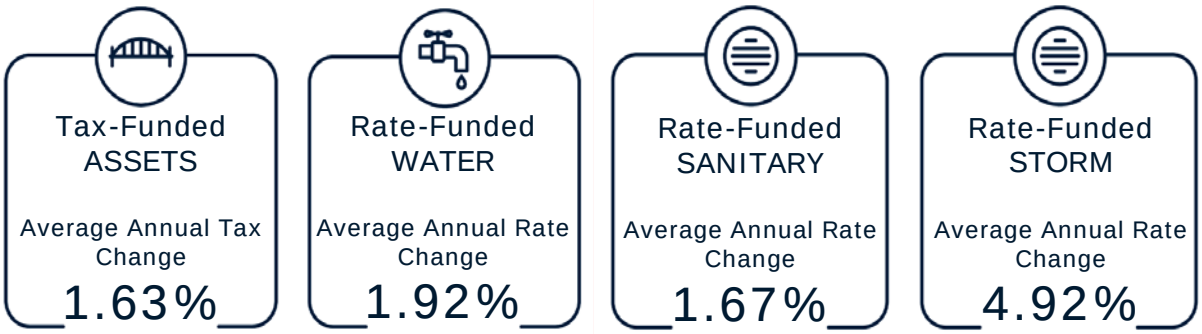


Figure 4 Summary of Annual Tax/Rate Changes

With the development of this AMP the Town has achieved compliance with O. Reg. 588/17 to the extent of the requirements that must be completed by July 1, 2025.

1 Introduction & Context

Key Insights

- The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio
- The Town's asset management policy provides clear direction to staff on their roles and responsibilities regarding asset management
- An asset management plan is a living document that should be updated regularly to inform long-term planning
- Ontario Regulation 588/17 outlines several key milestones and requirements for asset management plans in Ontario between July 1, 2023 and 2025

1.1 Aurora Community Profile

Census Characteristic	Town of Aurora	Ontario
Population 2021	62,057	14,223,942
Population Change 2016-2021	11.9	5.8
Total Private Dwellings	22,253	5,929,250
Population Density	1,241.1/km^2	15.9/km^2
Land Area	50 km^2	892,411.76 km^2

Table 1 Town of Aurora Community Profile

The Town of Aurora (Town) is a family friendly community with an attractive natural environment, urban amenities, and a growing economy. The Town is located in the Central York Region, within the Golden Horseshoe of Southern Ontario. The Town is within easy commuting distance to major cities like Toronto and Hamilton. As one of the growth centres of York Region, Aurora benefits from a convenient transit network and easy access to Highway 404.

The Town was founded in 1854. With a long history of industrial and agricultural business, Aurora was incorporated as a town in 1888. However, by the end of the 19th century, many factories moved out and Aurora experienced a slow growth period until the end of World War II. In the years following the war, many developments took place in the area and the Town was rejuvenated, due to its proximity to Toronto. In the 21st century, the Town has expanded to Highway 404 and experienced a considerable growth in population and economy. Currently, Aurora has a diversified economic base with over 1,300 businesses including both large businesses and start-up companies. The Town seeks to provide high quality employment lands for new business development, encourage employment opportunities for residents, and revitalize their downtown core. Looking to the future, the Town of Aurora prioritizes the promotion of economic growth.

Like many municipalities in the greater Toronto area, the Town is currently experiencing significant growth. Since 2016, the population has increased at more than 2 times the provincial average. The rapid growth is projected to be continued for the next 20 years. The Town continues to promote sustainable growth management that encourages mixed-use, transit-oriented development, and affordability. The Town also aims to provide and maintain adequate services and sustainable infrastructure that match the changing demographic.

The Town generates a total revenue of $57.0 million from taxes and $31.0 million from rates and has an approved capital budget authority of $202.4 million, with $73.6 million planned spending in 2023.

The Town is mostly an urbanized environment, containing roads, bridges, culverts, facilities, water, sanitary, storm, fleet, and equipment infrastructure. Generally, residents are satisfied with Town services. However, the 2023 resident satisfaction survey identified an expectation for improved traffic calming measures. The Roads, bridges and structural culverts are the priority for Town staff, as these are critical assets. With improved inspection and assessment programs, the Town will be able to better identify other infrastructure priorities in the future.

1.2 An Overview of Asset Management

Municipalities are responsible for managing and maintaining a broad portfolio of infrastructure assets to deliver services to the community. The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio.

The acquisition of capital assets accounts for only 10-20% of their total cost of ownership. The remaining 80-90% derives from operations and maintenance. This AMP focuses its analysis on the capital costs to maintain, rehabilitate and replace existing municipal infrastructure assets.

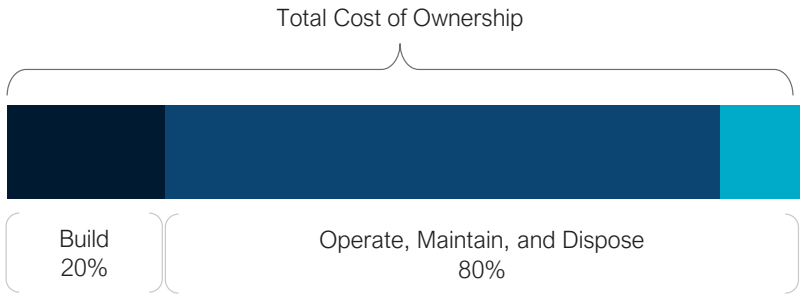


Figure 5 Total Cost of Asset Ownership

These costs can span decades, requiring planning and foresight to ensure financial responsibility is spread equitably across generations. An asset management plan is critical to this planning, and an essential element of broader asset management program. The industry-standard approach and sequence to developing a practical asset management program begins with a Strategic Plan, followed by an Asset

Management Policy and an Asset Management Strategy, concluding with an Asset Management Plan.

This industry standard, defined by the Institute of Asset Management (IAM), emphasizes the alignment between the corporate strategic plan and various asset management documents. The strategic plan has a direct, and cascading impact on asset management planning and reporting.

1.2.1 Asset Management Policy

An asset management policy represents a statement of the principles guiding the municipality's approach to asset management activities. It aligns with the organizational strategic plan and provides clear direction to municipal staff on their roles and responsibilities as part of the asset management program.

The Town adopted Policy No. FS-07 Strategic Asset Management Policy on March 26th, 2019, in accordance with Ontario Regulation 588/17.

The asset management plan satisfies the policy statement 1.0 section 5:

> *"The Town will develop an asset management plan (AMP) that incorporates all infrastructure categories and municipal infrastructure assets that are necessary to the provision of services… The AMP will be reviewed annually to address the Town's progress in implementing its asset management plan and updated at least every five years in accordance with O. Reg. 588/17 requirements, to promote, document and communicate continuous improvement of the asset management program."*

The Town's strategic asset management policy identifies various priorities such as commitments to the utilization of levels of service information, lifecycle management, mitigation approaches to climate change, and the coordination with upper and neighbouring municipalities in its asset maintenance. The Town of Aurora is committed to executing rehabilitation and replacement decision points wherever possible.

1.2.2 Asset Management Strategy

An asset management strategy outlines the translation of organizational objectives into asset management objectives and provides a strategic overview of the activities required to meet these objectives. It provides greater detail than the policy on how the Town plans to achieve asset management objectives through planned activities and decision-making criteria.

The Town's Asset Management Policy contains many of the key components of an asset management strategy and may be expanded on in future revisions or as part of a separate strategic document.

1.2.3 Asset Management Plan

The asset management plan (AMP) presents the outcomes of the Town's asset management program and identifies the resource requirements needed to achieve a defined level of service. The AMP typically includes the following content:

- State of Infrastructure
- Asset Management Strategies
- Levels of Service
- Financial Strategies

The AMP is a living document that should be updated regularly as additional asset and financial data becomes available. This will allow the Town to re-evaluate the state of infrastructure and identify how the organization's asset management and financial strategies are progressing.

1.3 Key Concepts in Asset Management

Effective asset management integrates several key components, including lifecycle management, risk management, and levels of service. These concepts are applied throughout this asset management plan and are described below in greater detail.

1.3.1 Lifecycle Management Strategies

The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment. Asset deterioration has a negative effect on the ability of an asset to fulfill its intended function, and may be characterized by increased cost, risk and even service disruption.

To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

There are several field intervention activities that are available to extend the life of an asset. These activities can be generally placed into one of three categories:

maintenance, rehabilitation, and replacement. The following table provides a description of each type of activity and the general difference in cost.

Lifecycle Activity	Description	Example (Roads)	Cost
Maintenance	Activities that prevent defects or deteriorations from occurring	Crack Seal	$
Rehabilitation / Renewal	Activities that rectify defects or deficiencies that are already present and may be affecting asset performance	Mill & Re-surface	$$
Replacement / Reconstruction	Asset end-of-life activities that often involve the complete replacement of assets	Full Reconstruction	$$$

Table 2 Lifecycle Management: Typical Lifecycle Interventions

Depending on initial lifecycle management strategies, asset performance can be sustained through a combination of maintenance and rehabilitation, but at some point, replacement is required. Understanding what effect these activities will have on the lifecycle of an asset, and their cost, will enable staff to make better recommendations.

The Town's approach to lifecycle management is described within each asset category outlined in this AMP. Developing and implementing a proactive lifecycle strategy will help staff to determine which activities to perform on an asset and when they should be performed to maximize useful life at the lowest total cost of ownership.

1.3.2 Risk Management Strategies

Municipalities generally take a 'worst-first' approach to infrastructure spending. Rather than prioritizing assets based on their importance to service delivery, assets in the worst condition are fixed first, regardless of their criticality. However, not all assets are created equal. Some are more important than others, and their failure or disrepair poses more risk to the community than that of others. For example, a road with a high volume of traffic that provides access to critical services poses a higher risk than a low volume rural road. These high-value assets should receive funding before others.

By identifying the various impacts of asset failure and the likelihood that it will fail, risk management strategies can identify critical assets, and determine where maintenance efforts, and spending, should be focused.

This AMP includes a high-level evaluation of asset risk and criticality. Each asset has been assigned a probability of failure score and consequence of failure score based on available asset data. These risk scores can be used to prioritize maintenance, rehabilitation, and replacement strategies for critical assets.

1.3.3 Levels of Service

A level of service (LOS) is a measure of what the Town is providing to the community and the nature and quality of that service. Within each asset category in this AMP, technical metrics and qualitative descriptions that measure both technical and community levels of service have been established and measured as data is available.

These measures include a combination of those that have been outlined in O. Reg. 588/17 in addition to performance measures identified by the Town as worth measuring and evaluating. The Town measures the level of service provided at two levels: Community Levels of Service, and Technical Levels of Service.

Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives. For core asset categories (roads, bridges and culverts, water, wastewater, stormwater) the Province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in this AMP. For non-core asset categories, the Town has determined the qualitative descriptions that will be used to determine the community level of service provided. These descriptions can be found in the Levels of Service subsection within each asset category.

Technical Levels of Service

Technical levels of service are a measure of key technical attributes of the service being provided to the community. These include mostly quantitative measures and tend to reflect the impact of the Town's asset management strategies on the physical condition of assets or the quality/capacity of the services they provide.

For core asset categories (roads, bridges and culverts, water, wastewater, stormwater) the Province, through O. Reg. 588/17, has provided technical metrics that are required to be included in this AMP. For non-core asset categories, the Town has determined the technical metrics that will be used to determine the technical level of service provided. These metrics can be found in the Levels of Service subsection within each asset category.

Current and Proposed Levels of Service

This AMP focuses on updating and establishing the current levels of service, in addition to providing proposed levels of service options over the next ten years, in accordance with O. Reg. 588/17. Proposed levels comprise of the following: establishing a target for each technical LOS measure, identification of budgetary impacts, and a description of the rationale of the target and the impacts on risk and the lifecycle strategy.

Three proposed LOS scenarios have been developed for each asset category. These scenarios include maintain existing LOS, enhance LOS, and reduce LOS. The recommended LOS scenario is chosen on the basis of the balance of affordability, risk, and user priorities.

1.4 Climate Change

Climate change is causing severe impacts on human and natural systems around the world. The effects of climate change include increasing temperatures, higher levels of precipitation, droughts, and extreme weather events. In 2019, Canada's Changing Climate Report (CCCR 2019) was released by Environment and Climate Change Canada (ECCC).

The report revealed that between 1948 and 2016, the average temperature increase across Canada was 1.7°C; the temperature increase in Canada has doubled that of the global average. If emissions are not significantly reduced, the temperature could increase by 6.3°C in Canada by the year 2100 compared to 2005 levels. Observed precipitation changes in Canada include an increase of approximately 20% between 1948 and 2012. By the late 21st century, the projected increase could reach an additional 24%. During the summer months, some regions in Southern Canada are expected to experience periods of drought at a higher rate. Extreme weather events and climate conditions are more common across Canada. Recorded events include droughts, flooding, cold extremes, warm extremes, wildfires, and record minimum arctic sea ice extent.

The changing climate poses a significant risk to the Canadian economy, society, environment, and infrastructure. The impacts on infrastructure are often a result of climate-related extremes such as droughts, floods, higher frequency of freeze-thaw cycles, extended periods of high temperatures, high winds, and wildfires. Physical infrastructure is vulnerable to damage and increased wear when exposed to these extreme events and climate variabilities. Canadian Municipalities are faced with the responsibility to protect their local economy, citizens, environment, and physical assets.

The Town has been proactive in their efforts to combat the effects of climate change. The Town adopted the Climate Change Adaptation Plan on October 24, 2023. The Climate Change Adaptation Plan was created by WSP, and projects that between 2021 and 2050, Aurora is expected to experience:

- A mean summer maximum temperature increase of 9%
- The number of heat waves are projected to increase from 1.2 to 3.6 per year
- Cooling Degree Days are projected to almost double
- Winter temperatures are projected to increase, leading to an increase in extreme cold risks, snow depth, and annual freeze-thaw cycles

To prepare for the anticipated climate change effects, the Town has identified short-term priorities including:

- Improving flood resilience of the stormwater system, evaluating future projected precipitation impacts to the system, and applying lot-level runoff controls
- Improving flood management to reduce risks to the sanitary system
- Preventing and repairing debris hazards for parks and natural heritage assets through proactive landscape maintenance
- Ensuring facilities have sufficient cooling capacity in critical buildings as temperatures and heatwaves increase, and ensure backup power is in place in facilities as required

The Town plans to incorporate climate change projections into asset management planning to ensure that infrastructure designs, operations, and maintenance procedures are prepared for future conditions. The Town also recognises the importance of planning for and implementing resilience interventions upon asset renewal, during major retrofits, or as needed when new risks are identified.

1.4.1 Aurora Climate Profile

Several extreme weather events such as heat waves, strong winds, and flooding have been experienced in Aurora. Heatwaves accelerate the deterioration of paved roads and increase the demand of energy used by people and facilities. Flooding caused by severe precipitation can weaken roads and buildings. Strong winds can damage the roofs, trees and power lines which cause further damage to the property, machinery, and equipment.

The Town is expected to experience notable effects of climate change which include higher average annual temperatures, an increase in total annual precipitation, and an increase in the frequency and severity of extreme weather events. According to Climatedata.ca – a collaboration supported by Environment and Climate Change Canada (ECCC) – the Town may experience the following trends:

Higher Average Annual Temperature:

- Between the years 1971 and 2000 the annual average temperature was 6.9 ºC.
- Under a high emissions scenario, the annual average temperatures are projected to increase by 2.5 ºC by the year 2050 and over 6.4 ºC by the end of the century.

Increase in Total Annual Precipitation:

- Under a high emissions scenario, Aurora is projected to experience a 13% increase in precipitation by the year 2080 and an 18% increase by the end of the century.

Increase in Frequency of Extreme Weather Events:

- It is expected that the frequency and severity of extreme weather events will change.
- In some areas, extreme weather events will occur with greater frequency and severity than others, especially those impacted by Great Lake winds.

1.4.2 Integration of Climate Change and Asset Management

Asset management practices aim to deliver sustainable service delivery - the delivery of services to residents today without compromising the services and well-being of future residents. Climate change threatens sustainable service delivery by reducing the useful life of an asset and increasing the risk of asset failure. Desired levels of service can be more difficult to achieve because of climate change impacts such as flooding, high heat, drought, and more frequent and intense storms.

The Town has developed a series of documents to improve their climate resilience; some key documents are listed below:

- Community Energy Plan
- Climate Emergency Declaration
- Corporate Environmental Action Plan (CEAP)
- Aurora's Energy Conservation and Demand Management Plan (ECDMP)
- Climate Change Adaptation Plan (CCAP)
- Green Fleet Action Plan (GFAP)

These documents will further advance the Municipality's capacity to develop asset management strategies that incorporate climate change mitigation and adaptation considerations.

To achieve the sustainable delivery of services, climate change considerations should be incorporated into asset management practices. The integration of asset

management and climate change adaptation observes industry best practices and enables the development of a holistic approach to risk management. Climate vulnerability risks from the Climate Change Adaptation Plan (2023) will be integrated into various categories in this Asset Management Plan. The risk matrices from this report highlight how assets may be affected by the changing climate, and mitigation strategies that the Town should consider adopting to combat the expected changes. For example, pedestrian paths may be degraded by an increased number and frequency of freeze-thaw cycles, which may increase the number of trip hazards and accessibility disturbances to residents. To mitigate this change, the Town may consider enhancing pedestrian paths with increased rip rap or other improvements.

1.5 Watershed Protection

Watersheds are recognized as an important ecological asset for managing both ground and surface water systems. York Region supplies water to the local municipalities using Lake Ontario, Lake Simcoe, and groundwater sources. To maintain the water quality, York Region has developed and implemented watershed plans in cooperation with the Toronto and Region Conservation Authority (TRCA) and the Lake Simcoe Region Conservation Authority (LSRCA).

1.5.1 Lake Simcoe Watershed

The drinking water in the Town is supplied by the groundwater from the Lake Simcoe Watershed and surface water from Lake Ontario. Lake Simcoe is the fourth largest lake wholly located in Ontario. The Lake Simcoe Watershed covers 3,400 square kilometres and 20 municipal borders, including the entirety of Aurora. There are over 500,000 residents in the watershed and the population in the southern portion of the region is growing quickly. Land use in the watershed is evolving over time, currently with 8% classified as urban land and 36% classified as agricultural land.

The physical impacts of climate change are most noticeable due to a shorter winter season, seasonal changes in river and creek flow, and more phosphorus in the water. The shorter winter season can have profound impacts on the natural habitat as it affects the distribution of oxygen and nutrients in the lake, which wildlife are dependant on. The seasonal changes in the river and creek flow include less water flowing in the spring and more flowing in the winter; such changes can impact infrastructure networks located near the East Holland River due to flooding or a decline in groundwater. Finally, the amount of phosphorus in the lake, most likely increasing because of more extreme weather such as rainstorms, can lead to degraded water quality and more frequent algal blooms. Public health and safety depend on the stability and predictability of the ecosystem in the Lake Simcoe watershed.

1.5.2 Lake Ontario

The York Drinking Water System (York DWS) supplies treated water from Lake Ontario to the Town and other municipalities in York Region.
Lake Ontario is the easternmost of the Great Lakes of North America. The Lake Ontario watershed supplies water to approximately 9 million residents, which is roughly 25% of Canada's population.

According to Climate Change in the Great Lakes Basins: Summary of Trends and Impacts, a summary report by the TRCA, an increase in over-land air temperature and over-lake precipitation and a reduction in ice coverage are expected until the end of the century. Warmer water inhibits the mixing of lake water, extends the stratification period, and increases oxygen depletion which causes more widespread and longer periods of bottom anoxia or dead zones. As a result, massive fish kills, and certain types of algal blooms produce toxic chemicals and negatively affect the water quality. The release of heavy metals such as mercury, manganese, and iron are promoted when low oxygen water reacts with the bottom sediments, which further damages the water quality. Low oxygen water is more corrosive and can damage water pipes, release metals, and affect the quality and the taste of the water delivered to the residents.

1.6 Resident Satisfaction Survey

1.6.1 Overview

It is considered best practice for municipalities across Canada to conduct periodical resident satisfaction surveys. The Town recognizes the importance of resident input and began seeking a third-party public polling firm to conduct the 2023 Resident Satisfaction Survey. It is estimated that prior to 2023, the last resident survey was over 15 years ago, with the last mention of a resident survey being the November 2007 General Committee Report. The objectives for the 2023 Resident Satisfaction Survey were as follows:

- Determine the overall impressions of the Town's use of tax dollars
- Residents' perceived quality of life in the Town
- Identify top of mind issues
- Determine level of satisfaction with and perceived importance of services, programs, and communications provided by the Town
- Identify residents' perceptions and expectations concerning specific municipal planning priorities
- Determine how residents would like to receive information and preferred ways of engagement in the future

In September 2023, Forum Research was selected to conduct the survey. A computer-assisted telephone interviewing methodology was selected, which is an industry standard. Residents were selected using random digit dialing techniques, which is a random sampling technique. The criteria for participation were residents in the Town of Aurora who are 18 years of age or older. The sample size for the telephone survey was 800 residents and included both landline and mobile phone numbers to ensure accuracy and representativeness. Not all respondents were asked every survey question to keep the length of the interview under 10 minutes. Results were weighted by age and gender to ensure the sample reflected the target population of Aurora according to 2021 census data. Forum Research also provided the Town with an open link online survey that allowed all residents to answer the survey questions online. A summary of the results can be found below in Figure 6.

The telephone survey was conducted between November 21 and December 21, 2023, while the open link online survey was available on the Engage Aurora website (https://engageaurora.ca/) between December 6, 2023, and January 6, 2023. The link to the survey was promoted through the typical communication channels of the Town. As is industry standard, only the telephone survey is considered statistically valid, due to its random sampling technique. However, the open link online survey was an important engagement tool for the Town. In total, 432 people completed the open link online survey. The open link survey still provides the Town with important insights.

Both the Corporate Management Team and the Executive Leadership Team were engaged to help inform the questions included in the survey. The Town was advised to keep survey questions like those asked in surveys for other municipalities to allow for benchmarking.

1.6.2 Key Findings

Overall, most respondents (98%) rated the quality of life in Aurora as “good” or “very good”. When benchmarked against six other Canadian municipalities that Forum conducted resident surveys for, the Town has the highest quality of life. Regarding quality of services, 92% of survey respondents indicated that they are satisfied with the Town’s delivery of services. When compared to other municipalities across Canada, the Town has the highest rating of satisfaction with services. Respondents were most satisfied with fire services, parks, greenspaces, and multi-use trails, arts and culture offerings, recreation facilities and spaces, and availability of online services. Below is a visual representation of respondent satisfaction of services provided.

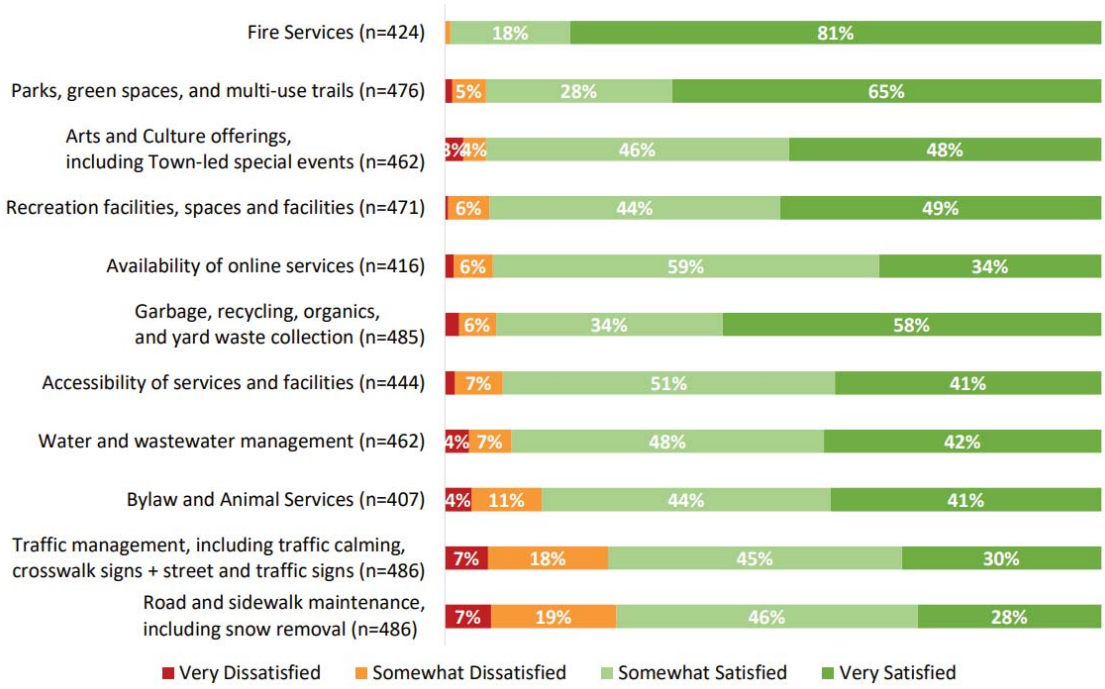


Figure 6: Satisfaction of Services Provided, Annual Aurora Resident Survey, February 2023

A statistical analysis, called a Gap Analysis, has been used to show the difference between how satisfied residents are with each Town's service and the impact of the services to residents' overall service satisfaction (i.e. perceived importance). A visual representation of the Gap Analysis is shown below. The satisfaction scores are plotted vertically, while the impact on overall satisfaction scores is plotted horizontally. The impact on overall satisfaction scores is based on a statistical method called regression analysis that determines how a specific service contributes to respondents' overall satisfaction with the services, or perceived importance.

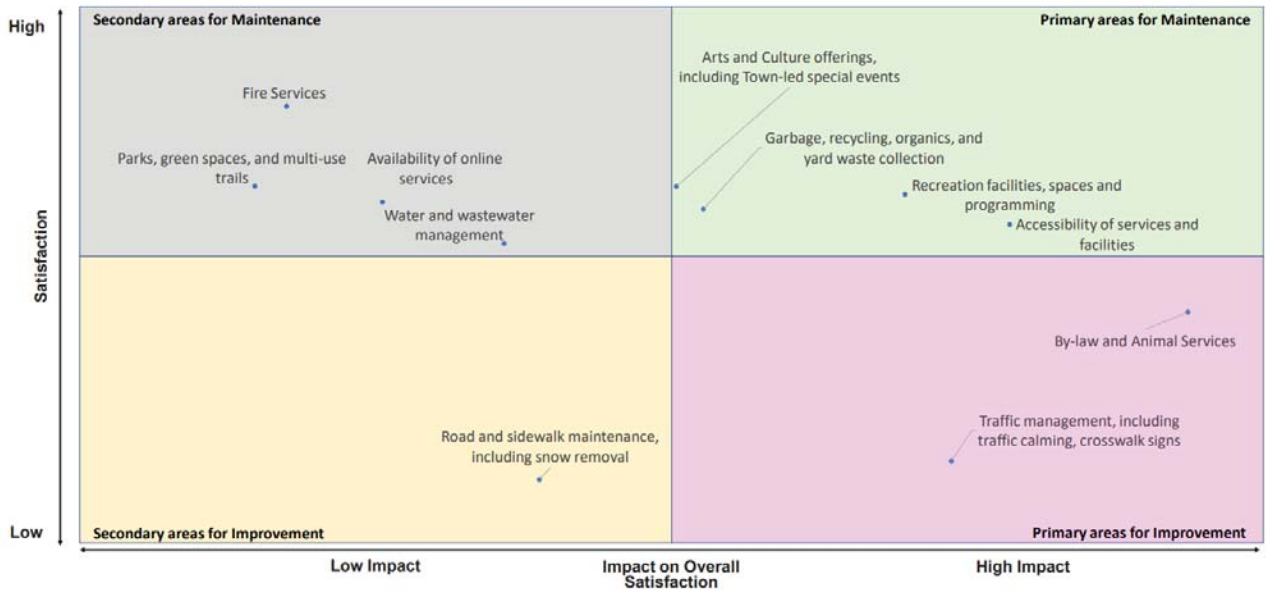


Figure 7: Gap Analysis, Annual Resident Survey, Town of Aurora, February 2023

Findings from this Gap Analysis identified two primary areas improvement: By-law and animal services, and traffic management. The analysis suggests that an increase in satisfaction in these areas would have the largest impact on overall satisfaction with Town services. A secondary area for improvement is road and sidewalk maintenance.

Most respondents (85%) said they receive a good value for their tax dollars. When compared to six other municipalities across Canada, the Town has the second highest rating of value for tax dollars. The majority (79%) of respondents are supportive of the Town spending money on infrastructure renewal and construction, however respondents were split on how to fund this renewal in infrastructure, with half supporting an increase in taxes to fund this, and half opposing. This means the Town is likely receptive to a conservative increase in spending.

1.6.3 Integration with AMP

The resident satisfaction survey is a key piece of information, with valuable findings. The Town is committed to continuing to prioritize the satisfaction of residents. Results from the 2023 Resident Satisfaction Survey will be used to inform the Proposed Levels of Service put forward in this AMP.

1.7 Ontario Regulation 588/17

As part of the *Infrastructure for Jobs and Prosperity Act, 2015*, the Ontario government introduced Regulation 588/17 - Asset Management Planning for Municipal Infrastructure (O. Reg 588/17). Along with creating better performing organizations, more liveable and sustainable communities, the regulation is a key, mandated driver of asset management planning and reporting. It places substantial emphasis on current and proposed levels of service and the lifecycle costs incurred in delivering them.

Figure 8 below outlines key reporting requirements under O. Reg 588/17 and the associated timelines.

2019

Strategic Asset Management Policy

2023

Asset Management Plan for Core Assets with the following components:

- Current levels of service
- Inventory analysis
- Lifecycle activities to sustain LOS
- Cost of lifecycle activities
- Population and employment forecasts
- Discussion of growth impacts

2024

Asset Management Plan for Core and Non-Core Assets (same components as 2023) and Asset Management Policy Update

2025

Asset Management Plan for All Assets with the following additional components:

- Proposed levels of service for next 10 years
- Updated inventory analysis
- Lifecycle management strategy
- Financial strategy and addressing shortfalls
- Discussion of how growth assumptions impacted lifecycle and financial strategies

Figure 8 O. Reg. 588/17 Requirements and Reporting Timelines

1.7.1 O. Reg. 588/17 Compliance Review

The following table identifies the requirements outlined in Ontario Regulation 588/17 for municipalities to meet by July 1, 2025. Next to each requirement a page or section reference is included in addition to any necessary commentary.

Requirement	O. Reg. Section	AMP Section Reference	Status
Summary of assets in each category	S.5(2), 3(i)	4.1.1 - 5.2.1	Complete
Replacement cost of assets in each category	S.5(2), 3(ii)	4.1.1 - 5.2.1	Complete
Average age of assets in each category	S.5(2), 3(iii)	4.1.3 - 5.2.3	Complete
Condition of core assets in each category	S.5(2), 3(iv)	4.1.2 – 5.2.2	Complete
Description of municipality's approach to assessing the condition of assets in each category	S.5(2), 3(v)	4.1.2 – 5.2.2	Complete
Current levels of service in each category	S.5(2), 1(i-ii)	4.1.6 - 5.2.6	Complete for Core Assets Only
Current performance measures in each category	S.5(2), 2	4.1.6 - 5.2.6	Complete for Core Assets Only
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	4.1.4 - 5.2.4	Complete
Costs of providing lifecycle activities for 10 years	S.5(2), 4	Appendix A	Complete
Growth assumptions	S.5(2), 5(i-ii) S.5(2), 6(i-vi)	6.1-6.2	Complete

Table 3 O. Reg. 588/17 Compliance Review Summary

2 Scope and Methodology

Key Insights

- This asset management plan includes 9 asset categories and is divided between tax-funded and rate-funded categories
- The source and recency of replacement costs impacts the accuracy and reliability of asset portfolio valuation
- Accurate and reliable condition data helps to prevent premature and costly rehabilitation or replacement and ensures that lifecycle activities occur at the right time to maximize asset value and useful life

2.1 Asset Categories Included in this Asset Management Plan

This asset management plan (AMP) for the Town is produced in compliance with Ontario Regulation 588/17. The July 2025 iteration of the AMP requires analysis of both core and non-core assets.

The AMP summarizes the state of the infrastructure for the Town's asset portfolio, establishes current levels of service, proposed levels of service, and the associated technical and customer-oriented key performance indicators (KPIs), outlines lifecycle strategies for optimal asset management and performance, and provides financial strategies to reach sustainability for the asset categories listed below.

Asset Category	Source of Funding
Road Network	Tax Levy
Bridges & Culverts	
Buildings	
Fleet	
Machinery & Equipment	
Park Facilities	
Water Network	User Rates
Sanitary Network	
Storm Network	

Table 4 AMP Asset Categories and Funding Sources

2.2 Deriving Replacement Costs

There are a range of methods to determine the replacement cost of an asset, and some are more accurate and reliable than others. This AMP relies on two methodologies:

- **User-Defined Cost and Cost/Unit**: Based on costs provided by municipal staff which could include average costs from recent contracts; data from engineering reports and assessments; staff estimates based on knowledge and experience
- **Cost Inflation/CPI Tables**: Historical cost of the asset is inflated based on Consumer Price Index or Non-Residential Building Construction Price Index

User-defined costs based on reliable sources are a reasonably accurate and reliable way to determine asset replacement costs. Cost inflation is typically used in the

absence of reliable replacement cost data. It is a reliable method for recently purchased and/or constructed assets where the total cost is reflective of the actual costs that the Town incurred. As assets age, and new products and technologies become available, cost inflation becomes a less reliable method.

2.3 Estimated Useful Life and Service Life Remaining

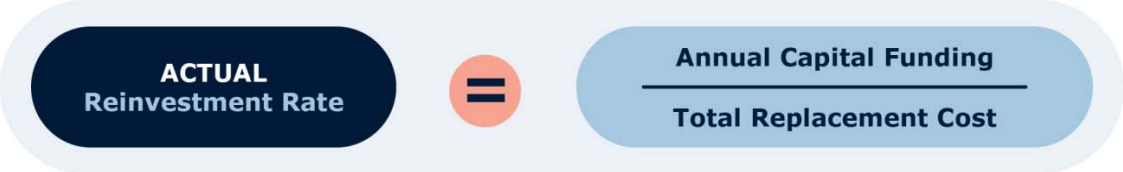
The estimated useful life (EUL) of an asset is the period over which the Town expects the asset to be available for use and remain in service before requiring replacement or disposal. The EUL for each asset in this AMP was assigned according to the knowledge and expertise of municipal staff and supplemented by existing industry standards when necessary.

By using an asset's in-service data and its EUL, the Town can determine the service life remaining (SLR) for each asset. Using condition data and the asset's SLR, the Town can more accurately forecast when it will require replacement. The SLR is calculated as follows:

2.4 Reinvestment Rate

As assets age and deteriorate they require additional investment to maintain a state of good repair. The reinvestment of capital funds, through asset renewal or replacement, is necessary to sustain an adequate level of service. The reinvestment rate is a measurement of available or required funding relative to the total replacement cost.

By comparing the actual vs. target reinvestment rate the Town can determine the extent of any existing funding gap. The reinvestment rate is calculated as follows:



2.5 Deriving Asset Condition

Condition	Description	Criteria	Service Life Remaining (%)
Very Good	Fit for the future	Well maintained, good condition, new or recently rehabilitated	80-100
Good	Adequate for now	Acceptable, generally approaching mid-stage of expected service life	60-80
Fair	Requires attention	Signs of deterioration, some elements exhibit significant deficiencies	40-60
Poor	Increasing potential of affecting service	Approaching end of service life, condition below standard, large portion of system exhibits significant deterioration	20-40
Very Poor	Unfit for sustained service	Near or beyond expected service life, widespread signs of advanced deterioration, some assets may be unusable	0-20

Table 5 Standard Condition Rating Scale

The analysis in this AMP is based on assessed condition data only as available. In the absence of assessed condition data, asset age is used as a proxy to determine asset condition.

3 Portfolio Overview

Key Insights

- The total replacement cost of the Town's asset portfolio is approximately $2.3 billion
- The Town's target re-investment rate is 1.9%, and the actual re-investment rate is 1.1%, contributing to an expanding infrastructure deficit
- 85% of all assets are in fair or better condition
- Average annual capital requirements total $43.8 million per year across all assets, excluding any planned contributions to supporting reserves

3.1 Total Replacement Cost of Asset Portfolio

The asset categories analyzed in this AMP have a total replacement cost of $2.3 billion based on inventory data from 2023. This total was determined based on a combination of user-defined costs and historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.

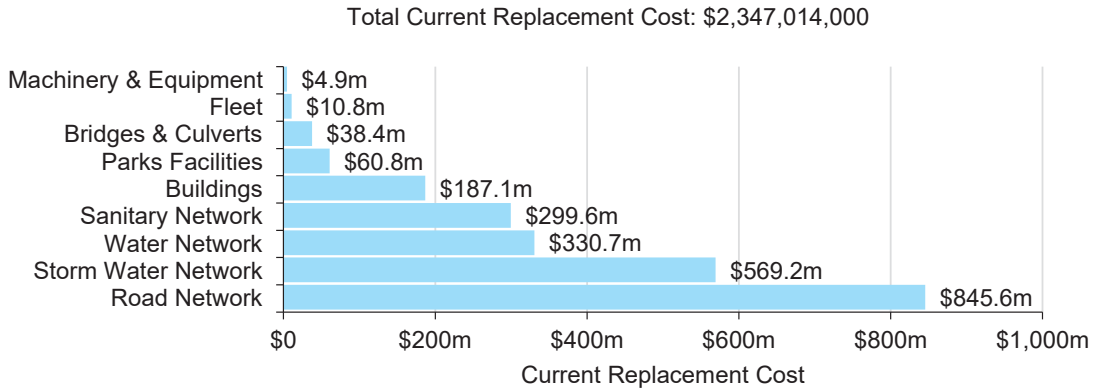


Figure 9 Current Replacement Cost by Asset Category

Table 6 below identifies the methods employed to determine replacement costs across each asset category:

Asset Category	Replacement Cost Method
Road Network	Cost per Unit 71%, CPI Tables 19% User-Defined 8%
Bridges & Culverts	CPI Tables
Storm Network	Cost per Unit 89%, CPI Tables 10% User-Defined 1%
Water Network	Cost per unit 5%, CPI Tables 28% User-Defined 67%
Sanitary Network	Cost per Unit 97%, User-Defined 3%
Buildings	User Defined
Machinery & Equipment	CPI Tables
Fleet	CPI Tables
Park Facilities	CPI Tables 69%, User-Defined 22% Cost per Unit 9%

Table 6 Replacement Cost Methods by Asset Category

3.2 Target vs. Actual Reinvestment Rate

Table 7 below depicts funding gaps or surpluses by comparing target vs actual reinvestment rate. To meet the long-term replacement needs, the Town should be allocating approximately $43.8 million annually, for a target reinvestment rate of 1.9%. Actual annual spending on infrastructure totals approximately $25.9 million, for an actual reinvestment rate of 1.1%.

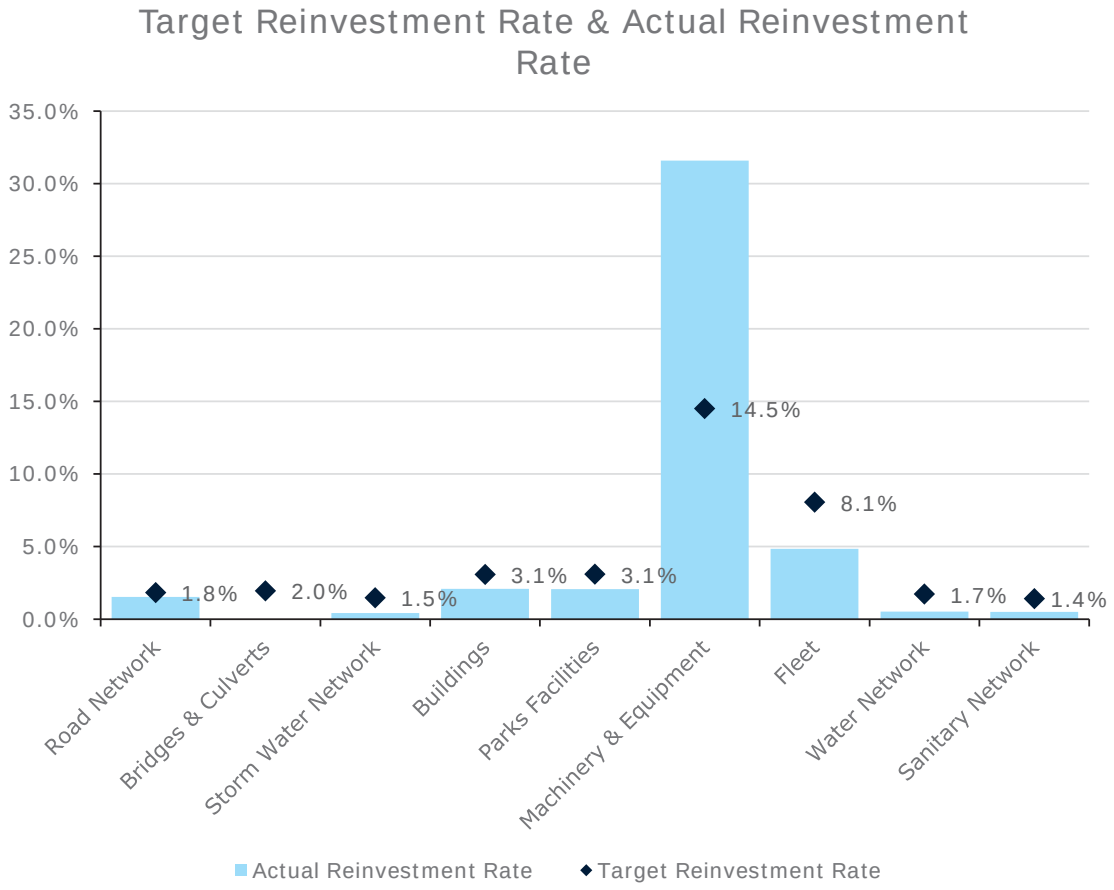


Table 7 Target vs. Actual Reinvestment Rate by Asset Category

3.3 Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 85% of assets in Aurora are in fair or better condition. This estimate relies on both age-based and field condition data.

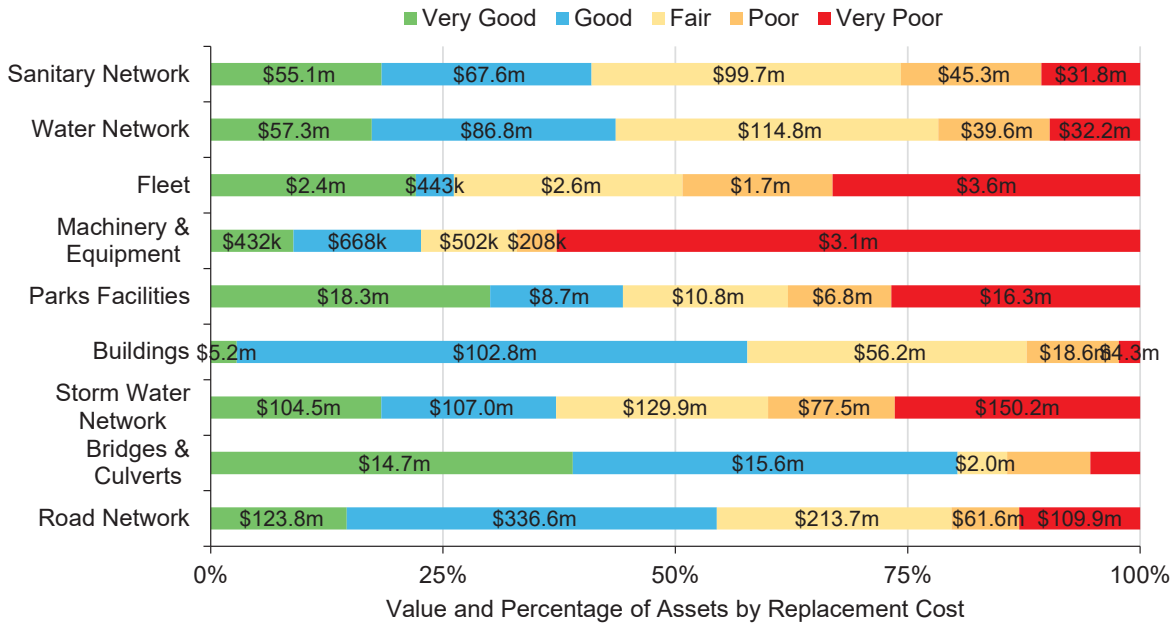


Figure 10 Asset Condition by Asset Category

This AMP relies on assessed condition data for 37% of assets; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. Table 8 below identifies the source of condition data used throughout this AMP.

Asset Category	% of Assets with Assessed Condition
Road Network	71%
Bridges & Culverts	82%
Stormwater Network	0%
Buildings & Facilities	98%
Parks Facilities	4%
Machinery & Equipment	0%
Fleet	0%
Water Network	2%
Sanitary Network	4%

Table 8 Condition Data by Asset Category

3.4 Forecasted Capital Requirements

The development of a long-term capital forecast should include both asset rehabilitation and replacement requirements. With the development of asset-specific lifecycle strategies that include the timing and cost of future capital events, the Town can produce an accurate long-term capital forecast. The following graph identifies capital requirements over the next 80 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.

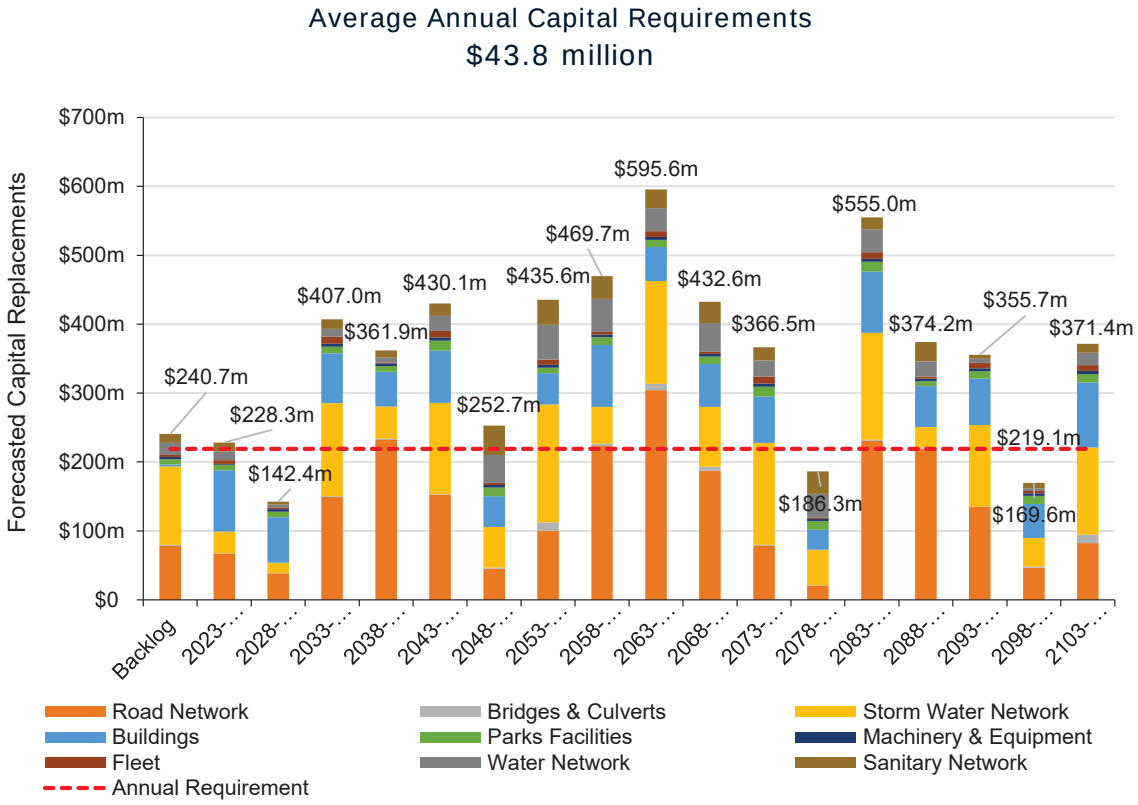


Figure 11 Capital Replacement Needs: Portfolio Overview 2023-2107

4 Impacts of Growth

Key Insights

- Understanding the key drivers of growth and demand will allow the Town to plan for new infrastructure more effectively, and the upgrade or disposal of existing infrastructure.
- Significant population and employment growth is expected.
- The costs of growth should be considered in long-term funding strategies that are designed to maintain the current level of service.

4.1 Description of Growth Assumptions

The demand for infrastructure and services will change over time based on a combination of internal and external factors. Understanding the key drivers of growth and demand will allow the Town to plan for new infrastructure more effectively, and the upgrade or disposal of existing infrastructure. Increases or decreases in demand can affect what assets are needed and what level of service meets the needs of the community.

4.1.1 Aurora Official Plan (2024)

The Official Plan is a planning document for the purpose of guiding the future development of the Town. The Town's Official Plan is intended to direct the actions of local governments, and provide guidance for land use, development decisions, and growth management with consideration of social, economic, and environmental factors. The document planning horizon spans the next 37 years, concluding in 2051.

The Official Plan for the Town was prepared and originally adopted in September 2010. The Plan has been updated to include approved Official Plan Amendments as of January 1, 2024. The Official Plan is developed based on the stakeholder consultation in accordance with the Provincial and York Region policies.

The Official Plan reflects the goals of developing a complete community, enhancing environmental responsibility, promoting responsible growth management, supporting the use of transit, and efficient use of infrastructure. The Town seeks to maintain a sustainable development pattern that focuses on intensification in strategic areas, protection of existing stable neighbourhoods, the revitalization of the Aurora Promenade, and the efficient use of the greenfield lands.

One of the primary factors considered in the Plan is to provide adequate municipal services (water, sewer, and stormwater), transportation services, social services, recreational facilities, and utility services to accommodate the proposed growth cost-effectively and efficiently. According to the Plan, the population is projected to grow to 85,800 people with the number of jobs projected to reach 41,600 by 2051. The following table outlines the projected population and employment changes to the Town between 2021 and 2051 from Statistics Canada.

Year	Population (Projected)	Employment (Projected)
2021	64,000	29,600
2031	71,900	34,100
2041	79,600	38,300
2051	85,800	41,600

Table 9 Projected Population and Employment for Aurora 2021-2051

Approximately 45 percent of new residential growth, is to be accommodated through intensification within the Built Boundary. The remaining 55 percent of new residential growth is to be accommodated within the Residential Designated Greenfield Area. Furthermore, new employment within the Greenfield areas must be planned to achieve a minimum gross density of 55 jobs per hectare.

Aurora's projected new employment growth shall be accommodated by a combination of new Designated Greenfield Area development, intensification of existing designated employment areas, and intensification in Strategic Growth Areas. The Existing Employment areas will continue to function as important employment areas. In addition, it is anticipated that additional home based jobs will be created within the existing residential land base.

4.1.2 Master Plans and Studies

The Town has developed several key master plans and studies that serve as guiding documents for municipal services with the expected growth. The Town has the following master plans and studies:

- Comprehensive Stormwater Management Master Plan (2014)
- Stream Management Master Plan (2019)
- Master Transportation Study (2020)
- Parks & Recreation Master Plan (2023)
- Active Transportation Master Plan (2024)

Additionally, York Region has developed the York Region Transportation Master Plan (2023).

The Comprehensive Stormwater Management Master Plan (CSWM-MP) was developed by Aquafor Beech Ltd and submitted to the Town in November 2014. The plan identifies the Town as being located within the Lake Simcoe watershed, and more specifically, in the East Holland sub watershed where anthropogenic activities have altered the ecological landscape and associated natural processes. This has resulted in increased surface runoff and degradation of water quality within the Lake Simcoe watershed. The development of the Comprehensive Stormwater

Management Master Plan is an important step in meeting the objectives of the Lake Simcoe Protection Plan, which are to reduce phosphorus loading and other nutrients of concern to Lake Simcoe and to reduce the discharge of pollutants to Lake Simcoe. The CSWM-MP identified various implementable measures for the Town of Auora to help meet these objectives. For pollution control, these measures include implementing materials storage controls, advising landowners on environmentally acceptable ways to drain pools, implementing an erosion and sediment control program, a cross connection control program, undertaking public and business education, as well as salt management measures and snow disposal practices in the winter months. The plan also recommends several retrofits that would serve as source control such as rain gardens soak away pits, pervious pavements, and rain barrels. The plan recommends various other retrofits and low impact developments (LIDs) such as adding perforated pipes, bioswales, or oil and grit separators to roads without ditches.

The Stream Management Master Plan & Tannery Creek Flood Relief Study was completed in 2019. This master plan was created in accordance with recommendations from the Town's Comprehensive Stormwater Management Master Plan (2014) and with its obligations under the Lake Simcoe Protection Plan (2009). Areas identified in the Stream Management Master Plan include watercourse enlargement and widening, deterioration of erosion control structures, erosion of private property, creation of barriers to fish mitigation, undercutting of bridge abutments and bank restoration materials, loss of floodplain access during more frequent flows, and more. Urbanization has placed the integrity of watercourses and adjacent lands at risk. The master plan has identified several possible approaches to mitigate the stream management problem in Aurora, such as stream restoration projects for erosion, flood mitigation, and improvement of aquatic habitat and long-term watershed management strategies.

The Master Transportation Study (MTS) was completed in 2020. The MTS seeks to review and address existing transportation needs within the Town, as well as provide support for the growth of the Town to 2041. The MTS seeks to develop and integrated set of road network and infrastructure solutions that continue to accommodate vehicles, cyclists, pedestrians, and transit users, while streamlining the improvements to preserve the small-town community characteristics of the Town and the Town's historic downtown core. The solutions recommended by the MTS were to implement Travel Demand Management, supporting and encouraging transit use, and active transportation improvements such as completing the sidewalk network. Additionally, the MTS puts forth the recommendation to improve traffic signal timing adjustments, and implement travel lane modifications, safety improvements, and parking management.

The Parks and Recreation Master Plan was prepared by Monteith Brown Planning Consultants and submitted to the Town in May 2023. The master plan is intended to

guide decision-making with respect to municipal parks and recreation facilities and services in the Town from 2023 to 2027. The plan puts forward several recommendations, from acquiring new land to develop new facilities, to reconstructing facilities with stakeholder input, to undertaking regular condition assessments for park amenities.

The Master Plans for core infrastructure largely indicate that the Town must integrate notable considerations for population and employment growth in new development. Further studies may be required to update the plans and strategies to improve growth management.

4.1.3 Development Charges Background Study (2024)

The Town prepared a Development Charges Background Study in 2023 through Watson & Associates Economists Ltd, pursuant to Section 10 of the Development Charges Act, 1997 (DCA). The 2024 DC Background Study addresses: the forecast amount, type, and location of growth; identification of the servicing needs to accommodate growth; the capital costs to provide the services; and the approved by-law (No. 6592-24) enables the Town to collect development charges in support of its provision of municipal services to its growing community.

The DC Study presents proposed new development charges based upon costing and related assumptions outlined in this document and compares the proposed charges to the current charges. Development charges are broken down by each municipal-wide service.

The DC Background Study, pursuant to the DCA, includes a reference to an AMP for the purposes of developing an asset management program that considers future growth. This AMP supports the objectives defined in the Development Charges Background Study.

4.2 Regional Growth

The Regional Official Plan was adopted by York Region Council in June 2023 and approved by the Minister of Municipal Affairs and Housing in November 2023. The Plan incorporates seven major goals based on population and employment growth. According to the Plan, the nine local municipalities in York Region (Aurora, East Gwillimbury, Georgina, King, Markham, Newmarket, Richmond Hill, Vaughan, Whitchurch-Stouffville) are currently experiencing the following trends: population growth and labour growth.

The 2021 Growth and Development Review states that York Region's population and employment growth will continue. The following graph, found in the document, displays the annual population growth in the region from 2012 to 2021. The average growth rate from 2012 to 2021 is 1.3%.

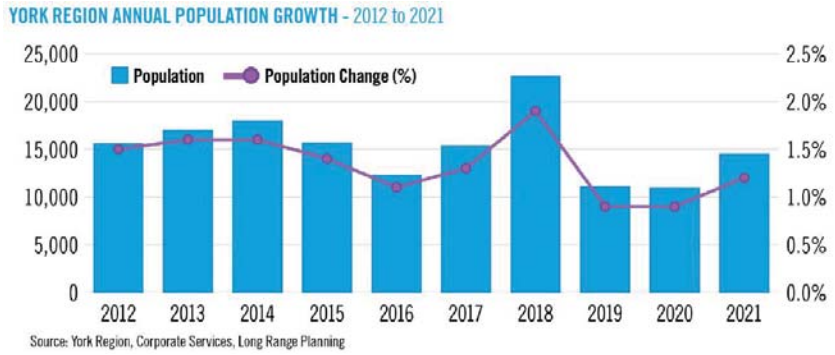


Figure 12 York Region Population Growth 2012-2021

In accordance with the Provincial document *A Place to Grow: Growth Plan* for the Greater Golden Horseshoe, Figure 13 below (referenced from the same document) shows the population and employment projections from 2016 to 2051.

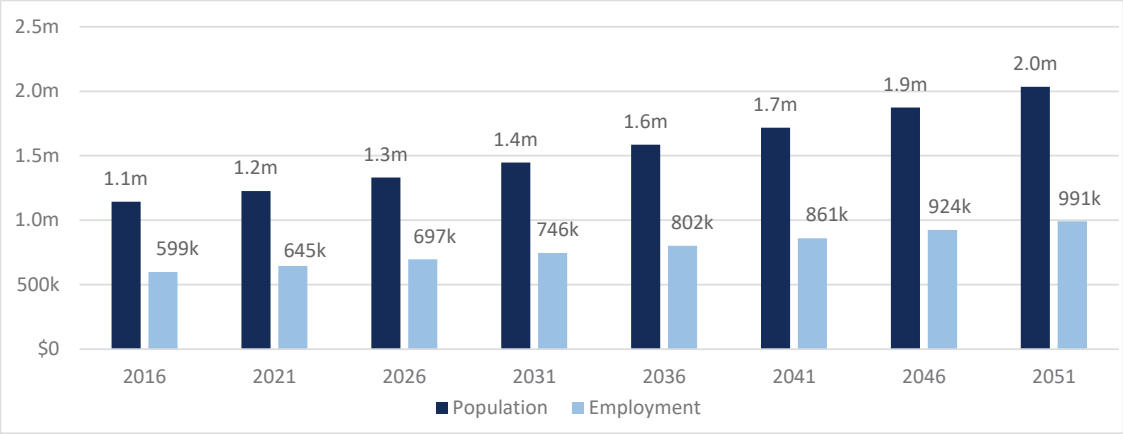


Figure 13 Population and Employment Projections for Greater Golden Horseshoe

York Region has established population and employment forecasts for the nine local municipalities to 2051 in the Official Plan. Table 10 below shows the population and employment projections in Aurora from 2016 to 2051.

	2016	2021	2031	2041	2051
Population	57,200	63,800	71,600	79,000	85,000
Employment	27,300	29,200	33,700	37,900	41,400

Table 10 Population and Employment Projections for Aurora from York Region Official Plan

The most recent census data from 2021 shows an employment increase above the projected level, reaching 34,205 while the population increase below the projected level. Given the upward trends of population and employment, Aurora is likely to experience continuous growth.

4.3 Impact of Growth

By July 1, 2025, the Town's asset management plan must include a discussion of how the assumptions regarding future changes in population and economic activity informed the preparation of the lifecycle management and financial strategy.

The Strategic Plan for the Town has indicated the priorities of maintaining sustainable infrastructure and a thriving business community, providing fiscally responsible practices, supporting balanced and sustainable growth, as well as providing gathering places and ensuring effective communications.

The Town will ensure the water and sewage disposal services, water supply services, stormwater management, transport pathways, recreation trails, public utilities, and emergency services are planned and developed to provide for the

growth targets outlined in the Official Plan. As growth-related assets are constructed or acquired, they should be integrated into the Town's AMP. While the addition of residential units will add to the existing assessment base and offset some of the costs associated with growth, the Town will need to review the lifecycle costs of growth-related infrastructure. These costs should be considered in long-term funding strategies that are designed to, at a minimum, maintain the current level of service.

5 Analysis of Tax-funded Assets

Key Insights

- Tax-funded assets are valued at $1.7 billion
- Tax-funded assets are funded at 41.4% of their long-term requirements
- Average annual capital requirement for tax-funded assets is $25.4 million
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

5.1 Road Network

The Road Network is a critical component of the provision of safe and efficient transportation services and represents one of the highest value asset categories in the Town's asset portfolio. It includes all municipally owned and maintained roadways in addition to supporting roadside infrastructure including pavement and curbs, sidewalks, paths, multiuse trails, streetlights, signage, retaining walls, and traffic signals.

Decisions on road maintenance and repairs are primarily managed through RoadMatrix – a data-driven pavement modelling and management tool. The tool factors in the condition of the road and other linear right-of-way assets and the road classification to recommend the most cost-effective treatments within a finite funding envelope. In addition to the recommendations from the pavement management system, input from the Operations road division annual inspections is incorporated to create a more comprehensive workplan. The Town has not yet optimized Citywide's project prioritization applications, therefore, staff should continue to use their pavement management system to develop a work plan for their linear assets.

The state of the infrastructure for the road network is summarized in Table 11.

Replacement Cost	Condition	Financial Capacity	
$846 M	65%	Recommended Annual Requirement:	$15.5 M
		Funding Available:	$13.0 M
		Annual Deficit:	$2.5 M

Table 11 Road Network State of the Infrastructure

The following core values and level of service statements are a key driving force behind the Town's asset management planning:

Service Attribute	Level of Service Statement
Scope	The road network service is conveniently accessible to the whole community in sufficient capacity (meets traffic demands) and is available under all weather conditions.
Quality	The road network is in good condition with minimal unplanned service interruptions and road closures.

Table 12 Road Network Level of Service Statements

5.1.1 Asset Inventory & Costs

Table 13 below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Town's road network inventory.

Asset Segment	Quantity	Replacement Cost	Recommended Annual Capital Requirement
Arterial Roads	58,210 m^2	$24,099,000	$367,000
Collector Roads	586,321 m^2	$194,659,000	$2,959,000
Local Roads	1,514,588 m^2	$355,928,000	$5,410,000
Retaining Walls	168 Assets	$54,032,000	$1,896,000
Signage	8,420 Assets	$1,434,000	$143,000
Sidewalks	414,343 m^2	$111,161,000	$2,138,000
Streetlights	5,891 Assets	$68,690,000	$1,280,000
Traffic Signals	18 Assets	$4,114,000	$206,000
Railing and Fencing	1,342 m	$2,734,000	$96,000
Parking Lot	67,482 m^2	$28,790,000	$960,000
Total		**$845,639,000**	**$15,454,000**

Table 13 Road Network Inventory and Valuation

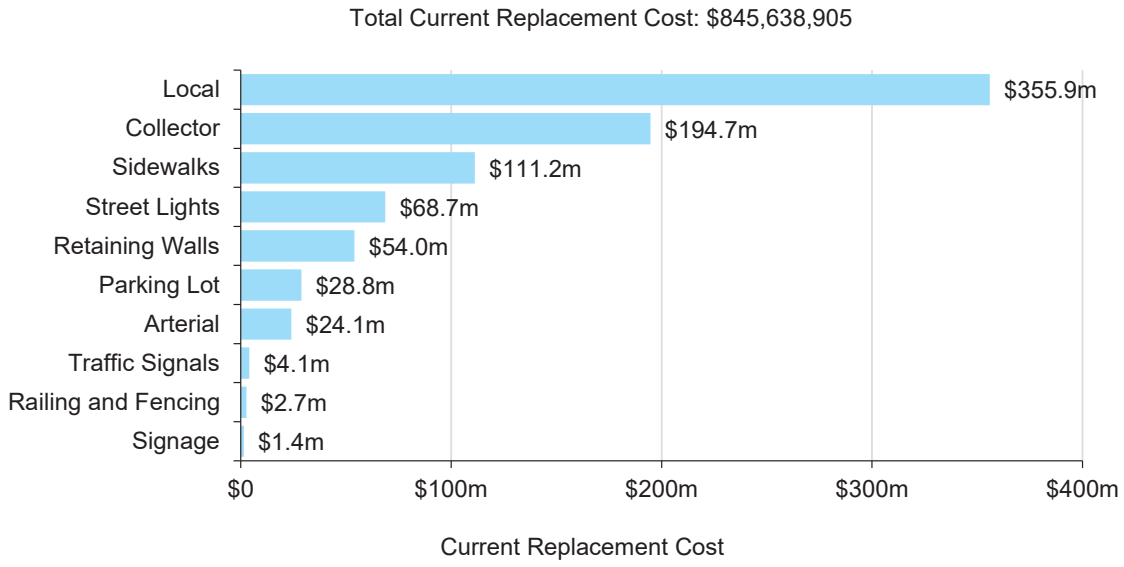


Figure 14 Road Network Replacement Cost by Segment

Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to represent realistic capital requirements more accurately.

5.1.2 Asset Condition & Age

Table 14 below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Arterial Roads	60	24	72%
Collector Roads	60	25	73%
Local Roads	60	24	69%
Retaining Walls	30	19	26%
Signage	10	18	12%
Sidewalks	50	23	66%
Streetlights	50	27	49%
Traffic Signals	20	25	15%
Railing and Fencing	30	4	80%
Parking Lot	30	16	59%
Average			**65%**

Table 14 Road Network Asset Age and Condition Summary

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs, inform the selection of optimal lifecycle strategies, and improve planning for potential long-term replacement spikes.

Figure 15 below displays the average asset age vs EUL for each asset segment.

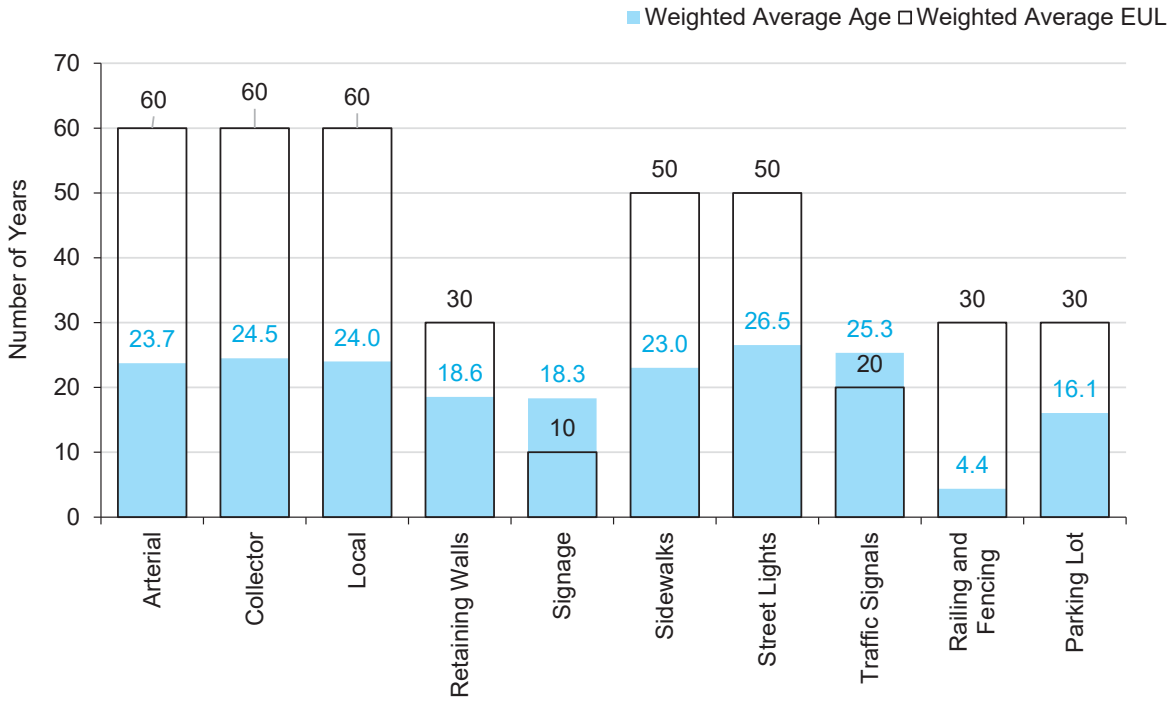


Figure 15 Road Network Asset Age vs. EUL

Figure 16 below visually illustrates the average condition for each asset segment on a very good to very poor scale.

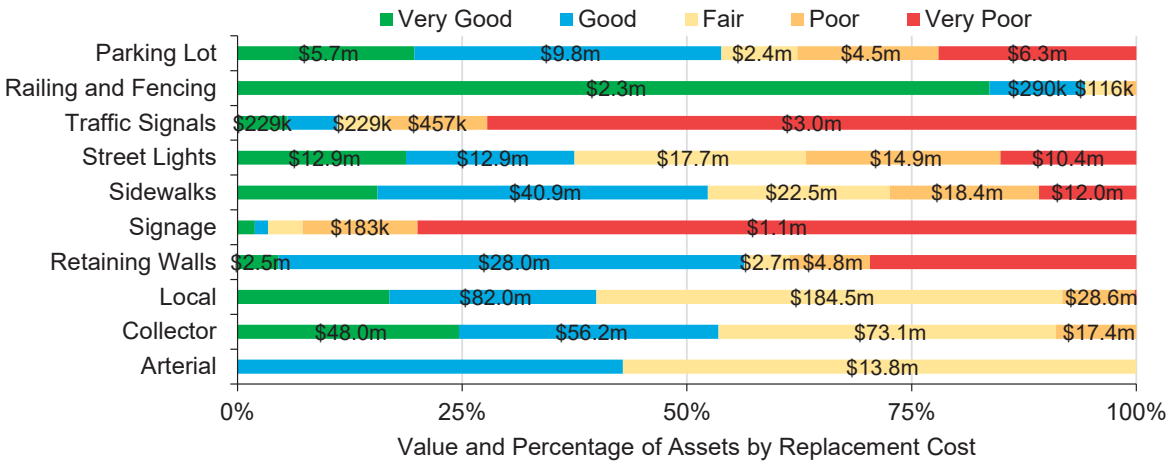


Figure 16 Road Network Asset Condition by Segment

To ensure that the Town's Road network continues to provide an acceptable level of service, the Town should monitor the average condition of all assets. If the average

condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation, and replacement activities is required to increase the overall condition of the roads.

Each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the Town's current approach:

- A Road Needs Study is performed every 3 years and entered into a pavement management system
- Parking lots are assessed cyclically every 10 years
- Annual inspections for sidewalks that include deficiency testing
- Regulatory and warning road signs are assessed for post condition and reflectivity on an annual basis as per MMS standards
- Traffic signals are inspected every two years, along with conflict monitoring
- Streetlights are inspected as per minimum maintenance standards, with extra inspections during winter months for public safety
- Regular internal inspections are completed for various other road assets

In this AMP the following rating criteria is used to determine the current condition of road segments and forecast future capital requirements:

Condition	Rating
Very Good	90-100
Good	70-89
Fair	50-69
Poor	30-49
Very Poor	0-29

Table 15 Road Network Condition Rating Scale

5.1.3 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

Table 16 outlines typical lifecycle management activities commonly deployed to the Town's road network:

Activity Type	Description of Current Strategy
Maintenance & Inspection	The Town regularly conducts a variety of maintenance activities including the following planned activities: street light inspection and maintenance (monthly to annually), sidewalk inspection (annually), crack sealing (monthly to annually). Repairs and maintenance, such as snow removal are completed as needed. All activities are conducted to meet Minimum Maintenance Standards for Municipal Highways (O. Reg. 239/02).
	Paved roads may receive crack sealing treatment based on if the pavement meets the road intervention decision criteria. In most cases, the road must be below an established condition threshold and have had no crack sealing treatment previously.
	Paved roads are to be assessed for condition at least every three (3) years. The last assessment was completed in 2023. Assessments were completed by an external engineering consultant. Data collected included surface distress and roughness data which helped inform the pavement quality index (PQI).
Rehabilitation	Rehabilitation activities may be planned or reactive in nature. Roads are commonly selected for mill and overlay, asphalt replacement, or full reconstruction. The decision to rehabilitate is mostly driven by the roads condition, with additional considerations (i.e. other linear projects, strategic opportunities, etc.) as needed.
Replacement	On an annual basis sidewalks are reconstructed. Candidates for reconstruction are based on an annual assessment focused on condition.
	Parking lot rehabilitation is primarily determined based on condition assessments.
	Roads may be reconstructed where the pavement condition has declined beyond the established threshold. Roads can also be selected for reconstruction as part of a road urbanization project.

Table 16 Road Network Lifecycle Management Strategies

The following decision tree outlines the general decision-making framework for paved roads. In some cases, exceptions and/or additional considerations (i.e. road class) may apply. The Pavement Quality Index (PQI) and Surface Distress Index

(SDI) has been factored into the Town's pavement management system decision tree below:

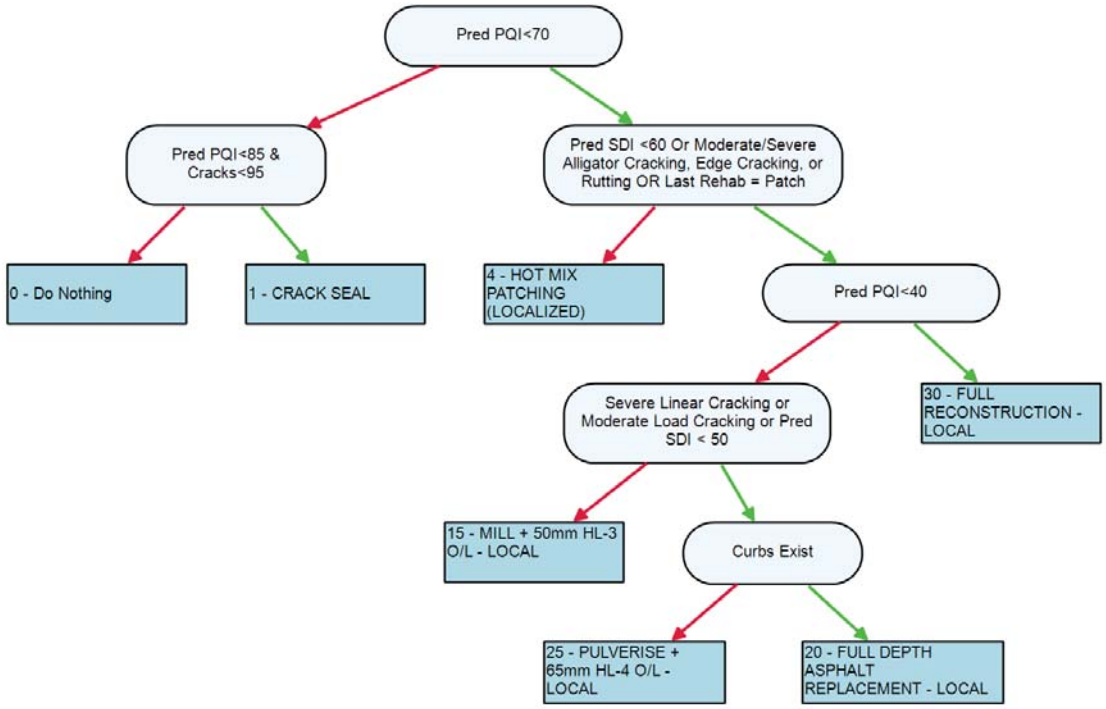


Figure 17 Paved Roads Decision Tree Summary

Forecasted Capital Requirements

Based on the lifecycle strategies identified previously for Paved Roads, and assuming the end-of-life replacement of all other assets in this category, the following graph forecasts capital requirements for the Road Network.

The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs to meet future capital needs. Figure 18 Road Network Forecasted Replacement Needs 2024-2108 is developed using information from the CityWide software which relies on the capital needs within an asset category. The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Table 126 in Appendix A.

The capital costs will typically differ between these two graphs since a capital plan resulting from individual asset needs will be different than the capital plan resulting from a project-based approach. The goal of this asset management plan is to assess the required long-term funding for these assets to maintain the desired

levels of service. As staff work towards refining the data and structure within CityWide, they will be able to run various risk and lifecycle strategies that will help them prioritize assets for rehabilitation and/or replacement effectively. In the meantime, the road reconstruction program from the pavement management system will provide a more accurate project-based forecast.

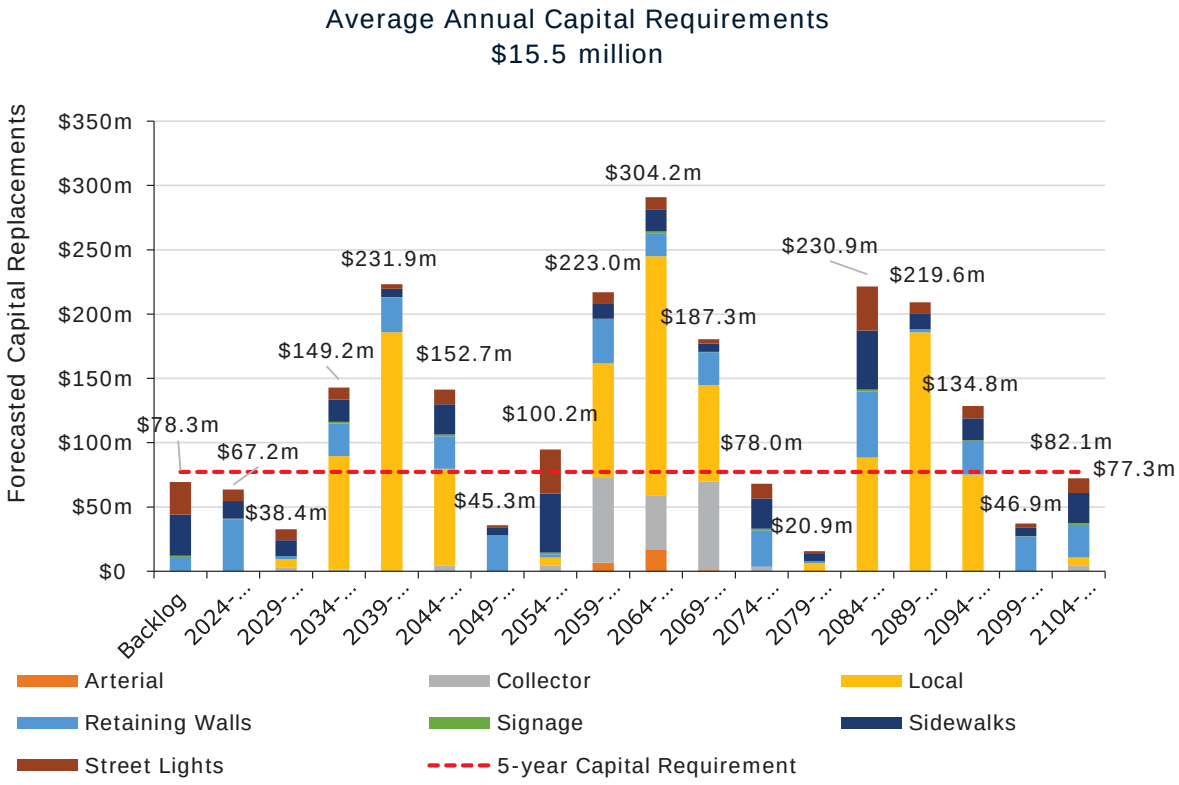


Figure 18 Road Network Forecasted Replacement Needs 2024-2108

5.1.4 Risk & Criticality

Risk Matrix

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the road network are documented below, with their weights indicated in brackets:

Probability of Failure (POF)	Consequence of Failure (COF)
Structural (75%)	Economic (25%)
Functional (25%)	Social (15%)
	Health and Safety (40%)
	Environmental (20%)

Table 17 Road Network Risk Parameters

Based on the above noted attributes and weightings, risk is calculated for each asset. The following heat map illustrates the probability and consequence of failure scores for all road network assets based on 2023 inventory data. Please refer to Figure 96 in Appendix C for a more detailed overview of the criteria used to estimate the risk rating of each asset.

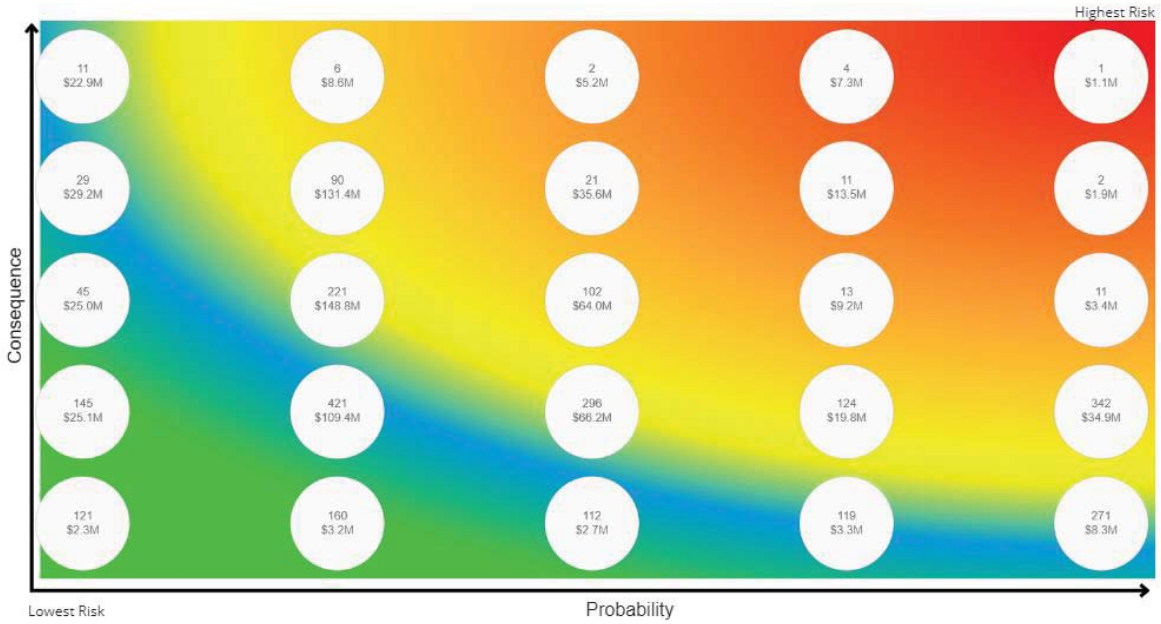


Figure 19 Road Network Risk Matrix Heat Map

This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The identification of critical assets is a valuable tool in identifying potential risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

Risks to Current Asset Management Strategies

Table 18 summarizes key trends, challenges, and risks to service delivery that the Town is currently facing:

Asset Data & Information

Inventory data is gathered continuously. Staff have plans to enhance data management process to increase the accuracy and reliability of asset data and information. Once completed, staff can confidently develop data-driven strategies to address infrastructure needs.

Lifecycle Management Strategies

The current lifecycle management strategy for roads is considered mainly proactive with reactive measures when required. It is a challenge to find the right balance between maintenance, capital rehabilitation, and the reconstruction of roads. Staff has plans to formally adopt better defined strategies to replace inferior infrastructure design, extend pavement lifecycle, explore cooperation opportunity with other assets, and reduce overall lifecycle costs. These strategies will require sustainable annual funding to minimize the deferral of capital works.

Capital Funding Strategies

Major capital rehabilitation and replacement projects are often dependant on the availability of grant funding opportunities. The Town has developed a project plan to address the infrastructure needs. When grants are not available, rehabilitation and replacement projects may be deferred. An enhanced proactive strategy can help to extend the service life of structures with lower funding requirements. A long-term capital funding strategy can reduce dependency on grant funding and help prevent deferral of necessary capital works.

	**Aging Infrastructure** As roads continue to age, there are a handful of structures that are approaching the end of their useful lives. High volumes of traffic and heavy vehicles accelerate the deterioration of road surfaces. Roads with poor condition pose higher demand on maintenance and rehabilitation. Current lifecycle management strategies are proactive. An enhanced proactive strategy can help to extend the service life of structures with lower funding requirement.
	Climate Change & Extreme Weather Events As extreme weather events are projected to continue, the events can result in damage to the road network and pose higher demand on maintenance and repair of the assets. Incorporating a monitoring and maintenance program for all road infrastructure can further support infrastructure resiliency and help mitigate the risk.

Table 18 Road Network Qualitative Risk Summary

5.1.5 Current Levels of Service

The following tables identify the Town's current level of service for the road network. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Town has selected for this AMP.

Community Levels of Service

Table 19 outlines the qualitative descriptions that determine the community levels of service provided by the road network.

Service Attribute	O. Reg. 588/17 Mandated	Qualitative Description	Current LOS (2023)
Scope	Yes	Description, which may include maps, of the road network in the municipality and its level of connectivity	The Town's road network contains local, collector, and arterial roads which are classified based on O. Reg. 239/02 speed limits and annual average daily traffic counts. These roads provide access throughout the Town and to neighbouring municipalities. Please refer to Figure 84 in Appendix B for a map of the Town's road network.
Quality	Yes	Description or images that illustrate the different levels of road class pavement condition	The Town's most recent road condition assessment was completed in 2023. Every road section received a surface condition rating ranging from 0-100. Condition scores are generally grouped and defined as follows: Very Poor: 0-29 Poor: 30-49 Fair: 50-69 Good: 70-89 Very Good: 90-100
Safe & Compliant	No	The Transportation Network is safe to use and complies with all relevant regulations	Description of the Town's winter maintenance policy, including a map of the Town served. Please refer to Figure 85 in Appendix B for a map of the Town's winter maintenance routes.
Affordable	No	The transportation network is affordable to all users	Description of measures to improve service cost effectiveness

Table 19 Road Network Community Levels of Service

Technical Levels of Service

Table 20 outlines the quantitative metrics that determine the technical level of service provided by the road network. The current LOS indicates the performance of each metric as of the specified date, in brackets. Current LOS performance is distinct from proposed LOS which is discussed in section 5.1.5.

Service Attribute	O. Reg. 588/17 Mandated	Technical Metric	Current LOS (2023)
Scope	Yes	Lane-km of arterial roads (mms classes 1 and 2) per land area (km/km^2)	0.4 km
	Yes	Lane-km of collector roads (mms classes 3 and 4) per land area (km/km^2)	4.0 km
	Yes	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	6.1 km
Quality	Yes	Average pavement condition index for paved roads in the municipality	70
	Yes	Average surface condition for unpaved roads in the municipality (e.g. excellent, good, fair, poor)	N/A
Safe & Compliant	No	O&M expenditure related to winter maintenance	$1.6 M
		Response time for sidewalk clearing	24 hours
		Response time for arterial roads	16 hours
		Response time for collector roads	24 hours
		Response time for local roads	24 hours
Accessible	No	% of roads equipped with bike lanes	3.4%
Affordable	No	O&M Expenditure per capita	$208
	No	Average Annual Reinvestment Rate	1.5%
	No	Five Year Average Annual Capital Expenditure	$4,910,000

Table 20 Road Network Technical Levels of Service

5.2 Bridges & Culverts

Bridges and culverts represent a critical portion of the transportation services provided to the community. The Department of Public Works is responsible for the maintenance of all bridges and culverts located across municipal roads with the goal of keeping structures in an adequate state of repair and minimizing service disruptions.

The state of the infrastructure for bridges and culverts is summarized in Table 21.

Replacement Cost	Condition	Financial Capacity	
$38.4 M	63%	Annual Requirement:	$739,000
		Funding Available:	$0
		Annual Deficit:	$739,000

Table 21 Bridges and Culverts State of the Infrastructure

The following core values and level of service statements are a key driving force behind the Town's asset management planning:

Service Attribute	Level of Service Statement
Scope	Bridges and culverts are available under all weather conditions. No bridges or culverts in the Municipality have loading restrictions.
Quality	The bridges and culverts are in very good condition with minimal unplanned service interruptions and closures.

Table 22 Bridges and Culverts Level of Service Statements

5.2.1 Asset Inventory & Costs

Table 23 below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Town's bridges and culverts inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Structural Bridges	4 Assets	$8,511,000	$180,000
Structural Culverts	45 Assets	$20,914,000	$429,000
Cross Culverts & Small Bridges	577 Assets	$8,987,000	$130,000
Total		**$38,412,000**	**$739,000**

Table 23 Bridges and Culverts Inventory and Valuation

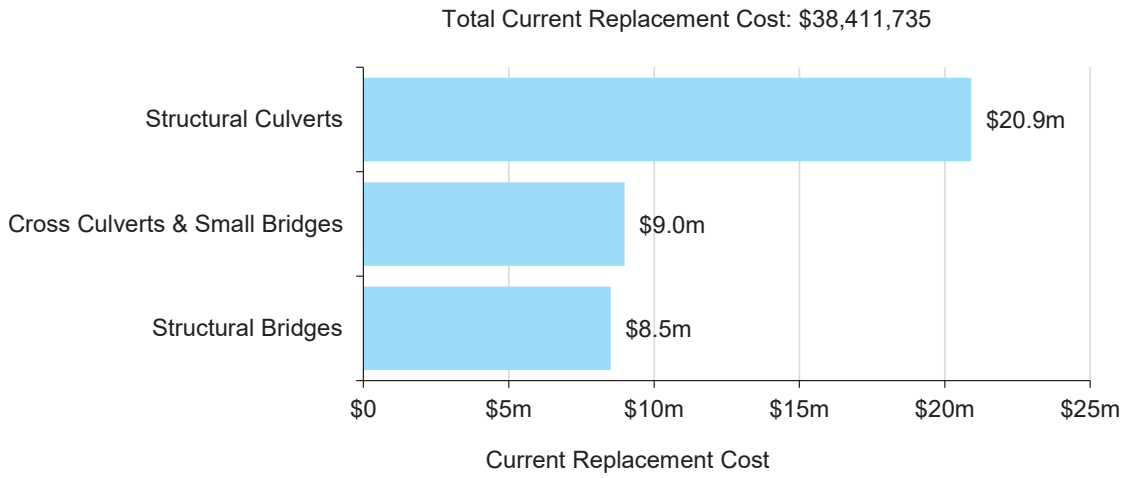


Figure 20 Bridges and Culverts Replacement Cost by Segment

Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to represent realistic capital requirements more accurately.

5.2.2 Asset Condition & Age

Table 24 below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Structural Bridges	75	24	79%
Structural Culverts	75	36	71%
Cross Culverts & Small Bridges	50	30	32%
Average			**63%**

Table 24 Bridges and Culverts Asset Age and Condition Summary

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs, inform the selection of optimal lifecycle strategies, and improve planning for potential long-term replacement spikes.

Figure 21 below displays the average asset age vs EUL for each asset segment.

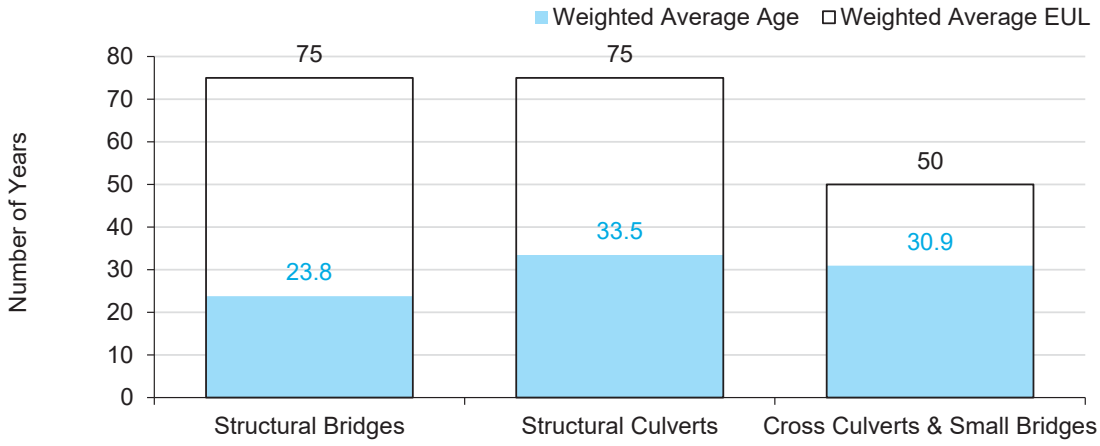


Figure 21 Bridges and Culverts Asset Age vs. EUL

Figure 22 below visually illustrates the average condition for each asset segment on a very good to very poor scale.

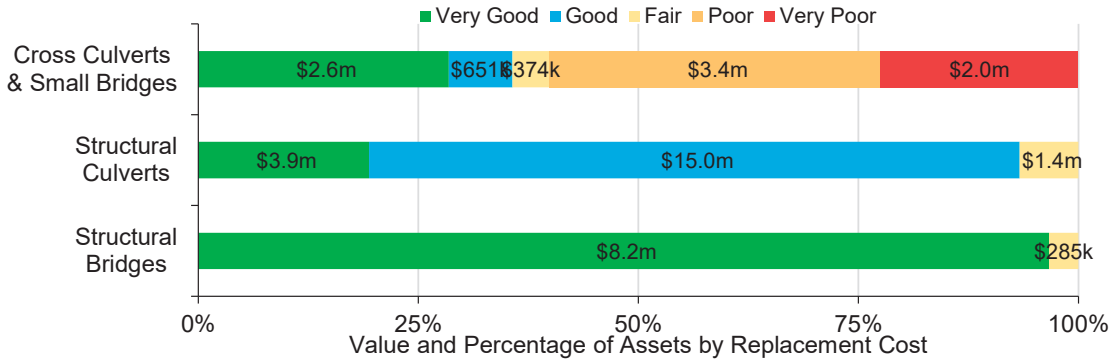


Figure 22 Bridges and Culverts Asset Condition by Segment

To ensure that the Municipality's Bridges & Culverts continue to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation, and replacement activities is required to increase the overall condition of the bridges and culverts.

Each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the Town's current approach:

- Condition assessments of all bridges and culverts with a span greater than or equal to 3 meters are completed every 2 years in accordance with the Ontario Structure Inspection Manual (OSIMs)
- Operations staff perform regular visual inspections in between OSIM inspections

In this AMP, the following rating criteria is used to determine the current condition of bridges and culverts and forecast future capital requirements:

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

Table 25 Bridges and Culverts Condition Rating Scale

5.2.3 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

Table 26 outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance, Rehabilitation & Replacement	All lifecycle activities are driven by the results of mandated structural inspections competed according to the Ontario Structure Inspection Manual (OSIM). Staff perform lifecycle activities (ex: deck replacements, concrete patch repairs, guard rail repairs, etc.) depending on recommendations through OSIM and/or staff inspections. Maintenance activities, such as cleaning or brushing, are completed by Operations staff as capacity allows

Table 26 Bridges and Culverts Lifecycle Management Strategies

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. Figure 23 identifies capital requirements over the next 50 years. This projection is used as it ensures that most assets have gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.

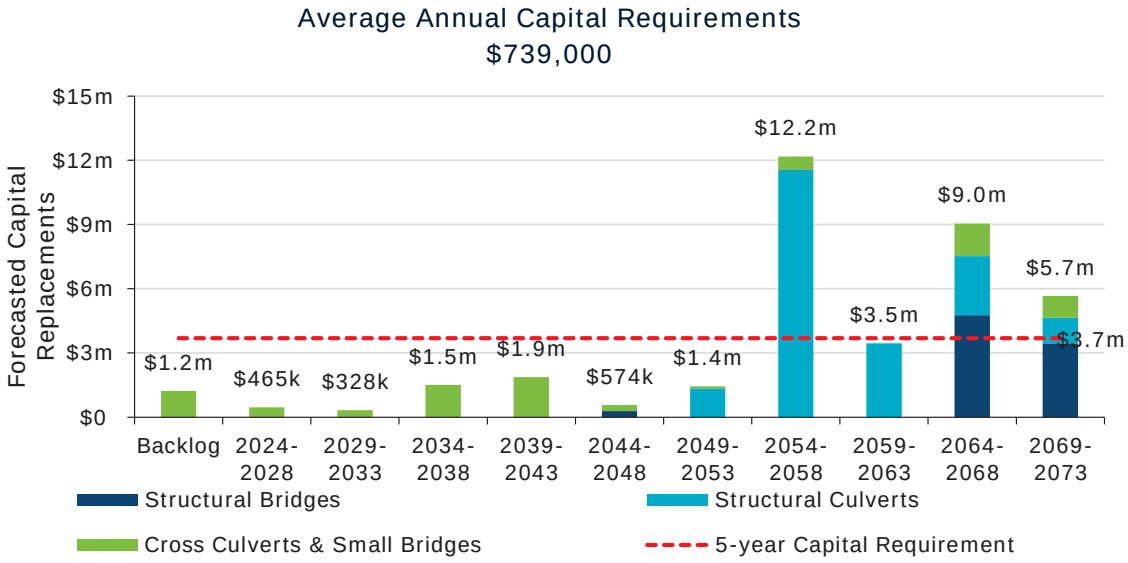


Figure 23 Bridges and Culverts Forecasted Replacement Needs 2024-2073

The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Table 127 in Appendix A.

5.2.4 Risk & Criticality

Risk Matrix

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the bridges and culverts are documented below, with their weights indicated in brackets:

Probability of Failure (POF)	Consequence of Failure (COF)
Structural (80%)	Economic (60%)
Functional (20%)	Health and Safety (20%)
	Environmental (20%)

Table 27 Bridges and Culverts Risk Parameters

Based on the above noted attributes and weightings, risk is calculated for each asset. The following heat map illustrates the probability and consequence of failure scores for all bridge and culvert assets based on 2023 inventory data. Please refer to Figure 97 in Appendix C for a more detailed overview of the criteria used to estimate the risk rating of each asset.

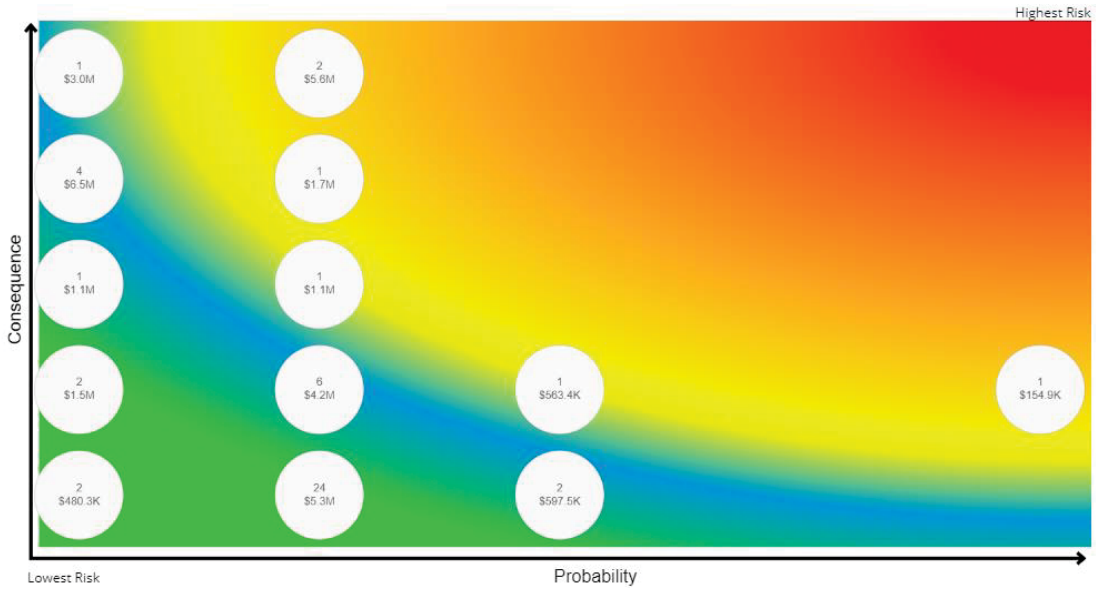


Figure 24 Bridges and Culverts Risk Matrix Heat Map

This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The identification of critical assets is a valuable tool in identifying potential risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

Risks to Current Asset Management Strategies

Table 28summarizes key trends, challenges, and risks to service delivery that the Town is currently facing:

	Asset Data & Information
	Inventory data is gathered continuously. Staff have plans to enhance data management process to increase the accuracy and reliability of asset data and information. Once completed, staff can confidently develop data-driven strategies to address infrastructure needs.
	Capital Funding Strategies
	Major capital rehabilitation and replacement projects are often dependant on the availability of grant funding opportunities. The Town has developed a project plan to address the infrastructure needs. When grants are not available, rehabilitation and replacement projects may

	be deferred. An enhanced proactive strategy can help to extend the service life of structures with lower funding requirements. A long-term capital funding strategy can reduce dependency on grant funding and help prevent deferral of necessary capital works.
	**Climate Change & Extreme Weather Events** As extreme weather events are projected to continue, the events can result in damage to bridges and culverts and pose higher demand on maintenance and repair of the assets. Incorporating a monitoring and maintenance program for all bridges and culverts can further support infrastructure resiliency and help mitigate the risk.

Table 28 Bridges and Culverts Qualitative Risk Summary

5.2.5 Current Levels of Service

The following tables identify the Town's current level of service for bridges and culverts. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17, as well as any additional performance measures that the Town has selected for this AMP.

Community Levels of Service

Table 29 outlines the qualitative descriptions that determine the community levels of service provided by bridges and culverts.

Service Attribute	O. Reg. 588/17 Mandated	Qualitative Description	Current LOS (2023)
Scope	Yes	Description of the traffic that is supported by municipal bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	Bridges and structural culverts are a key component of the municipal transportation network. None of the Town's structures have loading or dimensional restrictions meaning that most types of vehicles, including heavy transport, motor vehicles, emergency vehicles and cyclists can cross them without restriction.
Quality	Yes	Description or images of the condition of bridges and culverts and how this would affect use of the bridges and culverts	See Figure 93, Figure 94, and Figure 95 in Appendix B

Table 29 Bridges and Culverts Community Levels of Service

Technical Levels of Service

Table 30 outlines the quantitative metrics that determine the technical level of service provided by bridges and culverts. Current LOS performance metrics are reported as of 2023.

Service Attribute	O. Reg. 588/17 Mandated	Technical Metric	Current LOS (2023)
Scope	Yes	% of bridges in the Town with loading or dimensional restrictions	0%
Quality	Yes	Average bridge condition index value for bridges in the Town	79
	Yes	Average bridge condition index value for structural culverts in the Town	71

Table 30 Bridges and Culverts Technical Levels of Service

5.3 Buildings

The buildings portfolio includes property, facilities, and related property with respect to administration services, community centres, library, fire services, and other miscellaneous buildings that are available for public use or lease to third party tenants.

The state of the infrastructure for buildings and facilities is summarized in Table 31.

Replacement Cost	Condition	Financial Capacity	
$187 M	54%	Annual Requirement:	$5.8 M
		Funding Available:	$3.9 M
		Annual Deficit:	$1.9 M

Table 31 Buildings State of the Infrastructure

The following core values and level of service statements are a key driving force behind the Town's asset management planning:

Service Attribute	Level of Service Statement
Scope	The building and facilities service is conveniently accessible to the whole community in sufficient capacity.
Quality	The buildings and facilities are in good condition with minimal unplanned service interruptions and closures.

Table 32 Buildings Level of Service Statements

5.3.1 Asset Inventory & Costs

Table 33 below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Town's buildings and facilities inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
General Government	3	$35,825,000	$1,077,000
Protection Services	1	$9,555,000	$287,000
Recreation & Cultural Services	10	$114,399,000	$3,584,000
Transportation Services	1	$27,276,000	$819,000
Total		**$187,055,000**	**$5,767,000**

Table 33 Buildings Inventory and Valuation

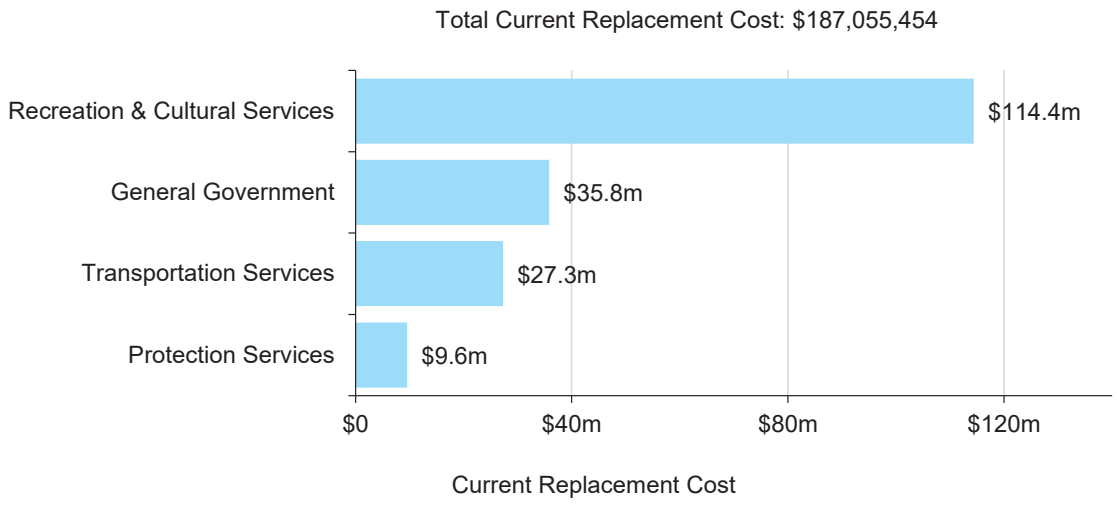


Figure 25 Buildings Replacement Cost by Segment

Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to represent realistic capital requirements more accurately.

5.3.2 Asset Condition & Age

Table 34 below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Estimated Useful Life (Years)	Average Age (Years)	Average Condition
General Government	30	21	55%
Protection Services	30	21	59%
Recreation & Cultural Services	30	20	56%
Transportation Services	30	8	66%
Average			**54%**

Table 34 Buildings Asset Age and Condition Summary

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs, inform the selection of optimal lifecycle strategies, and improve planning for potential long-term replacement spikes.

Figure 26 below displays the average asset age vs EUL for each asset segment.

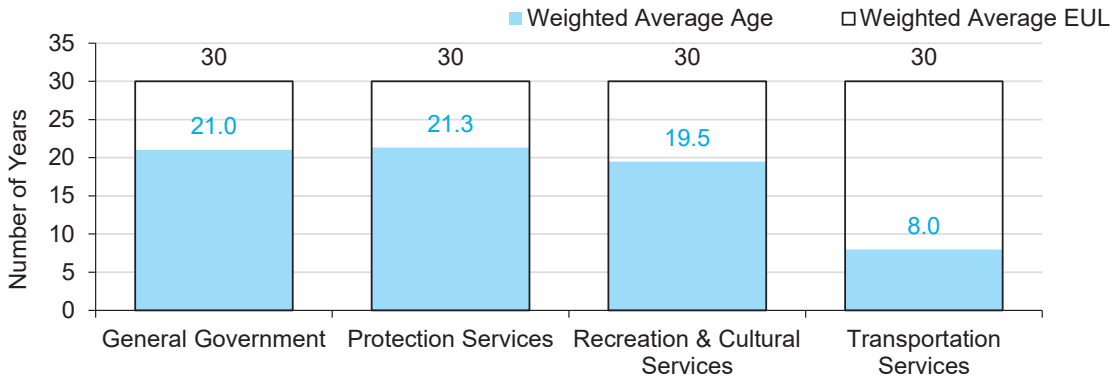


Figure 26 Buildings Asset Age vs. EUL

Figure 27 below visually illustrates the average condition for each asset segment on a very good to very poor scale.

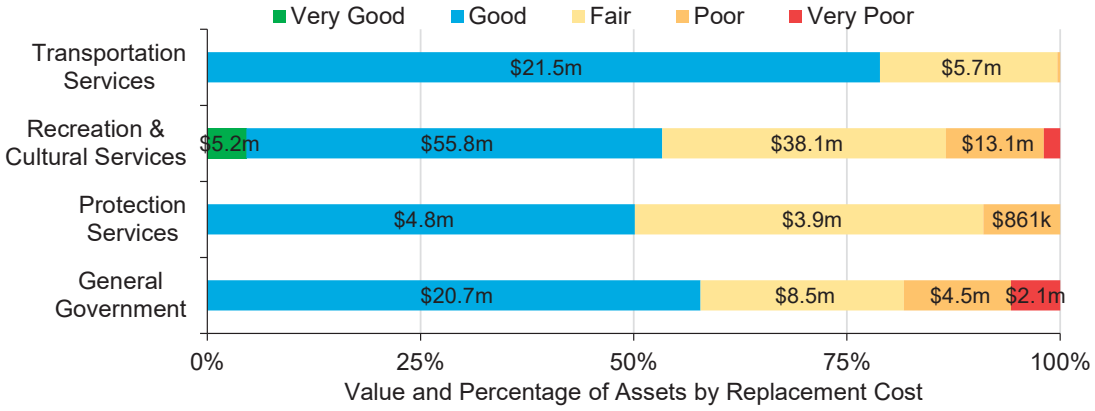


Figure 27 Buildings Asset Condition by Segment

To ensure that the Town's buildings and facilities continues to provide an acceptable level of service, the Town should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the buildings and facilities.

Each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the Town's current approach:

- Staff complete regular visual inspections of buildings to ensure they are in a state of adequate repair.
- Staff will be working with a third-party contractor to develop building condition assessments on their critical buildings, including a detailed componentized building inventory, complete with rehabilitation and replacement recommendations.

In this AMP the following rating criteria is used to determine the current condition of building assets and forecast future capital requirements:

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

Table 35 Buildings Condition Rating Scale

5.3.3 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration. Table 36 outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	Municipal buildings are subject to regular inspections to identify health and safety requirements, as well as structural deficiencies that require additional attention
	Critical buildings (Water Booster Stations, Wastewater Pumping Stations, Fire Stations etc.) have a detailed maintenance and rehabilitation schedule, while the maintenance of other facilities is dealt with on a case-by-case basis
Replacement	As a supplement to the knowledge and expertise of municipal staff, the Town regularly works with contractors to complete Facility Needs Assessment Studies

	Assessments are completed strategically as buildings approach their end-of-life to determine whether replacement or rehabilitation is appropriate

Table 36 Buildings Lifecycle Management Strategies

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. Figure 28 identifies capital requirements over the next 70 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.

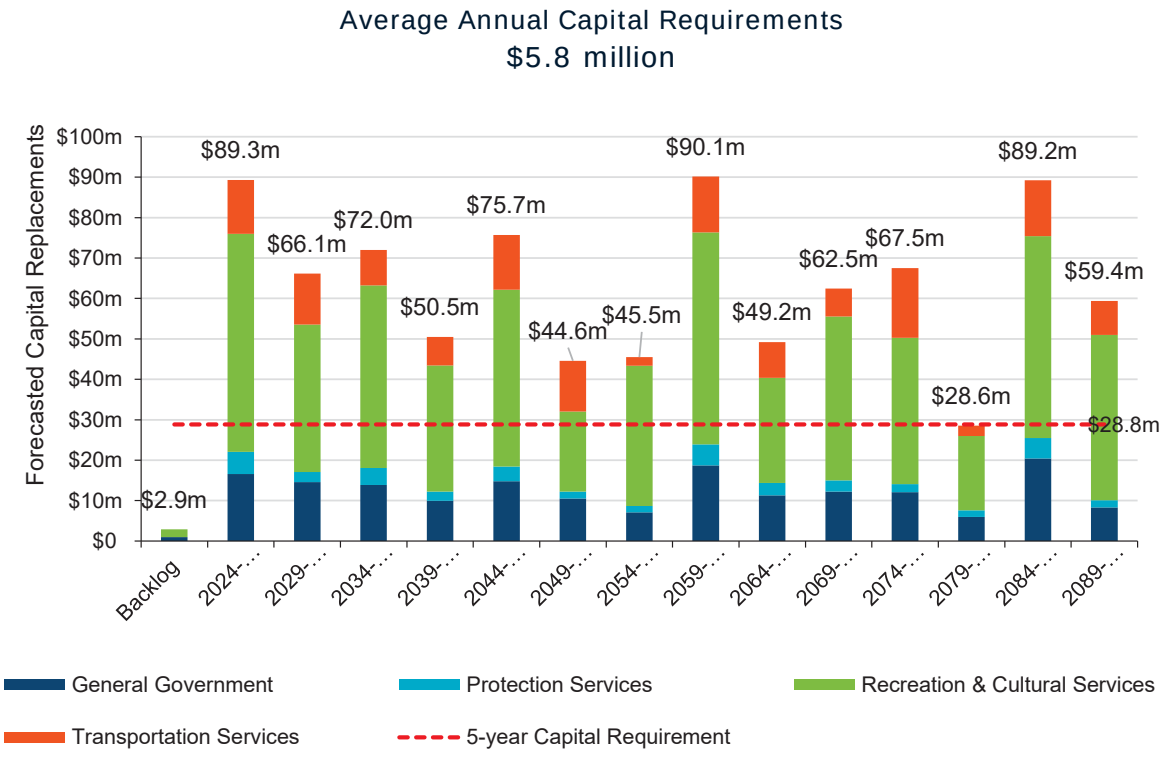


Figure 28 Buildings Forecasted Replacement Needs 2024-2093

The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Table 128 in Appendix A.

5.3.4 Risk & Criticality

Risk Matrix

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the buildings are documented below with their weights indicated in brackets:

Probability of Failure (POF)	Consequence of Failure (COF)
Structural (100%)	Economic (60%)
	Social (40%)

Table 37 Buildings Risk Parameters

Based on the above noted attributes and weightings, risk is calculated for each asset. The following heat map illustrates the probability and consequence of failure scores for all building assets based on 2023 inventory data. Please refer to Figure 98 in Appendix C for a more detailed overview of the criteria used to estimate the risk rating of each asset.

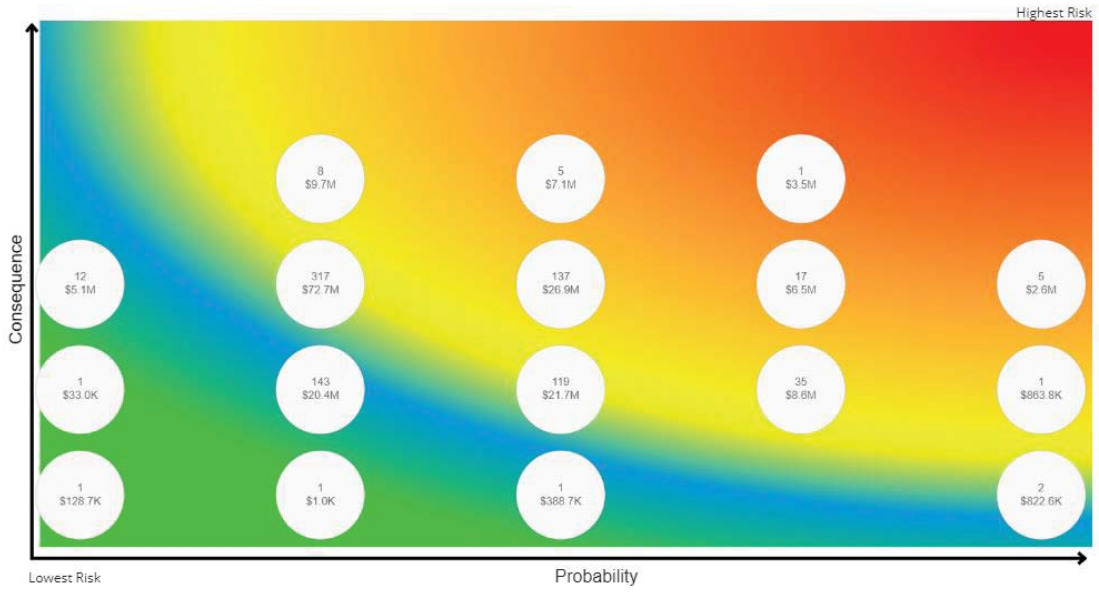


Figure 29 Buildings Risk Matrix Heat Map

This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The identification of critical assets is a valuable tool in identifying potential risk mitigation strategies and treatment options. Risk mitigation may include asset-

specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

Risks to Current Asset Management Strategies

Table 38 summarizes key trends, challenges, and risks to service delivery that the Town is currently facing:

	**Capital Funding Strategies** In recent years, there has been a significant increase in material and construction costs. Rehabilitation projects for buildings may be delayed due to the limited contractors available. Major capital rehabilitation projects of the buildings will be heavily reliant on the availability of grant funding opportunities. As capital budgets become more constrained, more maintenance will be postponed, which will further amplify this risk. An annual capital funding strategy can also reduce dependency on grant funding and help prevent deferral of capital works.
	**Staff Capacity and Growth** The Town currently has a large inventory of buildings which require regular maintenance and assessment. As the population continues to grow, the Town must prioritize expanding its capacity to serve a larger population. However, staff capacity may become insufficient to deploy optimal maintenance and assessment strategies for the growth. Developing a comprehensive long-term capital plan with considerations for growth and proactive lifecycle strategy can be helpful to minimize dependency on grant funding and increase the capacity.
	**Climate Change & Extreme Weather Events** As extreme weather events are projected to continue, the events can result in damage to buildings and pose higher demand on maintenance and repair of the assets. Incorporating a monitoring and maintenance program for all buildings can further support infrastructure resiliency and help mitigate the risk.

Table 38 Buildings Qualitative Risk Summary

5.3.5 Current Levels of Service

Buildings are a non-core asset category and as such, there are no LOS metrics that are mandated. Instead, the Town has selected metrics based on what is suitable, valuable, and feasible to collect. The following tables identify the selected LOS metrics for building assets.

Community Levels of Service

Table 39 outlines the qualitative descriptions that determine the community levels of service provided by building assets.

Service Attribute	Qualitative Description	Current LOS (2023)
Safety and Regulatory Compliance	Facilities are safe to use and do not pose a hazard to users	Description of the facilities health and safety inspection process.
Reliable	Buildings are in good condition, meeting the functional needs of users within facility operating hours	Description of maintenance and renewal activities to maintain buildings in a suitable condition
Accessible	Municipal buildings have adequate capacity to serve public programs and support Town staff work functions	Description, which may include maps, of facilities owned by the Town
Sustainability	Facilities are operated in a way to reduce overall power usage and greenhouse gas (GHG) generation	Description of energy conservation measures implemented to reduce energy consumption and GHG emissions
Affordability	Facilities are managed in a cost-effective way to reduce overall service costs	Description of the significant operating costs

Table 39 Buildings Community Levels of Service

Technical Levels of Service

Table 40 outlines the quantitative metrics that determine the technical level of service provided by the stormwater network. The current LOS performance for each metric as of 2023 is also detailed below.

Service Attribute	Technical Metric	Current LOS (2023)
Safety and Regulatory Compliance	% of buildings inspected monthly for safety	100%
Reliable	Average Condition of Buildings	54%
Accessible	# of Residents per community centre	21,370
Sustainable	Kw/Hrs of energy consumption by Facilities	19,386,242
Affordable	O&M costs per household	N/A
	Average Annual Reinvestment Rate	2.1%

Table 40 Buildings Technical Levels of Service

5.4 Fleet

Fleet assets allow staff to efficiently deliver municipal services and personnel. Municipal vehicles are used to support several service areas, including:

- tandem axle trucks for winter control activities
- fire rescue vehicles to provide emergency services
- pick-up trucks to support the maintenance of the transportation network and address service requests for Environmental Services and Parks & Recreation

The state of the infrastructure for the vehicles is summarized in Table 41.

Replacement Cost	Condition	Financial Capacity	
$10.8 M	42%	Annual Requirement:	$869,000
		Funding Available:	$521,000
		Annual Deficit:	$348,000

Table 41 Fleet State of the Infrastructure

The following core values and level of service statements are a key driving force behind the Town's asset management planning:

Service Attribute	Level of Service Statement
Scope	Town vehicles are available to service whole community in sufficient capacity.
Quality	The Fleet is in good condition with minimal unplanned service interruptions and down time.

Table 42 Fleet Level of Service Statements

5.4.1 Asset Inventory & Costs

Table 43 below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Town's Fleet.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Equipment / Attachments	95	$3,377,000	$456,000
Heavy Duty	12	$3,088,000	$150,000
Light Duty	49	$2,786,000	$122,000
Medium Duty	24	$1,520,000	$141,000
Total		**$10,770,000**	**$869,000**

Table 43 Fleet Inventory and Valuation

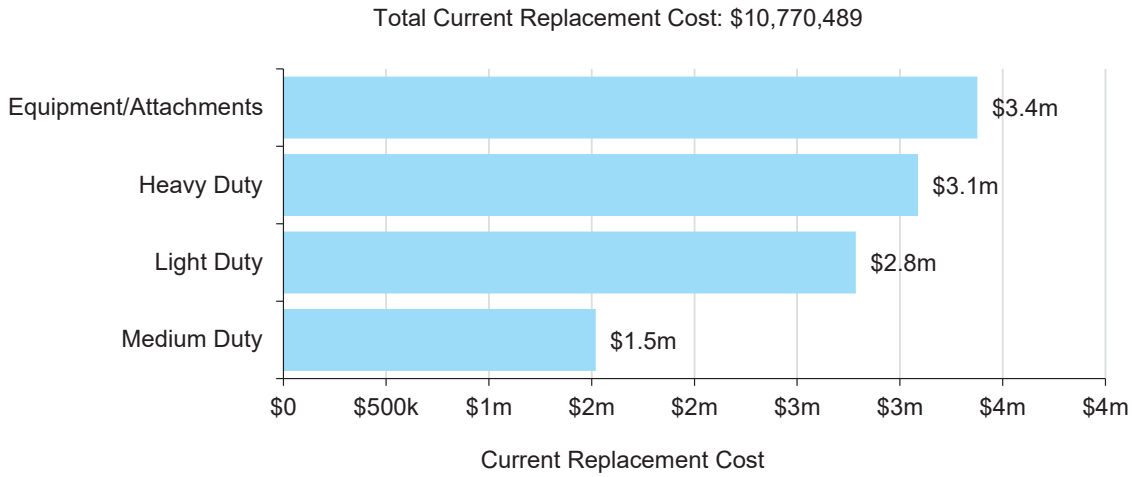


Figure 30 Fleet Replacement Cost by Segment

Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to represent realistic capital requirements more accurately.

5.4.2 Asset Condition & Age

Table 44 below identifies the current average condition and source of available condition data for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Equipment / Attachments	10	8	31%
Heavy Duty	15	7	56%
Light Duty	10	10	20%
Medium Duty	12	7	52%
Average			**42%**

Table 44 Fleet Asset Age and Condition Summary

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs, inform the selection of optimal lifecycle strategies, and improve planning for potential long-term replacement spikes.

Figure 31 below displays the average asset age vs EUL for each asset segment.

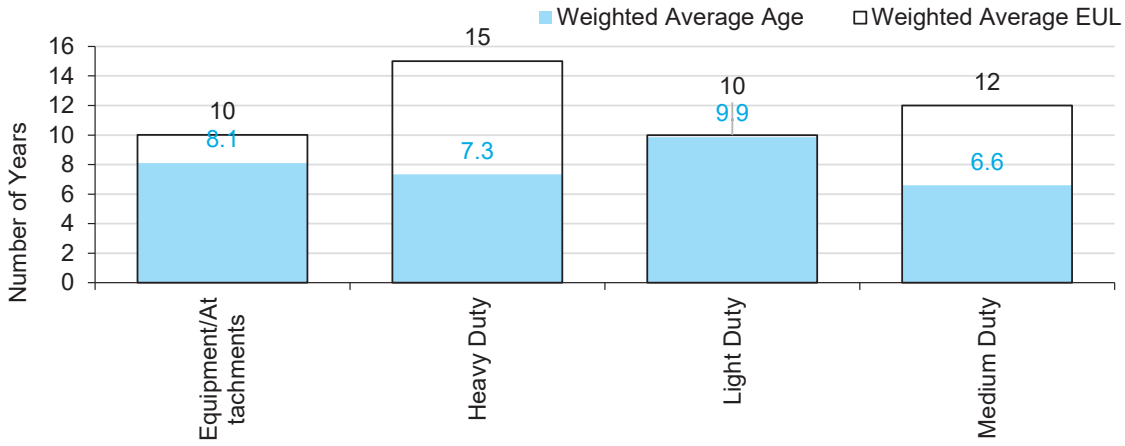


Figure 31 Fleet Asset Age vs. EUL

Figure 32 below visually illustrates the average condition for each asset segment on a very good to very poor scale.

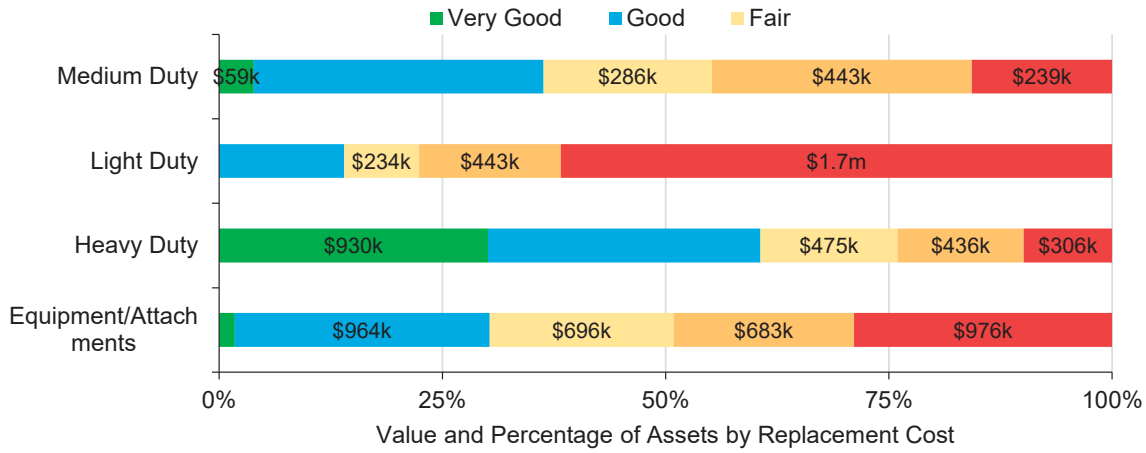


Figure 32 Fleet Asset Condition by Segment

To ensure that the Town's fleet continue to provide an acceptable level of service, the Town should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the fleet.

Each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the Town's current approach:

- Staff complete regular visual inspections of vehicles to ensure they are in state of adequate repair prior to operation
- Condition assessments are conducted on vehicles in accordance with regulations for health and safety regulations including National Fire Protection Association (NFPA) codes and standards for fire service-related vehicles

In this AMP the following rating criteria is used to determine the current condition of fleet assets and forecast future capital requirements:

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

Table 45 Fleet Condition Rating Scale

5.4.3 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration. Table 46 outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	Visual inspections completed and documented daily; fluids inspected at every fuel stop; tires inspected monthly
	Every 4000-7000km includes a detailed inspection which includes tire rotation and oil changes
	Annual preventative maintenance activities include system components check and additional detailed inspections
Replacement	Vehicle replacements are based on the Town's Capital Asset Policy 2015-45
	Vehicle age, kilometres and annual repair costs are taken into consideration when determining appropriate treatment options

Table 46 Fleet Lifecycle Management Strategies

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. Figure 33 identifies capital requirements over the next 50 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.

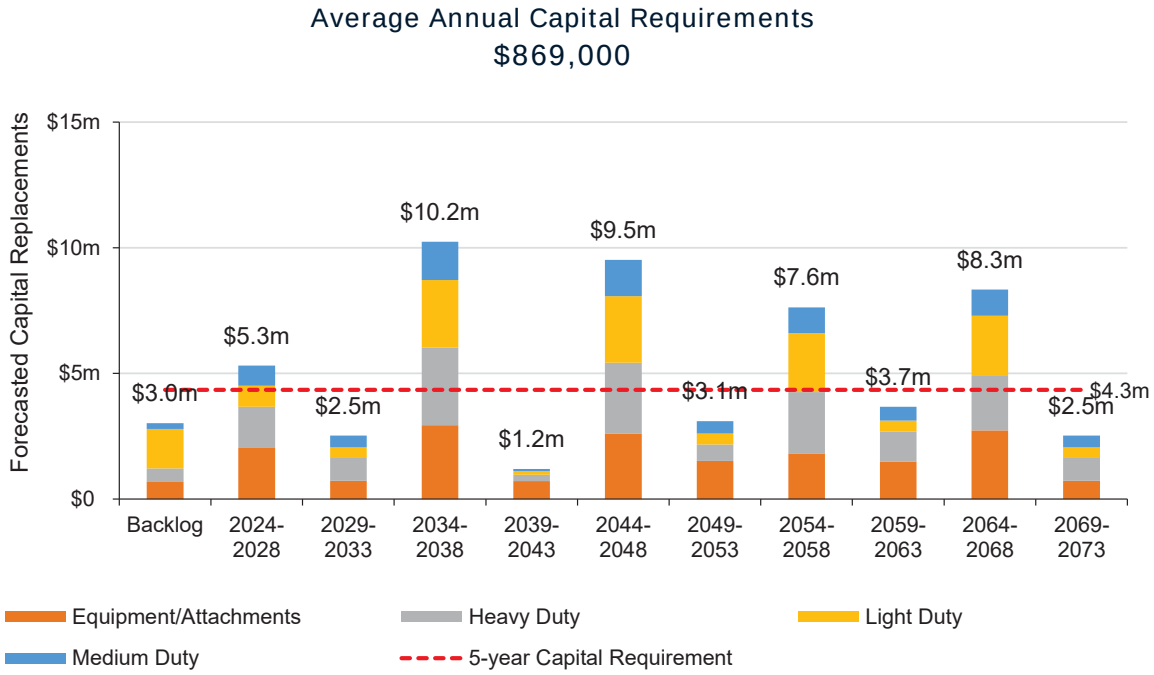


Figure 33 Fleet Forecasted Replacement Needs 2024-2108

The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Table 130 in Appendix A.

5.4.4 Risk & Criticality

Risk Matrix

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the fleet are documented below, with their weights indicated in brackets:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition (100%)	Economic (20%)
	Social (40%)
	Health and Safety (40%)

Table 47 Fleet Risk Parameters

Based on the above noted attributes and weightings, risk is calculated for each asset. The following heat map illustrates the probability and consequence of failure scores for all fleet assets based on 2023 inventory data. Please refer to Figure 99 in

Appendix C for a more detailed overview of the criteria used to estimate the risk rating of each asset.

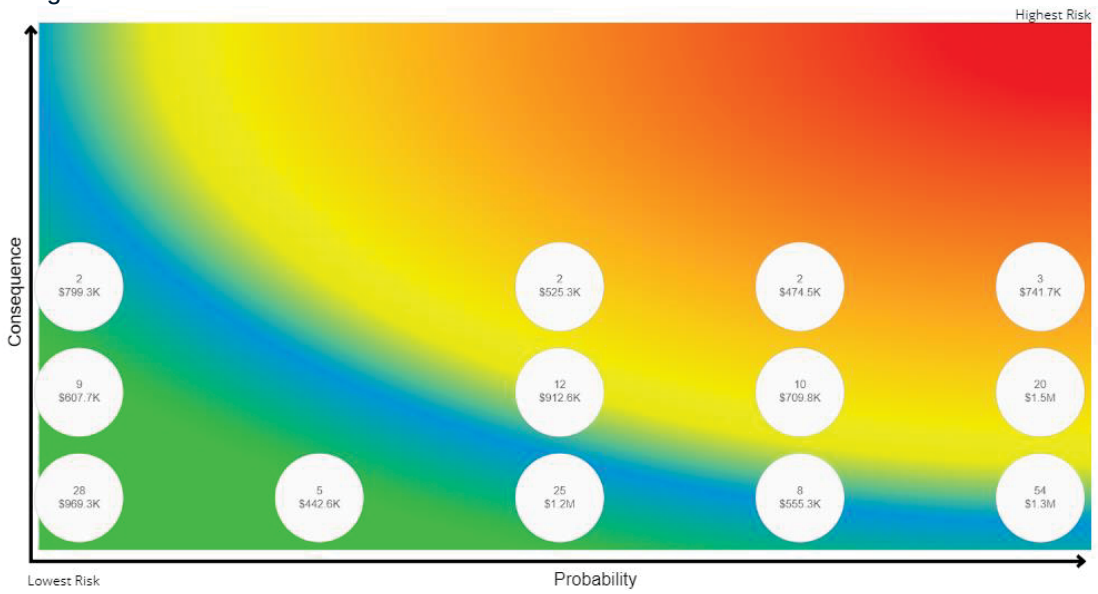


Figure 34 Fleet Risk Matrix Heat Map

This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The identification of critical assets is a valuable tool in identifying potential risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to service delivery that the Town is currently facing:

Capital Funding Strategies

The Town currently has a large inventory of vehicles which require regular maintenance and assessment to ensure compliance with MTO standards and to function adequately. Major rehabilitation and vehicle replacement will be heavily reliant on the availability of grant funding opportunities. The significant increase in market prices of the vehicles further amplifies this risk. Staff has developed the annual replacement plan to allow more lead time and avoid unplanned service disruption. An annual capital funding strategy can also reduce dependency on

	grant funding and help prevent the deferral for vehicles renewal or vehicles purchase.
	**Growth** As the population continues to grow, the Town must prioritize expanding its capacity to serve a larger population. It will require increasing O&M costs to ensure compliance with MTO standards and to function adequately. Developing a comprehensive long-term capital plan with considerations for growth can be helpful to minimize dependency on grant funding and increase the capacity.
	**Climate Change & Extreme Weather Events** As extreme weather events are projected to continue, the events can result increased demand on fleet assets which can lead to higher demand on maintenance and repair of the fleet. Incorporating a monitoring and maintenance program for all fleet assets can further support infrastructure resiliency and help mitigate the risk.

Table 48 Fleet Qualitative Risk Summary

5.4.5 Current Levels of Service

Fleet assets are a non-core asset category and as such, there are no LOS metrics that are mandated. Instead, the Town selected metrics based on what is suitable, valuable, and feasible to collect. The following tables identify the selected LOS metrics for fleet assets.

Community Levels of Service

Table 49 outlines the qualitative descriptions that determine the community levels of service provided by fleet assets.

Service Attribute	Qualitative Description	Current LOS (2023)
Safety & Regulatory Compliance	Fleet vehicles are safe to use and do not pose a hazard to operators	The annual fleet inspection process is a comprehensive assessment conducted to ensure compliance, safety, and operational efficiency.
Reliable	Fleet vehicles are in good repair and are available for use during service hours	Several factors can contribute to fleet downtime exceeding 48 hours. Each situation is unique, but common causes include major mechanical failure, accidents or collisions, parts supply issues, complex repairs, or shortage of replacement vehicles.
Accessible	Fleet and Equipment provide winter maintenance, road repair and Fire Services to the Town	Description of users accommodated by Winter Maintenance Services
Sustainable	Fleet and equipment are replaced with sustainable alternatives to reduce the Town's carbon footprint	Description of energy conservation measures implemented to reduce energy consumption and GHG emissions
Affordable	The Town's fleet is managed in a cost-effective way to reduce overall service costs	Description of initiatives and practices to vehicle ownership and replacement costs

Table 49 Fleet Community Levels of Service

Technical Levels of Service

Table 50 outlines the quantitative metrics that determine the technical level of service provided by the fleet asset. The current LOS performance for each metric as of 2023 is also detailed below.

Service Attribute	Technical Metric	Current LOS (2023)
Safety & Regulatory Compliance	% of regulated MTO inspections complete - CVOR	100%
	% of vehicles with safety inspection as per highway traffic act	100%
Reliable	Average condition of heavy-duty vehicles	56%
	Average condition of medium duty vehicles	52%
	Average condition of light duty vehicles	20%
	Number of vehicles with downtime more than 48 hrs	N/A
	Number of hours spent on unscheduled repairs - Operations	N/A
Accessible	% of Town Receiving Winter Maintenance Services	100%
	Average lead time for light and medium duty vehicles	12-18 months
	Average lead time for heavy duty vehicles	12-16 months
Sustainable	Percentage of fleet vehicles that are classified as EV or hybrid	4%
	Number of vehicles using biodiesel	39
Affordable	O&M expenditure per heavy duty vehicle	$5,000
	O&M expenditure per medium duty vehicle	$3,500
	O&M expenditure per light duty vehicle	$1,500
	Average Annual Reinvestment Rate	4.8%

Table 50 Fleet Technical Levels of Service

5.5 Machinery & Equipment

In order to maintain the high quality of public infrastructure and support the delivery of core services, Town staff own and employ various types of machinery and equipment. This includes:

- Landscaping equipment to maintain public parks
- Fire equipment to support the delivery of emergency services
- Plows and sand hoppers to provide winter control activities
- Library books for public loan

Keeping machinery and equipment in an adequate state of repair is important to maintain a high level of service.

The state of the infrastructure for the machinery and equipment is summarized in Table 51.

Replacement Cost	Condition	Financial Capacity	
$4.9 M	38%	Annual Requirement:	$0.7 M
		Funding Available:	$1.5 M
		Annual Surplus:	$0.8 M

Table 51 Machinery and Equipment State of the Infrastructure

The following core values and level of service statements are a key driving force behind the Town's asset management planning:

Service Attribute	Level of Service Statement
Scope	The Town is committed to providing efficient, reliable, and sustainable services through the proper management and maintenance of our machinery and equipment.
Quality	Machinery and equipment are in good condition with minimal unplanned service interruptions.

Table 52 Machinery and Equipment Level of Service Statements

5.5.1 Asset Inventory & Costs

Table 53 below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Town's machinery and equipment inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
IT	1,842 Assets	$4,429,000	$633,000
Miscellaneous	236 Assets	$433,000	$72,000
Total		**$4,862,000**	**$705,000**

Table 53 Machinery and Equipment Inventory and Valuation

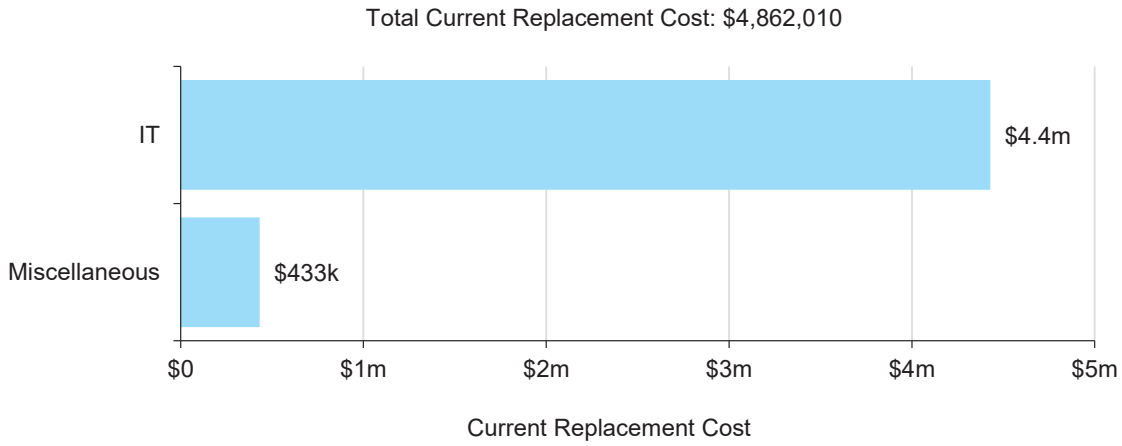


Figure 35 Machinery and Equipment Replacement Cost by Segment

Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to represent realistic capital requirements more accurately.

5.5.2 Asset Condition & Age

Table 54 below identifies the current average condition and source of available condition data for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Estimated Useful Life (Years)	Average Age (Years)	Average Condition
IT	7	9	36%
Miscellaneous	6	4	55%
Average			**38%**

Table 54 Machinery and Equipment Asset Age and Condition Summary

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs, inform the selection of optimal lifecycle strategies, and improve planning for potential long-term replacement spikes.

Figure 36 below displays the average asset age vs EUL for each asset segment.

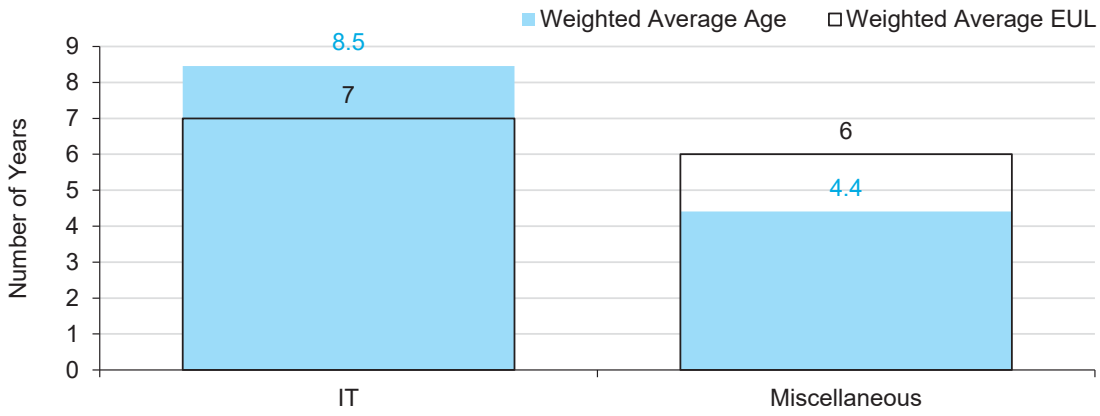


Figure 36 Machinery and Equipment Asset Age vs. EUL

Figure 37 below visually illustrates the average condition for each asset segment on a very good to very poor scale.

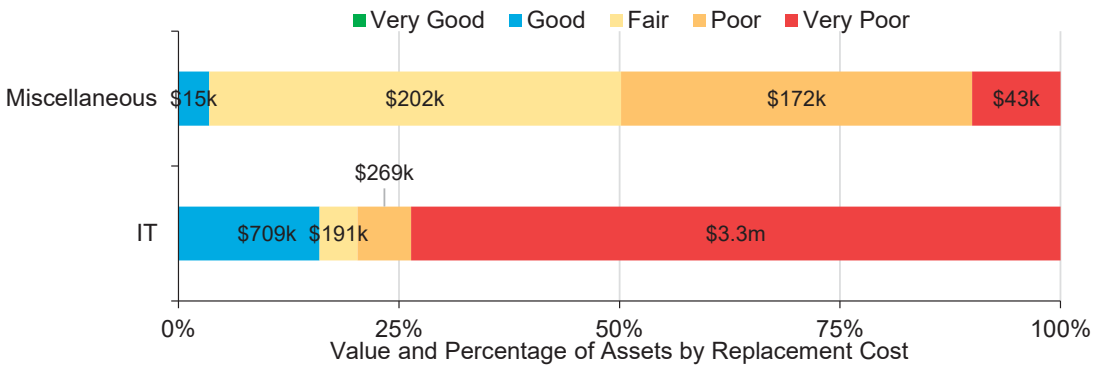


Figure 37 Machinery and Equipment Asset Condition by Segment

To ensure that the Town's machinery and equipment continues to provide an acceptable level of service, the Town should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the machinery and equipment.

Each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the Town's current approach:

- Staff complete regular visual inspections of their machinery & equipment to ensure they are structurally and functionally sound. Assets typically stay true to their estimated useful life and are replaced at end of life

In this AMP the following rating criteria is used to determine the current condition of machinery and equipment segments and forecast future capital requirements:

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

Table 55 Machinery and Equipment Condition Rating Scale

5.5.3 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

Table 56 outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	Maintenance program varies by department and asset
	Fire Protection Services equipment is subject to a much more rigorous inspection and maintenance program compared to most other departments
	Machinery and equipment are maintained according to manufacturer recommended actions and supplemented by the expertise of municipal staff
Replacement	The replacement of machinery and equipment depends on deficiencies identified by operators that may impact their ability to complete required tasks

Table 56 Machinery and Equipment Lifecycle Management Strategies

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. Figure 38 identifies capital requirements over the next 50 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.

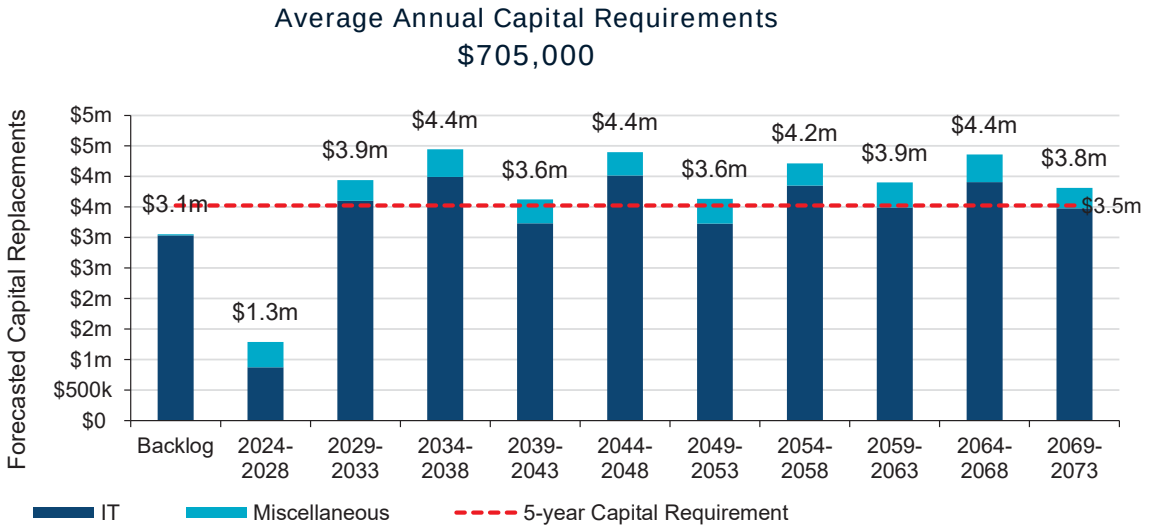


Figure 38 Machinery and Equipment Forecasted Replacement Needs 2024-2073

The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Table 131 in Appendix A.

5.5.4 Risk & Criticality

Risk Matrix

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the machinery and equipment are documented below, with their weights indicated in brackets:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition (100%)	Economic (80%)
	Health and Safety (20%)

Table 57 Machinery and Equipment Risk Parameters

Based on the above noted attributes and weightings, risk is calculated for each asset. The following heat map illustrates the probability and consequence of failure scores for all machinery and equipment assets based on 2023 inventory data. Please refer to Figure 100 and Figure 101 in Appendix C for a more detailed overview of the criteria used to estimate the risk rating of each asset.

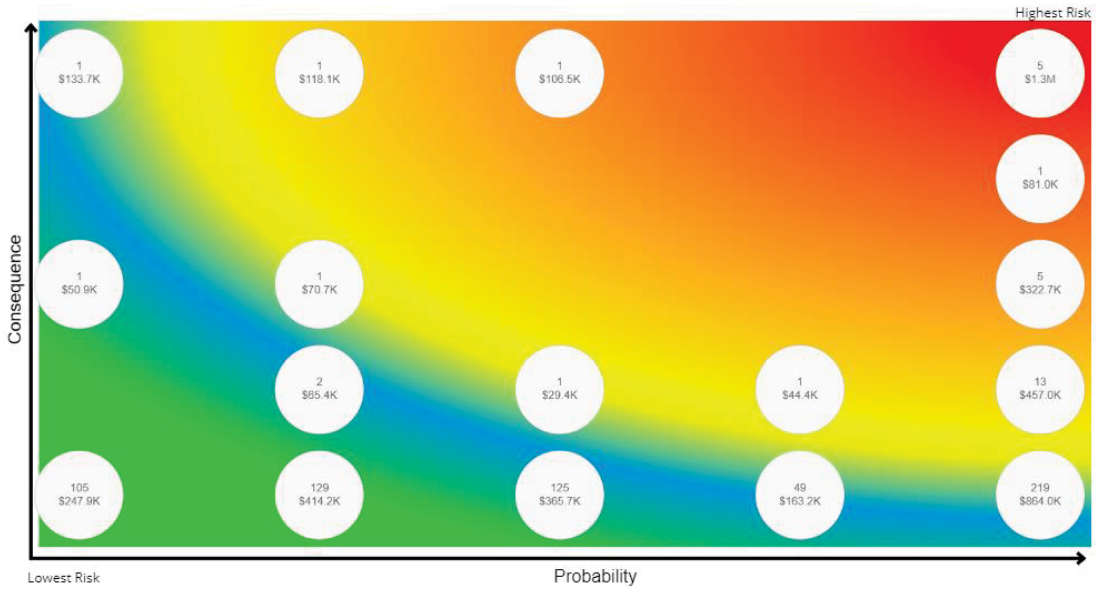


Figure 39 Machinery and Equipment Risk Matrix Heat Map

This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The identification of critical assets is a valuable tool in identifying potential risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to service delivery that the Town is currently facing:

Capital Funding Strategies and Growth

The Town currently has a large inventory of machinery and equipment which require regular maintenance and assessment to function adequately. As the population continues to grow, the Town must prioritize expanding its capacity to serve a larger population. When funds are not available, it will cause the deferral of renewal or additional equipment purchase. The significant increase in market prices of the machinery and equipment further amplifies this risk. An annual capital funding strategy can also reduce dependency on grant funding and help prevent deferral of capital works.

	**Organizational Cognizance and Capacity** There is a concern about the increasing rates of cybercrime in recent years. The IT department is working proactively on developing Training and awareness program to improve staff knowledge about cybersecurity. Staff in the IT department have distinct skills and knowledge. The Town is working towards building in skill-set redundancy and provide trainings to staff to expand their skill sets.
	**Climate Change & Extreme Weather Events** As extreme weather events are projected to continue, the possibility of fire, earthquakes and tornado events also increases. These events lead to the damages of the IT infrastructure and pose higher demand on maintenance and repair of the assets. The Town has developed the disaster recovery plan to support infrastructure resiliency and help mitigate the risk.

Table 58 Machinery and Equipment Qualitative Risk Summary

5.5.5 Current Levels of Service

Machinery and equipment is a non-core asset category and as such, there are no LOS metrics that are mandated. Instead, the Town has selected metrics based on what is suitable, valuable, and feasible to collect. The following tables identify the selected LOS metrics.

Community Levels of Service

Table 59 outlines the qualitative descriptions that determine the community levels of service provided by machinery and equipment.

Service Attribute	Qualitative Description	Current LOS (2023)
Safety & Regulatory Compliance	Machinery and equipment assets are safe to use and do not pose a hazard to operators	Description of asset inspection processes
Reliable	Machinery and equipment assets are in good repair and are available for use during service hours	Description of machinery and equipment and their cause for fleet with downtime more than 48 hrs
	IT assets are in good condition, meeting the functional needs of users	Description of maintenance, renewal, and monitoring efforts to ensure IT assets are functioning reliably

Accessible	Machinery and equipment provide winter maintenance, road repair and Fire Services to the Town	Description of users accommodated by Winter Maintenance Services. See winter maintenance route map in Figure 85 in Appendix B.
Sustainable	Machinery and equipment are replaced with sustainable alternatives to reduce the Town's carbon footprint	Description of energy conservation measures implemented to reduce energy consumption and GHG emissions
Affordable	IT services are provided to the Town in an affordable manner	Description of the significant operating costs
	Machinery and equipment are managed in a cost-effective way to reduce overall service costs	Description of initiatives and practices to asset ownership and replacement costs

Table 59 Machinery and Equipment Community Levels of Service

Technical Levels of Service

Table 60 outlines the quantitative metrics that determine the technical level of service provided by the machinery and equipment assets. The current LOS performance for each metric as of 2023 is also detailed below.

Service Attribute	Technical Metric	Current LOS (2023)
Safety & Regulatory Compliance	% of regulated MTO inspections completed	N/A
Reliable	% of useful life consumed of all IT equipment	N/A
	Average number of IT support tickets submitted per staff member	12.7
	# of IT FTEs that respond to tickets per 100 staff	4.9
	Average Condition of equipment and attachments	24%
	Number of equipment assets with downtime more than 48 hrs	N/A
	Number of hours spent on unscheduled repairs - Operations	N/A
Sustainable	Number of electric powered machinery and equipment assets	N/A
Affordable	O & M expenditures for all machinery and equipment assets	$748,700
	Average Annual Reinvestment Rate	31.6%

Table 60 Machinery and Equipment Technical Levels of Service

5.6 Park Facilities

The Town owns a variety of diverse assets categorizes as park facilities. Examples of assets included in this category are:

- Playground Equipment
- Gazebos
- Skateboard facility and equipment
- Basketball Courts
- Various Park Signs
- Various Park Fixtures including trash receptacles, benches, bleachers, and tables.

The state of the infrastructure for park facilities is summarized in Table 61.

Replacement Cost	Condition	Financial Capacity	
$60.8 M	65%	Annual Requirement:	$1.9 M
		Funding Available:	$1.3 M
		Annual Deficit:	$0.6 M

Table 61 Park Facilities State of the Infrastructure

The following core values and level of service statements are a key driving force behind the Town's asset management planning:

Service Attribute	Level of Service Statement
Scope	Parks facilities and trails are safe to use and do not pose a hazard to users.
Quality	Parks assets are in good condition, conveniently accessible, and meet the functional needs of users within facility operating hours.

Table 62 Park Facilities Level of Service Statements

5.6.1 Asset Inventory & Costs

Table 63 below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Town's park facilities inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Athletic Fields	1,527 m^2	$18,506,000	$402,000
Fencing & Gates	4,815 m	$3,369,000	$123,000
Park Fixtures & Lighting	1,640 Assets	$7,904,000	$264,000
Park Structures	771 Assets	$5,259,000	$175,000
Parking Lots	55,028 m^2	$5,691,000	$190,000
Playgrounds & Splashpads	693 Assets	$6,711,000	$335,000
Sanitary Infrastructure	221 Assets	$141,000	$2,000
Stormwater Infrastructure	1,796 Assets	$1,570,000	$19,000
Trails & Walkways	14,219 Assets	$11,491,000	$380,000
Water Infrastructure	272 Assets	$161,000	$2,000
Total		**$60,803,000**	**$1,892,000**

Table 63 Park Facilities Inventory and Valuation

Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

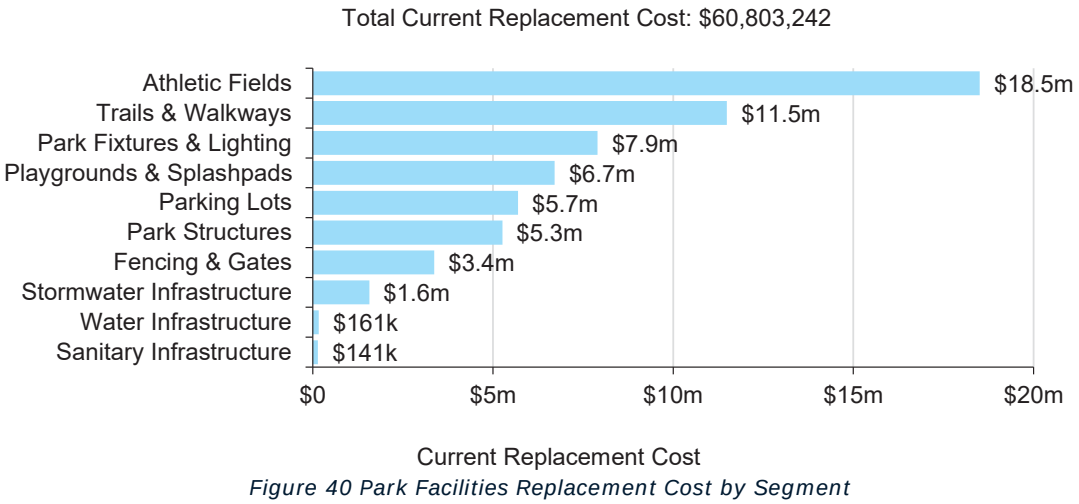


Figure 40 Park Facilities Replacement Cost by Segment

5.6.2 Asset Condition & Age

Table 64 below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Athletic Fields	46	27	50%
Fencing & Gates	30	22	42%
Park Fixtures & Lighting	30	14	29%
Park Structures	30	13	57%
Parking Lots	30	18	69%
Playgrounds & Splashpads	20	14	43%
Sanitary Infrastructure	80	38	59%
Stormwater Infrastructure	85	12	85%
Trails & Walkways	30	12	62%
Water Infrastructure	75	31	69%
Average			**65%**

Table 64 Park Facilities Asset Age and Condition Summary

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs, inform the selection of optimal lifecycle strategies, and improve planning for potential long-term replacement spikes.

Figure 41 below displays the average asset age vs EUL for each asset segment.

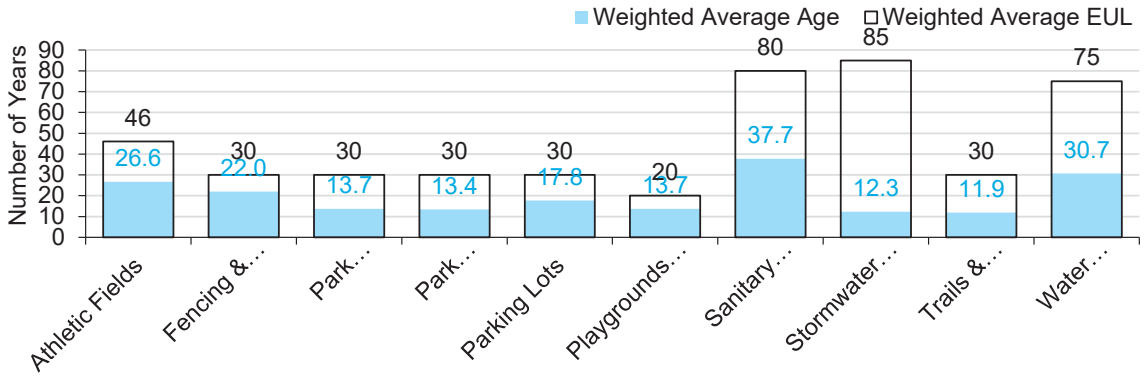


Figure 41 Park Facilities Asset Age vs. EUL

Figure 42 below visually illustrates the average condition for each asset segment on a very good to very poor scale.

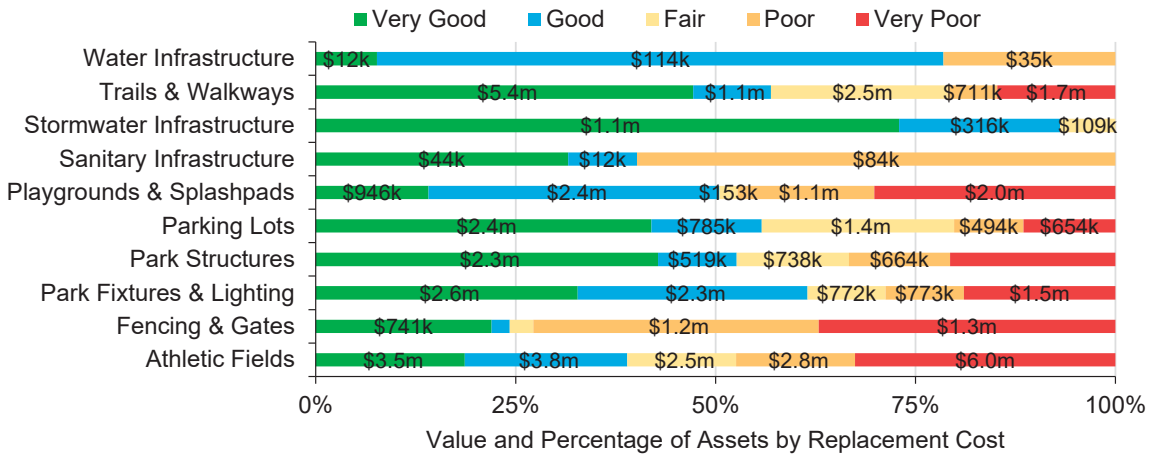


Figure 42 Park Facilities Asset Condition by Segment

To ensure that the Town's park facilities continue to provide an acceptable level of service, the Town should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the park facilities.

Each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the Town's current approach:

- Staff complete regular visual inspections on park facilities assets to ensure they are in state of adequate repair. Playgrounds are inspected according to CSA standards.

In this AMP the following rating criteria is used to determine the current condition of park asset segments and forecast future capital requirements:

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

Table 65 Park Facilities Condition Rating Scale

5.6.3 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

Table 66 outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance, Rehabilitation & Replacement	The Park Facilities asset category includes several unique asset types and lifecycle requirements are dealt with on a case-by-case basis

Table 66 Park Facilities Lifecycle Management Strategies

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. Figure 43 identifies capital requirements over the next 80 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted

requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.

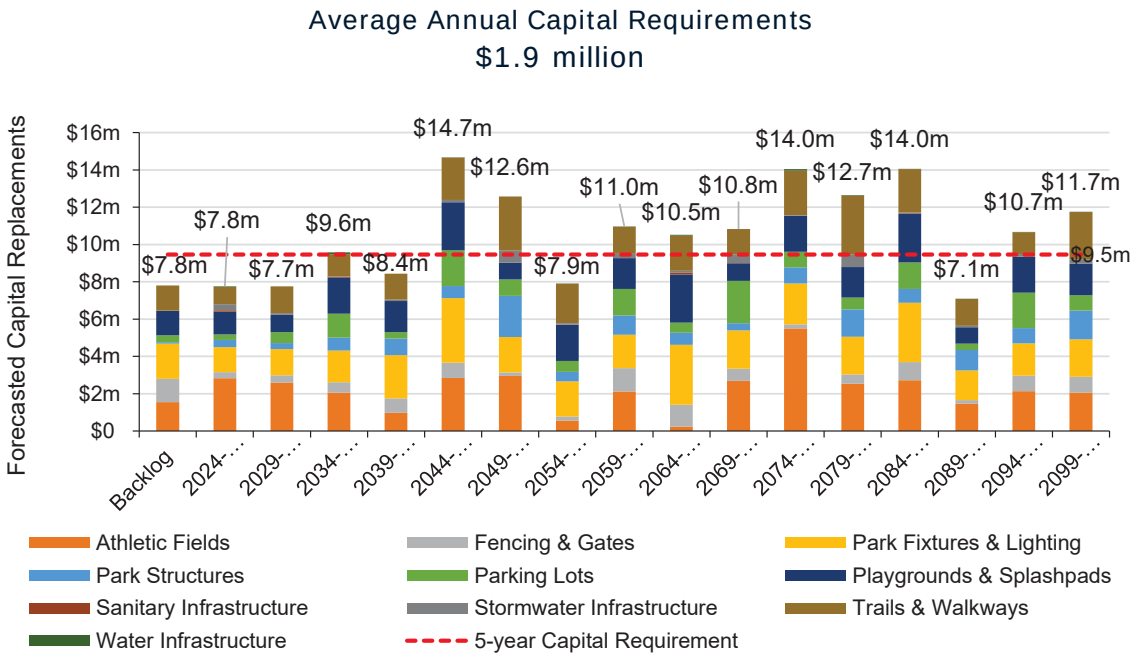


Figure 43 Park Facilities Forecasted Replacement Needs 2024-2103

The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Table 129 in Appendix A.

5.6.4 Risk & Criticality

Risk Matrix

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the park facilities are documented below, with their weights indicated in brackets:

Probability of Failure (POF)	Consequence of Failure (COF)
Structural (100%)	Economic (30%)
	Health and Safety (50%)
	Social (20%)

Table 67 Park Facilities Risk Parameters

Based on the above noted attributes and weightings, risk is calculated for each asset. The following heat map illustrates the probability and consequence of failure scores for all park assets based on 2023 inventory data. Please refer to Figure 102 in Appendix C for a more detailed overview of the criteria used to estimate the risk rating of each asset.

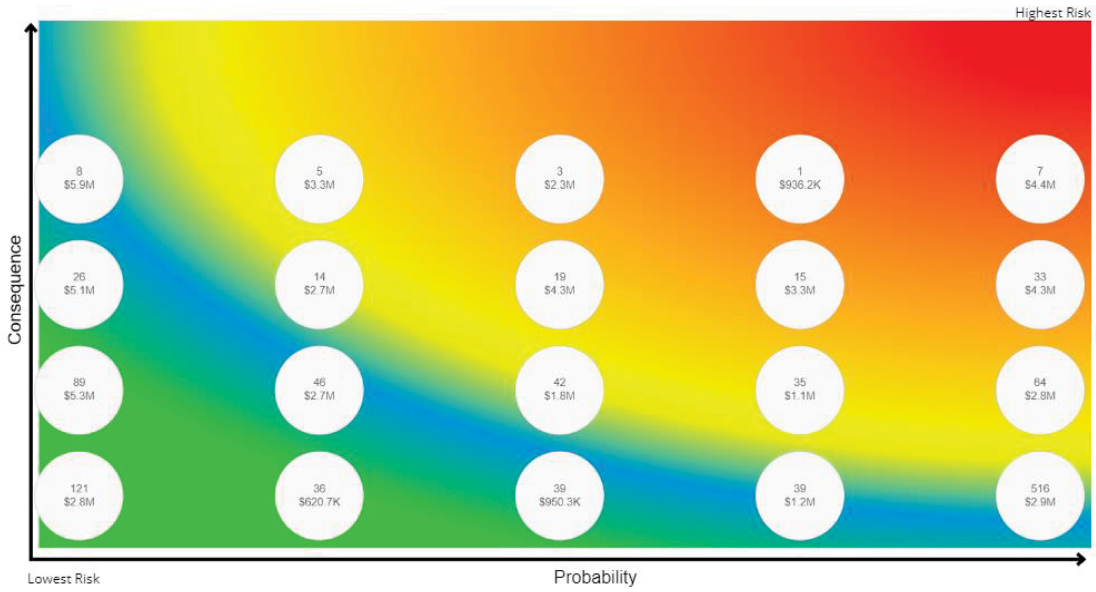


Figure 44 Park Facilities Risk Matrix Heat Map

This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The identification of critical assets is a valuable tool in identifying potential risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

Risks to Current Asset Management Strategies

Table 68 summarizes key trends, challenges, and risks to service delivery that the Town is currently facing:

	Aging Infrastructure and Asset Information
	A portion of park assets and playgrounds are approaching the end of their useful lives. As the assets age, it requires an increased operating costs and the aging playground elements may not meet the safety requirements. There is no formal condition assessment currently in

	place for park assets and park related land improvements. Staff are seeking to update the inventory and refine the asset information. A formal condition assessment program can also help to identify infrastructure needs, help capital planning, and reduce unplanned service disruption.
	**Growth** As the population continues to grow, the Town must prioritize expanding its capacity to serve a larger population. The demographic change in population also indicate the change in the community expectations on parks and park related land improvements. The Town has developed a five-year plan for parks and park related land improvements. This plan is updated regularly. Developing a comprehensive long-term capital plan with considerations for growth can be helpful to minimize dependency on grant funding and provide desired services.
	**Capital Funding Strategies** The Town currently has a large inventory of park assets which require regular maintenance and assessment. Major rehabilitation and replacement will be heavily reliant on the availability of grant funding opportunities. The significant increase in market prices of materials further amplify this risk. An annual capital funding strategy can also reduce dependency on grant funding and help prevent the deferral of asset renewal and acquisition.
	**Climate Change & Extreme Weather Events** As extreme weather events are projected to continue, the events can result in damage to parks facilities assets and pose higher demand on maintenance and repair of the assets. Incorporating a monitoring and maintenance program for all parks facilities assets can further support infrastructure resiliency and help mitigate the risk.

Table 68 Park Facilities Qualitative Risk Summary

5.6.5 Current Levels of Service

Park facilities are a non-core asset category and as such, there are no LOS metrics that are mandated. Instead, the Town selected metrics based on what is suitable, valuable, and feasible to collect. The following tables identify the selected LOS metrics.

Community Levels of Service

Table 69 outlines the qualitative descriptions that determine the community levels of service provided by park facilities.

Service Attribute	Qualitative Description	Current LOS (2023)
Safety & Regulatory Compliance	Parks facilities and trails are safe to use and do not pose a hazard to users	Description of the parks and trails inspection process
Reliable	Parks assets are in good condition, meeting the functional needs of users within facility operating hours	Description of maintenance and renewal activities to maintain parks in a suitable condition
Accessible	Parks Facilities are suitable to all kinds of users and are easy to access. Green Space development meets the needs of the community	See Figure 87 in Appendix B

Table 69 Park Facilities Community Levels of Service

Technical Levels of Service

Table 70 outlines the quantitative metrics that determine the technical level of service provided by park facility assets. The current LOS performance for each metric as of 2023 is also detailed below.

Service Attribute	Technical Metric	Current LOS (2023)
Safety & Regulatory Compliance	% of safety inspections completed as scheduled	100%
Reliable	Capital expenditure per hectare of parkland	N/A
	Park Service Area Ratio	800m radius
Accessible	# outdoor park facilities per 1,000 people	1.0
	Hectares of parkland per 1,000 people	2.7

Table 70 Park Facilities Technical Levels of Service

6 Analysis of Rate-funded Assets

Key Insights

- Rate-funded assets are valued at $630.3 million
- Water, wastewater, and storm assets are funded at 30.9% of their long-term requirements
- Average annual capital requirement for rate-funded assets is $18.4 million
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

6.1 Water Network

The Town is responsible for water distribution to the end users, consumer metering, and billing. York Region is responsible for water production and bulk distribution. Water in Aurora is 20 percent ground water source and 80 percent lake-based source. Water Services are coordinated between York Region and the Town's Operational Services department.

The state of the infrastructure for the water network is summarized in Table 71.

Replacement Cost	Condition	Financial Capacity	
$331 M	61%	Annual Requirement:	$5.7 M
		Funding Available:	$1.7 M
		Annual Deficit:	$4.0 M

Table 71 Water Network State of the Infrastructure

The following core values and level of service statements are a key driving force behind the Town's asset management planning:

Service Attribute	Level of Service Statement
Scope	The Municipal water supply is provided with minimal service disruptions and system failures and service requests are responded to promptly.
Quality / Reliability	The water network provides adequate pressure, is of acceptable quality, safe to drink, and is adequate for firefighting purposes.

Table 72 Water Network Level of Service Statements

6.1.1 Asset Inventory & Costs

Table 73 below includes the quantity, replacement cost method, and annual capital requirements of each asset segment in the Town's water network inventory.

Asset Segment	Quantity (Component)	Replacement Cost	Annual Capital Requirement
Hydrants	1,797 Assets	$16,022,000	$313,000
Water Booster Station	1 Asset	$438,000	$9,000
Water Mains	255,721 m	$197,488,000	$3,265,000
Water Meters	16,224 Assets	$5,339,000	$267,000
Water Sample Stations	60 Assets	$180,000	$4,000
Water Service Connections	178,780 m	$93,217,000	$1,541,000
Water Underground Enclosures	754 Assets	$8,470,000	$163,000
Water Valves	2,872 Assets	$9,535,000	$184,000
Total		**$330,688,000**	**$5,746,000**

Table 73 Water Network Inventory and Valuation

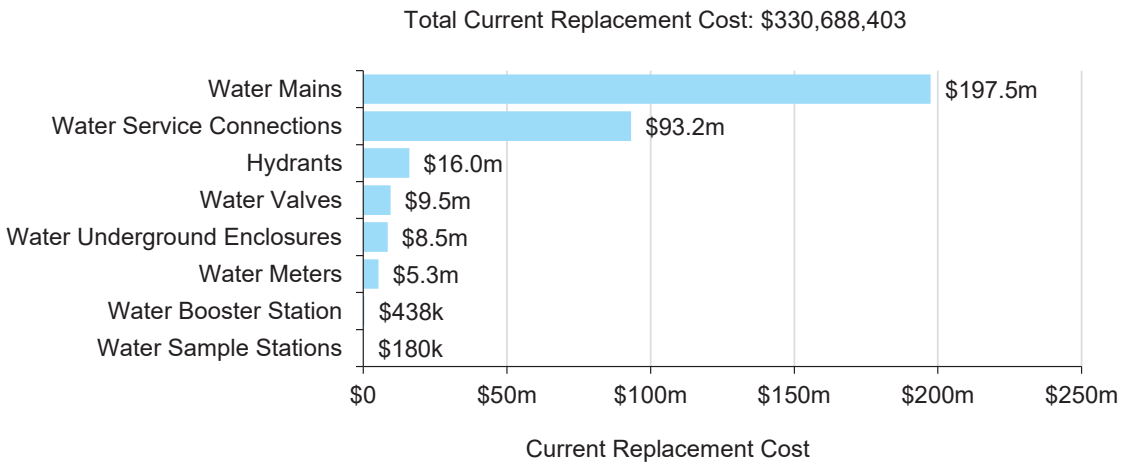


Figure 45 Water Network Replacement Cost by Segment

Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to represent realistic capital requirements more accurately.

6.1.2 Asset Condition & Age

Table 74 below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Hydrants	50	25	52%
Water Booster Station	50	24	53%
Water Mains	75	27	65%
Water Meters	20	34	3%
Water Sample Stations	50	18	64%
Water Service Connections	75	28	63%
Water Underground Enclosures	50	26	48%
Water Valves	50	24	54%
Average			**61%**

Table 74 Water Network Asset Age and Condition Summary

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs, inform the selection of optimal lifecycle strategies, and improve planning for potential long-term replacement spikes.

Figure 46 below displays the average asset age vs EUL for each asset segment.

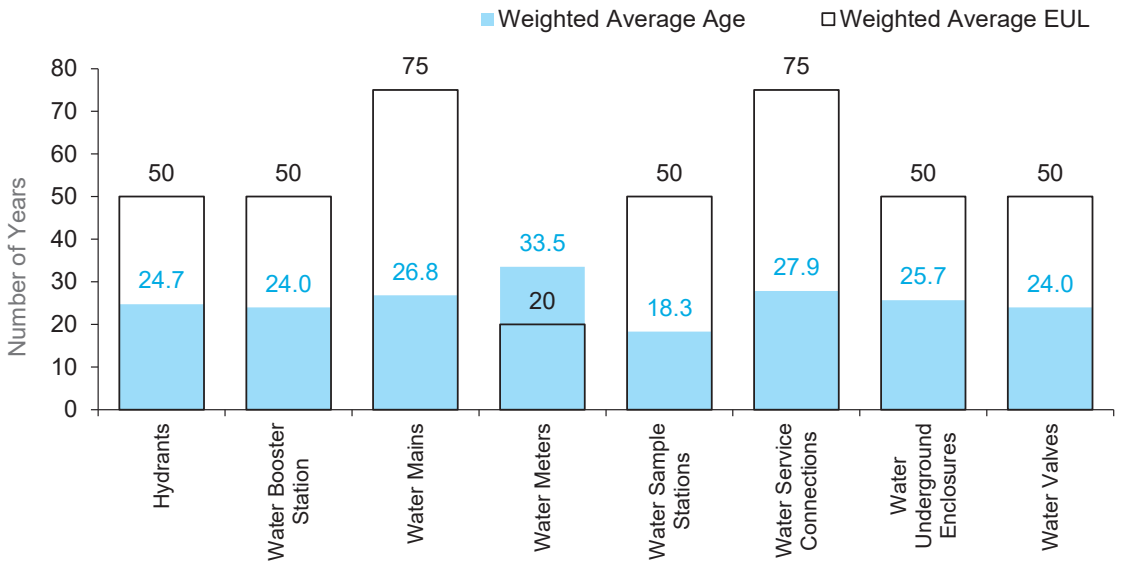


Figure 46 Water Network Asset Age vs. EUL

Figure 47 below visually illustrates the average condition for each asset segment on a very good to very poor scale:

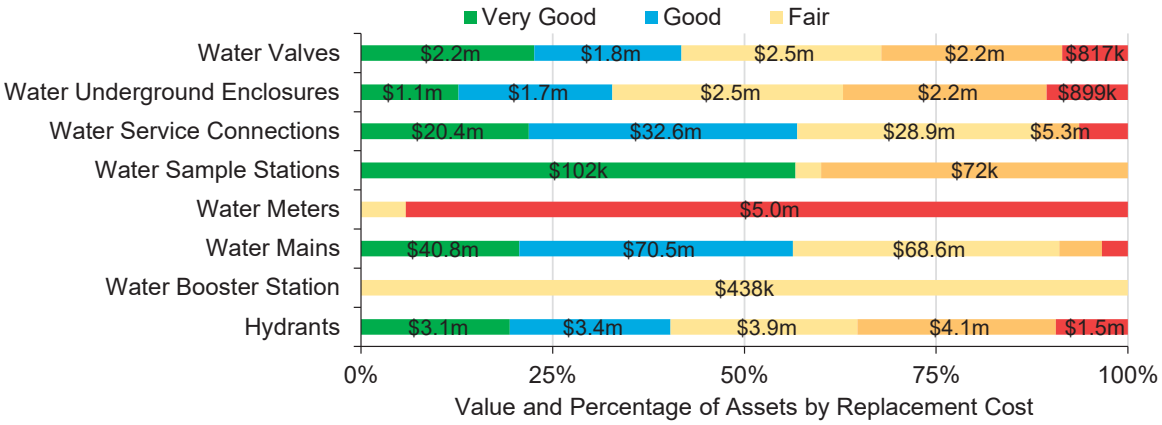


Figure 47 Water Network Asset Condition by Segment

To ensure that the Town's water network continues to provide an acceptable level of service, the Town should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the water network.

Each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the Town's current approach:

- Water sampling stations are inspected weekly
- Generators are inspected weekly, pumps are inspected monthly, and the structures housing those assets are inspected semi-annually
- Booster stations are inspected regularly for deficiencies
- Hydrants are inspected annually
- 25% of the main line water valves are inspected annually and logged
- Bulk water stations are inspected on a weekly basis or as needed

In this AMP the following rating criteria is used to determine the current condition of water network assets and forecast future capital requirements:

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

Table 75 Water Network Condition Rating Scale

6.1.3 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

Table 76 outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Hydraulic modelling is completed on an as-needed basis with the most recent study completed in 2021
	Leak detection is completed for service lines when an issue arises, but no formal program is currently in place
	Pressure and fireflow testing are regularly done by developers and insurance companies for new subdivisions
	Hydrants are flushed regularly, problematic areas have been noted to be flushed more frequently
	Main line valves are exercised during inspection, which covers 25% of the network on annual basis
Rehabilitation	A residential water meter replacement program is in place. To date approximately half of the town's water meters have been replaced
Replacement	Booster stations are maintained weekly with different components inspected at varying frequencies. While condition ratings are not assigned, deficiencies are identified and noted
	Metallic watermains are targeted for rehabilitation in conjunction with road rehabilitation projects.

Table 76 Water Network Lifecycle Management Strategies

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. Figure 48 identifies capital requirements over the next 85 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.

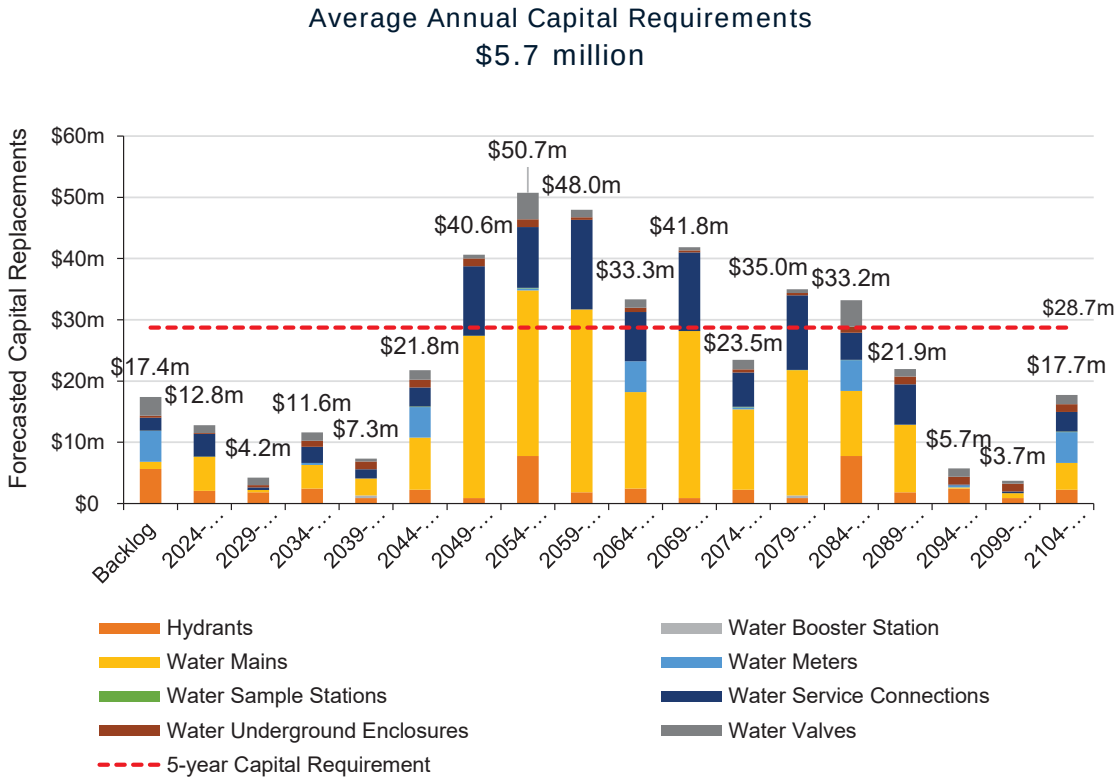


Figure 48 Water Network Forecasted Replacement Needs 2024-2108

The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Table 134 in Appendix A.

6.1.4 Risk & Criticality

Risk Matrix

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the water facilities are documented below, with their weights indicated in brackets:

Probability of Failure (POF)	Consequence of Failure (COF)
Structural (100%)	Economic (40%)
	Health and Safety (60%)

Table 77 Water Network Risk Parameters

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the water mains are documented below, with their weights indicated in brackets:

Probability of Failure (POF)	Consequence of Failure (COF)
Structural (100%)	Economic (30%)
Functional (50%)	Social (40%)
	Environmental (30%)

Table 78 Water Network (Water Mains) Risk Parameters

Based on the above noted attributes and weightings, risk is calculated for each asset. The following heat map illustrates the probability and consequence of failure scores for all water network assets based on 2023 inventory data. Please refer to Figure 103 and Figure 104 in Appendix C for a more detailed overview of the criteria used to estimate the risk rating of each asset.

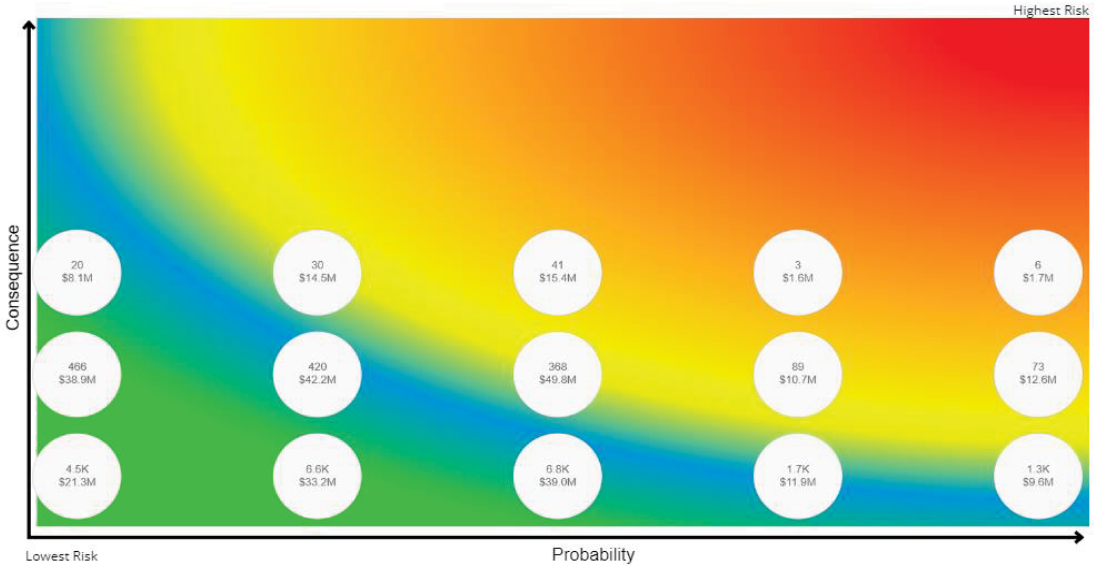


Figure 49 Water Network Risk Matrix Heat Map

This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The identification of critical assets is a valuable tool in identifying potential risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to service delivery that the Town is currently facing:

Asset Data & Information

There is no formal condition assessment currently in place for water assets. Without an understanding of the condition of the network, unexpected failures are more likely to occur. Staff is actively working towards improving the quality of the available inventory data for the water network. A formal condition assessment program can identify infrastructure needs, help capital planning, and reduce unplanned service disruption.

Climate Change & Extreme Weather Events

As extreme weather events continue to increase, the number of algae blooms in the source water increases. This leads to decreased water quality and degrades the natural environment, causing extra demand

	on the water treatment facilities. As a result, more chlorine residues will remain in the watermains, which poses higher demand on maintenance and rehabilitation activities. Incorporating a monitoring and maintenance program for all water infrastructure can further support infrastructure resiliency and help mitigate the risk.

Table 79 Water Network Qualitative Risk Summary

6.1.5 Current Levels of Service

The following tables identify the Town's current level of service for water network. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Town has selected for this AMP.

Community Levels of Service

Table 80 outlines the qualitative descriptions that determine the community levels of service provided by water network.

Service Attribute	O. Reg. 588/17 Mandated	Qualitative Description	Current LOS (2023)
Scope	Yes	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	See Figure 88 Appendix B
	Yes	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	See Figure 89 Appendix B
Reliability	Yes	Description of boil water advisories and service interruptions	0 boil water advisories

Table 80 Water Network Community Levels of Service

Technical Levels of Service

Table 81 outlines the quantitative metrics that determine the technical level of service provided by the water network.

Service Attribute	O. Reg. 588/17 Mandated	Technical Metric	Current LOS (2023)
Scope	Yes	% of properties connected to the municipal water system	97.1%
	Yes	% of properties where adequate fire flow is available	98.6%
Reliability	No	# of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	0:17,700
	Yes	# of connection-days per year where water is not available due to water main breaks compared to the total number of properties connected to the municipal water system	32:17,700
Performance	No	Capital re-investment rate	0.5%
Affordability	No	O&M Expenditure per capita	$740
	No	Five Year Average Annual Capital Expenditure	$1,562,719

Table 81 Water Network Technical Levels of Service

6.2 Sanitary Network

The Town is responsible for wastewater collection and delivery to regional trunk infrastructure. Sewer services provided by the Town are overseen by the Water and Wastewater Management division.

The state of the infrastructure for the sanitary network is summarized in Table 82.

Replacement Cost	Condition	Financial Capacity	
$300 M	63%	Annual Requirement:	$4.2 M
		Funding Available:	$1.5 M
		Annual Deficit:	$2.7 M

Table 82 Sanitary Network State of the Infrastructure

The following core values and level of service statements are a key driving force behind the Town's asset management planning.

Service Attribute	Level of Service Statement
Scope	96% of properties are connected to the municipal sanitary system in sufficient capacity (does not exceed maximum capacity).
Quality	The sanitary sewer network overall is in good condition.
Reliability	There are minimal unplanned service interruptions due to backups and effluent violations.

Table 83 Sanitary Network Level of Service Statements

6.2.1 Asset Inventory & Costs

Table 84 below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Town's sanitary network inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Sanitary Equalization Tanks	3 Assets	$1,076,000	$22,000
Sanitary Laterals	180,293 m	$106,126,000	$1,506,000
Sanitary Mains	223,264 m	$145,705,000	$2,067,000
Sanitary Manholes and Underground Enclosures	3,417 Assets	$38,384,000	$467,000
Sanitary Pumping Stations	9 Assets	$8,297,000	$166,000
Sanitary Valve	1 Asset	$3,000	$0
Total		**$299,590,000**	**$4,228,000**

Table 84 Sanitary Network Inventory and Valuation

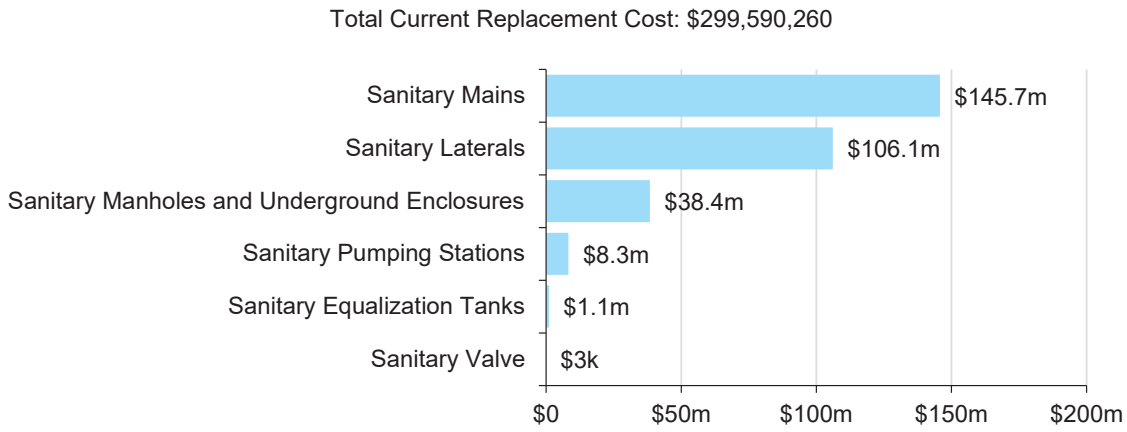


Figure 50 Sanitary Network Replacement Cost by Segment

Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to represent realistic capital requirements more accurately.

6.2.2 Asset Condition & Age

Table 85 below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Estimated Useful Life (Years)	Average Age (Years)	Average Condition (%)
Sanitary Equalization Tanks	50	23	52%
Sanitary Laterals	80	28	57%
Sanitary Mains	80	31	54%
Sanitary Manholes and Underground Enclosures	50	30	43%
Sanitary Pumping Stations	50	19	63%
Sanitary Valve	30	17	42%
Average			**63%**

Table 85 Sanitary Network Asset Age and Condition Summary

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs, inform the selection of optimal lifecycle strategies, and improve planning for potential long-term replacement spikes.

Figure 51 below displays the average asset age vs EUL for each asset segment

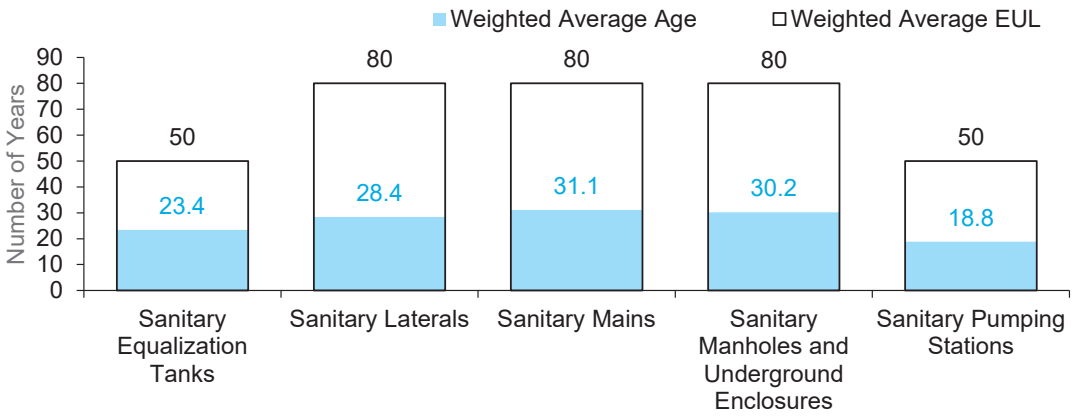


Figure 51 Sanitary Network Asset Age vs. EUL

Figure 52 below visually illustrates the average condition for each asset segment on a very good to very poor scale.

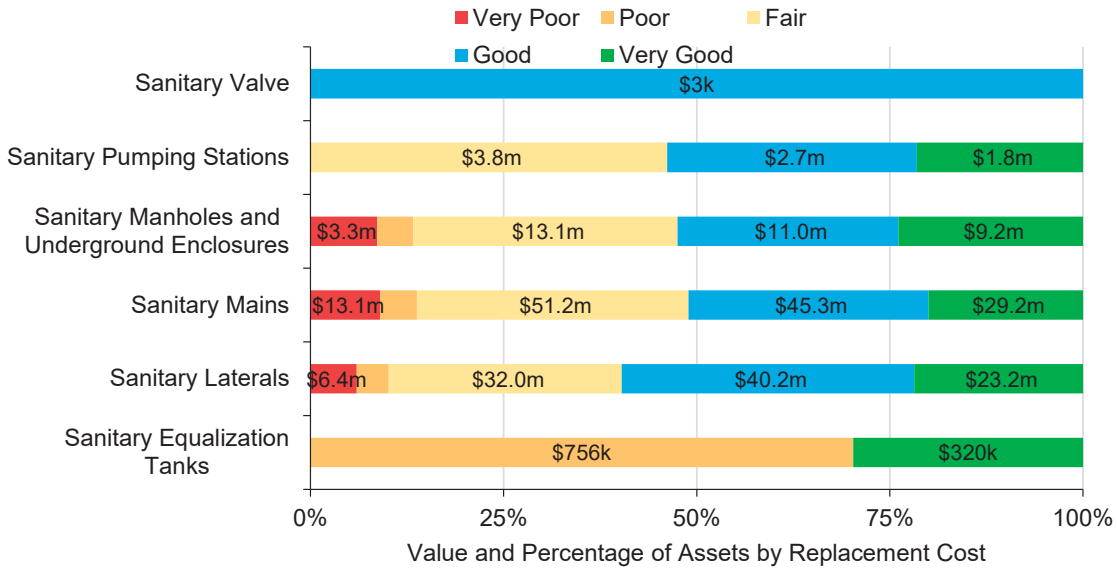


Figure 52 Sanitary Network Asset Condition by Segment

To ensure that the Town's sanitary network continues to provide an acceptable level of service, the Town should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the sanitary network.

Each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

Current Approach to Condition Assessment

Accurate and reliable condition data allows the Town to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the Town's current approach:

- CCTV inspections are done for approximately 10% of the entire sewer network every year
- Manholes are inspected for deficiencies and captured in a checklist type format on an annual basis and logged
- Sanitary pumping stations are inspected alongside water booster stations
- Sanitary laterals are inspected on a regular basis with their connected gravity main

In this AMP the following rating criteria is used to determine the current condition of sewer network assets and forecast future capital requirements:

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

Table 86 Sanitary Network Condition Rating Scale

6.2.3 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

Table 87 outlines the Township's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Manhole deficiencies are logged. Repairs are then prioritized by condition
Rehabilitation	Manholes are rehabilitated with sewer segments
Replacement	Sewers can be structurally lined to minimize surface impact
	Many sanitary assets are considered for replacement during coordinated lifecycle activities with work on neighbouring assets, such as road rehabilitations

Table 87 Sanitary Network Lifecycle Management Strategies

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. Figure 53 identifies capital requirements over the next 80 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.

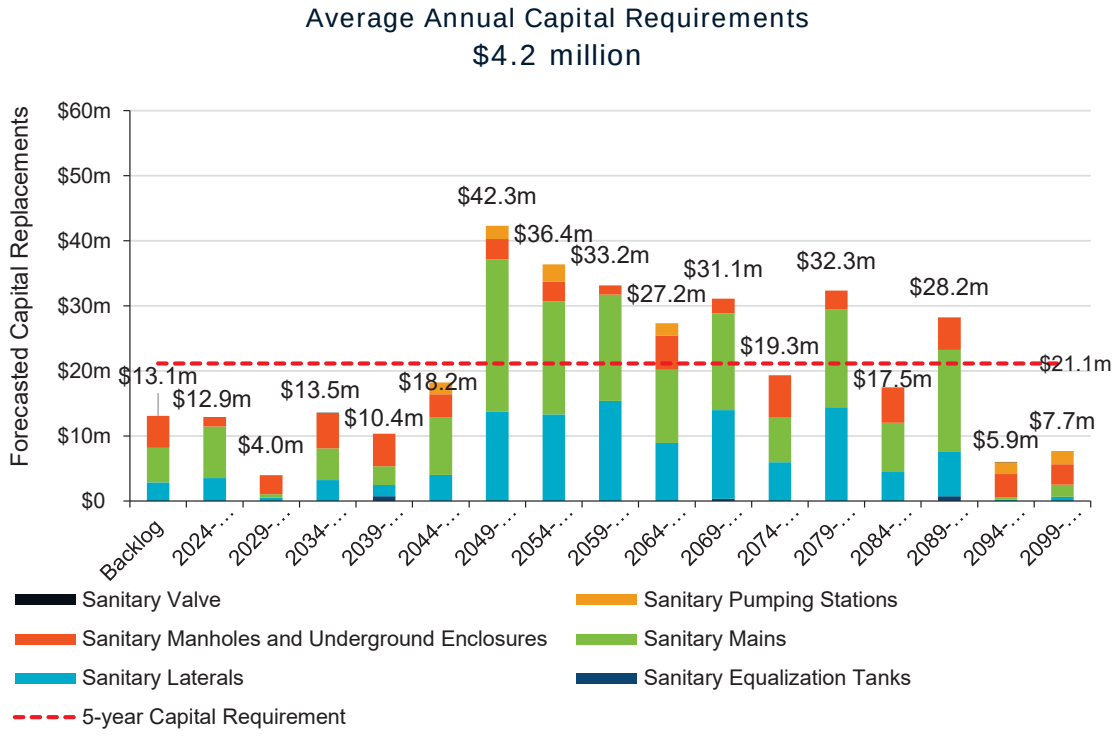


Figure 53 Sanitary Network Forecasted Replacement Needs 2024-2103

The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Table 132 in Appendix A.

6.2.4 Risk & Criticality

Risk Matrix

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the sanitary facilities are documented below, with their weights indicated in brackets:

Probability of Failure (POF)	Consequence of Failure (COF)
Structural (100%)	Economic (40%)
	Health and Safety (60%)

Table 88 Sanitary Network Risk Parameters

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the sanitary mains are documented below, with their weights indicated in brackets:

Probability of Failure (POF)	Consequence of Failure (COF)
Structural (75%)	Economic (40%)
Functional (25%)	Social (30%)
	Environmental (30%)

Table 89 Sanitary Network (Sanitary Mains) Risk Parameters

Based on the above noted attributes and weightings, risk is calculated for each asset. The following heat map illustrates the probability and consequence of failure scores for all sanitary network assets based on 2023 inventory data. Please refer to Figure 103 and Figure 105 in Appendix C for a more detailed overview of the criteria used to estimate the risk rating of each asset.

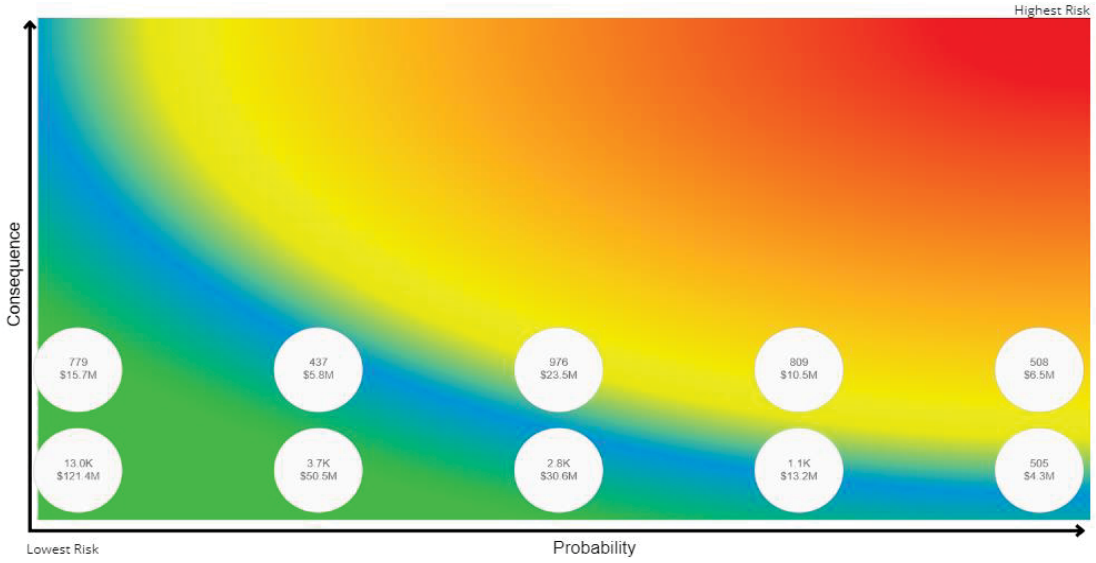


Figure 54 Sanitary Network Risk Matrix Heat Map

This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The identification of critical assets is a valuable tool in identifying potential risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to service delivery that the Town is currently facing:

Asset Data & Information

Staff is actively working towards collecting additional inventory data for the sanitary network. The current CCTV program in place is focused on the operational needs of the underground assets. Staff is seeking to improve the accuracy of condition data by advancing their CCTV inspection program and utilizing the information to provide a condition rating for underground assets. Once completed there will be greater confidence in the development of data-driven strategies to address infrastructure needs.

Lifecycle Management Strategies

The current lifecycle management strategy for the sanitary network is considered more reactive than proactive. There are no formal condition

	assessment programs in place. Without an understanding of the condition of the network, unexpected failures are more likely to occur. Staff are also working towards developing better defined strategies to help to extend the service life of structures with lower lifecycle costs. These strategies will require sustainable annual funding to minimize the deferral of capital works.
	**Growth** The Town is expected to experience significant growth. Population and employment growth will increase the demand on municipal services and potentially decrease the lifecycle of certain assets. As the population continues to grow, the Town must prioritize expanding its capacity to serve a larger population. Staff are working towards developing a comprehensive long-term capital plan with considerations for growth.
	**Climate Change & Extreme Weather Events** As extreme weather events are projected to continue, the events can result in damage sanitary infrastructure and pose higher demand on maintenance and repair of the assets. Incorporating a monitoring and maintenance program for all sanitary infrastructure can further support infrastructure resiliency and help mitigate the risk.

Table 90 Sanitary Network Qualitative Risk Summary

6.2.5 Current Levels of Service

The following tables identify the Town's current level of service for the sanitary network. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17, as well as any additional performance measures that the Town has selected for this AMP.

Community Levels of Service

Table 91 outlines the qualitative descriptions that determine the community levels of service provided by sanitary network.

Service Attribute	O. Reg. 588/17 Mandated	Qualitative Description	Current LOS (2023)
Scope	Yes	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system	See Figure 90 Appendix B

	No	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes	The Town does not own any combined sewers
	No	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	The Town does not own any combined sewers
Reliability	No	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	Stormwater can enter sanitary sewers through cracks in sanitary mains or indirect connections (e.g. weeping tiles). In the case of heavy rainfall events, sanitary sewers may experience a volume of water and sewage that exceeds its designed capacity. In some cases, this can cause water and/or sewage to overflow backup into homes. the disconnection of weeping tiles from sanitary mains and the use of sump pumps and pits directing storm water to the storm drain system can help to reduce the chance of this occurring.
	Yes	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	The Town follows a series of design standards that integrate servicing requirements and land use considerations when constructing or replacing sanitary sewers. These standards have been determined with consideration of the minimization of sewage overflows and backups.

	Yes	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system	Effluent refers to water pollution that is discharged from a wastewater treatment plant, and may include suspended solids, total phosphorous and biological oxygen demand. The Environmental Compliance Approval (ECA) identifies the effluent criteria for municipal wastewater treatment plants.

Table 91 Sanitary Network Community Levels of Service

Technical Levels of Service

Table 92 outlines the quantitative metrics that determine the technical level of service provided by the sanitary network.

Service Attribute	O. Reg. 588/17 Mandated	Technical Metric	Current LOS (2020)
Scope	Yes	% of properties connected to the municipal wastewater system	96%
Reliability	No	# of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system	0:20,500
	No	# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system	0:20,500
	Yes	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0:20,500
Performance	No	Capital re-investment rate	0.5%

Table 92 Sanitary Network Technical Levels of Service

6.3 Storm Network

The Town is responsible for owning and maintaining a stormwater network of storm sewer mains and other supporting infrastructure. Staff continue to improve the accuracy and reliability of their Stormwater inventory to assist with long-term asset management planning.

The state of the infrastructure for the stormwater network is summarized Table 93.

Replacement Cost	Condition	Financial Capacity	
$569 M	64%	Annual Requirement:	$8.4 M
		Funding Available:	$2.4 M
		Annual Deficit:	$6.0 M

Table 93 Storm Network State of the Infrastructure

The following core values and level of service statements are a key driving force behind the Town's asset management planning:

Service Attribute	Level of Service Statement
Scope	The stormwater network service has sufficient capacity for the community and is available under all weather conditions.
Quality	The stormwater network is in good condition with minimal unplanned service interruptions and road closures.

Table 94 Storm Network Level of Service Statements

6.3.1 Asset Inventory & Costs

Table 95 below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Town's stormwater network inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Catchbasins	6,131 Assets	$34,021,000	$494,000
Ditches	33,134 m	$6,118,000	$153,000
Headwalls	309 m	$18,481,000	$355,000
LIDs	14 Assets	$6,905,000	$230,000
Oil Grit Separator	44 Assets	$3,643,000	$121,000
Storm Equalization Tanks	61 Assets	$32,760,000	$652,000

Storm Laterals	134,249 m	$76,858,000	$1,222,000
Storm Mains	215,871 m	$223,637,000	$3,555,000
Storm Maintenance Holes and Underground Enclosures	3,503 Assets	$39,350,000	$463,000
Storm Valves	12 Assets	$40,000	$1,000
Stormwater Management Pond	80 Assets	$127,382,000	$1,168,000
Total		**$569,195,000**	**$8,414,000**

Table 95 Storm Network Inventory and Valuation

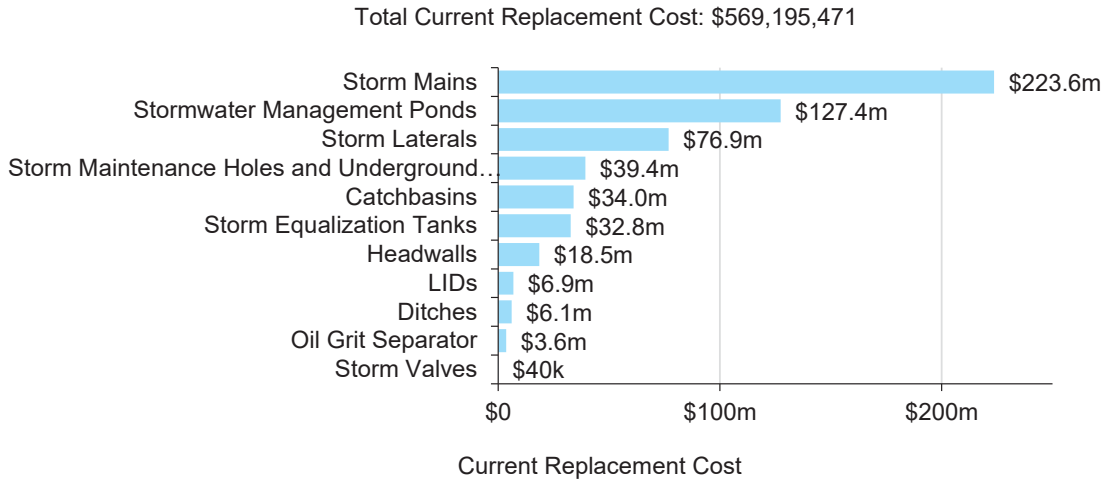


Figure 55 Storm Network Replacement Cost by Segment

Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to represent realistic capital requirements more accurately.

Asset Condition & Age

Table 96 below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Catchbasins	50	25	60%
Ditches	25	40	12%
Headwalls	50	21	49%

LIDs	25	5	86%
Oil Grit Separator	NA	N/A	56%
Storm Equalization Tanks	50	13	58%
Storm Laterals	67	28	68%
Storm Mains	67	28	68%
Storm Maintenance Holes and Underground Enclosures	50	26	68%
Storm Valves	30	13	73%
Stormwater Management Pond	11	23	44%
Average			**64%**

Table 96 Storm Network Asset Age and Condition Summary

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs, inform the selection of optimal lifecycle strategies, and improve planning for potential long-term replacement spikes.

Figure 56 below displays the average asset age vs EUL for each asset segment.

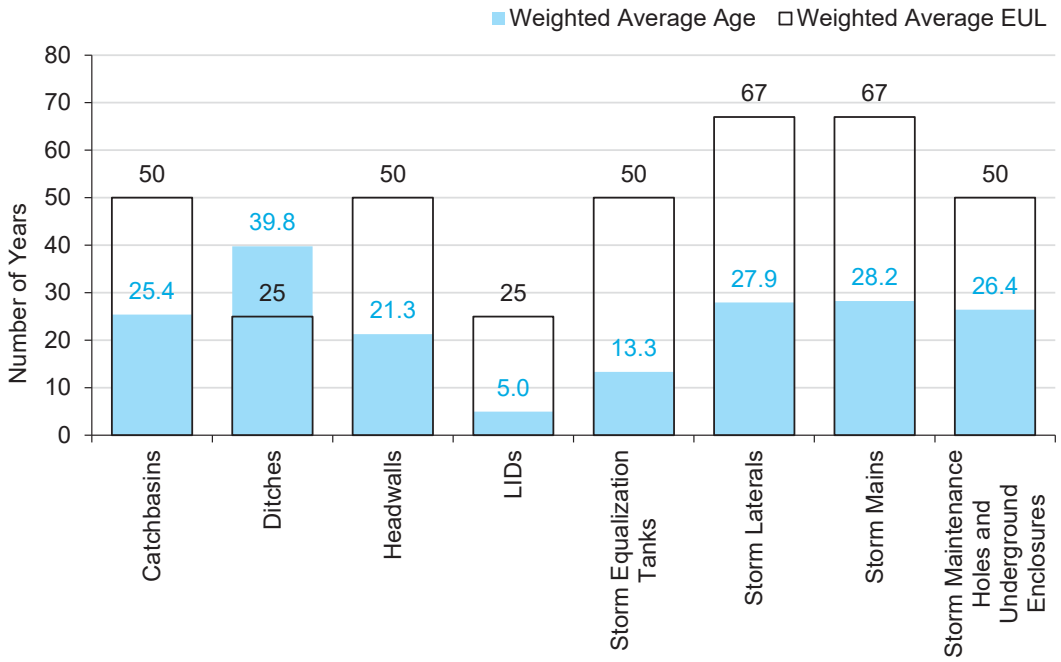


Figure 56 Storm Network Asset Age vs. EUL

Figure 57 below visually illustrates the average condition for each asset segment on a very good to very poor scale.

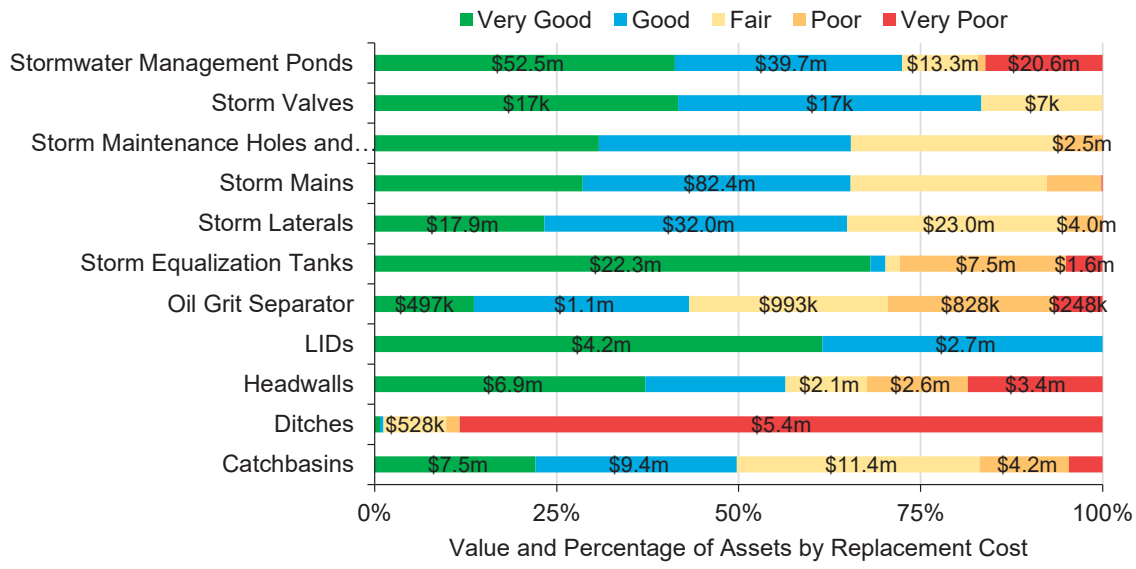


Figure 57 Storm Network Asset Condition by Segment

To ensure that the Town's stormwater network continues to provide an acceptable level of service, the Town should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the stormwater network.

Each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the Town's current approach:

- Closed Circuit Television Video (CCTV) inspections are performed on 10% of the entire storm sewer network annually.
- A comprehensive inspection of storm water management ponds is performed every 2 years.
- Oil grit separators are inspected on an annual basis.
- Catchbasins are inspected when cleaned, approximately 25% are inspected annually.
- Other stormwater assets are inspected on an as-needed basis

In this AMP the following rating criteria is used to determine the current condition of storm network assets and forecast future capital requirements:

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

Table 97 Storm Network Condition Rating Scale

6.3.2 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

Table 98 outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Storm Master Plans are undertaken as needed. The last plan was completed in 2020 in conjunction with Lake Simcoe's Protection Plan
	25% of catchbasins are cleaned out per year, repairs for catchbasins are usually coordinated with asphalt road repairs
	Storm equalization tanks are inspected yearly and receive cleaning and sediment removal
Rehabilitation	Stormwater management ponds may undergo restorative activities such as silt removal, deepening of the pond, or redesign. Costs are noted to vary widely depending on the extent of restoration. Regular maintenance activities such as vegetation management, debris and litter removal, and clearing of inlet and outlet structures are performed as needed
	Trenchless sewer lining can be considered to minimize impact to neighbouring assets on a case-by-case basis
Replacement	Many storm assets are replaced near the end of life. Earlier replacement is typically coordinated with other work on localized assets, namely the road assets

Table 98 Road Network Lifecycle Management Strategies

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. Figure 58 identifies capital requirements over the next 79 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.

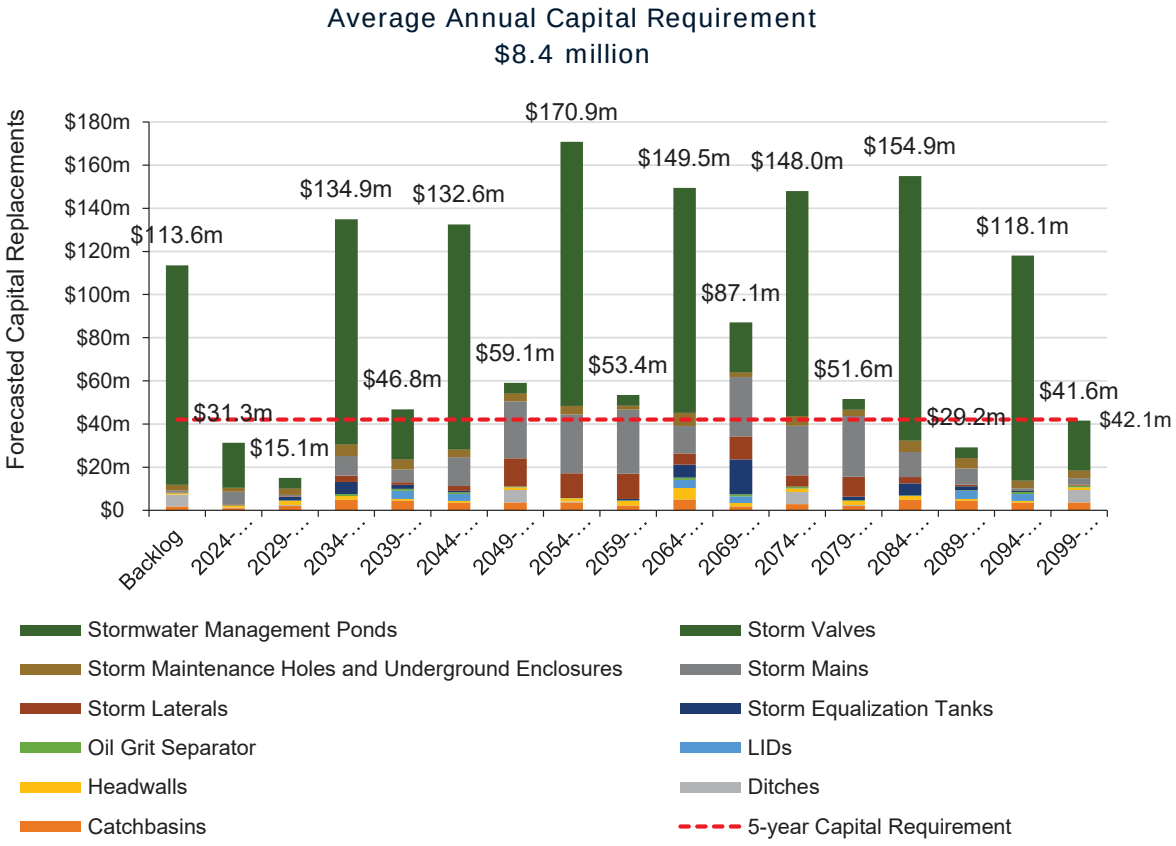


Figure 58 Storm Network Forecasted Replacement Needs 2024-2103

The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Table 133 in Appendix A.

6.3.3 Risk & Criticality

Risk Matrix

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the storm structures are documented below, with their weights indicated in brackets:

Probability of Failure (POF)	Consequence of Failure (COF)
Structural (100%)	Economic (30%)
	Health and Safety (40%)
	Environmental (30%)

Table 99 Storm Network Risk Parameters

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the storm mains are documented below, with their weights indicated in brackets:

Probability of Failure (POF)	Consequence of Failure (COF)
Structural (75%)	Economic (30%)
Functional (25%)	Social (40%)
	Environmental (30%)

Table 100 Storm Network (Storm Mains) Risk Parameters

Based on the above noted attributes and weightings, risk is calculated for each asset. The following heat map illustrates the probability and consequence of failure scores for all storm network assets based on 2023 inventory data.

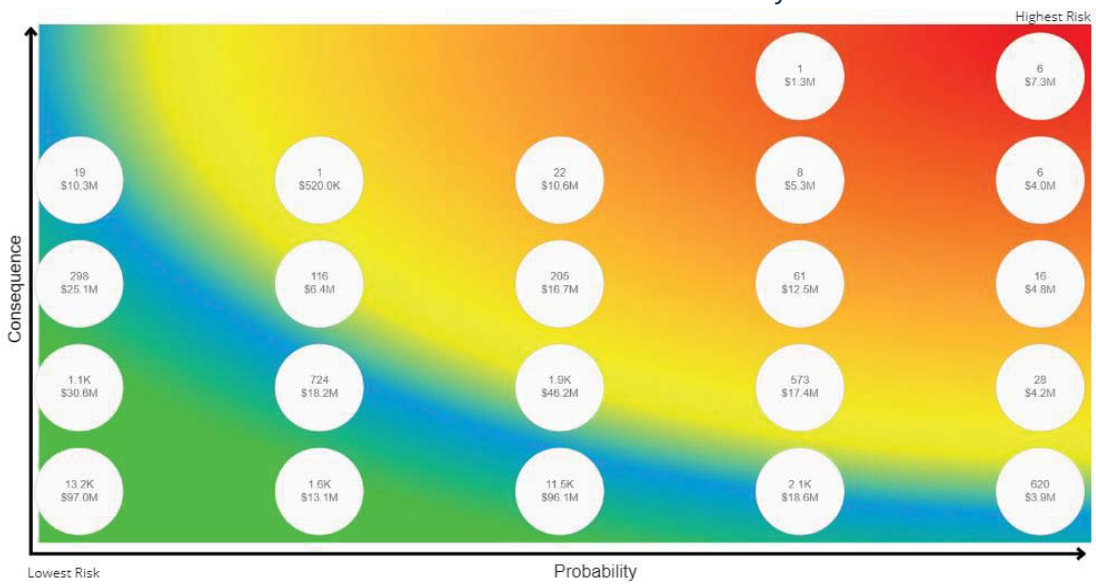


Figure 59 Storm Network Risk Matrix Heat Map

Please refer to Figure 106 and Figure 107 in Appendix C for a more detailed overview of the criteria used to estimate the risk rating of each asset.

This is a high-level model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The identification of critical assets is a valuable tool in identifying potential risk mitigation strategies and treatment options. Risk mitigation may include asset-

specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to service delivery that the Town is currently facing:

	**Asset Data & Information**
	Staff is actively working towards collecting additional inventory data for the storm network. Current CCTV program in place is focused on the operational needs of the underground assets. Staff is seeking to improve the accuracy of condition data by advancing their CCTV inspection program and utilizing the information to provide a condition rating for underground assets. Once completed there will be greater confidence in the development of data-driven strategies to address infrastructure needs.
	**Lifecycle Management Strategies**
	The current lifecycle management strategy for the storm network is considered more reactive than proactive. There are no formal condition assessment programs in place for storm network. Without an understanding of the condition of the network, unexpected failures are more likely to occur. Staff are also working towards developing better defined strategies to help to extend the service life of structures with lower lifecycle costs. These strategies will require sustainable annual funding to minimize the deferral of capital works.
	**Climate Change & Extreme Weather Events**
	Flooding and road washouts may exist in the poor drainage areas with an increase in intensity, frequency, and duration of precipitation events. This also leads to damages to surrounding infrastructure, pollution of natural resources, and extra demands on the storm system. Current condition assessment strategies and lifecycle strategies for the stormwater network are reactive. Incorporating a monitoring and maintenance program for all stormwater infrastructure can further support infrastructure resiliency and help mitigate the risk.

Table 101 Storm Network Qualitative Risk Summary

6.3.4 Current Levels of Service

The following tables identify the Town's current level of service for the stormwater network. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17, as well as any additional performance measures that the Town has selected for this AMP.

Community Levels of Service

Table 102 outlines the qualitative descriptions that determine the community levels of service provided by the stormwater network.

Service Attribute	O. Reg. 588/17 Mandated	Qualitative Description	Current LOS (2023)
Scope	Yes	Description, which may include map, of the user groups or areas of the municipality that are protected from flooding, including the extent of protection provided by the municipal stormwater system	See Figure 91 in Appendix B
Affordable	No	Description of measures to improve service cost effectiveness	The stormwater service is affordable to users
Reliable	No	Description of the lifecycle activities to maintain and renew the stormwater system	The stormwater network provides reliable protection, with minimal breaks, blockages, and outages
Safety and Regulatory compliance	No	Description of the erosion and flood mitigation projects in the Town	Stormwater is managed without risk or hazard to public health. There is full compliance with all regulatory requirements

Table 102 Storm Network Community Levels of Service

Technical Levels of Service

Table 103 outlines the quantitative metrics that determine the technical level of service provided by the stormwater network. The current LOS performance for each metric as of 2023 is also detailed below.

Service Attribute	O. Reg. 588/17 Mandated	Technical Metric	Current LOS (2023)
Scope	Yes	% of properties in municipality resilient to a 100-year storm	95.1%
		% of the municipal stormwater management system resilient to a 5-year storm	100%
Affordable	No	O&M Expenditure per capita	$973
		Average Annual Reinvestment Rate	0.4%
		Five Year Average Annual Capital Expenditure	$552,356
Reliable	No	Average Condition of stormwater mains and culverts	58%
		Average Condition of oil grit separators	60%
		Average. Condition of storm ponds	7%
		Average Condition of equalization tanks	63%
		Average condition of catchbasins	52%
		Number of stormwater ponds with a sediment fill more than 50% of total storage volume	11
Safety and Regulatory Compliance	No	% of stormwater pipes CCTV surveyed per year	10%
		km of channels assessed for condition each year	N/A
		% of storm ponds assessed for condition within last 5 years	N/A

Table 103 Storm Network Technical Levels of Service

7 Proposed Service Levels

Key Insights

- 92% of survey respondents indicated that they are satisfied with the Town's delivery of services
- Current maintenance and capital lifecycle activities are meeting level of service needs and expectations
- The majority of assets included in this AMP are considered to be in fair or better condition
- An increase in capital investment is required to sustain a stable level of service over the long term

7.1 Proposed Levels of Service

7.1.1 Scope

Ontario Regulation 588/17 Proposed Levels of Service

The 2025 deadline requires that proposed Levels of Service (LOS) are demonstrated to be appropriate based on an assessment of:

1. Proposed LOS options (i.e., increase, decrease, or maintain current LOS) and the risks associated with these options (i.e., asset reliability, safety, affordability) when considering the long-term sustainability of the municipality.
2. How proposed LOS may differ from current LOS.
3. Whether proposed LOS are achievable.
4. The municipality's ability to afford proposed LOS.

In addition, a lifecycle management and financial strategy to support the proposed LOS must be identified for a period of 10 years with specific reporting on:

1. Identification of lifecycle activities needed to provide the proposed LOS with consideration for:
    a. Full lifecycle of assets.
    b. Lifecycle activities options available to meet proposed LOS.
    c. Risks associated with the options identified in sub-paragraph B, above.
    d. Identification of which lifecycle activities identified in sub-paragraph B carry the lowest cost.
2. An estimate of the annual cost of meeting proposed LOS for a period of 10 years, separated by capital and operating expense.

7.1.2 Methodology

The LOS framework is a valuable tool for assessing and managing the performance of a system or service. Target levels of service for the Town have been developed through comprehensive engagement with Town staff and referencing resident satisfaction surveys. To achieve a target level of service goal, careful consideration of the following should be considered.

Financial Impact Assessment:

- Assess historical expenditures/budget patterns to gauge feasibility of increasing budgets to achieve LOS targets
- Consider implications of LOS adjustments on other services, and other infrastructure programs (tradeoffs)

Infrastructure Condition Assessment:

- Regularly assess the condition of critical infrastructure components.

- Use standardized condition indices or metrics to quantify the state of infrastructure.
- Identify non-critical components where maintenance can be deferred without causing severe degradation.
- Adjust condition indices or metrics to reflect the reduced maintenance budget.
- Use current condition levels as benchmarks to gauge feasibility of large adjustments to levels of service

Service Metrics:

- Measure user satisfaction, response times, and other relevant indicators for the specific service.

Service Impact Assessment:

- Evaluate potential impacts on user satisfaction and service delivery due to decreased infrastructure condition.

Key Activities:

- Implement routine maintenance and inspections to ensure infrastructure longevity.
- Monitor and optimize operational processes for efficiency.
- Regularly review and update preventive maintenance schedules.
- Prioritize critical infrastructure components for maintenance.
- Implement cost-saving measures without compromising safety or compliance.
- Develop strategies for managing and communicating service impacts to stakeholders.
- Invest in technology and process improvements to enhance maintenance efficiency.
- Upgrade critical infrastructure components to improve overall reliability.
- Explore opportunities for innovation and efficiency gains.

Risk Management:

- Identify potential risks to infrastructure and service quality.
- Develop contingency plans to address unforeseen challenges without compromising service quality.
- Monitor performance closely to ensure that the target investment translates into achieving the desired infrastructure condition.

Infrastructure Condition Enhancement:

- Identify areas for improvement and increased maintenance to enhance overall infrastructure condition.

- Adjust condition indices or metrics to reflect the increased maintenance budget.

Service Improvement Metrics:

- Analyze the performance of target levels of service regularly and incorporate more ambitious targets based on user satisfaction if required.

Timelines:

- Although O. Reg requires identification of expenditures for a 10-year period in pursuit of LOS targets, it does not require municipalities to identify the timeframe to achieve them.
- Careful consideration should be given to setting realistic targets for when LOS targets are to be achieved.

General Considerations for All Scenarios:

- **Stakeholder Engagement:**
  - Regularly engage with stakeholders to gather feedback and communicate changes transparently.
- **Data-Driven Decision Making:**
  - Use data analytics to inform decision-making processes and identify areas for improvement.
- **Flexibility and Adaptability:**
  - Design the methodology to be flexible, allowing for adjustments based on evolving conditions and priorities.
- **Continuous Improvement:**
  - Establish a process for continuous review and improvement of the LOS methodology itself.

7.1.3 Proposed Levels of Service Scenarios

The following three scenarios have been considered for establishing target levels of service for all asset categories included in this Asset Management Plan.

Scenario 1: Maintain Condition and Levels of Service

Approach: Adjust capital investment and infrastructure maintenance to sustain the current infrastructure condition and levels of service

Scenario 2: Decrease Infrastructure Condition by 5%

Approach: Adjust capital investment and infrastructure maintenance to accommodate a 5% reduction in overall condition.

Scenario 3: Increase Infrastructure Condition by 5%

Approach: Adjust capital investment and infrastructure maintenance to accommodate a 5% improvement in overall condition.

This methodology provides a structured approach for managing infrastructure condition and levels of service under different budget scenarios, emphasizing adaptability and stakeholder communication.

The charts below depict the categorical analysis for each LOS scenario, facilitated by the Town's Decision Support Module. The results for each category are also systematically compared:

7.2 Portfolio Overview

7.2.1 Categorical Analysis of Tax Funded Assets

	Maintain Current Condition		Current Condition +5%		Current Condition -5%	
Category	**KPI Value**	**Expected Capital Expenditure**	**KPI Value**	**Expected Capital Expenditure**	**KPI Value**	**Expected Capital Expenditure**
Bridges & Culverts	63%	$750,000	68%	$752,000	58%	$560,000
Buildings	54%	$5,764,000	59%	$5,767,000	49%	$5,728,000
Fleet	42%	$736,000	47%	$821,000	37%	$658,000
Machinery & Equipment	38%	$705,000	38%	$705,000	38%	$705,000
Parks Facilities	65%	$1,605,000	65%	$1,605,000	65%	$1,605,000
Road Network	46%	$14,322,000	51%	$15,023,000	41%	$12,756,000
Tax Funded Average / Total	49%	**$23,882,000**	54%	**$24,673,000**	44%	**$22,012,000**

Table 104 Proposed LOS Analysis for Tax Funded Assets

7.2.2 Categorical Analysis of Rate Funded Assets

	Maintain Current Condition		Current Condition +5%		Current Condition -5%	
Category	**KPI Value**	**Expected Capital Expenditure**	**KPI Value**	**Expected Capital Expenditure**	**KPI Value**	**Expected Capital Expenditure**
Sanitary Network	63%	$4,227,512	68%	$4,745,512	58%	$3,815,000
Stormwater Network	64%	$8,405,000	69%	$9,082,857	59%	$7,382,000
Water Network	61%	$5,720,214	66%	$6,526,309	56%	$4,836,000
Tax Funded Assets Totals	63%	**$18,352,726**	68%	**$20,354,678**	58%	**$16,033,000**

Table 105 Proposed LOS Analysis for Rate Funded Assets

7.3 Proposed Levels of Service Details

Through a comprehensive assessment, the following levels of service for the road network, bridges and culverts, sanitary network, storm network, water network, buildings, and fleet asset categories have been developed, aligning with the long-term interests of the Town. Achievability is the key consideration, with measures in place to ensure realistic targets. The Town's financial capacity was thoroughly reviewed, confirming its ability to sustain the proposed service levels. Furthermore, a performance evaluation plan was devised, incorporating asset-specific metrics ensuring accountability over the 10-year period. Complementing this, a detailed lifecycle management and financial strategy was developed, delineating necessary activities for each asset category. This strategy outlines the full lifecycle of assets, presents viable options for lifecycle activities, evaluates associated risks, and prioritizes cost-effective measures to maintain the proposed service standards.

7.3.1 Road Network

Table 106 compares the budget envelopes required to maintain current levels of service and recommended target levels of service for road network assets. The KPI value represents the target condition within each scenario of each segment of the road network. More detail on the average weighted condition of each asset segment can be found in Section 5.1.2.

	Maintain Current Condition		Recommended Target Condition	
Road Network Segment	**KPI Value**	**Expected Capital Expenditure**	**KPI Value**	**Expected Capital Expenditure**
Roads	70%	$8,735,000	70%	$8,735,000
Barriers & Railings	34%	$1,062,000	49%	$1,992,000
Signage	N/A	$143,000	N/A	$143,000
Sidewalks	66%	$2,070,000	71%	$2,138,000
Streetlights	49%	$1,146,000	64%	$1,280,000
Traffic Signals	N/A	$206,000	N/A	$206,000
Parking Lot	54%	$960,000	59%	$960,000
Totals		**$14,322,000**		**$15,454,000**

Table 106 Road Network Proposed LOS Targets

The following graphs illustrate the impacts on cost, performance, and risk for the target levels of service selected for the roads, barriers and railings, sidewalks, and streetlights. Signage, traffic signals, and parking lots were not included in the analysis and did not require a specific strategy to meet a proposed level of service.

The changes in risk are only to the probability of asset failure, and do not impact the consequences of its failure.

Roads

The recommended strategy for arterial, collector, and local roads is to maintain the current condition of roads as a desired levels of service is currently being achieved.

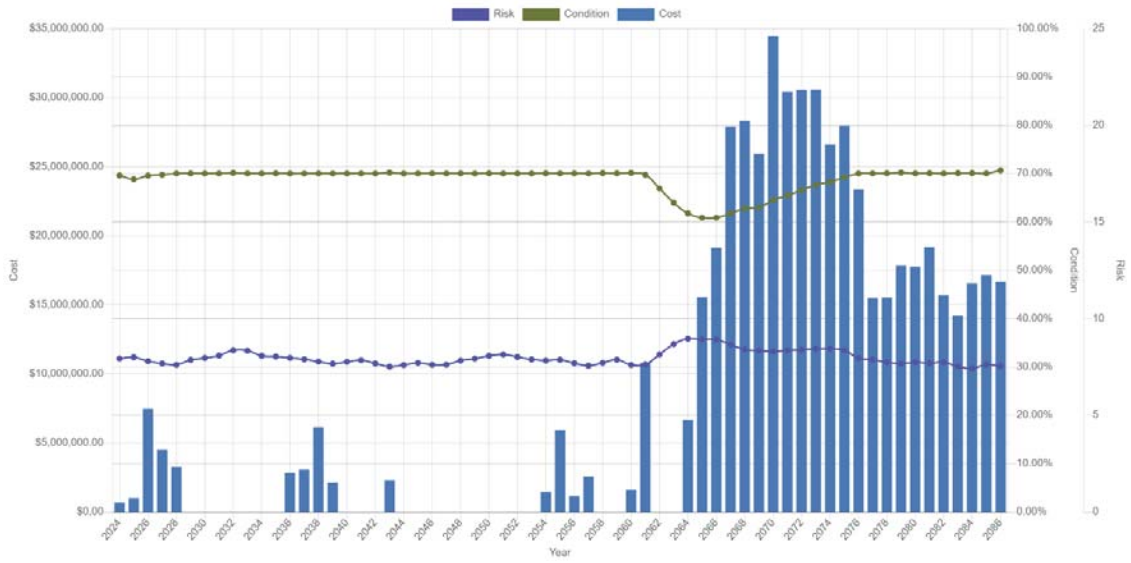


Figure 60 Road Network (Roads) Proposed LOS Impacts

Barriers and Railings

The recommended strategy for barriers and railings is to achieve an average condition of 49% over the next 30 years by increasing the current average condition of 34% by 15% overall.

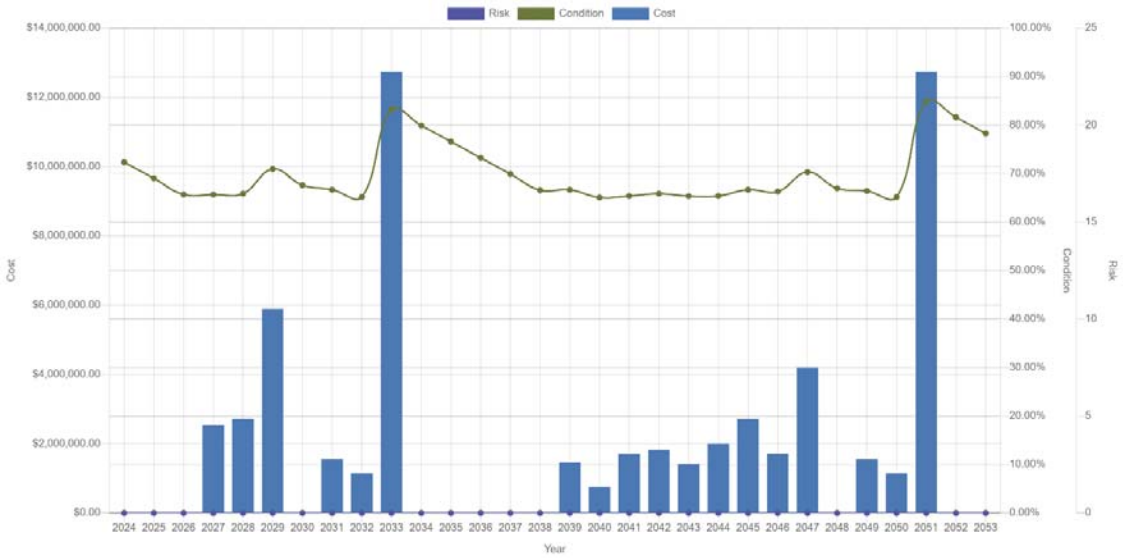


Figure 61 Road Network (Barriers and Railings) Proposed LOS Impacts

Sidewalks

The recommended strategy for sidewalks is to achieve an average condition of 71% over the next 50 years by increasing the current average condition of 66% by 5% overall.

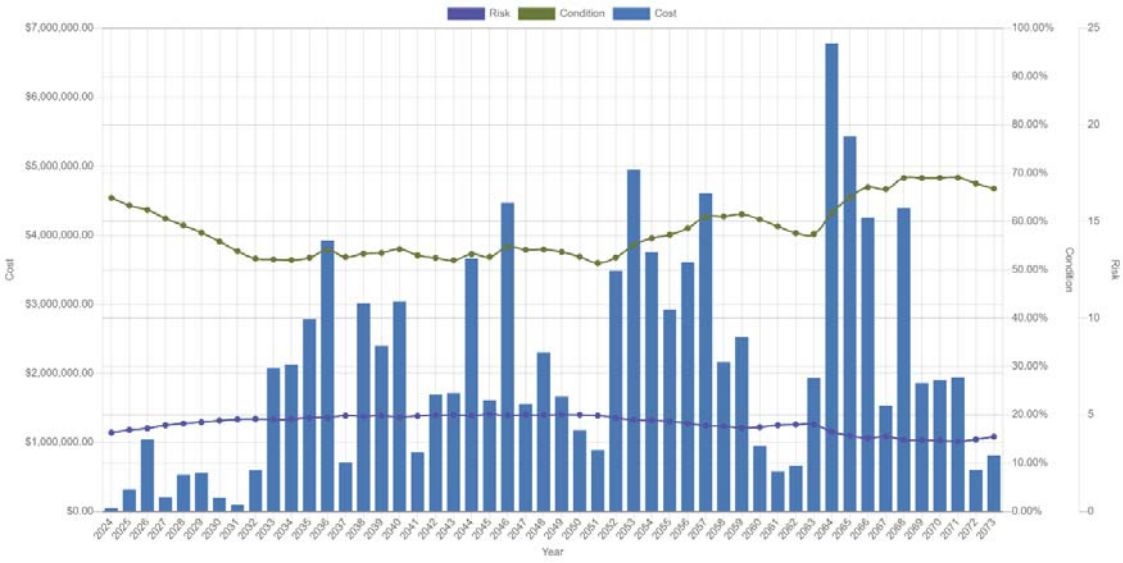


Figure 62 Road Network (Sidewalks) Proposed LOS Impacts

Streetlights

The recommended strategy for streetlights is to achieve an average condition of 64% over the next 50 years by increasing the current average condition of 49% by 15% overall.

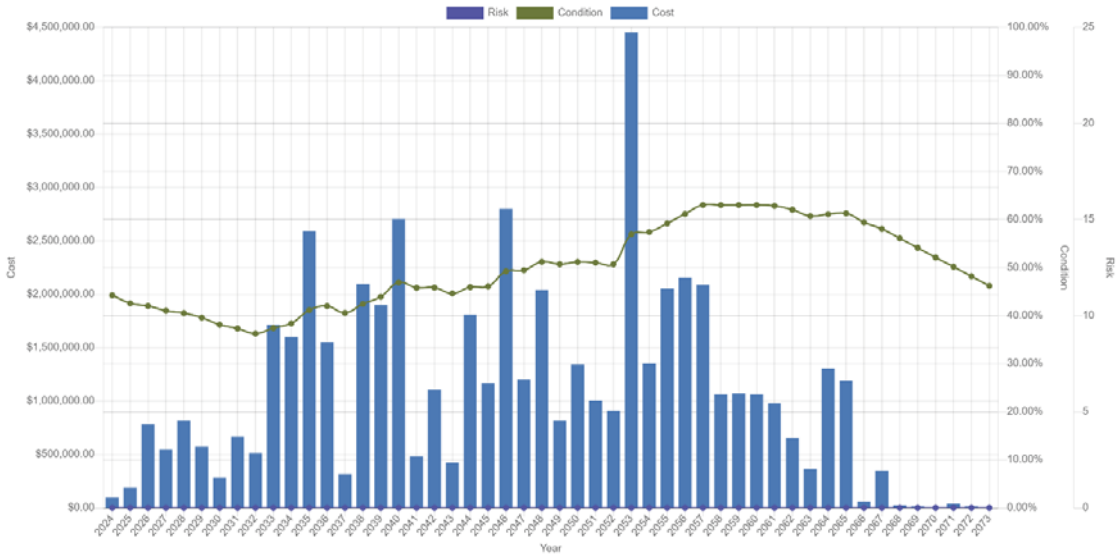


Figure 63 Road Network (Streetlights) Proposed LOS Impacts

The selected target level of service for the road network demonstrates the incremental performance progress achieved over the long-term ensuring the road network remains in a good state of repair while providing expected service delivery. The 10-year capital investment required to fund the lifecycle activities to meet the proposed levels of service over the long term is outlined in Table 126 in Appendix A.

7.3.2 Bridges & Culverts

Table 107 compares the budget envelopes required to maintain current levels of service and recommended target levels of service for bridges & culverts. The KPI value represents the target condition within each scenario of each segment of bridges and culverts. More detail on the average weighted condition of each asset segment can be found in Section 5.2.2.

	Maintain Current Condition		Recommended Target Condition	
Bridges & Culverts Segment	**KPI Value**	**Expected Capital Expenditure**	**KPI Value**	**Expected Capital Expenditure**
Structural Bridges & Culverts	77%	$609,000	77%	$609,000
Cross Culverts & Small Bridges	43%	$141,000	48%	$130,000
Totals		**$750,000**		**$739,000**

Table 107 Bridges and Culverts Proposed LOS Targets

The following graphs illustrate the impacts on cost, performance, and risk for the target levels of service selected for structural and non-structural bridges and culverts. The changes in risk are only to the probability of asset failure, and do not impact the consequences of its failure.

Structural Bridges and Culverts

The recommended strategy for structural bridges and culverts is to maintain the current condition as the desired level of service is currently being achieved.

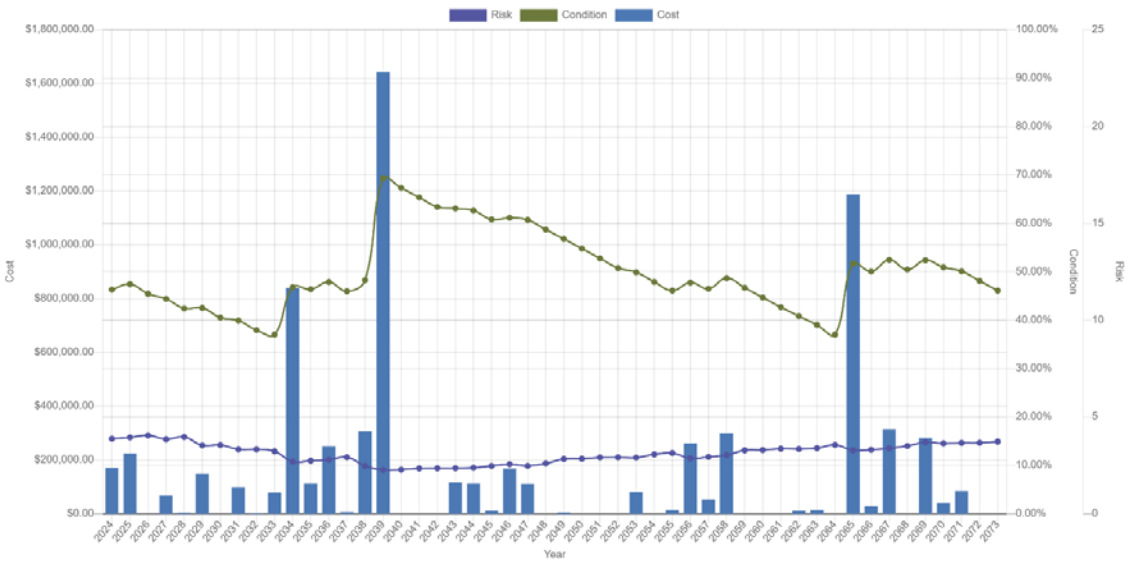


Figure 64 Bridges and Culverts (Structural Bridges and Culverts) Proposed LOS Impacts

Cross Culverts and Small Bridges

The recommended strategy for cross culverts and small bridges is to achieve an average condition of 48% over the next 50 years by increasing the current average condition of 43% by 5% overall.

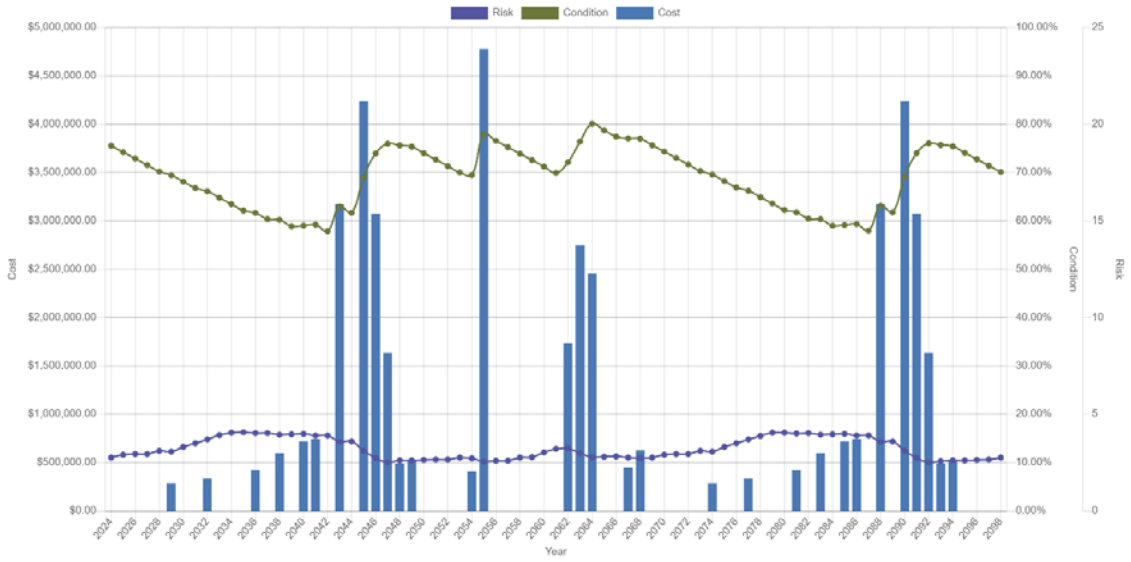


Figure 65 Bridges and Culverts (Cross Culverts and Small Bridges) Proposed LOS Impacts

The selected target level of service for bridges and culverts demonstrates the incremental performance progress achieved over the long-term ensuring bridges and culverts remains in a good state of repair while providing expected service delivery. The 10-year capital investment required to fund the lifecycle activities to meet the proposed levels of service over the long term is outlined in Table 127 in Appendix A.

7.3.3 Sanitary Network

Table 108 compares the budget envelopes required to maintain current levels of service and recommended target levels of service for the sanitary network. The KPI value represents the target condition within each scenario of each segment of the sanitary network. More detail on the average weighted condition of each asset segment can be found in Section 6.2.2.

	Maintain Current Condition		Recommended Target Condition	
Sanitary Network Segment	**KPI Value**	**Expected Capital Expenditure**	**KPI Value**	**Expected Capital Expenditure**
Sanitary Equalization Tanks	62%	$22,000	75%	$22,000
Sanitary Mains	62%	$3,573,000	62%	$3,573,000
Sanitary Pumping Stations	63%	$166,000	63%	$166,000
Sanitary Appurtenances	62%	$467,000	62%	$467,000
Totals		**$4,228,000**		**$4,228,000**

Table 108 Sanitary Network Proposed LOS Targets

The following graph illustrates the impacts on cost, performance, and risk for the target levels of service selected for the sanitary equalization tanks. Mains, pumping stations, and sanitary appurtenances were not included in the analysis and did not require a specific strategy to meet a proposed level of service. The changes in risk are only to the probability of asset failure, and do not impact the consequences of its failure.

The recommended strategy for entire sanitary network is to maintain the current condition as the desired level of service is currently being achieved.

Sanitary Equalization Tanks

The recommended strategy for sanitary equalization tanks is to achieve an average condition of 75% over the next 50 years by increasing the current average condition of 62% by 13% overall.

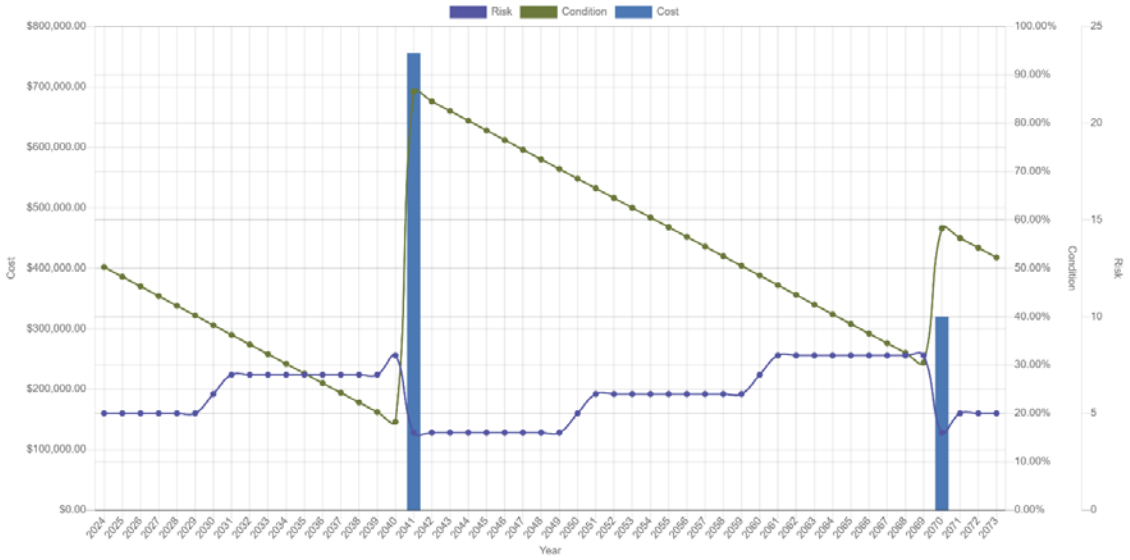


Figure 66 Sanitary Network Proposed LOS Impacts

The selected target level of service for the sanitary network demonstrates the incremental performance progress achieved over the long-term ensuring the sanitary network remains in a good state of repair while providing expected service delivery. The 10-year capital investment required to fund the lifecycle activities to meet the proposed levels of service over the long term is outlined in Table 132 in Appendix A.

7.3.4 Storm Network

Table 109 compares the budget envelopes required to maintain current levels of service and recommended target levels of service for the storm network. The KPI value represents the target condition within each scenario of each segment of the storm network. More detail on the average weighted condition of each asset segment can be found in Section 6.3.2.

	Maintain Current Condition		Recommended Target Condition	
Storm Network Segment	**KPI Value**	**Expected Capital Expenditure**	**KPI Value**	**Expected Capital Expenditure**
Catchbasins	60%	$494,000	60%	$494,000
Ditches	12%	$153,000	12%	$153,000
Headwalls	49%	$346,000	54%	$355,000
Low Impact Developments	86%	$230,000	86%	$230,000
Oil Grit Separators	56%	$121,000	61%	$121,000
Storm Equalization Tanks	58%	$652,000	58%	$652,000
Storm Mains	68%	$4,777,000	68%	$4,777,000
Storm Appurtenances	64%	$464,000	64%	$464,000
Storm Ponds	64%	$1,168,000	64%	$1,168,000
Totals		**$8,405,000**		**$8,414,000**

Table 109 Storm Network Proposed LOS Targets

The following graphs illustrate the impacts on cost, performance, and risk for the target levels of service selected for catchbasins, headwalls, oil grit separators, storm mains, and stormwater appurtenances. Ditches, low impact developments, storm equalization tanks, and storm ponds were not included in the analysis and did not require a specific strategy to meet a proposed level of service. The changes in risk are only to the probability of asset failure, and do not impact the consequences of its failure.

Catchbasins

The recommended strategy for catchbasins is to maintain the current condition as the desired level of service is currently being achieved.

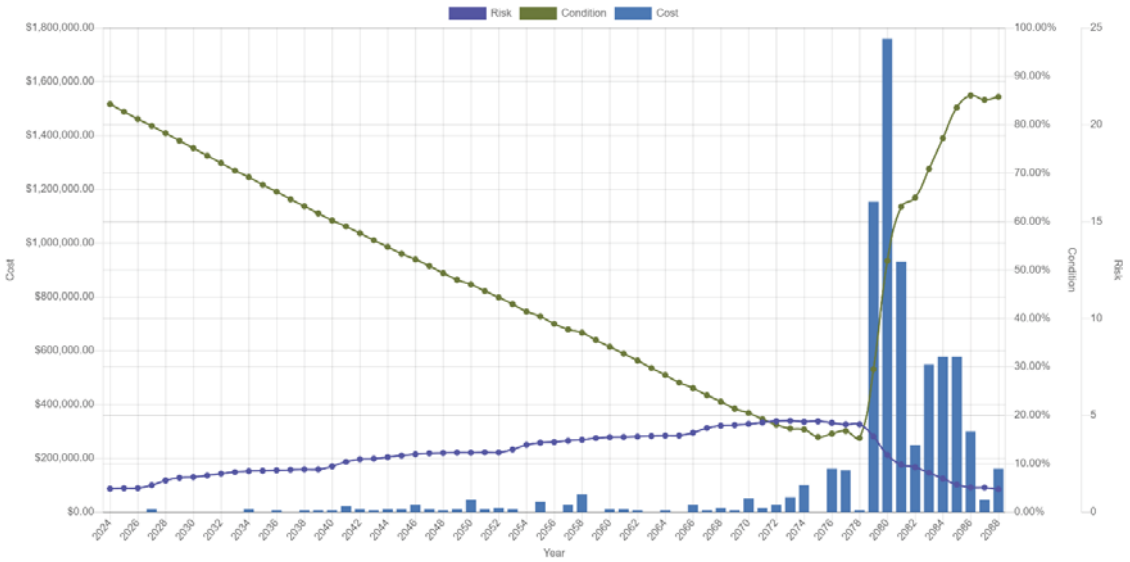


Figure 67 Storm Network (Catchbasins) Proposed LOS Impacts

Headwalls

The recommended strategy for headwalls is to achieve an average condition of 54% over the next 50 years by increasing the current average condition of 49% by 5% overall.

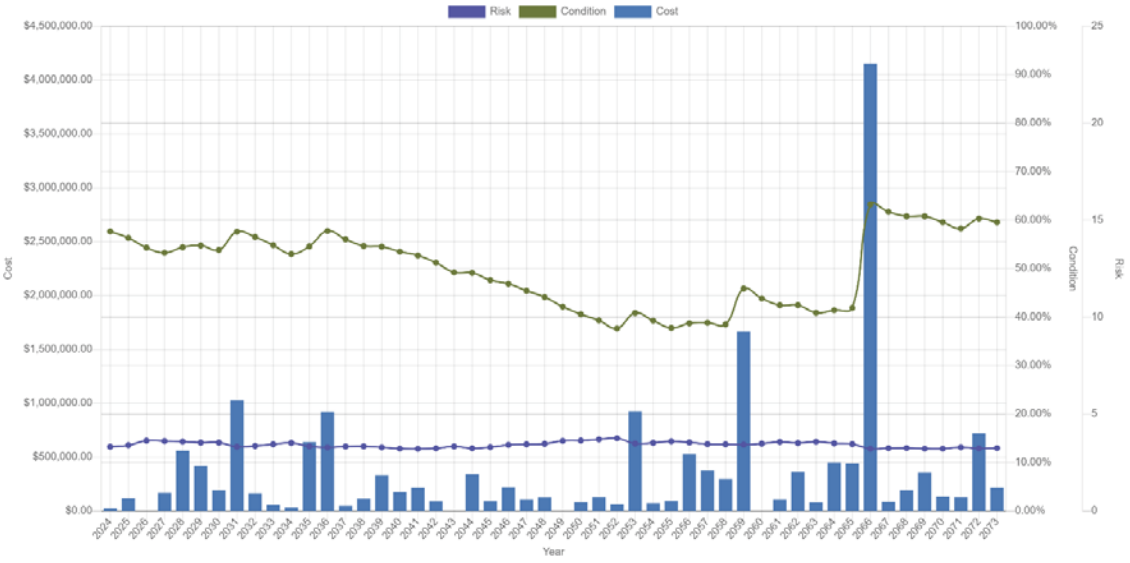


Figure 68 Storm Network (Headwalls) Proposed LOS Impacts

Oil Grit Separators

The recommended strategy for oil grit separators is to achieve an average condition of 61% over the next 30 years by increasing the current average condition of 56% by 5% overall.

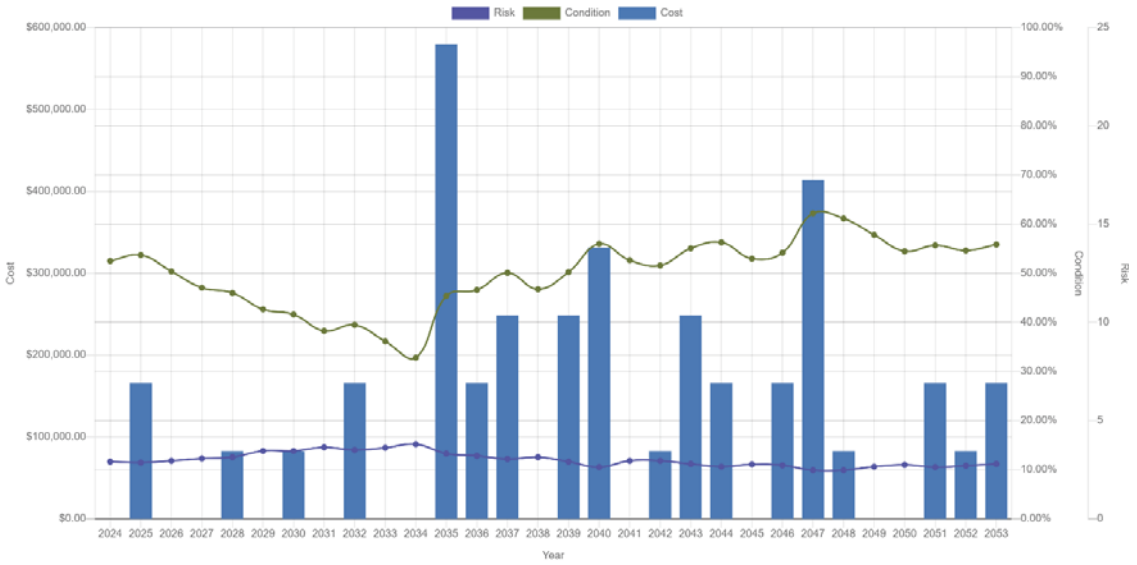


Figure 69 Storm Network (Oil Grit Separators) Proposed LOS Impacts

Storm Mains

The recommended strategy for storm mains is to maintain the current condition as the desired level of service is currently being achieved.

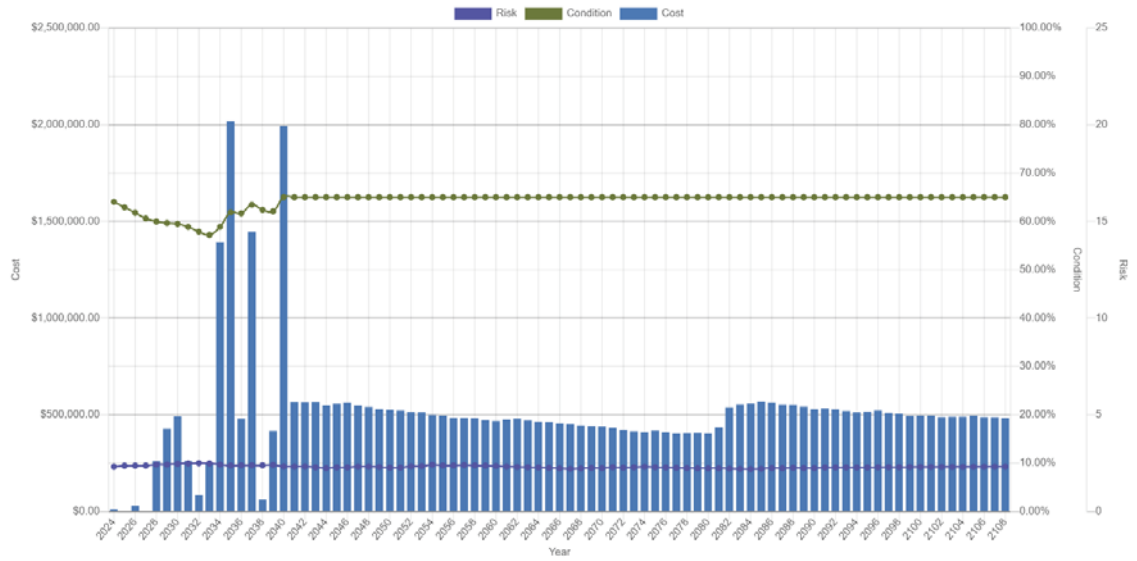


Figure 70 Storm Network (Storm Mains) Proposed LOS Impacts

Stormwater Appurtenances

The recommended strategy for stormwater appurtenances is to maintain the current condition as the desired level of service is currently being achieved.

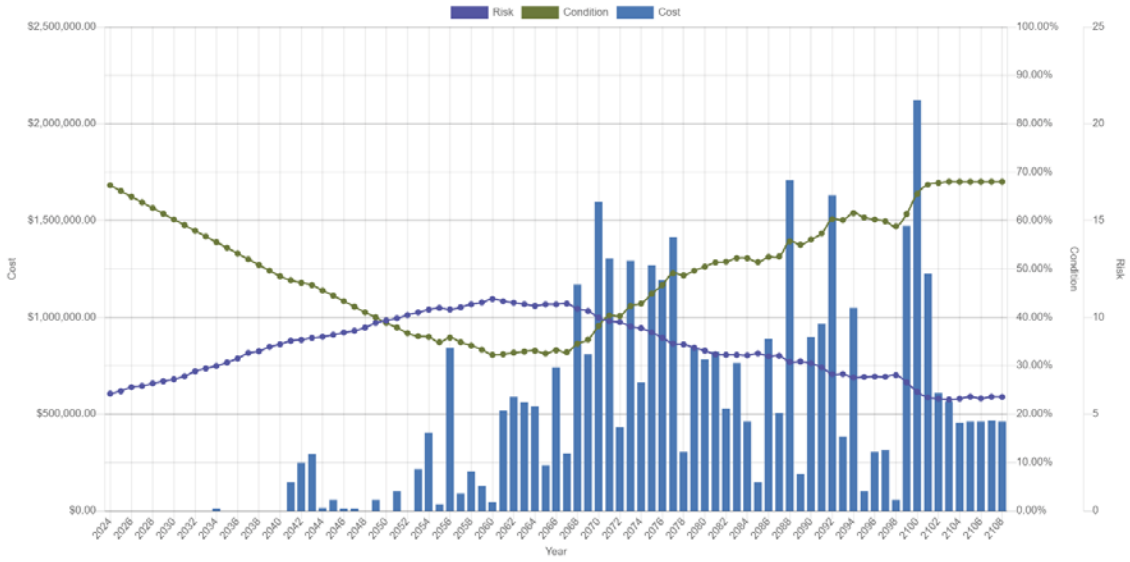


Figure 71 Storm Network (Stormwater Appurtenances) Proposed LOS Impacts

The selected target level of service for the storm network demonstrates the incremental performance progress achieved over the long-term ensuring the storm network remains in a good state of repair while providing expected service delivery. The 10-year capital investment required to fund the lifecycle activities to meet the proposed levels of service over the long term is outlined in Table 133 in Appendix A.

7.3.5 Water Network

Table 110 compares the budget envelopes required to maintain current levels of service and recommended target levels of service for the water network. The KPI value represents the target condition within each scenario of each segment of the water network. More detail on the average weighted condition of each asset segment can be found in Section 6.1.2.

	Maintain Current Condition		Recommended Target Condition	
Water Network Segment	**KPI Value**	**Expected Capital Expenditure**	**KPI Value**	**Expected Capital Expenditure**
Hydrants	52%	$304,000	57%	$313,000
Booster Station	53%	$9,000	53%	$9,000
Water Sampling Stations	64%	$4,000	64%	$4,000
Water Mains	63%	$4,806,000	63%	$4,806,000
Water Meters	13%	$267,000	13%	$267,000
Water Appurtenances	52%	$330,000	57%	$347,000
Totals		**$5,720,000**		**$5,746,000**

Table 110 Water Network Proposed LOS Targets

The following graphs illustrate the impacts on cost, performance, and risk for the target levels of service selected for hydrants, water facilities, watermains, and water network appurtenances. Water meters were not included in the analysis and did not require a specific strategy to meet a proposed level of service. The changes in risk are only to the probability of asset failure, and do not impact the consequences of its failure.

Hydrants

The recommended strategy for hydrants is to achieve an average condition of 57% over the next 35 years by increasing the current average condition of 52% by 5% overall.

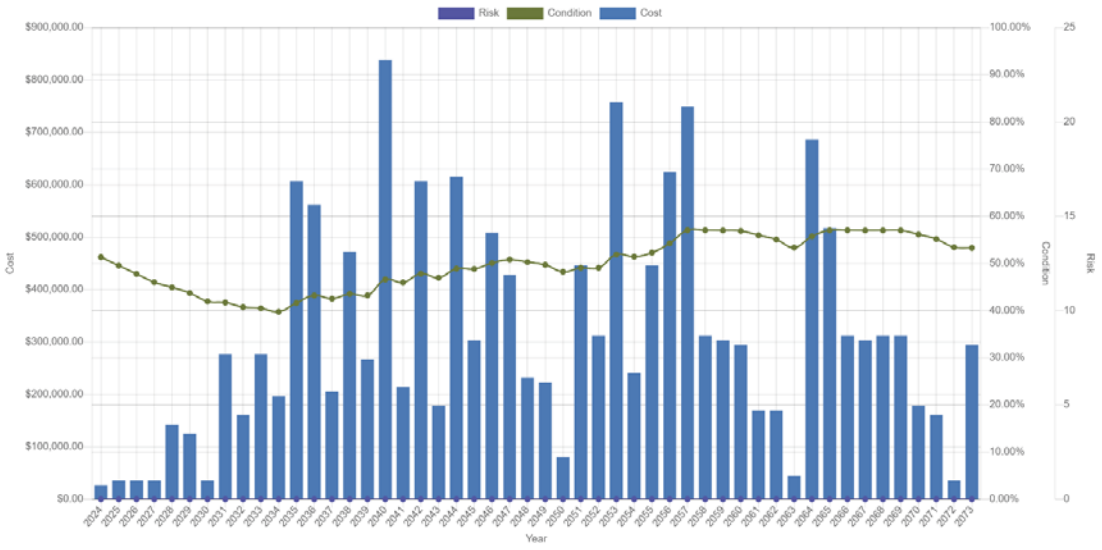


Figure 72 Water Network (Hydrants) Proposed LOS Impacts

Water Facilities

The recommended strategy for water facilities, including the booster station and sampling stations, is to maintain the current condition as the desired level of service is currently being achieved.

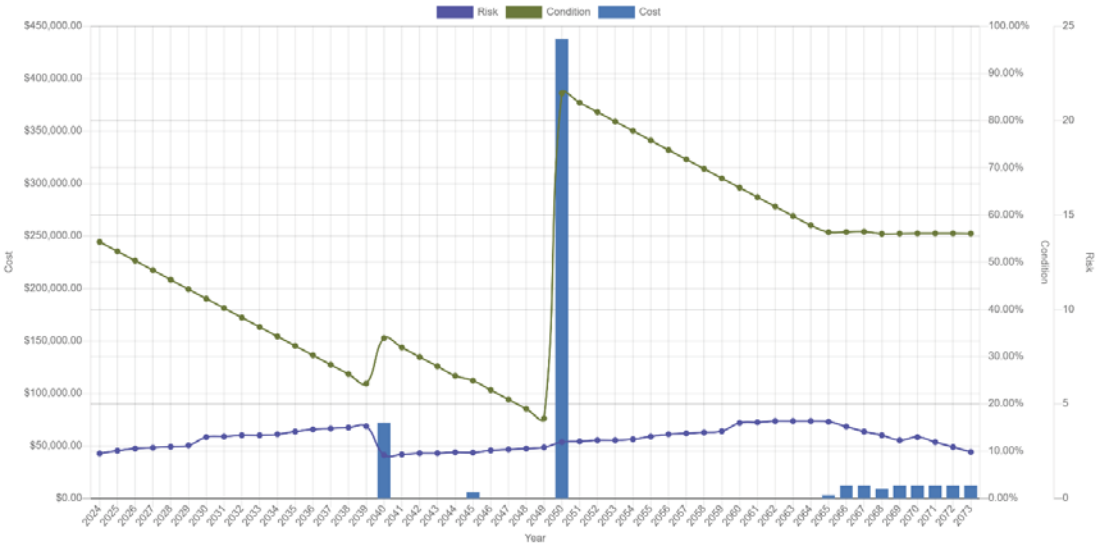


Figure 73 Water Network (Water Facilities) Proposed LOS Impacts

Watermains

The recommended strategy for watermains is to maintain the current condition as the desired level of service is currently being achieved.

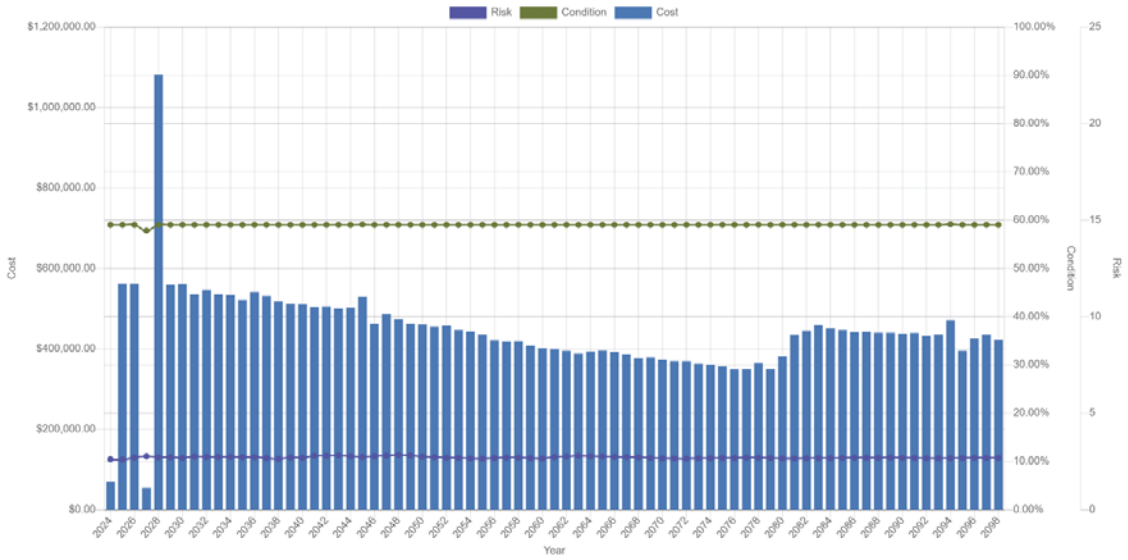


Figure 74 Water Network (Water Mains) Proposed LOS Impacts

Water Appurtenances

The recommended strategy for water appurtenances, including valves and underground enclosures, is to achieve an average condition of 57% over the next 33 years by increasing the current average condition of 52% by 5% overall.

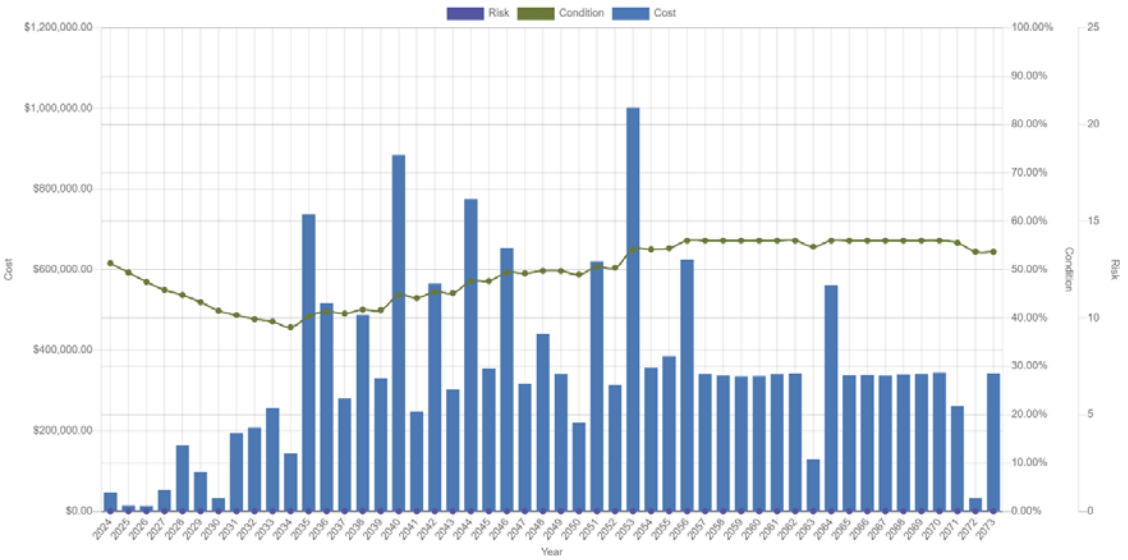


Figure 75 Water Network (Water Appurtenances) Proposed LOS Impacts

The selected target level of service for the water network demonstrates the incremental performance progress achieved over the long-term ensuring the water network remains in a good state of repair while providing expected service delivery. The 10-year capital investment required to fund the lifecycle activities to meet the proposed levels of service over the long term is outlined in Table 134 in Appendix A.

7.3.6 Buildings

Table 111 compares the budget envelopes required to maintain current levels of service and recommended target levels of service for buildings. The KPI value represents the target condition within each scenario of each segment of buildings. More detail on the average weighted condition of each asset segment can be found in Section 5.3.2.

	Maintain Current Condition		Recommended Target Condition	
Building Segment	**KPI Value**	**Expected Capital Expenditure**	**KPI Value**	**Expected Capital Expenditure**
General Government	59%	$1,076,178	64%	$1,077,000
Protection Services	55%	$286,718	60%	$287,000
Recreation & Cultural Services	56%	$3,582,078	61%	$3,584,000
Transportation Services	66%	$819,026	71%	$819,000
Totals		**$5,764,000**		**$$5,767,000**

Table 111 Buildings Proposed LOS Targets

The following graphs illustrate the impacts on cost, performance, and risk for the target levels of service selected for the Town's building portfolio. The changes in risk are only to the probability of asset failure, and do not impact the consequences of its failure.

The recommended strategy for the Town's buildings portfolio is to achieve an average condition of 66% over the next 50 years by increasing the current average condition of 61% by 5% overall.

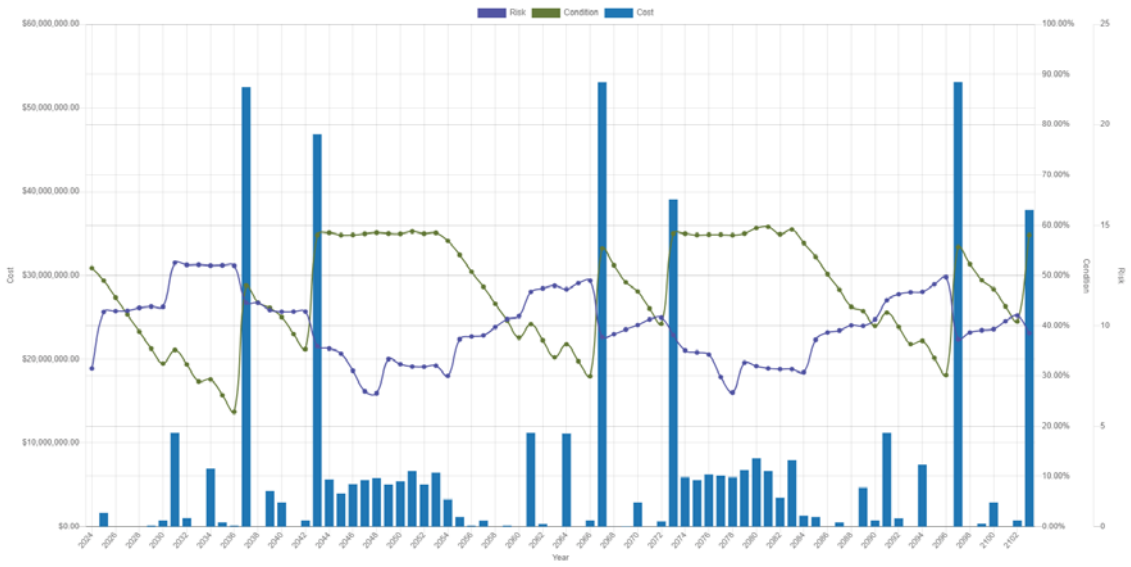


Figure 76 Buildings Proposed LOS Impacts

The selected target level of service for buildings demonstrates the incremental performance progress achieved over the long-term ensuring that buildings remain in a good state of repair while providing expected service delivery. The 10-year capital investment required to fund the lifecycle activities to meet the proposed levels of service over the long term is outlined in Table 128 in Appendix A.

7.3.7 Fleet

Table 112 compares the budget envelopes required to maintain current levels of service and recommended target levels of service for the Town's fleet. The KPI value represents the target condition within each scenario of each segment of fleet assets. More detail on the average weighted condition of each asset segment can be found in Section 5.4.2.

	Maintain Current Condition		Recommended Target Condition	
Fleet Segment	**KPI Value**	**Expected Capital Expenditure**	**KPI Value**	**Expected Capital Expenditure**
Equipment/Attachments	38%	$394,000	43%	$456,000
Heavy Duty	58%	$150,000	63%	$150,000
Light Duty	20%	$65,000	25%	$122,000
Medium Duty	49%	$127,000	54%	$141,000
Totals		**$736,000**		**$869,000**

Table 112 Road Network Proposed LOS Targets

The following graphs illustrate the impacts on cost, performance, and risk for the target levels of service selected for fleet equipment/attachments, heavy duty, medium duty, and light duty vehicles. The changes in risk are only to the probability of asset failure, and do not impact the consequences of its failure.

Fleet Equipment/Attachments

The recommended strategy for fleet equipment and attachments is to achieve an average condition of 43% over the next 10 years by increasing the current average condition of 38% by 5% overall.

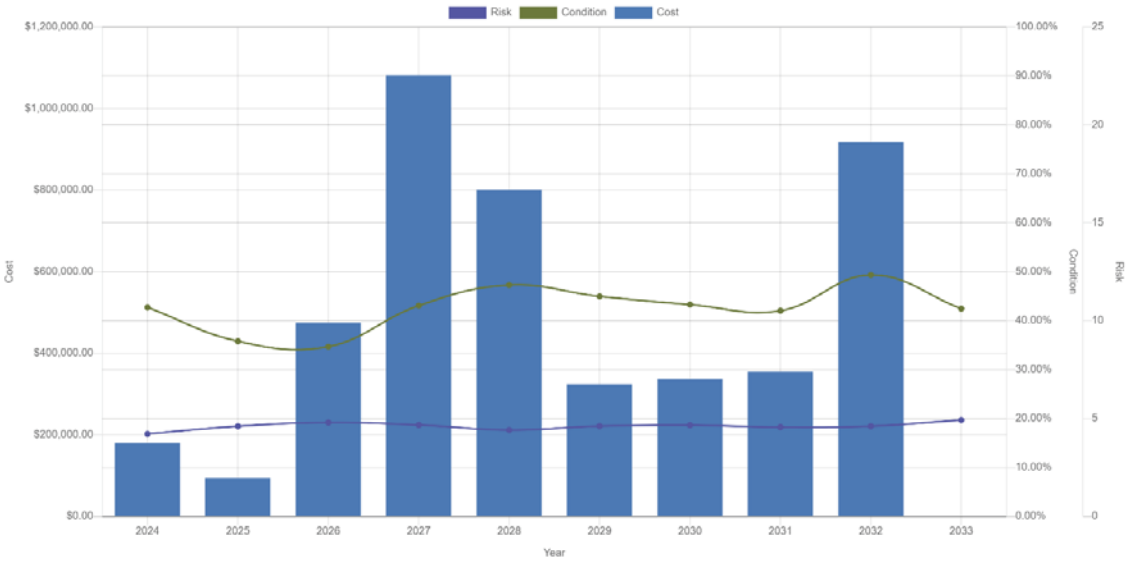


Figure 77 Fleet (Fleet Equipment/Attachments) Proposed LOS Impacts

Heavy Duty

The recommended strategy for heavy duty fleet is to achieve an average condition of 63% over the next 10 years by increasing the current average condition of 58% by 5% overall.

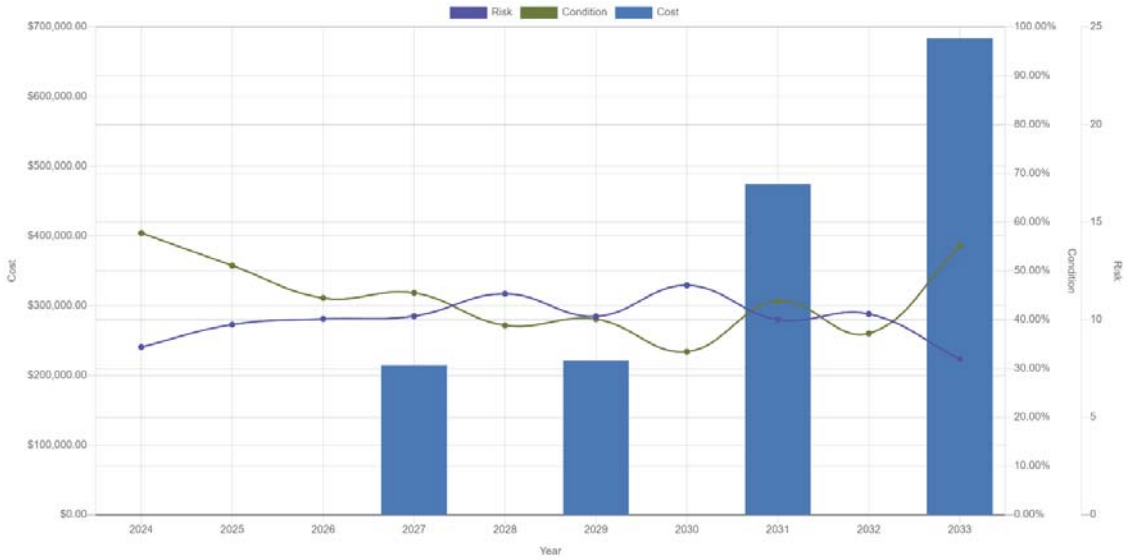


Figure 78 Fleet (Heavy Duty) Proposed LOS Impacts

Medium Duty

The recommended strategy for medium duty fleet is to achieve an average condition of 54% over the next 10 years by increasing the current average condition of 49% by 5% overall.

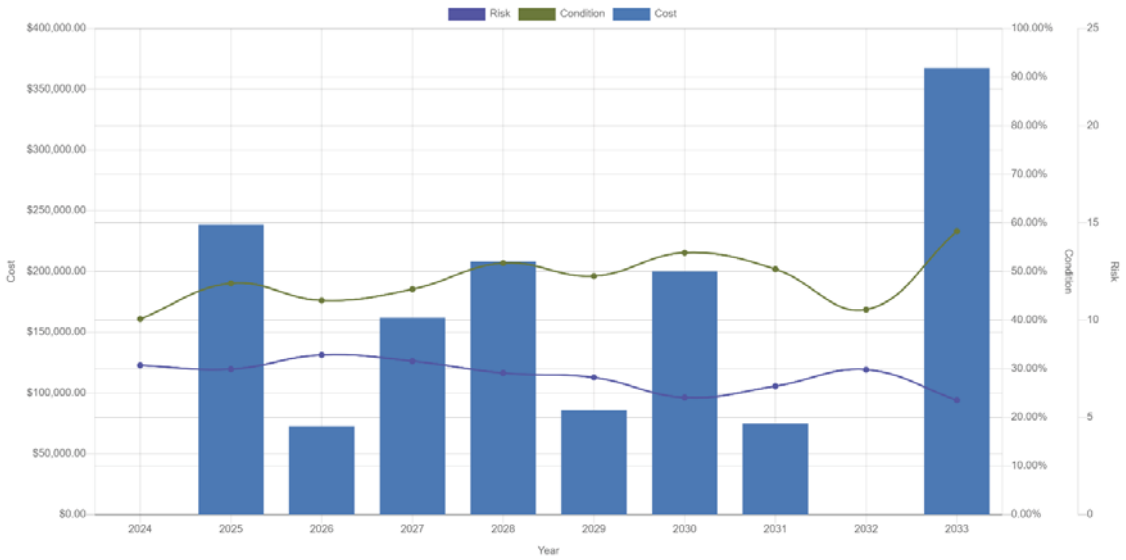


Figure 79 Fleet (Medium Duty) Proposed LOS Impacts

Light Duty

The recommended strategy for light duty fleet is to achieve an average condition of 45% over the next 10 years by increasing the current average condition of 20% by 25% overall.

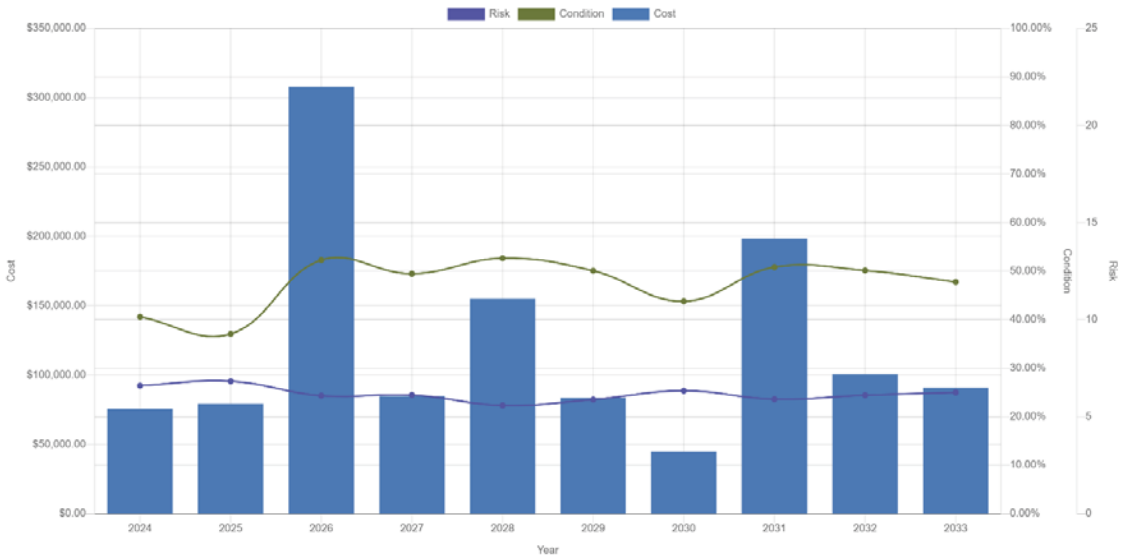


Figure 80 Fleet (Light Duty) Proposed LOS Impacts

The selected target level of service for the Town's fleet demonstrates the incremental performance progress achieved over the long-term ensuring that fleet assets remain in a good state of repair while providing expected service delivery. The 10-year capital investment required to fund the lifecycle activities to meet the proposed levels of service over the long term is outlined in Table 130 in Appendix A.

8 Financial Strategy

Key Insights

- The Town is committing approximately $16.2 million towards capital projects per year from sustainable revenue sources
- Given the annual capital requirement of $43.8 million there is currently a funding gap of $27.6 million annually
- For tax-funded assets, we recommend increasing tax revenues by 0.83% in addition to the 0.80% already collected each year for the next 15 years to achieve a sustainable level of funding
- For the sanitary network, we recommend increasing rate revenues by 1.27% in addition to the 0.4% already collected % each year for the next 10 years to achieve a sustainable level of funding
- For the water network, we recommend decreasing rate revenues from 2.2% to 1.92% annually for the next 15 years to achieve a sustainable level of funding
- For the Storm network, we recommend decreasing rate revenues from 11% to 4.92% each year for the next 20 years to achieve a sustainable level of funding

8.1 Financial Strategy Overview

For an asset management plan to be effective and meaningful, it must be integrated with financial planning and long-term budgeting.
This report develops such a financial plan by presenting several scenarios for consideration and culminating with final recommendations. As outlined below, the scenarios presented model different combinations of the following components:

1. The financial requirements for:
    a. Existing Assets
    b. Proposed Levels of Service
    c. Requirements of anticipated growth
2. Use of traditional sources of municipal funds:
    a. Tax levies
    b. User fees
    c. Reserves
    d. Debt
3. Use of non-traditional sources of municipal funds:
    a. Reallocated budgets
    b. Partnerships
    c. Procurement methods
4. Use of Senior Government Funds:
    a. Gas tax
    b. Annual grants

Note: Periodic grants are normally not included due to Provincial requirements for firm commitments. However, if moving a specific project forward is wholly dependent on receiving a one-time grant, the replacement cost included in the financial strategy is the net of such grant being received.

If the financial plan component results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Town's approach to the following:

1. In order to reduce financial requirements, consideration has been given to revising service levels downward.
2. All asset management and financial strategies have been considered. For example:
    a. If a zero-debt policy is in place, is it warranted? If not, the use of debt should be considered.
    b. Do user fees reflect the cost of the applicable service? If not, increased user fees should be considered.

8.1.1 Annual Requirements & Capital Funding

Annual Requirements

The annual requirements represent the amount the Town should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs and achieve long-term sustainability. In total, the Town must allocate approximately $43.8 million annually to address capital requirements for the assets included in this AMP.

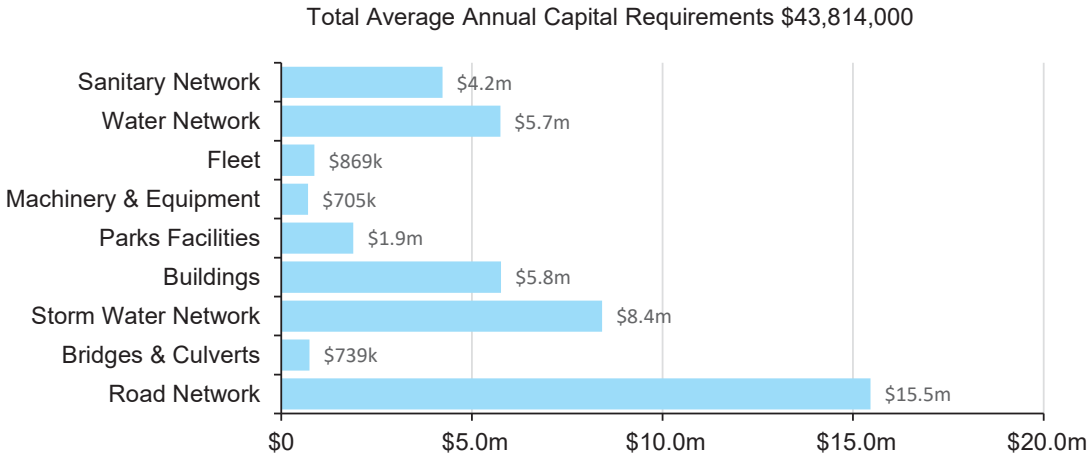


Figure 81 Portfolio Annual Requirements

For most asset categories the annual requirement has been calculated based on a "replacement only" scenario, in which capital costs are only incurred at the construction and replacement of each asset.

However, for the road network, lifecycle management strategies have been developed to identify capital costs that are realized through strategic rehabilitation and renewal of the Town's roads. The development of these strategies allows for a comparison of potential cost avoidance if the strategies were to be implemented. The following table compares two scenarios for the road network:

1. **Replacement Only Scenario**: Based on the assumption that assets deteriorate and – without regularly scheduled maintenance and rehabilitation – are replaced at the end of their service life.
2. **Lifecycle Strategy Scenario**: Based on the assumption that lifecycle activities are performed at strategic intervals to extend the service life of assets until replacement is required.

Asset Category	Annual Requirements (Replacement Only)	Annual Requirements (Lifecycle Strategy)	Potential Cost Avoidance
Road Network	$25,954,000	$15,837,000	$10,117,000

Table 113 Road Network Replacement Only vs. Lifecycle Annual Requirements

The implementation of a proactive lifecycle strategy for roads leads to a potential annual cost avoidance of $10.1 million for the road network. This represents an overall reduction of the annual requirements by 39%. As the lifecycle strategy scenario represents the lowest cost option available to the Town, we have used this annual requirement in the development of the financial strategy.

Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately $16.1 million towards capital projects per year from sustainable revenue sources. Given the annual capital requirement of $43.8 million, there is currently a funding gap of $27.7 million annually.

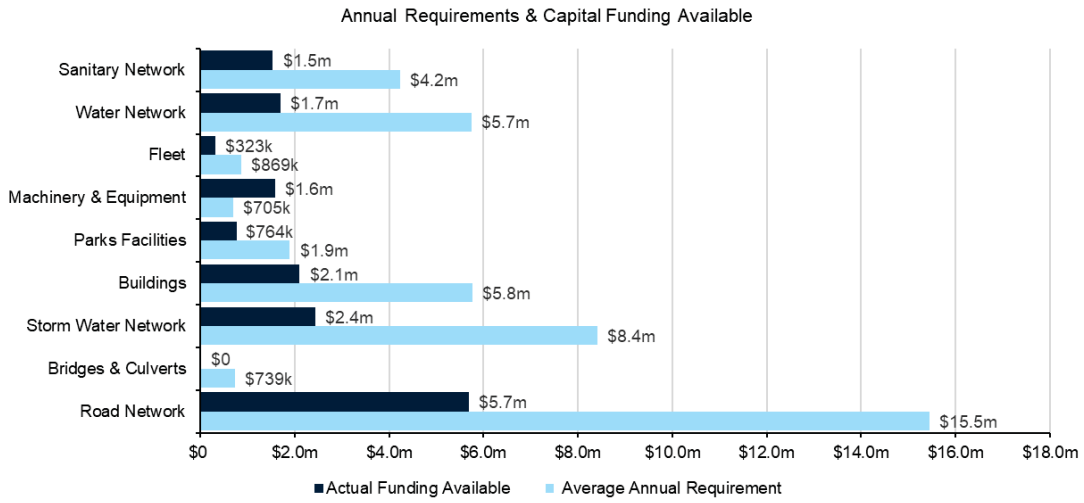


Figure 82 Portfolio Annual Funding Available

8.2 Funding Objective

We have developed a scenario that would enable Aurora to achieve full funding within 15 years for tax funded assets and between 10 and 20 years for rate funded assets. The following outlines the assets included in each category assets:

1. **Tax Funded Assets:** Road Network, Bridges & Culverts, Buildings, Machinery & Equipment, Parks Facilities, and Vehicles

2. **Rate-Funded Assets:** Water Network, Sanitary Network, and Storm Network

For each scenario developed we have included strategies, where applicable, regarding the use of cost containment and funding opportunities.

8.3 Financial Profile: Tax Funded Assets

8.3.1 Current Funding Position

Table 114 shows, by asset category, Aurora's average annual asset investment requirements in order to achieve the recommended level of services, current funding positions, and funding increases required to achieve full funding on assets funded by taxes.

Asset Category	Avg. Annual Requirement Recommend Levels of Service	Annual Funding Available				Annual Deficit
		Taxes	Gas Tax	OCIF or Other	Total Available	
Road Network	15,454,000	1,515,611	1,835,000	2,336,000	5,686,611	9,767,389
Bridges & Culverts	739,000	0	0	0	0	739,000
Buildings	5,767,000	2,101,135	0	0	2,101,135	3,665,865
Machinery & Equipment	705,000	1,587,048	0	0	1,587,048	-882,048
Park Facilities	1,892,000	763,570	0	75,000	838,570	1,053,430
Fleet	869,000	323,263			323,263	545,737
	25,426,000	**6,290,626**	**1,835,000**	**2,411,000**	**10,536,626**	**14,889,374**

Table 114 Tax Funded Assets Current Funding Position

The average annual investment requirement for the above categories is $25,426,000. Annual revenue currently allocated to these assets for capital purposes is $10,536,626 leaving an annual deficit of $15,537,374. Put differently, these infrastructure categories are currently funded at 40.4% of their long-term requirements.

8.3.2 Full Funding Requirements

In 2023, the Town has annual tax revenues of $57 million. As illustrated in Table 115, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following tax change over time:

Asset Category	Tax Change Required for Full Funding
Road Network	18.%
Bridges & Culverts	1.4%
Buildings	6.8%
Machinery & Equipment	-1.6%
Park Facilities	1.9%
Fleet	1.0%
	27.5%

Table 115 Tax Funded Assets Full Funding Requirements

The following changes in costs and/or revenues over the next number of years should also be considered in the financial strategy:

a) Aurora's formula based OCIF grant decreased from $2,748,000 in 2023 to $2,336,000 in 2023.

Our recommendations include capturing the above changes and allocating them to the infrastructure deficit outlined above. The table below outlines this concept and presents several phase-in options:

	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	14,889,374	14,889,374	14,889,374	14,889,374
Tax Increase Required	27.5%	27.5%	27.5%	27.5%
Annually	**4.97%**	**2.45%**	**1.63%**	**1.22%**

Table 116 Tax Adjustment Options to Meet Full Funding Requirements

Proposed levels of service play a role in the development of the Annual Average Requirement discussed above. For comparison, the tax rate impact for decreasing, increasing, and simply maintaining the levels of services are provided below:

Impact on the Tax Rate				
Change in Levels of Service	**5 Year**	**10 Year**	**15 Year**	**20 Year**
Decrease by 5%	3.91%	1.94%	1.29%	0.96%
Maintained	4.49%	2.22%	1.48%	1.10%
Increased by 5%	4.74%	2.34%	1.55%	1.16%
Recommended	5.16%	2.55%	1.69%	1.27%

Table 117 Proposed LOS Impacts on Tax Rate

8.3.3 Financial Strategy Recommendations

Considering all the above information, we recommend the 15-year option. This involves full funding being achieved over 15 years by:

a) increasing tax revenues by an additional 0.89% on top of the 0.80% already being collected each year for the next 15 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
b) distributing the current gas tax and OCIF revenue as outlined previously.
c) Reallocating appropriate revenue from categories in a surplus position to those in a deficit position.
d) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included OCIF formula-based funding, if applicable, since this funding is a multi-year commitment[1].
2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.

Although this option achieves full funding on an annual basis in 15 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of $78.3 million for the Road network, $1.2 million for Bridges and Culverts, $2.9 million for Buildings, $7.8 million for park facilities, $3.1 million for Machinery & Equipment, and $3 million for Fleet.

Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

[1] The Town should take advantage of all available grant funding programs and transfers from other levels of government. While OCIF has historically been considered a sustainable source of funding, the program is currently undergoing review by the provincial government. Depending on the outcome of this review there may be changes that impact its availability.

8.4 Financial Profile: Rate Funded Assets

8.4.1 Current Funding Position

The following tables show, by asset category, Aurora's average annual asset investment requirements, current funding positions, and funding increases required to achieve full funding on assets funded by rates.

Asset Category	Avg. Annual Requirement	Annual Funding Available				Annual Deficit
		Rates	To Operations	OCIF	Total Available	
Water Network	5,746,309	12,288,922	-10,588,922	0	1,700,000	4,046,309
Sanitary Network	4,227,512	14,912,691	-13,376,166	0	1,536,525	2,690,987
Storm Network	8,414,426	3,702,512	-1,264,482	0	2,438,030	5,976,396
	18,388,247	**30,904,125**	**-25,229,570**	**0**	**5,674,555**	**12,713,692**

Table 118 Rate Funded Assets Current Funding Position

The average annual investment requirement for the above categories is $18.4 million. Annual revenue currently allocated to these assets for capital purposes is $5.7 million leaving an annual deficit of $12.7 million. Put differently, these infrastructure categories are currently funded at 30.9% of their long-term requirements.

8.4.2 Full Funding Requirements

In 2023, Aurora had annual water revenues of $12,288,922, annual sanitary revenues of $14,912,691, and storm revenues of $3,702,512. As illustrated in Table 119 below, without consideration of any other sources of revenue, full funding would require the following changes over time:

Asset Category	Rate Change Required for Full Funding
Water Network	32.9%
Sanitary Network	18.0%
Storm Network	161.4%

Table 119 Rate Funded Assets Full Funding Requirements

In the following tables, we have expanded the above scenario to present multiple options and have provided phase-in options of up to 20 years:

Water Network				
	5 Years	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	4,046,309	4,046,309	4,046,309	4,046,309
Rate Increase Required	32.9%	32.9%	32.9%	32.9%
Annually:	**5.86%**	**2.89%**	**1.92%**	**1.45%**

Table 120 Tax Adjustment Options to Meet Full Funding Requirements (Water Network)

Sanitary Network				
	5 Years	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	2,690,987	2,690,987	2,690,987	2,690,987
Rate Increase Required	18.0%	18.0%	18.0%	18.0%
Annually:	**3.37%**	**1.67%**	**1.11%**	**0.83%**

Table 121 Tax Adjustment Options to Meet Full Funding Requirements (Sanitary Network)

Storm Network				
	5 Years	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	5,976,396	5,976,396	5,976,396	5,976,396
Rate Increase Required	161.4%	161.4%	161.4%	161.4%
Annually:	**21.19%**	**10.09%**	**6.62%**	**4.92%**

Table 122 Tax Adjustment Options to Meet Full Funding Requirements (Storm Network)

Similarly to the Tax Funded asset, the proposed levels of service play a role in the development of the Annual Average Requirement. For the rate funded assets there a lesser impact because the proposed levels of services are not much greater than what is currently achieved. For comparison, the rate impact for decreasing, increasing, and simply maintaining the levels of services are provided below:

Impact on Rates					
Water	**Changes in Levels of Service**	**5 year**	**10 Year**	**15 Year**	**20 Year**
	Decreased by 5%	4.65%	2.30%	1.53%	1.14%
	Maintained	5.82%	2.87%	1.90%	1.43%
	Increased by 5%	6.85%	3.37%	2.23%	1.67%
	Recommended	5.86%	2.89%	1.92%	1.45%
Sewer	**Changes in Levels of Service**	**5 year**	**10 Year**	**15 Year**	**20 Year**
	Decreased by 5%	2.88%	1.43%	0.95%	0.71%
	Maintained	3.37%	1.67%	1.11%	0.83%
	Increased by 5%	3.97%	1.97%	1.31%	0.98%
	Recommended	3.37%	1.67%	1.11%	0.83%
Storm	**Changes in Levels of Service**	**5 year**	**10 Year**	**15 Year**	**20 Year**
	Decreased by 5%	18.49%	8.85%	5.82%	4.33%
	Maintained	21.17%	10.08%	6.61%	4.92%
	Increased by 5%	22.82%	10.82%	7.09%	5.27%
	Recommended	21.19%	10.09%	6.62%	4.95%

Table 123 Proposed LOS Impacts on Utility Rates

8.4.3 Financial Strategy Recommendations

Considering all the above information, we recommend the 15-year option for water, the 10-year options for sanitary and the 20-year option for the storm network. This involves full funding being achieved over the periods discussed by:

a) decreasing the required annual reinvestment rate for the water network from the previous 2.2 to 1.92 percent for the next 15 years results in a reduced annual burden on water rate payers and will allow for full funding to be phased in
b) increasing the required annual reinvestment rate for the sanitary network from the previous 0.4 to 1.67 percent for the next 10 years enables the Town to achieve a financially sustainable asset renewal program within a shorter period of time.
c) Decreasing the required annual reinvestment rate for the storm network from the previous 11 to 4.92 percent for the next 20 years results in a reduced annual burden on storm rate payers and will allow for full funding to be phased in.
d) increasing existing and future infrastructure requirement plans by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. This periodic funding should not be incorporated into an AMP unless there are firm commitments in place.
2. We realize that raising rate revenues for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.
3. Any increase in rates required for operations would be in addition to the above recommendations.

Although this option achieves full funding and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of $17.4 million for the water network, $13.1 million for the sanitary network, and $113.6 million for the storm network.

Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

8.5 Use of Debt

Debt can be strategically utilized as an interim funding source within the long-term financial plan. The benefits of leveraging debt for infrastructure planning include:

a) the ability to stabilize tax & user rates when dealing with variable and sometimes uncontrollable factors

b) equitable distribution of the cost/benefits of infrastructure over its useful life

c) a secure source of funding

d) flexibility in cash flow management

Debt management policies and procedures with limitations and monitoring practices should be considered when reviewing debt as a funding option. In efforts to mitigate increasing commodity prices and inflation, interest rates have been rising. Sustainable funding models that include debt need to incorporate the now current realized risk of rising interest rates. Figure 83 shows the historical changes to the lending rates:

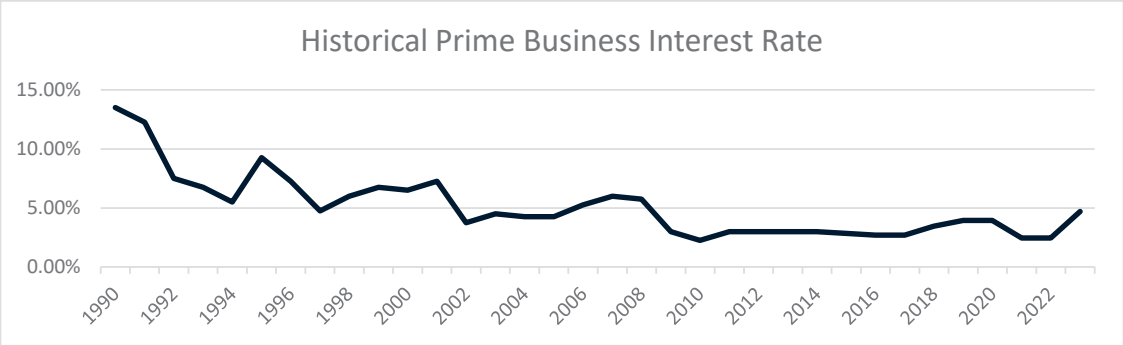


Figure 83 Historical Prime Business Interest Rate

A change in 15-year rates from 5% to 7% would change the premium from 45% to 65%. Such a change would have a significant impact on a financial plan.

For reference purposes, Table 124 outlines the premium paid on a project if financed by debt. For example, a $1 million project financed at 3.0%[2] over 15 years would result in a 26% premium or $260 thousand of increased costs due to interest payments. For simplicity, the table does not consider the time value of money or the effect of inflation on delayed projects.

Interest Rate	Number of Years Financed					
	5	10	15	20	25	30
7.0%	22%	42%	65%	89%	115%	142%
6.5%	20%	39%	60%	82%	105%	130%
6.0%	19%	36%	54%	74%	96%	118%
5.5%	17%	33%	49%	67%	86%	106%
5.0%	15%	30%	45%	60%	77%	95%
4.5%	14%	26%	40%	54%	69%	84%
4.0%	12%	23%	35%	47%	60%	73%
3.5%	11%	20%	30%	41%	52%	63%
3.0%	9%	17%	26%	34%	44%	53%
2.5%	8%	14%	21%	28%	36%	43%
2.0%	6%	11%	17%	22%	28%	34%
1.5%	5%	8%	12%	16%	21%	25%
1.0%	3%	6%	8%	11%	14%	16%
0.5%	2%	3%	4%	5%	7%	8%
0.0%	0%	0%	0%	0%	0%	0%

[2] Current municipal Infrastructure Ontario rates for 15-year money is 3.2%.

Table 124 Debt Financing Premiums Paid

8.6 Use of Reserves

8.6.1 Available Reserves

Reserves play a critical role in long-term financial planning. The benefits of having reserves available for infrastructure planning include:

a) the ability to stabilize tax rates when dealing with variable and sometimes uncontrollable factors
b) financing one-time or short-term investments
c) accumulating the funding for significant future infrastructure investments
d) managing the use of debt
e) normalizing infrastructure funding requirement

By asset category, Table 125 below outlines the details of the reserves currently available to Aurora.

Asset Category	Balance on December 31, 2023
Road Network	10,184,000
Bridges & Culverts	0
Buildings	7,393,000
Machinery & Equipment	1,490,000
Park Facilities	3,818,000
Fleet	3,736,000
Total Tax Funded:	**26,621,000**
Water Network	12,430,000
Sanitary Network	6,348,000
Storm Network	13,909,000
Total Rate Funded:	**32,687,000**

Table 125 Available Reserves

There is considerable debate in the municipal sector as to the appropriate level of reserves that a Town should have on hand. There is no clear guideline that has gained wide acceptance. Factors that municipalities should take into account when determining their capital reserve requirements include:

a) breadth of services provided
b) age and condition of infrastructure
c) use and level of debt
d) economic conditions and outlook
e) internal reserve and debt policies.

These reserves are available for use by applicable asset categories during the phase-in period to full funding. This coupled with Aurora's judicious use of debt in the past, allows the scenarios to assume that, if required, available reserves and debt capacity can be used for high priority and emergency infrastructure investments in the short- to medium-term.

9 Recommendations

Key Insights

- Asset Inventory, Data Review and Validation
- Condition Assessment Strategies
- Lifecycle Management Strategies
- Risk Management Strategies
- Levels of Service

Asset Inventory, Data Review & Validation

- Continue to review and validate inventory data, assessed condition data and replacement costs for all assets upon the completion of assessments, studies, or inspections as data becomes available.
- Document and review lifecycle management strategies for the stormwater network on a regular basis to achieve the lowest total cost of ownership while maintaining adequate service levels.
- Enhance organizational efficiency and optimize resource utilization through the merging and reconciling the Tangible Capital Asset (TCA) registry with the Asset Management asset registry derived from comprehensive GIS data and other alternative asset registries presently in use.
- Develop a standardized asset data template to collect and updated data on new and rehabilitated infrastructure and ensure data accuracy and quality.
- Deploy a computerized maintenance management system (CMMS) and asset management system to accurately track asset changes.
- Update the Asset Management Plan every five years and review trends and goals annually to continue to grow the Town's asset management maturity level.

Condition Assessment Strategies

- Prioritize and implement a formal condition assessment program for all municipal infrastructure and assets to enhance decision-making, prioritize maintenance, and ensure the long-term resilience of the Town's infrastructure.
- The last comprehensive assessment of the road network was completed in 2023. Continue to undertake condition assessment of the road network every three years.
- The Town should implement regular condition assessments for all facilities to better inform short-term and long-term capital requirements.
- Perform a comprehensive review of sanitary, storm, and water network inventory data accompanied by a system-wide assessment of the condition of all sanitary and storm sewer pipes through CCTV inspections.

Lifecycle Management Strategies

- Evaluate the efficacy of the Town's lifecycle management strategies at regular intervals to determine the impact cost, condition and risk.

- The Town should work towards identifying projected capital rehabilitation and renewal costs for bridges and culverts and integrating these costs into long-term planning.

- Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly.

- Many replacement costs used in this AMP were based on the inflation of historical costs or past replacement costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.

- A trenchless re-lining strategy is expected to extend the service life of sanitary and storm mains at a lower total cost of ownership and should be implemented to extend the life of infrastructure at the lowest total cost of ownership.

Risk Management Strategies

- Continue to operationalize risk-based decision-making frameworks by configuring the Town's asset management system to intuitively calculate risk as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.

- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Levels of Service

- Conduct regular reviews of SLAs to ensure they remain relevant and aligned with organizational goals. Adjust targets as needed to accommodate evolving industry standards and customer demands.

- Schedule regular performance reviews to assess the effectiveness of your service level tracking strategies. Use these reviews to identify successes, areas for improvement, and emerging opportunities. Adjust your approach based on the insights gained from these assessments.

- Develop contingency plans to address unforeseen challenges without compromising service quality.

10 Appendices

Key Insights

- Appendix A identifies projected 10-year capital requirements for each asset category
- Appendix B includes several maps that have been used to visualize the current level of service
- Appendix C identifies the criteria used to calculate risk for each asset category

10.1 Appendix A: 10-Year Capital Requirements

The following tables identify the capital cost requirements over 10 years to meet projected capital requirements and maintain the current level of service.

Road Network

Asset Segment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Arterial Roads	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Collector Roads	$0	$240k	$4.9m	$411k	$0	$0	$0	$0	$0	$0
Local Roads	$674k	$744k	$2.6m	$4.1m	$3.2m	$0	$0	$0	$0	$0
Retaining Walls	$0	$0	$0	$2.4m	$2.7m	$5.9m	$0	$1.6m	$1.1m	$12.7m
Signage	$158k	$131k	$122k	$61k	$40k	$15k	$7k	$15k	$10k	$18k
Sidewalks	$47k	$318k	$1.0m	$203k	$531k	$558k	$199k	$92k	$597k	$2.1m
Streetlights	$93k	$187k	$781k	$548k	$816k	$571k	$280k	$665k	$513k	$1.7m
Traffic Signals	$0	$0	$457k	$0	$457k	$0	$0	$0	$0	$0
Railing and Fencing	$0	$0	$0	$116k	$0	$0	$0	$0	$0	$0
Parking Lot	$0	$0	$612k	$0	$204k	$0	$3.7m	$0	$0	$924k
	$972k	**$1.6m**	**$10.5m**	**$7.9m**	**$8.0m**	**$7.0m**	**$4.2m**	**$2.3m**	**$2.3m**	**$17.5m**

Table 126 Road Network 10-Year Capital Requirements

Bridges & Culverts

Asset Segment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Bridges	$0	$0	$0	$0	$0	$285k	$0	$0	$0	$0
Structural Culverts	$0	$0	$0	$0	$0	$0	$0	$0	$332k	$0
Cross Culverts & Small Bridges	$170k	$225k	$0	$68k	$3k	$149k	$0	$99k	$2k	$79k
	$577k	**$225k**	**$0**	**$68k**	**$3k**	**$434k**	**$0**	**$99k**	**$334k**	**$79k**

Table 127 Bridges and Culverts 10-Year Capital Requirements

Buildings

Asset Segment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
General Government	$10.9m	$2.8m	$463k	$373k	$2.0m	$7.3m	$644k	$5.7m	$0	$891k
Protection Services	$2.6m	$1.4m	$101k	$842k	$516k	$1.3m	$27k	$1.0m	$31k	$69k
Recreation & Cultural Services	$33.5m	$5.6m	$2.0m	$4.5m	$8.3m	$19.6m	$2.4m	$5.8m	$5.4m	$3.3m
Transportation Services	$5.8m	$253k	$885k	$0	$6.4m	$7.0m	$289k	$1.7m	$3.6m	$0
	$52.8m	**$10.1m**	**$3.5m**	**$5.7m**	**$17.2m**	**$35.2m**	**$3.3m**	**$14.3m**	**$9.1m**	**$4.3m**

Table 128 Buildings 10-Year Capital Requirements

Park Facilities

Asset Segment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Athletic Fields	$0	$2.8m	$21k	$0	$3k	$53k	$52k	$0	$2.3m	$149k
Fencing & Gates	$63k	$137k	$44k	$59k	$26k	$3k	$201k	$32k	$80k	$67k
Park Fixtures & Lighting	$729k	$197k	$74k	$105k	$229k	$267k	$57k	$226k	$606k	$252k
Park Structures	$0	$0	$81k	$303k	$0	$26k	$30k	$158k	$110k	$0
Parking Lots	$0	$0	$0	$0	$291k	$0	$156k	$337k	$0	$96k
Playgrounds & Splashpads	$204k	$295k	$262k	$10k	$456k	$152k	$44k	$583k	$10k	$131k
Sanitary Infrastructure	$69k	$12k	$0	$0	$0	$0	$0	$0	$0	$0
Stormwater Infrastructure	$98k	$217k	$0	$0	$0	$96k	$0	$0	$5k	$0
Trails & Walkways	$62k	$9k	$660k	$134k	$60k	$858k	$219k	$100k	$9k	$235k
Water Infrastructure	$35k	$7k	$0	$0	$0	$0	$0	$0	$0	$0
	$1.3m	**$3.7m**	**$1.1m**	**$610k**	**$1.1m**	**$1.5m**	**$760k**	**$1.4m**	**$3.2m**	**$930k**

Table 129 Park Facilities 10-Year Capital Requirements

Fleet

Asset Segment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Equipment / Attachments	$180k	$94k	$475k	$1.1m	$800k	$323k	$336k	$355k	$917k	$0
Heavy Duty	-	-	-	$215k	-	$221k	-	$475k	-	$684k
Light Duty	$76k	$79k	$308k	$85k	$155k	$84k	$45k	$198k	$101k	$91k
Medium Duty	-	$239k	$73k	$162k	$208k	$86k	$200k	$75k	-	$367k
	$256k	**$412k**	**$855k**	**$1.5m**	**$1.2m**	**$714k**	**$581k**	**$1.1m**	**$1.0m**	**$1.1m**

Table 130 Fleet 10-Year Capital Requirements

Machinery & Equipment

Asset Segment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
IT	$74k	$172k	$354k	$246k	$28k	$2.1m	$424k	$543k	$462k	$109k
Miscellaneous	$113k	$91k	$75k	$102k	$36k	$133k	$84k	$75k	$41k	$7k
	$187k	**$263k**	**$428k**	**$348k**	**$64k**	**$2.2m**	**$507k**	**$618k**	**$502k**	**$115k**

Table 131 Machinery and Equipment 10-Year Capital Requirements

Sanitary Network

Asset Segment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Sanitary Equalization Tanks	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sanitary Laterals	$0	$791k	$267k	$310k	$559k	$782k	$772k	$2.9m	$1.2m	$901k
Sanitary Mains	$0	$0	$0	$0	$44k	$2.4m	$2.4m	$2.4m	$2.5m	$2.5m
Sanitary MH and UC's	-	-	$22k	-	$56k	$34k	-	$11k	-	$45k
Sanitary Pumping Stations	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sanitary Valve	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$0	**$791k**	**$290k**	**$310k**	**$660k**	**$3.2m**	**$3.2m**	**$5.4m**	**$3.7m**	**$3.4m**

Table 132 Sanitary Network 10-Year Capital Requirements

Storm Network

Asset Segment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Catchbasins	$6k	$0	$0	$0	$0	$11k	$0	$55k	$0	$244k
Ditches	$45k	$0	$14k	$119k	$0	$0	$300k	$95k	$0	$21k
Headwalls	$22k	$116k	$0	$166k	$559k	$421k	$192k	$1.0m	$162k	$56k
LIDs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Oil Grit Separator	$0	$166k	$0	$0	$83k	$0	$83k	$0	$166k	$0
Storm Equalization Tanks	$0	$0	$0	$0	$0	$0	$0	$217k	$141k	$1.2m
Storm Laterals	$13k	$2k	$111k	$716k	$277k	$523k	$683k	$585k	$169k	$748k
Storm Mains	-	-	$936k	$3.5m	$4.0m	$3.5m	$2.4m	$670k	$3.8m	$1.0m
Storm Maintenance Holes and Underground Enclosures	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Storm Valves	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Stormwater Management Pond	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$86k	**$284k**	**$1.1m**	**$4.5m**	**$4.9m**	**$4.5m**	**$3.7m**	**$2.6m**	**$4.4m**	**$3.2m**

Table 133 Storm Network 10-Year Capital Requirements

Water Network

Asset Segment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Hydrants	$27k	$36k	$36k	$36k	$143k	$125k	$36k	$276k	$160k	$276k
Water Booster Station	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Mains	$0	$0	$128k	$4.3m	$4.2m	$4.2m	$4.1m	$4.2m	$4.4m	$3.8m
Water Meters	$0	$0	$0	$0	$0	$0	$0	$323	$0	$0
Water Sample Stations	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Service Connections	$70k	$582k	$623k	$271k	$1.4m	$570k	$3.3m	$1.3m	$825k	$1.4m
Water Underground Enclosures	$34k	$11k	-	$34k	$101k	$45k	$22k	$67k	$101k	$157k
Water Valves	$13k	$3k	$13k	$20k	$63k	$53k	$10k	$126k	$106k	$100k
	$144k	**$632k**	**$800k**	**$4.6m**	**$5.9m**	**$5.0m**	**$7.5m**	**$6.0m**	**$5.6m**	**$5.8m**

Table 134 Water Network 10-Year Capital Requirements

10.2 Appendix B: Level of Service Maps

Roads Network Map

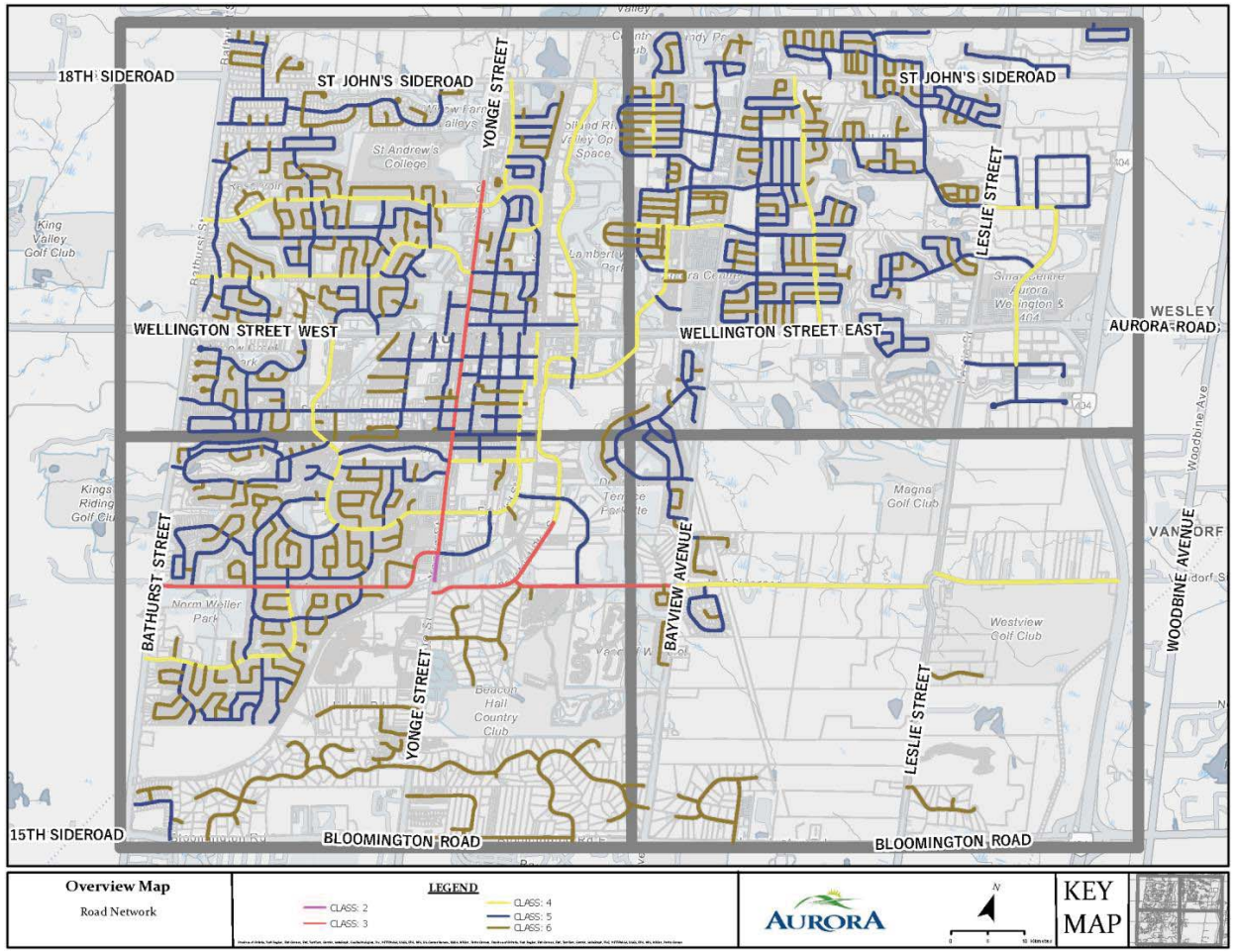


Figure 84 LOS Map: Road Network

Winter Maintenance Routes

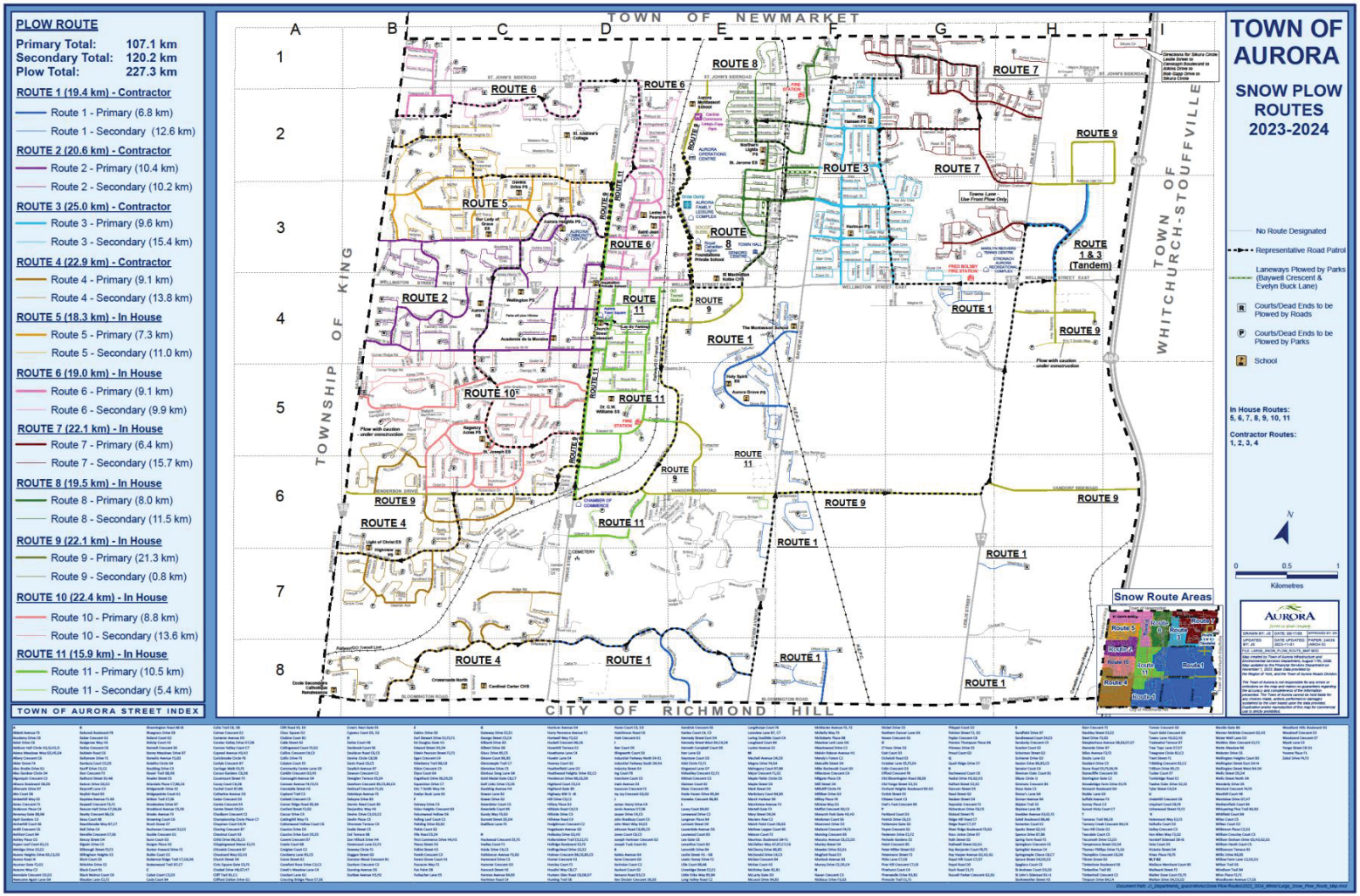


Figure 85 LOS Map: Winter Maintenance Routes

Facility Locations

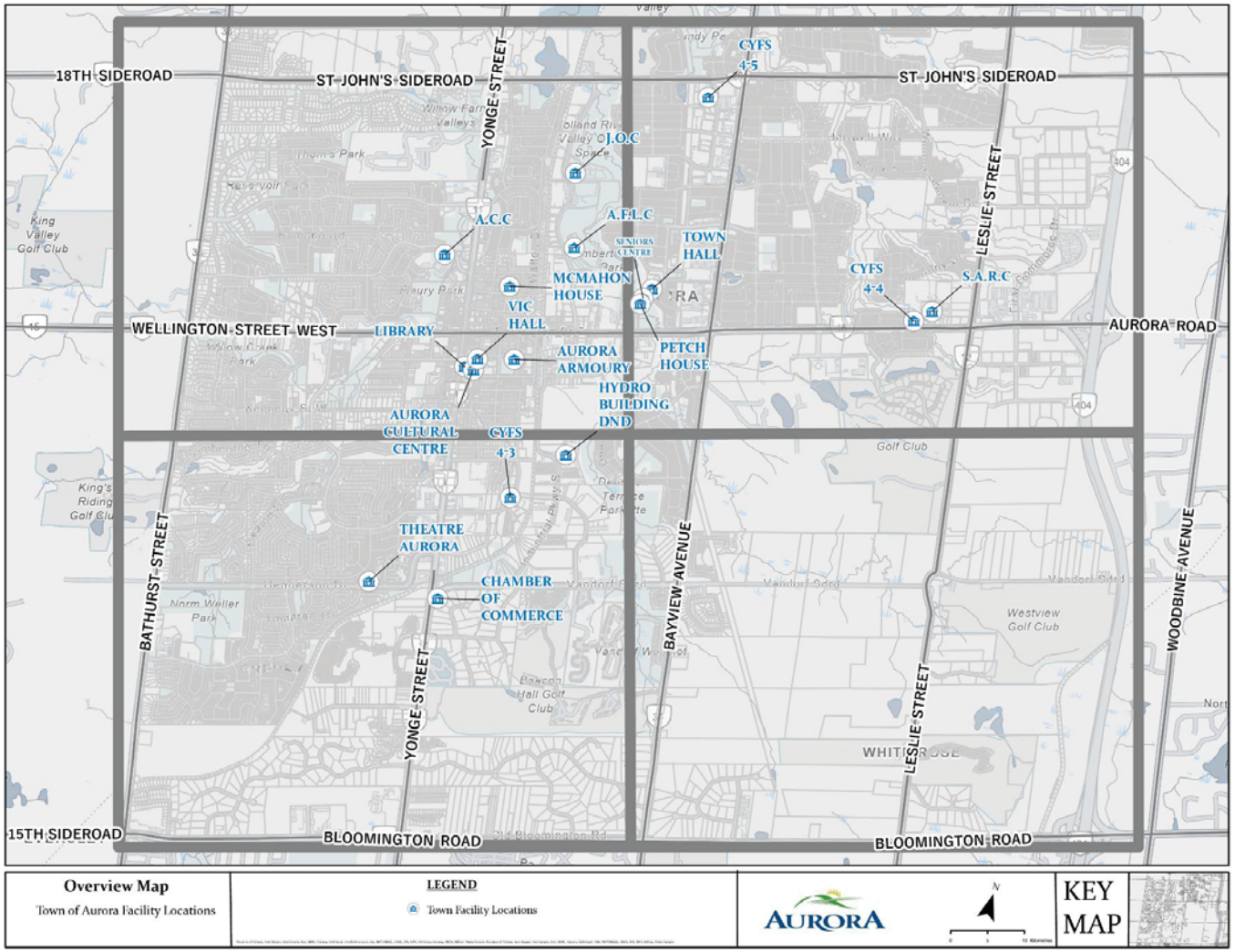


Figure 86 LOS Map: Facility Locations

Park Facilities Locations

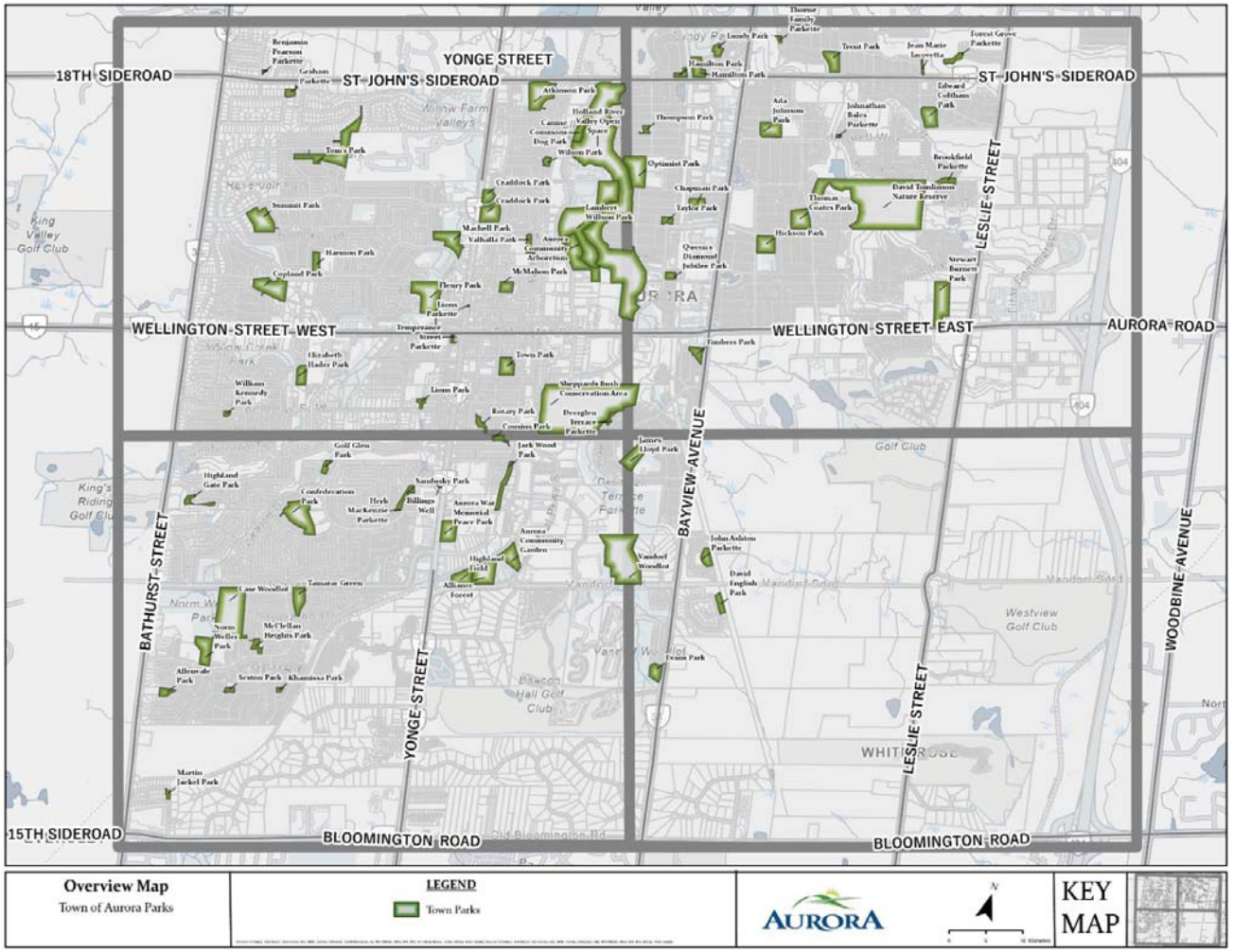


Figure 87 LOS Map: Park Facilities Locations

Watermain Service Map

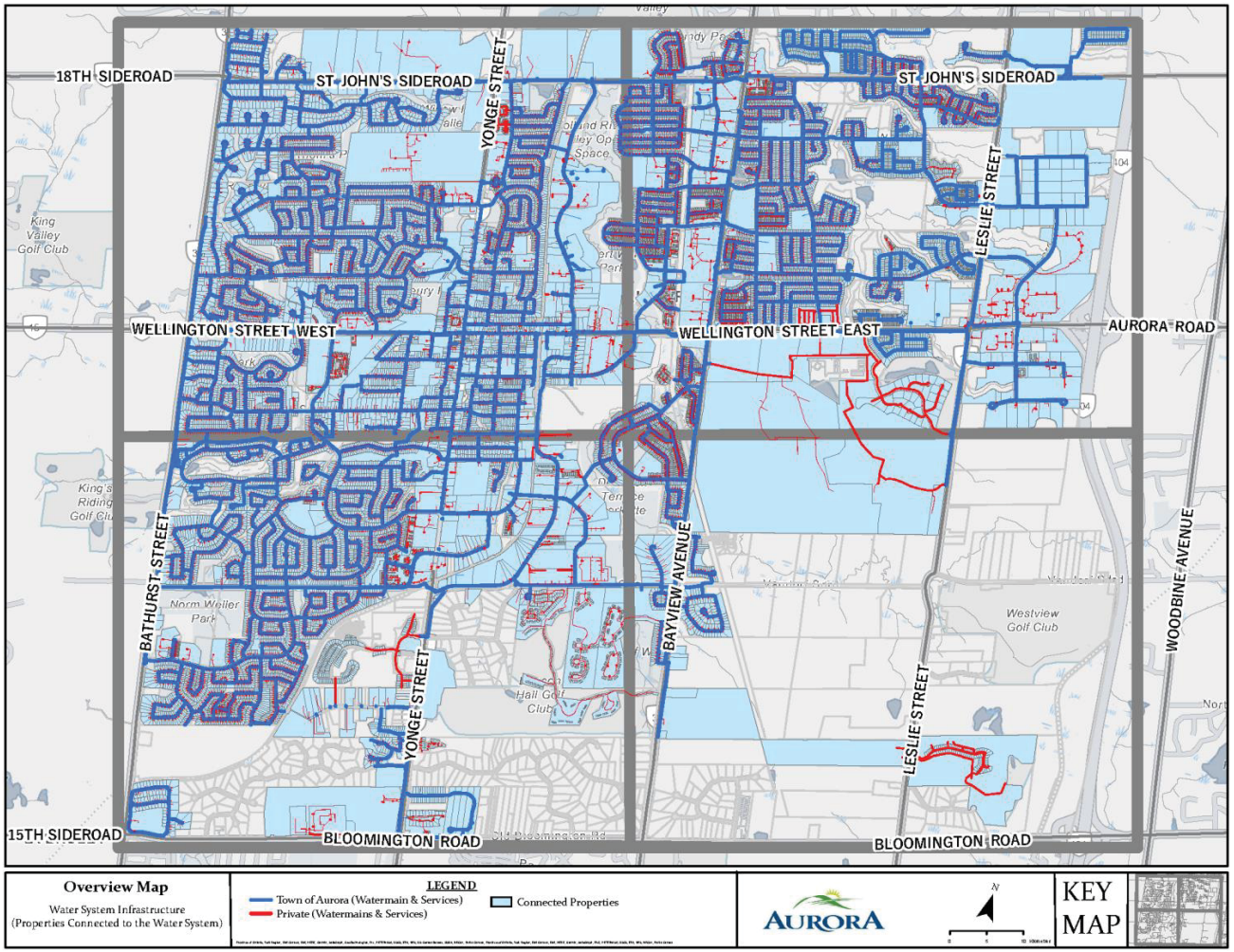


Figure 88 LOS Map: Watermain Services

Fire Flow Access Map

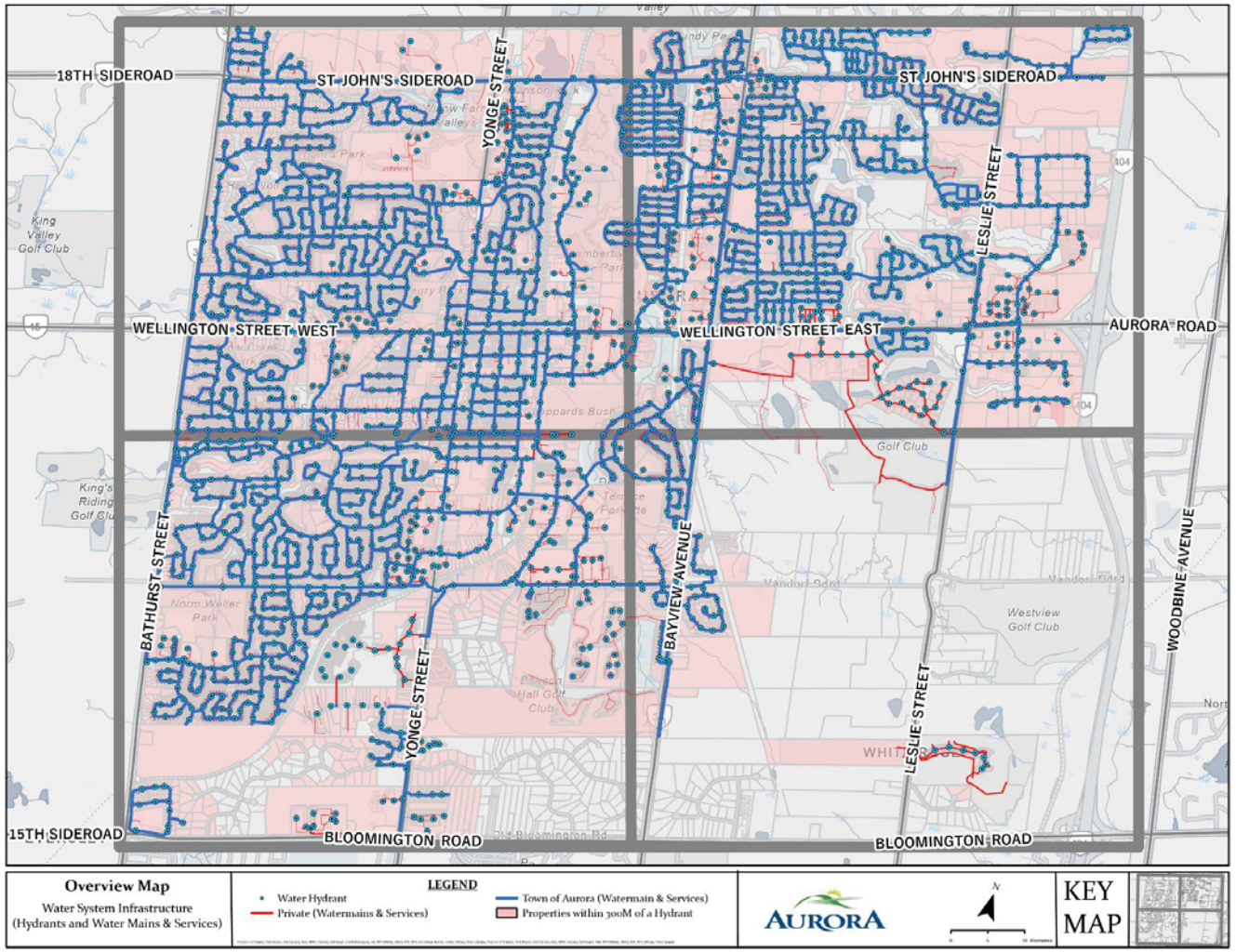


Figure 89 LOS Map: Fire Flow Access

Sanitary Service Map

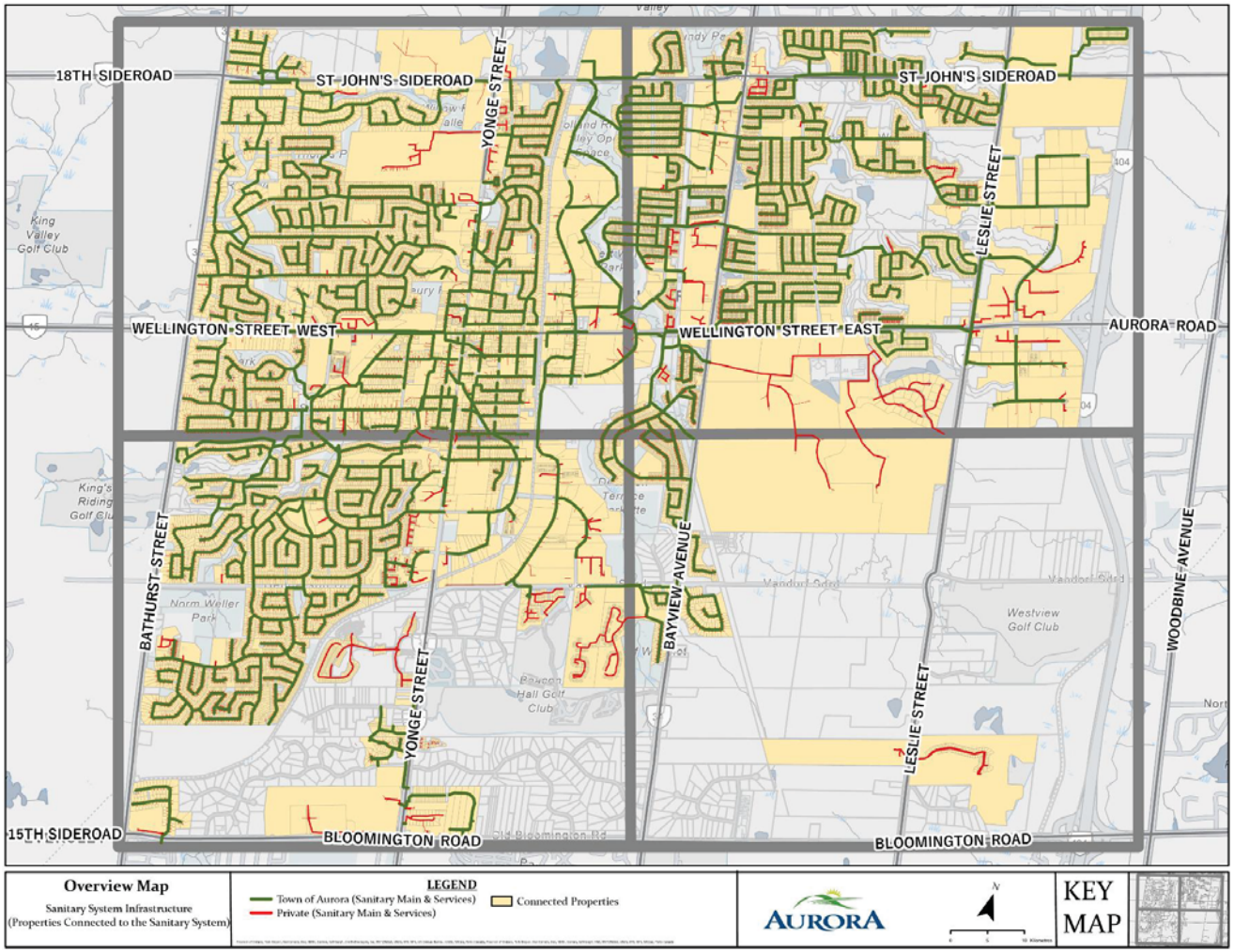


Figure 90 LOS Map: Sanitary Services

Storm Service Map

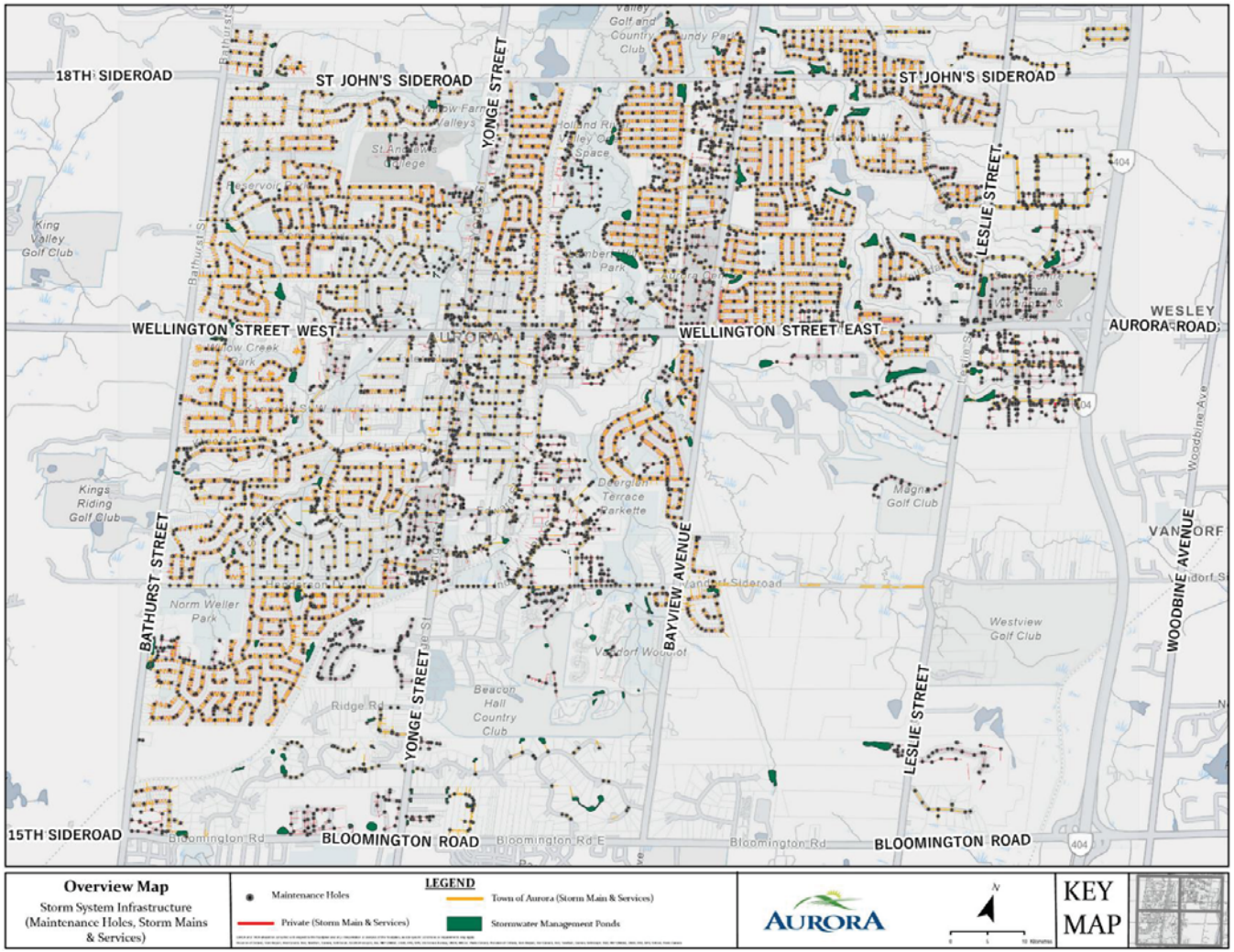


Figure 91 LOS Map: Storm Services

Flood Plain Map

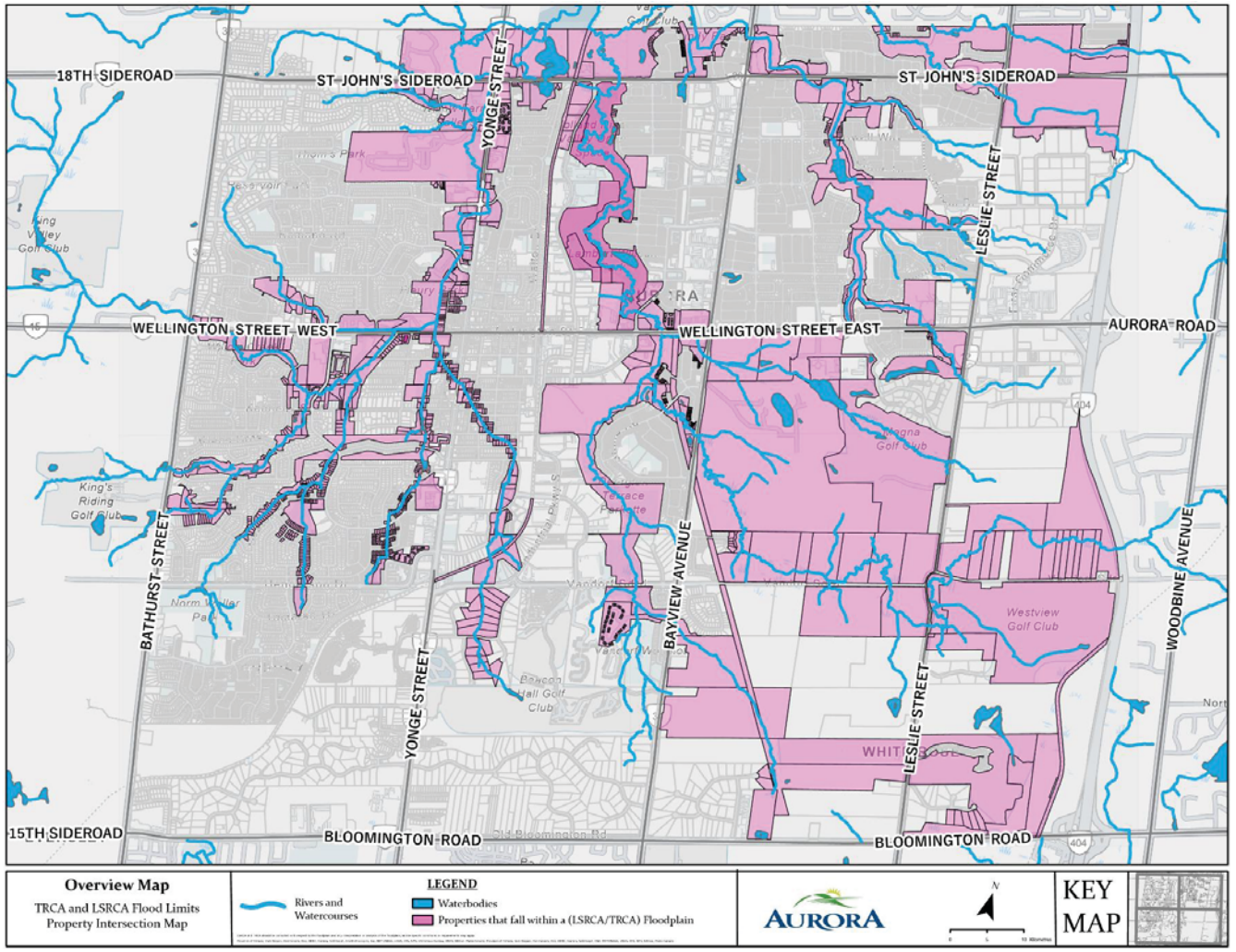


Figure 92 LOS Map: Flood Plain

Images of Bridge in Very Good Condition
John West Way Bridge
Inspected October 11th, 2023

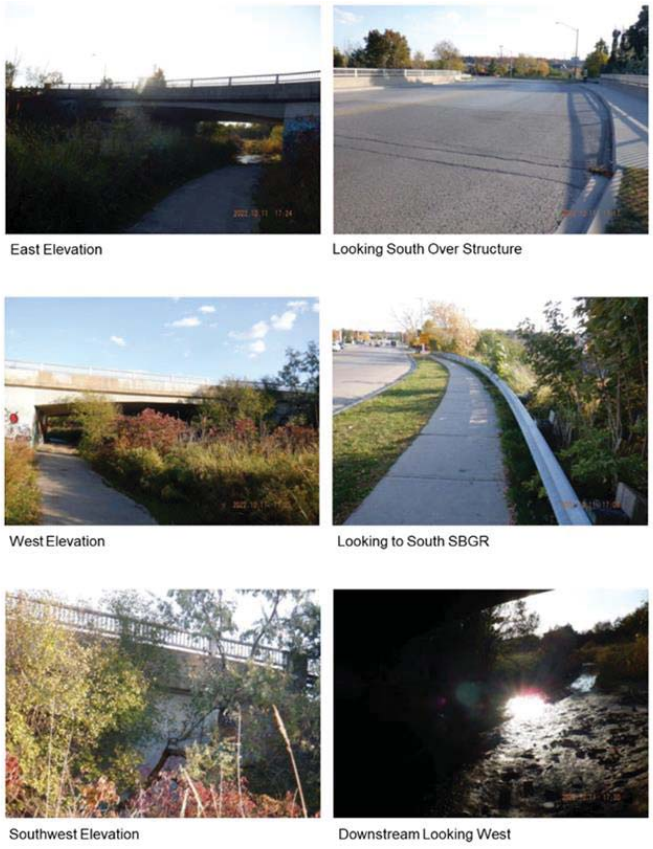


Figure 93 Bridge Condition Example: Very Good

Images of Culvert in Good Condition
Murray Drive Culvert – 145m north of Kennedy Street W

Inspected: October 11th, 2023

Figure 94 Culvert Condition Example: Good

Images of Culvert in Fair Condition
Vandorf Sideroad – 135m east of Leslie Street
Inspected: October 6th, 2023

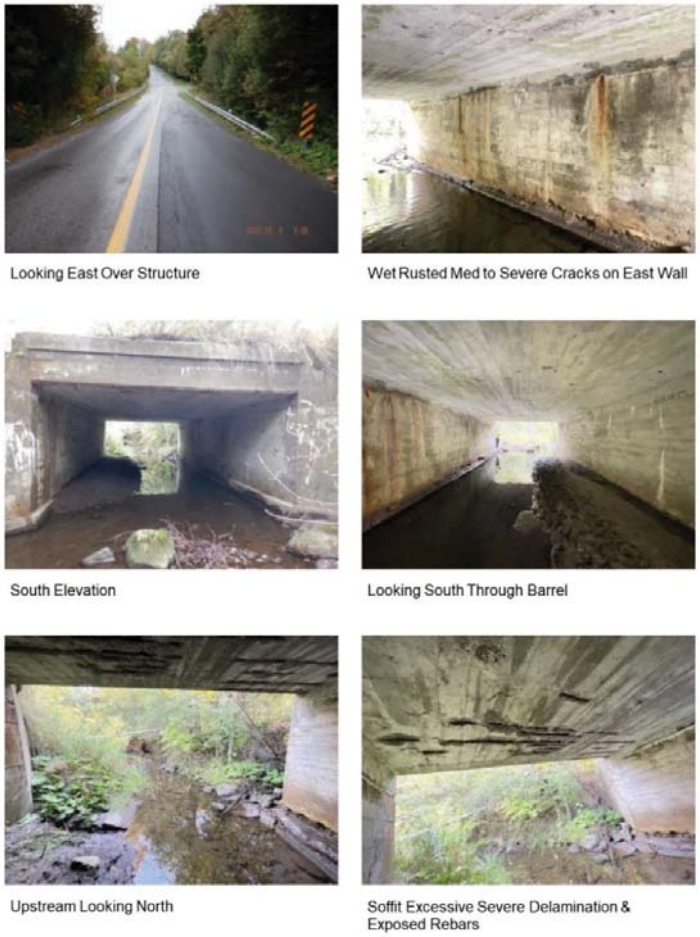


Figure 95 Culvert Condition Example: Fair

10.3 Appendix C: Risk Rating Criteria

Road Network

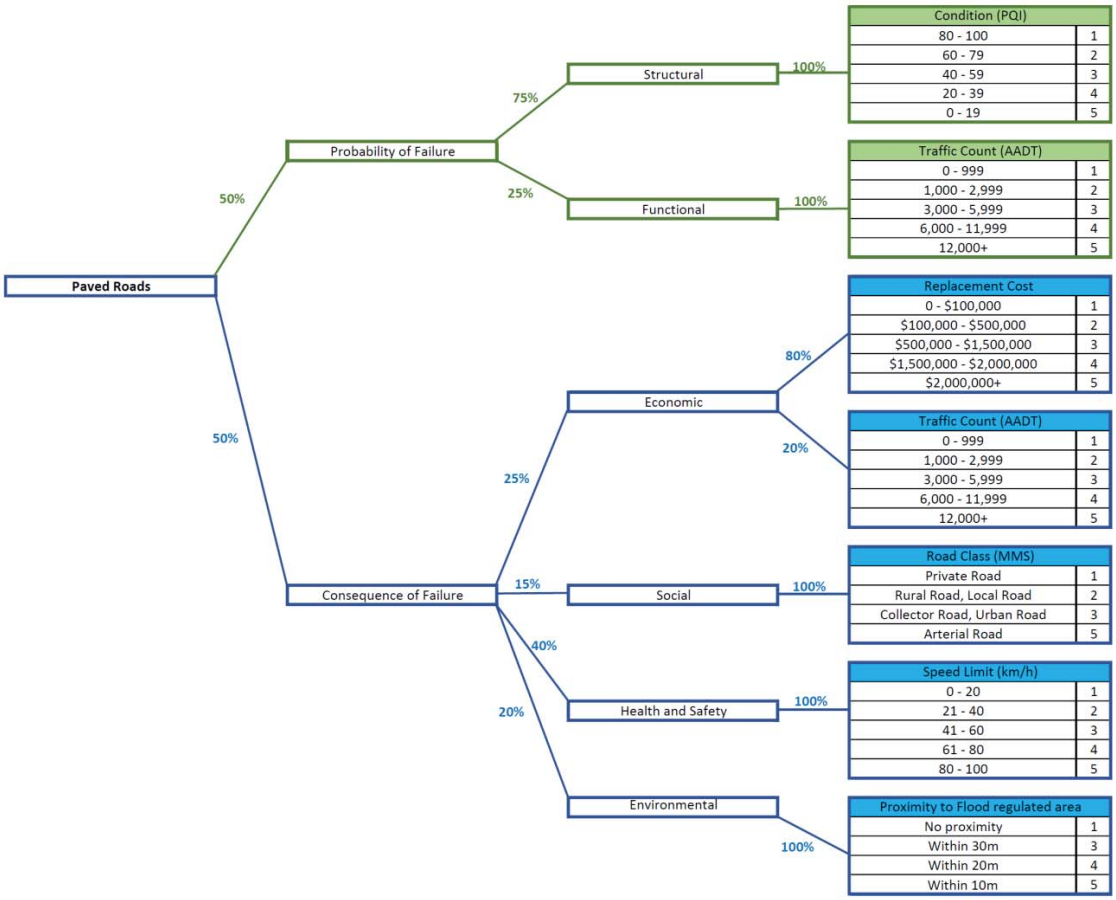


Figure 96 Road Network Risk Rating Criteria

Bridges & Culverts

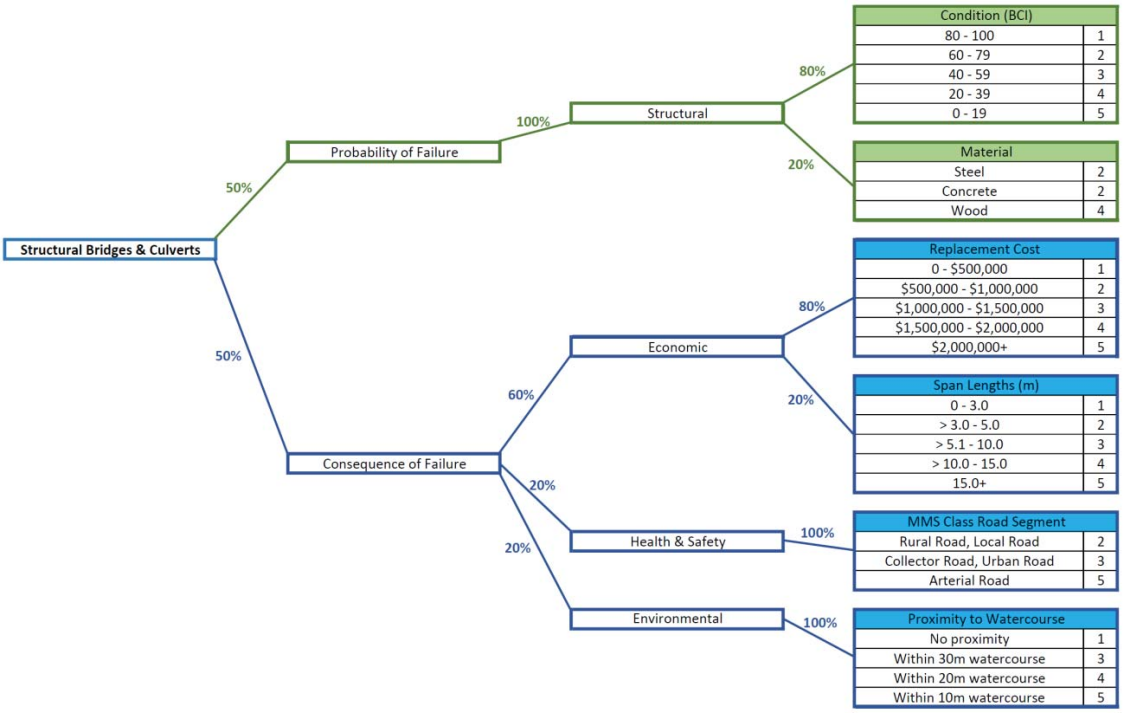


Figure 97 Bridges and Culverts Risk Rating Criteria

Buildings

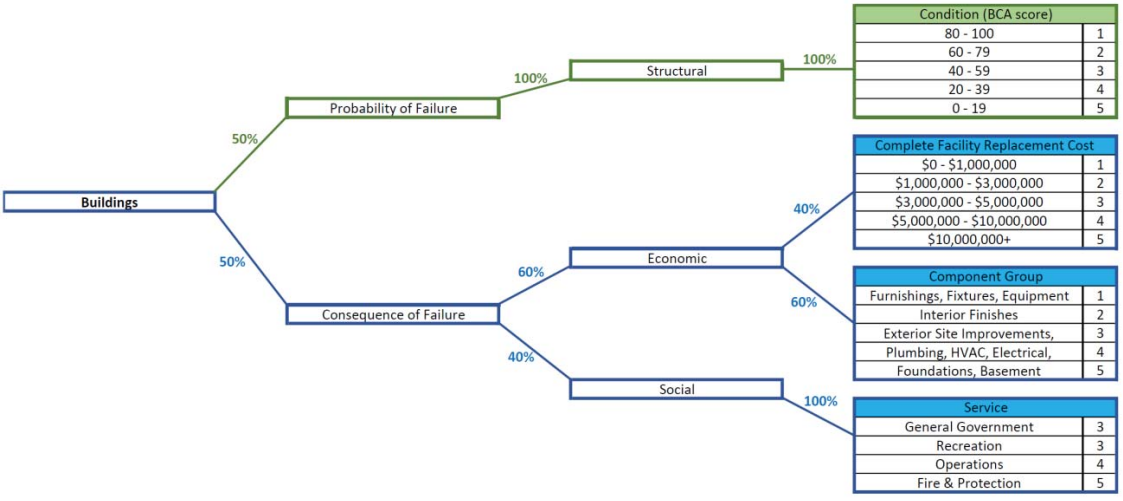


Figure 98 Buildings Risk Rating Criteria

Fleet

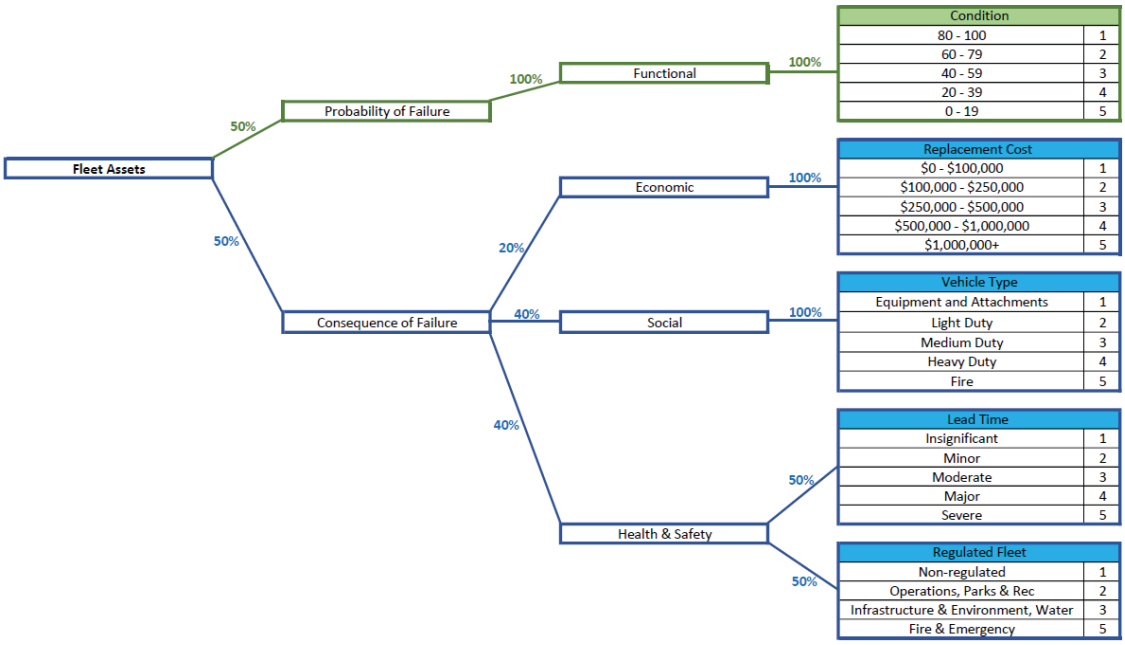


Figure 99 Fleet Risk Rating Criteria

Machinery & Equipment

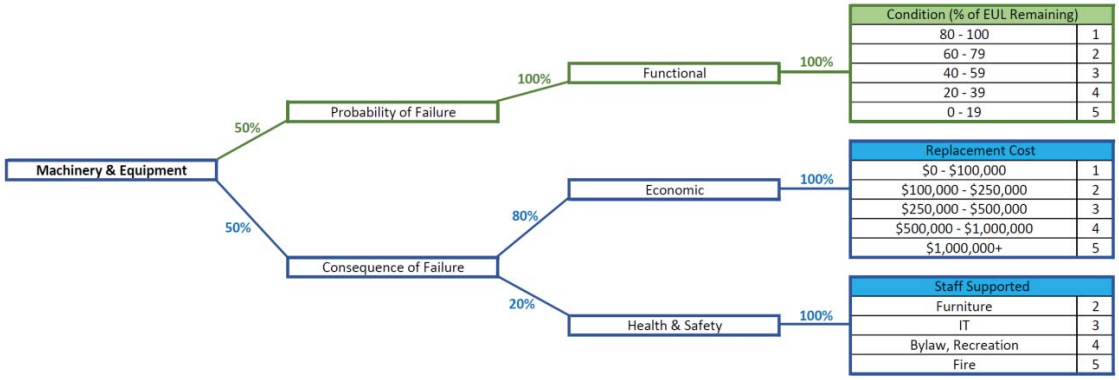


Figure 100 Machinery and Equipment Risk Rating Criteria

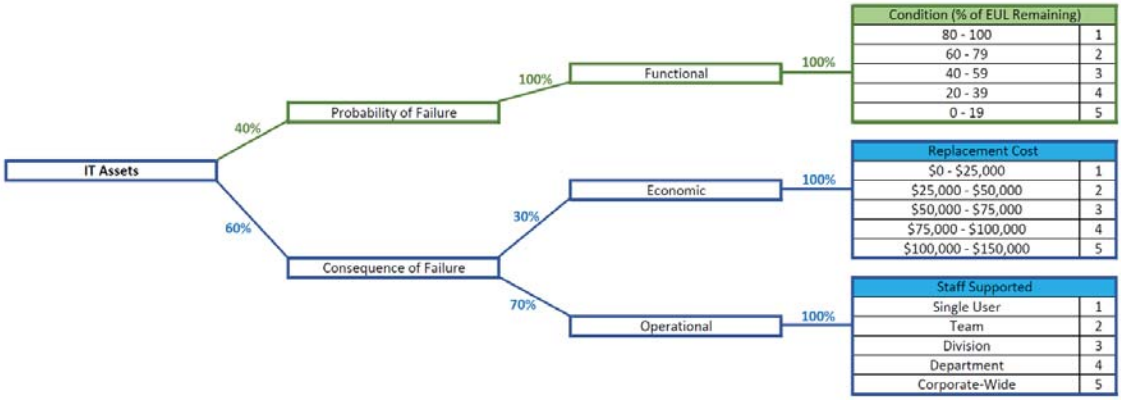


Figure 101 Machinery and Equipment (IT Assets) Risk Rating Criteria

Parks Facilities

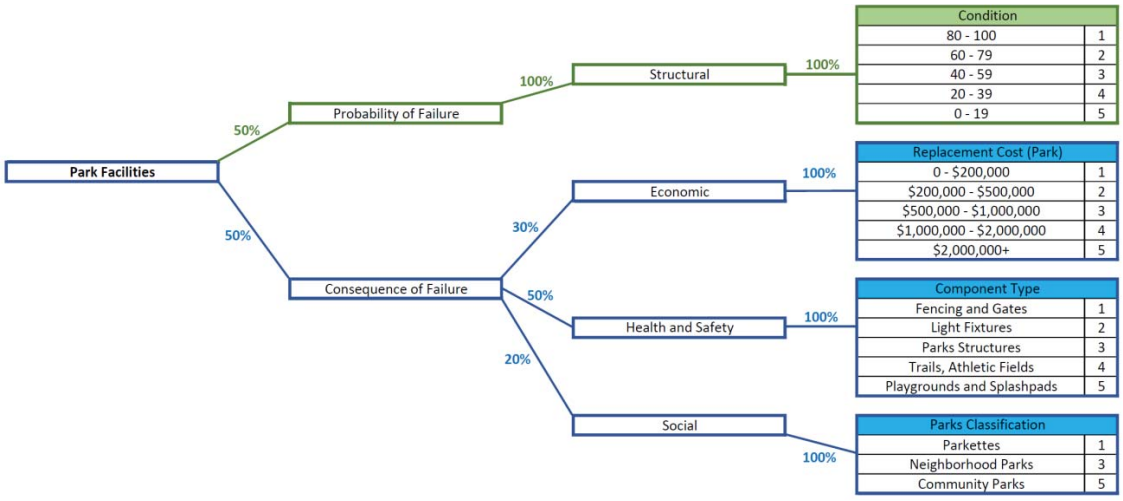


Figure 102 Park Facilities Risk Rating Criteria

Water & Sanitary Facilities

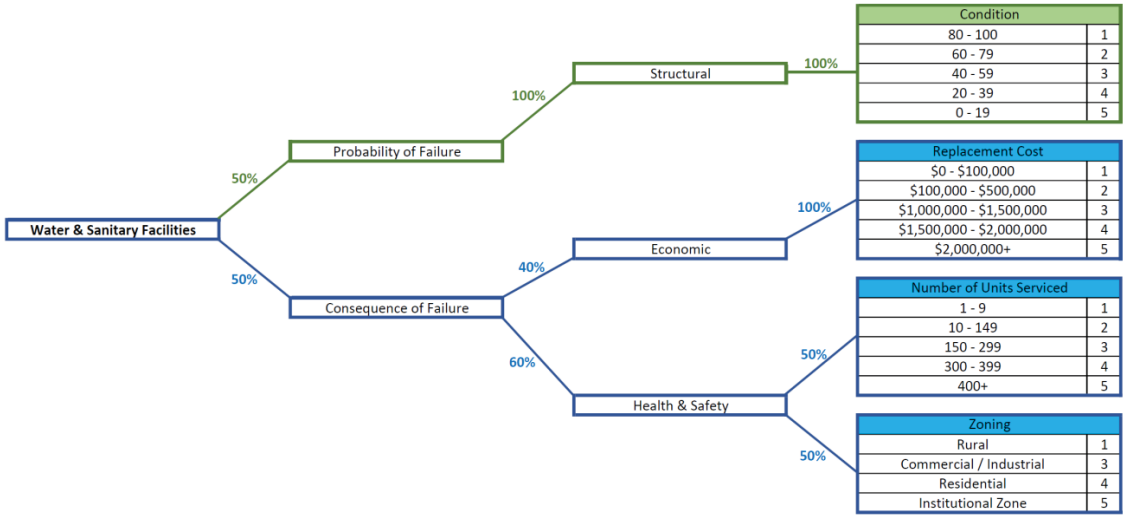


Figure 103 Water and Sanitary Facilities Risk Rating Criteria

Water Network

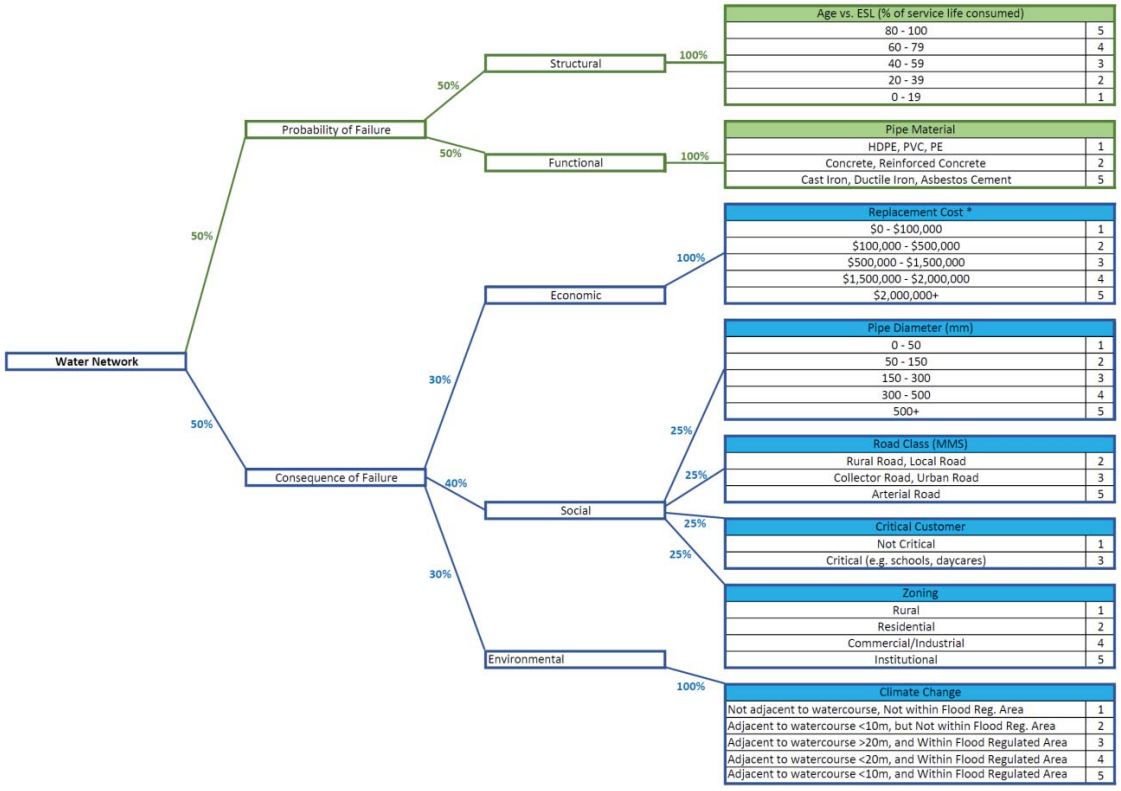


Figure 104 Water Network Risk Rating Criteria

Sanitary Network

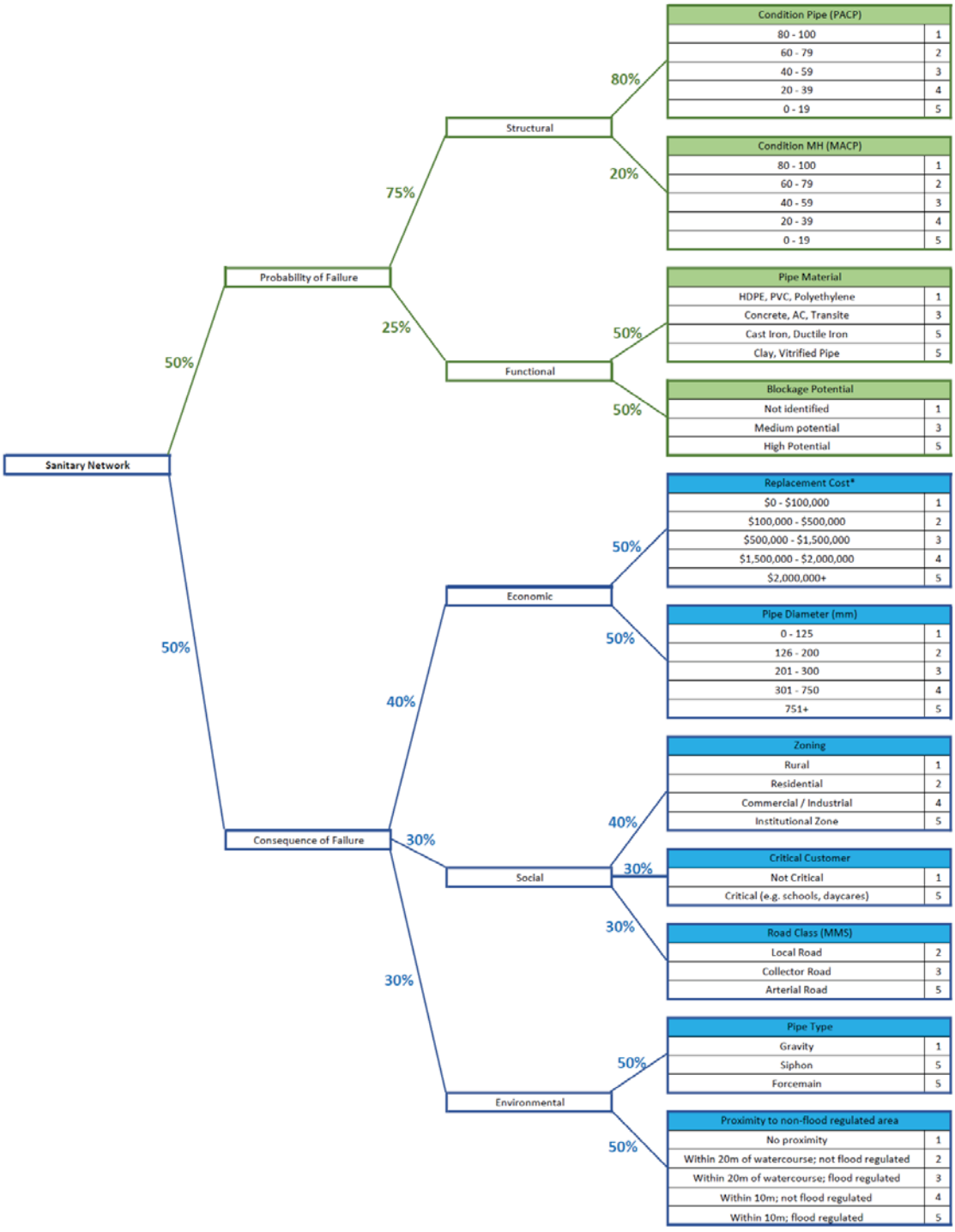


Figure 105 Sanitary Network Risk Rating Criteria

Storm Network

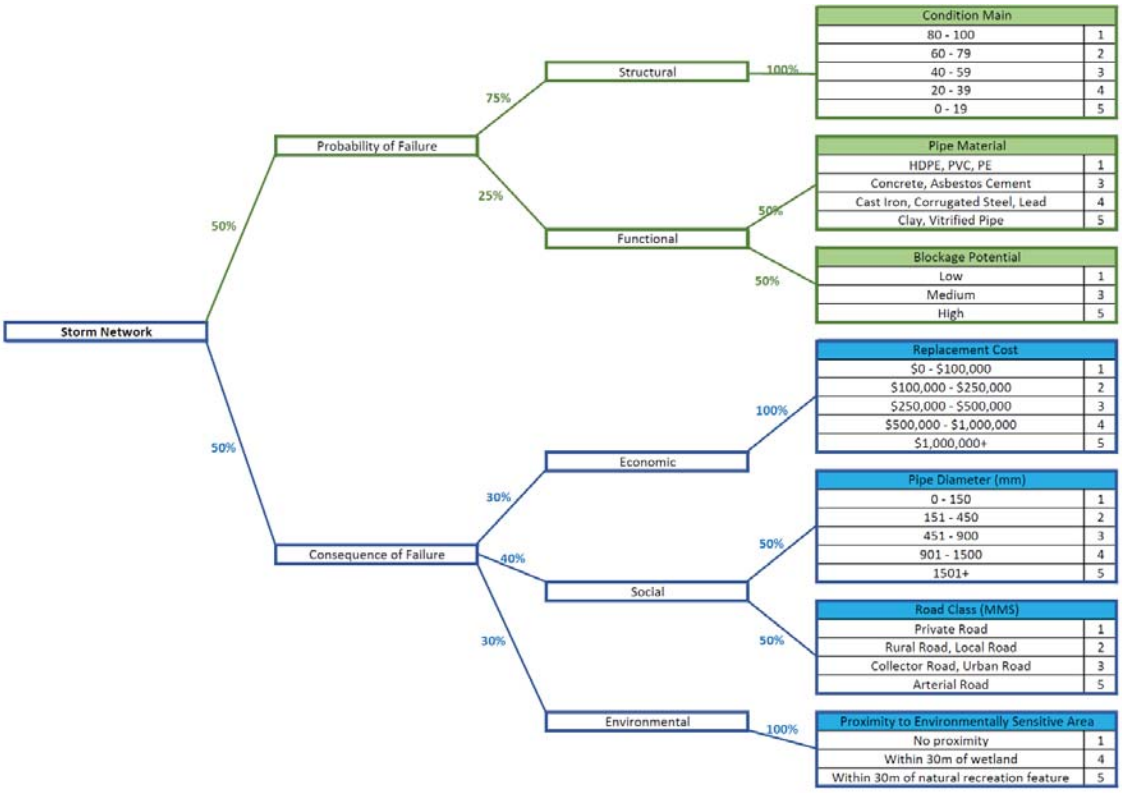
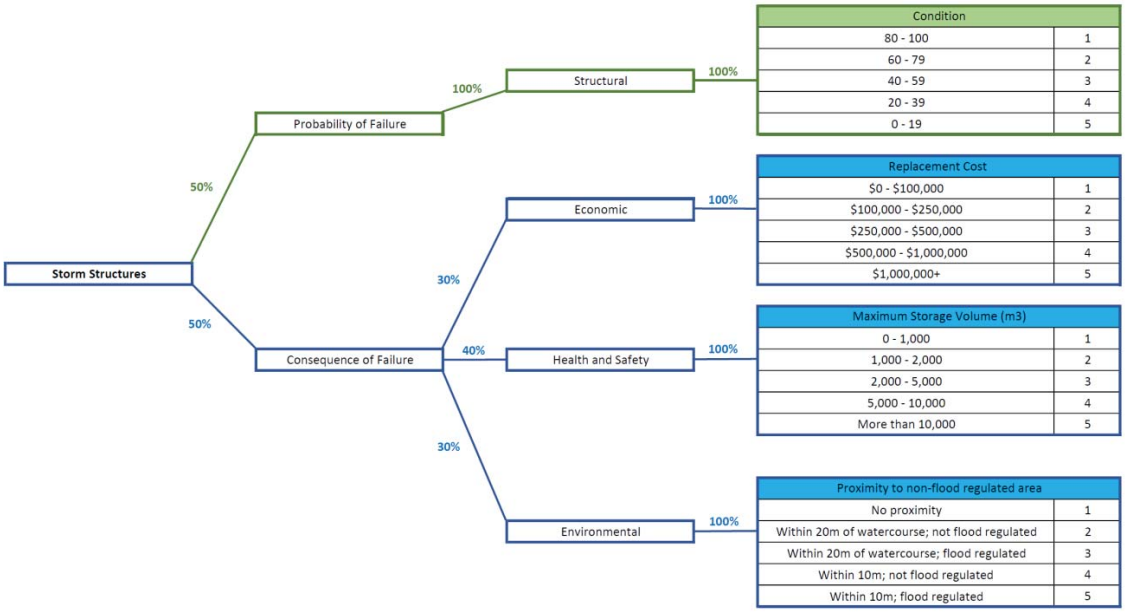


Figure 106 Storm Network Risk Rating Criteria

Storm Structures



Condition	
80 - 100	1
60 - 79	2
40 - 59	3
20 - 39	4
0 - 19	5

Replacement Cost	
$0 - $100,000	1
$100,000 - $250,000	2
$250,000 - $500,000	3
$500,000 - $1,000,000	4
$1,000,000+	5

Maximum Storage Volume (m3)	
0 - 1,000	1
1,000 - 2,000	2
2,000 - 5,000	3
5,000 - 10,000	4
More than 10,000	5

Proximity to non-flood regulated area	
No proximity	1
Within 20m of watercourse; not flood regulated	2
Within 20m of watercourse; flood regulated	3
Within 10m; not flood regulated	4
Within 10m; flood regulated	5

Figure 107 Storm Network (Structures) Risk Rating Criteria

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aurora.ca

Town of Aurora

Committee of the Whole Report

No. OPS24-016

Subject:	**Windrows Pilot Program Extension – Service Delivery Options**
Prepared by:	Luigi Colangelo, Manager of Public Works
Department:	Operational Services
Date:	July 2, 2024

Recommendation

1. **That Report No. OPS24-016 be received; and**
2. **That the continuation of the Windrow Removal Pilot Program for Seniors and Individuals with Disabilities for the 2024/2025 winter season, to be funded from the Tax Rate Stabilization reserve, be approved; and**
3. **That, if approved, direction be provided to staff on the service delivery models presented.**

Executive Summary

This report incorporates feedback from public engagement of the program participants for the 2023/2024 Windrow Removal Pilot Program for Seniors and Individuals with Disabilities and explores options to deliver the service with financial impacts:

- Town of Aurora adopted the 2023/2024 Windrow Removal Pilot Program as endorsed by Council in September 2023.
- Survey results indicate 96 per cent of the 460 respondents would like to see the Windrow Removal Pilot Program continue in the future.
- Service delivery to extend the Windrow Removal Pilot Program for one additional year based on three possible options.

Background

Town of Aurora adopted the 2023/2024 Windrow Removal Pilot Program as endorsed by Council in September 2023.

As stipulated by the Municipal Act, 2001, the Town of Aurora is entrusted with the responsibility of maintaining road and sidewalk networks to ensure the safety and accessibility of our community members. Recognizing the unique needs of seniors and individuals with disabilities, the Town approved the Windrow Removal Pilot Program in September 2023 to address the specific challenges seniors and individuals with disabilities encounter during winter weather conditions.

Staff reported back to Council in April 2024, with the recommendation to extend the Windrow Removal Pilot Program for one additional year as the 2023/2024 winter season was an unseasonably warm making it difficult winter season; therefore, not possible to gauge the total effect on Operational Services staff and other administrative support divisions. Not only is there a financial impact due to staff complement, but other operational impacts such as increased fuel consumption, vehicle maintenance etc. require evaluation. It is important to fully understand all factors to determine the viability and potential adoption of this program which can only be achieved by experiencing a more common winter weather season.

Analysis

Survey results indicate 96 per cent of the 460 respondents would like to see the Windrow Removal Pilot Program continue in the future.

Staff generated a survey to gauge continued interest and satisfaction with the Windrow Removal Pilot Program which was distributed to all 1,100 windrow participants. Operational Services received 460 responses. Demonstrated in Table 1 and Table 2 below, over 83 per cent of participants were satisfied with the program, and 96 per cent wanted to see the program continue in the future.

Table 1: Windrow Satisfaction Survey

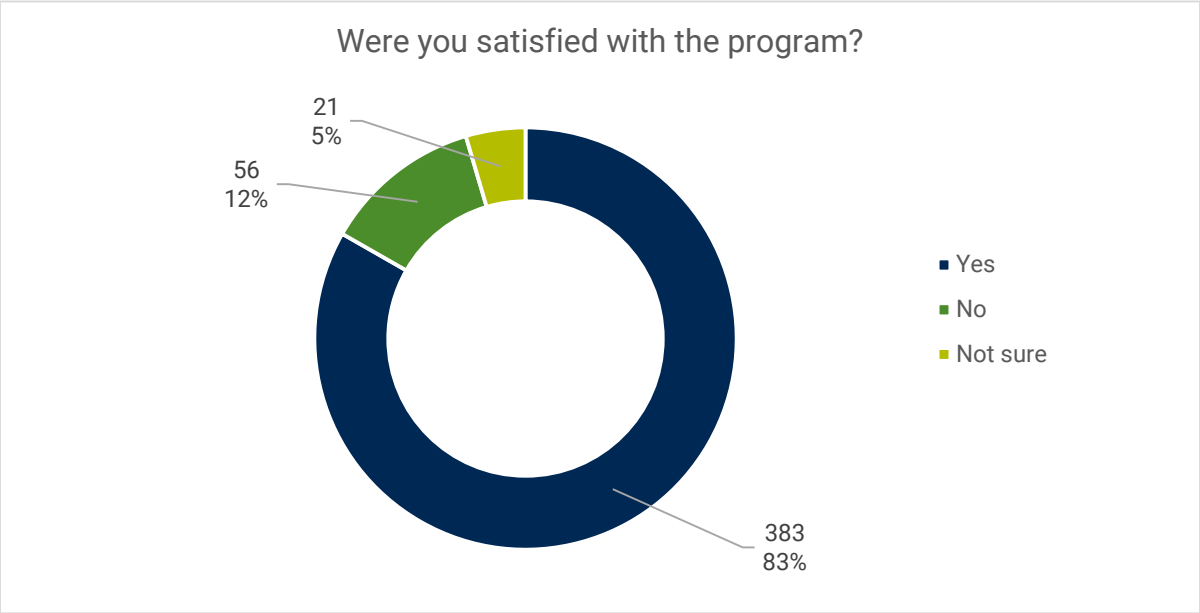
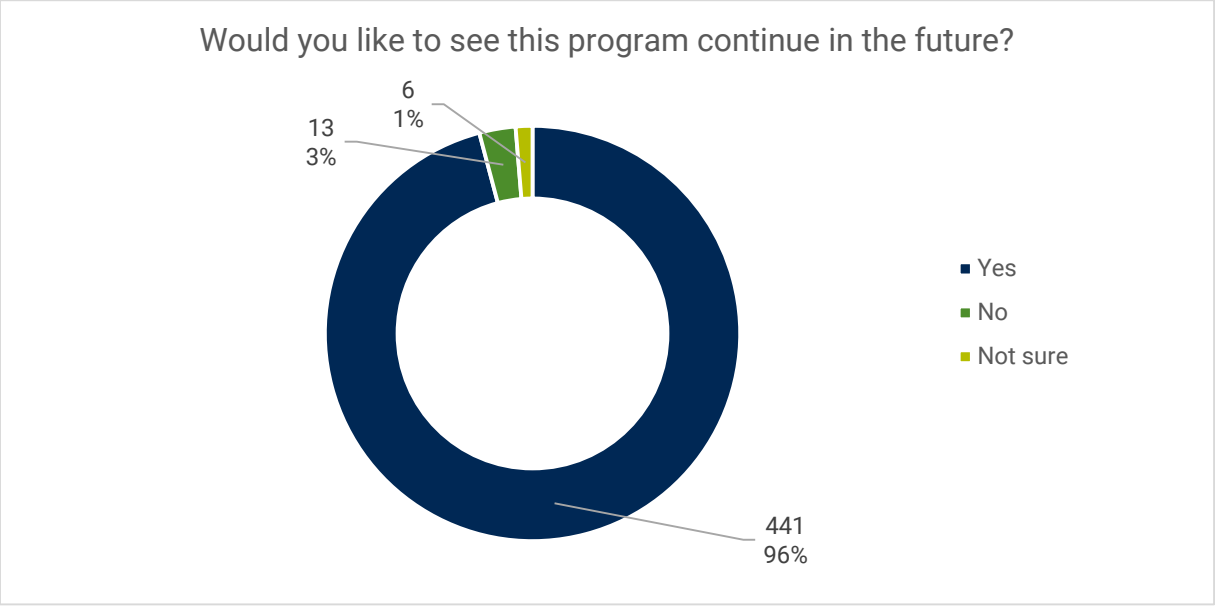


Table 2: Windrow Continuation



A majority of respondents indicated they would not participate in the program if there was a fee between $75-150 with 41 per cent not comfortable with paying any amount, and 56 per cent of respondents comfortable paying a mean of $70 annually.

Table 3: Windrow Satisfaction Survey

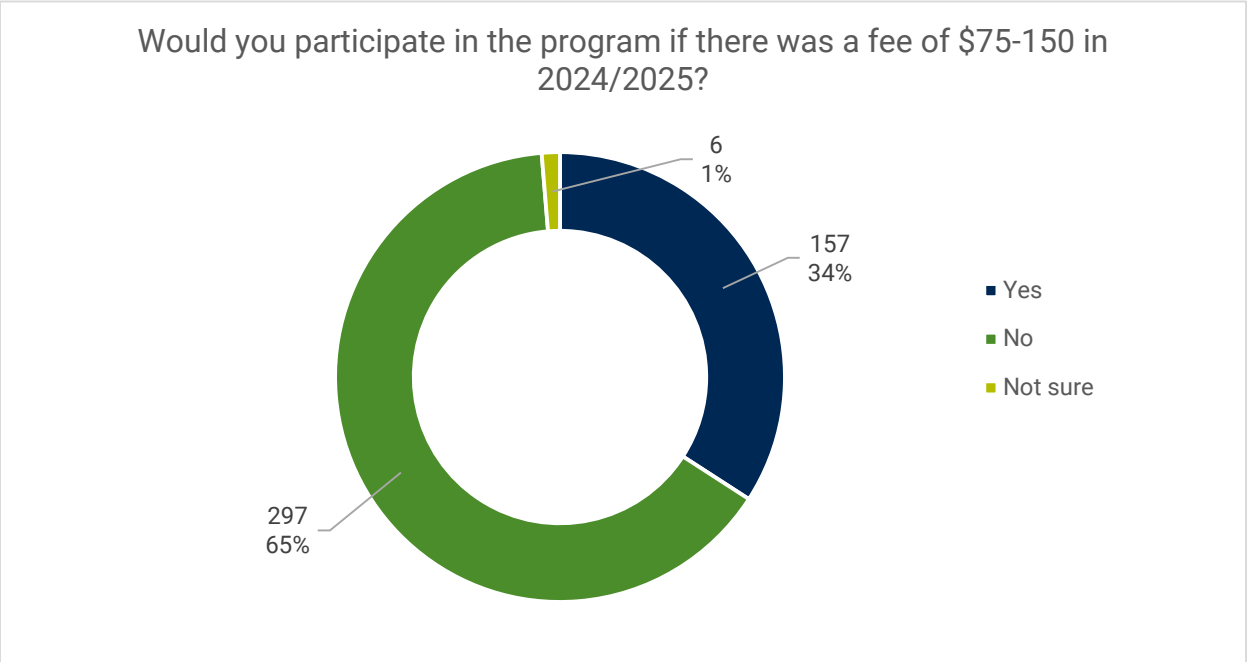
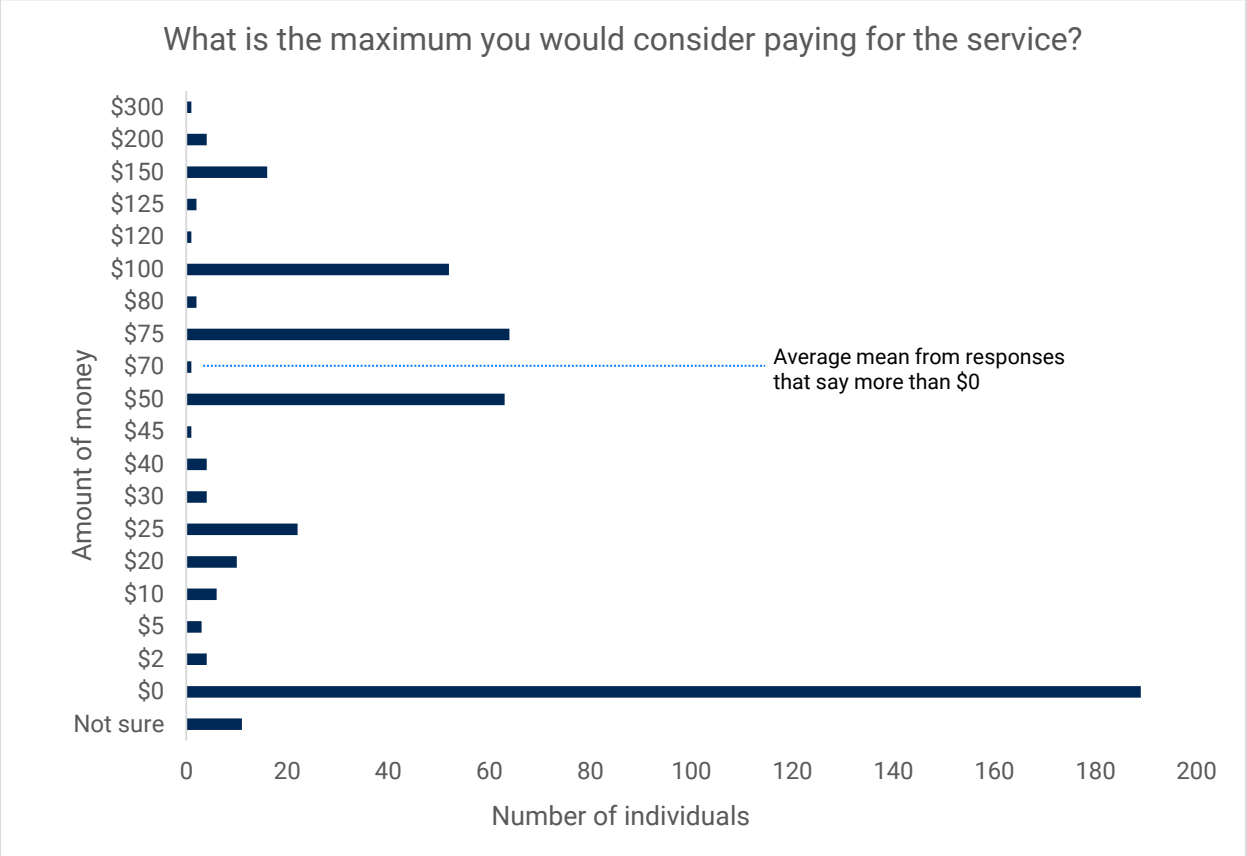


Table 4: Considered Cost by Participants



Service delivery to extend the Windrow Removal Pilot Program for one additional year based on three possible options.

Three potential service delivery methods as recommended by staff are options available to repeat the Windrow Removal Pilot Program for one additional year:

- Option A: Town staff can deliver the program internally with the hiring of six additional seasonal staff.
- Option B: the Town may procure a contractor to deliver the service on its behalf.
- Option C: the Town may implement a partial cost recovery rate to be applied to participants who enroll in the Windrow Pilot Program.

Option A would be a repeat of the service delivery method in 2023/2024. Under this method, the cost to deliver does include the added benefit of having staff on hand to conduct other duties whilst not performing windrow removals. Staff were actively involved in various essential parks maintenance tasks, including but not limited to:

- block pruning and municipal tree maintenance
- outdoor rink set up and ongoing maintenance
- park infrastructure repair and maintenance
- other duties in preparation of the summer outdoor maintenance season such as picnic table and waste receptacle restoration

Given the number of outdoor amenities/assets are annually increasing with new trails, parks and added outdoor temporary rinks, the addition of six seasonal staff were well utilized despite the lesser than predicted windrow removals. In 2023/2024 the cost to perform Option A resulted in a total amount of $253,000 or $230 per program participant household.

Option B would have the Town procure a contractor to perform windrow removal on its behalf. Recently staff released an RFQ for the service that requested costs, including clearance of windrows for different enrollment levels of participants e.g.: 700, 100, 1,500 etc. and all associated costs for vehicles/equipment, staffing and remediations. Based on a sample of 1,000 participants, costs are estimated to be $325,000 for the service, or at a sample of 1,500 participants at an estimated cost of $404,000. Under this model, a contractor would leave six vehicles or equipment at the Joint Operations Centre (JOC) similar to a sidewalk contractor. Operators would be on-call during snow events and a service standard of thirteen hours should be maintained as per the contractual agreement.

Option C is a cost recovery model, where the Town would either perform the service in-house, as described in Option A, or procure a contractor to deliver the service (Option B) with the adage that a cost-recovery charge be passed onto program participants. In this model, staff recommend a recovery charge of $100 per participating household, which could lower the overall cost to the Town.

In all three models, the eligibility criteria would remain the same, expecting between 1,000 and 1,500 total range of participants with understanding of more awareness of the program offering as a reason for a slight potential increase. Table 1 presents the estimated financial impacts of each option.

Table 1: Option financial comparison

Option	Estimated Net Cost to Town
Option A: Town staff program delivery	$253,000 (2023 cost based on 1,100 households)
Option B: Town contracted program delivery for 2024/2025	$325,000** (1,000 households) $404,000** (1,500 households)
Option C: Partial user cost recovery*	$143,000 (In-house service) $225,000 (Contracted based on 1,000 households) $254,000 (Contracted based on 1,500 households)

*Assumes a $100 cost recovery rate.

**Based on season 1 rates.

Advisory Committee Review

None.

Legal Considerations

Continued implementation of a windrow clearing program could lead to additional claims being made against the Town in relation to property damage or personal injury, which may have an impact on the Town's insurance premiums and the Town's insurance related budget lines. If a windrow clearing program is continued, waivers of liability should continue to be included in the application process to limit claims and potential damages.

Financial Implications

Should the continuation of the existing 2023/2024 Windrow Pilot Program be extended into the 2024/2025 winter season, the total estimated cost of this program is anticipated to be similar to the past season being $253,000. If an alternative service delivery model is selected, the pilot's total estimated cost will differ.

If approved, the 2024/2025 windrow pilot program's net operating costs would impact both the 2024 and 2025 operating budgets with roughly one third of that impact falling within 2024 and the remaining two thirds impacting 2025. It is recommended that these program costs continue to be funded from the Tax Rate Stabilization reserve.

Should this program become permanent, its ongoing net operating requirements would need to be addressed as an incremental burden on the tax levy in 2025 and 2026.

Communications Considerations

There are no communications considerations because of this report. But Communications will ensure that residents are aware of the decision of Council regarding if and how this pilot program will continue in the future and how to participate.

Climate Change Considerations

The recommendations have a minor impact on greenhouse gas emissions; however, when staff review future windrow clearings, green procurement will be considered as it plays an important roll mitigating the impacts of a changing climate, from air quality, stormwater management to counteracting the effects of the heat island.

Link to Strategic Plan

The Windrow Pilot Program supports the Strategic Plan goal of Strengthening the Fabric of our Community through its accomplishment in developing a plan to review and realign service levels to reflect current and future demographic trends.

Alternative(s) to the Recommendation

1. Council does not continue with the Windrow Removal Pilot Program going forward.

2. Other options ss directed by Council.

Conclusions

After surveying participants of the initial Windrow Removal Pilot Program, an overwhelming response of almost 42 per cent of all program participants was received. It is evident that most program participants were satisfied with the Pilot and would like to see the program continued in 2024/2025. As requested by Council, three options are presented for consideration, including repeating the in-house model, procuring a contractor to perform the service, a cost-recovery model, with the eligibility criteria remaining the same. Staff are seeking direction from Council on which model is preferred, if any, for the 2024/2025 winter snow removal season.

Attachments

None.

Previous Reports

OPS23-020, Potential Snow Windrow Removal Assistance Pilot Project, September 19, 2023

OPS24-004, Windrow Pilot Project-Update, April 2, 2024

OPS24-007, Windrow Pilot Project – Additional Information, April 23, 2024

Pre-submission Review

Agenda Management Team review on June 12, 2024.

Approvals

Approved by Sara Tienkamp, Director, Operational Services

Approved by Doug Nadorozny, Chief Administrative Officer

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Town of Aurora

Committee of the Whole Report

No. OPS24-018

Subject:	**Sidewalk Winter Maintenance – Service Delivery Review**
Prepared by:	Luigi Colangelo, Manager, Public Works
Department:	Operational Services
Date:	July 2, 2024

Recommendation

1. **That Report No. OPS24-018 be received; and**
2. **That staff increase the number of sidewalk routes from of eight to ten for the 2024/2025 winter season; and**
3. **That the length of individual sidewalk routes be reduced and maintained at approximately 25 kilometres to maintain current approved service level standards.**

Executive Summary

The purpose of this report is to provide Council with an update on the winter maintenance of sidewalks which involves the plowing and salting of all sidewalks, walkways and multi-use paths to reduce slip hazards, to provide safe passage for pedestrians during the winter months in support the Town of Aurora's Active Transportation Master Plan (ATMP):

- The Town of Aurora currently maintains over 252 kilometres of sidewalks, walkways and multi-use pathways on Town-owned and Regional road networks and strives to meet service levels set by Council.
- Despite a 25 per cent growth in the road and sidewalk network, the current resource complement of sidewalk machines or routes has not been updated in recent years.
- A review of municipal best practices indicates that Aurora's kilometres per sidewalk route exceeds those of other regional municipalities. Operational

Services added one additional sidewalk route in-house during the 2023/2024 winter season to determine if efficiencies could be created by shortening routes.

- Contracted winter sidewalk maintenance service provision supplemented by Town-owned equipment and staff affords the most flexibility in meeting the challenges inherent in the work.

Background

The Town of Aurora currently maintains over 252 kilometres of sidewalks, walkways and multi-use pathways on Town-owned and Regional road networks and strives to meet service levels set by Council.

The Town's 252 kilometre sidewalk network is divided into eight routes, seven of which are maintained by the Town's contractor and one route, introduced in 2023/2024, maintained by town staff and equipment. Aurora's sidewalk maintenance routes are divided into primary and secondary routes. The division of classification as identified in the Ontario Regulation 239/02: Minimum Maintenance Standards for Municipal Highways (MMS) filed under the *Municipal Act, 2001,* is that primary routes consist of sidewalks along arterial and collector roadways as well as school zones, including sidewalks along regional roads and secondary routes consist of lower volume local roads.

Aurora's approved service levels for sidewalks and multi-use pathways for winter maintenance is to plow all sidewalks within 24 hours of the end of a snowfall when accumulations reach five centimetres or more. This currently exceeds the requirements in the MMS standard which states that snow depths on sidewalks must be reduced to less than eight centimetres within 48 hours. The level of service targets approved by Council in 2014 are key defense tools in protecting the Town from claims related to winter sidewalk operations. Road and sidewalk winter management are high risk areas of operation for the Town. These risks are primarily related to personal injury claims. The purpose of establishing service levels and policies for these areas of risk is to mitigate the risks and reduce liability to the Town. To manage the Town's risk, its important to "say what you will do and do what you will say". When responding to a personal injury claim, one key defence is that the Town has clear and supportable policies and stated service levels in place and that those policies are being delivered to the service level targets.

Analysis

Despite a 25 per cent growth in the road and sidewalk network, the current resource complement of sidewalk machines or routes has not been updated in recent years.

The Town has experienced a 25 per cent increase in the length of sidewalks maintained over the past ten winter seasons (see Table 1). On average, the Town experiences, 45 to 50 winter maintenance events each season which require sidewalk plowing and salting. During an event, contracted staff are dispatched and often must return the next day for additional clean-up. Despite the substantial growth in the road and sidewalk network, the current resource complement of sidewalk machines or the number of sidewalk routes has not been updated in recent years. The Town's contractor has encountered numerous challenges in adhering to Council-approved service levels of plowing all sidewalks within 24 hours. The expanded and lengthy sidewalk routes have proven difficult to cover and excessively time-consuming within the designated timeframe. Ensuring sidewalks remain clear of snow and ice, especially along regional roads often require multiple passes, adding complexity and time to the sidewalk plowing process. In addition, there is little surplus flexibility. Despite these obstacles, efforts are ongoing to optimize operations to meet Council-approved service levels but continuing to operate in this manner, without additional sidewalk machines going forward, will prove problematic.

Table 1: Sidewalks Maintained and Number of Routes

Winter Season	Sidewalk Length (km)	Avg. Sidewalk Route Length (km)[1]	# of Plow Routes
2014-2015	201.74	33.62	6
2015-2016	206.53	34.42	6
2016-2017	213.14	35.52	6
2017-2018	226.38	37.73	6
2018-2019	235.67	39.27	6
2019-2020	238.68	34	7
2020-2021	249.22	35.6	7
2021-2022	249.89	35.6	7
2022-2023	250.91	35.8	7
2023-2024	252.69	31.6	*8

*Includes in-house route added this past winter

Aurora currently has 252 kilometres of sidewalk which does not include any new subdivisions that are to be assumed within the next five years. The Town's sidewalk network is anticipated to increase nine kilometres by 2029, as outlined in the Town's ATMP. This expansion addresses existing gaps and areas where sidewalks are currently absent, rather than being driven by new developments or regional sidewalk construction. When you consider both growth and the ATMP implementation, is expected that Aurora's total network of sidewalks will reach approximately 290 kilometres by 2029. This significant increase will directly impact sidewalk winter maintenance operations. To address the growing maintenance needs required to meet the current service levels, staff project the need to increase the number of sidewalk routes from the current eight routes to a total of ten routes to address the additional kilometres of sidewalks.

A review of municipal best practices indicates that Aurora's kilometres per sidewalk route exceeds those of other regional municipalities. Operational Services added one additional sidewalk route in-house during the 2023/2024 winter season to determine if efficiencies could be created by shortening routes.

In comparing Aurora's sidewalk winter maintenance efforts to those of neighbouring municipalities, it becomes clear that a consistent standard prevails across the Region. Each municipality is committed to clearing sidewalks within 24 hours following the end of a winter storm, ensuring safe pedestrian passage. This uniformity in service level highlights a collective dedication to public safety and efficient operational coordination.

Despite each municipality sharing the 24-hour service level, neighbouring municipalities maintain an average route length of 25 kilometres per route while the Town's average route length is 31.6 kilometres. Despite each municipality sharing the same 24-hour service level, neighbouring municipalities maintain an average route length of 25 kilometres per route while the Town's average route length is 31.6 kilometres.

By maintaining an average route length of 25 kilometres per route, these municipalities demonstrate a strategic and efficient approach to resource allocation. This balance of workload distribution and maximized coverage reflects a shared understanding of the importance of accessible, hazard-free sidewalks for community mobility and well-being. Increasing the number of routes to ten will change the average route length in Aurora to 25.3 kilometres/route.

Table 2: Neighbouring Municipalities Sidewalk Maintenance Operations

Municipality	Km Maintained	Number of Routes	Average Length
Newmarket	392 km	17	23 km/route
Bradford West Gwillimbury	150 km	6	25 km/route
East Gwillimbury	120 km	5	24 km/route
Township of King	118 km	6	20 km/route
City of Richmond Hill	750 km	25	30 km/route

During the 2023/2024 winter season, one winter sidewalk route was added utilizing existing Town staff and equipment to improve our sidewalk clearing operations. This initiative yielded significant benefits: decreased total route lengths from 36 kilometers to 31 kilometres on average/route, operator seat time reduced therefore less physical strain, reducing the risk of workplace injuries; response times improved, allowing staff to adapt more quickly to changing weather conditions; and equipment endured less wear and tear, potentially lowering maintenance costs over time.

This trial was also designed as a commitment to continuous improvement and proactive measures to address the challenges posed by winter weather conditions and the ability to enhance sidewalk service delivery utilizing existing Town resources.

Contracted winter sidewalk maintenance service provision, supplemented by Town-owned equipment and staff affords the most flexibility in meeting the challenges inherent in the work.

Similar to the winter roads contract service providers, the contracted sidewalk maintenance service provider must be available 24/7 on short notice, managing both equipment and personnel while complying with Ministry of Labour and Ministry of Transportation regulations. While the majority of winter sidewalk maintenance is conducted by a contract service, the Town supplements this service with its own equipment and staff, particularly during equipment breakdowns, severe storms, or specific maintenance needs.

Furthermore, this equipment serves other important needs in the operation associated with snow windrow removal including Yonge Street (and other streets in the downtown

core) as well as spring sidewalk sweeping throughout the entire municipality. Based on these needs, having this equipment in the Roads and Fleet Divisions continues to benefit overall operations.

Advisory Committee Review

None.

Legal Considerations

The Town has published service level standards and is legislatively mandated to maintain its sidewalks in a reasonable state of repair as set out in the MMS. The Town cannot abrogate this responsibility and may be liable for damages that any person may sustain, if the Town were to default on the prescribed obligations.

The MMS is a statutory defence to claims and deems roads and sidewalks to be a state of repair when the MMS is adhered to. To use this statutory defence, a municipality must be able to show through documentation that it met the standards prescribed in the MMS. It would be difficult to avoid liability in a case where the failure to meet the MMS had contributed to an incident. Consequently, should the Town conduct maintenance that falls below the MMS standard, it is expected that it would lead to an increase in claims, financial liabilities and insurance premiums. The recommendations brought forward by this report aim to maintain the service standards at a level that would continue to meet or exceed the MMS.

Financial Implications

The Town's current sidewalk winter maintenance contract costs total approximately $493,900 per year including unrecoverable taxes for its present seven routes. The eighth route is provided 'in house' by Town staff at an estimated cost of approximately $55,000 not including fuel/maintenance/sod repairs.

If staff's recommendation for two additional contracted routes is approved, this would result in a budget pressure of $120,000 to increase the contract.

If the Town proceeds with the two additional routes, it is recommended that the $120,000 budget pressure be funded from the Tax Rate Stabilization reserve for the 2024/2025 winter season. The 2025/2026 winter season's incremental costs would

then become a tax levy pressure that would be phased in over the 2025 and 2026 Operating budgets.

Communications Considerations

There are no communications considerations as a result of this report.

Climate Change Considerations

The key opportunity in developing the Green Fleet Plan (GFP) in 2021 was to achieve long-term GHG emissions targets, in conjunction with fundamental goals developed and the associated action items.

The following actions from GFP play a role in climate change mitigation:

- Replace vehicles with best in-class fuel efficient vehicles. New models are more fuel efficient, produce lower emissions and are good options while the manufacturers develop viable hybrid/electric vehicles required to provide service. Overall, GHG reduction, by upgrading alone, through capital renewal can produce 4-5 percent decrease.
- Utilize telematic information provided through GPS system to reduce idling, driver behaviour.

Link to Strategic Plan

Sidewalk winter maintenance service delivery review supports the Strategic Plan goal of Strengthening the Fabric of our Community through its accomplishment in developing a plan to review and realign service levels to reflect current and future demographic trends.

Alternative(s) to the Recommendation

1. Council could consider recommending alternative service levels or service provision methods and have staff report back on these alternatives.

2. Other options as directed by Council.

Conclusions

The sidewalk winter maintenance service delivery review highlights areas for improvement to enhance the quality and reliability of sidewalk winter maintenance services. By implementing the recommendations outlined in the report, the Town can optimize resource allocation, improve levels of service and deliver more effective and efficient snow removal services, ultimately reducing the Town's liability and ensuring safer pedestrian mobility during the winter months.

Attachments

None.

Previous Reports

IES14, 047, Service Level Review for Winter Maintenance and Revised Policies, September 2, 2014

Pre-submission Review

Agenda Management Team review on June 12, 2024.

Approvals

Approved by Sara Tienkamp, Director, Operational Services

Approved by Doug Nadorozny, Chief Administrative Officer

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Town of Aurora

Committee of the Whole Report

No. PDS24-079

Subject:	**Natural Capital Asset Management Plan**
Prepared by:	**Natalie Kehle, Energy and Climate Change Analyst**
Department:	Planning and Development Services
Date:	July 2, 2024

Recommendation

1. **That Report No. PDS24-079 be received; and**
2. **That Council adopt and approve the draft Natural Capital Asset Management Plan, including all proposed levels of service therein.**

Executive Summary

The Natural Capital Asset Management Plan (NCAMP) represents an important step forward towards the continued protection and conservation of the Town's natural areas. Natural ecological areas within Aurora provide numerous benefits that have economic, environmental, and societal value. These areas of natural capital provide benefits such as clean water supply, natural filtration of contaminants, water flow stabilization, greenhouse gas mitigation and climate resiliency, erosion control, nutrient cycling, habitat, recreation, health benefits and cultural pursuits. The NCAMP takes on a long-term outlook in the sustainability of Town-owned natural assets by incorporating them into existing asset management planning processes.

- The NCAMP was developed through consultation with Town staff and stakeholders and followed municipal best practices for natural capital asset management.
- The NCAMP fulfills the requirements under O. Reg. 588/17 through the inclusion of Town-owned green infrastructure into municipal asset management planning and aligns with the Town's Corporate Asset Management Plan (AMP).

- The NCAMP outlines the requirements for the sustainable delivery of services over the planning periods of 10 years and 25 years.
- NCAMP review and monitoring follow O. Reg. 588/17 with a 5-year plan update and annual review.

The final draft NCAMP is provided in Attachment 1.

Background

In 2013, the Town conducted an initial baseline estimate of the benefits provided from the existing stock of natural capital in the Town through The Economic Value of Natural Capital Assets. The report focused on the economic valuation which was based on estimated land areas, asset categories and economic values from several data sources.

In 2017, Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure (O. Reg. 588/17), was filed under the *Infrastructure for Jobs and Prosperity Act, 2015,* S.O. 2015, c. 15, to support municipalities in asset management and planning. O. Reg. 588/17 facilitates asset management best practices by providing a degree of consistency to asset management plans and leveraging asset management planning to optimize infrastructure investment decisions.

With the introduction of O. Reg. 588/17, Ontario became the first province in Canada to regulate asset management planning at the municipal level. In accordance with the regulation, municipalities are required to inventory, value, and integrate green infrastructure, including natural infrastructure and by extension natural assets, into their asset management planning when these assets are directly owned by the municipality.

On June 7th, 2022, the Town Council directed staff to undertake a study of the Town's natural capital assets that established the economic value of the Town-owned natural capital assets and that aligned with the Asset Management Planning for Municipal Infrastructure, O. Reg. 588/17.

Analysis

The NCAMP was developed through consultation with Town staff and stakeholders and followed municipal best practices for natural capital asset management.

Town staff and stakeholders that were consulted throughout the development of this plan included: Operational Services, Engineering & Capital Delivery and Financial

Management Services. The Environmental Advisory Committee was introduced to the project at the initiation stage, and presented with the draft plan to obtain their feedback.

The NCAMP fulfills the requirements under O. Reg. 588/17 through the inclusion of Town-owned green infrastructure into municipal asset management planning and aligns with the Town's Corporate Asset Management Plan (AMP).

The definition of what constitutes a municipal infrastructure asset for the purpose of O. Reg. 588/17 includes "green infrastructure", which is defined in the regulation as an:

infrastructure asset consisting of natural or human-made elements that provide ecological and hydrological functions and processes and includes natural heritage features and systems, street trees, urban forests, etc.

Although stormwater infrastructure and trails are considered a natural asset, they have not been included under the NCAMP as they are captured in the corporate AMP. The assets included in this plan are listed in Table 1.

Table 1 Natural Assets included in the NCAMP

Asset Category	Asset Class	Description
Natural Area Assets	Forest and open space	Forested, naturalized or un-mowed open spaces
	Wetland	Area where water covers the soil or is present either at or near the surface of the soil all year or for periods of time during the year. Includes swamp and marsh areas
	Waterbody	Area submerged under a significant accumulation of water
	Watercourse	A defined channel, with a bed, bank or sides, in which a flow of water regularly or continuously occurs
Natural Enhanced Assets	Community Gardens	Sets of raised garden plots where residents can grow plants
	Pet Cemetery	Forested area with manicured sections containing headstones and paths (under restoration)
	Urban Park	Manicured grassy areas
	Urban Tress	Town-owned street trees and park trees. Excludes trees in forests and open spaces

The NCAMP outlines the requirements for the sustainable delivery of services over the planning periods of 10 years and 25 years.

The NCAMP is a compilation of four key sections that include the following:

State of Infrastructure: Summarizes the inventory, valuation, condition, and remaining life of the assets in the inventory by service and asset type. Overall, 86% of the Town's natural assets are in Good or Very Good condition.

Levels of Service (LOS): Documents LOS performance indicators and targets, presents current performance, and discusses the future performance outlook. Formal targets have not been established for most of the LOS. Instead, the metrics will be monitored to track year-to-year changes, and to observe their relationship with community satisfaction and operational and capital costs.

Asset Management Strategy: Identifies risks to natural assets, including climate risk, recommends mitigation actions, and identifies strategies to mitigate risk while providing the required LOS. The following three asset management strategies (scenarios) were considered in the analysis and are detailed in Table 2:

- Scenario A Status Quo includes monitoring and maintenance of natural enhanced assets, but very little for natural area assets.
- Scenario B increases rehabilitation, monitoring and maintenance for natural area assets.
- Scenario C is similar to Scenario B, but includes funds for more aggressive rehabilitation, monitoring and maintenance for natural area assets.

Table 2 Comparison of Lifecycle Activities for Scenarios A, B and C from 2025-2049

Lifecycle Activities	Scenario A Status Quo	Scenario B Moderate	Scenario C High
Condition Assessment Assets: Forests, open spaces and wetlands (percent of total natural area covered)	0	17% per year for the first 6 years, 10% per year thereafter	20% per year for the first 5 years, 10% per year thereafter
Condition Assessment Assets: All streams (frequency of assessment)	Every 10 years for all Scenarios		
Condition Assessment Assets: Urban park trees and street trees (frequency of assessment)	Every 10 years for all Scenarios		
Net new trees planted by the Town Assets: Urban park trees and street trees (over a 25 year period)	1,500 trees	2,000 trees	4,000 trees
Net new trees planted through continued partnerships Assets: all natural areas (over a 25 year period)	11,125 trees for all Scenarios		
Replacement of dead/ dying trees Assets: Urban park trees and street trees (over 25 year period)	6,000 trees (82% of the forecasted need)*	7,000 trees (95% of the forecasted need)*	7,375 trees (100% of the forecasted need)*
Invasive Species Control Assets: forests, open spaces, and wetlands	2% of total natural areas	13% of total natural areas	45% of total natural areas
Targeted seeding and planting Assets: forests, open spaces and wetlands (based on condition assessment outcomes)	1% of total natural areas	2.4% of total natural areas	4.8% of total natural areas
Stream Management Master Plan Update in 2029 and 2039	Included in all Scenarios		
Urban Forest Study Update in 2034 and 2044	Included in all Scenarios		
Tree Inventory Update in 2025, 2035 and 2045	Included in all Scenarios		

* Percent of need is the number of trees replaced under the scenario compared to the estimated forecasted replacement requirements (based on age and/ or condition of the trees).

Financing Strategy: Provides financial analysis for each scenario to identify renewal needs over a planning horizon of 10 and 25 years. Table 3 summarizes the costs of each scenario.

As the Status Quo scenario, Scenario A represents the anticipated annual funding available, and is used to calculate the funding gap, or additional funding needed, for Scenarios B and C. The table shows that an average of $320,000 per year additional funding would be needed for Scenarios B and $700,00 per year additional funding would be needed for Scenarios C.

Table 3 Comparison of 10-Year and 25-Year Costs* for Scenarios A, B and C

	10-Year Cost Comparison			25-Year Cost Comparison**		
	Scenario A Status Quo	Scenario B Moderate	Scenario C High	Scenario A Status Quo	Scenario B Moderate	Scenario C High
Total Cost	$20,000,000	**$23,200,000**	$27,000,000	$37,900,000	**$45,700,000**	$57,900,000
Average Annual Cost ($ per year)	$2,000,000	**$2,320,000**	$2,700,000	$1,500,000	**$1,800,000**	$2,300,000
Anticipated Annual Average Funding ($ per year)	$2,000,000	**$2,000,000**	$2,000,000	$1,500,000	**$1,500,000**	$1,500,000
Average Annual Gap ($ per year)	-	**$320,000**	$710,000	-	**$310,000**	$800,000
Average Annual Gap (% increase from Status Quo)	-	**+16%**	+35%	-	**+21%**	+53%

*Costs in 2024 dollars and rounded

**It is anticipated that 25-year costs of all Scenarios are under-estimated because rehabilitation and restoration are not known and require condition assessments to be identified in the short term.

It is recommended that the Town proceed with Scenario B, because it includes a moderate program of condition assessment, which will enable the Town to determine whether asset lifecycle activities should be reduced or expanded in the future.

To fund Scenario B, the Town may:

- Seek additional revenues through taxation or grants.
- Re-allocate funds from other programs (this may result in reduced levels of service in other programs).

Next Steps and Continuous Improvement: The NCAMP summarizes the next steps including improving future iterations of the NCAMP and monitoring the NCAMP implementation progress. Key recommendations include:

- Developing and implement a condition assessment strategy for all natural asset classes. As part of strategy, establish condition scoring criteria.
- Establishing land classifications that will be applied consistently to assets in all Town documents, including the Corporate AMP and the Parks and Recreation Master Plan.
- Continuing the initiative to implement a computerized work order management system, which will be used to track maintenance and repair activities and costs.
- Implementing procedures to update the Town land inventory, with appropriate notifications on new park openings or Town acquisitions of natural assets.
- Building on the initial risk assessment for natural assets to further inform and prioritize risk mitigation actions.

It is also recommended that the Town continue or expand its existing strategies to support Town's natural asset services, including the following:

- Continuing to seek alternative ways to increase natural area asset capacity for its residents, for example, through maintenance agreements with external parties similar to the Town's existing agreements with the Duck's Unlimited property and Sheppard's Bush Conservation Area.
- Remaining open to opportunities to re-purpose existing properties or to acquire natural areas that become available.
- Maintaining existing partnerships with organizations that fund planting of trees in natural areas and seek additional partnership opportunities.
- Continuing the volunteer program for removal of invasive plant species on Town lands while considering expanding.

Plan review and monitoring follow O. Reg. 588/17 with a 5-year plan update and annual review.

The NCAMP is to be updated every five years to ensure it reports an updated snapshot of the Town's asset portfolio and its associated value, age, and condition. It will ensure that the Town has an updated 10-year outlook including service levels, costs of the associated lifecycle strategies and an assessment of any funding shortfalls.

As per O. Reg. 588/17, the Town will conduct an annual review of its progress in implementing this Plan and will discuss strategies to address any factors impeding its implementation. This will be aligned with the reporting undertaken for the Corporate AMP.

Advisory Committee Review

Report No. PDS24-025 and consultant presentation introducing the project was brought forth at the Environmental Advisory Committee (EAC) meeting on February 26th, 2024. Report No. PDS24-075 and consultant presentation of the draft NCAMP was brought forth at the EAC meeting on June 17th, 2024. The EAC is in support of the proposed plan and recommendations.

Table 3 lists the EAC comments and considerations into the NCAMP.

Table 3: EAC Comment Summary

Comments	Responses
Concerns that Scenario A (status quo) would create a situation that would be more costly to rehabilitate in the long run.	Comment received.
The need to address and increase natural asset resiliency to climate change impacts.	The NCAMP addresses these concerns and increases climate resiliency of the Town and its natural assets.
The Town should increase its tree canopy to mitigate impacts of heat island effect (heat domes) similar to what's is being measured in Montreal.	Comment received, the Town has recently adopted a 40% tree canopy as a community.
Scenario C is ideal but Scenario B (moderate) is a reasonable path.	Comment received.
Future NCAMP revisions should consider quantifying the carbon sequestration of the natural assets into the plan.	Future NCAMP revisions will consider quantifying carbon sequestration values for the natural assets. Values were estimated under the 2024 Urban Forest Study for the community, but its an evolving science.
How does the Town compare to other jurisdictions in terms of NCAMPs.	With the 2013 Town report *The Economic Value of Natural Capital*, and the development of the NCAMP,

Comments	Responses
	Aurora is well positioned compared to similar jurisdictions in integrating natural assets into its strategic planning process.
Consideration for the next NCAMP to include a gold standard target, and what that would look like. Either a Benchmark or target from other jurisdictions	Comment received and will be considered for the next NCAMP revision.
If risk is considered a linear or exponential relationship if not mitigated, and if there were any high risks identified in the plan.	Risk analysis in the area of natural capital assets is relatively new and ever evolving. Climate change risks can have a cascading impact if not mitigated, making it exponentially harder and more costly to address over time. No high risks were identified through the NCAMP, which would require immediate actions, only medium-high risks. The Scenarios B and C address those identified risks.
Considering the growth expected in Aurora, the Town could add a development charge for natural assets, considering the service value of natural assets in the community, and their economic value.	Comments received and will be considered with staff.
The Town's 2013 report *the Economic Valuation of Natural Capital* was a forward thinking document that went dormant for 10 years. The Status Quo of the NCAMP shows that the Town is not currently doing enough to protect and enhance its natural resources.	Though the NCAMP identified areas of improvement for integrating natural capital into the Town's assets planning process, others were shown to be well managed and protected, like urban trees and streams. Through the NCAMP, the 2024 Urban Forest Study and other recent strategic plans, Town staff are reviewing policy tools to better support, protect and enhance the Town's natural capital.
Will Scenario B make the Town resilient to Climate Change?	Scenarios B and C more aggressively address rehabilitation, monitoring and maintenance for natural area assets, thus increasing the resiliency.
Overall Committee support towards the NCAMP and support for the Scenario B being proposed in the plan going forward.	Comment received.
Will stewardship plans be included under the NCAMP?	The NCAMP includes asset management strategies for natural areas, including restoration, renewal, maintenance and condition assessment, while also managing risk and financial implications.

Legal Considerations

O. Reg. 588/17 requires all municipalities in Ontario to have a comprehensive asset management plan that identifies current LOS in place for all municipal infrastructure assets by July 1st, 2024, and a plan that includes proposed LOS by July 1st, 2025.

Financial Implications

Should the recommended Scenario B and its proposed levels of service be endorsed, this plan's total cost is estimated to be $23.2 and 45.7 million over the next 10 and 25 years, respectively. It is estimated that this scenario will result in an average annual funding gap of $320,000, which represents an equivalent tax rate increase of 0.52 percent that may be phased-in over a defined period. Staff will strive to minimize the financial impact of this plan by pursuing grant revenue opportunities.

Finance will present to Council in the fall, a comprehensive funding strategy which will consider both the Asset Management Plan and Natural Capital Asset Management Plan identified funding requirements.

Communications Considerations

In accordance with the requirements of O. Reg. 588/17, the NCAMP will be posted on the Town's website, along with related background documents for the public to access.

Climate Change Considerations

The NCAMP protects and enhances natural assets which play an important role in carbon sequestration, the process of capturing and absorbing greenhouse gas emissions (GHG) from our atmosphere. Most healthy forests have a positive carbon balance - they absorb more GHGs from the atmosphere than they emit. However, when a severe natural disturbance occurs (e.g. insects, wildfire, etc.) that causes trees to die, they shift from being a carbon sink to a carbon source. Many forested areas across Ontario have been impacted by these types of natural disturbances as well as disturbances related to human activity (e.g. mining, development, road construction, etc.).

The NCAMP increases the Town's climate resiliency, by protecting and enhancing the Town's natural assets. Natural assets are seen as effective solutions to deal with certain infrastructure and climate change related challenges and provide many benefits including reduction of urban heat island effects, flood and erosion risk reduction, with a changing climate. The recommendations outlined in the NCAMP improve the Town's ability to adapt to a changing climate through the protection and enhancement of the Town's natural capital, an essential solution to climate change.

Link to Strategic Plan

This plan supports the Strategic Plan goal of supporting environmental stewardship and sustainability through the promotion and advancement green initiatives and the encouragement of stewardship of Aurora's natural resources.

Alternative(s) to the Recommendation

None.

Conclusions

Natural assets in the Town are fundamental to social, economic, public, and environmental health, and the resilience of the Town to climate change, urbanization, and invasive stressors. The value of the services they provide increases exponentially as natural assets grow and thrive.

Natural capital assets are becoming more at risk of endangerment and identified as key assets in mitigating climate change and adaptation plans.

The NCAMP creates a roadmap to achieving a sustained long-term funding stream for supporting the Town's natural capital and improving the management of the asset. Outcomes from the plan support divisional efforts in the conservation and protection of the Town's natural assets through municipal best practices and meet the Town's requirements under O. Reg. 588/17.

Attachments

Attachment 1 – Final Draft Natural Capital Asset Management Plan (NCAMP)

Attachment 2 – NCAMP Presentation Slides

Previous Reports

None

Pre-submission Review

Agenda Management Team review on June 12, 2024

Approvals

Approved by Marco Ramunno, Director, Planning and Development Services

Approved by Doug Nadorozny, Chief Administrative Officer

Natural Capital Asset Management Plan

Final Report
Rev. 5

June 5, 2024

Prepared by SLBC Inc.
and Green Analytics

EXECUTIVE SUMMARY

Introduction

This Natural Capital Asset Management Plan (NCAMP) communicates the requirements for the sustainable delivery of services through management of natural assets, compliance with regulatory requirements, and required funding to provide the appropriate Levels of Service (LOS) over the planning periods of 10 years and 25 years.

Inventory

The Town's natural assets have an estimated replacement value of **$237.5 million**. Table ES-1 provides a breakdown of the inventory and replacement value by asset type. Replacement values for natural area assets were estimated based on average restoration costs per hectare, and do not include the cost of land. The inventory includes natural assets are owned by the Town or managed by the Town under a formal agreement. Privately owned assets are excluded.

Table ES 1 Replacement Value of Natural Assets

Asset Category	Asset Class	Quantity	Replacement Value [a]	
			2024 ($M)	% of Total
Natural Area Assets	Forest and open space	350.6 hectares [b]	63.0 [b]	26.5%
	Waterbody	6.3 hectares	N/A [c]	N/A [b]
	Watercourse	36.9 km [d]	62.8 [d]	26.4%
	Wetland	78.3 hectares	19.4	8.2%
Natural Enhanced Assets	Community Gardens	2 locations with 52 plots each	0.45	0.2%
	Pet Cemetery	6.4 hectares	0.3	0.1%
	Urban Parks	125.4 hectares [e]	25.1 [e]	10.6%
	Urban Trees	26,435 street and park trees	66.4	28.0%
TOTAL			**237.5**	**100%**

[a] See Appendix B for a summary of unit cost assumptions. Replacement Values do not include land values.

[b] Includes Sheppard's Bush Conservation Area and Ducks Unlimited property, which the Town maintains in exchange for public access.

[c] For waterbodies, there is no standard restoration unit cost available. As an asset management improvement, Town to explore what types of restoration will most likely be needed for its waterbodies how much those would cost.

[d] Includes watercourse segments that traverse Town-owned property.

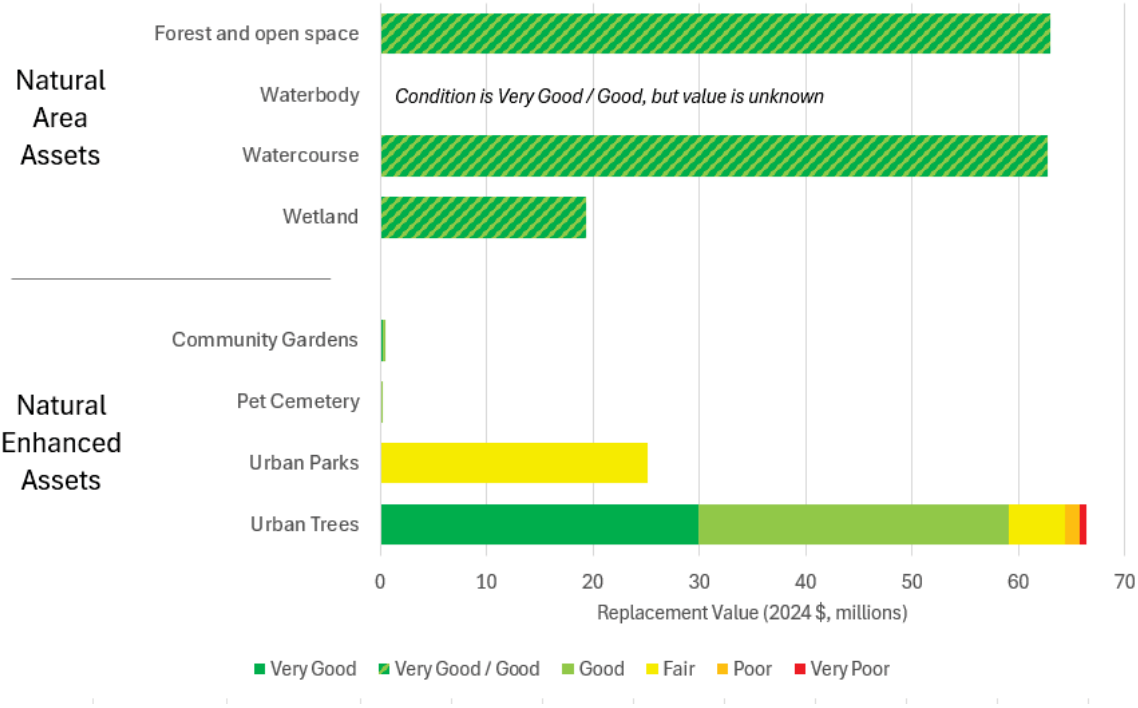
[e] Includes manicured grassy areas in Town-owned parks. Excludes naturalized areas (which are included in forest and open space) and building footprints.

State of Infrastructure

Overall, 86% of the Town's natural assets are in Good or Very Good condition and 13% are in Fair condition. One per cent (1%) are in Poor condition, meaning that they will soon require replacement, and 0.3% are in Very Poor condition, meaning that they are due or overdue for replacement.

Figure ES-1 shows the condition distribution of the Town's natural assets by asset class. The figure shows that the assets in Poor and Very Poor condition are urban trees.

Figure ES-1 Condition Distribution of Natural Assets



Levels of Service

The NCAMP presents Levels of Service (LOS) related to capacity, function and reliability of natural assets. Formal targets have not been established for most of the LOS. Instead, the metrics will be monitored to track year-to-year changes, and to observe their relationship with community satisfaction and operational costs.

In general, it is expected that due to land constraints and high land costs, the Town may not be able to expand its natural area assets, urban parks, community gardens and trails to keep up with population growth. As such, the capacity LOS for these assets will decrease, meaning that more people will share use of these assets.

For other LOS, the Town has more options, for example, as related to planting of new and replacement urban trees per year, and investment in control of invasive species.

Asset Management Strategy

The following three asset management strategies (scenarios) were compared:

- Scenario A: Status Quo
- Scenario B: Status Quo with Moderate Rehabilitation, Monitoring and Maintenance
- Scenario C: Status Quo with High Rehabilitation, Monitoring and Maintenance

Asset lifecycle activities included in each Scenario over the 25-year planning period are shown in Table ES-2.

Table ES-2 Comparison of Lifecycle Activities for Scenarios A, B and C

Lifecycle Activities Completed 2025-2049	Scenario A Status Quo	Scenario B Moderate	Scenario C High
Construct and Secure			
Net New Urban Trees Planted	1,500 trees 60 trees / year	**2,000 trees** **80 trees / year**	4000 trees 160 trees / year
Rehab and Restore			
Dead and Dying Urban Trees Replaced	6,000 trees (82% of need)*	**7,000 trees** **(95% of need)***	7,375 trees (100% of need)*
Invasive Species Control (hectares treated)	8.3 ha (2% of area)**	**53.6 ha** (13% of area)**	193.0 ha (45% of area)**
Targeted Seeding and Planting (hectares treated)	2.4 ha (1% of area)**	**10.3 ha** **(2.4% of area)****	20.4 ha (4.8% of area)**
Stream Rehabilitation projects completed	5 projects	**5 projects**	5 projects
Monitor and Maintain			
Condition Assessment (hectares assessed)	0	**1,243.7 ha**	1,286.6 ha
Tree Maintenance Increases with Net New Trees	Yes	**Yes**	Yes
Urban Park Maintenance	Same as current	**Same as current**	Same as current
Plan and Design			
Stream Management Master Plan Updated in 2029	Yes	**Yes**	Yes
Urban Forest Study Updated in 2034	Yes	**Yes**	Yes
Tree Inventory Updated in 2025	Yes	**Yes**	Yes

* Percent of need is determined based on the cumulative number of trees replaced by the scenario compared to the forecasted replacement need estimated in Section 4.2.4.

** Percent of area is determined based on the total area of Town-owned natural area assets.

Financial Strategy

Table ES-3 summarizes the costs of each scenario, and shows that 10-year costs range from $20.0 million for Scenario A (Status Quo) to $27.1 million for Scenario C (High), while the 25-year costs range from $37.9 million for Scenario A to $57.9 million for Scenario C. It is anticipated that 25-year costs of all Scenarios are under-estimated, because rehabilitation and restoration are not known and require condition assessments to be identified.

As the Status Quo scenario, Scenario A represents the anticipated annual funding available, and is used to calculate the funding gap, or additional funding needed, for Scenarios B and C. The table shows that an average of $0.3 million/year additional funding would be needed for Scenarios B and $0.7 million/year additional funding would be needed for Scenarios C.

Table ES-3 Comparison of 10-Year and 25-Year Costs for Scenarios A, B and C

	10-Year Cost Comparison			25-Year Cost Comparison		
	Scenario A	Scenario B	Scenario C	Scenario A	Scenario B	Scenario C
Total Cost (2024 $, millions)	$20.0	**$23.1**	$27.1	$37.9	**$45.7**	$57.9
Average Annual Cost (2024 $, millions/year)	$2.0	**$2.3**	$2.7	$1.5	**$1.8**	$2.3
Anticipated Annual Average Funding (2024 $, millions/year)	$2.0	**$2.0**	$2.0	$1.5	**$1.5**	$1.5
Average Annual Gap* (2024 $, millions/year)	--	**$0.3**	$0.7	--	**$0.3**	$0.8

* Differences due to rounding

It is recommended that the Town proceed with Scenario B, because it includes a moderate program of condition assessment, which will enable the Town to determine whether asset lifecycle activities should be reduced or expanded in the future. If Scenario B is adopted, the Proposed LOS are as listed in Table 5-9 (in main body of report).

To fund Scenario B, the Town may:

- Seek additional revenues through taxation or grants
- Re-allocate funds from other programs (this may result in reduced levels of service in other programs).

It is also recommended that the Town continue or expand its existing strategies to support Town's natural asset services, including the following:

- Continue to seek alternative ways to increase natural area asset capacity for its residents, for example, through maintenance agreements with external parties similar to the Town's existing agreements for use of the Duck's Unlimited property and Sheppard's Bush Conservation Area.

- Remain open to opportunities to re-purpose existing properties or to acquire natural areas that become available.
- Maintain existing partnerships with organizations that fund planting of trees in natural areas and seek additional partnership opportunities.
- Continue volunteer program for removal of invasive plant species on Town lands. Consider expanding.

The Town may also consider offering sponsorship opportunities wherein community organizations may pay for natural asset maintenance costs in exchange for acknowledgement signage.

Plan Monitoring and Improvement

Per O.Reg. 588/17, the Town will conduct an annual review of its progress in implementing this NCAMP and will update this NCAMP after at most 5 years.

The Town is committed to continually improving how assets are managed and how services are delivered. Development of asset management plans is an iterative process that includes improving data, processes, systems, staff skills, and organizational culture over time. Key recommendations include:

- Data
  - Develop and implement a condition assessment strategy for all natural asset classes. As part of strategy, establish condition scoring criteria.
  - Enhance the accuracy and precision of Geographic Information System (GIS) data to enable a comprehensive and nuanced understanding of natural capital assets.
  - Establish land classifications that will be applied consistently to assets in all Town documents, including the NCAMP, the Corporate AMP and the Parks and Recreation Master Plan.
- Technology
  - Continue the initiative to implement a computerized work order management system, which will be used to track maintenance and repair activities and costs at an asset level. This information can be used to improve future needs forecasting and budgeting.
- Processes
  - Establish processes to keep tree data current as trees are replaced or maintained.
  - Implement procedures to ensure that the Town land inventory is current, with appropriate notifications on new park openings or Town acquisitions of natural assets.
  - Monitor LOS performance relative customer input and cost to inform future target setting.
  - Use Town-wide tree targets to guide development of Town-owned tree targets
  - Consider building on the initial risk assessment for natural assets to further inform and prioritize risk mitigation actions for natural assets.

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List of Abbreviations

Abbreviation	Definition
AM	Asset Management
CAO	Chief Administrative Officer
CCAP	Climate Change Adaptation Plan
CRV	Current Replacement Value
dbh	Diameter at breast height
EAC	Environmental Advisory Committee
ELC	Ecological Land Classification
EVNCA	Economic Valuation of Natural Capital Assets Report
GDS	Green Development Standards
GIS	Geographic Information System
LOS	Levels of Service
MTSA	Major Transit Station Area
NCAMP	Natural Capital Asset Management Plan
OP	Official Plan
OPA	Official Plan Amendment
O.Reg.	Ontario Regulation
SLT	Senior Leadership Team
SOI	State of Infrastructure
TCA	Tangible Capital Asset
TRCA	Toronto Region Conservation Authority

1 INTRODUCTION

1.1 Background

The Town of Aurora is a municipality located within the boundaries of York Region. The Town has a population of over 60,000 residents and covers over 49 square kilometers of land, comprised of built and natural assets.

This Natural Capital Asset Management Plan (NCAMP) communicates the requirements for the sustainable delivery of services through management of natural assets, compliance with regulatory requirements, and funding to provide the appropriate Levels of Service (LOS) over the planning periods of 10 years and 25 years.

1.2 Alignment with Regulatory Requirements

Municipalities in Ontario have been using asset management processes to manage their built assets for decades. However, it has only been over the past five to ten years that municipalities have begun incorporating natural capital (e.g., wetlands, forests, meadows, watercourses, trees, parkland) into this framework. This shift has been triggered in part by:

(a) A growing need to repair aging municipal “grey” or built infrastructure with limited municipal tax dollars, which has pushed governments and others to start to explore alternative and complementary solutions.

(b) Climate change which, among other things, is putting municipal infrastructure at greater risk of failure.

(c) A growing recognition of the essential services provided by natural assets to communities at the local scale along with numerous co-benefits.

In Ontario, this shift is also being driven by Ontario Regulation (O.Reg.) 588/17 Asset Management Planning for Municipal Infrastructure under the *Infrastructure for Jobs and Prosperity Act* (2015), which came into effect January 1, 2018. O.Reg. 588/17 made Ontario the first province in Canada to regulate asset management planning at the municipal level and to require consideration of both human-made and natural assets as part of this process. Ontario remains the only Province with this type of legislation. O.Reg. 588/17 requires all municipalities in Ontario to have a comprehensive Asset Management Plan that identifies current LOS in place for all municipal infrastructure assets by July 1st of 2024, and a plan that includes proposed LOS by July 1st of 2025.

The definition of what constitutes a municipal infrastructure asset for the purpose of O.Reg 588/17 includes “green infrastructure”, which is defined in the regulation as an:

> *infrastructure asset consisting of natural or human-made elements that provide ecological and hydrological functions and processes and includes natural heritage features and systems, parklands, stormwater management systems, street trees, urban forests, natural channels, permeable surfaces and green roofs.*

For the NCAMP, natural assets have been divided into the following categories in alignment with Canadian Standards Association (CSA) Group's specifications for natural asset inventories CSA W218:23:

- Natural Area Assets: The stock of natural areas and ecosystem elements that are relied upon and managed by a municipality
- Natural Enhanced Assets: Designed elements that have been established to mimic natural functions and processes in the service of human interests

In accordance with the requirements of O.Reg. 588/17, this NCAMP is posted on the Town's website, along with related background documents.

1.3 Relationship with Other Documents

Asset management planning is a medium to long-term planning activity that relies on input from strategic planning activities and informs shorter-term decision making. The NCAMP provides a framework to validate the Town's budgeting processes and assist in prioritizing work activities, including capital projects, based on risk. It also discusses LOS that support goals in the Town's strategic plan, and lifecycle management strategies intended to reduce the overall cost of asset ownership.

The NCAMP is intended to be read with other Town policies and planning documents, including the following:

- Climate Change Adaption Plan (CCAP), 2022
- Green Development Standards (GDS), 2022
- Economic Valuation of Natural Capital Assets Report (EVNCA), 2013
- Town of Aurora Strategic Plan: 2011-2031
- Town of Aurora Official Plan 2023 Consolidation (OP)
- Town of Aurora Secondary Plans
- 2023 Parks & Recreation Master Plan
- 2023 Parks Maintenance Standard
- 2024 Urban Forest Study
- 2019 Stream Management Master Plan
- Comprehensive Stormwater Management Master Plan 2014

The 2022 CCAP recommends climate action items, including one to update the Town's 2013 EVNCA and one to incorporate natural capital assets into the Town's asset management plans. This NCAMP partially updates the EVNCA by presenting the value of Town-owned natural assets, and it incorporates natural capital assets into the Town's asset management plans.

1.4 Key Partners

Key partners in the preparation and implementation of this NCAMP are shown in Table 1-1.

Table 1-1 Key Partners in the NCAMP

Key Stakeholder	Role in Asset Management Plan
Town of Aurora Council	Council is dedicated to serving the residents and businesses of the Town of Aurora in a responsive and effective manner, through leadership and legislative action, for the present and future well-being of the community.
Environmental Advisory Committee (EAC)	The Environmental Advisory Committee (EAC) addresses ongoing climate change, adaptation and mitigation initiatives, energy conservation and environmental matters. EAC also contributes comments on the development of the Town's strategic plans that affect the environment, such as the Climate Change Adaptation Plan, the Community Energy Plan, the Corporate Energy Conservation and Demand Management Plan, the Corporate Environmental Action Plan, York Region's Climate Change Action Plan and the NCAMP.
Chief Administrative Officer (CAO) and Senior Leadership Team (SLT)	The CAO and SLT provides leadership that supports the policies and programs that drives the organization forward, focusing on ensuring the Town has efficient and effective systems in place to support the responsible growth of Aurora. The CAO and SLT provide corporate oversight to the Town's asset management program to ensure that the goal and directions of the asset management program are achieved and remain consistent with the overall strategic plan.
Finance	Finance provides historic Tangible Capital Asset (TCA) amounts, and historic and current capital and operating budgets.
Various Town Departments	Various Town Departments provide input data, forecasts and information for the NCAMP related to their service and program area or area of functional expertise.

1.5 Goals and Objectives of Natural Asset Management

The Town is seeking to create a detailed and comprehensive NCAMP that will serve as an extension to the Town's Corporate AMP.

The goal in managing natural and enhanced assets is to meet the defined LOS (as amended from time to time) in the most cost-effective manner for the present and future community.

The key elements of natural and enhanced asset management are:

- Providing a defined level of service and monitoring performance
- Managing the impact of growth through demand management and asset investment
- Taking a lifecycle approach to developing cost-effective management strategies for the long-term that meet the defined level of service
- Identifying, assessing, and appropriately controlling risks

- Linking to a long-term financial plan which identifies required, affordable expenditure and how it will be financed.

1.6 Corporate Asset Management System

Asset management plans aim to provide a line of sight between corporate strategic priorities, and tactical planning, including annual budgeting and business planning. Tactical plans are then used to guide work delivery, including capital delivery, operations and maintenance. The Town has an existing Corporate AMP that addresses other assets under O.Reg. 588/17 and this NCAMP follows the same steps and procedures. Although stormwater infrastructure is sometimes considered a natural asset, it has not been included here since it is already captured in the Corporate AMP. The line of sight is illustrated in Figure 1-1.

Figure 1-1 Strategic Plan line-of-sight to Work Plan

1.7 Organization of Document

The contents of this NCAMP follow the recommended elements of a detailed asset management plan:

- **Introduction**: Outlines scope, background information, relationship to other Municipal documents and plans, and applicable legislation.
- **State of Infrastructure**: Summarizes the inventory, valuation, condition and remaining life of the assets in the inventory by service and asset type.
- **Levels of Service**: Defines LOS performance indicators and targets, presents current performance and discusses the future performance outlook.
- **Asset Management Strategy**: Identifies risks to natural assets, recommends mitigation actions, and summarizes the asset management strategies, including restoration, renewal, maintenance and condition assessment, that will enable the assets to provide the required levels of service in a sustainable way, while managing risk, at the lowest lifecycle cost.
- **Financing Strategy**: Presents three scenarios for investing in the management of natural assets. Each option carries a different cost and delivers a different lifecycle benefit. A preferred scenario is recommended.
- **NCAMP Improvement and Monitoring**: Summarizes the next steps including improving future iterations of the NCAMP and monitoring the NCAMP implementation progress.

2 STATE OF INFRASTRUCTURE

The State of Infrastructure (SOI) section of the NCAMP describes the Town's inventory of natural assets, and provides a snapshot in time of the valuation, age and condition of these assets.

2.1 Asset Hierarchy and Inventory

This NCAMP focuses on Town-owned natural assets, because the Town can only directly maintain and manage natural assets on lands under its ownership, or through a shared management agreement (e.g., with another public agency such as a conservation authority). However, it is also understood that the system of natural assets that exists throughout the Town's jurisdiction is essential to the provision of services that benefit the community. These service provisions include things such as air pollution control, urban temperature regulation, water quantity and quality management, and physical and mental health benefits from time spent in and around natural areas. These benefits are discussed further in Section 2.2.

For the NCAMP, natural assets have been divided into the categories and classes shown in Table 2-1. The approach and assumptions used to establish the NCAMP inventory are summarized in Appendix A.

Locations of natural area and natural enhanced assets are shown in Figure 2-1. The map includes Sheppard's Bush Conservation Area and the Ducks Unlimited property, which the Town maintains in exchange for public access.

The NCAMP does not include stormwater ponds, which are considered built assets, and are included in the Corporate AMP.

In addition, although trails provide access to natural area assets, trails are considered built infrastructure and are covered in the Corporate AMP.

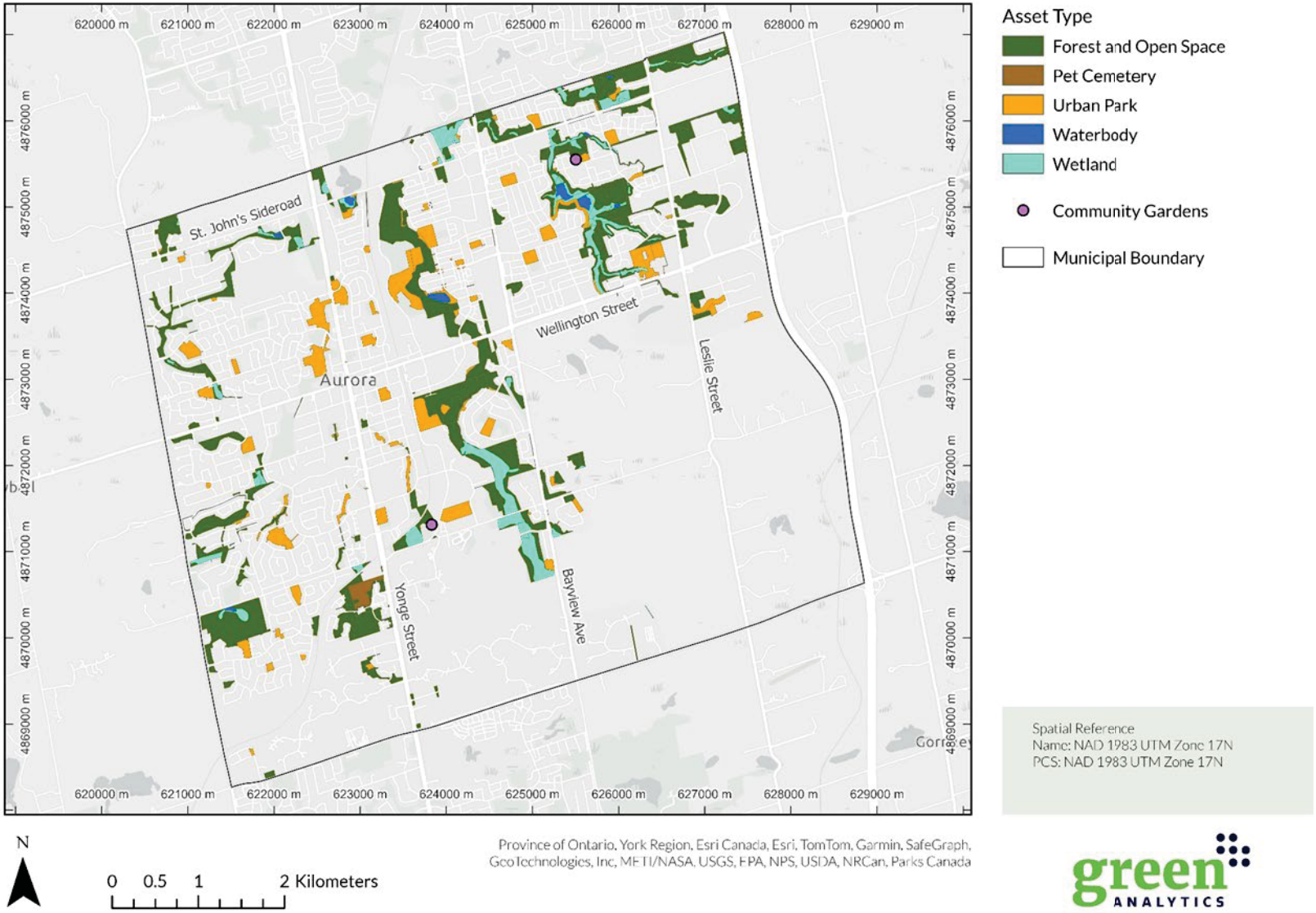
Table 2-1 Assets covered by this NCAMP

Asset Category	Asset Class	Description	Examples of Town Assets
Natural Area Assets	Forest and open space	Forested, naturalized or un-mowed open spaces as defined by the Ecological Land Classification (ELC)[1] geospatial data available for Aurora. The asset class captures coniferous forest, deciduous forest, mixed forest, cultural plantation, cultural woodland, cultural thickets, and cultural meadows ELC communities.	Holland River Valley North property is an example of a cultural meadow. Examples of forested areas include Vandorf Woodlot and Case Woodlot.
	Wetland	Area where water covers the soil or is present either at or near the surface of the soil all year or for varying periods of time during the year, such as swamps and marshes.	A large portion of Atkinson Park is wetland.
	Waterbody	Area submerged under a significant accumulation of water, such as natural lakes and ponds.	A waterbody exists west of Hollandview Trail, across from Ochalski Rd.
	Watercourse	A defined channel, having a bed and banks or sides, in which a flow of water regularly or continuously occurs. Inventory includes only segments that traverse Town-owned properties.	Segments of the East Holland River and Tannery Creek
Natural Enhanced Assets	Community Gardens	Sets of raised garden plots where residents and groups grow plants.	One located near Alliance Park. One located along Hartwell Way.
	Pet Cemetery	This property is a forested area that includes a manicured section with path stones and head stones. The manicured section is currently being restored. As the project evolves, the use and categorization of the different	Happy Woodland Pet Cemetery

[1] This is based on the ecological land classification (ELC) system mapping for southern Ontario (in accordance with the standards established by Lee et al., 1998) This classification system is an established and widely accepted standard in southern Ontario that is useful for informing inventory structure as well as condition assessment and management of natural assets.

Asset Category	Asset Class	Description	Examples of Town Assets
		areas of the property may be changed.	
	Urban Park	Manicured grassy areas within Town-owned parks	Thomas Coates Park
	Urban Trees	Town-owned street trees and park trees. Excludes trees in forests and open spaces.	Street trees Park trees

Figure 2-1 NCAMP Inventory



2.2 Asset Valuation

The current replacement value of an asset represents the expected cost to replace an asset to the same functional standard with a 'like for like' version based on current market conditions and construction standards. Establishing a current replacement cost for natural areas is somewhat more challenging than for built assets since natural areas (e.g. forest and wetlands) are not typically built or constructed. Therefore, estimating a replacement cost for most natural assets is achieved by estimating the anticipated cost to restore a natural asset. This was achieved by using average restoration costs per hectare of natural areas provided by Toronto Region Conservation Authority (TRCA). This approach follows best practices as outlined in the Natural Assets Initiative (2024)[2] guidance document to help municipalities across Canada incorporate natural assets into their assessment management planning process.

For individual tree assets or other enhanced assets (e.g. community gardens), more typical construction costs or costs of replacement are used. For natural and enhanced assets, the total replacement value is estimated to be **$237.5 million**. Table 2-2 and Figure 2-2 provide a breakdown of the inventory and replacement value by asset type.

Table 2-2 Replacement Value of Natural Capital Assets

Asset Category	Asset Class	Quantity	Replacement Value [a]	
			2024 ($M)	% of Total
Natural Area Assets	Forest and open space	350.6 hectares [b]	63.0 [b]	26.5%
	Waterbody	6.3 hectares	N/A [c]	N/A [b]
	Watercourse	36.9 km [d]	62.8 [d]	26.4
	Wetland	78.3 hectares	19.4	8.2%
Natural Enhanced Assets	Community Gardens	2 locations with 52 plots each	0.45	0.2%
	Pet Cemetery	6.4 hectares	0.3	0.1%
	Urban Parks	125.4 hectares [e]	25.1 [e]	10.6%
	Urban Trees	26,435 street and park trees	66.4	28.0%
TOTAL			**237.5**	**100%**

[a] See Appendix B for a summary of unit cost assumptions. Replacement Values do not include land values.

[b] Includes Sheppard's Bush Conservation Area and Ducks Unlimited property, which the Town maintains.

[c] For waterbodies, restoration costs were not readily available. As an asset management improvement, Town to explore what types of restoration will most likely be needed for its waterbodies and how much those would cost.

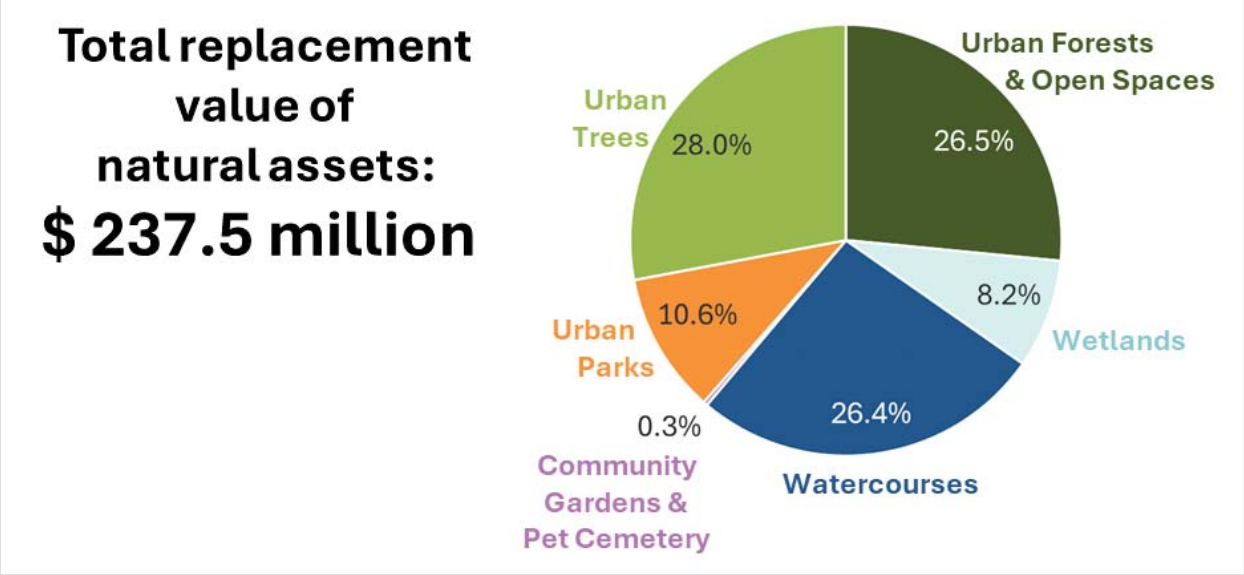
[d] Includes watercourse segments that traverse Town-owned property.

[e] Includes manicured grassy areas in Town-owned parks. Excludes naturalized areas (which are included in forest and open space) and building footprints. Area of manicured grass is slightly overestimated as it was not possible to remove playground footprints with the available data.

[2] NAI (2024). Nature is infrastructure: How to include natural assets in asset management plans. Natural Assets Initiative. naturalassetsinitiative.ca

For natural area assets it is important to recognize that while restoration costs can act as replacement cost for asset management purposes, it can take many years or decades for a natural system to grow, establish, and develop the ecosystem functionality to provide a 'like for like' replacement. While the restoration costs can approximate the expenditure need to replace some natural assets, it does not fully account for the lost or reduced Level of Service (LOS) provision that would exist if replacement were to occur.

Figure 2-2 Portion of Replacement Costs by Asset Type



For the purpose of an asset management plan, asset valuation is typically done using the replacement cost of the asset as is outlined in Table 2-2. The replacement value is an estimate of the capital costs associated with restoring natural assets. It is important to distinguish this from natural capital values which measure the value of ecosystem service provided by natural assets. Ecosystem services values are the benefits that humans derive from nature and are typically reported as an average annual service value. For instance, Aurora (2013)[3] and Green Analytics (2017)[4] explore a range ecosystem services value provided by Aurora's natural assets. These values recognize and demonstrate the importance of natural assets from the perspective of benefits provided to local communities. Ecosystem service benefits can be wide ranging including reduction of urban heat island effects, flood and erosion risk reduction, the provision of recreational opportunities, and physical and mental health benefits from time spent in nature. Aurora (2013) estimated the value of ecosystem service benefits at $7.4 million per year.

2.3 Asset Age and Remaining Life

For built assets, understanding the estimated life of an asset and the proportion of life that remains provides an insight into potential risk of asset failure and potential renewal needs. For natural

[3] Aurora (2013). The Economic Value of Natural Capital Assets Associated with Ecosystem Protection.

[4] Green Analytics (2017). Valuing Natural Capital in the Lake Simcoe Watershed. Report prepared for Lake Simcoe Region Conservation Authority.

assets, age and remaining life do not apply in the same way and will not provide the same insight. Natural assets typically exist in perpetuity, and if unimpacted by external pressures, will not degrade over time.

For street and park tree assets where management is based on individual units, age is sometimes measured and reported like built assets. However, currently there is no standard lifespan to use for street trees. Existing asset management plans from peer municipalities provide some precedent for tree lifespan, though ranges from 35 to 110 years have been used. The service life of a street or park tree will vary depending on tree species, where it is planted (e.g., in street, planter, boulevard etc.) and the conditions of the surrounding environment. For instance, trees in the boulevards tend to have a shorter lifespan that is anticipated to be in the 35-year range. For this NCAMP park trees were assumed to have an 80-year life and street trees a life of 50 years. The Town's existing urban tree inventory includes an age class that estimates tree age in 10-year periods. Using the mid-point of those age classes, the weighted average age of the Town's urban trees is 28 years.

Average service life and age of natural capital assets is shown in Table 2-3.

Table 2-3 Average Service Life and Age of Natural Capital

Asset Category	Asset Class	Average Service Life (Years)	Average Age (Years)
Natural Area Assets	Forest and Open Space	N/A [a]	N/A [a]
	Waterbody		
	Watercourse		
	Wetland		
Natural Enhanced Assets	Community Garden	Garden located near Alliance Park: 40 years Garden located along Hartwell Way: 25 years	Garden located near Alliance Park: Over 25 years Garden located along Hartwell Way: 0 years
	Pet Cemetery	N/A [a]	N/A [a]
	Urban Parks	N/A [a]	N/A [a]
	Urban Trees	Park trees: 80 years Street trees: 50 years	28

[a] Assets are expected to exist in perpetuity

2.4 Asset Condition

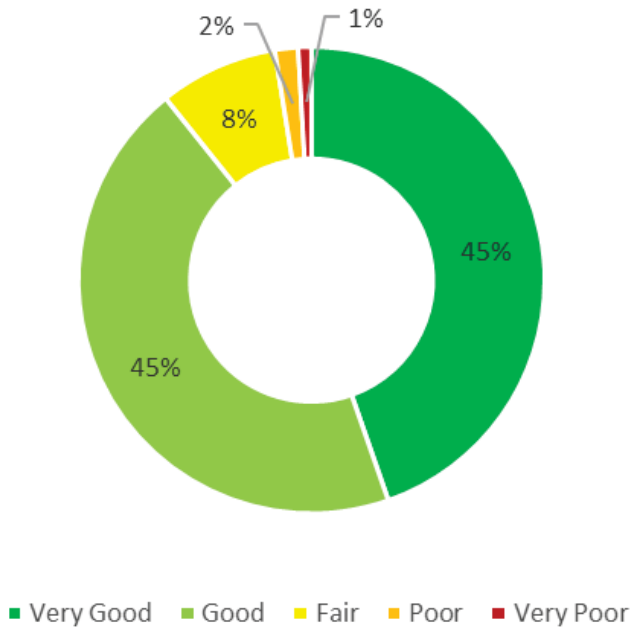
Maintaining urban trees in a healthy condition is a primary goal for the Town. Maintenance includes a wide range of activities including pruning to maintain structural integrity, promote healthy growth and eliminate dead or hazardous branches. The Town maintains an inventory of urban trees and documents their health rating on the following six-point scale: dead, death

imminent, declining, potential trouble, satisfactory, and good. For the purpose of this NCAMP the tree health scale has been adjusted to align with the corporate condition rating scale as summarized in Table 2-4. The condition distribution of urban tree assets is summarized in Figure 2-2. Approximately 90% of urban trees are estimated to be in Good or Very Good condition.

Table 2-4 Urban Tree Condition Rating

Condition Rating	Condition Score	Description of Urban Tree Condition	Tree Health Rating
Very Good	1	Fit for the future	Good
Good	2	Adequate for now	Satisfactory
Fair	3	Requires attention	Potential Trouble
Poor	4	Increasing potential of affecting service	Declining
Very Poor	5	Unfit for sustained service	Dead; death imminent

Figure 2-3 Condition of Urban Trees



For other natural assets in Aurora condition is currently not formally assessed. However, based on detailed discussions with the Town's Operations staff that maintain these assets, asset condition for the purposes of this plan can be assumed to be visually assessed and have been found to be in in good or very good condition and enhanced assets are assumed to be in fair or good condition as summarized in Table 2-5. The urban parks largely capture the manicured turf,

which were noted by Town staff as having a variety of conditions, but overall should be considered in fair condition due to presence of weeds and signs of heavy use.

Table 2-5 Asset Condition

Asset Category	Asset Class	Condition Rating	Condition Score
Natural Area Assets	Forest and Open Space	Good or very good	1 or 2
	Waterbody	Good or very good	1 or 2
	Watercourse	Good or very good	1 or 2
	Wetland	Good or very good	1 or 2
Natural Enhanced Assets	Community Gardens	Garden located near Alliance Park: Good Garden located along Hartwell Way: Very Good	2 1
	Pet Cemetery	Good	2
	Urban Parks	Fair	3
	Urban Trees	As per Figure 2-1	As per Figure 2-1

Not having detailed condition information for natural area assets is common across many municipalities, as asset management maturity is still relatively low for this asset category and there is currently no commonly accepted standard to establishing condition approach for natural area assets. However, as will be discussed in the Asset Management Strategy section of this NCAMP (Section 4), regular condition monitoring can help the Town better maintain its natural assets and respond to natural asset threats.

2.5 Confidence in Data

The information presented in this NCAMP is based on data available at the time of preparation. It is expected that with each update of this plan, the data confidence will improve from the development and implementation of the initiatives listed in the Recommendations and Continuous Improvement section (Section 6).

The confidence in data used to support the SOI can be summarized as follows:

- Data associated with the asset inventory and valuation is rated as high confidence.
    - Data is based on sound records, procedures, investigations, and analysis, with proper documentation. There are minor shortcomings, for example some data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation.
- Data associated with asset condition is rated as low confidence.
    - Data is based on unconfirmed verbal reports and/or cursory inspection and analysis. There are data gaps related to condition and the Town would benefit from continuing to fill baseline data moving forward in preparation of the next NCAMP update.

3 LEVELS OF SERVICE

In the State of Infrastructure (SOI) section, the value, age, and condition of the Town's natural capital assets were discussed. The Levels of Service (LOS) chapter builds on the SOI by defining the performance of the Town's assets and what they are intended to deliver over their service lives. For example, the Town's tree inventory may be expected to support a certain canopy target.

LOS are statements that describe the outputs and objectives the Town intends to deliver to its residents, businesses, and other stakeholders. Developing, monitoring, and reporting on LOS are all integral parts of an overall performance management program which is aimed at improving service delivery and demonstrating accountability to the Town's stakeholders.

As per O.Reg 588/17, the asset management plans are required to provide the current and proposed LOS for all assets, including natural assets, determined in accordance with qualitative descriptions and technical metrics established by the municipality.

In general, LOS are guided by corporate commitments to the community, legislative requirements, and internal guidelines, policies, and procedures. In many cases, LOS are also implied based on past service delivery, community expectations, and infrastructure system design. Effective asset management requires that LOS be formalized and supported through a framework of performance measures, targets, and timeframes to achieve targets, and that the costs to deliver the documented LOS be understood.

3.1 Levels of Service Framework

Figure 3-1 shows the LOS framework and line of sight from high-level corporate initiatives to detailed asset-specific LOS and asset lifecycle decisions. Corporate commitments, along with legislated LOS guide Community LOS, which are qualitative statements that describe how the Town's residents and businesses should experience its services. Community LOS can typically be categorized to one of the following service attributes:

- **Capacity:** Measures that reflect whether the service and supporting assets are of sufficient capacity to meet user demand.
- **Function:** Measures that reflect the suitability of the services, operations and assets for the user or other stakeholder.
- **Reliability & Quality:** Measures that reflect whether services and supporting assets are reliable, available when needed, and responsive to the community.
- **Affordability:** Measures that reflect whether services and supporting assets are adequately funded in both the short and long term.

Technical LOS are quantitative metrics that support the Community LOS. They relate to the allocation of resources to service activities to best achieve the desired community outcomes and demonstrate effective performance.

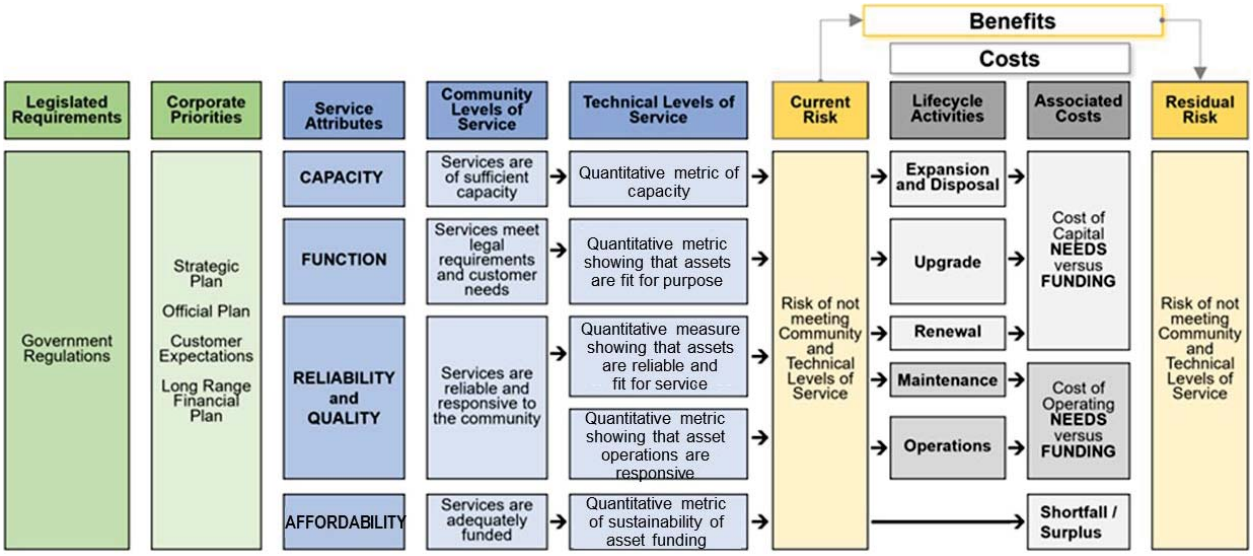
Community LOS are translated into Technical LOS, where:

- **Capacity LOS** are metrics that drive assessment of expansion needs
- **Function LOS** are metrics that drive assessment of upgrade needs

- **Reliability & Quality LOS** are metrics that drive assessment of renewal, maintenance and operations (and programming) needs
- **Affordability LOS** are metrics that drive assessment of financial sustainability needs.

Through the asset management process the risks of failing to achieve the defined Community and Technical LOS are assessed, and lifecycle activities are prioritized to address those risks. Lifecycle activities may include expansion, upgrade, renewal, maintenance or operational activities, depending on the category of LOS to be addressed. In some cases, lifecycle activities address several Community and Technical LOS. For example, a project on a runway may simultaneously increase capacity, make upgrades to meet regulatory requirements, and renew existing pavement. The nature of the lifecycle activity determines whether it should be funded as capital or operating, as well as eligible funding sources. As shown in the figure below, even after the lifecycle intervention, some residual risk may remain.

Figure 3-1 Levels of Service Framework



The following sections describe the legislative requirements, corporate priorities, and Community and Technical LOS that guide the Town's management of natural assets.

3.2 Legislative Requirements

Legislative requirements that impact the delivery of the Town's natural asset services are outlined in Table 3-1.

Table 3-1 Legislative Requirements

Legislation	Requirement
Municipal Act, 2001	The main statute governing the creation, administration and government of municipalities in Ontario, other than the City of Toronto.
Ontario Regulation 588/17 The Infrastructure for Jobs and Prosperity Act, 2015	Sets out the principles for the provincial government to regulate asset management planning for municipalities, including the requirement to include green infrastructure.
Public Sector Accounting Board Standard 3150	Standards on how to account for and report on tangible capital assets in government financial statements. Natural assets are not currently included in financial reporting however, there is active discussion on how to include the value of natural assets in financial statements.
Environmental Protection Act	The primary pollution control legislation in Ontario. Prohibits discharge of any contaminants to the environment that can cause or are likely to cause adverse effects. Amounts of approved contaminants must not exceed limits prescribed by the regulations. Requires that spills of pollutants are reported and cleaned up promptly. Has the authority to establish liability on the party at fault.
Ontario Water Resources Act	Focuses on both groundwater and surface water throughout the province. Regulates sewage disposal and "sewage works" and prohibits the discharge of polluting materials that may impair water quality.

3.3 Corporate Priorities

The Corporate Priorities establish the main vision or objective of service delivery for the Town. The Corporate Strategic Plan identifies three pillars of success that reflect the needs of the community and in turn guide the management of the Town's assets. As shown below, Natural Environment is one of three pillars of the Corporate Strategic Plan.

Table 3-2 Corporate Strategic Plan Pillars of Success

Pillar of Success	Service Level Objective
Community	Support an exceptional quality of life for all
Economy	Enable a diverse, creative and resilient economy
Natural Environment	Support environmental stewardship and sustainability

3.4 Community and Technical Levels of Service

Community LOS translate the Town's corporate priorities into statements that describe how the community should experience natural asset services. Technical LOS then translate those

statements into quantitative performance metrics, which allow the Town to compare its natural asset services with prior years or against service targets.

It is worth noting that a single natural asset can provide multiple services to a community, sometimes referred to as co-benefits (e.g., cooling, passive recreation venue, reduced stress, air quality improvements). In 2013, Aurora published an assessment of ecosystem services provided by the Town's natural assets, highlighting the range of services provided such as carbon storage and sequestration, pollution regulation, water regulation and treatment, pollination, recreation, and health benefits. The provision and value of these services demonstrate the importance of including natural assets in asset management planning.

While the "service-benefit stacking" noted above helps make natural assets a compelling solution for community service delivery, it adds to the complexity of incorporating natural assets into an asset management plan in a consistent and useful way. Furthermore, the science of ecosystem service measurement is still evolving and the more accessible options for quantifying such measures are driven largely by the area of the natural asset. For informing an asset management plan, areas managed for ecological or natural purposes, or percent of canopy cover, can be considered effective proxy measures for the provision of a suite of ecosystem services. For instance, percent canopy cover can be considered a proxy measure for local temperature reduction, carbon sequestration, and air quality regulation.

Table 3-3 summarizes Community and Technical LOS along with current and desired performance. The second last column of the table shows that formal targets have not been established for most of the technical LOS. Instead, the technical LOS will be monitored to track year-to-year changes, and to observe their relationship with community input and operational and capital costs.

Table 3-3 also illustrates that targets have been established for tree canopy and tree diversity; however those targets are not directly applicable to the Town's asset performance (fifth column of Table 3-3), because the targets apply to all trees within the municipal boundaries, whereas the Town's asset performance relates specifically to Town-owned trees.

For example, the Town's tree canopy target is 40%; however, the NCAMP defines LOS performance based only on Town-owned trees, since the Town only directly manages Town-owned assets. However, Town-owned trees provide an estimated 6.3% (or 314 ha) of canopy coverage, which makes the Town a major contributor to the community's ability to meet the 40% target. According to the Urban Forest Study the current area of canopy is 1,662 ha (34% of the Town's area) and the 40% target would amount to 1,970 ha meaning to meet this target an additional 308 ha of canopy cover is needed.

Similarly, the Town's tree diversity goal is that no species represents more than 5% of the tree population. This target applies to all trees within the municipal boundaries; however, for the NCAMP it has been applied to the inventory of Town-owned trees. (This assumes that the Town-owned inventory isn't deliberately being weighted to counter-balance lack of diversity of non-owned trees.) As shown in the table, several Town-owned tree species exceed the diversity target as a proportion of the Town-owned inventory. The Town is working to achieve the diversity target as part of its long-term tree planting and tree replacement program.

Table 3-3 Current Level of Service Performance

Service Attribute	Community LOS	Technical LOS	Relevant Asset Type	Current Performance Metric	Data Source	Target Performance	Target Performance Achieved?
Capacity & Use	Natural assets are suitable to all kinds of users and are easy to access.[a]	% residential homes within 500m of natural area assets or enhanced asset areas	Natural area and natural enhanced assets	99.35% of residential properties	GIS analysis	No established target. Town to monitor performance.	n/a
		Area of natural area assets and natural enhanced assets per 1000 people	Natural area and natural enhanced assets	Natural area assets per 1000 people: 6.56 ha [b,c] Natural enhanced asset per 1000 people: 1.99 ha [b,c]	Inventory analysis	No established target. Town to monitor performance.	n/a
		Area of canopy cover provided by the Town	Urban trees and forest and open space	Approximately 313 ha of canopy cover is Town-owned. This provides a canopy cover of 6.3%, which accounts for 18.5% of the current Town-wide canopy cover (34%).	Inventory analysis	Town does not have a target for Town-owned canopy cover but has established a Town-wide target of 40% canopy overall by 2034 (current performance is 34%).	n/a
		# of public maintained street and park trees per 1000 people	Urban trees	# of urban trees: 26,435 # of public maintained street trees/person: 398.3 [c]	Inventory analysis	No established target. Town to monitor performance.	n/a
		# of new trees planted per year	Urban trees Natural area trees	60 new urban trees planted (2023) 445 new trees planted in natural areas (2023)	Town operations estimate	No established target. Town to monitor performance.	n/a
		# of Community Garden locations per 1000 people	Community gardens	# of locations: 2 # of locations per 1000 people: 0.030 [c]	Inventory analysis	No established target. Town to monitor performance.	n/a
		# of km of trails through natural area assets and natural enhanced assets per 1000 people	Natural area and natural enhanced assets	40.87 km of trails through town-owned and town-maintained land Trails per 1000 people: 0.616 km [c]	GIS analysis	No established target. Town to monitor performance.	n/a
Function	Enrich Aurora's ecology by protecting and preserving biodiversity. [d]	Species diversity of maintained trees	Urban trees	Species composition for highest 5 species in Town's tree inventory: • Norway maple (14.96%) • Littleleaf linden (11.83%) • Ash (9.51%) • Honey locust (8.54%) • Silver maple (5.49%)	Analysis of tree inventory data	2024 Urban Forest Study Recommendation 8: Long-term goal that **no species represents more than 5%** of the tree population, no genus represents more than 10% of the tree population, and no family represents more than 20% of the intensively managed tree population both municipal-wide and at the neighbourhood level.	No (target is long-term)
		% Town-owned natural assets affected by invasive species	Natural area assets	55% of Open Space – Natural Cover plots show invasive plant species (from Urban Forest Study) [e]	2024 Urban Forest Study	No established target. Town to monitor performance.	n/a
Quality & Reliability	Natural and enhanced assets are in good condition, meeting the needs of users.[a]	Tree pruning activities completed per year	Urban trees	3150 (in-house) 183 (contracted)	Town operations estimate	No established target. Town to monitor performance.	n/a
		# of urban tree replacements per year	Urban trees	240 trees replaced (2023)	Town operations estimate	No established target. Town to monitor performance.	n/a

a) Adapted based on Level of Service Statement for Aurora's Parks & Recreation facilities.

b) The Parks and Recreation Master Plan, reports 2.7 hectares per 1000 residents of parkland, but defines parkland as lands within Town-owned park properties. Those properties do not consistently include or exclude naturalized areas.

c) Population in 2024 estimated at 66,370 based on 2022 York Region Official Plan.

d) From the Town of Aurora Corporate Environmental Action Plan 2018.

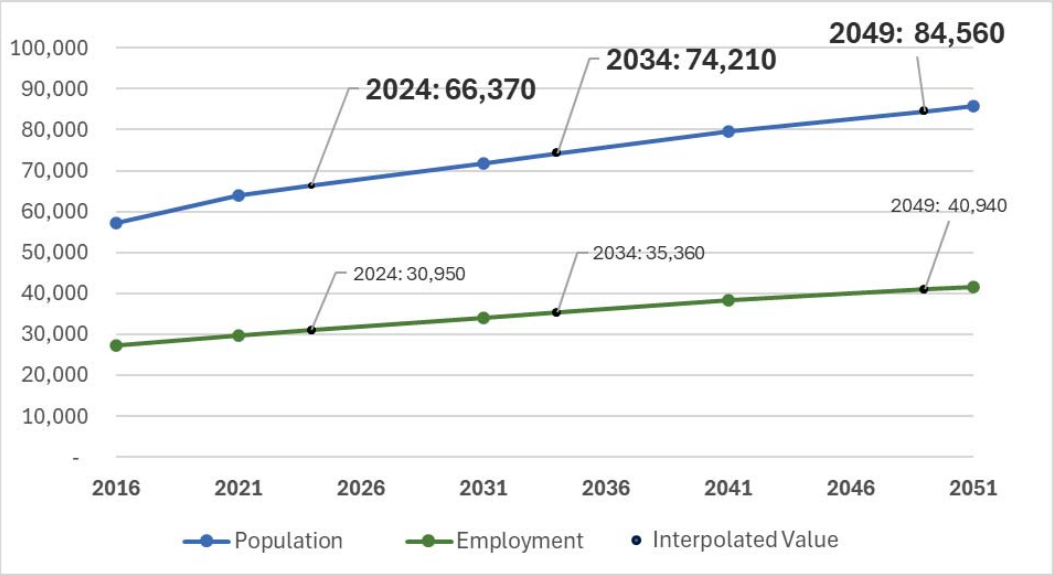
e) Existing data is not specific to town-owned natural assets. However, data compiled for the Urban Forest Study based on a series of representative sample plots across Aurora found that 55% of "Open Space – Natural Cover" plots had presence of invasive plant species.

3.5 Levels of Service Outlook

LOS performance may be affected by future trends, such as population growth or changes in the environment and climate. This section focuses on the impact of population growth on LOS, because many of the LOS are defined relative to population. Environmental, climate and other hazards are discussed in Section 4.1.2 on risk assessment.

Figure 3-2 shows that, based on the 2022 York Region Official Plan forecasts, the Town's population is expected to grow 27.4% from 66,370 in 2024 to 84,560 by 2049, and employment will grow from 30,950 to 40,940. O.Reg. 588/17 requires asset management plans to report forecasted population and employment growth; however, natural asset planning is primarily driven by growth in population (residents).

Figure 3-2 Forecast Population and Employment Growth



Source: 2022 York Region Official Plan

Table 3-4 describes the expected outlook for each technical LOS in consideration of the Town's anticipated population growth and its current plans for natural assets.

Table 3-4 Level of Service Outlook

Service Attribute	Community LOS	Technical LOS	Future Outlook
Capacity & Use	Natural assets are suitable to all kinds of users and are easy to access.	% residential homes within 500m of natural area assets or enhanced asset areas	According to the Official Plan, most new units will be added in the Aurora Promenade and Major Transit Station Areas. These corridors generally have natural asset parcels within 500m, so this metric is expected to **increase (improve)** with growth.

Service Attribute	Community LOS	Technical LOS	Future Outlook
		Area of natural area assets and natural enhanced assets per 1000 people	Due to land constraints and high land costs, the Town does not currently plan on acquiring additional natural area assets or urban parks. As such, natural area assets and natural enhanced assets per 1000 people is expected to **decrease**.
		Area of canopy cover provided by the Town	The Town-owned tree canopy is expected to **increase (improve)** as new trees are planted, and as trees mature in good in health. Tree planting and maintenance and planting levels will be discussed in the Asset Management Strategy (Section 4) and Financing Strategy (Section 5).
		# of public maintained street and park trees per 1000 people # of new urban trees planted per year	The ratio of Town-owned urban trees to people is expected to **decrease**, unless the Town plants additional trees in proportion to population growth.
		# of new trees planted per year in natural areas	The number of new trees planted in natural areas is expected to **remain steady**. These plantings are funded by external partners.
		# of Community Garden locations per 1000 people	As population grows, this ratio is expected to **decrease.** The Town does not currently plan to build additional community gardens.
		# of km of trails through natural area assets and natural enhanced assets per 1000 people	As population grows, this ratio is expected to **decrease.** The Town may build additional trails on private land under maintenance agreements; however, these are not expected to keep up with population growth.
Function	Enrich Aurora's ecology by protecting and preserving biodiversity.	Species diversity of maintained trees	The species diversity is expected to **slowly improve** through the Town's tree replacement and planting program.
		% Town-owned natural assets affected by invasive species	The % of natural assets affected by invasive species is expected to **increase (worsen)** if actions are not taken to manage them.
Quality & Reliability	Natural and enhanced assets are in good condition, meeting the needs of users.	Tree pruning activities completed per year	Given the same resources (budget), tree pruning activities are expected to remain **steady**. However, if the tree inventory grows, this would represent a reduction **(worsening)** in maintenance attention for each tree.
		# of urban trees replacements per year	Tree replacement activities are expected to remain steady; however, this is expected to be insufficient to keep up with the number of trees requiring replacement each year. This will result in a **growing backlog** of dead and dying trees.

As indicated in the table, due to land constraints and high land costs, the Town may not be able to expand its natural area assets, urban parks, community gardens and trails to keep up with population growth. As such, the capacity LOS for these assets will decrease, meaning that more people will share use of these assets.

Despite the land constraints, the Town may seek alternative ways to increase natural area asset capacity for residents, for example, through maintenance agreements with external parties similar to the Town's existing agreements for use of the Duck's Unlimited property and Sheppard's Bush Conservation Area. There may also be opportunities for the Town to re-purpose some of its existing properties.

The Town-owned tree canopy is expected to increase (improve) as new trees are planted, and as trees mature in good in health; however, this depends on the resources allocated to both tree maintenance and tree planting. To maintain the current ratio of Town-owned trees to people, the Town will need to plant approximately 3,000 new trees by 2034. Through planting of new and replacement trees, the Town will slowly work toward its diversity target of no more than 5% of any one species. Tree maintenance and planting are discussed in Section 4.

The percent of natural assets affected by invasive species may increase (worsen) if actions are not taken to manage them. Mitigation and management of invasive species are discussed in Section 4.

3.6 Proposed Levels of Service

The expected outlook for LOS performance will change depending on the asset lifecycle strategies applied. Lifecycle needs will be discussed in Section 4. Different investment scenarios to meet those needs will be presented in Section 5 along with their expected impact on LOS. A scenario will be recommended, and if adopted, that scenario's associated LOS will become the Proposed LOS.

4 ASSET MANAGEMENT STRATEGY

The Asset Management Strategy section of the NCAMP identifies risks to natural assets, recommends mitigation actions, and summarizes the asset management strategies, including restoration, renewal, maintenance and condition assessment, that will enable the assets to provide the required Levels of Service (LOS) in a sustainable way, while managing risk.

4.1 Risk Assessment

This section addresses risks to the Town's natural assets. First, the risk context is discussed, then a risk assessment highlights anticipated hazards and threats to the Town's natural assets. Next, an asset failure risk assessment is presented for urban trees. Risk mitigation actions to address known risk are discussed.

4.1.1 Risk Context

The standard risk assessment approach used for built assets can also be applied to natural assets. However, the application of risk is slightly different given the unique features of natural assets and natural area assets in particular. Natural assets are resilient, meaning they can withstand a certain amount of stress and in many cases, they repair themselves when damaged. Therefore, degradation or damage to one component of a natural asset may not have a significant impact on the overall LOS (e.g., the loss of one tree may have a minor impact on overall forest or canopy cover and the associated services). This resiliency is one of the many reasons natural assets are seen as effective solutions to deal with certain infrastructure and climate change related challenges. However, cumulative effects and exposure to multiple stressors can lead to tipping points that can cause cascading or widespread failure of natural assets. Therefore, a risk assessment for natural assets needs to consider the range of hazards to which natural assets are exposed, and the potential impacts those hazards could trigger.

Ideally, the condition of natural assets is carefully assessed and monitored at regular intervals. In such a situation, a natural asset's condition can help inform the probability of asset failure, much in the same way it is used for built assets. Provided the condition assessments are robust, a lower condition rating would imply a lower level of natural resilience, and that a certain level of degradation has occurred such that additional stressors would be more likely to trigger failure.

Currently, condition assessments and regular monitoring of the condition of natural assets within Aurora is limited. However, the Town's objective is to develop and implement regular monitoring and condition assessment protocols. Once available, this information can be combined with the current understanding of threats and hazards to natural assets to inform the probability and consequences of asset failure.

4.1.2 Natural Asset Risk Assessment – Hazards and Threats

As a starting point, this NCAMP outlines the work completed to date toward understanding the range of threats and hazards to natural assets. The Town has already made progress on risk management related to natural assets through its 2022 Climate Change Adaptation Plan (CCAP). As part of the CCAP, specific climate hazards were identified. Each hazard was assigned a probability of occurrence rating and a severity of consequence rating, which were combined into four risk ratings summarized in Table 4-1.

Table 4-1 Risk Rating Overview

Risk Rating	Description*
Low Risk	No immediate vulnerability associated with natural infrastructure.
Low-medium Risk	Potential vulnerability exists, viability of the natural infrastructure is not an immediate concern, but action may be required in the foreseeable future.
High-medium Risk	Potential vulnerability exists, viability of the natural infrastructure is not an immediate concern, but action is needed soon to avoid anticipated consequences.
High Risk	A known vulnerability is present, mitigative actions are required to ensure viability of natural infrastructure.

* Descriptions of risk ratings were adapted from what was used in Aurora's Climate Change Action Plan and modified to also apply to non-climate related threats or hazards.

Climate change risks pose a significant challenge to managing Town assets and maintaining service levels. Climate change impacts increase the probability of natural asset failure and can also increase the consequence of failure in terms of financial impacts, service delivery, and damages to the natural environment. Therefore, in general, climate change is anticipated to increase the Town's risk exposure. Several specific climate related hazards are identified in the Town's CCAP. These hazards are further detailed into potential risks to natural assets as summarized in Table 4-2.

For natural assets, other non-climate or human activity-related threats and hazards exist that should also be considered. Building on the work done through the CCAP in addition to input gathered from Town staff and the results of the 2024 Urban Forest Study, other hazards identified include invasive species, pests and diseases, wildlife impacts, unauthorized edge encroachment or disturbances, contamination (e.g. road salting and other spills), and overuse and misuse of natural areas. The potential impacts and risk ratings associated with these hazards are detailed in Table 4-2 for natural area assets and natural enhanced assets.

Aurora's Urban Forest Study provides some additional insight into the invasive species and climate change vulnerability of forest and tree assets. For instance, the urban forest study reports that 55% of the Town's forest plots had at least one invasive species present. Presence and symptoms of spongy moth and emerald ash borer were observed in 15% and 8% of plots surveyed, respectively. Furthermore, 60% of the total tree population in Aurora (Town-owned and other) are tree species considered highly or extremely vulnerable to climate change.

Risk mitigation strategies are identified in Section 4.1.4.

Table 4-2 Risk Assessment of Threats and Hazards

Asset Category	Threat or Hazard	Potential Impacts	Risk Rating*
Natural Areas Assets	Extreme heat and drought	Vegetation dieback and increased watering or replacement of vegetation required.	Low-medium
	Extreme rainfall and erosion	Washout of vegetation, erosion of soil, exposure of roots, and damage to trees and vegetation.	Low-medium

Asset Category	Threat or Hazard	Potential Impacts	Risk Rating*
	Extreme storms (wind and lightning)	Replacement and maintenance of vegetation may be required after lightning or wind damage to trees and plants. Debris can also cause physical hazards.	Low-medium[5]
	Invasive species, pests and disease	Potential for tree mortality in forest areas from spongy moth and emerald ash borer. Phragmites impact ecological function of natural wetlands. European buckthorn, Manitoba maple, and garlic mustard were most common invasive species found in natural cover forest plots.	High-medium
	Wildlife Impacts	Beavers are a risk to tree canopy, and their dams cause flooding. There are limited remediation options.	High-medium
	Unauthorized edge encroachment or disturbances	Impacts resulting from inappropriate and unauthorized activities adjacent to and within natural assets that negatively impact the natural asset. For example these could include dumping of yard or other waste from adjacent land use; installation of forts, sheds, or other structures; Mowing or other gardening; creation of informal trails.	Low
	Contamination (e.g. road salting and other spills)	Introduction of pollutants and /or chemicals to the asset that can seriously impair the function of or kill the asset.	Low
	Overuse and misuse	Impacts resulting from heavy volume of activity or in appropriate uses of natural assets causing negative impacts. Impacts could include widening of formal trails; excessive off-trail activities, use of motorized vehicles such as ATVs, dogs off-leash, excessive litter, etc.	Low
Natural Enhanced Assets	Extreme heat and drought	Fields maybe become unusable and/or require additional maintenance.	Low-medium
	Extreme rainfall and erosion	Washout of vegetation, erosion of soil, exposure of roots, and damage to trees and vegetation.	Low-medium
	Extreme storms (wind and lightning)	Replacement and maintenance of vegetation may be required after lightning or wind damage to trees and plants. Debris can also cause physical hazards.	Low-medium
	Unauthorized edge encroachment or disturbances	Impacts resulting from inappropriate and unauthorized activities adjacent to and within natural assets that negatively impact the natural asset.	Low
	Overuse and misuse	Impacts resulting from excessive and overuse of open space and parkland causing negative impacts.	Low-medium

* Risk ratings were determined based on the CCAP, Urban Forest Study and staff input.

[5] Through the CCAP this risk was rated at low-medium. However, based on recent experience staff noted that this risk could be a medium-high risk.

4.1.3 Urban Tree Risk Assessment – Asset Failure

For urban trees, existing inventory data on individual trees allowed for a more detailed assessment of risk using consequence and probability of failure. Urban trees were assigned a consequence of failure rating based on their trunk diameter at breast height (Table 4-3). The rationale for this is that larger trees tend to provide a greater LOS and are more costly to replace. For instance, a large mature tree will provide a larger canopy cover offering greater shade, runoff control, and neighbourhood aesthetics. Loss of this tree results in greater loss of benefits. Probability of failure was assigned based on asset condition rating (Table 4-4).

Table 4-3 Consequence of Failure (CoF) Rating Scale

CoF Rating	Trunk diameter at breast height (dbh)
1	<5 cm
2	5 to <20cm
3	20 to <40cm
4	40 to <80 cm
5	>=80cm

Table 4-4 Probability of Failure (PoF) Rating Scale

PoF Rating	Probability of Failure	Corresponding Asset Condition
1	Rare	Very Good
2	Unlikely	Good
3	Possible	Fair
4	Probable	Poor
5	Almost Certain	Very Poor

Table 4-5 shown below, presents the Risk Evaluation Matrix Framework that depicts the risk exposure, based on the likelihood of occurrence and consequence rating for urban trees in Aurora.

Table 4-5 Risk Evaluation Matrix Framework

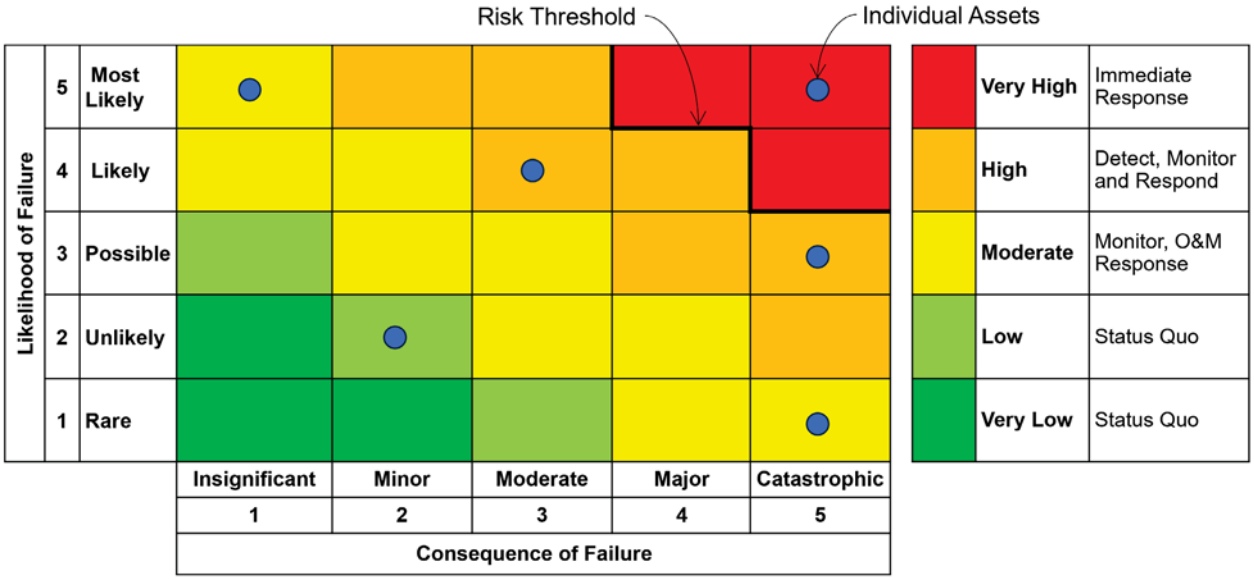


Table 4-6 shows the risk evaluation matrix for the Town's urban trees, based on the likelihood of occurrence and consequence ratings. Overall, only 0.1% of urban trees were considered Very High risk. This represents a total of approximately 60 trees and a replacement value of $63,000.

Table 4-6 Risk Evaluation Matrix (2024 $, millions) – Urban Trees

Likelihood of Failure	1	2	3	4	5
5	$0.03	$0.10	$0.12	$0.03	$0.00
4	$0.02	$0.19	$0.33	$0.18	$0.04
3	$0.11	$0.59	$2.04	$1.59	$0.14
2	$0.45	$4.05	$11.18	$5.74	$0.43
1	$0.59	$5.37	$8.42	$2.41	$0.07
	1	2	3	4	5
	Consequence of Failure				

Risk Exposure	CRV*($M)	CRV*(%)
Very High	$0.06	0.1%
High	$2.89	6.5%
Moderate	$22.26	50.4%
Low	$12.58	28.5%
Very Low	$6.41	14.5%
Total	**$44.20**	**100.0%**

* CRV = Current Replacement Value

4.1.4 Risk Mitigation Strategies

With an understanding of the risks facing natural assets, risk response or mitigation strategies can be established. Through the work of the CCAP and the Urban Forest Study, the Town has already identified several risk mitigation strategies many of which are already being implemented by the Town. Climate change risk mitigation actions identified for natural assets through the CCAP include the following:

1. Plan for low-maintenance landscaping with hardy species adapted to future climate conditions.
2. Adopt or enhance maintenance procedures to proactively identify hazardous trees and undertake preventative maintenance before damage occurs during extreme events.
3. Continue applying procedures in the Park Maintenance Plan to inspect parks following extreme weather events to identify damaged landscaping and amenities to prioritize repairs and minimize service disruptions.

The 2024 Urban Forest Study also identified recommendations related to the mitigation of climate change, invasive species and pest risk relevant to the Town's urban forest and urban trees. These include:

1. Assess the Town's current recommended planting list based on the climate vulnerability of each species. Shift recommendations to native and appropriate non-native, non-invasive species that have a higher tolerance and lower vulnerability to climate change impacts.
2. Consider targeted removal of high priority invasive plant species at high priority sites following best practices.
3. Develop a monitoring and action strategy for invasive species, including pests and diseases, and continue taking proactive approaches to address new and emerging invasive species, such as hemlock woolly adelgid and oak wilt.

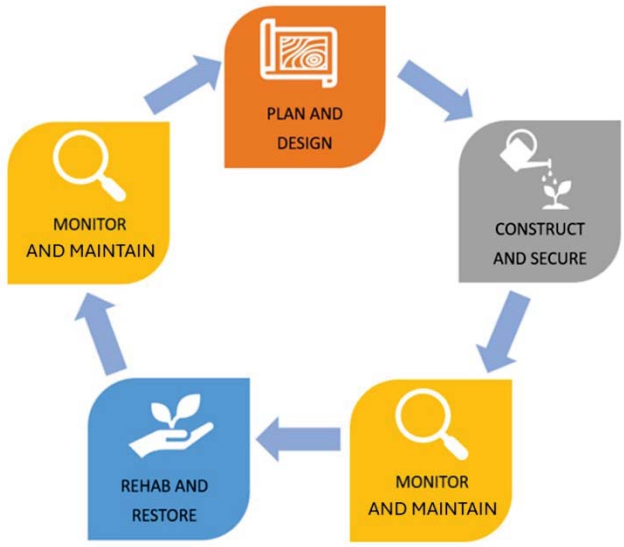
In addition to the risk mitigation already identified through the CCAP and the Urban Forest Study, this NCAMP recommends other mitigation actions for natural assets:

1. Conduct a study to assess the current condition of Town-owned natural area assets, documenting evidence of non-climate related risk (e.g. presence of invasive species, area degraded by overuse, etc.). Implement recommended upgrade, restoration, renewal and maintenance activities.
2. Remove and replace the trees identified as exposing the Town to very high risk (approximately 60 trees with a total value of $63,000 as shown in Table 4-6).
3. Explore options for managing beavers and formalize an approach to reducing their negative impacts on the tree canopy and drainage.
4. When the Town acquires new natural assets, conduct a condition assessment of the assets to inform financial considerations and risks to the Town.

4.2 Asset Management Strategies

The application of asset management lifecycle stages to natural assets is still evolving. For natural assets the stages are similar to built assets, however, some of the unique features of natural assets require a slightly different framing. The Natural Assets Initiative (2024)[6] recently released a guidance document to help municipalities across Canada incorporate natural assets into their assessment management planning process. The document articulates four key lifecycle stages for natural assets as shown in Figure 4-1 and as per the following descriptions:

Figure 4-1 Natural Asset Management Lifecycle



Source: Natural Assets Initiative (2024)

- **Plan and design** - activities to inform the subsequent stages that at a minimum involve data and information collection to understand the type, location and extent of natural assets under the management of the local government.
- **Construct and secure** – activities to provide a new asset that did not exist previously or to expand an existing asset (e.g., expanding an urban forest, planting new trees, constructing new community gardens). This includes securing land to expand the area of natural assets and where necessary, constructing new natural assets.
- **Rehabilitate and restore** – activities similar to upgrade and renewal of built assets. For natural assets, these activities tend to focus more on restoring degraded assets (e.g. replacing deteriorated sod, replanting deceased street trees, restoring streams affected by erosion), or improving asset resilience to known risks (e.g. replacing trees with different species to meet diversity targets or vaccinating trees).
- **Monitor and maintain** – activities needed to retain asset condition, including regularly scheduled inspection and assessment, regular fertilizing, overseeding, aeration and mowing of grassy areas; regular removal of litter and debris; or clean-up of tree limbs following extreme weather events.

This NCAMP focuses the asset management strategies on the lifecycle stages identified above. Note that disposal, a common consideration in asset management for built assets is largely not applicable to natural assets. An exception to this is some enhanced assets such as urban trees

[6] NAI (2024). Nature is infrastructure: How to include natural assets in asset management plans. Natural Assets Initiative. naturalassetsinitiative.ca

managed as individual units that have an end of life, and therefore disposal and asset replacement is needed.

Through asset management, the Town assesses the costs of potential lifecycle activities to determine the lowest lifecycle cost strategy to manage each asset type and deliver required services. Failing to take care of assets can impact the total cost of ownership for that asset and can also have other impacts such as causing damage to other infrastructure or interruption to service delivery.

This section of the NCAMP works through each of the lifecycle stages outlining what the Town is currently doing for each stage and potential future action that may be needed.

4.2.1 Plan and Design

The planning and design stage is intended to establish the long-term strategy for a service and its assets, and to inform the subsequent stages of planning for monitoring and maintenance, rehabilitation and restoration, and construction or securing of assets.

Table 4-7 lists the Town's current long-term strategic planning activities for natural assets. For natural area assets, the vision for scope and quantity of Town-owned services is shaped by the Strategic Plan 2011-2031, and land use plans defined in the Official Plan 2023 and Secondary Plans. In addition, the Town's Stream Management Master Plan 2019 defines the Town's vision for watercourse management. The Urban Forest Study 2024 defines the vision for tree canopy coverage, tree species diversity, and tree health. The Parks and Recreation Master Plan 2023 defines the Town's vision for urban parkland area and community gardens. The Pet Cemetery was acquired in 2011 and is in the process of being restored.

The table also shows potential future activities that may enhance the Town's long-term planning of natural assets. For example, it is recommended that the Town establish update frequencies for the Stream Management Master Plan and Parks and Recreation Master Plan and update these plans when they are due. Similarly, the Urban Forest Study should be updated on its established frequency of every 10 years. It is also recommended that the Pet Cemetery be incorporated into the into Official Plan and Parks and Recreation Master Plan when these are updated.

Table 4-7 Long-term Strategic Planning Activities

Asset Category	Asset Class	Current Activities	Potential Future Activities
Natural Area Assets	Forest and Open Spaces	Strategic Plan 2011-2031 Official Plan 2023 Secondary Plans (various) Urban Forest Study 2024 (includes urban forests, updated every 10 years)	Update current plans when due. Also consider incorporating carbon sequestration impact of natural assets in Town's GHG emissions plans, such as the Energy Conservation and Demand Management Plan and the Community Energy Plan.
	Wetlands		
	Waterbodies		
	Watercourses	Strategic Plan 2011-2031 Official Plan 2023 Stream Management Master Plan 2019 (updated every 10 years)	Establish a frequency for updating the Stream Management Master Plan and update when due
	Urban Trees	Urban Forest Study 2024 (includes urban trees, updated every 10 years)	Update the Urban Forest Study when due

Asset Category	Asset Class	Current Activities	Potential Future Activities
Natural Enhanced Assets		Tree inventory (used for Urban Forest Study)	Also consider incorporating carbon sequestration impact of urban trees in Town's GHG emissions plans, such as the Energy Conservation and Demand Management Plan and the Community Energy Plan.
	Urban Parks Community Gardens	Strategic Plan 2011-2031 Official Plan 2023 Parks and Recreation Master Plan 2023	Establish a frequency for updating the Parks and Frequency Master Plan and update when due
	Pet Cemetery	Site is planned for Heritage designation. Site acquired in 2011 and is in the process of being restored. Restoration is planned to continue over the next few years including clearing internal pathways, debris removal, stone cleaning, data/name collection and formal site/plot survey.	Incorporate Pet Cemetery into Parks and Recreation Master Plan

Planning for construction and securing, monitoring and maintenance, and rehabilitation and restoration of natural assets is currently done in this NCAMP, which references other planning documents where more detailed study has been completed. Construction and securing activities are discussed in Section 4.2.2, monitoring and maintenance activities are discussed in Section 4.2.3, and rehabilitation and restoration activities are discussed in Section 4.2.4.

4.2.2 Construct and Secure

As was explained in Section 3.5, the Town's population is expected to grow 11.8% from 66,370 in 2024 to 74,210 by 2034; however, due to land constraints and high land costs, the Town may not expand its natural area assets, urban parks, community gardens and trails to keep up with population growth.

The Town may consider planting additional trees to help achieve the Town-wide canopy target of 40%. Town-owned trees currently provides 6.3% canopy cover, which represents 18.5% of the current Town-wide canopy coverage of 34%. To meet the Town-wide target of 40% by 2034, the area of canopy cover needs to increase by 308 ha. It is challenging to translate canopy area need into a quantity of trees, because a tree's canopy coverage changes with age; however, assuming an average tree crown diameter of 6m, another 100,000 trees would be needed Town-wide, so any additional planting of Town-owned trees will help achieve this target.

Additional planting will also help the Town maintain its current LOS ratio of Town-owned urban trees to people. To maintain the current ratio of 398.3 trees per 1000 people, the Town will need to plant 3,123 urban trees by 2034 and another 2,779 urban trees by 2049, for a total of 5,902 urban trees planted over the next 25 years; however, maintaining the current LOS is not an

established target. For new plantings, the Town will select trees that will achieve its species diversity goal.

4.2.3 Monitor and Maintain

Monitoring and maintenance strategies for natural assets focus on improving assets' long-term resilience. Table 4-9 outlines the Town's current monitoring and maintenance activities by asset type. In addition, potential future activities have been identified that could help the Town improve and advance its overall management of natural assets. Frequency of inspections should be based on anticipated risks. However, targeting an inspection cycle of 5 to 10 years for all asset classes is recommended. The frequency of maintenance activities for natural area assets is more difficult to identify and should be based on identified needs that are uncovered as part of the inspection cycle. For natural enhanced assets, maintenance frequencies are defined in existing maintenance standards.

Table 4-8 Monitor and Maintain Management Strategies

Asset Category	Asset Class	Current Activities	Potential Future Activities
Natural Area Assets	Forest and Open Space	Current urban forest maintenance focuses on areas along the trail system, identifying and addressing trees that pose a hazard to public safety. Some identification of invasive species is completed; however, this is typically spearheaded by local ratepayers' groups.	Inspect for invasive species and assess management need. Urban Forest Study recommends developing a monitoring and action strategy for invasive species, including pests and diseases, and continuing to take proactive approaches to address new and emerging invasive species, such as hemlock woolly adelgid and oak wilt.
	Wetland	None	Inspect for invasive species and assess management needs. Adopt monitoring procedures to routinely inspect owned natural assets for preventative maintenance needs. Inspect assets regularly for signs of risk exposure, degradation, and possible rehabilitation needs. Potential future activities to be determined associated with Ducks Unlimited Canada property.
	Waterbody	None	Inspect for invasive species and assess management needs.
	Watercourses	Corrective maintenance of any issues when identified.	Execute operation and maintenance activities recommended by the Stream Management Master Plan. This plan also provides recommendations for a maintenance and monitoring plan as well as long-term monitoring based on a combination of 5 and 10-year inspection cycle field walks.

Asset Category	Asset Class	Current Activities	Potential Future Activities
Natural Enhanced Assets	Urban Trees	As per the Park Maintenance Standard, pruning of street trees varies by age class as follows: (1) Trees in the age class 15-25 years pruned once every 5 years; (2) Trees in the age class of 25-35 years pruned once every 7 years: (3) Trees in the age class of 35 years or more pruned once every 10 years. Corrective maintenance (clean up after storm).	Continue with tree maintenance program and implement recommendations from Urban Forest Study.
	Urban Parks	As per the Park Maintenance Standard, turf areas will be mowed to an average of 5cm, clippings will be removed from non-turf areas using a backpack blower, and litter and debris will be removed. Sports fields grass is aerated, top dressed, over seeded and fertilized.	Continue in accordance with existing maintenance standards.
	Community Gardens	Maintenance standards in development.	Formalize and implement maintenance standards.
	Pet Cemetery	Maintenance standards in development.	Formalize and implement maintenance standards.

4.2.4 Rehabilitate and Restore

The goal of rehabilitation and restoration activities is to improve asset condition, improve an assets' resilience to anticipated risks, or to respond to certain extreme hazard events that require reactive rehabilitation. Specific rehabilitation or restoration needs should be identified through routine monitoring and inspection. Currently the Town has a robust inspection cycle for urban trees. However, for other natural assets, restoration activities are more reactionary. A 5-to-10-year assessment cycle is recommended, recognizing that budget, condition, risk, and asset criticality should inform priority areas for assessment. Table 4-10 provides a summary of the Town's current and possible future rehabilitate and restore activities.

To estimate the tree replacement needs, a replacement age of 80 years for park trees and 49 years for street trees. These service life estimates yielded a replacement need of 646 trees, which approximated current replacement backlog of 666 trees identified in the inventory as dead or dying. Based on those service life estimates, it was projected that over the next 25 years, 7,361 urban trees will reach end of life and require replacement, or about 295 trees/year. With the unit replacement cost of $1,825, the total cost to address the backlog and replace all necessary trees over the next 25 years is projected to be $13.5 million, with an annual average cost of $538,375.

Table 4-9 Rehabilitate and Restore Management Strategies

Asset Class	Current Rehabilitation Activities	Potential Future Rehabilitation Activities
Wetlands Waterbody	No regular or planned rehabilitation efforts.	To be determined and prioritized through condition assessments and site inspections.
Forest and open space	The Town is nearing the end of its Emerald Ash Borer (EAB) management program, and there is no additional funding planned for forest restoration activities. Restoration programs are implemented as needed in response to specific threats and damage, such as invasive species, diseases or extreme weather. An Urban Forest Study is completed every 10 years to assess the health of trees and forests based on aerial photo. The most recent study was completed in 2024. The aerial photo does not enable assessment of the understory.	To be determined and prioritized through condition assessments and site inspections
Watercourses	A Stream Management Master Plan was completed in 2019, and the Town is continuing to implement the recommended erosion control improvements.	Complete the improvements identified in the 2019 Stream Management Master Plan.
Urban Trees	Street and park trees are individually replaced when they are damaged, dying or dead. Town staff complete a tree inspection and inventory on one quadrant of the Town each year. As such, trees are inspected every 4 years. During the inspection, trees are maintained or identified for replacement. Trees are also identified for replacement through the Urban Forest Study, which is completed every 10 years, and assesses the health of trees based on aerial photo. The most recent study was completed in 2024.	Continue replacing trees as needed, based on annual inspections, the Urban Forest Study and reports by residents and staff. An estimated average of 295 trees / year will require replacement. As trees are replaced, strive to achieve the species diversity target defined in the LOS (based on the Urban Forest Plan), and to shift to native and appropriate non-native, non-invasive species that have a higher tolerance and lower vulnerability to climate change impacts.
Urban Parks	As per the Park Maintenance Standard, manicured grassy areas are not restored or re-sodded unless, except for high wear areas of sports fields.	Continue in accordance with existing maintenance standards.
Community Gardens	These constructed assets are replaced and renewed as needed. The existing Community Garden is over 25 years old, and is in Good condition, so renewal is not currently planned.	Monitor the existing Community Garden for signs of deterioration and renew as needed. A second Community Garden is being constructed in 2024 and is not expected to require renewal in the NCAMP's 10-year planning period.

Asset Class	Current Rehabilitation Activities	Potential Future Rehabilitation Activities
Pet Cemetery	The Pet Cemetery was purchased in 2011 and has been undergoing restoration since 2017. The restoration is almost complete, and no additional renewal needs are anticipated.	Establish regular on-site monitoring and assessment of the Pet Cemetery, to proactively identify restoration and rehabilitation needs.

4.3 Summary of Lifecycle Management Needs

This section identified current lifecycle management activities and potential future activities to address risks to natural assets and achieve desired LOS.

4.3.1 Managing Risk

Based on the Town's CCAP and interviews with Town staff, invasive species, pests and diseases, and wildlife impacts (specifically beavers) present High-medium risks to the Town's natural assets. Low-medium risks include extreme weather, contamination, overuse, and misuse. Low risks include unauthorized edge encroachment or disturbances. No threats were ranked as High risk.

Risk treatments recommended by the CCAP and reinforced by recommendations from the Urban Forest Study include:

1. **Tree and Plant Selection**

   Regularly assess the Town's planting list to plant trees, shrubs and other plants that are native or non-invasive, low-maintenance, and resilient to invasive species, pests, diseases and projected climate conditions.

2. **Before Extreme Weather Events**

   Assess the costs and benefits of increasing the current tree inspection and maintenance process (one quadrant of the Town each year) to identify hazardous trees and undertake preventative maintenance before damage occurs during extreme weather events. Implement the optimal inspection and maintenance frequency.

3. **After Extreme Weather Events**

   Continue applying procedures in the Park Maintenance Plan to inspect parks following extreme weather events to identify damaged landscaping and amenities to prioritize repairs and minimize service disruptions.

4. **Managing Non-Climate Threats**

   Establish a program to monitor and assess degradation of natural assets due to invasive species, pests, diseases, contamination, overuse, misuse, unauthorized edge encroachment or other disturbances. Continue taking proactive approaches to address new and emerging invasive species, such as hemlock woolly adelgid and oak wilt. Consider targeted removal of high priority invasive plant species at high priority sites following best practices. Implement actions to restore degraded assets and to prevent future degradation.

5. **Managing Wildlife Threats**

   Explore options for managing beavers and formalize an approach to reducing their negative impacts on the tree canopy and drainage. However, it is recognized that options may be limited based on existing wildlife regulations.

In addition, asset failure risk was assessed for individual urban trees, and it was found that 0.1% of urban trees are exposing the Town to Very High risk, representing a total of approximately 60 trees and a replacement value of $63,000. It is recommended that the Town prioritize removal and replacement of these trees.

4.3.2 Managing the Asset Lifecycle

In addition to the Town's current practices for managing natural assets across the stages of the lifecycle, potential future activities for the Town to consider for each lifecycle stage include the following:

- Plan and Design
    - Continue updating the Stream Management Master Plan and Urban Forest Study every 10 years
    - Incorporate the Pet Cemetery into Official Plan and Parks and Recreation Master Plan when these are updated.
    - Consider incorporating carbon sequestration impact of urban trees in Town's GHG emissions plans, such as the Energy Conservation and Demand Management Plan and the Community Energy Plan.
- Construct and Secure
    - Due to land constraints and the high cost of land it may not be feasible for the Town to maintain the current LOS of natural area assets and natural enhanced assets per 1,000 people.
    - Given these constraints, construct and secure strategies should focus on working toward meeting the Town's 40% canopy cover target.
- Monitor and Maintain
    - Establish a program to assess and monitor degradation of natural assets, as described in Section 4.3.1, Recommendation 4 – Manage Non-Climate Threats. This should include assessing the condition of any newly acquired lands if any are secured.
    - Continue executing operations and maintenance activities recommended by the Stream Management Master Plan, including conducting regular field walks.
    - Continue maintaining trees in accordance with the Park Maintenance Standard and implement recommendations from the 2024 Urban Forest Study.
    - Continue maintaining urban parkland in accordance with the Park Maintenance Standard.
    - Continue formalizing maintenance standards for community gardens and pet cemetery, then implement.
- Rehabilitation and Restoration

- Implement restoration needs identified through the assessment of natural assets.
- Continue to implement the improvements identified in the 2019 Stream Management Master Plan.
- Continue replacing trees based on annual inspections, the Urban Forest Study and reports by residents and staff. Prioritize the trees identified as Very High risk in Table 4-6. As trees are replaced, consider the recommendations in the Tree and Plant Selection list updated in alignment with Section 4.3.1, Recommendation 1 – Tree and Plant Selection. Strive to achieve the species diversity target defined in the LOS (based on the Urban Forest Plan), and to shift to native and appropriate non-native, non-invasive species that have a higher tolerance and lower vulnerability to climate change impacts.

The next section discusses the estimated costs of the recommended risk mitigations and potential future lifecycle activities.

5 FINANCIAL STRATEGY

This section presents three options for investing in the management of natural assets. Each option carries a different cost and delivers a different lifecycle benefit. The scenarios are:

- **Scenario A: Status Quo**
  Manage assets according to current practices and planned restoration activities. Replacement of urban trees, invasive species management and targeted planting and seedling are based on capacity of existing budget. New urban tree planting continues based on current levels.
- **Scenario B: Status Quo with Moderate Rehabilitation, Monitoring and Maintenance**
  Continue status quo activities and initiate broader programs to manage invasive species, conduct targeted planting and seeding, and assess condition of natural area assets. Increased replacement of urban tree and planting of new urban trees.
- **Scenario C: Status Quo with High Rehabilitation, Monitoring and Maintenance**
  Continue status quo activities and initiate broader programs to more aggressively manage invasive species, conduct targeted planting and seeding, and assess condition of natural area assets. Address all urban tree replacement needs over the 25-year period and increase new urban tree plantings.

As indicated by their names, the strategies differ primarily in their level of monitoring and maintenance of natural assets. Scenario A: Status Quo includes monitoring and maintenance of natural enhanced assets, but very little for natural area assets. Scenario B initiates rehabilitation, monitoring and maintenance for natural assets. Scenario C is similar to Scenario B, but includes funds for more aggressive rehabilitation, monitoring and maintenance.

Due to land constraints and the high cost of land, none of the Scenarios include the addition of natural area or enhanced assets.

The details of each Scenario are described below, followed by a summary comparison.

5.1 Scenario A: Status Quo

Table 5-1 summarizes the lifecycle activities included in the Status Quo scenario. All activities reflect existing fund levels in current capital plan and the 2024 operating budget. Assumptions regarding status quo activities and costs are as follows:

- Construct and Secure
  - 1,500 new urban trees planted over 25 years, or on average 60 trees/year at cost of $375/tree.
- Rehabilitation and Restoration
  - The total estimated cost for replacing community gardens is $450,000, with $150,000 needed in year approximately 2039 and the remaining amount in approximately 2049.
  - Invasive species controls are applied to 8.3 ha over the next 25 years. The annual invasive species control cost, which does not include value of volunteer work, is

estimated to be $20,000 per year. The total cost over 25 years is estimated to be $0.5 million.

- Targeted seeding or planting activities are applied to 2.4 ha over the next 25 years. The annual cost, which excludes cost spent on trees planted through external partnerships, is estimated to be $20,000 per year and the total cost is $0.5 million.
- The estimated cost for urban tree replacement is derived from an age-based forecast model, assuming the current replacement rate of 240 trees per year. With current replacement rate, a total of 6,000 trees is estimated to be replaced over 25 years, totaling around $11 million.
- Recommendations of the 2029 Stream Management Master Plan will be implemented and are estimated based on current Town's budgeted expenses.

- Monitor and Maintain
  - Includes the continued maintenance efforts for urban parks, community gardens, and the pet cemetery. This cost is based on current budget expenses and an estimate of staff time related to these assets to generate an average maintenance cost of approximately $431,000.
  - Tree maintenance costs are estimated using a similar process including current expenses and staff time to generate an average maintenance cost of $203,000, with a total exceeding $5 million.
- Plan and Design
  - 10-year update of the Stream Management Master Plan (required in year 2029, 2039, and 2049), which is expected to cost about $150,000.
  - Updated tree inventory, on a 10-year frequency, is based on what is currently report in the 10-year Capital Budget amounting to $36,200. Currently planned for 2025, 2035 and 2045.
  - An update to the Urban Forest Study is also required on a 10-year frequency (required in 2034 and 2044) and estimated based on the Town's portion of the cost to complete the recent 2023 as reported in the 10-year capital budget.

Table 5-1 Scenario A: Status Quo Lifecycle Activities

Lifecycle Stage	Activities for Natural Area Assets (Forests and Open Spaces, Water Bodies, Wetlands, Watercourses)	Activities for Natural Enhanced Assets (Community Gardens, Urban Parks, Urban Trees and Pet Cemetery)
Construct and Secure	None	Assumes no additional parklands, community gardens or other enhanced areas. Per status quo, 60 new urban trees will be planted per year, resulting in 1,500 new trees by 2049. (Trees that are planted by developers would be additional). LOS drops from 398.3 urban trees / 1000 people in 2024 to **345 urban trees / 1000 people in 2049.**
Rehabilitation and Restore	Conduct invasive species control on 0.33ha of natural area assets per year, for a total of **8.3ha completed in 25 years (2% of natural areas)**. This quantity reflects status quo of ~$20k/year spending on this activity. Additional progress is made by volunteers, and it is recommended that the Town continue volunteer activities. Conduct targeted planting and seeding on 0.95ha of natural area assets per year for a total of **2.4ha completed in 25 years (1% of natural areas).** This quantity reflects status quo of ~$20k/year spending on this activity. In addition, 445 trees are planted in natural areas, funded through partnerships. It is assumed that trees will be planted at the same rate over the next 25 years. This will require the Town to maintain these partnerships.	Town to continue **replacing 240 urban trees / year**. It is estimated that 7360 urban trees will reach end-of-life by 2049, or approximately 295/year, so at the end of **2049 there will be a backlog of 1361 trees requiring replacement.**
Monitor and Maintain	Condition of natural area assets is not assessed. Does not include stream monitoring. 2019 Stream Management Plan recommend 5-year and 10-year monitoring cycles along different segments. 10-year assessments will be included with the Stream Management Plan Update (see Plan	Continue current maintenance levels for trees; however, does not allow for additional maintenance required as trees are added. Continue current maintenance practices for parklands (assuming no additional lands are acquired).

Lifecycle Stage	Activities for Natural Area Assets (Forests and Open Spaces, Water Bodies, Wetlands, Watercourses)	Activities for Natural Enhanced Assets (Community Gardens, Urban Parks, Urban Trees and Pet Cemetery)
	and Design section); however Scenario A does not include the recommended 5-year monitoring.	
Plan and Design	Update of Stream Management Master Plan in 2029 and 2039 (10-year cycle). The update includes stream monitoring (field walk) to collect data.	Includes Tree inventory update in 2025, 2035 and 2045 (10-year cycle) and Urban Forest Study Update in 2034 and 2044 (in accordance with 10-year cycle).

Table 5-2 and Figure 5-1 outline the financial needs forecast over both the 10- and 25-year planning periods for Scenario A – Status Quo. See Appendix D for detailed financial tables.

Overall, the total forecasted needs over the 10-year period are $19.99 million, with an average annual need of $2.0 million/year (indicated by the black dashed line in Figured 5-1).

The average annual needs over the 25-year forecast were estimated to be $1.5 million (indicated by the grey dashed line in Figure 5-1). This value is lower than the forecast 10-year needs, because the only rehabilitation and restoration needs known for natural area assets are stream rehabilitation identified in the 2019 Stream Management Master Plan, which will all be completed in 2031. Because natural area assets do not deteriorate with age, condition assessments are needed to identify of rehabilitation and restoration.

This scenario is derived from Status Quo activities and planned budget allocations, and thus represents the anticipated available funding.

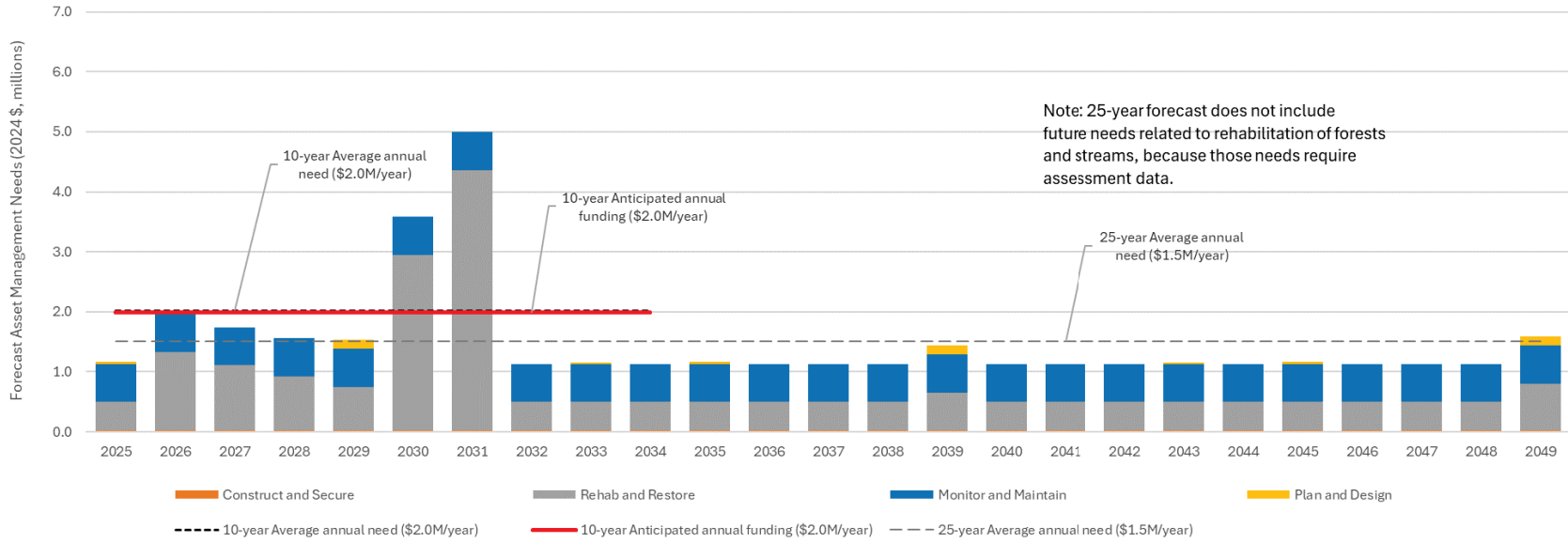
Table 5-2 Scenario A: Financial Needs Forecast Summary

No additional funding required for this Scenario.

	Forecast Needs (2024 $, millions)			
	10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Construct and Secure	0.23	0.02	0.56	0.02
Rehab and Restore	13.22	1.32	20.84	0.83
Monitor and Maintain	6.35	0.63	15.87	0.63
Plan and Design	0.20	0.02	0.59	0.02
OVERALL TOTAL*	19.99	2.00	37.85	1.51

* Differences due to rounding

Figure 5-1 Scenario A: Financial Needs Forecast 2025-2049



5.2 Scenario B: Moderate Rehab, Monitoring and Maintenance

Table 5-3 lists the lifecycle activities included in Scenario B. The lifecycle activities are the same as described in Scenario A, except for the following changes:

- Construct and Secure
    - 2,000 new trees planted over 25 years, or on average 80 trees/year at cost of $375/tree
- Rehabilitation and Restoration
    - Invasive species controls are applied to 53.6 ha over the next 25 years. The percentage of area to control each year is set at 0.5%. Based on costs reported by CVC (2020)[7], the unit cost for these procedures were estimated to be $6/m^2. When applied to the assumed area of treatment result in a cost of $3.2 million over the 25-year period.
    - Targeted seeding or planting activities are applied to 10.3 ha over the next 25 years. Based on costs reported by CVC (2020), the unit cost for these procedures were estimated to be $21/m^2. When applied to the assumed area of treatment results in a cost of $2.2 million over 25-years.
    - The tree replacing rate is set at 280 per year, and the total cost of $12.8 million to replace 7,000 trees over next 25 years.
- Monitor and Maintain
    - Tree maintenance cost is estimated based on existing cost per tree, increases with addition of trees planted each year, totalled at $5.3 million.
    - Over a 25-year period, the total projected assessment cost for natural area asset assessment amounts to approximately $1.2 million. This estimate is based on assessing 25% of the area (open spaces, forests, and wetlands) in 2025 and 2026, 15% in 2027 and 2028, and 10% annually thereafter, with a unit assessment cost of $1,000 per hectare.

[7] CVC (2020). Life Cycle Costing of Restoration and Environmental Management Actions: Costing Natural Assets in Peel Region.

Table 5-3 Scenario B: Moderate Lifecycle Activities

Lifecycle Stage	Activities for Natural Area Assets (Forests and Open Spaces, Water Bodies, Wetlands, Watercourses)	Activities for Natural Enhanced Assets (Community Gardens, Urban Parks, Urban Trees and Pet Cemetery)
Construct and Secure	Same as Scenario A - Status Quo	Assumes no additional parklands, community gardens or other enhanced areas (e.g. pet cemetery). 80 new urban trees will be planted per year, resulting in 2,000 new trees by 2049. (Trees that are planted by developers and through existing partnerships would be additional.) LOS in 2049: 356 urban trees / 1000 people (lower than in 2024)
Rehabilitation and Restore	Allows for 54ha of invasive species control per year in 25 years (13% of natural areas). This does not include efforts of volunteers. Additional progress will be made by volunteers (quantity unknown). Allows for 10.3ha of targeted planting and seeding in 25 years (2.4% of natural areas). This does not include the significant contributions of planting partnerships.	Town to **replace 280 urban trees / year**. It is estimated that 7360 urban trees will reach end-of-life by 2049, or approximately 295/year, so at the end of **2049 there will be a backlog of 361 trees requiring replacement**.
Monitor and Maintain	Completes condition assessment on all natural areas in first 6 years, then continues on a cycle of assessing each property every 10 years (1/10th of portfolio per year). Includes the 5-year monitoring that was excluded from Scenario A. As with Scenario A, 10-year monitoring will be covered by the Stream Management Plan Update (see Plan and Design section)."	Continue current maintenance levels for trees. Allow for additional maintenance proportional to growth in urban tree portfolio (trees planted by Town, does not include developer-planted trees because those are unknown). Same as Scenario A - Status Quo
Plan and Design	Same as Scenario A - Status Quo	Same as Scenario A - Status Quo

Table 5-4 and Figure 5-2 show the forecasted financial needs over both the 10 and 25-year planning periods for Scenario B. See Appendix D for detailed financial tables.

The overall forecasted need across all categories for the 10-year period totals $23.1 million or $2.3 million/year. The forecasted need surpasses the Status Quo Scenario by $0.32 million/year. This amount also represents the gap between anticipated available funding (indicated by the difference between the red line in Figure 5-2) and forecast need (indicated by the black dashed line).

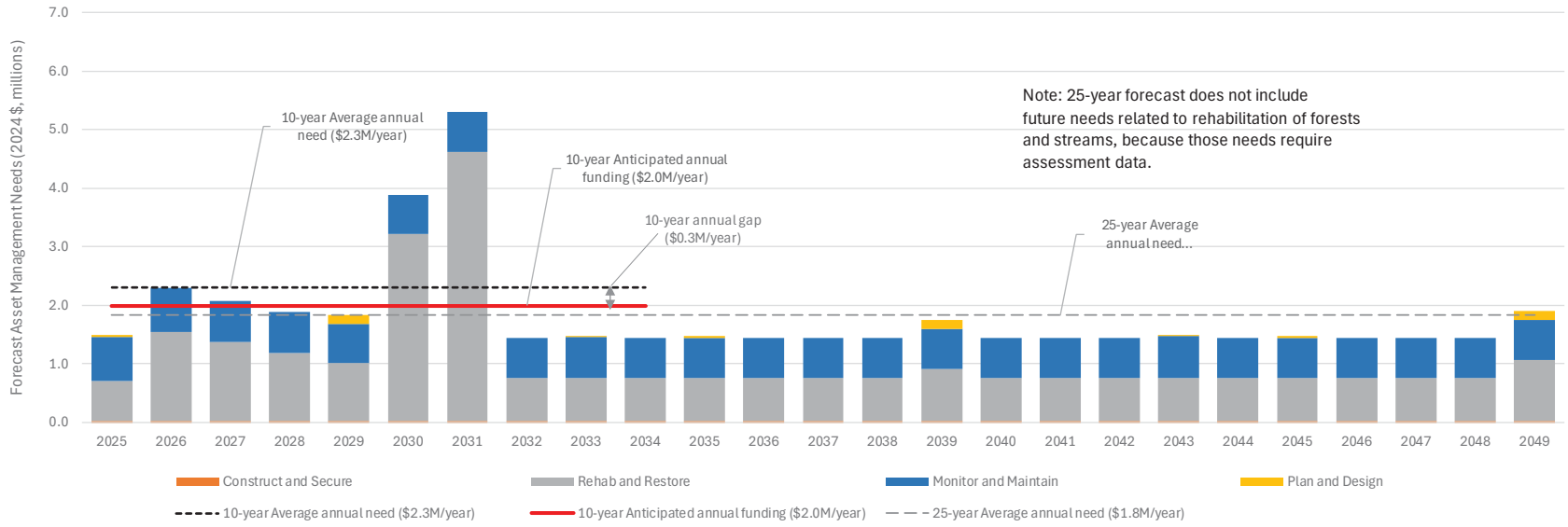
Over 25 years, forecast needs average $1.8 million/year; however, it is anticipated that this amount will increase after condition assessments are completed, and rehabilitation and restoration needs are identified.

Table 5-4 Scenario B: Financial Needs Forecast Summary

	Forecast Needs (2024 $, millions)			
	10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Construct and Secure	0.30	0.03	0.75	0.03
Rehab and Restore	15.64	1.56	27.04	1.08
Monitor and Maintain	7.00	0.70	17.34	0.69
Plan and Design	0.20	0.02	0.59	0.02
OVERALL TOTAL*	23.14	2.31	45.72	1.83
Difference from Status Quo*	3.15	0.32	7.87	0.31

* Differences due to rounding

Figure 5-2 Scenario B: Financial Needs Forecast 2025-2049



5.3 Scenario C: High Rehab, Monitoring and Maintenance

Table 5-5 lists the lifecycle activities included in the Scenario C. The lifecycle activities are the same as described in Scenario B, with exception of the following:

- Construct and Secure
    - 4,000 new trees planted over 25 years, or on average 160 trees/year at cost of $375/tree
- Rehabilitation and Restoration
    - Invasive species controls are applied to 193.0 ha over the next 25 years. The percentage of area to control each year is set at 2.0%. Based on the same cost assumptions outlined for Scenario B, the total cost for invasive species control is totalled around $11.6 million.
    - Targeted seeding or planting activities are applied to 20.4 ha over the next 25 years, using the same cost assumptions outlined for Scenario B.
    - The tree replacing rate is set at 295 per year, and the total cost of $13.5 million to replace 7,375 trees over next 25 years.
- Monitor and Maintain
    - Tree maintenance cost is estimated based on existing cost per tree, increases with addition of trees planted each year, totalled at $5.5 million.
    - Over a 25-year period, the total projected assessment cost for natural area asset assessment amounts exceeding $1.3 million. This estimate is based on assessing 25% of the area (open spaces, forests, and wetlands) in 2025 and 2026, 20% in 2027 and 2028, and 10% annually thereafter, with a unit assessment cost of $1,000 per hectare.

Table 5-5 Scenario C: High Lifecycle Activities

Lifecycle Stage	**Activities for Natural Area Assets** (Forests and Open Spaces, Water Bodies, Wetlands, Watercourses)	**Activities for Natural Enhanced Assets** (Community Gardens, Urban Parks, Urban Trees and Pet Cemetery)
Construct and Secure	Same as Scenario A - Status Quo	Assumes no additional parklands, community gardens or other enhanced areas (e.g. pet cemetery). 160 new urban trees will be planted per year, resulting in 4,000 new trees by 2049. (Trees that are planted by developers would be additional.) LOS in 2049: **398 urban trees / 1000 people** (same as in 2024)

Lifecycle Stage	Activities for Natural Area Assets (Forests and Open Spaces, Water Bodies, Wetlands, Watercourses)	Activities for Natural Enhanced Assets (Community Gardens, Urban Parks, Urban Trees and Pet Cemetery)
Rehabilitation and Restore	Allows for 193**ha of invasive species control per year in 25 years (45% of natural areas).** This does not include efforts of volunteers. Additional progress will be made by volunteers (quantity unknown). Allows for **20.4ha of targeted planting and seeding in 25 years (4.8% of natural areas)**. This does not include the significant contributions of planting partnerships.	Town to **replace 295 urban trees / year, which is** expected to be sufficient to replace all trees that reach end-of-life by 2049 (**no backlog**).
Monitor and Maintain	Completes condition assessment on all natural areas in **first 5 years**, then continues on a cycle of assessing each property every 10 years (1/10th of portfolio per year). Same as Scenario B - Medium.	Same as Scenario B - Medium; however, funding requirement is higher because more new trees are planted in Scenario C. Same as Scenario A - Status Quo
Plan and Design	Same as Scenario A - Status Quo	Same as Scenario A - Status Quo

Table 5-6 and Figure 5-3 display both the 10-year and 25-year financial needs forecast for Scenario C. See Appendix D for detailed financial tables.

The total projected financial need for all categories is estimated to be $27.1 million over the 10-year period, with an annual average need of $2.71 million/year. Compared to Scenario A – Status Quo, Scenario C requires an additional $7.1 million over the 10-year period. This represents an average annual funding gap of $0.71 million/year, indicated by the difference between the black dash line (forecast need) and the red line (anticipated annual funding) in Figure 5-3.

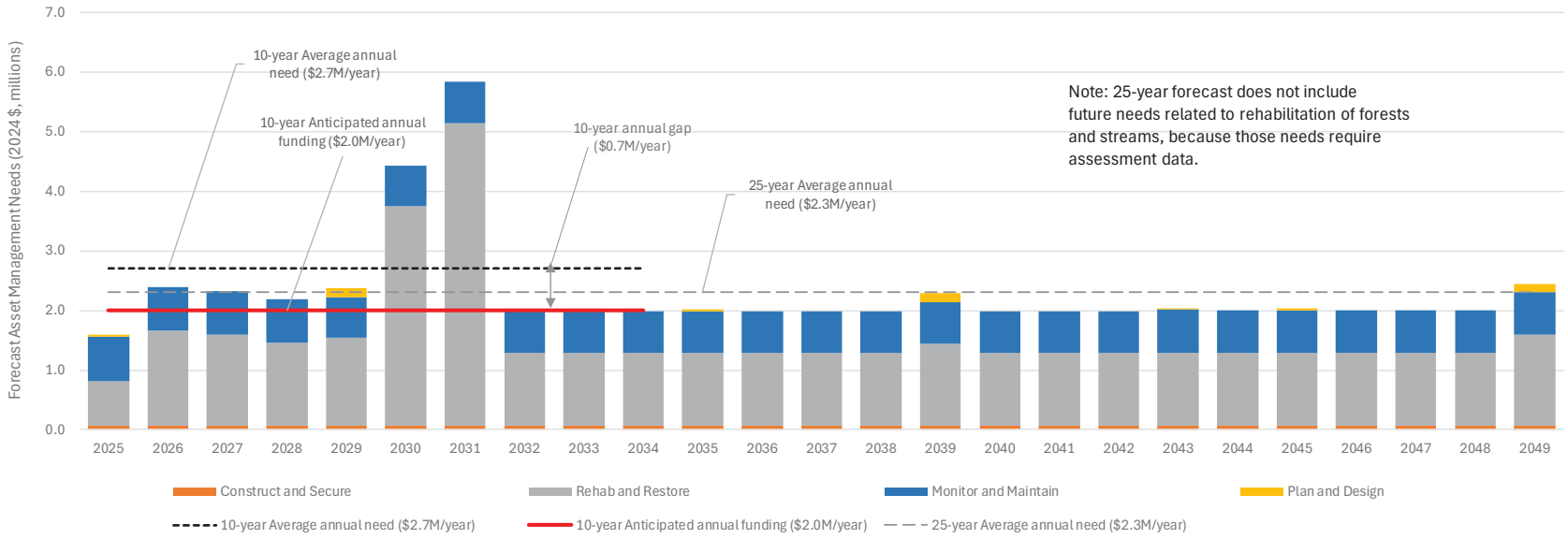
The 25-year forecast shows an average annual need of $2.3 million/year; however, it is anticipated that this amount will increase after condition assessments are completed, and rehabilitation and restoration needs are identified.

Table 5-6 Scenario C: Cost Forecast 2025-2034

	Forecast Needs (2024 $)			
	10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Construct and Secure	0.60	0.06	1.50	0.06
Rehab and Restore	19.25	1.93	38.20	1.53
Monitor and Maintain	7.07	0.71	17.57	0.70
Plan and Design	0.20	0.02	0.59	0.02
OVERALL TOTAL*	27.12	2.71	57.86	2.31
Difference from Status Quo*	7.14	0.71	20.01	0.80

* Differences due to rounding

Figure 5-3 Scenario C: Cost Forecast 2025-2034



5.4 Comparison of Scenarios

The three scenarios for natural asset management are compared in Table 5-7 through Table 5-9. Table 5-7 summarizes the costs of each scenario, and shows that 10-year costs range from $20.0 million for Scenario A (Status Quo) to $27.1 million for Scenario C (High), while the 25-year costs range from $37.9 million for Scenario A to $57.9 million for Scenario C.

As the Status Quo scenario, Scenario A represents the anticipated annual funding available, and is used to calculate the funding gap, or additional funding needed, for Scenarios B and C. The table shows that an average of $0.3 million/year additional funding would be needed for Scenarios B and $0.7 million/year additional funding would be needed for Scenarios C.

Table 5-7 Comparison of 10-Year and 25-Year Costs for Scenarios A, B and C

	10-Year Cost Comparison			25-Year Cost Comparison		
	Scenario A	Scenario B	Scenario C	Scenario A	Scenario B	Scenario C
Total Cost (2024 $, millions)	$20.0	$23.1	$27.1	$37.9	$45.7	$57.9
Average Annual Cost (2024 $, millions/year)	$2.0	$2.3	$2.7	$1.5	$1.8	$2.3
Anticipated Annual Average Funding (2024 $, millions/year)	$2.0	$2.0	$2.0	$1.5	$1.5	$1.5
Average Annual Gap* (2024 $, millions/year)	--	$0.3	$0.7	--	$0.3	$0.8

* Differences due to rounding

Table 5-8 compares the lifecycle activities completed of each scenario over the 25-year planning period. As shown in the table, Scenario A replaces 82% of the estimated tree replacement need (as calculated in Section 4.2.4), and new tree plantings continue based on current levels to contribute to achieving the 40% canopy cover target. Natural area condition assessments are not conducted, but existing levels of invasive species control and targeted seeding and planting continue. This Scenario will leave the Town and its natural assets unprepared for hazards such as extreme weather, invasive species, encroachment and misuse.

Scenario B replaces 95% of the estimated tree replacement need (as calculated in Section 4.2.4), and plants 2000 (80/year) new trees to contribute to achieving the canopy target. Moreover, natural area condition assessments will be completed on all properties in the first 6 years before transitioning to a 10-year cycle. Moderate programs of invasive species control and targeted seeding and planting will also be conducted.

Scenario C is similar to Scenario B but aims to replace 100% of the estimated tree replacement need (as calculated in Section 4.2.4) and to plant 4000 new trees to contribute to the tree canopy target (and would be sufficient to maintain the current LOS ratio of trees to population). Natural

area condition assessments will be completed on all properties in the first 5 years (1 year faster than Scenario B) before transitioning to a 10-year cycle, and invasive species control and targeted seeding and planting will also be conducted at a higher rate. This will better position the Town for the identified risks to its natural assets.

Table 5-8 Comparison of Lifecycle Activities under Scenarios A, B and C

Lifecycle Activities Completed 2025-2049	Scenario A Status Quo	Scenario B Moderate	Scenario C High
Construct and Secure			
Net New Urban Trees Planted	1,500 trees 60 trees / year	2,000 trees 80 trees / year	4000 trees 160 trees / year
Rehab and Restore			
Dead and Dying Urban Trees Replaced	6,000 trees (82% of need)*	7,000 trees (95% of need)*	7,375 trees (100% of need)*
Invasive Species Control (hectares treated)	8.3 ha (2% of area)**	53.6 ha (13% of area)**	193.0 ha (45% of area)**
Targeted Seeding and Planting (hectares treated)	2.4 ha (1% of area)**	10.3 ha (2.4% of area)**	20.4 ha (4.8% of area)**
Stream Rehabilitation projects completed	5 projects	5 projects	5 projects
Monitor and Maintain			
Condition Assessment (hectares assessed)	0	1,243.7 ha	1,286.6 ha
Tree Maintenance Increases with Net New Trees	Yes	Yes	Yes
Urban Park Maintenance	Same as current	Same as current	Same as current
Plan and Design			
Stream Management Master Plan Updated in 2029, 2039, 2049	Yes	Yes	Yes
Urban Forest Study Updated in 2034, 2044	Yes	Yes	Yes
Tree Inventory Updated in 2025, 2035, 2045	Yes	Yes	Yes

* Percent of need is determined based on the cumulative number of trees replaced by the scenario compared to the forecasted replacement need estimated in Section 4.2.4.

** Percent of area is determined based on the total area of Town-owned natural area assets.

Table 5-9 compares the forecast LOS of each scenario at the end of the 25-year planning period. As shown in the table, the forecast LOS is the same across all scenarios for several of the metrics, including the following:

- % residential homes within 500m of natural area assets or enhanced asset areas
- Area of natural area assets and natural enhanced assets per 1000 people
- # of Community Garden locations per 1000 people
- # of km of trails through natural area assets and natural enhanced assets per 1000 people

These are the same across all scenarios, because the scenarios do not include addition of lands, community gardens or trails.

LOS is also the same across all scenarios for the tree pruning LOS, because all the scenarios assume that pruning will be done at the current rate, with activity increasing proportionally with addition of trees.

Differences between scenarios relate to the following LOS:

- Area of canopy cover provided by the Town
- # of public maintained street and park trees per 1000 people
- # of new urban trees planted per year
- Species diversity of maintained trees
- % Town-owned natural assets affected by invasive species
- # of urban tree replacements per year

For each of these metrics, Scenario A – Status Quo provides a benchmark performance level, Scenario B provides a slightly improved performance, which will make the Town's natural assets healthier and more resilient to climate and non-climate threats. This scenario will require $0.32 million/year of additional funding.

Scenario C provides even greater health and resilience but requires $0.73 million/year of additional funding.

Table 5-9 Level of Service Performance Forecasts for Scenarios A, B and C

Service Attribute	Community LOS	Technical LOS	Relevant Asset Type	Current Performance	Performance Forecast for 2049		
					Scenario A Status Quo	Scenario B Moderate	Scenario C High
Capacity & Use	Natural assets are suitable to all kinds of users and are easy to access.[a]	% residential homes within 500m of natural area assets or enhanced asset areas	Natural area and natural enhanced assets	**99.35%** of residential properties	Percentage expected to increase (improve) with growth of Aurora Promenade and Major Transit Station Area		
		Area of natural area assets and natural enhanced assets per 1000 people	Natural area and natural enhanced assets	Natural area assets per 1000 people: **6.56 ha** [b,c] Natural enhanced asset per 1000 people: **1.99 ha** [b,c]	Natural area assets per 1000 people: **5.15 ha** [c] Natural enhanced asset per 1000 people: **1.56 ha** [c]		
		Area of canopy cover provided by the Town	Urban trees and forest and open space	Approximately 313 ha of canopy cover is Town-owned. This provides a canopy cover of 6.3%, which accounts for 18.5% of the current Town-wide canopy cover (34%).	1,500 new urban trees [f]	2,000 new urban trees [f]	4,000 new urban trees [f]
		# of public maintained street and park trees per 1000 people	Urban trees	# of urban trees: 26,435 # of public maintained street trees/1000 people: **398.3** [c]	29,195 trees **345.3** trees/1000 people [c]	30,095 trees **355.9** trees/1000 people [c]	33,695 trees **398.5** trees/1000 people [c]
		# of new urban trees planted per year	Urban trees	60 new urban trees planted (2023)	60 trees / year	80 trees / year	160 trees / year
		# of Community Garden locations per 1000 people	Community gardens	# of locations: 2 # of locations per 1000 people: **0.030** [c]	2 locations **0.024** locations / 1000 people [c]		
		# of km of trails through natural area assets and natural enhanced assets per 1000 people	Natural area and natural enhanced assets	40.87 km of trails through town-owned and town-maintained land Trails per 1000 people: **0.616 km** [c]	40.87 km **0.483 km** / 1000 people [c]		
Function	Enrich Aurora's ecology by protecting and preserving biodiversity. [d]	Species diversity of maintained trees	Urban trees	Species composition for highest 5 species in Town's tree inventory: • Norway maple (14.96%) • Littleleaf linden (11.83%) • Ash (9.51%) • Honey locust (8.54%) • Silver maple (5.49%)	Low improvement	Low-Medium improvement	Medium improvement
		% Town-owned natural assets affected by invasive species	Natural area assets	55% of Open Space − Natural Cover plots show invasive plant species (from Urban Forest Study) [e]	Invasive species control completed on 8.3ha over 25 years	Invasive species control completed on 55ha over 25 years	Invasive species control completed on 197ha over 25 years
Quality & Reliability	Natural and enhanced assets are in good condition, meeting the needs of users.[a]	Tree pruning activities completed per year	Urban trees	3150 (in-house) 183 (contracted)	Same rate as current, activity increases proportionally with addition of trees		
		# of urban tree replacements per year	Urban trees	**240** urban trees replaced (2023)	**240** trees / year (81.5% of need) [g]	**280** trees / year (95.1% of need) [g]	**295** trees / year (100% of need) [g]

a) Adapted based on Level of Service Statement for Aurora's Parks & Recreation facilities.

b) The Parks and Recreation Master Plan, reports 2.7 hectares per 1000 residents of parkland, but defines parkland as lands within Town-owned park properties. Those properties do not consistently include or exclude naturalized areas.

c) Population estimated at 66,370 in 2024 and 84,560 in 2049 based on 2022 York Region Official Plan.

d) From the Town of Aurora Corporate Environmental Action Plan 2018.

e) Existing data is not specific to town-owned natural assets. However, data compiled for the Urban Forest Study based on a series of representative sample plots across Aurora found that 55% of "Open Space – Natural Cover" plots had presence of invasive plant species.

f) Canopy cover provided by new trees will vary over time.

g) Forecast tree replacement need is approximately 295 trees / year.

5.5 Recommended Scenario and Proposed LOS

It is recommended that the Town proceed with Scenario B, because it includes a moderate program of assessment, maintenance and restoration activities. The data collected through the assessments will enable the Town to determine whether these programs should be reduced or expanded in the future. If Scenario B is adopted, the LOS performance forecasted in Table 5-9 for that scenario will be the Town's Proposed LOS.

To fund Scenario B, the Town may:

- Seek additional revenues through taxation or grants
- Re-allocate funds from other programs (this may result in reduced levels of service in other programs).

It is also recommended that the Town continue or expand its existing strategies that support the Town's natural asset services, including the following:

- Continue to seek alternative ways to increase natural area asset capacity for its residents, for example, through maintenance agreements with external parties similar to the Town's existing agreements for use of the Duck's Unlimited property and Sheppard's Bush Conservation Area.
- Remain open to opportunities to re-purpose existing properties or to acquire natural areas that become available.
- Maintain existing partnerships with organizations that fund planting of trees in natural areas and seek additional partnership opportunities.
- Continue volunteer program for removal of invasive plant species on Town lands. Consider expanding.

The Town may also consider offering sponsorship opportunities wherein community organizations may pay for natural asset maintenance costs in exchange for acknowledgement signage.

6 NCAMP IMPROVEMENT AND MONITORING

6.1 NCAMP Improvement Recommendations

The Town is committed to continually improving how assets are managed and how services are delivered. Development of asset management plans is an iterative process that includes improving data, processes, systems, staff skills, and organizational culture over time. Table 6-1 identifies recommendations for the Town that will help the NCAMP evolve and improve through each iteration.

Table 6-1 Asset Management Improvement Recommendations

Gap	Improvement Recommendation
State of Infrastructure	
Establish a condition assessment program for natural assets	For this NCAMP, condition scores for many asset classes were established based on staff knowledge and expertise. Future efforts should work toward establishing a condition assessment program, as recommended in Section 4 under Maintenance and Monitoring activities. The protocol should also include an assessment of condition for any acquired lands the Town may secure. Prior to beginning a condition assessment program it is recommended that the Town establish condition scoring criteria for different natural asset types, so that the appropriate data can be collected. For instance, the Town may refer to and adapt Credit Valley Conservation's "Rapid Condition Assessment Protocol."
Inventory improvements	An initial natural asset inventory has been developed based on the best available data which incorporates local Ecological Land Classification (ELC) mapping, the Town's parks and open space GIS layer, as well as available spatial data associated with community gardens, the pet cemetery, and watercourses. The inventory also includes lands maintained but not owned by the Town. Future refinements to consider include addressing: • Enhance the accuracy and precision of Geographic Information System (GIS) data to enable a comprehensive and nuanced understanding of natural capital assets. • While the inventory provides the best available depiction of the Town-owned natural assets, there are limitations with ELC data; for example, the ELC's defined land cover is not always an accurate reflection of what is on the land. • Land types should be defined consistently across the NCAMP and the Parks and Recreation Master Plan. For example, the Parks and Recreation Master Plan defines parklands to include all lands within the boundaries of a Town-owned park; however, for the purposes of the NCAMP, some of the areas are considered forests or open spaces (meadows). • Based on the GIS date, urban park assets (manicured grassy areas) in the NCAMP include park facilities that are not part of this NCAMP, such as playgrounds, play courts, skate parks and splash pads. Future refinements should designate them appropriately.

Gap	Improvement Recommendation
	• New properties have been recently purchased that have not been included and should be added for the next NCAMP. • Implement procedures to ensure that the Town land inventory is current, with appropriate notifications on new park openings or Town acquisitions of natural assets.
Regular urban tree inventory updates	Continue to update and improve the accuracy of the street tree inventory. Design and implement processes to keep the tree inventory current by updating the asset data as trees are replaced or maintained. These updates should be incorporated into work order management processes, and tree inventory data should be required from developers and tree planting contractors.
Replacement Value of Waterbodies	To estimated value of waterbodies, Town to explore what types of restoration will most likely be needed for its waterbodies and how much those would cost.
Levels of Service	
Refinement of Levels of Service	LOS have been established for this NCAMP that demonstrate some of the important services delivered by natural assets. As the Town's asset management maturity evolves for this asset portfolio, LOS should be updated and refined to improve the connections between LOS measures, management actions, and financial impacts.
Monitoring and Target Setting	LOS performance should be monitored relative customer satisfaction and cost to inform future target setting.
Use Town-wide tree targets to guide development of Town-owned tree targets	Although targets have been set for tree canopy and tree diversity, those targets are not directly applicable to the Town's asset performance, because the targets apply to all trees within the municipal boundaries, whereas the Town's asset performance relates specifically to Town-owned trees. The Town-wide tree targets should be used to guide development of Town-owned tree targets, which in turn will guide the Town's asset investment needs. For example, given that the Town-wide canopy target is 40%, consideration should be given on how much of that should comprise Town-owned trees. Also, consideration should be given to whether the diversity target should be applied to the Town-owned inventory or whether should the Town aim for a different species mix to offset an imbalance in non-owned tree species.
Asset Management and Financial Analysis	
Risk Management	Consider building on the initial risk assessment for natural assets to further inform and prioritize risk mitigation actions for natural assets. However, it is recognized that the industry is still in the early stages of understanding how to best apply risk management assessment to natural assets and the Town's approach will evolve

Gap	Improvement Recommendation
	over time as the industry matures. The Natural Assets Initiative (2024)[8] recently released a guidance document that provides some potential options
Determine or refine growth needs assessment	Currently, LOS as defined by area of assets per capita provide a good metric for understanding the general LOS being provided. This LOS can also inform growth needs. However, there is a limit to how much land can be acquired and dedicated to natural assets as the population continues to grow. This NCAMP assumes no growth due to land and financial constraints, but some land acquisition may be possible that could reduce the decline of the population-based LOS.
Incorporate Natural Assets in GHG emissions plans	Consider incorporating carbon sequestration impact of natural assets in Town's GHG emissions plans, such as the Energy Conservation and Demand Management Plan and the Community Energy Plan.
Conduct a rehabilitation and restoration needs assessment	To better understand the financial needs for natural assets, consider a site-specific assessment of rehabilitation and restoration needs, which would establish and prioritize necessary management inventions.
Monitor tree replacement needs to enable better forecasting	Monitor trends in urban tree replacement needs (for example age, location, species and other factors) to enable better forecasting and planning of replacement needs.
Maintenance Costs	Current maintenance funding has been well defined for urban parks and urban trees. Working toward a better understanding of maintenance needs for natural area assets could shift some of the funding needs for managing natural assets from capital budgets to operation budgets as maturity with natural areas assets increases over time. Continue the initiative to implement a work order management system, which will be used to track maintenance and repair activities and costs at an asset level. This information can be used to improve future needs forecasting and budgeting.

6.2 NCAMP Monitoring and Review

The NCAMP will be updated every five years to ensure it reports an updated snapshot of the Town's asset portfolio and its associated value, age, and condition. It will ensure that the Town has an updated 10-year outlook including service levels, costs of the associated lifecycle strategies and an assessment of any funding shortfalls.

Per O.Reg. 588/17, the Town will conduct an annual review of its progress in implementing this NCAMP and will discuss strategies to address any factors impeding its implementation.

[8] NAI (2024). Nature is infrastructure: How to include natural assets in asset management plans. Natural Assets Initiative. naturalassetsinitiative.ca

6.3 Performance Measures

The effectiveness of this NCAMP can be measured in the following ways:

- The degree to which the forecast costs identified in this NCAMP are incorporated into the long-term financial plan,
- The degree to which the 1- to 5-year detailed works programs, budgets, business plans align with the recommendations of the NCAMP, and
- The degree to which the existing and projected service levels and service consequences, risks and residual risks are incorporated into the Strategic Planning documents and associated plans.

APPENDIX A: ESTABLISHING NCAMP INVENTORY

To establish the NCAMP inventory, the spatial boundaries of Town-owned land and 2 properties (Ducks unlimited Canada lands and the Ontario Heritage Trust's Sheppard's Bush property) of town-maintained land were combined. A natural asset hierarchy was then established to organize the inventory into asset types within the parent categories of "Natural Area Assets" and "Natural Enhanced Assets". The data utilized to compose the inventory is outlined in Table A-1.

Table A-1 Data Utilized

Data Name	Source
Municipal Boundary	Data_NCAMP.gdb / Municipal Boundary
Building Footprints	Data_NCAMP.gdb / Building Footprints
LSRCA Ecological Land Classification	Data_NCAMP.gdb / LSRCA
Parks and Open Space Lots (New)	Aurora
Community Gardens	Aurora - Additionally provided shapefile for Community Gardens
Pet Cemetery	Aurora - Additionally provided shapefile for Pet Cemetery
Additional Town-owned Land	Aurora - Additionally provided shapefile for polygons missing from original Town-owned Land data
Town-maintained Land	Aurora - Additionally provided shapefile for further delineation of Town-maintained Land
Streams & Reaches v2	Aurora

To develop the Natural Area Assets portion of the inventory hierarchy, ELC classes were used to delineate natural polygon areas on the town-owned and -maintained lands. An outline of the conversion of ELC classes to Asset Type groups is outlined in Table A-2.

Table A-22 Conversion of ELC Category to Asset Class groupings

Asset Class	Ecological Land Classification Category
Forest and Open Space	Coniferous Forest
	Cultural Plantation
	Cultural Thicket
	Cultural Woodland
	Deciduous Forest
	Mixed Forest
	Cultural Meadow
Waterbody	Open Water
	Submerged Shallow Aquatic
	Mixed Shallow Aquatic
Wetland	Deciduous Swamp
	Meadow Marsh
	Mixed Swamp
	Shallow Marsh

For watercourse assets, data (Streams & Reaches v2) was provided for the project and was used to identify the stream segments and attributes associated with Town-owned and managed properties.

The identification of Natural Enhanced Assets was performed using multiple datasets. For Urban Trees, data was provided that identified individual street and park trees. This data was unmodified and adopted to meet the hierarchy structure of the inventory. Urban Parks were identified using the “Parks and Open Spaces Lots” dataset. Parks and Open Space boundaries in the city provided data did not have complete ELC coverage within the area. For example, an ELC forest polygon may have only covered a portion of a park area, leaving the rest of the park as a gap in the inventory. In areas classified as Urban Park in the “Parks and Open Space Lot” dataset, gaps were classified as “Urban Park”. In areas classified as Urban Forest and Open Space in the “Parks and Open Space Lot” dataset, gaps were classified as “Forest and Open Space”.

Community Gardens and a Pet Cemetery were added into the inventory by merging the layers into the inventory and prioritizing their boundaries as a uniquely classified enhanced asset over any existing classification

Once the inventory was organized, the data was clipped to be restricted to the boundaries of the merged Town-owned Land and Town-maintained Land. Any assets that fell within Town-maintained land were assigned an attribute within the data to allow easier filtering of Town-maintained assets.

Finally, the data was inspected and compared to available satellite imagery to identify any glaring errors associated with the allocation of the ELC classes, with emphasis on ensuring manicured turf areas were not allocated a natural land cover. A total of 3 properties were adjusted based on this review.

APPENDIX B: UNIT COST ASSUMPTIONS

Table B-11 Unit Cost Assumptions

Asset Category	Asset Class	Asset Subtype	Unit Cost
Natural Area Assets[a]	Forest and unmanicured open space	Cultural Meadow	$198,144 per ha
		Coniferous Forest	$173,847 per ha
		Deciduous Forest	
		Mixed Forest	
		Cultural plantation	
		Cultural woodland	
		Cultural Thicket	$188,546 per ha
	Wetland	Deciduous Swamp	$268,404 per ha
		Mixed Swamp	
		Thicket Swamp	$245,945 per ha
		Meadow Marsh	$224,816 per ha
		Shallow Marsh	
	Waterbody		NA[b]
	Watercourse		$1,700,200 per km[c]
Natural Enhanced Assets	Community Garden		$150,000 for the existing garden $300,000 for the newly built garden[d]
	Pet Cemetery		$300,000[e]
	Manicured open space		$200,000 per ha[f]
	Urban Trees		$375 per tree + $16.50 per cm dbh (removal)[g]

a) Natural asset unit costs per ha are based on 2023 typical restoration costs provided by TRCA. In general, the NCAMP replacement values do not include land costs.

b) For waterbodies restoration costs were not readily available. As an asset management improvement, Town to explore what types of restoration will most likely be needed for its waterbodies and how much those would cost.

c) While there has been some stream restoration works done within Aurora, those have focused more on shoreline and stream bank stabilization and may not sufficiently capture the 'replacement cost' value of the whole stream feature. Future work could explore the potential cost of broader stream restoration focused on recreating natural stream features. CVC (2019) provides an approximate estimate of stream corridor rehabilitation. It should be noted that costs for stream rehabilitation projects can vary widely depending on local context, site access, extent of flow management required, etc. The CVC (2019) rehabilitation costs are based on stream corridor segments assumed to be 500m long and 20m wide. For comparison, Aurora's Stream Management Master Plan estimates a reach-scale restoration project for Tannery Creek could cost $7M for 1,250m (or about $5.6 M per km).

d) Community garden costs are based on an estimated construction cost for the newest community garden. There are two community gardens both with 52 garden plots. Therefore, $300,000 per garden was applied.

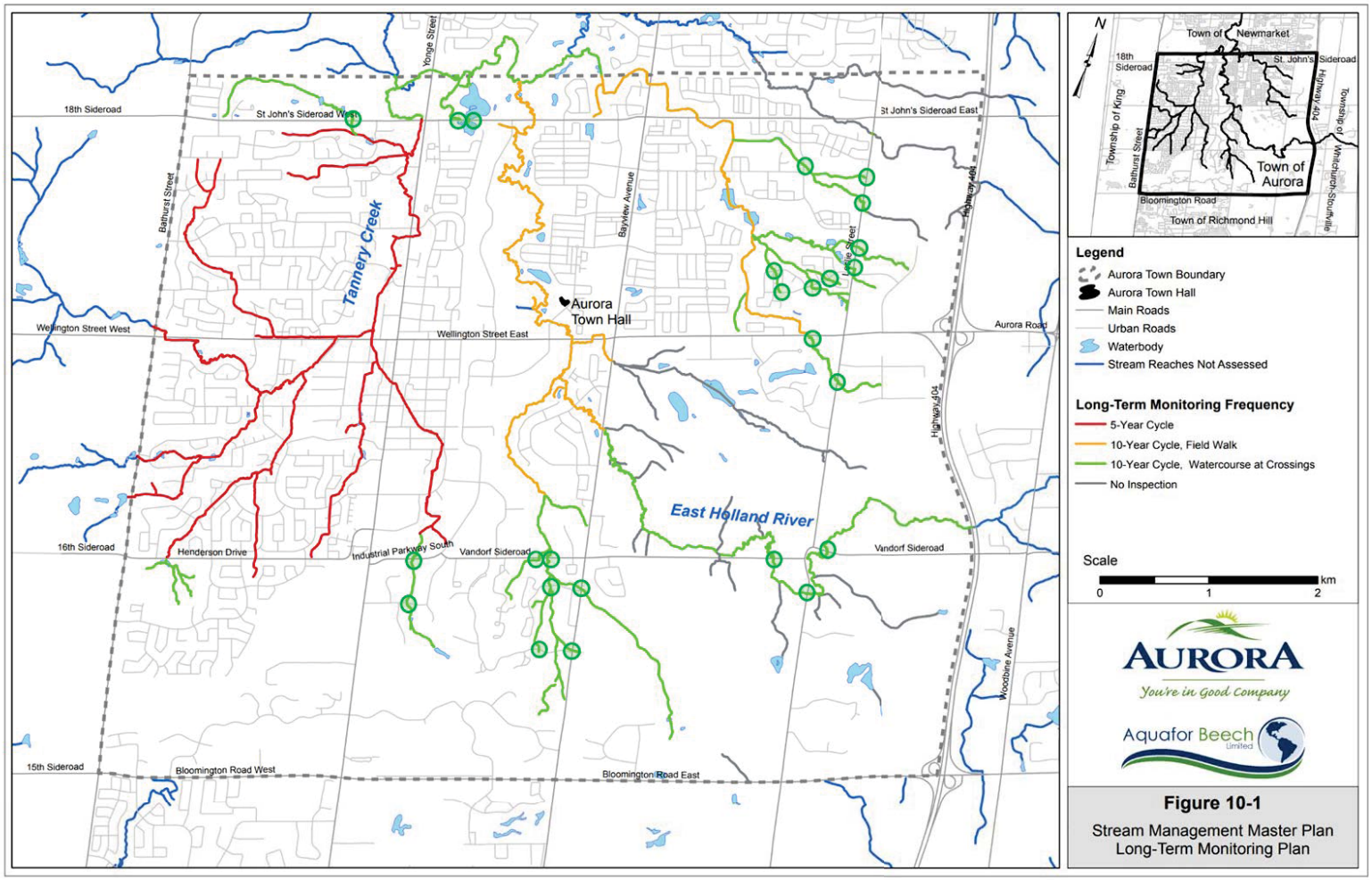
e) The pet cemetery is considered a cultural heritage area and considered irreplaceable. However, for the purpose of the NCAMP, recent upgrade costs estimated to be roughly $300,000 is applied. In general, the NCAMP replacement values do not include land costs.

f) Urban park areas largely capture manicured grassy areas. Therefore, the average cost of $200,000/ha, used as a replacement cost is based on $20/sqm cost of installed sod.

g) Replacement costs for individually managed urban trees was established using the diameter replacement method. A cost of $375 per tree is applied to the estimated number of trees needed to replace existing trees, which is determined by dividing the diameter at breast height (dbh) of each tree by the assumed dbh of the replacement tree (5cm). This approach is used to help establish a “like for like” replacement. For instance, a replacement tree with a 5cm dbh will not be able to provide the same service level as a tree with 100cm dbh. It should be recognized that the Town does not actually replace trees based on this ratio. The ratio is used for the purpose of this NCAMP to establish the “like for like” replacement cost. In addition to the tree replacement, a removal cost is also applied based on an assumed average cost for tree removal and stumping ($1,650 per tree). However, in an effort to avoid applying a removal and stumping cost for mature trees to the young trees currently in the inventory, the $1,650 was assumed to apply to 100cm dbh tree to generate a removal and stumpage cost that could be scaled by each tree’s diameter at breast height (dbh). The resulting assumption is a removal and stumpage cost of $16.50 per 1cm dbh.

APPENDIX C: MAP OF RECOMMENDED MONITORING FREQUENCY

Figure C-1 Map of Recommended Monitoring Frequency



Source: Stream Management Master Plan, 2019

APPENDIX D: DETAILED FINANCIAL FORECAST TABLES

This Appendix provides detailed cost projections for:

- Scenario A: Status Quo
- Scenario B: Status Quo with Moderate Rehabilitation, Monitoring and Maintenance
- Scenario C: Status Quo with High Rehabilitation, Monitoring and Maintenance

Table D-11 Detailed Cost Forecast for Scenario A: Status Quo

	Forecast Needs (2024 $)																									Forecast Needs (2024 $)		Forecast Needs (2024 $)	
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Construct and Secure	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	225,000	22,500	562,500	22,500
Rehab and Restore	478,000	1,316,000	1,086,000	904,000	729,000	2,932,000	4,336,000	478,000	478,000	478,000	478,000	478,000	478,000	478,000	628,000	478,000	478,000	478,000	478,000	478,000	478,000	478,000	478,000	478,000	778,000	13,215,000	1,321,500	20,835,000	833,400
Monitor and Maintain	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	6,346,821	634,682	15,867,051	634,682
Plan and Design	36,200	-	-	-	150,000	-	-	-	15,000	-	36,200	-	-	-	150,000	-	-	-	15,000	-	36,200	-	-	-	150,000	201,200	20,120	588,600	23,544
OVERALL TOTAL	1,171,382	1,973,182	1,743,182	1,561,182	1,536,182	3,589,182	4,993,182	1,135,182	1,150,182	1,135,182	1,171,382	1,135,182	1,135,182	1,135,182	1,435,182	1,135,182	1,135,182	1,135,182	1,150,182	1,135,182	1,171,382	1,135,182	1,135,182	1,135,182	1,585,182	**19,988,021**	**1,998,802**	**37,853,151**	**1,514,126**

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Construction and Securing (Growth)																										10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Additional trees planted each year	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***60.0***	***600***	***60***	***1,500***	***60***
Urban tree planting - new trees (does not include trees planted by developers)	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	225,000	22,500	562,500	22,500
Rehabilitation and Restoration																										10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Total land (open spaces, forests, wetlands)	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***				
% area to control each year	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***0.08%***	***3.3***	***0.3***	***8.3***	***0.3***
Invasive Species Control (does not include value of volunteer work)	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	200,000	20,000	500,000	20,000
% area to seed / plant each year	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***0.02%***	***1.0***	***0.1***	***2.4***	***0.1***
Targeted Seeding or Planting (does not include trees planted through external partnerships)	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	200,000	20,000	500,000	20,000
Stream Rehabilitation - Tyler St.	-	718,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	718,000	239,333	718,000	39,889
Stream Rehabilitation - Sandusky Park	-	120,000	608,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	728,000	182,000	728,000	38,316
Stream Rehabilitation - Harriman Rd.	-	-	-	-	251,000	-	1,300,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,551,000	387,750	1,551,000	81,632
Stream Rehabilitation - Wellington St. Phase 1	-	-	-	426,000	-	2,454,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,880,000	720,000	2,880,000	151,579
Stream Rehabilitation - Wellington St. Phase 2	-	-	-	-	-	-	2,558,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,558,000	852,667	2,558,000	142,111
Total trees to replace	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***240.0***	***2,400.0***	***240.0***	***6,000.0***	***240.0***
Urban Tree Replacement (only the VP in 2024)	438,000	438,000	438,000	438,000	438,000	438,000	438,000	438,000	438,000	438,000	438,000	438,000	438,000	438,000	438,000	438,000	438,000	438,000	438,000	438,000	438,000	438,000	438,000	438,000	438,000	4,380,000	438,000	10,950,000	438,000
Community gardens replacemnet																										-		-	
Garden replacemnet															150,000										300,000	-		450,000	225,000
Total Rehab and Restore	478,000	1,316,000	1,086,000	904,000	729,000	2,932,000	4,336,000	478,000	478,000	478,000	478,000	478,000	478,000	478,000	628,000	478,000	478,000	478,000	478,000	478,000	478,000	478,000	478,000	478,000	778,000	**13,215,000**	**1,321,500**	**20,835,000**	**833,400**
Monitoring and Maintenance																										10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Total land (open spaces, forests, wetlands)	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***				
% to assess each year	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	***0%***	-	-	-	-
Natural area assets assessments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Number of tree to be maintained	***26,435***	***26,495***	***26,555***	***26,615***	***26,675***	***26,735***	***26,795***	***26,855***	***26,915***	***26,975***	***27,035***	***27,095***	***27,155***	***27,215***	***27,275***	***27,335***	***27,395***	***27,455***	***27,515***	***27,575***	***27,635***	***27,695***	***27,755***	***27,815***	***27,875***	***267,050***	***26,705***	***679,875***	***27,155***
Urban Tree Maintenance, based on existing (no adjustment for additional trees)	203,495	203,495	203,495	203,495	203,495	203,495	203,495	203,495	203,495	203,495	203,495	203,495	203,495	203,495	203,495	203,495	203,495	203,495	203,495	203,495	203,495	203,495	203,495	203,495	203,495	2,034,950	203,495	5,087,375	203,495
Stream Monitoring																													
Red - 2019 Stream Management Master Plan recommended every 5 years, status quo assumes it is done every 10 years	10-year assessment being done as part of Master Plan, but no 5-year being done																									-	-	-	-
Yellow - 2019 Stream Management Master Plan recommended every 10 years	being done as part of Master Plan																									-	-	-	-
Green - 2019 Stream Management Master Plan recommended every 10 years, crossings only	being done as part of Master Plan																									-	-	-	-
Urban park, community garden, pet cemetery area to be maintained	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***1,254.1***	***125.4***	***3,135.2***	***125.4***
Existing maintenance cost	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	4,311,871	431,187	10,779,676	431,187
Total Monitor and Maintain	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	634,682	**6,346,821**	**634,682**	**15,867,051**	**634,682**
Plan and Design																										10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Stream Management Master Plan	-	-	-	-	150,000	-	-	-	-	-	-	-	-	-	150,000	-	-	-	-	-	-	-	-	-	150,000	150,000	15,000	450,000	18,000
Urban Forest Study	-	-	-	-	-	-	-	-	15,000	-	-	-	-	-	-	-	-	-	15,000	-	-	-	-	-	-	15,000	1,500	30,000	1,200
Tree inventory update	36,200	-	-	-	-	-	-	-	-	-	36,200	-	-	-	-	-	-	-	-	-	36,200	-	-	-	-	36,200	3,620	108,600	4,344
Total Plan and Design	36,200	-	-	-	150,000	-	-	-	15,000	-	36,200	-	-	-	150,000	-	-	-	15,000	-	36,200	-	-	-	150,000	**201,200**	**20,120**	**588,600**	**23,544**

Table D-22 Detailed Cost Forecast for Scenario B: Status Quo with Moderate Rehabilitation, Monitoring and Maintenance

	Forecast Needs (2024 $)																									Forecast Needs (2024 $)		Forecast Needs (2024 $)	
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Construct and Secure	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	300,000	30,000	750,000	30,000
Rehab and Restore	684,696	1,522,696	1,337,728	1,155,728	980,728	3,183,728	4,587,728	729,728	729,728	729,728	729,728	729,728	729,728	729,728	879,728	729,728	729,728	729,728	729,728	729,728	729,728	729,728	729,728	729,728	1,029,728	15,642,217	1,564,222	27,038,139	1,081,526
Monitor and Maintain	741,902	742,518	700,246	700,861	680,033	680,649	681,265	681,881	705,857	683,112	683,728	684,344	684,960	685,576	686,192	686,807	687,423	688,039	712,015	689,271	689,887	690,502	691,118	691,734	692,350	6,998,323	699,832	17,342,270	693,691
Plan and Design	36,200	-	-	-	150,000	-	-	-	15,000	-	36,200	-	-	-	150,000	-	-	-	15,000	-	36,200	-	-	-	150,000	201,200	20,120	588,600	23,544
OVERALL TOTAL	1,492,798	2,295,213	2,067,974	1,886,590	1,840,761	3,894,377	5,298,993	1,441,609	1,480,585	1,442,841	1,479,656	1,444,072	1,444,688	1,445,304	1,745,920	1,446,536	1,447,151	1,447,767	1,486,743	1,448,999	1,485,815	1,450,231	1,450,846	1,451,462	1,902,078	**23,141,740**	**2,314,174**	**45,719,009**	**1,828,760**
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Construction and Securing (Growth)																													
Additional trees planted each year	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***80.0***	***800***	***80***	***2,000***	***80***
Urban tree planting - new trees (does not include trees planted by developers)	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	300,000	30,000	750,000	30,000
Rehabilitation and Restoration																										10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Total land (open spaces, forests, wetlands)	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***				
% area to control each year	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***0.50%***	***21.4***	***2.1***	***53.6***	***2.1***
Invasive Species Control (does not include value of volunteer work)	128,664	128,664	128,664	128,664	128,664	128,664	128,664	128,664	128,664	128,664	128,664	128,664	128,664	128,664	128,664	128,664	128,664	128,664	128,664	128,664	128,664	128,664	128,664	128,664	128,664	1,286,636	128,664	3,216,591	128,664
% area to seed / plant each year	***0.05%***	***0.05%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***0.10%***	***3.9***	***0.4***	***10.3***	***0.4***
Targeted Seeding or Planting (does not include trees planted through external partnerships)	45,032	45,032	90,065	90,065	90,065	90,065	90,065	90,065	90,065	90,065	90,065	90,065	90,065	90,065	90,065	90,065	90,065	90,065	90,065	90,065	90,065	90,065	90,065	90,065	90,065	810,581	81,058	2,161,549	86,462
Stream Rehabilitation - Tyler St.	-	718,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	718,000	239,333	718,000	39,889
Stream Rehabilitation - Sandusky Park	-	120,000	608,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	728,000	182,000	728,000	38,316
Stream Rehabilitation - Harriman Rd.	-	-	-	-	251,000	-	1,300,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,551,000	387,750	1,551,000	81,632
Stream Rehabilitation - Wellington St. Phase 1	-	-	-	426,000	-	2,454,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,880,000	720,000	2,880,000	151,579
Stream Rehabilitation - Wellington St. Phase 2	-	-	-	-	-	-	2,558,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,558,000	852,667	2,558,000	142,111
Total trees to replace	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***280.0***	***2,800.0***	***280.0***	***7,000.0***	***280.0***
Urban Tree Replacement (only the VP in 2024)	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	511,000	5,110,000	511,000	12,775,000	511,000
Community gardens replacement	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Garden replacemnet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150,000	-	-	-	-	-	-	-	-	-	300,000	-	-	450,000	18,000
Total Rehab and Restore	684,696	1,522,696	1,337,728	1,155,728	980,728	3,183,728	4,587,728	729,728	729,728	729,728	729,728	729,728	729,728	729,728	879,728	729,728	729,728	729,728	729,728	729,728	729,728	729,728	729,728	729,728	1,029,728	**15,642,217**	**1,564,222**	**27,038,139**	**1,081,526**
Monitoring and Maintenance																										10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Total land (open spaces, forests, wetlands)	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***				
% to assess each year	***25%***	***25%***	***15%***	***15%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***600.4***	***60.0***	***1,243.7***	***49.7***
Natural area assets assessments	107,220	107,220	64,332	64,332	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	600,430	60,043	1,243,748	49,750
Number of tree to be maintained	***26,435***	***26,515***	***26,595***	***26,675***	***26,755***	***26,835***	***26,915***	***26,995***	***27,075***	***27,155***	***27,235***	***27,315***	***27,395***	***27,475***	***27,555***	***27,635***	***27,715***	***27,795***	***27,875***	***27,955***	***28,035***	***28,115***	***28,195***	***28,275***	***28,355***	***267,950***	***26,795***	***684,875***	***27,395***
Urban Tree Maintenance, based on existing (no adjustment for additional trees)	203,495	204,111	204,727	205,343	205,958	206,574	207,190	207,806	208,422	209,038	209,653	210,269	210,885	211,501	212,117	212,733	213,348	213,964	214,580	215,196	215,812	216,428	217,043	217,659	218,275	2,062,663	206,266	5,272,126	210,885
Stream Monitoring																													
Red - 2019 Stream Management Master Plan recommended every 5 years, status quo assumes it is done every 10 years	10-year being done as part of Master Plan								23,360										23,360							23,360	23,360	46,720	23,360
Yellow - 2019 Stream Management Master Plan recommended every 10 years	10-year being done as part of Master Plan																									-	-	-	-
Green - 2019 Stream Management Master Plan recommended every 10 years, crossings only	10-year being done as part of Master Plan																									-	-	-	-
Urban park, community garden, pet cemetery area to be maintained	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***1,254.1***	***125.4***	***3,135.2***	***125.4***
ance cost	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	4,311,871	431,187	10,779,676	431,187
Total Monitor and Maintain	741,902	742,518	700,246	700,861	680,033	680,649	681,265	681,881	705,857	683,112	683,728	684,344	684,960	685,576	686,192	686,807	687,423	688,039	712,015	689,271	689,887	690,502	691,118	691,734	692,350	**6,998,323**	**699,832**	**17,342,270**	**693,691**
Plan and Design																										10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Stream Management Master Plan	-	-	-	-	150,000	-	-	-	-	-	-	-	-	-	150,000	-	-	-	-	-	-	-	-	-	150,000	150,000	15,000	450,000	18,000
Urban Forest Study	-	-	-	-	-	-	-	-	15,000	-	-	-	-	-	-	-	-	-	15,000	-	-	-	-	-	-	15,000	1,500	30,000	1,200
Tree inventory update	36,200	-	-	-	-	-	-	-	-	-	36,200	-	-	-	-	-	-	-	-	-	36,200	-	-	-	-	36,200	3,620	108,600	4,344
Total Plan and Design	36,200	-	-	-	150,000	-	-	-	15,000	-	36,200	-	-	-	150,000	-	-	-	15,000	-	36,200	-	-	-	150,000	**201,200**	**20,120**	**588,600**	**23,544**

Table D-33 Detailed Cost Forecast for Scenario C: Status Quo with High Rehabilitation, Monitoring and Maintenance

	Forecast Needs (2024 $)																									Forecast Needs (2024 $)		Forecast Needs (2024 $)	
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Construct and Secure	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	600,000	60,000	1,500,000	60,000
Rehab and Restore	757,103	1,595,103	1,538,799	1,401,831	1,484,159	3,687,159	5,091,159	1,233,159	1,233,159	1,233,159	1,233,159	1,233,159	1,233,159	1,233,159	1,383,159	1,233,159	1,233,159	1,233,159	1,233,159	1,233,159	1,233,159	1,233,159	1,233,159	1,233,159	1,533,159	19,254,788	1,925,479	38,202,166	1,528,087
Monitor and Maintain	741,902	743,133	722,921	724,153	682,497	683,728	684,960	686,192	710,783	688,655	689,887	691,118	692,350	693,582	694,813	696,045	697,277	698,508	723,100	700,972	702,203	703,435	704,667	705,898	707,130	7,068,924	706,892	17,569,909	702,796
Plan and Design	36,200	-	-	-	150,000	-	-	-	15,000	-	36,200	-	-	-	150,000	-	-	-	15,000	-	36,200	-	-	-	150,000	201,200	20,120	588,600	23,544
OVERALL TOTAL	1,595,205	2,398,237	2,321,720	2,185,984	2,376,655	4,430,887	5,836,118	1,979,350	2,018,942	1,981,814	2,019,245	1,984,277	1,985,509	1,986,740	2,287,972	1,989,204	1,990,435	1,991,667	2,031,259	1,994,130	2,031,562	1,996,594	1,997,825	1,999,057	2,450,289	27,124,912	2,712,491	57,860,675	2,314,427

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Construction and Securing (Growth)																										10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Additional trees planted each year	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***160.0***	***1,600***	***160***	***4,000***	***160***
Urban tree planting - new trees (does not include trees planted by developers)	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	600,000	60,000	1,500,000	60,000
Rehabilitation and Restoration																										10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Total land (open spaces, forests, wetlands)	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***				
% area to control each year	***0.5%***	***0.5%***	***1.0%***	***1.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***	***2.0%***	***64.3***	***6.4***	***193.0***	***7.7***
Invasive Species Control (does not include value of volunteer work)	128,664	128,664	257,327	257,327	514,654	514,654	514,654	514,654	514,654	514,654	514,654	514,654	514,654	514,654	514,654	514,654	514,654	514,654	514,654	514,654	514,654	514,654	514,654	514,654	514,654	3,859,909	385,991	11,579,726	463,189
% area to seed / plant each year	***0.10%***	***0.10%***	***0.15%***	***0.20%***	***0.20%***	***0.20%***	***0.20%***	***0.20%***	***0.20%***	***0.20%***	***0.20%***	***0.20%***	***0.20%***	***0.20%***	***0.20%***	***0.20%***	***0.20%***	***0.20%***	***0.20%***	***0.20%***	***0.20%***	***0.20%***	***0.20%***	***0.20%***	***0.20%***	***7.5***	***0.8***	***20.4***	***0.8***
Targeted Seeding or Planting (does not include trees planted through external partnerships)	90,065	90,065	135,097	180,129	180,129	180,129	180,129	180,129	180,129	180,129	180,129	180,129	180,129	180,129	180,129	180,129	180,129	180,129	180,129	180,129	180,129	180,129	180,129	180,129	180,129	1,576,129	157,613	4,278,065	171,123
Stream Rehabilitation - Tyler St.	-	718,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	718,000	239,333	718,000	39,889
Stream Rehabilitation - Sandusky Park	-	120,000	608,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	728,000	182,000	728,000	38,316
Stream Rehabilitation - Harriman Rd.	-	-	-	-	251,000	-	1,300,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,551,000	387,750	1,551,000	81,632
Stream Rehabilitation - Wellington St. Phase 1	-	-	-	426,000	-	2,454,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,880,000	720,000	2,880,000	151,579
Stream Rehabilitation - Wellington St. Phase 2	-	-	-	-	-	-	2,558,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,558,000	852,667	2,558,000	142,111
Total trees to replace	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***295.0***	***2,950.0***	***295.0***	***7,375.0***	***295.0***
Urban Tree Replacement (only the VP in 2024)	538,375	538,375	538,375	538,375	538,375	538,375	538,375	538,375	538,375	538,375	538,375	538,375	538,375	538,375	538,375	538,375	538,375	538,375	538,375	538,375	538,375	538,375	538,375	538,375	538,375	5,383,750	538,375	13,459,375	538,375
Community gardens replacement																										-	-	-	-
Garden replacemnet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150,000	-	-	-	-	-	-	-	-	-	300,000	-	-	450,000	18,000
Total Rehab and Restore	757,103	1,595,103	1,538,799	1,401,831	1,484,159	3,687,159	5,091,159	1,233,159	1,233,159	1,233,159	1,233,159	1,233,159	1,233,159	1,233,159	1,383,159	1,233,159	1,233,159	1,233,159	1,233,159	1,233,159	1,233,159	1,233,159	1,233,159	1,233,159	1,533,159	**19,254,788**	**1,925,479**	**38,202,166**	**1,528,087**
Monitoring and Maintenance																										10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Total land (open spaces, forests, wetlands)	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***	***428.9***				
% to assess each year	***25%***	***25%***	***20%***	***20%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***10%***	***643.3***	***64.3***	***1,286.6***	***51.5***
Natural area assets assessments	107,220	107,220	85,776	85,776	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	42,888	643,318	64,332	1,286,636	51,465
Number of tree to be maintained	***26,435***	***26,595***	***26,755***	***26,915***	***27,075***	***27,235***	***27,395***	***27,555***	***27,715***	***27,875***	***28,035***	***28,195***	***28,355***	***28,515***	***28,675***	***28,835***	***28,995***	***29,155***	***29,315***	***29,475***	***29,635***	***29,795***	***29,955***	***30,115***	***30,275***	***271,550***	***27,155***	***708,875***	***28,355***
Urban Tree Maintenance, based on existing cost/tree, increases with addition of trees	203,495	204,727	205,958	207,190	208,422	209,653	210,885	212,117	213,348	214,580	215,812	217,043	218,275	219,507	220,738	221,970	223,202	224,433	225,665	226,897	228,128	229,360	230,592	231,823	233,055	2,090,375	209,038	5,456,876	218,275
Stream Monitoring																													
Red - 2019 Stream Management Master Plan recommended every 5 years, status quo assumes it is done every 10 years	10-year being done as part of Master Plan								23,360										23,360							23,360	23,360	46,720	23,360
Yellow - 2019 Stream Management Master Plan recommended every 10 years	10-year being done as part of Master Plan																									-	-	-	-
Green - 2019 Stream Management Master Plan recommended every 10 years, crossings only	10-year being done as part of Master Plan																									-	-	-	-
Urban park, community garden, pet cemetery area to be maintained	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***125.4***	***1,254.1***	***125.4***	***3,135.2***	***125.4***
tenance cost	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	431,187	4,311,871	431,187	10,779,676	431,187
Total Monitor and Maintain	741,902	743,133	722,921	724,153	682,497	683,728	684,960	686,192	710,783	688,655	689,887	691,118	692,350	693,582	694,813	696,045	697,277	698,508	723,100	700,972	702,203	703,435	704,667	705,898	707,130	**7,068,924**	**706,892**	**17,569,909**	**702,796**
Plan and Design																										10-year TOTAL	10-year ANN AVG	25-year TOTAL	25-year ANN AVG
Stream Management Master Plan	-	-	-	-	150,000	-	-	-	-	-	-	-	-	-	150,000	-	-	-	-	-	-	-	-	-	150,000	150,000	15,000	450,000	18,000
Urban Forest Study	-	-	-	-	-	-	-	-	15,000	-	-	-	-	-	-	-	-	-	15,000	-	-	-	-	-	-	15,000	1,500	30,000	1,200
Tree inventory update	36,200	-	-	-	-	-	-	-	-	-	36,200	-	-	-	-	-	-	-	-	-	36,200	-	-	-	-	36,200	3,620	108,600	4,344
Total Plan and Design	36,200	-	-	-	150,000	-	-	-	15,000	-	36,200	-	-	-	150,000	-	-	-	15,000	-	36,200	-	-	-	150,000	**201,200**	**20,120**	**588,600**	**23,544**

TOWN OF AURORA
NATURAL CAPITAL ASSET MANAGEMENT PLAN

Committee of the Whole

June 17, 2024

O.Reg. 588/17 for Asset Management Planning

July 2019
Strategic
AM Policy

Required to articulate specific principles and commitments that will guide decisions around when, why and how money is spent on assets.

July 2022
AM Plan
Current LOS
Core Assets

Required to document current LOS and costs to sustain current LOS provided by **the water, wastewater, stormwater, road and bridge assets**

July 2024
AM Plan
Current LOS
All Assets

Required to document **current LOS** and costs to sustain current LOS for **non-core** assets, including **natural** assets and infrastructure.

July 2025
AM Plan
Proposed LOS
All Assets

Required to document **proposed LOS** and costs to achieve proposed LOS, and the financial strategy to fund these expenditures

Progress implementing AM Plans to be reported annually.

AM Plans to be updated at least every 5 years.

NCAMP Asset Categories

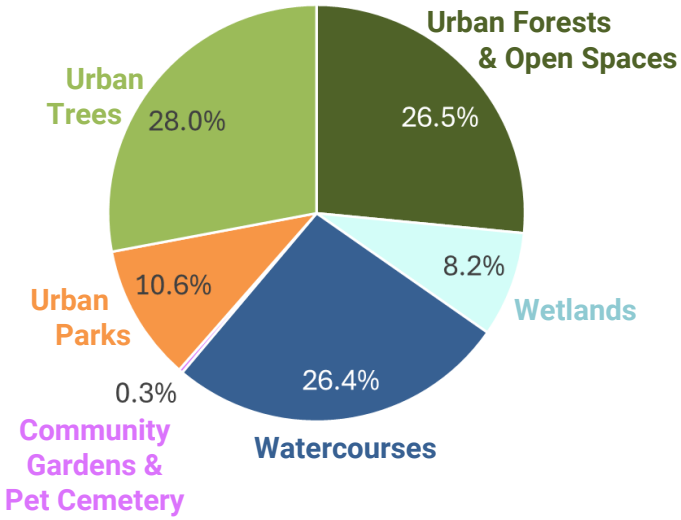
Natural Area Assets

- Forests & Open spaces
- Wetlands
- Watercourses
- Waterbodies

Natural Enhanced Assets

- Urban Trees
- Urban Parks
- Community Gardens
- Pet Cemetery

$ 237.5 million



State of Infrastructure

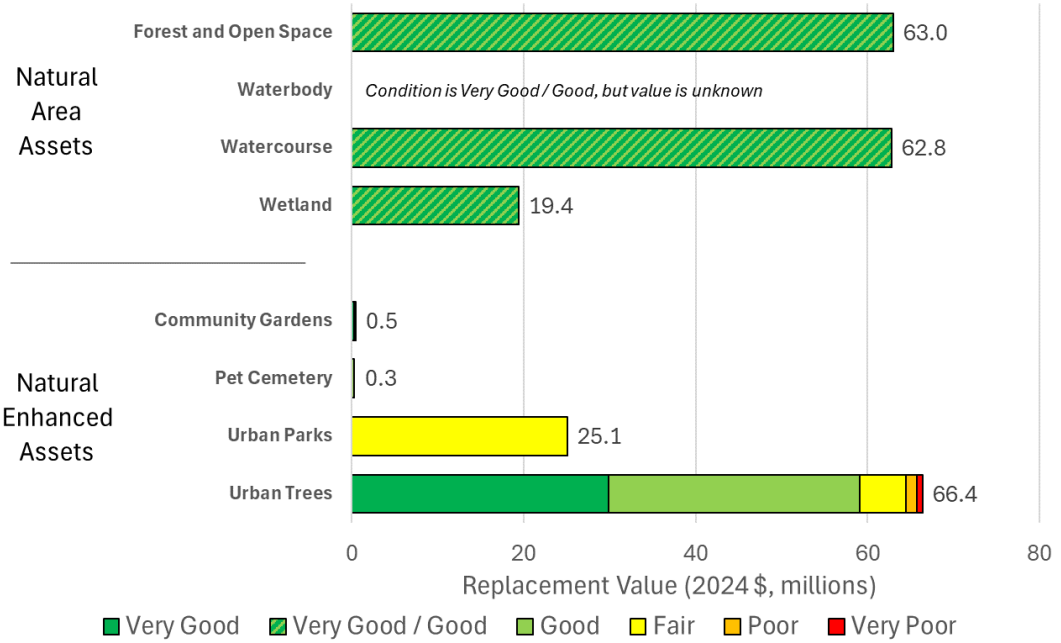
86% **Very Good or Good**

13% Fair

1% Poor

0.3% Very Poor

Condition of Natural Assets



Asset Management Strategies

Scenario A

Status Quo

Current state activities and costs

Scenario B

Status Quo with
Moderate
Rehab, Maintenance and Monitoring

Scenario C

Status Quo with
High
Rehab, Maintenance and Monitoring

Scenario Comparison –
AM Activities Completed Over 25 Years

Asset Management Activity	Scenario A	Scenario B	Scenario C
Construct & Secure			
New urban trees	1500 trees	2000 trees	4000 trees
New trees in forests and open spaces	11,125 trees (through partnerships)		
Monitor & Maintain			
5-year stream inspections	0	2	2
Natural area condition assessment*	0	All areas completed in first 6 years, then 10-year cycle	All areas completed in first 5 years, then 10-year cycle
Urban tree maintenance	In accordance with current standards		
Urban park maintenance	In accordance with current standards		
Rehab & Restore			
Urban trees replaced	6,000 (82% of forecast need)	7,000 (95% of forecast need)	7,375 (100% of forecast need)
Invasive species control	2% of natural areas	13% of natural areas	45% of natural areas
Targeted seeding and planting	1% of natural areas	2.4% of natural areas	4.8% of natural areas
Stream rehab projects completed	In accordance with Stream Management Master Plan		
Plan & Design			
Stream Management Master Plan updates (including 10-year inspections)	In accordance with 10-year update frequency		
Urban Forest Study updates	In accordance with 10-year update frequency		
Tree inventory updates	In accordance with 10-year update frequency		

** Forests, open spaces and wetlands*

Scenario Comparison –
Cost and Gap

	Scenario A Status Quo*	Scenario B Moderate*	Scenario C High*
Total Cost	$ 37.9 M	$ 45.7 M	$ 57.9 M
Average Annual Cost	$ 1.5 M	$ 1.8 M	$ 2.3 M
Anticipated Annual Funding	$ 1.5 M	$ 1.5 M	$ 1.5 M
Anticipated Annual Gap	--	**$ 0.3 M**	**$ 0.8 M**
% Above Current Spending	--	**+20%**	**+53%**

* Amounts over 25 years, in 2024 $, millions

Scenario B recommended - Allows Town to:

- Begin condition assessment program for natural assets
- Increase invasive species control and targeted planting (to increase resilience to environmental and climate hazards)
- Increase urban tree replacements (address backlog of 666 trees)
- Increase planting of new urban trees toward
  - Achieving tree canopy target
  - Maintaining ratio of trees / 1000 people

Recommended Strategy – Funding

Scenario B

	Over 10 Years (in 2024$, millions)	Over 25 Years
Total Cost	$ 23.1	$ 45.7
Average Annual Cost	$ 2.3	$ 1.8
Anticipated Annual Funding	$ 2.0	$ 1.5
Anticipated Gap	**$ 0.3**	**$ 0.3**

To close funding gap:

- Seek additional revenues through taxation or grants
- Re-allocate funds from other programs
  (may result in reduced levels of service in other programs).

Also, continue partnerships with external organizations for

- Access to natural lands (with maintenance agreements)
- Tree planting programs
- Invasive species control (volunteers)

AM Plan Improvement Recommendations

Levels of Service

1. Monitor LOS performance and costs to inform future adjustments.
2. Establish LOS targets for Town-owned trees, to support Town-wide tree targets (e.g. tree canopy and diversity targets).
3. Incorporating natural assets in Town's GHG emissions plans (Energy Conservation and Demand Management Plan, Community Energy Plan).

AM Process, Technology and Data

4. Establish land type naming standards for use in Corporate AMP, NCAMP and Parks and Recreation Master Plan.
5. Continue implementing maintenance management system.
6. Continue building on the initial risk assessment for natural assets.

Questions?

advisory services

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Town of Aurora

Committee of the Whole Report

No. PDS24-053

Subject:	**Bike Share Feasibility Study**
Prepared by:	Michael Bat, Traffic and Transportation Analyst
Department:	Planning and Development Services
Date:	July 2, 2024

Recommendation

1. **That Report No. PDS24-053 be received; and**
2. **That staff be authorized to issue a Request for Information (RFI) for the Bike Share Program as detailed in this report and report back to Council with the results.**

Executive Summary

This report presents to Council the results of the Bike Share Feasibility study (Study) undertaken by staff in response to the direction at the May 23, 2023, Council Meeting. The Study provides recommendations, a detailed implementation plan and potential funding strategies for consideration.

- The primary purpose of the Study was to determine the feasibility of implementing a bike share program within Town limits to provide residents and visitors with a feasible mode of active transportation that meets various travel demands while encouraging a healthy lifestyle
- York Region completed a bike share feasibility study in 2019 which recommended local municipalities take the lead in implementing bike share programs in their municipalities and York Region provide support where required
- Staff recommend as a next step; a Request for Information (RFI) be released for the implementation of a bike share program to gauge vendor interest and further investigate a sustainable model

The Bike Share Feasibility Study is provided in Attachment 1.

Background

On May 23, 2023, Council passed the resolution to undertake a Bike Share Feasibility Study (Study). Staff has retained an external consulting firm (WSP) to assist on completing the Study for the Town.

Shared micromobility devices encompass all shared-use fleets of small, fully, or partially human-powered vehicles that could be rented through a mobile app or kiosk by residents or visitors of a municipality. Some examples include manual bikes, e-bikes, and e-scooters. Municipalities across North America (including Toronto, Hamilton, and Montreal) have begun to implement shared micromobility programs to promote cycling as a viable travel option and contribute to broader climate, health, and economic goals. The Study details how a bike share program could operate within the Town limits.

Analysis

The primary purpose of the Study was to determine the feasibility of implementing a bike share program within Town limits to provide residents and visitors with a feasible mode of active transportation that meets various travel demands while encouraging a healthy lifestyle

The Study provides recommendations and a detailed implementation plan (Table 1) that outlines a business model, estimated costs, and potential funding strategies for consideration. This program would play key roles in:

- Improving accessibility to major destinations, employment, and community services in the Town for people who may not have access to or may prefer not to use an automobile
- Offering transit users with a solution to make the first and/or last mile of a transit trip
- Encouraging locals and visitors to explore the Town through recreational and tourist activities
- Supporting active transportation in the Town by making cycling more accessible

Table 1: Bike Share Program Implementation Plan Recommendations

Items	Recommendations
Business Model	To pursue a partnership with one or multiple private bike share providers to implement bike share services for the Town.
Financial Contribution	The cost of provisioning the vehicle fleet, system operations, maintenance, and customer interface would be the responsibility of the private bike share provider(s) in exchange for the right to operate on Town property. Staff time will be required to work with and regulate the selected operator(s).
Fleet Size	Number of bikes will be determined in collaboration with the selected operator.
Fleet Composition	Provide a combination of standard bikes and e-bikes.
Service Area	Please refer to location map provided in Appendix A of the Study.

Number of Stations	To be implemented in 3 phases with a total of 31 stations:
	
	• Phase 1:
	  ○ 1-2 years with 9 stations.
	  ○ Centralizing within the downtown, promenade, and GO Station area.
	
	• Phase 2:
	  ○ 3-5 years with 9 stations.
	  ○ Expand coverage to other major Town corridors, trail entrances, and Town Hall.
	
	• Phase 3:
	  ○ 5+ years with 13 stations.
	  ○ Further expand the program for Town-wide coverage.

Service Period	To maintain year-round operation.
Parking Management	Docking stations.

York Region completed a bike share feasibility study in 2019 which recommended local municipalities take the lead in implementing bike share programs in their municipalities and York Region provide support where required

The Region undertook a bike share feasibility study to assess bike share opportunities within the Region in 2019. This study recommended that the Region not undertake a bike share program themselves, rather its local municipalities should take the lead in further exploring options individually.

Staff recommend as a next step; a Request for Information (RFI) be released for the implementation of a bike share program to gauge vendor interest and further investigate a sustainable model

The purpose of undertaking the RFI process is to gather further information including a more detailed implementation plan and associated funding scenarios from prospective private bike share providers to determine the feasibility of a bike share program for the Town. The results from the RFI will be summarized and presented to Council at a future Community of the Whole meeting.

Advisory Committee Review

A memorandum (Report No. PDS24-043) was presented at the Active Transportation and Traffic Safety Advisory Committee (ATTSAC) meeting on May 22, 2024. The committee provided the following recommendations (Table 2).

Table 2: ATTSAC Comment Summary

Comments	Responses
The implementation of a Bike Share Program for the Town of Aurora is premature with our current active transportation facilities. The program should be deferred until more active transportation infrastructures are built as outlined in the Active Transportation Master Plan.	The Bike Share Program will be implemented in 3 phases. Phase 1 will focus within the GO Station, Downtown and Promenade area. We will gather data and feedback from users, residents, visitors, and businesses, and adjust the program as needed for Phase 2 and Phase 3.
The program should also focus on providing bike share services adjacent to high schools to encourage students on active transportation.	The final locations of the bike docking stations will be determined in consultation with the selected private bike share operator.
Year-round operation may be impractical, suggest considering a 6-month (non winter) operation period.	The operation will be determined in consultation with the selected private bike share operator.

Legal Considerations

The RFI will be conducted in accordance with the Town's Procurement By-law and policies.

Financial Implications

The Study recommends the Town further explore a partnership model with one or multiple private bike share providers to provide bike share services for little to no cost to the Town. Under the model under exploration, the bike share program would be privately owned and operated with oversight from the Town which will minimize the Town's financial risk exposure. Under this program, all associated direct operating and capital costs would be borne by the 3rd party operator(s). Staff time will be required to provided oversight and regulation of operator(s), including its enforcement of any associated permits and other regulatory schemes.

Communications Considerations

This report will be posted to the Town's website. If, as a result of the RFI process, a Bike Share Program progress, Communications will develop a communications plan to inform the public via channels such as the Town website, e-newsletters, social media.

Climate Change Considerations

According to the 2020 Community Energy Plan (Plan), the transportation sector accounts for approximately 37 per cent of the total greenhouse gas emissions, and the major contributor (approximately 99 per cent) are from personal vehicles. The Plan estimates that the transportation sector will account for 31 per cent and 36 per cent of greenhouse gas emissions by year 2030 and 2050, respectively.

The objective of the bike share program is to provide a safe, convenient, well-connected, and accessible active transportation network to help reduce reliance on personal vehicles. The use of alternative modes of transportation can help reduce air and water pollutants, and green house gas emissions.

Link to Strategic Plan

This report supports the Strategic Plan goal of Support an Exceptional Quality of Life for All by examining traffic patterns and identify potential solutions to improve movement and safety at key intersections in the community.

Alternative(s) to the Recommendation

None.

Conclusions

WSP was retained to support the development of a Bike Share Feasibility study (Study). The primary purpose of the Study is to develop a bike share program to provide residents and visitors with a feasible mode of active transportation that meets various travel demands while encouraging a healthy lifestyle.

In addition, the Study also outlines an implementation plan (Table 1) with a preferred business model, estimated costs, and potential funding strategies to support the Town

in establishing a viable, sustainable bike share program to provide additional mobility choices to residents and visitors today and into the future.

It is recommended that staff be directed to coordinate with Procurement Services to initiate a Request for Information (RFI) to gather additional information and market research from prospective private bike share providers to determine the feasibility of a bike share program for the Town. The results from the RFI will be summarized and presented to Council at a future Community of the Whole meeting.

Attachments

Attachment 1: Bike Share Feasibility Study

Previous Reports

PDS24-043, Memorandum Bike Share Feasibility Study, May 22, 2024.

Pre-submission Review

Agenda Management Team review on June 12, 2024

Approvals

Approved by Marco Ramunno, Director, Planning and Development Services

Approved by Doug Nadorozny, Chief Administrative Officer

Aurora Bike Share Feasibility Study

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wsp

Table of Contents

Executive Summary

Shared micromobility devices encompass all shared-use fleets of small, fully, or partially human-powered vehicles that could be rented through a mobile app or kiosk by residents or visitors of a municipality. Some examples include manual bikes, e-bikes, and e-scooters. Communities across North America have begun to implement shared micromobility programs to promote cycling as a viable and valued travel option and contribute to broader climate, health, and economic goals. The Project Team has developed this Aurora Bike Share Feasibility Study to provide details about how a bike share program could operate within Aurora.

The primary purpose of a bike share program in the Town of Aurora is to provide its residents, workers, and visitors with a feasible mode that meets various travel demands while encouraging a healthy lifestyle. This program aligns with the overall Vision and supporting Objectives of the Town of Aurora's Active Transportation Master Plan as it would play key roles in:

- Improving accessibility to major destinations, employment, and community services in the Town for people who may not have access to or may prefer not to use a private automobile;
- Offering transit users with a solution to make the first and / or last mile of a transit trip;
- Encouraging locals and visitors to explore the Town through recreational and tourist activities; and
- Increasing the number of cyclists in the Town, with elements of equity integrated into the program structure to encourage the "Interested but Concerned" population and underserved communities to uptake cycling, which in turn supports future investments into active transportation.

This Aurora Bike Share Feasibility Study first begins with a review of best practices in the planning and implementation of a bike share program, including a review of case studies from three comparable Canadian municipalities that currently operate shared micromobility programs. This review was further guided by The Bikeshare Planning Guide (2018) by the Institute for Transportation & Development Policy (ITDP), state of the industry reports (2021 and 2022) from the North American Bikeshare & Scootershare Association (NABSA), and the National Association of City Transportation Officials (NACTO) Bike Share Station Siting Guide (2016). Key takeaways in bike share program best practices to help inform recommendations for the Town of Aurora include:

- Integration with existing and planned infrastructure;
- Strategies for operating, funding, and monitoring the program; and

- General public and key stakeholder engagement.

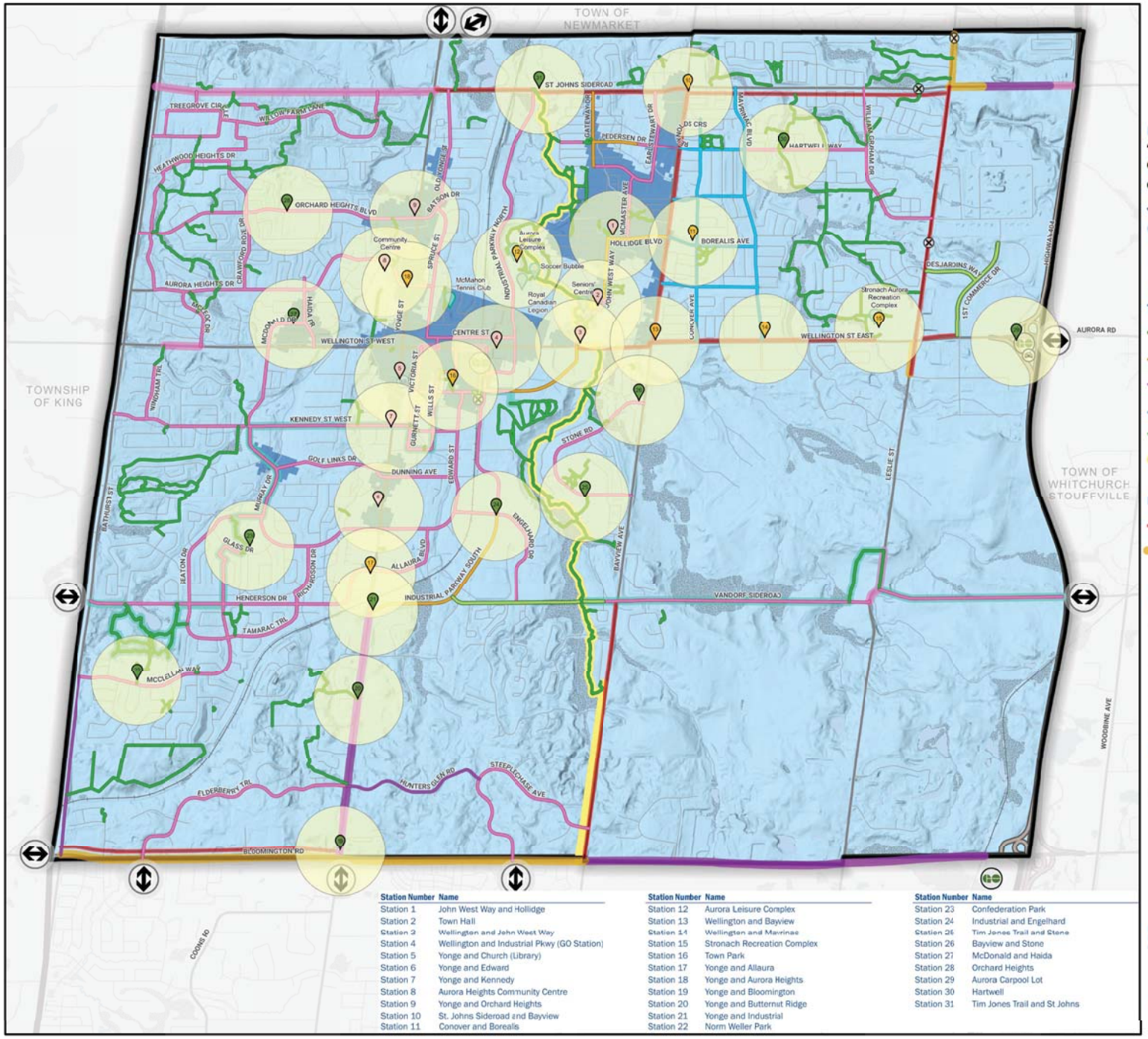
These recommendations are further supported by a detailed evaluation of potential bike share station locations. The results of the 2018 York Region Bike Share Feasibility Study were used as a starting point to identify locations with the best potential for bike share stations within the Town based on the 36 spatial indicators. The final map surface dataset from the 2018 York Region Bike Share Feasibility Study was transformed in six steps to provide relevant suitability scoring for each of the initial 20 candidate locations for bike share stations. These candidate locations were further reviewed and based on feedback from Town Staff, **the final recommendation was developed, which includes a total of 31 station locations divided into the three phases: Phase 1 (1 – 2 years); Phase 2 (3 – 5 years); and Phase 3 (5+ years)**. These are shown on the map at the end of the Executive Summary.

This study also outlines an implementation plan with a preferred business model, estimated costs, and potential funding strategies to support the Town in establishing a viable, sustainable bike share program to provide additional mobility choices to residents and visitors today and into the future. It is recommended that **the Town of Aurora pursue a partnership with one or multiple private bike share providers to provide bike share services for little to no cost to the Town**. The cost of provisioning the vehicle fleet, system operations, maintenance, and customer interface would be the responsibility of the private bike share provider(s) in exchange for the right to operate on Town property. The Town would be responsible for enforcing permits and other regulatory schemes. It is anticipated that some Town Staff time may be needed to provide oversight and regulate operator(s). **Under this model, the bike share program would be privately owned and operated with regulation from the Town, which minimizes the financial risk to the Town as all capital and operating costs (including any potential cost overruns) are borne by the private sector**.

High-level details of the recommended bike share program for the Town of Aurora are outlined below:

Item	Recommendation
Fleet Size	To be determined in collaboration with selected operator(s)
Fleet Composition	Combination of standard bikes and e-bikes
Service Area	See map at the end of the Executive Summary
Number of Stations	A total of 31 stations for three phases: – Phase 1 (1-2 years): 9 stations – Phase 2 (3-5 years): 9 stations

Item	Recommendation
	– Phase 3 (5+ years): 13 stations
Service Period	Year-round operation
Parking Management	Docking stations
Equipment Standards	Responsibility of the operator(s) to ensure fleet meets Provincial safety requirements and suits local context
Insurance Requirements	Proof of Commercial General Liability Insurance in Province of Ontario, motor vehicle liability insurance, and WSIB coverage
Financial Contributions from the Town of Aurora	Some staff time anticipated to work with and regulate operator(s)
Financial Contributions Required of Private Operators	All capital and operating costs, annual licensing fee or application fee, and providing reimbursements for the Town for any costs (plus penalty) incurred by the Town for violation of agreement or repair / maintenance of Town property.
Cost Overruns	Responsibility of the operator(s)
Operations Plan	Responsibility of the operator(s) and provide Town Staff with direct contact
User Interface and Payment Systems	Responsibility of the operator(s)
Costs	Operator(s) retain right to set pricing and user fees in consultation with Town Staff
Data Reporting Standards	Operator(s) must give Town Staff access to fleet management portal and real-time data feeds with usage reporting on a regular basis (e.g. monthly)
Repair and Maintenance	Responsibility of the operator(s) with reporting to Town Staff on a regular basis (e.g. monthly)
Rebalancing	Responsibility of the operator(s) to rebalance every 24 hours and respond to pedestrian obstructions and safety concerns within several hours; otherwise, may face penalty if Town Staff are required to remove fleet vehicles.
User Education	Responsibility of the operator(s)



Station Number	Name
Station 1	John West Way and Hollidge
Station 2	Town Hall
Station 3	Wellington and John West Way
Station 4	Wellington and Industrial Pkwy (GO Station)
Station 5	Yonge and Church (Library)
Station 6	Yonge and Edward
Station 7	Yonge and Kennedy
Station 8	Aurora Heights Community Centre
Station 9	Yonge and Orchard Heights
Station 10	St. Johns Sideroad and Bayview
Station 11	Conover and Borealis
Station 12	Aurora Leisure Complex
Station 13	Wellington and Bayview
Station 14	Wellington and Mavrinac
Station 15	Stronach Recreation Complex
Station 16	Town Park
Station 17	Yonge and Allaura
Station 18	Yonge and Aurora Heights
Station 19	Yonge and Bloomington
Station 20	Yonge and Butternut Ridge
Station 21	Yonge and Industrial
Station 22	Norm Weller Park
Station 23	Confederation Park
Station 24	Industrial and Engelhard
Station 25	Tim Jones Trail and Stone
Station 26	Bayview and Stone
Station 27	McDonald and Haida
Station 28	Orchard Heights
Station 29	Aurora Carpool Lot
Station 30	Hartwell
Station 31	Tim Jones Trail and St Johns

Bike Share Station Candidate Locations

Town of Aurora Active Transportation Master Plan

2024-02-12

Potential Station Locations

- Phase 1: 1-2 years
- Phase 2: 3-5 years
- Phase 3: 5+ years
- 500 m Station Buffer

York Region 2018 Bike Feasibility Score (Normalized)

100 / 50 / 0

Town Cycling Network

- Multi-Use Path
- Bike Lane
- Paved Shoulder
- Signed Route
- Shared Roadway (Currently Unsigned)

Trail System

- Multi-Use Trail
- Lake-to-Lake Route

Trail Features

- Existing Grade Separated Crossing

Regional Cycling Network

- Multi-Use Path
- Bike Lane
- Paved Shoulder
- Shared Route (Unsigned)

Base Features

- Highway / Expressway
- Arterial / Collector Road
- Local Road
- Rail Line
- Watercourse
- Waterbody
- Wetland
- Municipal Boundary

Destinations

- Town Hall
- Community / Recreation Centre
- Library
- Carpool Lot & GO Bus Stop
- GO Transit Station
- Municipal Connection to Existing Cycling Facility

N

0 0.75 1.5 KM

Notes:
Data obtained through Land Information Ontario (LIO) GeoHub, Town of Aurora and York Region Open Data Portal.

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WSP

1.0 Introduction

Shared micromobility devices encompass all shared-use fleets of small, fully, or partially human-powered vehicles that could be rented through a mobile app or kiosk by residents or visitors of a municipality. Some examples include manual bikes, e-bikes, and e-scooters. These devices improve accessibility to travel by offering a practical alternative to private single-occupant automobile trips, extending the reach of transit users for the first and last mile of a transit trip while also providing new mobility options for recreational trips and tourism in a community. Planning a shared micromobility program for a municipality requires careful consideration of the local context and key challenges, some of which include integration with active transportation infrastructure and public transit, space constraints, safety concerns with mixing micromobility devices with pedestrians and persons with disabilities, and political and financial support.

The Project Team has developed this Bike Share Feasibility Study to provide additional details about how a bike share program could operate within Aurora. The purpose of this paper is to provide recommendations for the Town based on a review of best practices in the planning and implementation of a bike share program, including a review of case studies from three comparable Canadian municipalities that currently operate shared micromobility programs. These recommendations are further supported by a detailed evaluation of potential bike share station locations, providing the Town with a list of optimum locations based on best practices in the siting of bike share facilities. This Study also outlines an implementation plan with a preferred business model, estimated costs, and potential funding strategies to support the Town in establishing a viable, sustainable bike share program to provide additional mobility choices to residents and visitors today and into the future.

2.0 Best Practices in Bike Share from Comparable Canadian Municipalities

Communities across North America have begun to implement shared micromobility programs to promote cycling as a viable and valued travel option and contribute to broader climate, health, and economic goals. When developing a bike share program for Aurora, it is beneficial to consider how comparable municipalities in Canada have developed similar programs and what lessons can be learned to be adapted for Aurora.

In identifying Case Study communities, the Project Team looked for Canadian municipalities that have a similar four-seasons climate with cold winters and similar scale in terms of population and land use with expanding urban communities. Based on these criteria, the Project Team reviewed documentation related to current micromobility programs from the following three Canadian municipalities:

1. Region of Waterloo, Ontario: bike share pilot (ended in 2019), e-bike and e-scooter pilot
2. City of Hamilton, Ontario: bike share
3. City of Kelowna, British Columbia: e-bike and e-scooter pilot

Sections 2.1 to 2.3 provide a summary of the key elements of each municipality's micromobility program, followed by Section 2.4 which outlines best practices and lessons learned to help inform the planning and implementation of a bike share program for Aurora. Note that this review was further guided by The Bikeshare Planning Guide (2018) by the Institute for Transportation & Development Policy (ITDP) and state of the industry reports (2021 and 2022) from the North American Bikeshare & Scootershare Association (NABSA).

2.1 Region of Waterloo, Ontario

2.1.1 Bike Share Pilot (Ended in 2019)

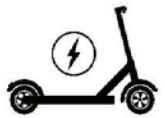
Physical System	• 400 shared bikes • Docking stations marked using painted box, partial box or flag, or other material
Operations and User Interface	• Users access bikes through mobile app • Hybrid docking model, which allows users to either lock a bike to a docking station or in a designated area away from a docking station
Operating Model	• Owned by Region of Waterloo and operated by Drop Mobility, a private organization • Pilot ran from May to November 2019 as a joint effort between the Region and its three cities
Program Impacts	• 1,573 unique users • Over 4,600 total trips made by shared bikes • 21% of shared bike trips replaced driving

X 400

2.1.2 E-Bike and E-Scooter Pilot (ongoing)

Physical System	• 500 shared e-bikes and 500 shared e-scooters • Planned to expand to 150 stations across Region of Waterloo, starting with stations in downtown areas of Cambridge, Kitchener, and Waterloo and near transit stations and university campuses
Operations and User Interface	• Users access bikes through Neuron's mobile app • Hybrid docking model, which allows users to either lock a bike to a docking station or in a designated area away from a docking station
Operating Model	• Owned by the Region of Waterloo and operated by Neuron Mobility, a private organization • Pilot running from April to October 2023 as a joint effort between the Region and its three largest communities
Program Impacts	• Not publicly available yet

X 500 (each)



2.2 City of Hamilton, Ontario

Physical System (As of May 2020)	• 900 shared bikes • 130 docking stations on the street, in the boulevard, or in open spaces • Stations located to a recommended density of every 300 m
Operations and User Interface	• Users access bikes through SoBi app or using RFID Member Card • Hybrid docking model, which allows users to either lock a bike to a docking station or in a designated area away from a docking station with an incentive for the next user to return an out-of-station bike • Everyone Rides Initiative (ERI), which provides improved access to bikes, subsidized user passes, cycling education, and outreach to remove barriers to cycling and create a welcoming culture for all cyclists; funded by Ontario Trillium Foundation
Operating Model	• Owned by City of Hamilton and operated by Hamilton Bike Share Inc., a local not-for-profit organization • Operator shares anonymous user data with City to better inform infrastructure improvements based on travel patterns • Program initiation in 2014 funded by Metrolinx Quick Wins grant • Current operations fully funded by user revenues, sponsorship, donations, grants, and City of Hamilton contributions
Program Impacts (As of May 2020)	• 26,800 active members • ERI includes ~500 of the active members and connections to 10 social service organizations who provide access to cycling to their clients • ~1.7 million trips made by shared bikes • ~13.7 million total kilometres travelled by shared bikes • 918,760 kg of carbon emissions reduced

X 900

2.3 City of Kelowna, British Columbia

Physical System	• 700 shared e-scooters and 300 shared e-bikes • Dockless
Operations and User Interface	• Users access e-scooters and e-bikes through Lime app • Dockless model, which allows users to park in "furniture zone" of road or on the side of the road in places without paid parking; cannot block pedestrian infrastructure, building or parking accesses, and transit stops or create accessibility issues for pedestrians • Laws for users, such as only one adult at a time on a device while wearing a helmet, ensuring they are not intoxicated, and only riding where cycling is allowed; safety information and requirements communicated through Lime app • Lime Access program supports lower income users with 70% discount
Operating Model	• Owned by City of Kelowna and operated by Lime, a private organization • Regulated through City's Micromobility Permit • Operator shares anonymous user data with City to monitor compliance with Micromobility Permit, help track and correct inappropriate use of devices, and better inform infrastructure improvements based on travel patterns • Initiated in April 2021 and funded by Provincial e-scooter pilot program (April 2021 - April 2024); operator pays annual permit fee to offset City management tasks
Program Impacts (As of June 2023)	• Over 600,000 trips made by shared e-bikes or e-scooters • Over 1 million kilometres travelled by shared e-bikes or e-scooters • Service area covers 70% of residents with 60% of trips occurring outside of downtown • 48% of shared e-scooter trips replaced driving

X 700

X 300

2.4 Key Takeaways in Bike Share Program Best Practices

This section outlines key takeaways in bike share program best practices to help inform the planning and implementation of a bike share program for Aurora:

Integration with Existing and Planned Infrastructure

Provide or plan to provide high-quality active transportation infrastructure throughout the municipality to increase public acceptance of cycling and the bike share program as well as improve user safety. Micromobility systems provide the highest level of value when they are supporting mode shift for users who are currently using an automobile. These users are frequently defined as the "Interested but Concerned" population who require a comfortable, convenient experience to shift towards active travel modes. The implementation plan from the Active Transportation Master Plan will support the Town in adhering to this best practice.

Plan stations near areas of highest demand based on key origin and destination points in a municipality, operational feasibility, availability of supporting amenities, and safety (such as areas with good lighting, high pedestrian traffic, and traffic calming measures). For instance, one of the limitations of the Region of Waterloo's pilot bike share program was that bike share users had difficulty finding bike parking at key locations, such as transit stations where personal bikes occupied most of the bike racks.

Integrate the bike share program with public transit. Some examples of this include locating bike share stations at or near key existing or planned transit hubs and stations, streamlining user information and payment systems (e.g. through in-app trip planning and bundled passes), and co-marketing or co-promoting shared micromobility. In the case of the pilot bike share program in the Region of Waterloo, some users identified that paying the full price for transit service and bike share would have made a trip too expensive; thus, such users could be incentivized with discounts to use bike share for the first-mile or last-mile of a transit trip, which would make it more practical for people to choose sustainable

Choose physical system elements to suit the local context and needs of the municipality. Physical elements can include:

- Type of system (e.g. hybrid bike share systems have become more common as they offer typical docking stations that may be more intuitive for the general public to navigate while also providing the flexibility to start or end a trip outside of a docking station);
- Service area (e.g. typically 500 metre radius around a docking station or the jurisdictional boundary of a municipality for a dockless system while also considering population and key destinations); and
- Type of vehicles (e.g. important to ensure that vehicles are robust, low-maintenance, secure, identifiable, and include storage; some options include manual bikes, e-bikes, e-scooters, pedal assist e-bikes, and adaptive bikes for those with accessibility needs).

These decisions should be guided by engagement with the public, discussions between municipal staff, and material availability to ensure that the program aligns with community needs and generates public use and support. While this study will provide recommendations for program details, it should not take the place of engagement with the community about the potential pilot system. An example of the importance of engaging the community to better understand their needs can be found in the first bike share system launched in the Region of Waterloo: based on performance metrics and feedback, it was found that the public would have preferred more bikes to be available at launch and a greater service area. Some operational constraints may not be easily overcome based on program budget and availability of operators, but it is important to understand the needs of the community to communicate the program's intent and potential growth to garner support as the program matures.

Strategies for Operating, Funding, and Monitoring the Program

Choose an appropriate operating model considering asset ownership and revenue flow between the municipality, operator(s), and other key stakeholders. The three main contracting structures include:

1. Publicly owned and operated;
2. Privately owned and operated; and
3. Public owned and privately operated.

The third type of contracting structure in which the system is owned by the municipality and is operated by a private entity through a contract or permit is the most used. The type of operating model suitable for a bike share program should be informed by input from the municipality, the public, and other key stakeholders as well as feasibility analyses.

Aim to diversify funding streams and create private sector partnerships to ensure financial sustainability of the program. Funding streams can include government funding (e.g. grants, transportation budget), sponsorship, private investments (e.g. partnership with private land owners, donations, fundraising), advertising, and user revenue. This can be used to offset capital and operating costs, deal with seasonal changes in user revenue, and plan for expansions.

Establish a regulatory regime before the launch of the program to ensure that suppliers and operators are meeting the municipality's needs. Regulations and policies may focus on:

- Effectively managing public space (e.g. cap fleet size, response to parking complaints)
- Fostering equity and accessibility (e.g. flexible payment options, transit integration)
- Improving planning and enforcement (e.g. data sharing, user surveys)
- Protecting users (e.g. provide users with clear safety information, equipment standards, sidewalk riding detection)

The success of such a strategy requires reliable, real-time, and historical data from operators and municipal staff who can interpret that data and assess fines and penalties if performance targets are not being met. It is also important to gather public feedback and collect user data to identify and address issues that may arise.

An example of the importance of implementing a regulatory regime with clear performance targets can be found in the first bike share system launched in the Region of Waterloo: at the end of the pilot program, feedback indicated that the operator should have offered robust customer service, anticipated mobile app issues, ensured consistent communication with the municipality and users, and offered a variety of methods to access service to those unfamiliar with a mobile app.

A well-defined regulatory regime can support the municipality in improving the performance of operators to ensure that users have access to a high-quality, reliable bike share program.

Another way that regulation can be used is to maximize the likelihood of users following the rules so that they can safely share the road with other travellers, particularly when operating a new technology. For example, the City of Kelowna passed laws and regulations with the new rollout of e-scooters in response to public concerns, such as restricting the use of a device to one user at a time, requiring each user to show proof of age (18 years or older) and wear a helmet, and suspending service in the downtown area late at night to avoid intoxicated riding.

Develop a communications plan and marketing strategies to establish a program identity and keep the public educated and engaged. A clear, consistent identity for the bike share program should be presented with education and outreach initiatives to keep the public informed on the safe use of the system and to attract new users. The program identity should consist of a simple name and logo that positively connects to a municipality's identity complimented by an aesthetic system design with consistent colour schemes and messaging.

The purpose and format of education and outreach efforts depend on the needs of the local community and may focus on how to operate a micromobility device safely, navigate new technology, and share the road. For example, the City of Kelowna's program includes multiple strategies to educate users on safety, such as communications through the Lime app or printed information on vehicles, the E-Scooter Safety Education Campaign, and the planned deployment of street teams downtown to educate the public on how to ride safely and courteously during busy months.

Track performance metrics related to program goals with real-time user data and public feedback. This may be a requirement in the contract and permit of a system to ensure operator compliance, such as the pilot program in City of Kelowna which requires the operator to provide a live feed of device location and status, as well as conduct random parking audits.

User data is critical in measuring program performance, identifying common travel patterns, gathering feedback from users and the public to inform further expansions, and developing appropriate strategies to respond to changes, such as future policies or regulations. Some performance metrics include:

- **Climate** (e.g. reduction in greenhouse gas emissions)
- **Health** (e.g. improving air quality, increase in physical activity)
- **Economy** (e.g. time and cost savings versus other modes, increase in local economic activity)
- **Safety** (e.g. decrease in killed or seriously injured collisions)
- **Access** (e.g. number of people living near bike share station)

General Public and Key Stakeholder Engagement

Engage the public and key stakeholders at all stages to continue to build an identity and gather public support for the program. For example, when choosing candidate docking station locations, the City of Hamilton referred to international best practices according to the ITDP, consulted with City departments, and underwent an extensive public engagement process with a variety of tools and techniques to gather public input and understand local needs. The program continues to gather public support by showcasing ERI user stories, organizing group rides as part of key public events in the City, and encouraging people to reach out to local businesses and Ward councillors to get funding for desired new stations. Furthermore, make it clear to the public at launch why certain stations were prioritized and what expansion plans are to continue engaging people in neighbourhoods that may not currently have stations.

A focus on equity is key to attracting new riders who may currently choose not to cycle. Such barriers to cycling could be:

- Financial: not able to pay for membership, no access to credit card, not able to make deposit to sign up
- Physical: not able to ride typical bike due to accessibility needs
- Psychological: lack of knowledge on navigating new technology, perceiving cycling as unsafe due to lack of skills, experience, or sense of belonging in cycling community

Providing elements in the bike share program to suit the needs of the local community, such as the ERI in Hamilton, would help the program to realize its intended benefits and gather support for future expansions. Key components to consider include:

- Geographic equity (e.g. policies to provide stations in low-density, low-income areas)
- Social equity (e.g. discount program or alternative payment options for low-income users)
- Cultural acceptance (e.g. targeted education and outreach for underserved groups, equitable hiring)

3.0 Candidate Locations of Pilot Bike Share Stations in Auora

This section outlines a detailed evaluation and recommendations of potential bike share station locations for the Town of Aurora to prioritize as they pilot a bike share program. These are based on the Vision Statement and supporting Objectives of the Town of Aurora's Active Transportation Master Plan, key takeaways from the National Association of City Transportation Officials (NACTO) Bike Share Station Siting Guide (2016) and The Bikeshare Planning Guide (2018) by ITDP, and bike share program best practices presented in Section 2.4.

3.1 Purpose of Bike Share in Aurora

The primary purpose of a bike share program in the Town of Aurora is to provide its residents, workers, and visitors with a feasible mode that meets various travel demands while encouraging a healthy lifestyle. This program would play key roles in:

- Improving accessibility to major destinations, employment, and community services in the Town for people who may not have access to or may prefer not to use a private automobile;
- Offering transit users with a solution to make the first and / or last mile of a transit trip;
- Encouraging locals and visitors to explore the Town through recreational and tourist activities; and
- Increasing the number of cyclists in the Town, with elements of equity integrated into the program structure to encourage the "Interested but Concerned" population and underserved communities to uptake cycling, which in turn supports future investments into active transportation.

The primary purpose and roles of a bike share program in the Town align with the overall Vision and supporting Objectives of the Town of Aurora's Active Transportation Master Plan, namely:

- Provide and Support a Variety of Transportation Options;
- Support Community Health;
- Improve Connectivity;
- Coordinate with Existing and Future Infrastructure Projects;
- Prioritize Safety and Accessibility; and
- Increase Sustainability.

3.2 Best Practices and Guidelines for Service Area and Bike Share Station Placement

Two key aspects of planning a station-based bike share program includes determining the:

1. Service area, which is the physical area within which users can rent and return a shared bike; and
2. Placement of each station within the streetscape.

Best practices on these aspects were reviewed from The Bikeshare Planning Guide (2018) by ITDP and the NACTO Bike Share Station Siting Guide (2016) to support the Town in choosing priority locations for bike share stations and planning for how each station could be integrated into the existing infrastructure.

Figure 1: Collector Road in Aurora (Source: WSP)

1 Choosing the service area depends on considerations of a variety of factors, including demand, land use, and cost. It is recommended to base the service area in high-density parts of a municipality with mixed land uses to create convenient connections between a significant set of origin and destination points to potentially attract more people to use bike share. To ensure reliable coverage, a municipality should aim for a generally uniform density of bike share stations, commonly targeting to place a station within a 300 m to 500 m diameter buffer of each other.

At the same time, it is important to consider capturing lower-density areas, where underserved populations may rely on active modes of travel and transit and would greatly benefit from improved connectivity to the transportation system via bike share. Therefore, a few stations may be placed outside of the dense coverage areas based on land use, existing infrastructure, and community needs.

Regardless of the chosen station density, all stations within the service area should be within a reasonable walking distance (e.g. within 3 to 5 minutes of walking) of each other and of key origins and destinations to provide users with a convenient and reliable way to travel from / to anywhere in the municipality.

2 The placement of a bike share station within the streetscape should follow these key principles:

- **Accessible and Convenient**: allow pedestrians and cyclists to easily find and use the station, regardless of time of day or season of the year; typically locate in areas with high cycling demand (e.g. along existing cycling facility, at transit hub, at mixed-use development nodes)
- **Designed for Safety**: improve personal safety by locating in areas with high foot traffic, traffic calming measures to slow down motorists, and good lighting (which can also attract and retain sponsors and advertisers)
- **Operationally Feasible**: ensure ease of access for operations, maintenance, and servicing (e.g. e-bike charging, rebalancing, adequate sun exposure if station relies on solar power)
- **Enhancing the Pedestrian Realm**: enhance the quality of the surrounding pedestrian environment without blocking the flow of pedestrians
- **Part of the Streetscape Hierarchy**: should not block major, permanent elements (e.g. fire hydrant, transit stop) but can be prioritized over moveable objects (e.g. drive rails, standard bike racks)

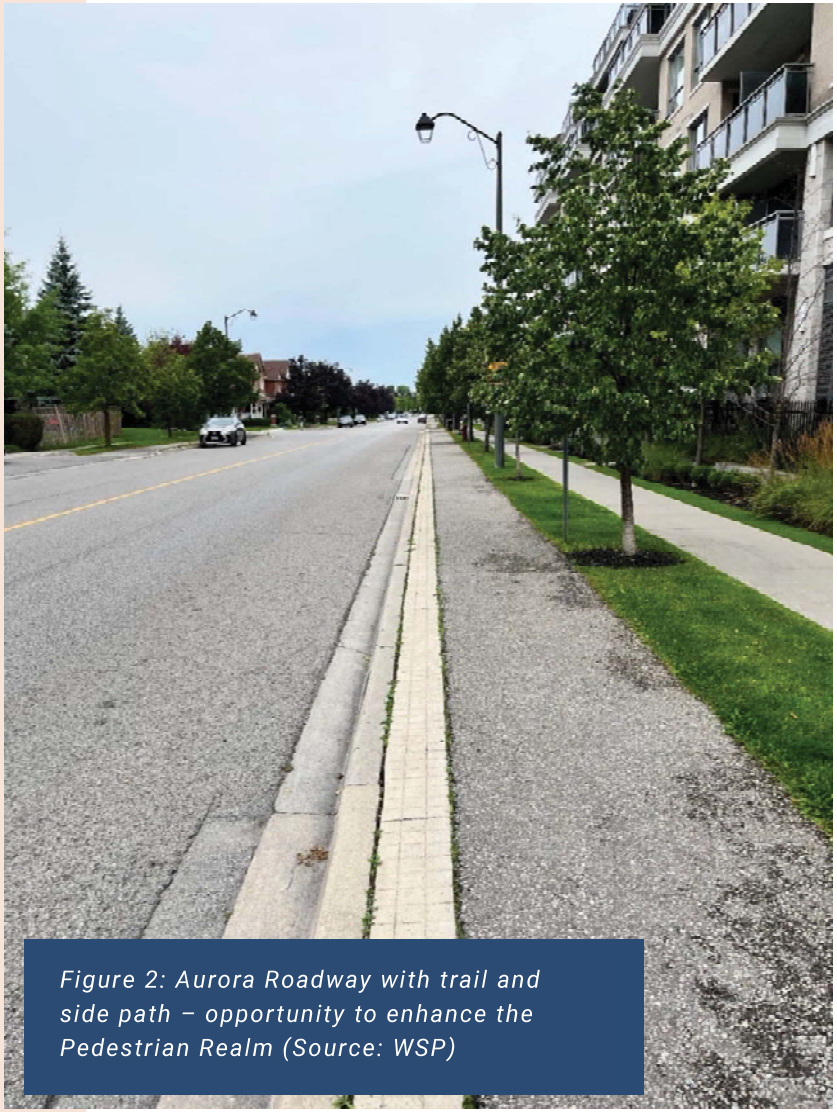


Figure 2: Aurora Roadway with trail and side path – opportunity to enhance the Pedestrian Realm (Source: WSP)

3.3 Methodology of Selecting Pilot Bike Share Stations in Aurora

The results of the 2018 York Region Bike Share Feasibility Study were used as a starting point for the Town of Aurora's Bike Share Feasibility analysis to identify locations most suitable for bike share stations. Beginning with a long list of 20 potential station locations, the Project Team evaluated candidate locations against spatial analysis results to develop a data-driven approach to the phased implementation of a bike share system within Aurora. The final list of candidate bike share station locations and phasing was determined based on feedback from Town Staff.

York Region Bike Share Feasibility Study

In June of 2018, York Region engaged WSP to develop a Bike Share Feasibility Analysis that would build on previous modelling work completed for the Toronto Parking Authority and Metrolinx. This work and methodology were documented in detail in the City of Toronto Feasibility Study (2015) and furthered in the Greater Toronto and Hamilton Area Feasibility Study (2016). The purpose of these studies was to identify the most promising areas for bike share service deployment and ultimately improve opportunities for active transportation, enhanced transit access as well as broaden transportation choice.

WSP developed an analysis framework to identify areas of high Bike Share suitability throughout all local municipalities within York Region. The framework was based on indicators like population density, economic generators, cycling conditions, points of interest, transportation mode choice and availability of cycling infrastructure. The Project Team leveraged GIS, interactive mapping and consultation tools, as well as geo-statistical methods on 36 spatial datasets to determine areas of high potential for Bike Share station locations.

To determine suitable areas or "hot spots" for bike share station locations, the 36 indicators were compared and analyzed on a common scale. The Project Team used a variety of geo-spatial tools to normalize and combine the data for each of the 36 indicators. The result was a final map surface which contained a bike share suitability score ranging from 0-100, where 100 is the highest score possible — denoting, in relative terms, the best potential location for a future bike share station within the study area.

Methodology

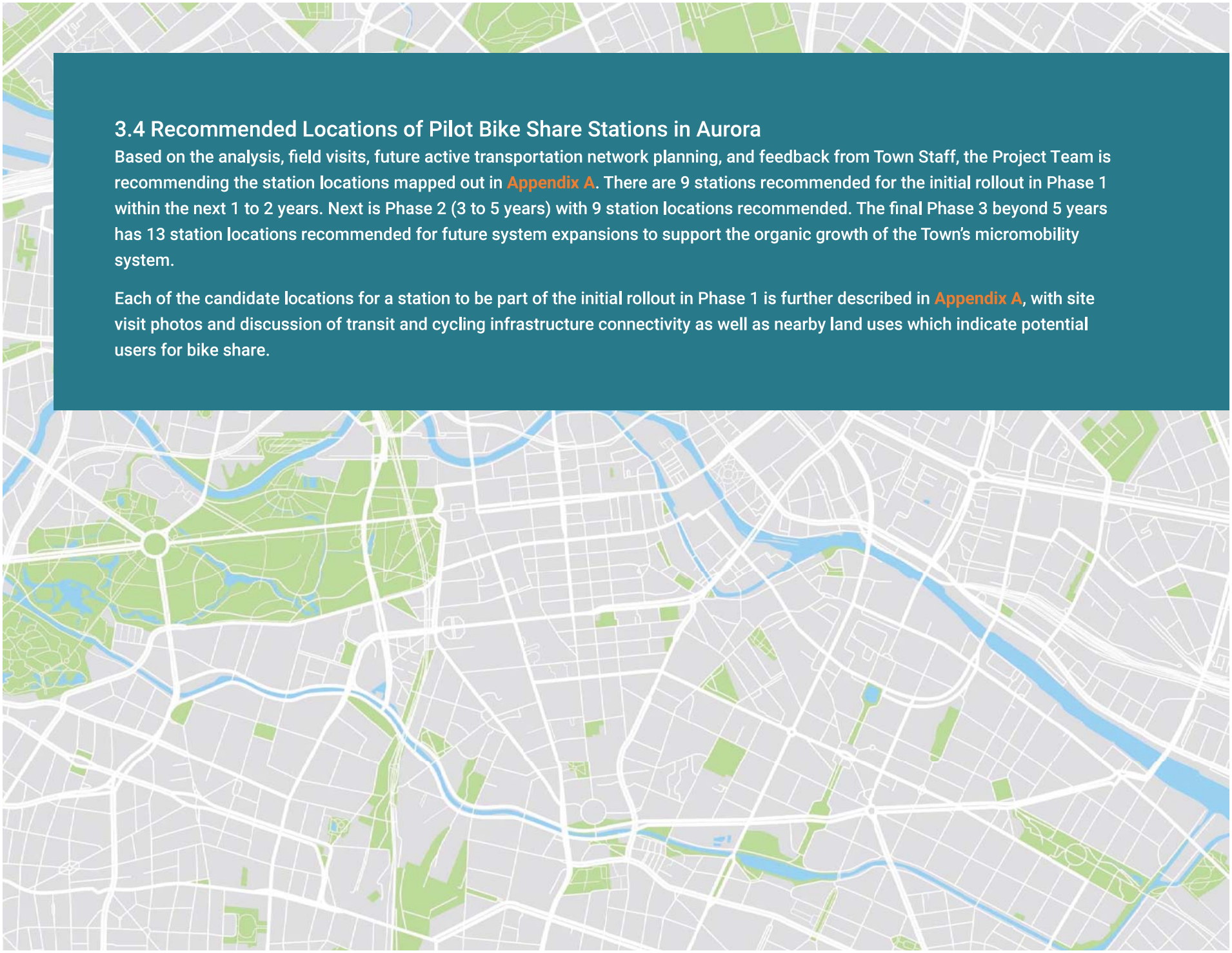
The final map surface dataset from the 2018 York Region Bike Share Feasibility Study was transformed in six steps to provide relevant suitability scoring for each of the initial 20- bike share station candidate locations using the methodology below:

1. The final map surface was isolated to the Town of Aurora's municipal boundary to create a new map surface dataset that only contained the suitability scores within Aurora.
2. The scoring within Aurora's map surface dataset was normalized to reflect a 0-100 scoring range.
3. The suitability scores within a 50-metre radius surrounding each of the 20 bike share station candidate locations were extracted from the normalized dataset to create 50-metre radius map surfaces specific to each station.
4. Preliminary suitability scores for each station were determined through a weighted average calculation where the suitability scores within each map surface were weighted against the area they occupied in the 50-metre radius.
5. A proximity penalty was applied to the preliminary scoring for each station, where a station received a 10% reduction in its score if it was within 400 metres of another station, or a 20% reduction if it was within 400 metres of two stations.
6. A remoteness penalty was lastly applied to arrive at the final suitability score. A station received a 20% reduction to its score if it was not within an 800-metre radius of another station.

These suitability scores provided the foundation for the initial 20 candidate locations. These locations were further reviewed and based on feedback from Town Staff, the final recommendation was developed, which includes a total of 31 station locations divided into the three phases below:

1. Phase 1: 1-2 years
2. Phase 2: 3-5 years
3. Phase 3: 5+ years

This approach aligns with the recommendations in The Bikeshare Planning Guide (section 4.1.1.a) – Field approach, where the Project Team conducted field visits to identify potential station locations and then refined those recommendations through desktop analysis and feedback from Town Staff.



3.4 Recommended Locations of Pilot Bike Share Stations in Aurora

Based on the analysis, field visits, future active transportation network planning, and feedback from Town Staff, the Project Team is recommending the station locations mapped out in Appendix A. There are 9 stations recommended for the initial rollout in Phase 1 within the next 1 to 2 years. Next is Phase 2 (3 to 5 years) with 9 station locations recommended. The final Phase 3 beyond 5 years has 13 station locations recommended for future system expansions to support the organic growth of the Town's micromobility system.

Each of the candidate locations for a station to be part of the initial rollout in Phase 1 is further described in Appendix A, with site visit photos and discussion of transit and cycling infrastructure connectivity as well as nearby land uses which indicate potential users for bike share.

4.0 Recommended Business Model and Financial Model for Aurora

4.1 Recommended Business Model for Aurora

The bike share program for the Town of Aurora will include an implementation plan that outlines a feasible business model, estimates of expected costs, and potential funding strategies for the Town to explore. This will support the initial rollout and future expansions of the bike share program so that it continues to serve residents and visitors of the Town in the long term.

Recommendations on each element of a business model appropriate for the Town of Aurora's bike share program are outlined below. These were informed by detailed research into each element, a summary of which is provided in Appendix B.

Organizational structure

The Town should pursue a partnership with one or multiple private bike share providers. The cost of provisioning the vehicle fleet, system operations, maintenance, and customer interface would be the responsibility of the private bike share provider(s) in exchange for the right to operate on Town property. The Town would be responsible for enforcing permits and other regulatory schemes and it is anticipated that some Town Staff time may be needed to provide oversight and regulate operator(s).

Asset ownership

It is recommended that the private bike share provider(s) selected by the Town own all physical assets (e.g. vehicle fleet, stations, and other physical materials) and system for delivering the bike share program (e.g. IT system, vehicles to support rebalancing etc.).

Enforcement

The Town should develop a regulatory regime with policies and regulations that apply to supplier(s), operator(s), and / or users to ensure that the program is delivered and used in line with the Town's goals. This should include developing a permit application process to assess and choose the qualified bike share service provider(s).

Furthermore, the Town should enforce system-wide delivery standards through a contract by outlining performance metrics for program delivery, requirements for the operator(s) to demonstrate how each metric is met, and certain penalties for non-compliance. In addition, if new technology is deemed appropriate to be incorporated into the vehicle fleet (e.g. e-bike), the Town should amend by-laws to allow for these devices to be operated on public space and to educate users on how to safely operate the devices and share the road space.

Contracting structure

It is recommended for the Town to pursue a bike share program that is privately owned and operated. This minimizes the financial risk to the Town as all capital and operating costs (including any potential cost overruns) are borne by the private sector. The fleet size would depend on the operator(s) selected, which could be incorporated into the evaluation criteria that the Town uses to select suitable provider(s) through the procurement process.

4.2 Recommended Financial Model for Aurora

A financial model was developed to predict and maximize the long-term financial sustainability of a bike share program. This model includes capital costs, operating costs, and revenue streams. This section outlines high-level details of each component to inform a detailed financial analysis that the Town should undertake with the most recently available data and methods to verify costs for the local context at a later planning stage.

Capital Costs and Operating Costs

Capital costs for a station-based system include the following four key components:

This cost can vary immensely depending on the level of security and advanced technology for the chosen vehicle fleet. Characteristics that may increase the unit cost of a bike include special locking mechanisms, speciality bikes with proprietary parts, GPS tracking, pedal-assist, charging infrastructure, other smart onboard technology, rebalancing, etc.

This is typically the most significant capital cost. High-tech terminals are typical for medium to large stations where most users are expected, whereas non-interactive terminals are provided with signage and static information for small stations. Note that increasing the number of docking spaces at a station can help to reduce costs for rebalancing vehicles.

Software

A municipality may contract the operator(s) who would own, provide, and manage the IT software.

Control Centre, Depot, and Maintenance and Redistribution of Units

This includes the centre from which the bike share program is managed, depots where bikes are stored and serviced, and mobile units to address maintenance and repair requests as well as rebalance between stations. This may be provided through an agreement between the municipality and the operator(s) or through partnerships with community organizations.

Operating costs for a station-based system include the following components:

This is the relocation of bikes from stations at or close to capacity to nearby stations that are nearly empty. This is the most significant operating cost. Onboard GPS technology and machine learning have been used in other jurisdictions to help accurately predict demand and reduce the challenges of rebalancing. Offering price incentives to users to park at another station can also help to rebalance bikes.

Staffing roles can include administration, maintenance, rebalancing, and customer service. It is recommended for the Town to hire at least two full-time staff (or contractors) to manage the bike share program and do community outreach and education. The cost of staffing will largely depend on local cost of employment.

This includes repair and preventive activities for the bikes and stations (e.g. sweeping around stations, fixing faulty brakes for bikes, fixing electrical equipment for station terminals, etc.) and may be conducted at depots or using mobile units. Maintenance to ensure high-quality, safe service is essential to building a reliable positive image of the bike share program for the public. The Town should outline maintenance standards in a service-level agreement or permit with the operator(s).

Marketing and Customer Information

This can range from printed material to municipal-wide campaigns using a variety of outlets, including social media. This is critical within the first 6 months of the start of the program and when expansions or service changes are planned. Membership campaigns to attract new users can also add to this cost. The Town should work with the operator(s) to provide oversight for marketing and providing customer information.

Insurance

Referencing anti-theft, accidents, and vandalism specifically, it is important for the Town to include a conditions-of-use document and proof of accident and anti-theft insurance in the contract or permit requirements when choosing the qualified operator(s). Deposits or liability holds may be put on a user's credit card to encourage them to properly use and return the bike, but this may pose some financial barriers to low-income users. Outreach efforts to build a respectable image for the bike share program is the most effective strategy to avoid vandalism of the bikes or station properties.

Revenue Streams

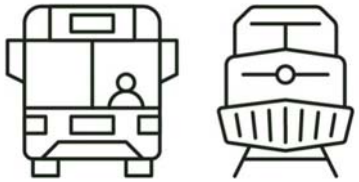
Several government funding options the Town should explore are outlined below. It is generally recommended that the Town pay the operator(s) based on service-level agreements for transparency and some level of control over program performance.

Investing in Canada Infrastructure Program

The Government of Canada provides over $33 billion of funding to support the development of inclusive, resilient communities that reduce air and water pollution, provide clean resources, and create growing economies to improve the overall quality of life for Canadians. It is delivered through bilateral agreements with provinces and territories and includes a “Green Infrastructure” category for projects that reduce greenhouse gas emissions, contribute to cleaner air, and allow communities to effectively adapt to the impacts of climate change.

The Green Municipal Fund

This is a $1.6 billion program funded by the Government of Canada and the Federation of Canadian Municipalities. It supports local governments in effectively shifting to sustainable practices with funding, resources, and training. Capital projects that improve the quality of air, water, and land as well as reduce greenhouse gas emissions are eligible.



The Public Transit Infrastructure Fund

This is a $3.4 billion program funded by the Government of Canada that provides short-term funding to support municipal investments in supporting the use and expansion of transit. This program committed $4 million starting in 2017 to expand the Toronto Bike Share system. Integration of a bike share program with transit is essential for the success of both systems and thus funding for public transit could be leveraged.

Other revenue streams to offset capital and operating costs include:

User Revenues

This can include a subscription fee for regular users or a usage fee for less frequent users with different cost options based on circumstances. The pricing structure for users should be developed with extensive public consultation so that it is suited to the needs of the local community, including those who may face financial barriers, so that it attracts regular, long-term users.

Operator(s) Fees

These are annual permit fees or permit review fees paid by the operator(s) to the Town to be allowed to operate the program on public land and to cover staff time to review and approve permit applications. This can also include non-compliance fees that the operator would be required to pay the Town based on service-level agreements.

Sponsorship and Advertising

This would involve the bike share provider(s) partnering with a private entity to place their logo and advertisements on terminal boards or bikes. However, the Town must ensure this aligns with the municipal-wide image built for the bike share program.

5.0 Other Supportive Measures – E-Bikes for Town Staff

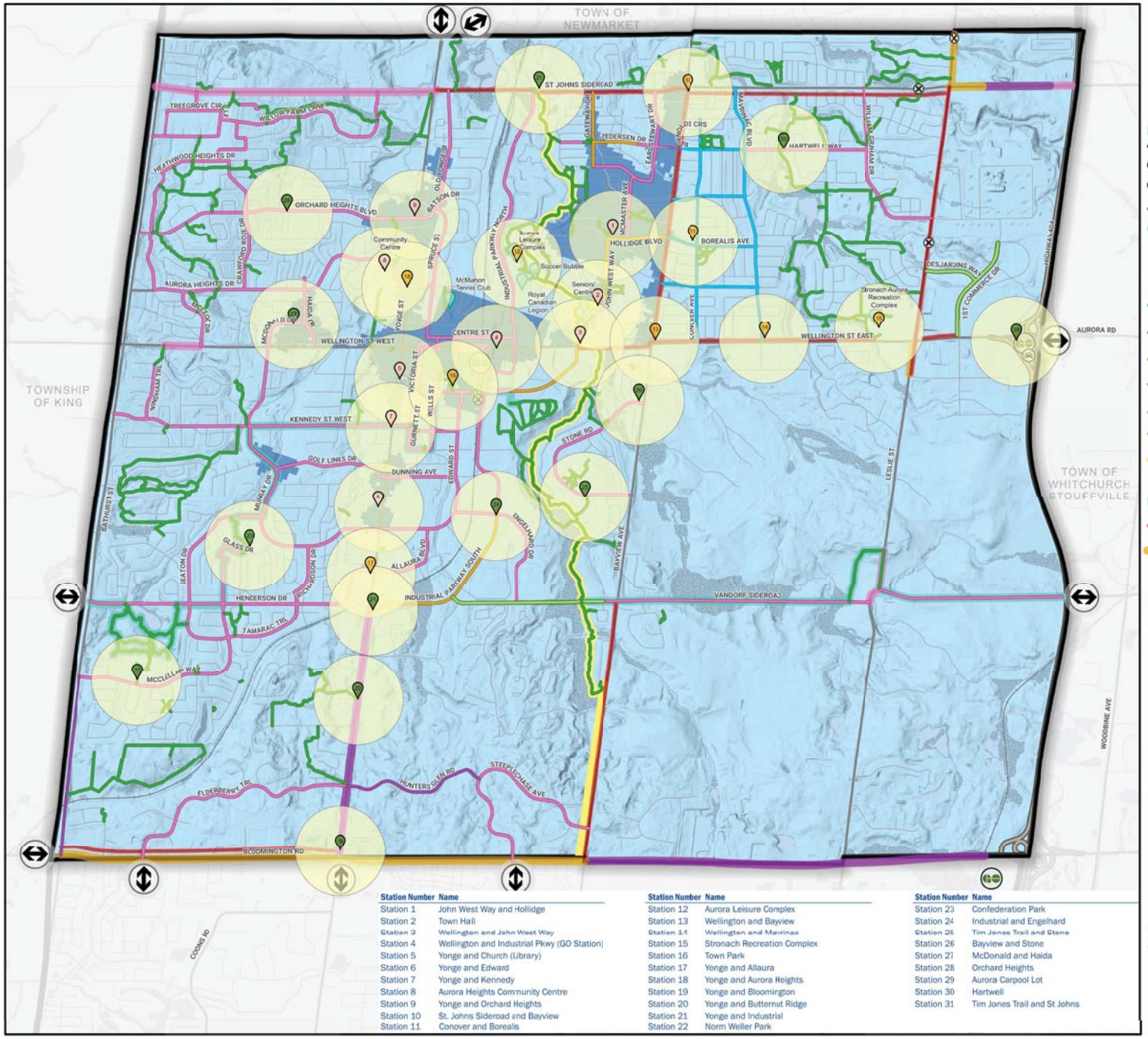
In addition to launching a bike share program for the public, the Town of Aurora should also consider procuring a small fleet of e-bikes for the use of bylaw officers and other Town Staff. This would have several benefits, such as:

- Enhancing the mobility and efficiency of bylaw officers, especially in areas where parking is limited or traffic is congested.
- Reducing the greenhouse gas emissions and fuel costs associated with operating conventional vehicles.
- Demonstrating the Town's commitment to sustainable transportation and promoting a culture of active living among its employees.
- Expanding the awareness and acceptance of micromobility and e-bikes among the residents and businesses of Aurora, as they see Town Staff using them for their daily tasks.

By procuring e-bikes for Town Staff, the Town of Aurora would not only improve its own operations, but also set an example for the community and encourage more people to adopt this mode of transportation.

Appendices

Appendix A



Station Number	Name
Station 1	John West Way and Hollidge
Station 2	Town Hall
Station 3	Wellington and John West Way
Station 4	Wellington and Industrial Pkwy (GO Station)
Station 5	Yonge and Church (Library)
Station 6	Yonge and Edward
Station 7	Yonge and Kennedy
Station 8	Aurora Heights Community Centre
Station 9	Yonge and Orchard Heights
Station 10	St. Johns Sideroad and Bayview
Station 11	Conover and Borealis
Station 12	Aurora Leisure Complex
Station 13	Wellington and Bayview
Station 14	Wellington and Mavrinac
Station 15	Stronach Recreation Complex
Station 16	Town Park
Station 17	Yonge and Allaura
Station 18	Yonge and Aurora Heights
Station 19	Yonge and Bloomington
Station 20	Yonge and Butternut Ridge
Station 21	Yonge and Industrial
Station 22	Norm Weller Park
Station 23	Confederation Park
Station 24	Industrial and Engelhard
Station 25	Tim Jones Trail and Stone
Station 26	Bayview and Stone
Station 27	McDonald and Haida
Station 28	Orchard Heights
Station 29	Aurora Carpool Lot
Station 30	Hartwell
Station 31	Tim Jones Trail and St Johns

Bike Share Station Candidate Locations

Town of Aurora Active Transportation Master Plan

2024-02-12

Potential Station Locations

- Phase 1: 1-2 years
- Phase 2: 3-5 years
- Phase 3: 5+ years
- 500 m Station Buffer

York Region 2018 Bike Feasibility Score (Normalized)

100 / 50 / 0

Town Cycling Network

- Multi-Use Path
- Bike Lane
- Paved Shoulder
- Signed Route
- Shared Roadway (Currently Unsigned)

Trail System

- Multi-Use Trail
- Lake-to-Lake Route

Trail Features

- Existing Grade Separated Crossing

Regional Cycling Network

- Multi-Use Path
- Bike Lane
- Paved Shoulder
- Shared Route (Unsigned)

Base Features

- Highway / Expressway
- Arterial / Collector Road
- Local Road
- Rail Line
- Watercourse
- Waterbody
- Wetland
- Municipal Boundary

Destinations

- Town Hall
- Community / Recreation Centre
- Library
- Carpool Lot & GO Bus Stop
- GO Transit Station
- Municipal Connection to Existing Cycling Facility

N

0 0.75 1.5 KM

Notes:
Data obtained through Land Information Ontario (LIO) GeoHub, Town of Aurora and York Region Open Data Portal.

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WSP

John West Way and Hollidge – Station #1

Figure 1: Southwest corner of John West Way and Hollidge Boulevard intersection (Source: WSP)

Figure 2: North side of John West Way and Hollidge Boulevard intersection (Source: WSP)

Figure 3: Hollidge Boulevard corridor, facing east from John West Way intersection (Source: WSP)

Transit Connectivity	— YRT bus stops at John West Way and Hollidge Boulevard intersection
Cycling Infrastructure Connectivity	— Bike lanes: Hollidge Boulevard — Shared roadway: John West Way, McMaster Avenue
Nearby Land Uses	— Immediately adjacent to Taylor Park, which provides recreation opportunities — Residential and commercial employment/service areas in adjacent blocks — Adequate space within public realm adjacent to park or along Hollidge Boulevard corridor to place station without impeding access or pedestrian flow

Town Hall – Station #2

Figure 4: Along south edge of Aurora Town Hall (Source: WSP)

Figure 5: Near front entrance of Aurora Town Hall (Source: WSP)

Transit Connectivity	— YRT bus stops along John West Way within a 1-minute walk
Cycling Infrastructure Connectivity	— Shared roadway: John West Way — Off-road multi-use trail: Tim Jones Trail connection to the west
Nearby Land Uses	— At Aurora Town Hall, common point of community gatherings — Aurora Seniors Association centre to the south — Public recreation facilities (e.g. Queen's Diamond Jubilee Park, nearby parks with access through Tim Jones Trail) — Residential and commercial employment/service areas in adjacent blocks — Adequate space along entrance and south edge of Aurora Town Hall to place station without impeding access or pedestrian flow

Wellington and John West Way – Station #3

Figure 6: Northeast corner of Wellington Street East and John West Way Intersection (Source: WSP)

Transit Connectivity	— YRT bus stops at Wellington Street East and John West Way intersection
Cycling Infrastructure Connectivity	— Shared roadway: John West Way — Bike lanes: Mary Street — In-boulevard shared pathway: Wellington Street East (east side of intersection) — Off-road multi-use trail: Tim Jones Trail connection to Wellington Street East
Nearby Land Uses	— Residential, commercial employment/service, and industrial areas in adjacent blocks — St. Maximilian Kolbe Catholic High School (less than 250 m or a 3-minute walk to the west) — Public recreation facilities nearby (e.g. nearby parks with access through Tim Jones Trail) — Adequate space within public realm at northwest corner of intersection to place station without impeding access or pedestrian flow

Wellington and Industrial Pkwy (GO Station) – Station #4

Figure 7: Northeast corner of the Aurora GO Station platform (Source: WSP)

Transit Connectivity	— At Aurora GO Station (Barrie Line) — York Regional Transit (YRT) bus stops at Wellington Street and Berczy Street intersection (less than 60 m or a 1-minute walk to the west)
Cycling Infrastructure Connectivity	— Shared roadway: Industrial Parkway, Wellington Street, and Centre Street — In-boulevard multi-use Trail along Wellington Street, connected by bike lanes on John West Way. — At-grade road crossing of the rail line at Wellington Street and at Centre Street
Nearby Land Uses	— Immediately adjacent to transit hub, which provides regional public transit service by Metrolinx GO Transit, parking, washrooms, and wayfinding — Residential, commercial employment/service, and industrial areas in adjacent blocks — Adequate space within public realm to place station at northeast end of Aurora GO Station platform without impeding access or pedestrian flow

Yonge and Church (Library) – Station #5

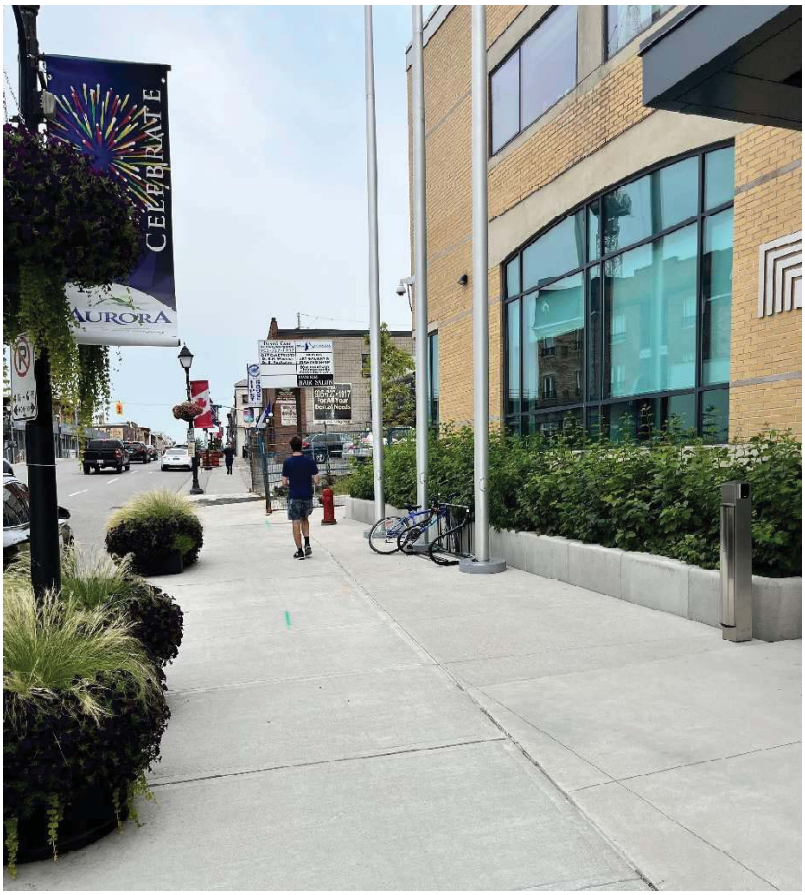

Figure 8: Entrance to Aurora Public Library, facing north on Yonge Street (Source: WSP)

Transit Connectivity	— YRT bus stops at Yonge Street and Church Street intersection (less than 60 m or a 1-minute walk to the south)
Cycling Infrastructure Connectivity	— No existing facilities
Nearby Land Uses	— Immediately adjacent to public library, which attracts different age groups and may be used to host community events and programs — Near Aurora Public School (less than 200 m or a 3-minute walk to the east) — Residential and commercial employment/service areas in adjacent blocks — Adequate space within public realm at front entrance of Aurora Public Library to place station without impeding access or pedestrian flow

Yonge and Edward – Station #6

Figure 9: Southwest corner of Yonge Street and Murray Drive / Edward Street intersection (Source: WSP)

Transit Connectivity	— YRT bus stops at Yonge Street and Murray Drive / Edward Street intersection
Cycling Infrastructure Connectivity	— Shared roadway: Murray Drive / Edward Street
Nearby Land Uses	— Residential, commercial employment/service, park, and school areas in adjacent blocks — Adequate space within public realm at southwest corner of intersection to place station without impeding access or pedestrian flow

Yonge and Kennedy – Station #7

Figure 10: Intersection of Yonge and Kennedy, looking east. Preferred station location would be on southeast corner (Source: Google Maps).

Transit Connectivity	— YRT bus stops at Yonge Street and Kennedy Street intersection
Cycling Infrastructure Connectivity	— Shared roadway: Kennedy Street
Nearby Land Uses	— Residential, commercial employment/service, park, and school areas in adjacent blocks — Adequate space within public realm at southeast corner of intersection to place station without impeding access or pedestrian flow

Aurora Heights Community Centre – Station #8

Figure 11: Near front entrance of Aurora Community Centre (Source: WSP)

Figure 12: Open space along east edge of Aurora Community Centre (Source: WSP)

Figure 13: Parking lot along southeast edge of Aurora Community Centre (Source: WSP)

Transit Connectivity	— YRT bus stops at Yonge Street and Aurora Heights Drive / Mark Street intersection (about 300 m or a 5-minute walk to the east)
Cycling Infrastructure Connectivity	— Shared roadway: Aurora Heights Drive — Off-road multi-use trail: Fleury & Machell Park Trail along east property edge
Nearby Land Uses	— At Aurora Community Centre, which is a popular location for recreation and community gatherings and provides parking and washrooms — Aurora Heights Public School and YMCA Before and After School Program facilities to the west — Public recreation facilities (e.g. Machell Park to the north and Fleury Park to the south) — Mixed-use commercial plazas along Yonge Street to the east — Residential neighbourhoods in adjacent blocks — Adequate space along entrances and east edge of Aurora Community Centre to place station without impeding access or pedestrian flow

Yonge and Orchard Heights – Station #9

Figure 14: Northwest corner of Yonge Street and Orchard Heights Boulevard / Batson Drive Intersection (Source: WSP)

Transit Connectivity	— YRT bus stops at Yonge Street and Orchard Heights Boulevard / Batson Drive intersection
Cycling Infrastructure Connectivity	— Shared roadway: Orchard Heights Boulevard / Batson Drive — Off-road multi-use trail: Fleury & Machell Park Trail connection to Orchard Heights Boulevard (less than 230 m or a 3-minute walk to the west)
Nearby Land Uses	— Mixed-use commercial plazas immediately to the northwest or south — Public recreation facilities at Machell Park (less than 230 m or a 3-minute walk to the west) — Residential neighbourhoods in adjacent blocks — Adequate space within public realm at northwest corner of intersection to place station without impeding access or pedestrian flow

Appendix B

Appendix B - Overview of Business Model

The business model of a bike share program includes the following elements:

- Organizational structure;
- Asset ownership;
- Contracting structure; and
- Enforcement.

The type of business model suitable for a bike share program should be informed by input from the municipality, the public, and other key stakeholders as well as feasibility analyses. The following sections provide further details on elements of the business model, which informed the recommended model for the Town of Aurora's bike share program.

Business Model of Bike Share Program: Organizational Structure

The organizational structure outlines the relationship between the various agencies involved in the planning, ownership, operations, management, financing, and oversight of the bike share program. There are two main types of organizational structures for a bike share program based on the responsibilities of the implementing agency (i.e. government agency):

- **Publicly procured**
  - Implementing agency responsible for planning, implementing, operating, and promoting typically with separate contracts
  - Government agency could include departments of transportation, urban development, environment, and parks and recreation; public transport agency; or regional planning authority
  - Challenging to expand across political boundaries and integrate with other transport systems
- **Permitted**
  - Implementing agency responsible for planning, implementing, enforcing permits or other regulatory schemes, coordinating system-wide promotion, and planning for expansion

- Key is monitoring performance of operator(s) through compliance checks based on defined service levels and make required changes

Each organizational structure can have a single operator or multiple operators that may be public or private entities. The most important and costly role of an operator is rebalancing vehicle capacities between stations or hubs. Other roles include maintenance of bike share vehicle fleet and stations (if applicable), customer service, and general brand management along with marketing and advertising.

- **Single operator**
  - Important for implementing agency to have clearly written contract and oversight
  - Benefits:
    - Long-term contract helps for goals of operator and implementing agency to align through revenue-sharing agreements and establishes commitment to financial sustainability
    - Implementing agency significantly involved in key decisions
    - Operator financially incentivized to meet quality service standards
  - Challenges:
    - Lack incentive to incorporate new technology or may take longer given multi-year contract
    - Enforcement, particularly in keeping other operators out
    - Providing limited consumer choices
- **Multiple operators**
  - Could have one operator managing existing, station-based program with other operators offering dockless program or could have multiple private operators offering dockless program

- Important for implementing agency to establish permit system to monitor base levels of performance while allowing private operators to innovate
- Benefits:
  - No upfront cost in bike share assets to implementing agency
  - Reduces time for planning and implementation
  - More likely to gain political support since it does not rely on public funding
  - Competition between operators encourages continuous service improvement
  - Offers range of choices to riders which helps to encourage cycling
- Challenges:
  - Requires more oversight capacity from implementing agency to ensure compliance, process and renew applications, and communicate policy changes
  - May be confusing for users to navigate multiple platforms

Business Model of Bike Share Program: Asset Ownership

Bike share program assets include the vehicle fleet; stations, docks, and terminals (not applicable for a dockless system); and IT system. Programs operated by a non-profit organization or a private dockless operator typically provide their own vehicle fleets in exchange for the government allowing them to operate using public spaces and public rights-of-way. Asset ownership ultimately determines the quality of the program assets and service; thus, it is important for the government entity to set clear permit requirements for baseline asset and service quality if the assets are owned by a private entity.

Business Model of Bike Share Program: Contracting Structure

The contracting structure of a bike share program is shaped by the operating structure and asset ownership and typically falls into two main categories:

- Program operated through public-private partnership; or
- Program operated by private sector.

Program Operated Through Public-Private Partnership

Bundling the provision of infrastructure and operations of the bike share program into one contract simplifies the implementing agency's role in managing contracts and incentivizes the contractor to supply high quality infrastructure to minimize maintenance costs down the line. Also, this setup can help to make a smoother program transition from design to operations.

On the other hand, an implementing agency may choose to sign separate contracts for each part of the program components, including bikes and stations (if applicable), software, operations, advertising, and marketing. This helps to implement each component within a shorter time frame with financing from smaller budgets, allows the implementing agency to select contractors that specialize in each of the requested services, and reduces the risk of relying on a single entity. In addition, the duration of each contract tied to the infrastructure components is usually based on the life span of the infrastructure; it should be noted that shorter durations (i.e. three to five years) offer greater flexibility to the implementing agency and opportunities for the operator(s) to innovate and incorporate new technologies.

Program Operated By Private Sector

The three main contracting structures for a privately-operated program without public-private partnerships are outlined below. For all structures, the implementing agency should have oversight of the entire program and lead contract management and performance monitoring.

Publicly Publicly owned and operated	• Government plans, implements, operates, and promotes program • Simplifies management of all components and prioritizes large-scale public goals • Government owns assets and takes on all financial risk • Stifles innovation due to lack of competition • Risk of lack of previous experience with micromobility and program continuity with changes in government

Privately owned and operated	• Private entity (single or multiple operators) owns assets and provides service with some government regulation (e.g. permit, code of conduct) • Implementing agency could generate revenue with permit fees • All financial risk lies with private operator(s) • Challenging to align public sector goals (e.g. widespread distribution) with private sector goals (e.g. profitability)
Public owned and privately operated	• Government owns assets and contracts private entity to operate • Requires public funding for implementation but all operational costs and logistics are handled by private contractor • Implementing agency has some control over key decisions without needing to assume financial risk for operations • Can incentivize efficient operations by offering part of the program's surplus to private entity • Shorter contracts require more government staff time for issuing tenders and managing contracts

Business Model of Bike Share Program: Enforcement

The implementing agency should ensure the operator(s) are running the system according to public goals by enforcing service level standards through a contract. Service level standards establish a baseline in the expected quality of infrastructure and operations of the bike share program (e.g. hardware and software, customer service, redistribution, marketing). Rewards and penalties are typically tied to meeting service level standards within a specified threshold to incentivize the operator(s) to increase revenue. These levels should be set realistically so that they can be monitored using easy, cost-effective methods and re-evaluated based on performance data from the initial years of operation. Furthermore, the operator(s) should be transparent and provide the implementing agency with all required real-time user data and how the program is meeting performance metrics.

The implementing agency could require the operator(s) to obtain permits to provide the service in the municipality and enforce system-wide standards using the following strategies:

- Require operator(s) to pay non-compliance fees if operational permit requirements are violated;

- Require operator(s) to pay for a percentage of government staff time if the government staff end up having to relocate or remove non-compliant bikes; and
- Temporarily freeze and eventually revoke permit if operator(s) fails to meet major permit requirements.

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aurora.ca

Town of Aurora

Committee of the Whole Report

No. PDS24-067

Subject:	**Request for Increased Capital Budget Authority for Capital Project GN0163– Design of Active Transportation Facilities- Yonge Street: Bloomington Road to Rail Bridge**
Prepared by:	Michael Ha, Transportation and Traffic Analyst
Department:	Planning and Development Services
Date:	July 2, 2024

Recommendation

1. **That Report No. PDS24-067 be received; and**
2. **That the total approved budget authority for Capital Project No. GN0163 be increased to $ 329,200, representing an increase of $129,200; and**
3. **That $20,000 in previously approved capital budget authority for Project No. GN0056 and its associated funding be transferred to Project No. GN0163; and**
4. **That the remaining proposed budget authority increase of $109,200 for Project No. GN0163 be funded with $98,300 from Roads & Related development charges and $10,900 from the Growth & New reserve.**

Executive Summary

The intent of this report is to seek Council's approval of an increase to a previously approved capital budget authority for Capital Project No. GN0163, the design for the Yonge Street active transportation facilities between Bloomington Road and the Metrolinx rail bridge (Attachment 1).

- The proposed Yonge Street active transportation facilities will form a major north-south link in the Town for pedestrians and cyclists. It will provide connections between other active transportation systems including the multi-use path on Bloomington Road and the bicycle facilities on Industrial Parkway South.

The design of these facilities currently has an approved budget authority of $200,000.

- Various factors, including increased inflation rates and increased labour prices have resulted in significant increases to design costs.

Background

Capital Project No. GN0163, the design of Yonge Street active transportation facilities between Bloomington Road and the Metrolinx rail bridge was included in the Town's 10 Year Capital Plan which is consistent with the recommendations from the Town's Active Transportation Master Plan. The scope of work for this design includes a combination of both a multi use path and/or sidewalk on both sides of the of Yonge Street.

The proposed Yonge Street active transportation facilities will form a major north-south link in the Town for pedestrians and cyclists. It will provide connections between other active transportation systems including the multi-use path on Bloomington Road and the bicycle facilities on Industrial Parkway South. The design of these facilities currently has an approved budget authority of $200,000.

Currently, active transportation facilities are not provided along the subject section of Yonge Street. Cyclists share the road with motorists without dedicated and separated facilities and pedestrians are using the shoulder of the road to access services and amenities north of this area. The construction of active transportation facilities will increase safety for all road users.

Analysis

Various factors, including increased inflation rates and increased labour prices have resulted in significant increases to design costs.

Significant increases in the cost of consulting and contractor services have been observed over the past several years due to numerous factors including higher inflation rates and increased price of labour. Consequently, the bids submitted for this project have exceeded the projected market average. The lowest compliant bid is higher than originally estimated during the budget forecasting process. This project's updated estimated requirements, which include the lowest compliant bid submitted to the Town for the work to be performed are summarized in Table 1.

The period of validity (for which Bids are irrevocable) for the RFP, is ninety (90) days from the Bid Closing Date. The RFP closed on April 29, 2024 and the period of validity ends on July 28, 2024.

Table 1
Updated Estimated Requirements for Capital Project No. GN01636

Description	Amount
Approved Capital Budget Authority (GN0163)	**$200,000**
Subject Contract Award excluding HST	$323,490
Non-refundable taxes (1.76%)	$5,693.42
Total Remaining Project Requirement (Rounded)	**$129,200**

The project will explore cost-sharing opportunities via partnerships including the York Region Pedestrian and Cycling Partnership Program (PCPP). The PCPP funding is subject to Regional Council review and approval and is based on the municipality demonstrating their project's contribution to the Region's network of walking and cycling infrastructure. In order to be considered for Regional funding consideration, applications including design and a cost estimate of construction must be submitted by September 15, 2024.

Legal Considerations

Pursuant to the Town's Procurement By-law, Town Staff is authorized to award and execute any related agreement with respect to any procurement, provided that the budget required for such Contract award has been approved by Council. The procurement process with respect to this project yielded bids that were all above the approved budget. Consequently, Council approval is required to increase the project budget for staff to be able to award the project to a compliant bidder.

Financial Implications

Total budget authority of $200,000 for Project No. GN0165 was included as part of the Town's adopted 2024 capital budget. As outlined above in Table 1, it is anticipated that this project's total design requirements will exceed its current approved budget authority by approximately $129,200. Therefore, it is recommended that this project's total budget authority be increased to $329,200, representing an increase of $129,200.

It is recommended that a portion of the proposed budget authority increase be addressed through the transfer of $20,000 of available budget authority and associated

funding from Project No. GN0056, as permitted under the Town's Delegation by-law, which allows for the increase of a project's budget authority by up to a maximum of 10 per cent of the original approved amount through the transfer of available authority from another similarly funded project.

Further, it is recommended that the remaining proposed budget authority of $109,200 be funded by $98,300 in Roads & Related development charges and $10,900 from the Growth & New reserve as per the Town's recently endorsed 2024 DC Study.

Communications Considerations

Staff in partnership with the Town's project consultant will engage the public broadly in the design process through updates on the Town website and through Public Information Sessions.

Climate Change Considerations

According to the 2020 Community Energy Plan, the transportation sector accounts for approximately 37 per cent of the total greenhouse gas emissions, and the major contributor (approximately 99 per cent) are from personal vehicles.

The construction of the proposed active transportation facilities is consistent with the objective of the Town's Active Transportation Master Plan to provide a safe, convenient, well-connected, and accessible active transportation network to help reduce reliance on personal vehicles. The use of active transportation can help reduce air and water pollutants, and green house gas emissions.

The Town's Climate Change Adaptation Plan identifies climate change related risks and mitigation measures for active transportation infrastructure such as loss of access due to flooding from extreme short duration precipitation and heaving from freeze-thaw cycles.

The design of the proposed active transportation facilities will support the goals under Town's Climate Change Adaptation Plan by taking into consideration mitigation measures related to these climate change related risks.

Link to Strategic Plan

This project supports the Strategic Plan goal of Supporting an Exceptional Quality of Life for All through the following items:

- Improving transportation, mobility, and connectivity
- Investing in sustainable infrastructure
- Encouraging an active and healthy lifestyle

Alternative(s) to the Recommendation

1. That Council provide direction.

Conclusions

The proposed Yonge Street active transportation facilities will form a major north-south link in the Town for pedestrians and cyclists. It will provide connections between other active transportation systems including the multi-use path on Bloomington Road and the bicycle facilities on Industrial Parkway South. The design of these facilities currently has an approved budget authority of $200,000.

It is anticipated that this project's total requirements will exceed its currently approved budget authority of $200,000 by approximately $129,185. It is recommended that this project's total budget authority be increased to $329,185, representing an increase of $129,185. Furthermore, it is recommended that a portion of this additional required budget authority ($20,000) be funded through a transfer of previously approved budget authority from capital project No. GN0033.

Attachments

Attachment 1 – Project Limits of Proposed Active Transportation Facilities on Yonge Street

Previous Reports

N/A

Pre-submission Review

Agenda Management Team review on June 12, 2024

Approvals

Approved by Marco Ramunno, Director, Planning and Development Services

Approved by Doug Nadorozny, Chief Administrative Officer

PROJECT LIMITS OF PROPOSED ACTIVE TRANSPORTATION FACILITIES ON YONGE STREET

ATTACHMENT 1

RAILWAY

GO TRANSIT BRIDGE LOCATION

SUBJECT LANDS

AURORA You're in Good Company

Map created by the Town of Aurora Financial Services Department, IT Division, March 06, 2024. Base data provided by Aurora GIS & York Region. Air Photos taken Spring 2022, © First Base Solutions Inc., 2022 Orthophotography

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Town of Aurora

Committee of the Whole Report

No. PDS24-078

Subject:	**Heritage Permit Application HPA-2024-03 – 23 Mark Street**
Prepared by:	**Adam Robb, MPL, MCIP, RPP, CAHP** **Manager, Policy Planning and Heritage**
Department:	Planning and Development Services
Date:	July 2, 2024

Recommendation

1. **That Report No. PDS24-078 be received; and**
2. **That Heritage Permit Application HPA-2024-03 be approved to permit a rear garden suite at 23 Mark Street as shown in Attachment 2 of this report.**

Executive Summary

This report seeks Council's approval of Heritage Permit Application HPA-2024-03 to permit a rear garden suite at 23 Mark Street.

- 23 Mark Street is located within the Town's Northeast Old Aurora Heritage Conservation District and is designated under Part V of the *Ontario Heritage Act.*
- The proposal meets the guidelines of the Heritage Conservation District Plan, and the Heritage Advisory Committee has indicated their general support.
- A decision on the application is required to be made prior to August 25, 2024, in order to satisfy the legislative timeline under the *Ontario Heritage Act.*

Background

23 Mark Street is located within the Town's Northeast Old Aurora Heritage Conservation District and is designated under Part V of the *Ontario Heritage Act*

The subject property is located on the south side of Mark Street, west of Spruce Street. The property contains an Edwardian four square dwelling constructed circa 1920 and is

characterized by a deep rear yard and side driveway. The subject parcel is over 65 metres deep and has a frontage of approximately 15 metres.

The primary heritage elements of the property are the main dwelling itself, which features brick construction, a front porch supported by columns, an architrave over the porch, and gable ends. The Owner has confirmed that there is no proposed work being done to the primary dwelling.

Analysis

The proposal meets the guidelines of the Heritage Conservation District Plan, and the Heritage Advisory Committee has indicated their general support

Additional residential units, which includes rear garden suites, are permitted as-of-right by provincial legislation as a means of providing additional housing opportunities. The proposed garden suite is a 1-storey building with an approximate floor area of 700 square feet. There is approximately 37 metres of separation between the primary dwelling and the proposed rear garden suite, as the lot is very deep. The proposed garden suite also conforms to all zoning requirements including height and lot coverage, but a detailed zoning review will also occur through the building permit review process, should the heritage permit application be approved.

The proposed garden suite will feature board and batten siding and its placement at the rear of the property is such that there will largely be no impact on the primary dwelling, character of the area, or view from the streetscape. The height and scale of the structure is modest, and the District Plan further recognizes that Mark Street in particular is suitable to support such additions that sensitively integrate with the area (Section 9.1.1). The owner has also confirmed to staff that there is no proposed work being done to the primary dwelling itself, and that there are no trees proposed to be removed or impacted.

The Heritage Advisory Committee generally supported the proposal and had no direct oppositions to it, but raised some questions regarding the purpose of the unit, for which the Owner indicated it is to accommodate family use; the registration process for the unit, for which registration will occur through the Building Services Department and the structure will be required to be compliant with the Building Code and Fire Code and be assessed; and concern whether this would set a precedent for the area. The province has permitted additional residential units as-of-right, and it is noted that all zoning requirements are proposed to be met with the subject application. On a site-specific basis 23 Mark Street specifically benefits from an exceptionally deep lot to

accommodate the proposal in a sympathetic manner. Ample space for parking and open amenity/landscape area is also provided, and the site is fully serviced. There are no anticipated impacts to the main heritage dwelling, trees, or streetscape. Each potential future garden suite application within the District will however have to be reviewed uniquely and independently depending on the individual site context, as not all future applications may benefit from the same site size and context as 23 Mark Street, or be proposing as modest and sympathetic of a structure.

Staff are ultimately of the opinion that the proposal at 23 Mark Street generally meets the intent of the District Plan and is appropriate, modest, and will result in no significant impacts to the heritage property or streetscape. Staff also note that given the policy climate around implementing additional residential unit opportunities, the Ontario Land Tribunal would likely rule in favour of this type of proposal, should Council deny the application and the Owner submit an appeal. The Province now permits three residential units on properties as-of-right under Provincial Bill 23 and the Planning Act, as higher-order policy and legislation.

A decision on the application is required to be made prior to August 25, 2024, in order to satisfy the legislative timeline under the *Ontario Heritage Act*

A Notice of Receipt was issued to the applicant on May 27, 2024. Under the *Ontario Heritage Act,* there is a 90-day timeline from the date that a Notice of Receipt is issued for a decision to be made by Council on the Heritage Permit Application. This 90-day timeline lasts until August 25, 2024, wherein after that date the application will be automatically deemed approved. This review period can be extended on consent of the owner. Further details on this process are also provided under the Legal Considerations section of this report.

Advisory Committee Review

Heritage Permit Application HPA-2024-03 was reviewed and generally supported by the Heritage Advisory Committee on June 10, 2024. The Heritage Advisory Committee had no direct opposition to the subject proposal, but posed some questions regarding the purpose of the garden suite, with the owner indicating it is for family use; the registration process, with the Owner required to register the unit with Building Services and have the unit be fully compliant with the Ontario Building Code and Fire Code and be assessed; and on whether this proposal may set a precedent for the area. 23 Mark Street in particular benefits from a deep lot that the Heritage Conservation District Plan specifically recognizes as being suitable for sensitive rear additions (Section 9.1.1). The

proposed garden suite is modest in scale and will not deter from the heritage elements of the primary dwelling or character of the street. Each future application in the District however will be required to be reviewed uniquely and independently on its own site-specific context and merits.

The Heritage Advisory Committee also had general questions about Additional Residential Units at-large. The Province through Bill 23, the More Homes Built Faster Act, has now established as-of-right permissions for homeowners to add additional residential units. Properties are entitled to have three units on any serviced residential lot, with this provincial policy and direction superseding local zoning.

Legal Considerations

Under Section 42 of the Ontario Heritage Act, any developments or alterations that would potentially impact the heritage character of a property located within a Heritage Conservation District requires Council's consent. This legislative requirement is implemented in the Town of Aurora through the process of a Heritage Permit Application, which is subject to Council's approval in consultation with the Heritage Advisory Committee. Council must make a decision on a heritage permit application within 90 days after the notice of receipt is served on the applicant, otherwise Council shall be deemed to have consented to the application. The 90-day deadline for this permit application is August 25, 2024. Council may extend the review period of a heritage application in a heritage conservation district without any time limit under the Ontario Heritage Act provided it is agreed upon by the owner.

If Council refuses the application or makes the permit subject to terms and conditions that are not agreeable by the owner, the owner may appeal to the Ontario Land Tribunal.

Financial Implications

There are no direct financial implications as a result of this report.

Communications Considerations

None.

Climate Change Considerations

None.

Link to Strategic Plan

The conservation of heritage resources supports the Strategic Plan goal of Supporting an Exceptional Quality of Life for All through its accomplishment in satisfying the requirements under Celebrating and Promoting our Culture.

Alternative to the Recommendation

1. That Heritage Permit Application HPA-2024-03 be refused.

Conclusions

Heritage Permit Application HPA-2024-03 proposes to add a rear garden suite at 23 Mark Street. Since the property is designated under Part V of the Ontario Heritage Act and located within the Northeast Old Aurora Heritage Conservation District, approval from Council is required.

Attachments

Attachment 1 – Location Map

Attachment 2 – Site Plan and Renderings

Previous Reports

Memorandum to the Heritage Advisory Committee dated June 10, 2024.

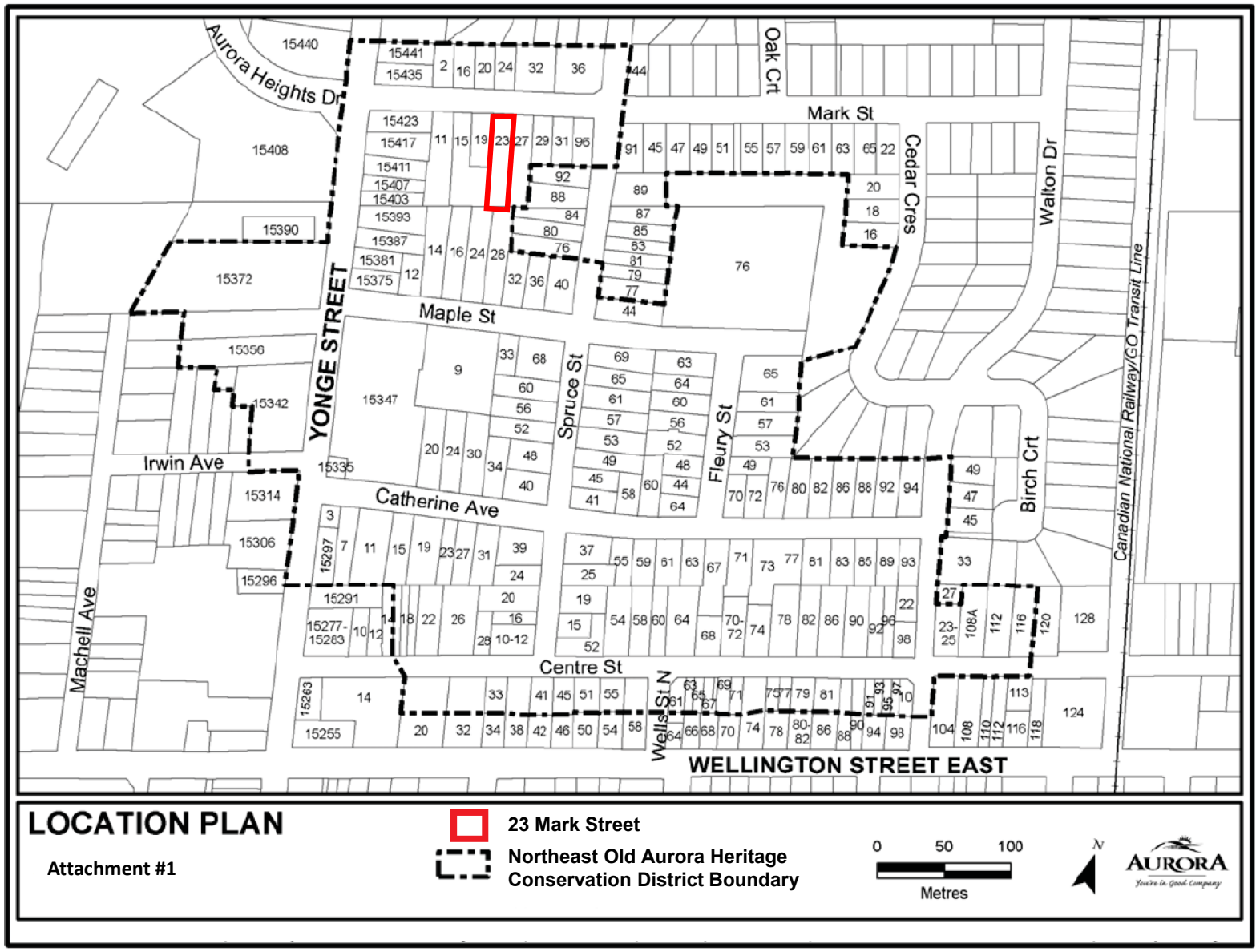
Pre-submission Review

Agenda Management Team review on June 12, 2024

Approvals

Approved by Marco Ramunno, Director, Planning and Development Services

Approved by Doug Nadorozny, Chief Administrative Officer


Aurora Heights Dr
Oak Crt
Mark St
Cedar Cres
Walton Dr
Canadian National Railway/GO Transit Line
YONGE STREET
Maple St
Spruce St
Fleury St
Birch Crt
Irwin Ave
Catherine Ave
Machell Ave
Centre St
Wells St N
WELLINGTON STREET EAST
LOCATION PLAN
Attachment #1
23 Mark Street
Northeast Old Aurora Heritage Conservation District Boundary
0 50 100
Metres
N
AURORA
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ZONING INFORMATION AS PER:

TOWN OF AURORA
ZONING BY-LAW #6000-17

JULY 2020

SITE INFORMATION TAKEN FROM:

PLAN OF SURVEY OF
LOT 17, REGISTERED PLAN No. 215 AND
LOT 98, REGISTERED PLAN No. 246
TOWN OF AURORA - REGIONAL MUNICIPALITY OF YORK

SITE PLAN and BUILDING STATISTICS

1	ZONING	R7	
		REQUIRED	**PROPOSED**
2	LOT AREA	460 m² (MIN.)	1,043.30 m²
3	LOT FRONTAGE	15.0 m (MIN.)	15.24 m
4	LOT COVERAGE FOR ACCESSORY BLDGS. & STRUCTURES	15 %	6.12 %
5	FRONT YARD SETBACK	6 m (MIN.)	N/A
6	REAR YARD SETBACK	1.0 m (MIN.) ACCESSORY BLDG.	1.57 m
7	INT. SIDE YARD SETBACK	1.2 m (MIN.)	1.52 m
8	INT. SIDE YARD SETBACK	1.2 m (MIN.)	7.30 m
9	BUILDING HEIGHT	4.5 m (MAX.)	4.46 m

GENERAL NOTES:

1. ALL FOOTING FORMWORK ELEVATIONS AND SETBACKS ARE TO BE CONFIRMED BY A REGISTERED PROFESSIONAL ENGINEER, OR A REGISTERED ONTARIO LAND SURVEYOR, PRIOR TO PLACING OF ANY CONCRETE.

2. ALL RAINWATER LEADERS TO BE DIRECTED TO SIDEYARD SWALES AND TO ROAD.

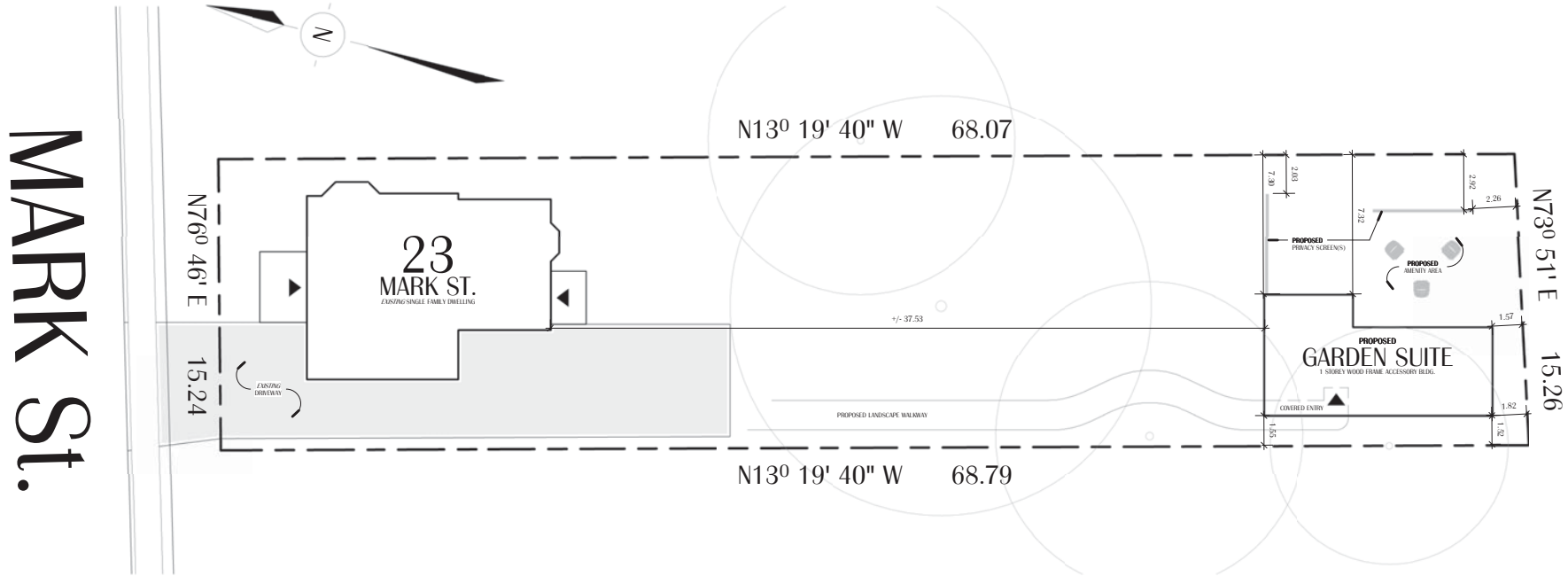
3. A 0.30m WIDE UNDISTURBED STRIP IS TO BE PROVIDED ALONG ALL BOUNDARIES WITH ADJACENT OWNERS.

4. ALL PERIMETER GRADES TO REMAIN AS EXISTING.

NOTE:

ALL EXISTING TREES, STRUCTURE AND COMPONENTS NOT INDICATED TO BE DEMOLISHED TO BE PROTECTED DURING CONSTRUCTION

BUILDER MUST VERIFY THE EXISTING STORM AND SANITARY INVERT ELEVATIONS. BUILDER TO CONFIRM TO CONSULTING ENGINEER THAT MINIMUM 2% SLOPE CAN BE ACHIEVED PRIOR TO PLACING CONCRETE FOOTINGS.



NOTE: CONTRACTOR WILL CHECK AND VERIFY ALL DIMENSIONS AND CHECK ALL CONDITIONS ON THE JOB SITE BEFORE PROCEEDING WITH ANY WORK.

S+H STAMP & HAMMER
1135 STELLAR DRIVE NEWMARKET ON L3Y 7B8 | 905-235-3933 | info@stampandhammer.com | www.stampandhammer.com

1. ALL WORK SHALL CONFORM TO ALL LOCAL APPLICABLE CODES & ORDINANCES.
2. NO DRAWING IS TO BE SCALED; USE DIMENSIONS ONLY.
3. DIMENSIONS ARE TAKEN FROM FACE OF MASONRY, CONCRETE OR WOOD STUD FRAMING MEMBERS UNLESS OTHERWISE INDICATED.
4. CONFIRM ALL EXISTING CONDITIONS BEFORE PROCEEDING WITH THE SAID WORK.
5. ITEMS NOT NOTED, BUT IMPLIED AS NECESSARY FOR THE PERFORMANCE OF THE CONTRACT, ARE CONSIDERED PART OF THE WORK.
6. CONTRACTOR(S) IS TO PROTECT THE PUBLIC AND PREMISES DURING THE PERIOD OF CONSTRUCTION WITH ADEQUATE SHORING, BRACING, FENCING, LIGHTING, VENTILATION, ETC.
7. ALL CHANGES OR SUBSTITUTIONS ARE TO BE APPROVED BY THE OWNER BEFORE BEING INCORPORATED INTO THE WORK.
8. CONFORM TO ALL MANUFACTURERS INSTRUCTIONS & SPECIFICATIONS FOR THE INSTALLATION OR USE OF ALL MATERIALS UNLESS OTHERWISE NOTED.
9. ALL EXTERIOR LUMBER, LUMBER IN CONTACT WITH MASONRY, CONCRETE, OR SOIL TO BE PRESSURE TREATED

The undersigned has reviewed and takes responsibility for this design, has the qualifications, and meets the requirements set out in the Ontario Building Code to be a designer.

QUALIFICATION INFORMATION
required unless design is exempt under Division 3.2.5.1 of the 2012 Ontario Building Code

Brett Blech 46520

REGISTRATION INFORMATION
required unless design is exempt under Division 3.2.5.1 of the 2012 Ontario Building Code

Stamp and Hammer Inc 1289/55

REVISION SCHEDULE

No.	Description	Date	By
1	ISSUED FOR PERMIT	XXXX-XXX	B.B.

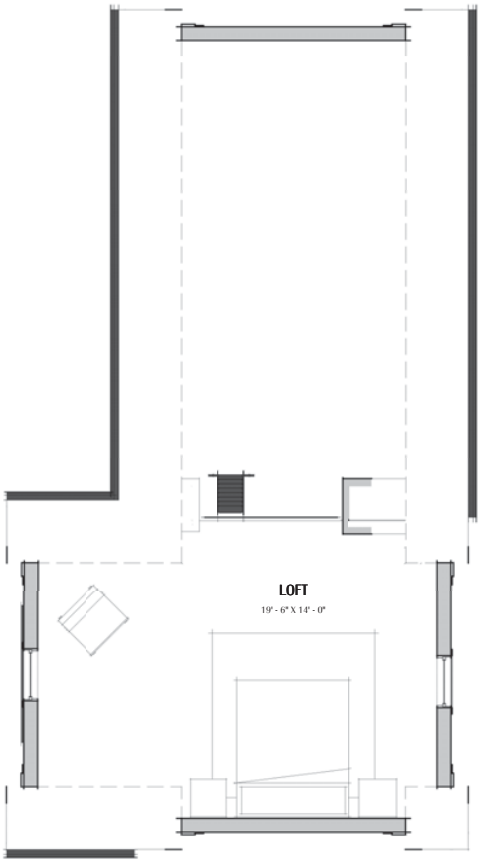
PROJECT:
GARDEN SUITE

PROJECT ADDRESS:
23 MARK STREET
AURORA ON L4G 1L4
TOWN OF AURORA

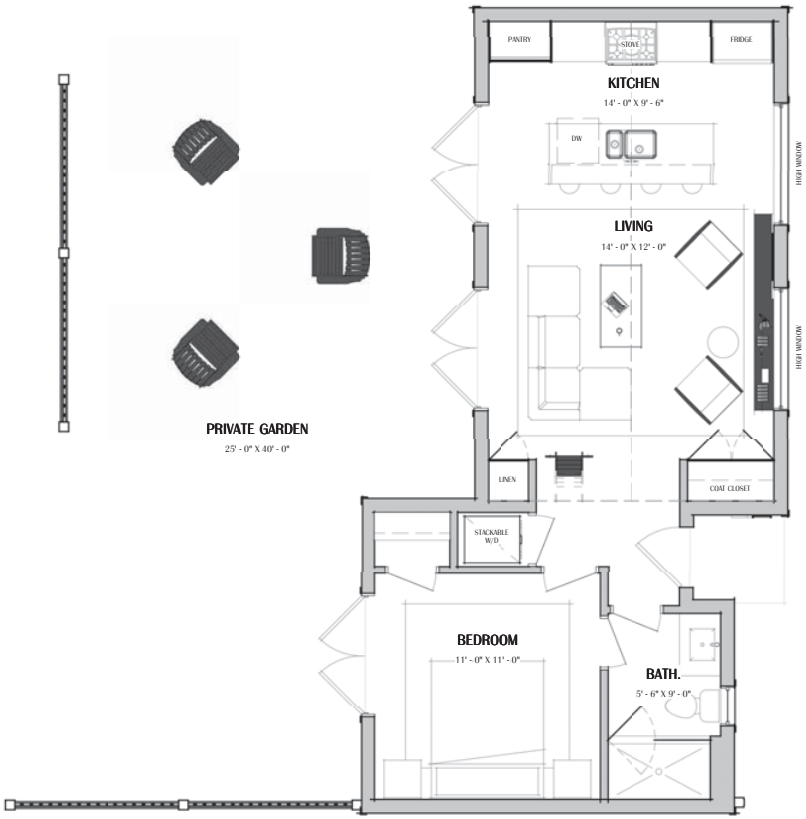
SCALE: As indicated

SITE PLAN

A-100



2 A-101 LOFT PLAN
1/4" = 1'-0"



1 A-101 MAIN FLOOR PLAN
1/4" = 1'-0"

NOTE: CONTRACTOR WILL CHECK AND VERIFY ALL DIMENSIONS AND CHECK ALL CONDITIONS ON THE JOB SITE BEFORE PROCEEDING WITH ANY WORK.

S+H STAMP & HAMMER
1135 STELLAR DRIVE NEWMARKET ON L3Y 7B8 | 905-235-3933 | info@stampandhammer.com | www.stampandhammer.com

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2. NO DRAWING IS TO BE SCALED; USE DIMENSIONS ONLY.
3. DIMENSIONS ARE TAKEN FROM FACE OF MASONRY, CONCRETE OR WOOD STUD FRAMING MEMBERS UNLESS OTHERWISE INDICATED.
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9. ALL EXTERIOR LUMBER, LUMBER IN CONTACT WITH MASONRY, CONCRETE, OR SOIL TO BE PRESSURE TREATED

The undersigned has reviewed and takes responsibility for this design, has the qualifications, and meets the requirements set out in the Ontario Building Code to be a designer.

QUALIFICATION INFORMATION
required unless design is exempt under Division 3.2.5.1 of the 2012 Ontario Building Code

Brett Blech 46520

REGISTRATION INFORMATION
required unless design is exempt under Division 3.2.5.1 of the 2012 Ontario Building Code

Stamp and Hammer Inc 1289/55

REVISION SCHEDULE

No.	Description	Date	By
1	ISSUED FOR PERMIT	XX/XX/XXXX	B.B.

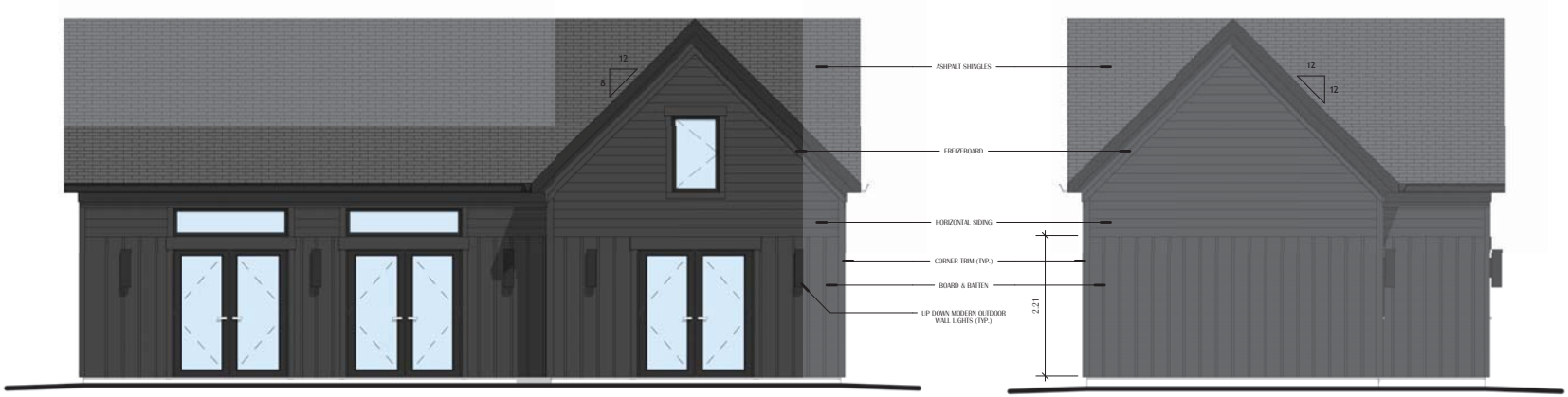
PROJECT:
GARDEN SUITE

PROJECT ADDRESS:
23 MARK STREET
AURORA ON L4G 1L4
TOWN OF AURORA

SCALE: 1/4" = 1'-0"

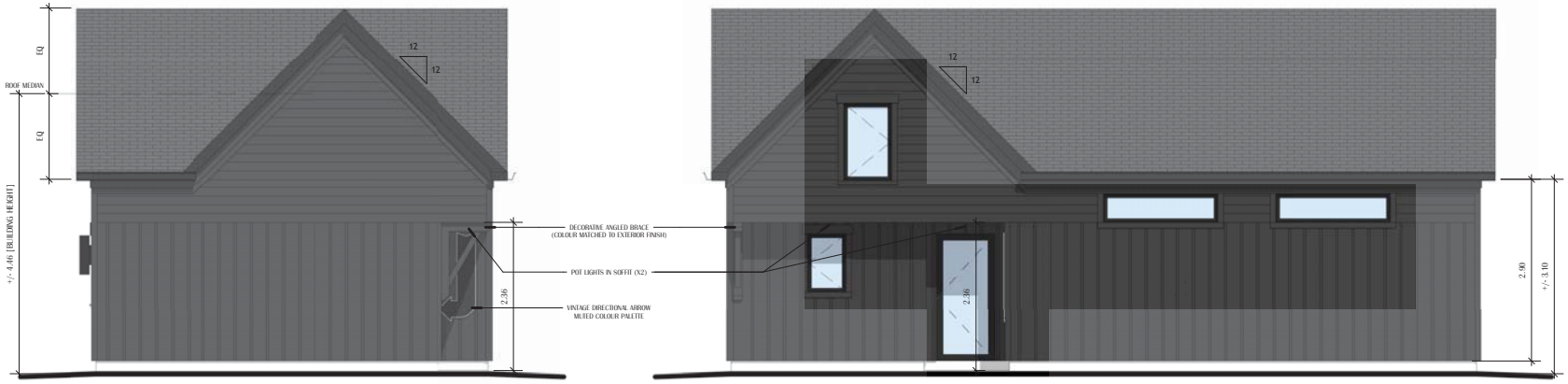
FLOOR PLANS

A-101



4 A-201 EAST ELEVATION
1/4" = 1'-0"

3 A-201 SOUTH ELEVATION
1/4" = 1'-0"



2 A-201 NORTH ELEVATION
1/4" = 1'-0"

1 A-201 WEST ELEVATION
1/4" = 1'-0"

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Stamp and Hammer Inc 1289/55

REVISION SCHEDULE

No.	Description	Date	By
1	ISSUED FOR PERMIT	XXXX-XXXX	B.B.

PROJECT:
GARDEN SUITE

PROJECT ADDRESS:
23 MARK STREET
AURORA ON L4G 1L4
TOWN OF AURORA

SCALE:
1/4" = 1'-0"

EXTERIOR ELEVATIONS

A-201

NOTE: CONTRACTOR WILL CHECK AND VERIFY ALL DIMENSIONS AND CHECK ALL CONDITIONS ON THE JOB SITE BEFORE PROCEEDING WITH ANY WORK.

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Stamp and Hammer Inc 1289/55

REVISION SCHEDULE

No.	Description	Date	By
1	ISSUED FOR PERMIT	XXXX-XXX	B.B.

PROJECT:
GARDEN SUITE

PROJECT ADDRESS:
23 MARK STREET
AURORA ON L4G 1L4
TOWN OF AURORA

SCALE:

PERSPECTIVE VIEWS

A-202

100 John West Way
Aurora, Ontario
L4G 6J1
(905) 727-3123
aurora.ca

Town of Aurora

Committee of the Whole Report

No. PDS24-080

Subject:	**Official Plan and Zoning By-law Amendment Applications** **Gervais Development (Centre) Corp.** **180, 182 Centre Crescent** **Part of Lot 105, Registered Plan 246** **File Number: OPA-2022-03, ZBA-2022-05** **Related File Number: SP-2022-12**
Prepared by:	Kenny Ng, Planner
Department:	Planning and Development Services
Date:	July 2, 2024

Recommendation

1. That Report No. PDS24-080 be received; and
2. That Official Plan Amendment application OPA-2022-03 be approved to amend Schedule 'H' of the Town of Aurora Official Plan to identify a new Site Specific Policy for the subject lands. The site specific policy will permit buildings taller than four storey or 15 metres in height are subject to a front yard step back at the second storey and the angular plane provisions as outlined in Appendix "A"; and
3. That Zoning By-law Amendment application ZBA-2022-05 be approved to rezone the subject lands to "Second Density Apartment Residential Exception RA2(XX) Zone" as outlined in Appendix "B"; and
4. That a total of 330 persons worth of servicing allocation be granted to facilitate the proposed development of 193 apartment dwelling units; and
5. That the implementing By-laws for the Official Plan and Zoning By-law Amendment be brought forward to a future Council meeting for enactment.

Executive Summary

This report seeks Council's approval of the proposed Official Plan and Zoning By-law Amendment applications at 180, 182 Centre Crescent (the 'subject lands'). The purpose of the proposed applications is to facilitate the development of a 7-storey apartment building with a total of 193 units.

- The proposed Official Plan Amendment will permit a second storey front yard step back for the proposed development
- The proposed Zoning By-law Amendment will rezone the subject lands to "Second Density Apartment Residential Exception (RA2-XX) Zone"
- A 7 storey apartment building with 193 units and 2 underground of parking is proposed
- The proposed applications are consistent with the Provincial Policy Statement (PPS) and the Growth Plan
- The proposed applications conforms to the Lake Simcoe Protection Plan (LSPP)
- York Region has exempted the proposed OPA from Regional approval
- The proposed Official Plan Amendment is compatible with surrounding land uses and consistent with the Aurora Promenade - Concept Plan - Urban Design Strategy
- An appropriately sized and designed urban square is provided for the subject development
- The proposed Zoning By-law Amendments implements the general direction of the Town's Official Plan for additional infill residential development.
- All external agencies and Town staff have completed their review for the subject applications and have no objections to the approval of the subject applications
- Public comments related to transition of the area, urban square, traffic management, construction access have been adequately addressed

Background

Application History

Town Council adopted its Official Plan on January 30, 2024 and York Region approved it with modifications on May 24, 2024. The update to the Official Plan aligned with provincial requirements for Major Transit Station Areas (MTSAs), permitting residential use and seven storeys. This update eliminated the need for two of the initial amendments and retaining only the proposed provision regarding building setbacks. At the time of drafting this report, the specifics of the transition period regarding the planning responsibilities of the Regional Municipality remain unclear. Nevertheless, recent provincial legislation effective from July 1 suggests that the Region will no longer be tasked with planning responsibilities. Nevertheless, the Region has exempted the proposed Official Plan Amendment from regional approval.

A Community Information Meeting, hosted by the applicant, was held on June 22, 2023, to introduce the proposed development to area residents and to obtain feedback. A Statutory Public Meeting was held on September 12, 2023, where the subject applications and Public Planning Report No. PDS23-111 were presented to Council and the public. During that meeting, Council received the report and instructed staff to present a future report to the General Committee, addressing the points discussed.

Location / Land Use

The subject lands are located north of Centre Street and West of Industrial Parkway North, and municipally known as 180 and 182 Centre Crescent (Figure 1). The subject lands have a combined area of approximately 0.76 hectares (1.89 acres) with a lot frontage of approximately 104.24 metres along Industrial Parkway North. Both 180 and 182 Centre Crescent contain one single detached dwelling each; and mature trees are visible throughout the site.

Surrounding Land Uses

The surrounding land uses are as follows:

- North: Industrial uses;
- South: Industrial/Commercial and Residential uses;
- East: Industrial/Commercial uses;
- West: Residential and industrial use.

Policy Context

Provincial Policies

All *Planning Act* development applications are subject to provincial policies. The Provincial Policy Statement (PPS) provides policy direction on matters of provincial interest. These policies support the development of strong communities through the promotion of efficient land use and development patterns. All planning decisions shall be consistent with the policies and directions of the PPS, including providing a mix of housing and ensuring a compact and efficient built form.

The Growth Plan for the Greater Golden Horseshoe is a guiding document for growth management within the Greater Golden Horseshoe (GGH) Area to 2051. The Growth Plan provides a framework which guide decisions on how land will be planned, designated, zoned and designed.

The Lake Simcoe Protection Plan (LSPP) is a provincial document that provides policies which addresses aquatic life, water quality, water quantity, shorelines and natural heritage, other threats and activities (including invasive species, climate change and recreational activities) and implementation. The proposal has been reviewed by the LSRCA and is not located with the Regulated Area or any hazard areas.

York Region Official Plan (YROP)

The York Region Official Plan was approved with modifications by the Province in November 2022. The YROP identifies the subject lands as “Urban Area”. Development within the Urban Area is envisioned to enhance the Region’s urban structure through a balance of intensification and complete vibrant communities. The subject lands are also designated as “Community Area” under Map 1A and can be developed for non-employment use. Furthermore, the YROP identified the subject lands as part of the “Built-Up Area” under Map 1B. Policies 4.4.2 require that a minimum of 50% of all residential development between 2021 to 2041, and 55% from 2041 to 2051 occur annually within the built-up area.

Section 7.3.8 of the YROP states that amendments to local official plans may be exempt from Regional approval where they are of local significance, no Regional interest is adversely affected and conform with Provincial plans and policies of the YROP.

Town of Aurora Official Plan

As per the Town's Official Plan, the subject lands are located within the Aurora Promenade Secondary Plan and is designated as "Aurora Promenade and MTSA Mixed Use" (see Figure 2). This designation serves as the Town's primary focus area for growth and intensification, accommodating the highest densities within Aurora. The maximum building height permitted on the subject land is 7 storeys. It is intended for this area to be transformed into a vibrant pedestrian-oriented area and transit hub. The development policies related to building height, setbacks, parking coverages are listed under section 9.6.2 of the Official Plan. Furthermore, the Official Plan requires a minimum of 35% of new housing in the MTSA to be affordable.

Zoning By-law 6000-17, as amended

The subject lands are zoned "E1 (9) - Employment" by the Zoning By-law 6000-17, as amended (see Figure 3), which includes a wide range of employment/ light industrial uses. The site specific exception 9 permits any industrial use which existed as of August 17, 1981 whether or not the use is conducted and wholly contained within an enclosed building.

Reports and Studies

Documents submitted in support of complete application for the subject applications were listed in Public Planning Report Number PDS23-111.

Proposed Applications

Official Plan and Zoning By-law Amendment applications have been submitted to facilitate the development of a 7-storey apartment building with a total of 193 units.

Proposed Official Plan Amendment (OPA)

The proposed Official Plan Amendment will permit a second storey front yard step back for the proposed development

As shown in Figure 4 and 5, the applicant is proposing to amend Schedule 'H' of the Town of Aurora Official Plan to create a new site-specific policy #64 on the subject lands. The site specific policy will require new developments to provide a front yard setback at the second storey, whereas the existing provision requires a setback at the 4th storey. The angular plane requirements of the policy remain unchanged.

Proposed Zoning By-law Amendment (ZBA)

The proposed Zoning By-law Amendment will rezone the subject lands to "Second Density Apartment Residential Exception (RA2-XX) Zone"

As shown in Figure 6, the Applicant proposes to rezone the subject lands from "E1(9) Employment Zone" to "(RA2-XX) Second Density Apartment Residential Exception Zone". The draft Zoning By-law is attached as Appendix "B" of this report. The following is a table to compare the difference between the parent Second Density Apartment Residential (RA2) zone requirements with the proposed Second Density Apartment Residential Exception (RA2-XX) Zone, as well as other requested zoning standards deviations.

	Parent Second Density Apartment Residential Zone Requirement	Proposed Second Density Apartment Residential Exception Zone
Lot Area (minimum)	95 m^2 per dwelling unit	39 m^2 per dwelling unit
Front Yard (minimum)	½ the height of the main building and in no case less than 9 m from the street line	3.0 m
Rear Yard (minimum)	9 m	5.35 m
Interior Side Yard (minimum)	½ the height of the main building and in no case less than 6 m	4.25 m
Lot Coverage (maximum)	35%	40%
Amenity Area	A minimum Amenity Area of Eighteen (18) square metres per dwelling unit, provided a minimum of 50% of the required Amenity Area is	A minimum Amenity Area of Seventeen and one half (17.5) square metres per dwelling unit, provided a minimum of 15% of the

	Parent Second Density Apartment Residential Zone Requirement	Proposed Second Density Apartment Residential Exception Zone
	provided as interior amenity space	required Amenity Area is provided as interior amenity space
Dwelling Adjacent to an Employment Zone	The minimum required yard abutting the Employment Zone shall be 20 metres	The minimum required yard abutting the Employment Zone shall be 3.0 metres
Yard Encroachments Permitted (Open porches)	3 m from the Side yard Lot line	2 m from the Side yard Lot line

	Section 5 Parking and Stacking Requirements	Proposed Amended Section 5 Parking and Stacking Requirements
5.3 Required Manoeuvring Space (90 degree spaces)	7 m	6.8 m
5.4 Parking Standards - Apartment Building	1.5 spaces per dwelling unit, minimum 20% of spaces provided shall be set aside for visitor parking	0 Parking spaces and visitor parking
5.5.2 Setback	Parking space manoeuvring area and/or Driveway within a Side Yard or Rear Yard shall not be closer to any wall of a building than one decimal five (1.5) metres	No minimum setback to a wall of a building from a parking space, manoeuvring area or driveway within under ground parking level

Proposed Site Plan Application

A 7 storey apartment building with 193 units and 2 underground of parking is proposed

As shown in Figure 7, the proposed development consists of a 7-storey residential apartment building with 193 units without retail at grade. It will also include a total of 252 parking spaces at grade and 2 levels of underground parking.

A fourth full move vehicular access is proposed at the existing three-way traffic light intersection at Industrial Parkway North and the private driveway (access to the rear of Maximilian Kolbe Catholic High School). The proposed entry way will lead vehicles to the underground parking or to the front lobby for drop offs and visitors parking.

The bedroom sizes proposed in the apartment range from studio to two bedrooms units. The applicant aims to allocate approximately 35% of the total units to studios, one-bedroom, and one-bedroom with a den configuration.

There is a mixture of indoor and outdoor amenity space. The outdoor amenity areas are located along the western property line, which contains a courtyard, outdoor play area shade structure. The second outdoor amenity area is located at the front lobby area as a garden amenity area. There is a 3 m (9.84 ft) landscape buffer around the perimeter of the site. In addition, an urban square consist of public art piece, formal and informal seating is proposed at the northeast corner of the site for the public use. (Figure 8)

The proposed site plan and elevations (Figure 9 and 10) is currently under review by Town departments and relevant agencies. Site plan approval will be granted through staff delegation once the proposed by-laws related to the subject Official Plan and Zoning By-law Amendments are enacted. Upon approval of the site plan application, the applicant will be required to enter into a development agreement with the Town to ensure the building will be constructed in accordance with the Town’s development standards.

Analysis

Planning Considerations

The proposed applications are consistent with the Provincial Policy Statement (PPS) and the Growth Plan.

The subject lands are located within a Settlement Area as outlined by the PPS and Growth Plan. It is Staff's opinion that the proposed development aligns well with the criteria outlined in policy 1.1.1 of the PPS and the population growth policies within the Growth Plan. Particularly, the proposed 7 storey apartment building represents an efficient development, offering various residential options and supporting transit. Situated within a Major Transit Station Area (MTSA), the proposed development represents an infill development that aids in increasing housing stock of various sizes within an area already equipped with municipal services, infrastructure, and close proximity to community amenities and public transportation.

The proposed applications conforms to the Lake Simcoe Protection Plan (LSPP)

The Lake Simcoe Conservation Authority (LSCRA) has reviewed the proposed applications in consideration of the LSPP and has no objection to the approval of the subject applications as presented. The subject lands are located outside of the LSRCA regulated limits and accordingly no Regulation Permit is required prior to development or site alteration taking place on the subject lands. The subject lands are also free from any natural hazards and are outside of hazardous lands.

York Region has exempted the proposed OPA from Regional approval.

York Region has reviewed the proposed applications and have no concerns with the proposed amendments. It is the opinion of Regional Staff this is a local matter and therefore is exempted from regional approval. Furthermore, it is the opinion of Regional Staff that the proposed applications conforms to the York Region Official Plan. The proposed 193 units will exceed the Region's minimum population density forecast within the Major Transit Station Area. The development provides a mix and range of unit, if the development is constructed as a purpose-built rentals, it will assist in achieving the Region's rental housing targets for the Town of Aurora.

The proposed Official Plan Amendment is compatible with surrounding land uses and consistent with the Aurora Promenade - Concept Plan - Urban Design Strategy

Although the proposed development requires an Official Plan Amendment to allow for a building setback at the second storey, it complies with all other development policies outlined in the Official Plan. These policies include overall height, density, municipal infrastructure, growth management, and the provision of diverse housing options.

The existing policy 9.6.2 a) ii) of the Town Official Plan requires that buildings taller than four storeys or 15 metres, are subject to a front yard step-back at the fourth storey and the angular plane provisions of this Plan. The proposed site-specific policy will amend the required front yard step back to occur at the second storey. (See Figure 9 and 10) It is staff's opinion that the proposed amendment is adequate to provide for appropriate transition to the upper storeys of the building. The proposed amendment will continue to achieve the angular plane provisions of the Official Plan.

The Aurora Promenade - Concept Plan - Urban Design Strategy advocates for buildings closer to the street and enhancing public spaces. The proposed building aligns with this by being strategically located on Industrial Parkway North to enliven the streetscape and promote active transportation. Staff believe it fits with the existing and planned character of the area, consistent with the Aurora Promenade - Concept Plan - Urban Design Strategy.

An appropriately sized and designed urban square is provided for the subject development

The Official Plan strongly encourages all developments within the "Major Transit Station Area" designation on sites greater than 0.2 ha in size to provide an Urban Square. The Urban Square is to be built and maintained by the landowner, and an easement with the Town is to be established to ensure the space is open and accessible to the public at all times.

A 195.50 m^2 (2104 ft^2) Urban Square is located at the northeast corner of the site. The urban square conceptual plan shows a public art piece, formal and informal seating, a lawn, an open-air pavilion and two shade structures. Staff are generally satisfied with the provided Urban Square, while the detailed design and implementation will be closely monitored in the Site Plan process.

The proposed Zoning By-law Amendments implements the general direction of the Town's Official Plan for additional infill residential development

Planning staff are of the opinion that the development is appropriate and compatible with adjacent and neighbouring community, and that the by-law exceptions are appropriate to facilitate the development.

Front yard setback

The front yard setback reduction from the required 13.5 m to 3 m is required to allow the future building to be situated closer to the street (Industrial Parkway North). The purpose is to have a more intimate and accessible building design. A building situated closer to the street can better animate the streetscape and create a pedestrian friendly design that encourages active transportation and walking.

Side and Rear yard setback

The proposed reduction in side yard setback from 13.5 m to 4.25 m and rear yard setback from 13.5 m to 5.35 m is required to maximum the interior bedroom unit size and indoor amenity area within the existing site context. To minimize any potential visual impact to the neighbouring properties, the applicant incorporated a retaining wall and a 1.37 m high ornamental metal fence. Furthermore, to provide buffering and visual screening for the adjacent property additional landscaped plantings including karl foresters and a coniferous screen along the south lot line (interior side yard) and west lot line (rear yard).

Amenity Area

The proposed reduction of the overall amenity area per dwelling unit is appropriate for the development as the overall amenity area is marginally reduced. It is Staff's opinion that there is adequate amount of overall indoor and outdoor amenity area for the future residents.

The reduction in the proposed indoor amenity area from 50% of the required amenity area to 15% is to optimize the utilization of available space. This approach is often necessary in urban environments where land is scarce and property values are high. By reducing the indoor amenity area and providing additional amenity spaces outdoor and balcony, this can contribute to keeping housing prices more affordable for buyers or renters.

Required yard abutting Employment Zone

The subject lands are surrounded by existing industrial uses, the area is anticipated to undergo a transition to permissible uses within the Major Transit Station Area as development progresses. As such, the proposed reduction is not anticipated to result in any compatibility issues between the development and any existing and planned uses in the adjacent area.

Primary and visitor parking spaces

The Cutting Red Tape to Build More Homes Act, 2024 (Bill 185), received royal assent from the Province of Ontario (the "Province") on June 6, 2024. As per Bill 185, municipalities are no longer permitted to regulate minimum parking space requirements within the MTSA. However, the applicant is proposing 1.24 parking spaces per unit (252 parking spaces) which is supported by the Traffic Impact Study and is comparable to industry standards for transit supported areas. The amount of visitor parking is considered to be appropriate, as the development will still provide for 25 visitor parking spaces, with additional bike parking spaces available for the users.

Parking aisle and driveway setbacks

The reduced parking aisle widths is considered to be reasonable as the proposed aisle width can continue to support the movements of emergency and other larger vehicles and can comfortably accommodate for average vehicles. Transportation staff have not identified any vehicular related restrictions due to the reduced widths.

The reduction of setback for the driveway to the building wall is necessary as the driveway is leading to the entrance to the building's underground parking. Such reduction is a common practice among apartment development with underground parking facility and is not anticipated to result in any concerns related to site circulation, access and pedestrian safety.

Department / Agency Comments

All external agencies and Town staff have completed their review for the subject applications and have no objections to the approval of the subject applications

The proposed applications were circulated to all internal and external agencies for review and comments. All external agencies and Town staff have completed their review and have no objections to the approval of the subject applications. The applicant will continue to work with Staff to resolve any outstanding site plan matters prior to the approval of the site plan control application and execution of the site plan agreement.

Public Comments

Subsequent to the September 2023 Public Meeting, the applicant has implemented several updates to the proposed development. These include revisions to landscaping and engineering drawings, as well as enhancements to the proposed OPA and ZBA by-laws and addressing the urban square design.

Public comments related to transition of the area, urban square, traffic management, construction access have been adequately addressed

Below is a summary and response to all written and verbal comments received at the time of writing this report:

Comments	Response
Concerns over increased density and the associated increased traffic and risk of accidents for pedestrians	The Traffic Operations Assessment concluded that site generated traffic is not expected to impact the intersections significantly. The Level of Services are expected to remain the same between the years of 2026 and 2031. The site generated traffic does not warrant the requirement of a signal of left-turn lane. The Town's Traffic Analyst concurs with the assessment.
Provision of control rental units for the development	The Applicant has not yet determined the tenure type for the proposed development, however, the provision of smaller units is planned to increase the affordability of the proposed development.
Comprehensive development of projects in the adjacent area to allow for appropriate management of the transition of the community	The subject lands are located within a Major Transit Station Area, significant growth will be occurring in the host community to fully utilize the adjacent transit amenities. Staff has been monitoring and tracking any proposed, planned and approved development projects in the designated MTSA community, so that the transition of the immediate and neighbouring community can be properly envisioned and managed.

Design quality is slightly lacking with not enough variation in elevations	The applicant has incorporated various design related changes in accordance with the Aurora Promenade Urban Design Strategy and design staff comments, including enhanced presence of southeast corner of the building, canopies at all entrances, revised elevations such as brick finish and spandrel finishing to increase architectural treatment. Additional works are expected prior to the finalization of the site plan control application.
Suggestion for alternative location for the Urban Square to preserve the square for residents to use	The proposed Urban Square must have a frontage on the abutting sidewalk as per Official Plan to function as a pedestrian space and allow for public access. The location and size of the proposed urban square is appropriate in relation to the overall site. Staff has no concern with the proposed pavilion, art piece, lawn and seating area contained within the urban square.
Proposed construction access can be disruptive to residents	The applicant has submitted a Construction Management Plan which showcases that the proposed access will be from Industrial Parkway North only, as well as location of crane set up, loading area, trade parking location, etc. Staff are generally satisfied with the submitted plan and have no concern.

Advisory Committee Review

The Town's Accessibility Advisor has reviewed the subject applications on behalf of the Accessibility Advisory Committee. Accessibility Advisor has no concerns with the subject applications.

Legal Considerations

Subsections 22(7) and 22(7.0.2) of the *Planning Act* states that if Council refuses the Official Plan Amendment application or fails to make a decision on it within 120 days after the receipt of the application, the applicant (or the Minister) may appeal the application to the Ontario Land Tribunal (OLT).

Subsection 34(11.0.0.0.1) of the *Planning Act* states that if the passing of a Zoning By-law Amendment also requires an amendment to the Official Plan, and that if both applications are made on the same day, if Council refuses the Zoning By-law Amendment application or fails to make a decision on it within 120 days after the receipt of the application, the applicant (or Minister) may appeal the application to the OLT.

The applications were deemed as complete on October 17, 2022 and therefore, the applicant may appeal to the OLT at any time.

Financial Implications

There are no direct financial implications as a result of this report.

Communications Considerations

On October 17, 2022, a Notice of Complete Application respecting the Official Plan and Zoning By-law Amendment applications was published in the Auroran and Aurora Banner newspapers. On June 22, 2023, a Community Information Meeting was held at the Aurora Public Library.

On August 23, 2023, a Notice of Public Planning Meeting was mailed out to all addressed property owners within 120m of the subject lands. In addition, the notice was published in the Auroran and Aurora Banner newspapers. Signage on the subject lands was posted with information regarding the Public Meeting, with all notification provided in accordance with the Planning Act.

Climate Change Considerations

Through the site plan application, the applicant is applying several design elements that will mitigate the impact on GHG emissions such as using cool roof design, incorporating an urban square amenity area and low emission mechanical systems. The project increases the Town’s ability to adapt to climate change by incorporating EV

charging capability and water saving technologies into the development, and using native plant species for landscaped areas. This project supports the objectives from the Community Energy Plan, and Section 5 of the Official Plan.

Link to Strategic Plan

The proposed applications support the Strategic Plan goal of Supporting an exceptional quality of life for all through its accomplishment in satisfying requirements in the following key objectives within this goal statement:

Strengthening the fabric of our community: Through the addition of 193 residential units, housing is provided in accordance with the Collaborate with the development community to ensure future growth includes housing opportunities for everyone action item.

Strengthening the fabric of our community: Through the approval of an infill residential development, the Work with the development community to meet intensification targets to 2051 as identified in the Town's Official Plan action item is realized.

Alternative(s) to the Recommendation

1. Refusal of the application with an explanation for the refusal.

Conclusions

Planning and Development Services reviewed the proposed Official Plan and Zoning By-law Amendment applications in accordance with the provisions of the Provincial, Regional, the Town's Official Plan, Zoning By-law and municipal development standards respecting the subject lands. The proposed Official Plan and Zoning By-law Amendment applications are considered to be in keeping with the development standards of the Town. Any technical revisions to the proposed plans will be reviewed by Town Staff prior to site plan approval and the execution of the site plan agreement. Staff recommends approval of the Official Plan OPA-2022-03 and Zoning By-law Amendments ZBA-2022-05.

Attachments

Appendix A – Draft Official Plan Amendment
Appendix B – Draft Zoning By-law Amendment

Figure 1 – Location Map
Figure 2 – Existing Official Plan Designation
Figure 3 – Existing Zoning By-Law
Figure 4 – Proposed Site-Specific Official Plan Policy Area
Figure 5 – Proposed Official Plan Amendment
Figure 6 – Proposed Zoning By-law Amendment
Figure 7 – Proposed Site Plan
Figure 8 – Proposed Landscape Plan
Figure 9 – Proposed Front Building Elevations
Figure 10 – Proposed Side Building Elevations

Previous Reports

Public Planning Report No. PDS23-111, dated September 12, 2023.

Pre-submission Review

Agenda Management Team review on June 12, 2024

Approvals

Approved by Marco Ramunno, Director, Planning and Development Services

Approved by Doug Nadorozny, Chief Administrative Officer

The Corporation of the Town of Aurora

By-law Number XXXX-24

Being a By-law to amend By-law Number 6579-24, as amended, to adopt Official Plan Amendment No.1.

Whereas on January 30, 2024, the Council of The Corporation of the Town of Aurora (the "Town") enacted By-law Number 6579-24, as amended, to adopt the Official Plan for the Town of Aurora (the "Official Plan");

And whereas authority is given to Council pursuant to the Planning Act, R.S.O. 1990, c. P.13, as amended (the "Planning Act") to pass a by-law amending the Official Plan;

And whereas the Council of the Town deems it necessary and expedient to further amend the Official Plan;

Now therefore the Council of The Corporation of the Town of Aurora hereby enacts as follows:

1. Official Plan Amendment No. 1 to the Official Plan, attached and forming part of this by-law, be and is hereby adopted.

2. This By-law shall come into full force subject to compliance with the provisions of the Planning Act and subject to compliance with such provisions, this By-law will take effect from the date of final passage hereof.

Enacted by Town of Aurora Council this XX of July, 2024.

Tom Mrakas, Mayor

Michael de Rond, Town Clerk

By-law Number XXXX-24

Amendment No. 1

To the Official Plan for the Town of Aurora

Statement of Components

Part I – The Preamble

1. Introduction
2. Purpose of the Amendment
3. Location
4. Basis of the Amendment

Part II - The Amendment

1. Introduction
2. Details of the Amendment
3. Implementation and interpretation

Part III – The Appendices

By-law Number XXXX-24

PART I - THE PREAMBLE

1. Introduction

This part of the Official Plan Amendment No. 1 (the "Amendment"), entitled Part I – The Preamble, explains the purpose and location of this Amendment, and provides an overview of the reasons for it. It is for explanatory purposes only and does not form part of the Amendment.

2. Purpose of the Amendment

The purpose of this Amendment is to amend the building design and step-back policy for development within *"Major Transit Station Area"* designation. The provision of this Amendment will create a new site specific Policy #64 to allow for the proposed seven storey, 193-unit apartment building with step back provisions at the second storey.

3. Location

The lands affected by this Amendment are located on the west side of Industrial Parkway North between Centre Street and Scanlon Court, municipally known as 180 and 182 Centre Crescent; having a lot area of approximately 0.7643 hectares (1.89 acres); and are legally described as Part of Lot 105, Registered Plan 246, Parts 1 – 4 (inclusive), Plan 65R-39267 Town of Aurora, Regional Municipality of York (the "Subject Lands").

4. Basis of the Amendment

The basis of the Amendment is as follows:

4.1 The Amendment is privately initiated and follows general provisions of the Aurora Promenade and the Major Transit Station Area.

4.2 The redevelopment of the Subject Lands will allow for the intensification of land within the urban boundary and within a Major Transit Station Area which are promoted in provincial and regional planning policy related to providing a range and mix of housing types, densities and tenures.

4.3 The Amendment proposes to proposes to permit the proposed 7 storey to implement the step back provisions at the second storey.

4.4 The Amendment provides for a compatible use. The full basis for this Amendment has been set out in the Planning Justification Report and related supplementary reports submitted in support of this Amendment and the related Zoning by-law Amendment.

4.5 The Amendment is considered as an appropriate urban design criteria.

4.6 The Town of Aurora is the approval authority for the Amendment.

By-law Number XXXX-24

PART II - THE AMENDMENT

1. Introduction

This part of the Amendment, entitled Part II – The Amendment, consisting of the following text and attached maps, designated as Schedule "A" constitutes Amendment No. 1 to the Official Plan.

2. Details of the Amendment

The Official Plan be and is hereby amended as follows:

Item (1): Schedule "H" – Site Specific Policy Areas, being part of the Town of Aurora Official Plan, is hereby amended by designating the subject lands municipally known as 180, 182 Centre Crescent, Town of Aurora in the Regional Municipality of York as "Special Policy Area 64", as shown on Schedule "H" – Site Specific Policy Areas.

Item (2): Section 20 of the Town of Aurora Official Plan is hereby amended by adding Subsection "20.XX", as follows:

"20.XX"

The following policy applies to the lands shown on Schedule "H" as Site Specific Policy Area 64, which is designated "Aurora Promenade and MTSA Mixed Use"

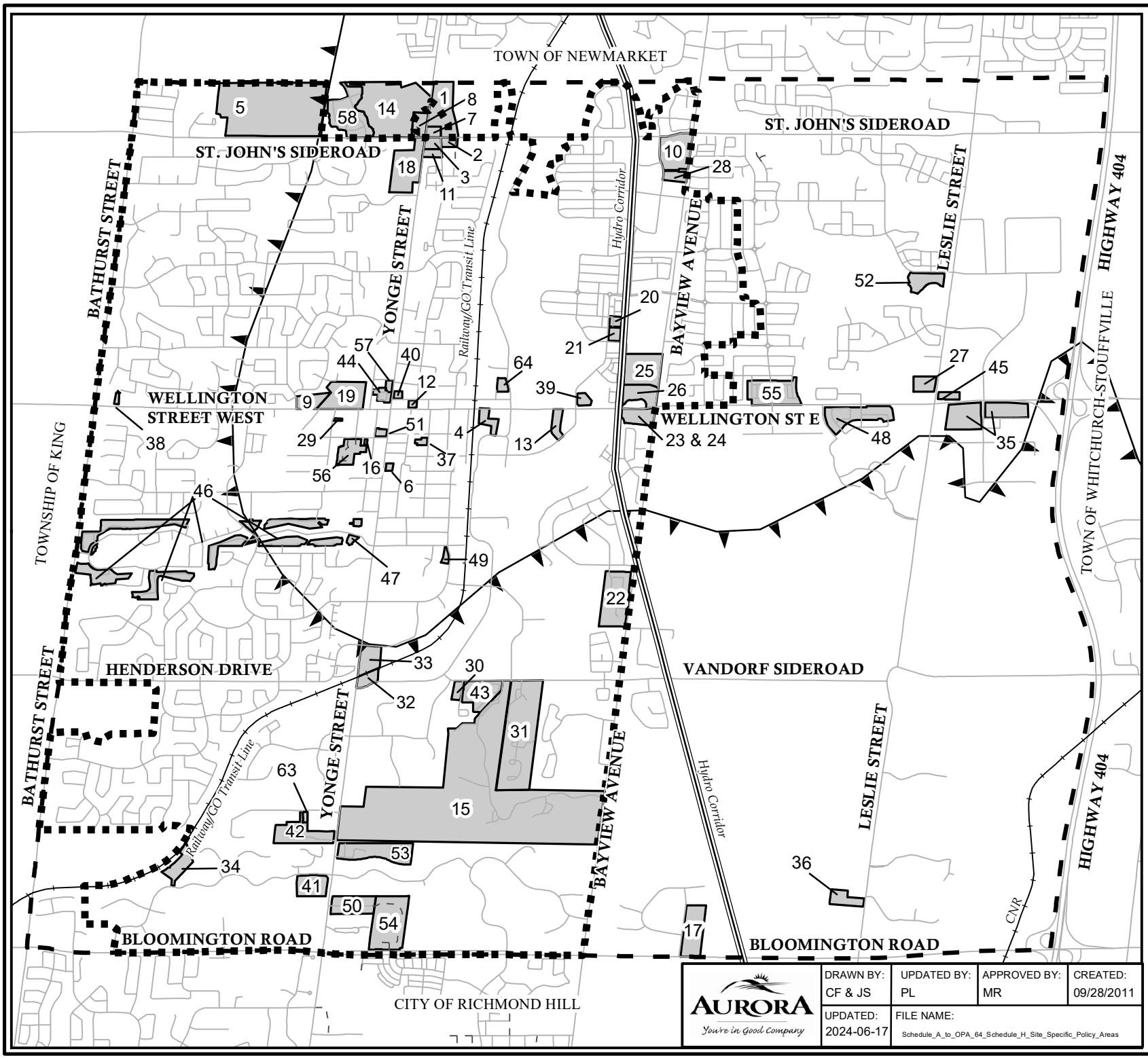
"Notwithstanding 9.6.2 a) ii), Buildings taller than four storey or 15 metres are subject **to a front yard step back at the second storey** and the angular plane provisions of this Plan."

3. Implementation

This Amendment has been considered in accordance with the provisions of the Official Plan. The implementation and interpretation of this Amendment shall be in accordance with the respective policies of the Official Plan.

PART III - THE APPENDICES

Schedule "A" – Amendment to Official Plan Schedule "H" - Site Specific Policy Areas



SCHEDULE "H" TO OPA - SITE SPECIFIC POLICY AREAS

SCHEDULE "A" TO OPA NO.1

LEGEND

- Municipal Boundary
- Road
- Proposed Road
- Oak Ridges Moraine Boundary
  - Boundary of Oak Ridges Moraine Conservation Plan Area Ontario Regulation 140/02
  - Boundary of Oak Ridges Moraine Area Ontario Regulation 01/02
- Built Boundary

Site Specific Policy Areas

- Site Specific Policy Area

N

0 0.5 1

Kilometers

THIS SCHEDULE IS A CONSOLIDATION AND IS PREPARED FOR CONVENIENCE ONLY. FOR ACCURATE REFERENCES, THE ORIGINAL OPA SCHEDULES SHOULD BE CONSULTED. COPIES OF THE ORIGINALS ARE AVAILABLE IN THE CORPORATE & FINANCIAL SERVICES OR PLANNING & BUILDINGT SERVICES DEPARTMENTS.

AURORA You're in Good Company

DRAWN BY:	UPDATED BY:	APPROVED BY:	CREATED:
CF & JS	PL	MR	09/28/2011
UPDATED: 2024-06-17	FILE NAME: Schedule_A_to_OPA_64_Schedule_H_Site_Specific_Policy_Areas		

The Corporation of the Town of Aurora

By-law Number XXXX-24
Being a By-law to amend By-law Number 6000-17, as amended, respecting the lands municipally known as 180 and 182 Centre Crescent
(File No. ZBA-2022-05)

Whereas under section 34 of the Planning Act, R.S.O. 1990, c. P.13, as amended (the "Planning Act"), zoning by-laws may be passed by the councils of local municipalities to prohibit and regulate the use of land, buildings and structures;

And whereas on June 27, 2017, the Council of The Corporation of the Town of Aurora (the "Town") enacted By-law Number 6000-17 (the "Zoning By-law"), which Zoning By-law was appealed to the Ontario Municipal Board (the "OMB");

And whereas on January 29, 2018, the OMB made an order, in accordance with subsection 34(31) of the Planning Act, providing that any part of the Zoning By-law not in issue in the appeal shall be deemed to have come into force on the day the Zoning By-law was passed;

And whereas the OMB is continued under the name Local Planning Appeal Tribunal (the "LPAT"), and any reference to the Ontario Municipal Board or the OMB is deemed to be a reference to the LPAT;

And whereas the Council of the Town deems it necessary and expedient to further amend the Zoning By-law;

Now therefore the Council of The Corporation of the Town of Aurora hereby enacts as follows:

1. The Zoning By-law be and is hereby amended to replace the "Service Employment E1(9)" zoning category applying to the lands shown in hatching on Schedule "A" attached hereto and forming part of this By-law with "Second Density Apartment Residential (RA2-556)" zoning category.

2. The Zoning By-law be and is hereby amended to add the following:

Parent Zone: RA2 **Exception Zone:** (556)	**Map:** Schedule 'A', Map No. 3	**Previous Zone:** (E1(9))	**Previous By-laws:** 6000-17
Municipal Address: 180 and 182 Centre Crescent			
Legal Description: Part of Block 105, Plan 246. Parts 1 – 4, Plan 65R-39267			
24.542.1 Permitted Uses			

No more than One Apartment Building per Lot	
24.542.2 Zone Requirements	
24.542.2.1 Lot Specifications	
Lot Area	39m^2 per dwelling unit
Lot Frontage	30m
24.542.2.2 Siting Specifications	
Front Yard	3.0m
Rear Yard	5.35m
Interior Side Yard	4.25m
Exterior Side Yard	½ the height of the Main Building and in no case less than 9m.
24.542.2.3 Building Specifications	
Lot Coverage (Maximum)	40%
Building Height (Maximum)	26m
24.542.2.4 Amenity Area:	
Any Apartment Residential Zone, Commercial Zone or Promenade Zone, which contains Apartment Dwelling Units, or any Multi-Unit Development shall provide a minimum Amenity Area of Seventeen and one half (17.5) square metres per dwelling unit, provided a minimum of 15% of the required Amenity Area is provided as interior amenity space.	
24.542.2.5 Dwelling Adjacent to an Employment Zone:	
Notwithstanding any other provisions of this By-law where a Residential Zone is adjacent to an Employment Zone, the minimum required yard abutting the Employment Zone shall be 3.0m metres.	
24.542.2.6 Yard Encroachments Permitted	
The structures listed below shall be permitted to project into the minimum yards indicated for the distances specified: • Open porches: Interior Side Yards – 2.5m. In no case shall be closer than 2m from the Interior Side Yard.	
24.542.2.7 Required Manoeuvring Space	
All single and parallel spaces shall have adequate provisions for Manoeuvring Space or Driveway purposes as follows: 90 degree spaces - 6.80m	
24.542.2.8 Parking Standards	
Apartment Building	As per Bill 185, there shall be no minimum parking requirements
24.542.2.9 Setbacks	
Where a Parking Lot or Parking Area having capacity for five or more cars, or Driveway serves an apartment building or any other multiple Residential use, there shall be no minimum setback to a wall of a building from a parking space, manoeuvring area or driveway that serves under ground parking.	

3. This By-law shall come into full force subject to compliance with the provisions of the Planning Act and subject to compliance with such provisions, this By-law will take effect from the date of final passage hereof.

4. If a building permit that is appropriate for the development has not been issued under the Building Code Act, 1992, S.O. 1992, c. 23, as amended, for any building or structure so authorized within X (X) years from enactment of this By-law, then this By-law shall automatically repeal and if so repealed, the zoning of the lands will revert to the original zoning.

Enacted by the Town of Aurora Council this ___ day of _____, 2024.

_____
Tom Mrakas, Mayor

_____
Michael de Rond, Clerk

Explanatory Note

Re: By-law Number XXXX-24

By-law Number XXXX-24 has the following purpose and effect:

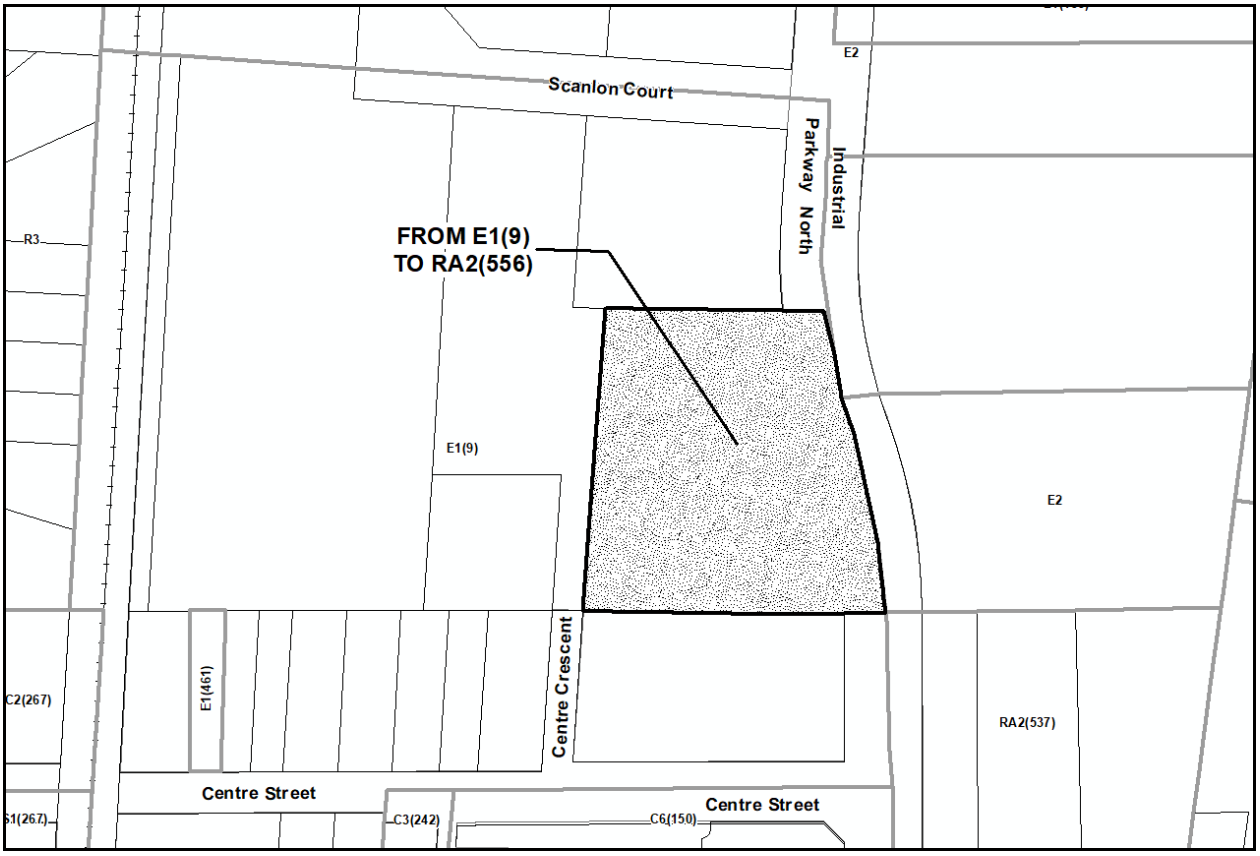
To amend By-law Number 6000-17, as amended, the Zoning By-law in effect in the Town of Aurora, to rezone the subject lands from ""Service Employment E1(9) Exception Zone" to "Second Density Apartment Residential (RA2-556) Exception Zone."

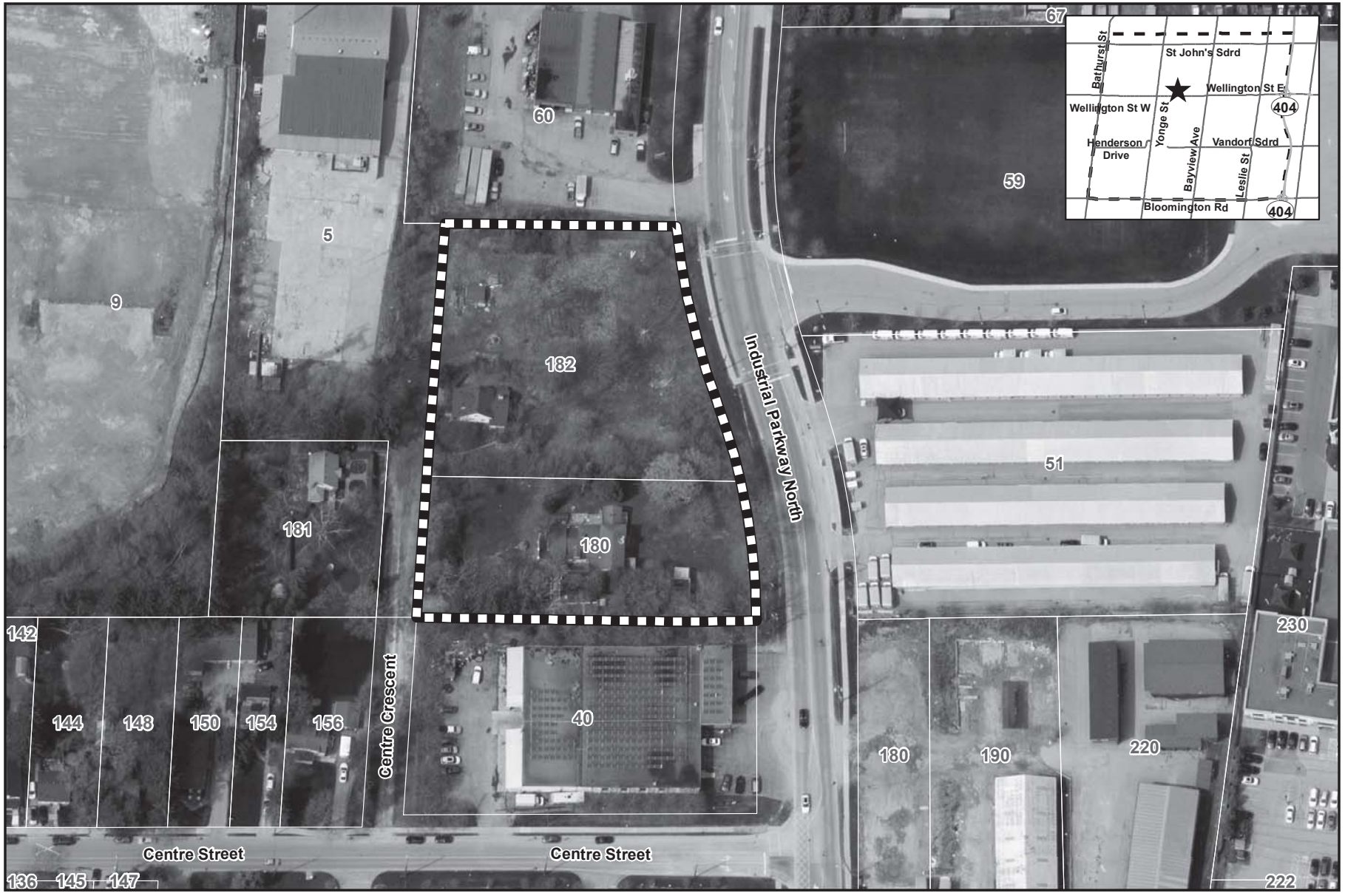
The effect of this zoning amendment will rezone the subject property to one exception zone category and facilitate the creation of a 7 storey residential apartment building with 193 units and 2 levels of underground parking.

Schedule "A"

Location: Part of Block 105, Plan 246. Parts 1 – 4, Plan 65R-39267, Town of Aurora, Regional Municipality of York

Lands rezoned from "Service Employment E1(9) Exception Zone" to "Second Density Apartment Residential (RA2-556) Exception Zone"





LOCATION MAP

APPLICANT: GERVAIS DEVELOPMENT CORP.
FILE: OPA-2022-03 & ZBA-2022-05
FIGURE 1

SUBJECT LANDS

N

0 25 50
Meters

AURORA
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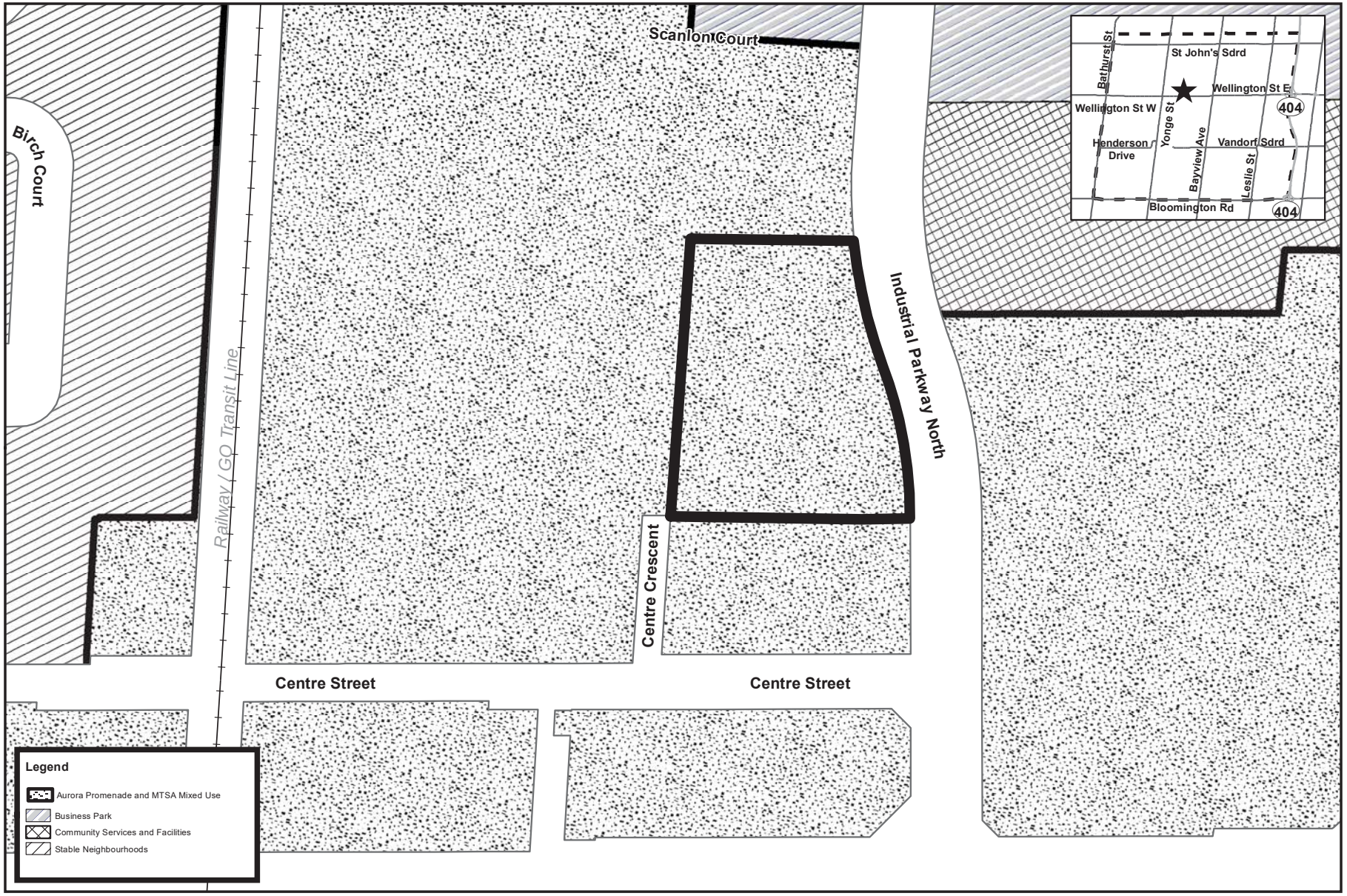
Map by the Town of Aurora Planning and Development Services Department, 2024-06-17. Base data provided by York Region & the Town of Aurora. Air Photos taken Spring 2022, © First Base Solutions Inc., 2022 Orthophotography.

Document Path: J:\data\data\Planning Maps\180, 182 Centre Crescent (OPA-2022-03, ZBA-2022-05)\Report Map June 6 2024\Figure_1_Location_Map.mxd



EXISTING OFFICIAL PLAN DESIGNATION

APPLICANT: GERVAIS DEVELOPMENT CORP.
FILE: OPA-2022-03 & ZBA-2022-05
FIGURE 2

SUBJECT LANDS

0 25 50
Meters

N

AURORA
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*Map by the Town of Aurora Financial Services Department, 2024-06-17. Base data provided by York Region & the Town of Aurora. *Mapping is based on York Region approval of the Town's Official Plan dated May 24, 2024*

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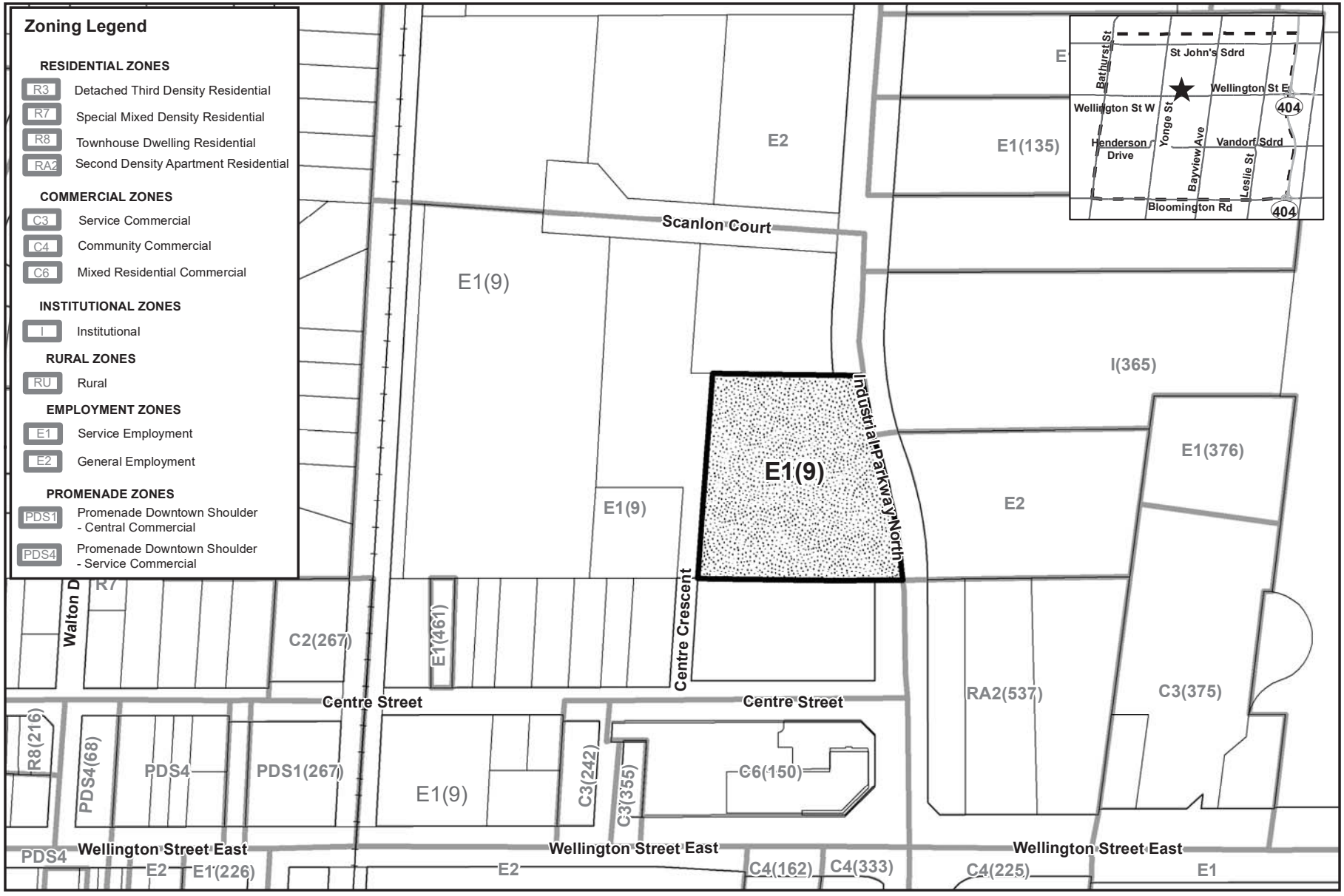

EXISTING ZONING BY-LAW

APPLICANT: GERVAIS DEVELOPMENT CORP.
FILE: OPA-2022-03 & ZBA-2022-05
FIGURE 3

SUBJECT LANDS

0 25 50
Meters

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AURORA
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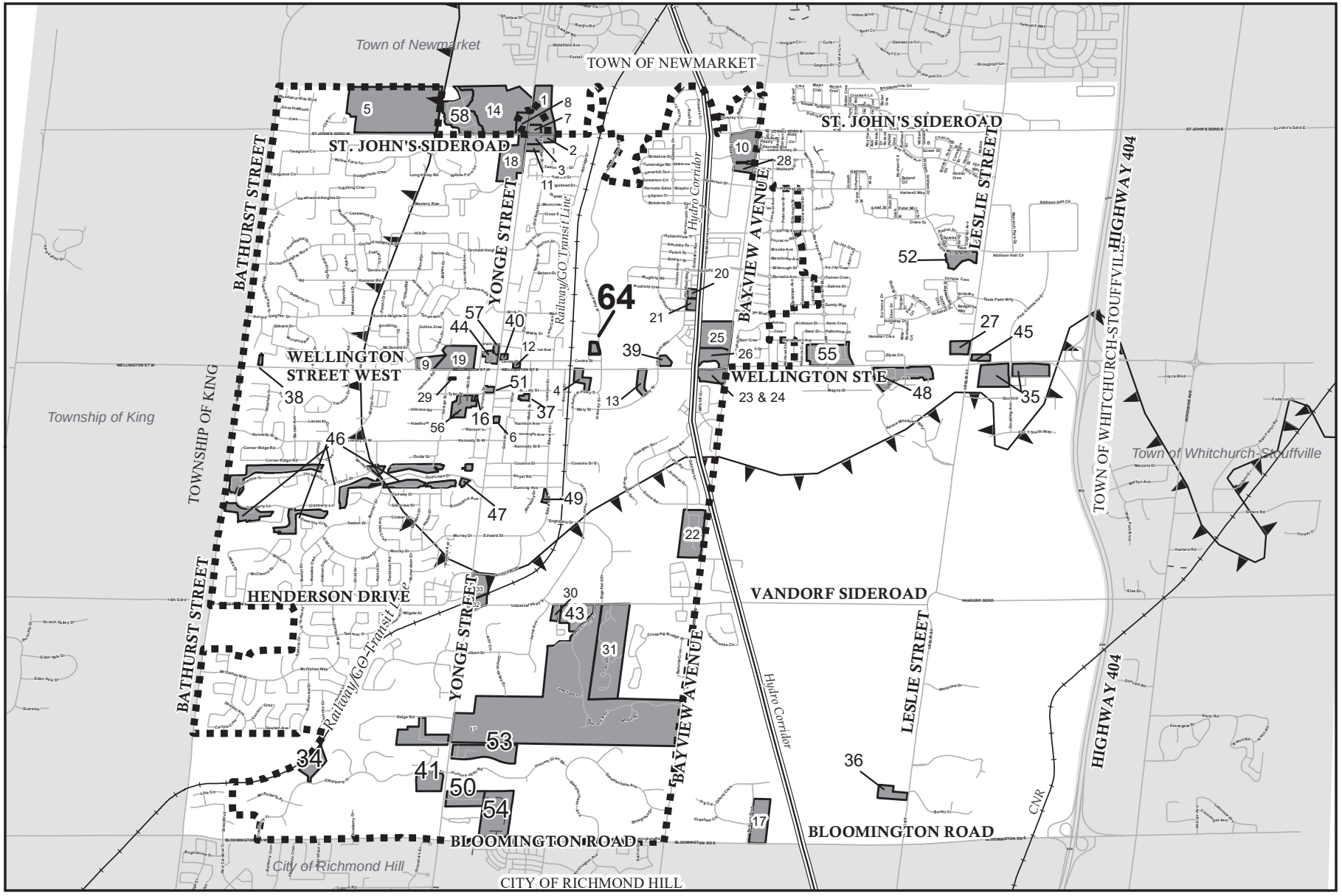
Map by the Town of Aurora Financial Services Department, 2024-06-17. Base data provided by York Region & the Town of Aurora.

Document Path: J:\data\data\Planning Maps\180, 182 Centre Crescent (OPA-2022-03, ZBA-2022-05)\Report Map June 6 2024\Figure_3_Existing_Zoning By Law.mxd



PROPOSED SITE-SPECIFIC OFFICIAL PLAN POLICY AREA

APPLICANT: GERVAIS DEVELOPMENT CORP.
FILE: OPA-2022-03 & ZBA-2022-05
FIGURE 4

Site-Specific Official Plan Policy Area
Aurora Built Boundary

0 2.5 5
Kilometres

N

AURORA
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Map by the Town of Aurora Financial Services Department, 2024-06-17. Base data provided by York Region & the Town of Aurora.

Document Path: J:\data\data\Planning Maps\180, 182 Centre Crescent (OPA-2022-03, ZBA-2022-05)\Report Map June 6 2024\Figure_4_Proposed Site-Specific Official Plan Policy Area.mxd

PROPOSED OFFICIAL PLAN AMENDMENT

APPLICANT: GERVAIS DEVELOPMENT CORP.
FILE: OPA-2022-03 & ZBA-2022-05
FIGURE 5

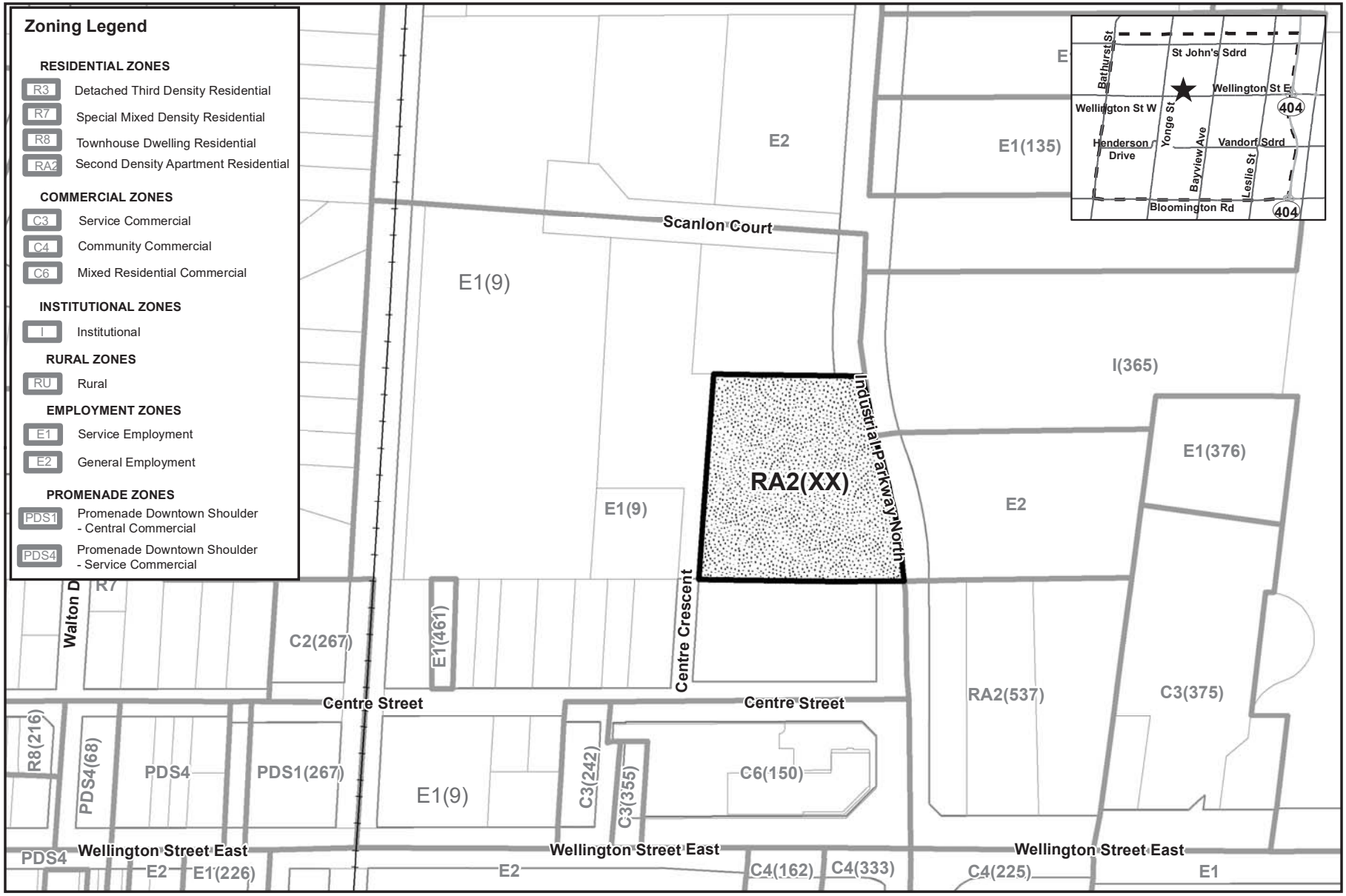
SITE-SPECIFIC AURORA PROMENADE AND MTSA MIXED USE (SITE-SPECIFIC OFFICIAL PLAN POLICY AREA 64)

N
0 25 50
Meters

AURORA You're in Good Company

*Map by the Town of Aurora Financial Services Department, 2024-06-17. Base data provided by York Region & the Town of Aurora. *Mapping is based on York Region approval of the Town's Official Plan dated May 24, 2024*

Document Path: J:\data\data\Planning Maps\180, 182 Centre Crescent (OPA-2022-03, ZBA-2022-05)\Report Map June 6 2024\Figure_5_Proposed Official Plan Amendment.mxd



PROPOSED ZONING BY-LAW AMENDMENT

APPLICANT: GERVAIS DEVELOPMENT CORP.
FILE: OPA-2022-03 & ZBA-2022-05
FIGURE 6

SUBJECT LANDS

0 25 50
Meters

N

AURORA
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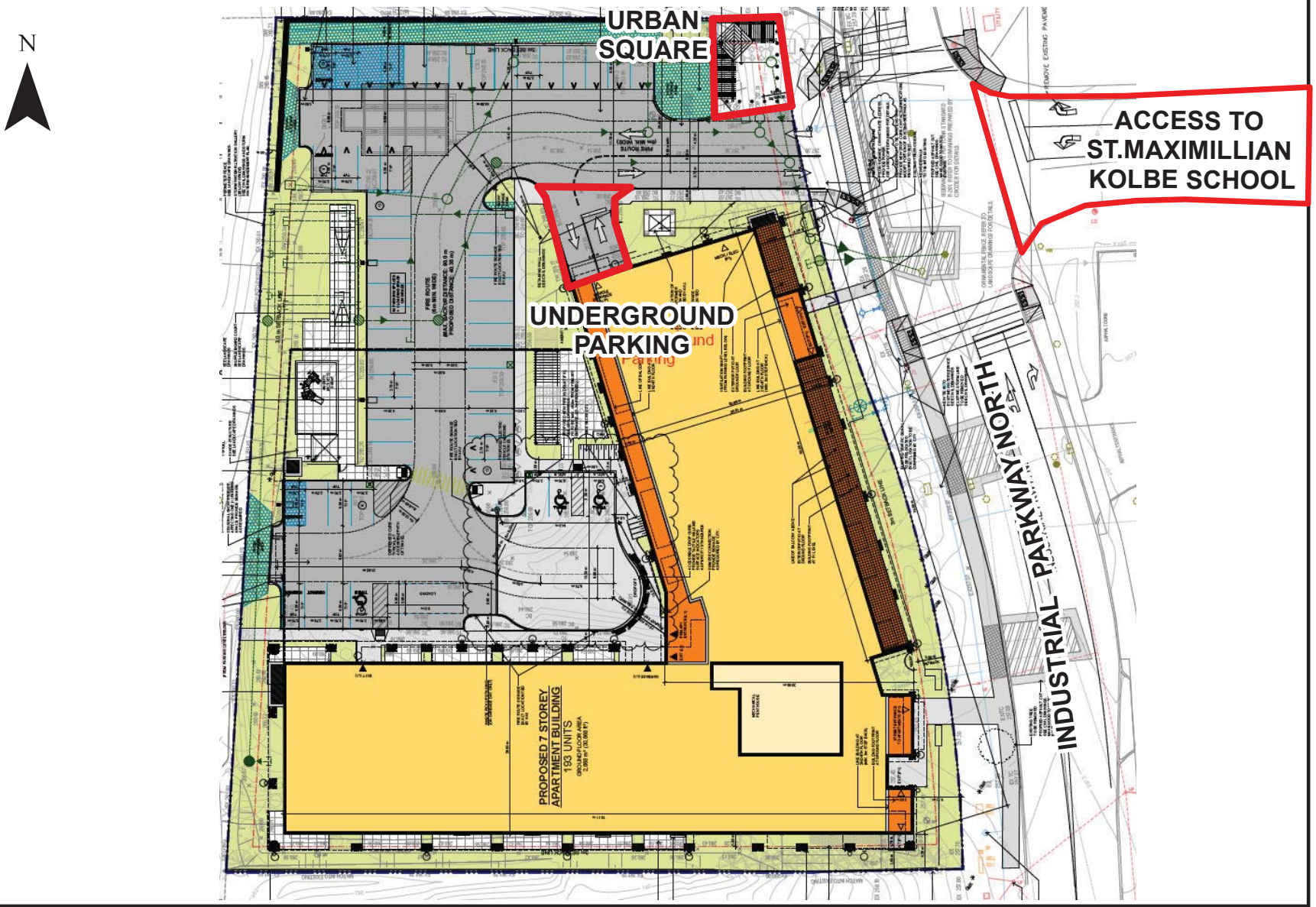
Map by the Town of Aurora Financial Services Department, 2024-06-17. Base data provided by York Region & the Town of Aurora.

Document Path: J:\data\data\Planning Maps\180, 182 Centre Crescent (OPA-2022-03, ZBA-2022-05)\Report Map June 6 2024\Figure_6_Proposed_Zoning by law Amendment.mxd



PROPOSED SITE PLAN

APPLICANT: GERVAIS DEVELOPMENT CORP.
FILE: OPA-2022-03 & ZBA-2022-05

FIGURE 7

AURORA
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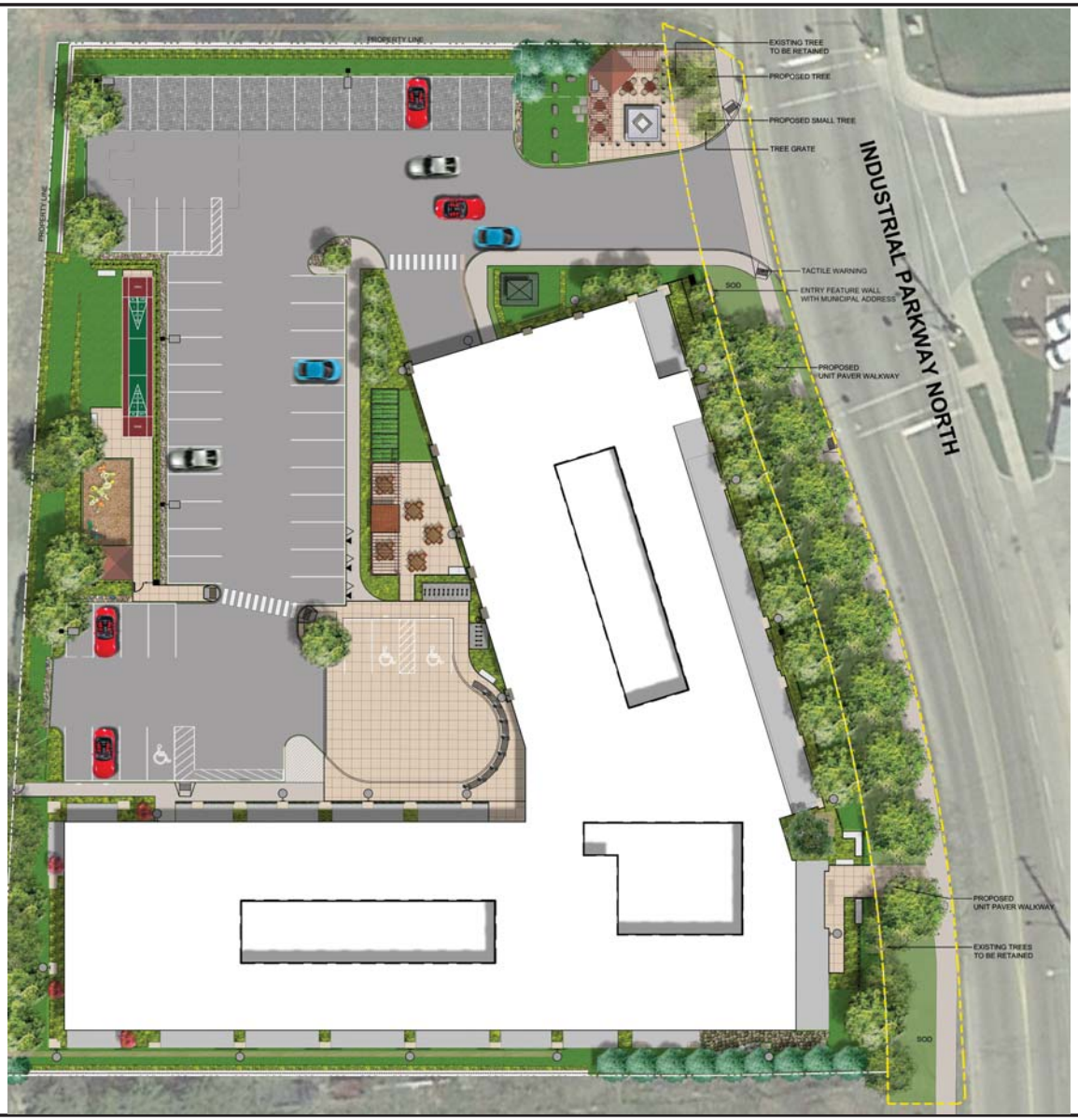
Map created by the Town of Aurora Planning & Building Services Department, 2024-06-17. Drawing provided by Gervais Development Corp.

Document Path: J:\data\data\Planning Maps\180, 182 Centre Crescent (OPA-2022-03, ZBA-2022-05)\Report Map June 6 2024\Figure_7_Proposed Site Plan.mxd



PROPOSED LANDSCAPE PLAN

APPLICANT: GERVAIS DEVELOPMENT CORP.
FILE: OPA-2022-03 & ZBA-2022-05

FIGURE 8

AURORA
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Map created by the Town of Aurora Planning & Building Services Department, 2024-06-17. Drawing provided by Gervais Development Corp.

Document Path: J:\data\data\Planning Maps\180, 182 Centre Crescent (OPA-2022-03, ZBA-2022-05)\Report Map June 6 2024\Figure_8_Proposed Landscape Plan.mxd

THIS ELEVATION FACES INDUSTRIAL PARKWAY NORTH

PROPOSED FRONT BUILDING ELEVATIONS

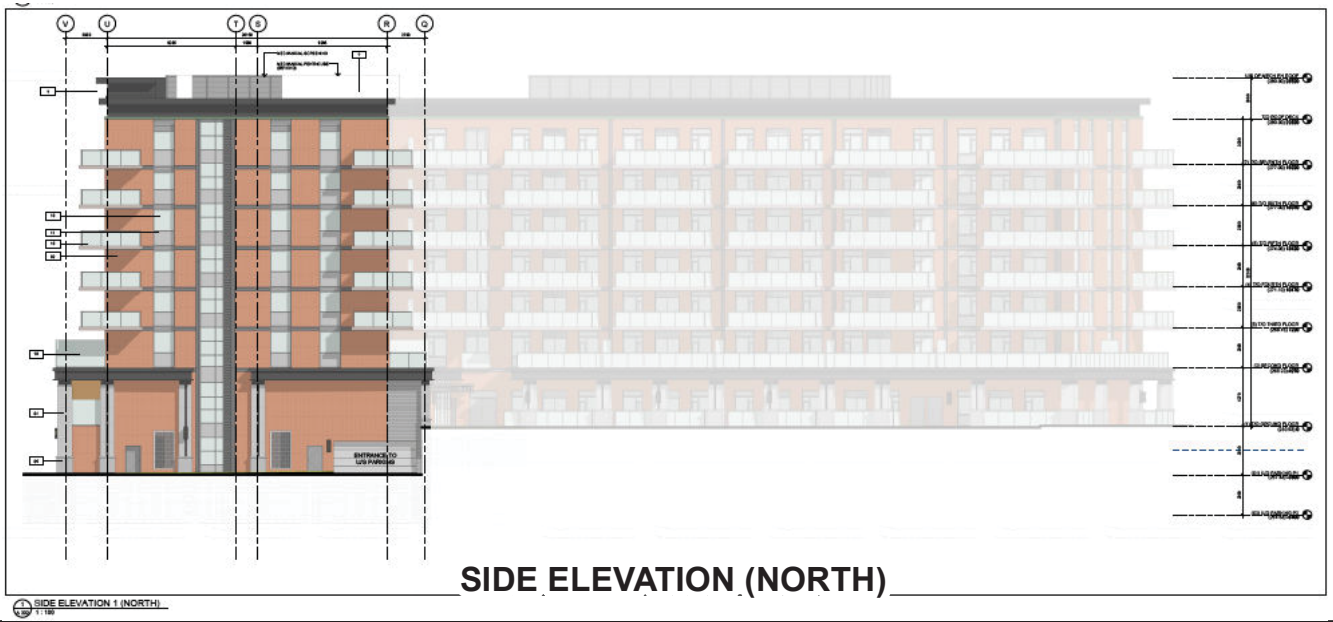
APPLICANT: GERVAIS DEVELOPMENT CORP.
FILE: OPA-2022-03 & ZBA-2022-05

FIGURE 9

Map created by the Town of Aurora Planning & Building Services Department, 2024-06-17. Drawing provided by Gervais Development Corp.

Document Path: J:\data\data\Planning Maps\180, 182 Centre Crescent (OPA-2022-03, ZBA-2022-05)\Report Map June 6 2024\Figure_9_Proposed Front Building Elevations.mxd

SIDE ELEVATION (SOUTH)



SIDE ELEVATION (NORTH)

PROPOSED SIDE BUILDING ELEVATIONS

APPLICANT: GERVAIS DEVELOPMENT CORP.
FILE: OPA-2022-03 & ZBA-2022-05

FIGURE 10

AURORA
You're in Good Company

Map created by the Town of Aurora Planning & Building Services Department, 2024-06-17. Drawing provided by Gervais Development Corp.

Document Path: J:\data\data\Planning Maps\180, 182 Centre Crescent (OPA-2022-03, ZBA-2022-05)\Report Map June 6 2024\Figure_10_Proposed Side Building Elevations.mxd

100 John West Way
Aurora, Ontario
L4G 6J1
(905) 727-3123
aurora.ca

Town of Aurora

Committee of the Whole Report

No. PDS24-041

Subject:	Request for Non-Standard Procurement Approval for Capital Project No. AM0332 – Aurora Promenade Streetscape Detailed Design
Prepared by:	**Garry Anggawinata, Municipal Engineer**
Department:	Planning and Development Services
Date:	July 2, 2024

Recommendation

1. **That Report No. PDS24-041 be received; and**
2. **That Council approve the award of a Non-Standard Procurement for Capital Project No. AM0332, Detailed Design of the Aurora Promenade Streetscape to CIMA+ in the amount of $578,927.80 excluding taxes.**

Executive Summary

This report seeks Council's approval to proceed with a Non-Standard Procurement (NSP) process for Capital Project No. AM0332 –Aurora Promenade Streetscape Detailed Design and Sanitary Sewer Rehabilitation. The purpose of the NSP is to retain a qualified engineering consultant to complete the detailed design of the proposed streetscape for the downtown promenade area and sanitary sewer rehabilitation at Yonge Street (between Church Street and Wellington Street).

- A formal Request for Proposal (RFP) was issued on January 17, 2024 and closed on February 12, 2024. No bid submissions were received during the competitive procurement process.
- As per the Procurement By-law, when a competitive procurement process results in no valid bids, the Town can proceed with a NSP process. For a procurement value equal to or greater than $250,000, Council authority is required to proceed with the authorization of the award.

- Town Staff recommends that the Town proceed with awarding the project to CIMA+ through a Non-Standard Procurement as their submission best demonstrated technical competence, experience with similar projects and value.

Background

The Town is seeking the services of a qualified engineering consultant to complete assessments and a detailed design for the downtown Promenade area located at Yonge Street (between Church Street and Wellington Street). This is a multi-disciplinary project with multiple components which requires the expertise of various professionals to develop the streetscape design.

Town staff has identified opportunities for infrastructure rehabilitation and enhancements as part of this construction project. Town staff recommend replacing the existing sanitary sewer system at this section of the Yonge Street corridor, which is comprised of 225mm vitrified clay pipes and 375mm asbestos cement pipes constructed in 1932. The replacement of this aged and deteriorating infrastructure will improve the durability, longevity, and performance of the Town's sanitary infrastructure for current residents and future developments in the downtown promenade area. In addition to wastewater sewer infrastructure upgrades, the base scope of the streetscape detailed design includes the following tasks:

1. Sanitary Sewer Assessment and Functional Servicing Analysis – The consultant will conduct a technical analysis of the existing sanitary sewer system and identify feasible design options for rehabilitation and/or replacement.

2. Traffic Impact Study – An extensive traffic impact assessment will need to be completed to design a road layout that is optimal for traffic flow while accounting for pedestrian movement, active transportation, and public transit.

3. Subsurface Utility Engineering (SUE) Investigation and Utility Coordination – A SUE Investigation must be conducted for utility locates and verifying the locations of all existing utilities and infrastructure (such as hydro conduits, gas mains, telecommunication lines, watermains, and sewer mains) in the project site.

4. Topographic Land Survey – A certified Ontario Land Surveyor will need to be engaged to conduct a topographic survey and gather grading and elevation data

of the existing site. This information will be required in the development of the detailed streetscape design.

5. Landscape Design – The consultant will be required to have a certified landscape architect and arborist as part of the project team for the design of landscape features which will include the planting of trees and vegetation, design of sidewalks and pedestrian facilities, and streetscape furniture.

6. Photometric Analysis – A photometric study is recommended to determine the requirements for streetlight upgrades and provide illumination for the streetscape area as per Town Standards.

7. Stakeholder Consultation and Public Engagement – Stakeholder consultation and public engagement will be a significant component of this project and will impact stakeholders, including business owners and residents. The consultant will organize and host several working group meetings, public information centre open houses, and have a dedicated public outreach/communications specialist to coordinate all stakeholder engagement efforts.

The successful delivery of this project requires a reputable and established multi-disciplinary team with the relevant subject matter expertise and experience in completing projects of comparable size and scope.

Analysis

A formal Request for Proposal (RFP) was issued on January 17, 2024 and closed on February 12, 2024. No bid submissions were received.

Town staff initiated a High Value Procurement (HVP) process and issued an RFP on January 17, 2024. The RFP closed on February 12, 2024 and no bid submissions were received. When no bids are received during a competitive procurement process, the Town's Procurement By-law allows for the use of a NSP process whereby staff are able to engage and negotiate with a consultant to obtain a bid for the work required.

As per the Procurement By-law, when a competitive procurement process results in no valid bids, the Town can proceed with a NSP process. For a procurement value equal to or

greater than $250,000, Council authority is required to proceed with the authorization of the award.

Capital Project No. AM0332 has a total approved budget of $1,187,233. This budget represents the consolidation of three previously approved capital projects which support various components of the downtown promenade streetscape project. These three previously approved project budgets have now been merged under a single capital project (AM0332) with the intent to deliver their entire intended scope via this project. Table 1 summarizes the original approved capital projects whose budget authority and associated funding that were consolidated under AM0332.

Table 1: Summary of Consolidated Accounts for Capital Project No. AM0332

Donor Capital Project Number	Description	Previously Approved Amount
AM0246	Streetlight Improvements – Yonge Street from Wellington to Church	$600,000
AM0344	Temperance Street Parking Lot Staircase Replacement	$150,000
GN0109	Promenade Streetscape Design and Implementation	$437,233
	Total Amount	**$1,187,233**

Town Staff recommends that the Town proceed with awarding the project to CIMA+ through a Non-Standard Procurement as their submission best demonstrated technical competence, experience with similar projects and value.

Quotes were received from a total of three (3) different engineering consultants with sufficient qualifications and experience in the delivery of streetscape design projects. Upon review and analysis of the bids submitted, Town Staff recommends to proceed with retaining CIMA+ as the consultant for this project through a NSP. Their submission demonstrates technical competence, extensive experience in similar projects, thorough understanding of the project requirements, and a team consisting of professionals with the expertise and qualifications required for this project.

Legal Considerations

The RFP process with respect to this project did not yield any compliant bids. Pursuant to the Town's Procurement By-law No. 6404-22 and the Non-Standard Procurement Protocol, where an open competition process is conducted and no valid bids are received, Town staff can pursue deliverables through a Non-Standard Procurement process. However, when the procurement value is equal to or greater than $250,000,

Council approval is required to proceed with the award of such a Non-Standard Procurement. Consequently, although funding for this project has previously been approved, Council authorization is required to proceed.

Financial Implications

It is anticipated that the total estimated cost for the design phase of this project will be approximately $589,100 including unrecoverable taxes if the Town were to proceed with this contract award to CIMA+. If approved, this contract cost would be fully funded under capital project no. AM0332 which currently has $1,187,233 in approved budget authority as summarized in Table 1. There is sufficient budget authority available within this project to proceed with the proposed NSP.

Communications Considerations

The Town will inform the public of the information contained in this report by posting it to the Town's website. Town staff will distribute notice letters to residents and all affected parties prior to the commencement of any field work related to this project. An extensive Stakeholder Engagement and Communication Plan has been included as part of the project scope to ensure all relevant parties are consulted and involved in the streetscape design process. This includes multiple working group meetings, public information centres and open houses, and information sessions for the public throughout key milestones of the project. The Aurora Economic Development Corporation and its Downtown Action Team are supportive and will be engaged as part of the extensive engagement plan.

Staff will also leverage communication platforms such as Engage Aurora, the Town's website, and social media pages to communicate relevant project updates, information, and consultation touch points for stakeholders. Contact information for the Town's Project Manager will be made available on the Town's website so residents can reach out directly with their inquiries.

Climate Change Considerations

The development of the streetscape design provides opportunities for climate change considerations to be incorporated. Replacing the existing sanitary sewer improves its conveyance capacity, prolongs its service life, and prevents future issues such as main breaks and leaks. If left untreated, such occurrences can be costly to address if

frequent repairs are required. This project supports the Town's efforts to adapt to climate change by improving critical infrastructure.

Furthermore, the redesign of the Yonge Street corridor aims to improve pedestrian walkability, promote active transportation, and support public transit. The streetscape design intends to enhance the public realm and promote the use of alternate modes of transportation to reduce greenhouse gas emissions from vehicles. Additional considerations which can be incorporated into this project include exploring options to replace existing streetlights with more energy-efficient LED fixtures or smart lighting systems and conducting assessments to determine the feasibility of implementing electric vehicle charging stations at parking stalls.

Link to Strategic Plan

This proposed project supports the Strategic Plan goals of:

1. **Supporting an exceptional quality of life for all**; and
2. **Enabling a creative, diverse, and resilient economy**

By achieving the following supporting objectives:

Improve transportation, mobility, and connectivity: The streetscape design intends to optimize traffic flow and improve pedestrian facilities, walkways, active transportation features, and support public transit in the downtown promenade area.

Invest in sustainable infrastructure: The replacement of the existing sanitary sewer is an investment to maintain and improve infrastructure to support forecasted population growth. The infrastructure upgrades included in the project scope serves to improve its performance, prolong its service life, and prevent future issues related to breaks, leaks, and failure of the aging sewer pipes.

Strengthening the fabric of our community: This project will engage stakeholders and work with community partners to address the needs of local businesses and residents, as well as create new growth opportunities. The development of the Aurora downtown promenade and streetscape design aims to create a public realm to foster a strong sense of community and serve as a key community hub for the Town.

Promoting economic opportunities that facilitate the growth of Aurora as a desirable place to do business: The revitalization of the downtown promenade area aims to stimulate economic growth by supporting the local businesses in the area, attract more residents and visitors to the Yonge Street corridor, promote future development

opportunities, and attract businesses that provide employment opportunities for residents. This project will serve to enhance the area as a downtown hub for Aurora with the streetscape area located directly adjacent to the newly constructed Aurora Town Square.

Alternative(s) to the Recommendation

None.

Conclusions

Staff would like to proceed with a Non-Standard Procurement for the delivery of Capital Project No. AM0332 (Aurora Promenade Streetscape Detailed Design) as a result of receiving no bid submissions during the competitive procurement process. Town staff is seeking Council approval for a Non-Standard Procurement to be awarded to CIMA+ in the amount of $578,927.80 excluding taxes.

Attachments

Attachment No. 1 – Subject Area Map

Previous Reports

PDS21-137 – Promenade Streetscape Needs Assessment

Pre-submission Review

Agenda Management Team review on April 18, 2024

Approvals

Approved by Marco Ramunno, Director, Planning and Development Services

Approved by Doug Nadorozny, Chief Administrative Officer

Aurora Promenade Streetscape Subject Area

N

0 50 100 150 200

Metres

Aurora Promenade Downtown Streetscape Subject Area

AURORA You're in Good Company

Map created by the Town of Aurora Planning & Development Services Department, September 12, 2018. Base data provided by York Region and Aurora - GIS.