



The Corporation of the City of St. Catharines
CITY COUNCIL AGENDA
Regular, Monday, October 4, 2021
Council Chambers and Electronic Participation, 6:00 PM

This Meeting of Council will be held in person at Council Chambers and electronically for the Members of Council. Due to capacity limits due to the COVID-19 pandemic the public can only participate electronically.

This Meeting may be viewed online at www.stcatharines.ca/youtube

Public Comments: The public may submit comments regarding agenda matters to the Office of the City Clerk by contacting clerks@stcatharines.ca by Monday, October 4, 2021 before Noon. Comments submitted will be considered as public information and entered into public record.

Electronic Delegations: Those wishing to speak to an item on the agenda must complete the [City's Electronic Delegation Form](#) by Monday, October 4, 2021 before 9:00 a.m. and attend a test session with City staff on Monday, October 4, 2021 at 10:00 a.m.

His Worship Mayor Walter Sendzik takes the Chair and opens the meeting with a Land Acknowledgement

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1. Mayor's Report

2. Adoption of the Agenda

3. Adoption of the Minutes

3.1 Regular Council, Minutes of [September 27, 2021](#)
[Addenda]

4. Declarations of Interest

5. Motion to Move Consent Reports

Consent Reports are approved in one motion which approves all of the recommendations contained in each report. Prior to this motion, a councillor may request that one or more of the reports listed under Item 6 be moved to the list of Discussion Reports.

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6. Consent Reports

- 5 - 21 6.1 Legal and Clerks Services, Office of the City Clerk
Council Correspondence

7. Public Meetings

8. Presentations

9. Discussion Reports

- 22 - 203 9.1 Engineering, Facilities and Environmental Services, Engineering and
Construction
Financial Management Services, Corporate Asset Management
2021 Asset Management Plan for Core Assets
(*Staff presentation will precede discussion of the report*)
- 204 - 207 9.2 Office of the Chief Administrative Officer
Positioning the City for Success: Strategic Plan Alignment and
Connectivity with Corporate Priorities
(*Report republished Friday, October 1*)
[Addenda]
- 208 - 235 9.3 Office of the Chief Administrative Officer
Audit and Accountability Fund Intake 2 – Public Report
(*Presentation by Ernst & Young LLP will precede discussion of the
report*)
- 236 - 265 9.4 Community, Recreation and Culture Services, Programs and Cultural
Services
Private Watson Memorial Stakeholder Engagement Report
- A recording of the community consultation presentation given by
City staff regarding the Private Watson Memorial is available on
the City's YouTube Channel. [Click this link](#) to view the
presentation.

10. Motions

10.1 Tree-Planting Along MTO Property

Councillor Miller will present the following motion:

WHEREAS many residential properties in St. Catharines border MTO
property near highways; and

WHEREAS residents are responsible for graffiti removal and infractions
on their fences abutting MTO and highway land, despite this portion of
their property being practically inaccessible to the property owner; and

WHEREAS the City of St. Catharines is committed to mitigating climate change and improving the overall tree canopy in St. Catharines;

THEREFORE BE IT RESOLVED that City staff approach the MTO to endorse and materially support tree-planting along these rear fences to not only discourage graffiti tagging but also increase the number of trees within St. Catharines.

10.2 Disability Employment Awareness Month

Councillor Miller will present the following motion:

WHEREAS October is Disability Employment Awareness Month; and

WHEREAS approximately 22% of Canadians identify as having a disability; and

WHEREAS many of these disabilities are "invisible," for example: chronic pain, chronic fatigue, multiple sclerosis, deafness or hearing loss, neurological conditions, and many more; and

WHEREAS the City of St. Catharines has made great strides to improve accessibility for employees and others accessing our buildings and services;

THEREFORE BE IT RESOLVED that St. Catharines City Council recognizes Disability Employment Awareness Month and remains committed to improving accessibility for all City staff and persons who access City services and buildings; and

BE IT FURTHER RESOLVED that staff prepare a report exploring options for improving accessibility for those with invisible disabilities, including, but not limited to, providing closed captioning on livestreamed videos and identification options for those with invisible disabilities who are working at or otherwise accessing City facilities; and

BE IT FURTHER RESOLVED that staff consult with the Accessibility Advisory Committee in the creation of the report.

11. Call for Notices of Motion

12. Report Requests

13. Committee and Task Force Minutes

13.1 Minutes to Receive:

- Recreation Master Plan Advisory Committee, meeting of [September 7, 2021](#) (draft)
- Transportation Advisory Committee, meeting of [September 16, 2021](#) (draft)

[Addenda]

14. Closed Session

Council will meet in Closed Session for the following purpose(s):

14.1 Office of the Chief Administrative Officer

Positioning the City for Success: Organizational Alignment and Connectivity with Corporate Priorities

(Closed Session report pursuant to By-law 2021-124, Section H3.1(b), Personal matters about an identifiable individual, including municipal or local board employees)

[Addenda]

15. Motion Arising from Closed Session

16. By-laws

16.1 Reading of By-laws

[Addenda]

17. Adjournment



Corporate Report City Council

Report from: Legal and Clerks Services, Office of the City Clerk

Report Date: September 23, 2021

Meeting Date: October 4, 2021

Report Number: LCS-160-2021

File: 10.12.1

Subject: Council Correspondence

Strategic Pillar:

Recommendation

That Council receive and file the items listed within the report; and

That Council receive and file additional correspondence distributed for the meeting held October 4, 2021, which is available upon request.

Report

The Office of the City Clerk is submitting, for the approval of Council, correspondence received during the period of September 17, 2021 to September 23, 2021.

At the meeting of August 30, 2021, City Council approved a motion regarding "Comprehensive Marine Strategy." Attached as Sub-Item #2 are resolutions from the Town of Fort Erie and the City of Thorold endorsing Council's motion.

At the meeting of September 13, 2021, City Council approved a motion regarding "Provincial Nursing Shortage." Attached as Sub-Item #3 is a resolution from the Town of Fort Erie endorsing Council's motion.

Resolutions

1. Town of Fort Erie - re. Request the Provincial Government to Implement a Right of Passage along the Lake Erie Shoreline

Responses to Motions from St. Catharines City Council

2. Support for City Council's Motion – re. Comprehensive Marine Strategy (motion passed at Council Meeting of August 30, 2021)
3. Support for City Council's Motion – re. Provincial Nursing Shortage (motion passed at Council Meeting of September 13, 2021)

Correspondence

4. AMO Watchfile – September 23, 2021

Reports Requested by Council

5. Outstanding Reports List – updated September 23, 2021

Prepared by

Evan McGinty

Council and Committee Coordinator

Submitted and Approved by

Bonnie Nistico-Dunk

City Clerk



Community Services

Legislative Services

September 21, 2021

File #120203

Sent via email: amopresident@amo.on.ca / policy@amo.on.ca

Graydon Smith, President and Mayor
AMO
200 University Ave., Suite 801
Toronto, Ontario M5H 3C6

Dear Mr. Smith:

Re: Request the Provincial Government to Implement a Right of Passage along the Lake Erie Shoreline

The Municipal Council of the Town of Fort Erie at its meeting of September 20, 2021 passed the following resolution:

Whereas access along the Lake Erie Shoreline remains an important issue in the Town of Fort Erie; and

Whereas the Council for the Town of Fort Erie has previously requested that the Provincial Government to pass legislation permitting a right of passage along the Lake Erie shoreline, without success;

Now therefore be it resolved;

That: Council again requests the Premier of Ontario, The Honourable Doug Ford, to implement legislation that will provide individuals the right to pass peaceably along the Lake Erie shoreline and any other of the Great Lakes within 5 feet of the water's edge, respecting the rights of any private property owners across whose property the individuals may pass, and further

That: The Mayor is directed to send a letter to the Premier providing background on the matter and the rationale for this request, and further

.../2

Mailing Address: The Corporation of the Town of Fort Erie
1 Municipal Centre Drive, Fort Erie ON L2A 2S6
Office Hours 8:30 a.m. to 5:00 p.m. Phone: (905) 871-1600 FAX: (905) 871-4022

Web-site: www.forterie.ca

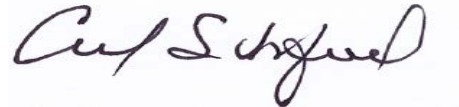
Graydon Smith, President and Mayor, AMO

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That: This Resolution be circulated to the Association of Municipalities of Ontario, the Region of Niagara, all municipalities in Niagara, the Members of Provincial Parliament in Niagara and the Members of Parliament in Niagara for their support.

Thank you for your attention to this matter.

Yours very truly,



Carol Schofield, Dipl.M.A.
Manager, Legislative Services/Clerk

cschofield@forterie.ca

CS:dlk

c.c. Niagara Region
 Local Area Municipalities
 All Members of Parliament
 All Members of Provincial ParliamentP



Community Services

Legislative Services

September 21, 2021

File #120203

Sent via email: premier@ontario.ca

The Honourable Doug Ford, Premier of Ontario
Room 281, Legislative Building, Queen's Park
Toronto, ON M7A 1A1

Honourable and Dear Sir:

Re: City of St. Catharines – Create a Comprehensive Marine Strategy

Please be advised the Municipal Council of the Town of Fort Erie at its meeting of September 20, 2021 received and supported correspondence from the City of St. Catharines dated September 3, 2021 requesting the Province of Ontario to signal their commitment to the importance of the marine sector by appointing or creating an Ontario Marine Strategy Secretariat position to lead the consultations and oversee the strategy.

Attached please find a copy of the City of St. Catharines correspondence dated September 3, 2021.

Thank you for your attention to this matter.

Yours very truly,

Carol Schofield, Dipl.M.A.
Manager, Legislative Services/Clerk

cschofield@forterie.ca

CS:dlk

Attach

c.c. Vic Fedeli, Minister of Economic Development, Job Creation and Trade vic.fedeli@pc.ola.org
Caroline Mulroney, Minister of Transportation caroline.mulroney@pc.ola.org
Kinga Surma, Minister of Infrastructure kinga.surmaco@pc.ola.org
Jennifer Stevens, MPP - St. Catharines JStevens-CO@ndp.on.ca
Jeff Burch, MPP - Niagara Centre JBurch-QP@ndp.on.ca
Wayne Gates, MPP - Niagara Falls wgates-co@ndp.on.ca
Sam Oosterhoff, MPP - Niagara West-Glanbrook sam.oosterhoff@pc.ola.org
Chris Bittle, MP - St. Catharines Chris.Bittle@parl.gc.ca
Vance Badaway, MP - Niagara Centre Vance.Badaway@parl.gc.ca
The Association of Ontario Municipalities (AMO) amo@amo.on.ca
Ontario's Big City Mayors info@ontariobigcitymayors.ca
Niagara Region
Local Area Municipalities

Mailing Address:

The Corporation of the Town of Fort Erie
1 Municipal Centre Drive, Fort Erie ON L2A 2S6

Office Hours 8:30 a.m. to 5:00 p.m. Phone: (905) 871-1600 FAX: (905) 871-4022

Web-site: www.forterie.ca

September 3, 2021

The Honourable Doug Ford, M.P.P.
Premier of Ontario
Legislative Building
Queen's Park
Toronto, ON M7A 1A1

Sent via email: premier@ontario.ca

**Re: Comprehensive Marine Strategy
Our File 35.31.99**

Dear Premier Ford,

At its meeting held on August 30, 2021, St. Catharines City Council approved the following motion:

“WHEREAS Canadians depend on our waterways for leisure, sustenance, and their livelihood and our marine sectors contribute approximately \$31.7 billion annually in gross domestic product and account for close to 300,000 jobs; and

WHEREAS the federal government has consulted widely with the provinces and territories, Indigenous peoples, industry, conservationists, and all Canadians in the development of the Blue Economy Strategy; and

WHEREAS Quebec, British Columbia, and the Atlantic provinces have achieved great success in the emerging marine sector economy, and to remain competitive Ontario must capitalize on the economic potential of its marine sector; and

WHEREAS the marine industry is vital to Ontario’s economy through the creation of jobs, increased supply chain efficiencies and resilience, and the ability to reduce greenhouse gas emissions and road congestions;

THEREFORE BE IT RESOLVED that St. Catharines City Council calls on the Government of Ontario to create a comprehensive Marine Strategy that will:

- Provide the Great Lakes with modern and competitive infrastructures, and
- Ensure efficient and ecosystem-friendly navigation of the Great Lakes, and
- Deliver sustainable development opportunities for maritime communities; and

BE IT FURTHER RESOLVED that St. Catharines City Council calls on the Government of Ontario to signal their commitment to the importance of the marine sector by appointing or creating an Ontario Marine Strategy Secretariat position to lead the consultations and oversee the strategy; and

BE IT FURTHER RESOLVED that a copy of this motion be forwarded to Premier Doug Ford; Vic Fedeli, Minister of Economic Development, Job Creation and Trade; Caroline Mulroney, Minister of Transportation; local MPPs; the Association of Ontario Municipalities (AMO); Ontario's Big City Mayors (formerly Large Urban Mayors Caucus of Ontario-LUMCO); the Niagara Region; all local area municipalities; MP Chris Bittle; MP Vance Badaway; and Kinga Surma, Minister of Infrastructure.

If you have any questions, please contact the Office of the City Clerk at extension 1524.



Bonnie Nistico-Dunk, City Clerk
Legal and Clerks Services, Office of the City Clerk
:em

cc: Vic Fedeli, Minister of Economic Development, Job Creation and Trade vic.fedeli@pc.ola.org
Caroline Mulroney, Minister of Transportation caroline.mulroney@pc.ola.org
Kinga Surma, Minister of Infrastructure kinga.surmaco@pc.ola.org
Jennifer Stevens, MPP - St. Catharines, JStevens-CO@ndp.on.ca
Jeff Burch, MPP - Niagara Centre, JBurch-QP@ndp.on.ca
Wayne Gates, MPP - Niagara Falls, wgates-co@ndp.on.ca
Sam Oosterhoff, MPP - Niagara West-Glanbrook, sam.oosterhoff@pc.ola.org
Chris Bittle, MP - St. Catharines Chris.Bittle@parl.gc.ca
Vance Badaway, MP - Niagara Centre Vance.Badawey@parl.gc.ca
The Association of Ontario Municipalities (AMO), amo@amo.on.ca
Ontario's Big City Mayors, info@ontariobigcitymayors.ca
The Niagara Region
Local area municipalities
Brian York, Director of Economic Development and Government Relations
Melissa Wenzler, Government Relations Advisor, City of St. Catharines

Received by
September 20, 2021
Council

Dear Premier Ford:

Please be advised Thorold City Council, at its September 21, 2021 meeting, adopted the following resolution:

Moved By: Councillor Sentance
Seconded By: Councillor Dekker

THAT Thorold City Council call on the Government of Ontario to create a comprehensive marine strategy that will:

1. provide the Great Lakes with modern and competitive infrastructure; and
2. ensure efficient and ecosystem-friendly navigation of the Great Lakes; and
3. deliver sustainable development opportunities for maritime communities; and

BE IT FURTHER RESOLVED THAT City of Thorold Council call on the Government of Ontario to signal their commitment to the importance of the marine sector by appointing or creating an Ontario Marine Strategy Secretariat position to lead the consultations and oversee the strategy.

Result: CARRIED



Community Services

Legislative Services

September 21, 2021

File #120203

Sent via email: premier@ontario.ca

The Honourable Doug Ford, Premier of Ontario
Room 281, Legislative Building, Queen's Park
Toronto, ON M7A 1A1

Honourable and Dear Sir:

Re: City of St. Catharines – Address Nursing Shortage

Please be advised the Municipal Council of the Town of Fort Erie at its meeting of September 20, 2021 received and supported correspondence from the City of St. Catharines dated September 15, 2021 requesting the Province of Ontario to immediately identify and implement solutions to this crisis that will allow the resumption of in-person learning for these children, possibly including but not limited to greater incentives to retain qualified nurses and the allowance of trained caregivers to fill these roles.

Attached please find a copy of the City of St. Catharines correspondence dated September 15, 2021.

Thank you for your attention to this matter.

Yours very truly,

Carol Schofield, Dipl.M.A.
Manager, Legislative Services/Clerk

cschofield@forterie.ca

CS:dlk

Attach

c.c. The Honourable Christine Elliott, Minister of Health christine.elliott@ontario.ca
Jennifer Stevens, MPP - St. Catharines JStevens-CO@ndp.on.ca
Jeff Burch, MPP - Niagara Centre JBurch-QP@ndp.on.ca
Wayne Gates, MPP - Niagara Falls wgates-co@ndp.on.ca
Sam Oosterhoff, MPP - Niagara West-Glanbrook sam.oosterhoff@pc.ola.org
The Association of Ontario Municipalities (AMO) amo@amo.on.ca
Niagara Region
Local area municipalities

Mailing Address:

The Corporation of the Town of Fort Erie
1 Municipal Centre Drive, Fort Erie ON L2A 2S6

Office Hours 8:30 a.m. to 5:00 p.m. Phone: (905) 871-1600 FAX: (905) 871-4022

Web-site: www.forterie.ca

September 15, 2021

The Honourable Doug Ford, M.P.P.
Premier of Ontario
Legislative Building
Queen's Park
Toronto, ON M7A 1A1

Sent via email: premier@ontario.ca

**Re: Provincial Nursing Shortage
Our File 35.31.99**

Dear Premier Ford,

At its meeting held on September 13, 2021, St. Catharines City Council approved the following motion:

“WHEREAS a nursing shortage in the Province of Ontario is currently ongoing due to burnout from the COVID-19 pandemic; and

WHEREAS this nursing shortage has led to a situation where many medically fragile children who require one-on-one care from a nurse are unable to find one; and

WHEREAS this situation will lead to these children being unable to attend school this year; and

WHEREAS all available research indicates that in-person learning is superior to online virtual learning in the vast majority of cases;

THEREFORE BE IT RESOLVED that the City of St. Catharines call upon the Government of Ontario to immediately identify and implement solutions to this crisis that will allow the resumption of in-person learning for these children, possibly including but not limited to greater incentives to retain qualified nurses and the allowance of trained caregivers to fill these roles; and

BE IT FURTHER RESOLVED that this resolution be forwarded to the Association of Municipalities of Ontario, Premier Doug Ford, Health Minister Christine Elliott, MPP Jennie Stevens, MPP Sam Oosterhoff, MPP Wayne Gates, MPP Jeff Burch, the local area municipalities and the Niagara Region.”

If you have any questions, please contact the Office of the City Clerk at extension 1524.



Bonnie Nistico-Dunk, City Clerk
Legal and Clerks Services, Office of the City Clerk
:em

cc: Hon. Christine Elliott, Minister of Health, christine.elliott@ontario.ca
Jennifer Stevens, MPP - St. Catharines, JStevens-CO@ndp.on.ca
Jeff Burch, MPP - Niagara Centre, JBurch-QP@ndp.on.ca
Wayne Gates, MPP - Niagara Falls, wgates-co@ndp.on.ca
Sam Oosterhoff, MPP - Niagara West-Glanbrook, sam.oosterhoff@pc.ola.org
The Association of Ontario Municipalities (AMO), amo@amo.on.ca
The Niagara Region
Local area municipalities
Brian York, Director of Economic Development and Government Relations
Melissa Wenzler, Government Relations Advisor, City of St. Catharines

Received by
September 20, 2021
Council



September 23, 2021

In This Issue

- Municipal Modernization Program open for applications.
- Municipal Cyber Security Forum.
- Accessibility and year-end deadlines.
- Register today: Virtual Risk Management Symposium.
- Spaces remain for in demand Human Rights & Navigating Conflict Relations training.
- Energy reporting deadline extended to October 15.
- Canoe procurement webinar: Supply chain update.
- LED upgrades save real municipal dollars!
- Come on a treasure hunt to find energy savings!
- Get fleets ready for winter with new tires.
- Join the virtual Waterloo Innovation Summit on September 28.
- Careers and RFP: Niagara Region, MEDJCT, Quinte West and Goderich.

Provincial Matters

Municipalities can apply for intake three of the Municipal Modernization Program until October 19, 2021. Funding will support digital modernization, service integration, streamlined development approvals and shared services/alternative delivery models. Visit www.Ontario.ca/getfunding for complete details. Webinars to assist with applications will be announced shortly.

Infrastructure Ontario launched a new competitive procurement process to support accelerated broadband expansion in the province. For more information on the Request for Qualifications (RFQ) and Ontario Connects program, click [here](#).

Eye on Events

On October 14, AMO and the Municipal Information Systems Association of Ontario are co-hosting our second virtual Municipal Cyber Security Forum. Learn from leading cyber experts about the shared responsibility of cyber security and how you can build cyber security resiliency across your municipality and organization. \$50 plus HST. Register today!

The December 31, 2021 deadline is quickly approaching for the *Accessibility for Ontarians with Disability Act*. Is your municipality compliant? On October 7 at 12.30 pm, join AMO and eSolutionsGroup to learn about year-end requirements and what help is available to meet the deadline.

The Virtual Risk Management Symposium will feature discussions on emergency preparedness, tools, strategies, and financial planning to assist municipalities as they plan for and manage our new climate realities. The entire Symposium will be recorded and available for 30 days to all registrants.

AMO has developed training to support its members in some of the most sensitive and current issues including human rights and equity and developing skills in navigating conflict relationships. A few spaces are still available for fall sessions.

LAS

Did you miss the O.Reg. 507/18 annual energy reporting deadline? The Ministry of Energy will accept 2019 consumption data up to October 15. Please email BPSsupport@ontario.ca if you have any questions about the regulation.

The pandemic has impacted supply chains around the world, and these impacts are being felt by municipalities when procuring supplies and equipment. Join representatives from Canoe Procurement Group and some of our key vendors on October 6 at 10am to learn what to expect as you prep your 2022 budgets. Register here.

Older lighting technology accounts for appx. 20 - 30% of energy cost in facilities. With over 65 LED upgrade projects, municipalities are now collectively saving over \$1 million annually through LAS' Facility Lighting Service. Contact Christian Tham for a free proposal just in time for your 2022 budget.

LAS Energy Training workshops and Treasure Hunt have found significant energy savings opportunities. With more than 300 attendees over 54 workshops, many have found savings in their own buildings worth tens of thousands dollars. Contact Christian Tham to book your custom workshop this fall and start saving money.

Get your fleets ready for winter with new tires through the Canoe Procurement Group. Simply contact one of our four vendors (Michelin, Goodyear, Kal Tire, Tirecraft) and request the Canoe pricing. Got questions? Contact Tanner today.

Municipal Wire*

The Waterloo Innovation Summit is back on September 28, 9 a.m. to lead a 90-minute virtual discussion with business and policy leaders on the imperative to recalibrate policies and models in response to dramatically shifting innovation ecosystems. Hosted by the University of Waterloo. Register today.

Careers

Associate Director, Traffic Systems & Operations, & Associate Director, Transportation Operations - Niagara Region. The Associate Director Traffic Systems & Operations is responsible for the overall management of the Traffic Systems and

Operations section. The Associate Director Transportation Operations is responsible for the overall management of the Transportation Operations unit. Apply online by visiting our 'Careers' page at www.niagararegion.ca.

Senior Program Advisor - Ministry of Economic Development, Job Creation and Trade. Are you interested in supporting the Province's investment attraction efforts and promoting economic development in Ontario by working with global investors considering Ontario for their next expansion? If so, the Site Selection Unit at MEDJCT is currently hiring 3 Senior Program Advisors. Interested applicants are invited to apply [here](#).

Director of Community Services and Strategic Partnerships - City of Quinte West. Reporting to the Chief Administrative Officer (CAO), the position is responsible for the efficient and effective planning, administration, maintenance and operation of all services, activities, programs and facilities in the City of Quinte West. Qualified applicants are invited to apply [online](#) by October 3, 2021.

Director of Corporate Services - City of Quinte West. Reporting to the CAO, the position is responsible to the CAO and Council on all statutory, operational and custodial matters affecting the corporate services of the municipality. Qualified applicants are invited to apply [online](#) by October 3, 2021.

Director of Financial Services - City of Quinte West. Reporting to the Chief Administrative Officer (CAO), the position is responsible for performing the statutory duties of the Treasurer for the City of Quinte West and for providing advice on fiscal, financial and accounting matters to the CAO and Council. Qualified applicants are invited to apply [online](#) by October 3, 2021.

RFP - Affordable/Attainable Housing Community Improvement Plan - Town of Goderich. The Town of Goderich is seeking the services of a qualified consulting team with experience in Community Improvement planning and project facilitation to undertake the development of a Community Improvement Plan. All proposals must be submitted electronically in PDF format to afisher@goderich.ca and copied to apiskorski@goderich.ca. Proposal Closing October 8, 2021.

About AMO

AMO is a non-profit organization representing almost all of Ontario's 444 municipal governments. AMO supports strong and effective municipal government in Ontario and promotes the value of municipal government as a vital and essential component of Ontario's and Canada's political system. Follow [@AMOPolicy](#) on Twitter!

AMO Contacts

AMO Watch File Tel: 416.971.9856
[Conferences/Events](#)

Policy and Funding Programs

LAS Local Authority Services

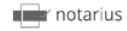
MEPCO Municipal Employer Pension Centre of Ontario

ONE Investment

Media Inquiries Tel: 416.729.5425

Municipal Wire, Career/Employment and Council Resolution Distributions

AMO's Partners



*Disclaimer: The Association of Municipalities of Ontario (AMO) is unable to provide any warranty regarding the accuracy or completeness of third-party submissions. Distribution of these items does not imply an endorsement of the views, information or services mentioned.

City Council Outstanding Reports List

Sub-Item 5

Reports by Strategic Pillar

Cultural	1	Economic	8
Environmental	3	Social	13

Reports Related to Strategic Plan 25

Reports Unrelated to Strategic Plan 2

Updated: September 23, 2021

Relation to Strategic Plan	ORL #	Requested	Requested by	Request	Lead Dept.	Expected Return Date	Comments
Economic	2019-22	15-Jul-19	Townsend	Amend sign by-law to permit digital signage on City-owned properties and buildings, including the appropriateness and ability to include third-party advertising as part of digital signage on City-owned properties.	PBS / COMMS	Q1 2022	Appeal Information Report - Application for Sign By-law Variance; 142 St. Paul Street; Owner: 2400795 Ontario Inc. was deferred 8-12-19 until ORL #2019-22 is presented to Council. Requested return Q4 2019
Economic	2020-11	10-Aug-20	Porter	Support programs for musicians and live music venues, including but not limited to property tax relief or rebate programs for live performance venues	CRCS / FMS	September 27, 2021	At the request of Councillor Porter, this will now be a memo
Economic	2021-11	10-May-21	Social Pillar	That the diverse supplier policy proposal from the Anti-Racism Advisory Committee, as amended, be sent to City Council to request a report back by the end of Q4 2021 from City staff on the development of a Diverse Supplier Policy.	FMS	Q4 2021	Requested return date of end of Q4 2021
Economic	2021-14	10-May-21	Surplus Lands Dev TF	That staff be directed to prepare a report regarding 2 Facer Street, including condition of the facility and the potential to declare the property surplus with consideration to not displacing the existing tenant.	FMS / EFES	Q1 2022	
Economic	2021-15	14-Jun-21	Miller	Report back on the City's current remuneration formula for members of Council, including how and when the formula was developed, as well as the remuneration for Councillors at comparator municipalities.	FMS	Q1 2022	Include information on reimbursement for committee chairs and administrative supports for Councillors at other municipalities
Environmental	2020-18	16-Nov-20	Townsend / Sorrento	That staff be directed to prepare a report on the costs associated with beautifying the Bunting Road corridor between Scott Street and the Garden City Skyway to include tree planting, grassed boulevards, floral, etc.	EFES	Q4 2021	From Nov. 18, 2020 GC meeting (formerly BSC) - That \$50,000 for a visioning or master streetscape plan to recommend improvements to the Bunting Road corridor be included in the Draft 2022 Operating Budget
Environmental	2020-31	22-Dec-20	Siscoe / Porter	Report back on opportunities to improve the stormwater system in the city.	EFES	Q4 2021	Staff will provide a memo to Council. Anticipated return date Fall 2021
Social	2019-29	09-Sep-19	Littleton	Report back on the existing street naming process with ways to include more public engagement, perhaps similar to the park naming process	PBS	Q4 2021	
Social	2020-10	27-Jul-20	Porter	Strategy and options for the relocation of the Private Watson statue	CRCS	October 2021	See Council Minutes from July 27, 2020 for list of groups to be consulted for the report
Social	2020-14	19-Oct-20	Kushner	The approval of a Cannabis grow-up at the corner of St. Paul Street West and Vansickle Road	PBS	October 2021	Include information on roll of Canada Health, zoning and notification of ward councillors. Will be a memo to Council.
Social	2021-02	18-Jan-21	Miller	Repeal / review and update the City's loitering by-laws and report back to Council	MW	Q4 2021	Staff to provide a memo to Council in August or September 2021 noting issue will be included in Pilot study with Gateway of Niagara (Deputy CAO to speak to Gateway)
Social	2021-04	18-Jan-21	Social Pillar	Produce a report on amending Facility and Design Standards (FADS) in the following sections: Section 4.2.7 Universal Washrooms and Section 4.5.2 Outdoor Recreational Facilities – Playground	CRCS / EFES	Q4 2021	See Council Minutes of January 18, 2021 for what is to be included in the report
Social	2021-12	10-May-21	Social Pillar	Amend the current by-law for the erection of signs and other advertising devices to state that no person shall display or cause to be displayed a sign that bears a hate message or a logo, crest or graphic that would convey such a message	PBS / LCS	Q4 2021	
Social	2021-13	10-May-21	Social Pillar	That staff provide a report by Q4 2021 on the options for improving accessibility of the Carousel to make it more inclusive	CRCS / EFES	Q4 2021	
Social	2021-18	9-Aug-21	Social Pillar	Amend By-law 2007-295 (a By-law to address Public Nuisances) under Section 2 "Prohibitions" to add: "No person shall, in a public place, unnecessarily interfere with another person's use and enjoyment of the Public Place by using abusive or insulting language as a personal invective."	LCS	Q1 2022	Staff report to also include information on adding "aggressive behaviour" to the Public Nuisances by-law
Social	2021-19	30-Aug-21	Phillips	That staff be directed to prepare a report on the possibility of capturing grey water from municipal facilities, such as splash pads and the St. Catharines Kiwanis Aquatics Centre, into cisterns in order to irrigate municipal sports fields and gardens as well as hanging baskets and planters.	EFES / PBS	2022	In the report include information on the timing, locations and costs associated with capturing grey water.
None	2019-47	16-Dec-19	Miller / Mayor Sendzik	That the request for funds to be used to record in-camera meetings be referred to 2020 for a report including the upgrading of screening services for all meetings (open and closed sessions).	LCS		

Relation to Strategic Plan	ORL #	Requested	Requested by	Request	Lead Dept.	Expected Return Date	Comments
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Follow Up Reports

Relation to Strategic Plan	ORL #	Requested	Requested by	Request	Lead Dept.	Expected Return Date	Comments
Economic	2020-16	09-Nov-16	Garcia	That staff report back in 2021 on remediation costs for applications that are a minimum of 5% of total past and future project costs.	PBS	Q4 2021	Follow up report to PBS-154-2020. See General Committee minutes of November 9, 2020
Economic	2020-17	09-Nov-16	Mayor Sendzik	That Council bring back the Accessory Dwelling Unit Program in 2022 to come back as part of an update on the overall CIP program annual report.	PBS	Q4 2021	Follow up report to PBS-154-2020. See General Committee minutes of November 9, 2020
Economic	2021-10	10-May-21	Siscoe	That staff report back on removing the owner occupant requirement for rural properties	PBS	October 2021	Follow up report to PBS-029-2021. See Council Minutes of May 10, 2021. Will be a memo to Council.
Environmental	2021-16	28-Jun-21	Siscoe	Report back in Q4 2021 on the Ontario Street Secondary Plan launch including scope, preliminary workplan, public engagement strategy, and study partnership options	PBS	Q4 2021	
Social	2020-07	24-Feb-20	Porter	Revised Graffiti Program: Consult with the community, the relevant cultural committees and downtown stakeholder groups to modernize the graffiti program and by-law by 2021.	PBS	Q1 2022	Follow up report. Initial report (PBS-010-2020) approved February 10, 2020
Social	2020-10	26-Apr-21	Phillips	Update report on the City's Beach Strategy	CAO	Q4 2021	Follow up report. Initial report (CAO-058-2021) approved April 26, 2021. See minutes of April 26, 2021 Council Meeting for information on what is to be included in the report
None	2021-01	18-Jan-21	Social Pillar / Siscoe	That staff be directed to prepare a report on the current protections in place to deal with harassment directed at Mayor and members of Council, and the resources it would require to provide further support to Mayor and members of Council who are subjected to harassment, intimidation and threats.	LCS	Q4 2021	Report Request part of motion arising from Integrity Commissioner report from January 18, 2021. See Council Agenda Item 7.1. Report to go to Equity and Inclusion Committee for feedback prior to going to Council.

Reports Affected by COVID-19

Relation to Strategic Plan	ORL #	Requested	Requested by	Request	Lead Dept.	Expected Return Date	Comments
Social	2019-12	15-Apr-19	Porter	Review of Citizen Appointments to Boards and Committees Policy	LCS	2021	Report was postponed due to COVID-19. See Council Minutes of April 15, 2019, Item 8.2, for original motion.
Social	2019-23	15-Jul-19	Littleton	Opportunities and strategies for the City to support neighbourhood associations and neighbourhood-based community groups, including best practices and information gathered from the forum	CRCS	TBD	Staff report will come forward following the neighbourhood association forum. Forum was scheduled for March 28, 2020 but was postponed to a later date due to the COVID-19 pandemic
Cultural	2020-15	19-Oct-20	Littleton / Siscoe / Harris	Report back on excluding 101 Oakdale Avenue, 25 Duke Street and 160, 168, 174, 176 St. Paul Street from the register of non-designated cultural heritage properties. Report to include update on the request for the property owners of 101 Oakdale Avenue and 25 Duke Street to attend a Heritage Committee meeting about their request to be excluded. Report to include update on correspondence from 160, 168, 174, 176 St. Paul Street requesting exclusion from the register.	PBS	Q4 2021 / 2022	Follow-up report to PBS-111-2020. See General Committee minutes from October 19, 2020. Due to the effects of the COVID-19 pandemic on downtown businesses, staff will report back to Council once the downtown economic climate strengthens. Staff will report back on 25 Duke Street upon completion of renovations at the property



Corporate Report City Council

Report from: Engineering, Facilities and Environmental Services, Engineering and Construction (EFES) and Financial Management Services (FMS), Corporate Asset Management

Report Date: September 7, 2021

Meeting Date: September 22, 2021

Report Number: EFES/FMS-146-2021

File: 68.81.99 & 10.7.10

Subject: 2021 Asset Management Plan for Core Assets

Strategic Pillar:

This report aligns with the following St. Catharines Strategic Plan pillars: economic, social, environmental, and cultural.



Recommendation

That Report EFES/FMS-146-2021, regarding the 2021 Asset Management Plan, be referred to City Council for consideration of the Staff Recommendations at the Council meeting of October 4, 2021

Staff Recommendation

That Council endorse the 2021 Asset Management Plan, attached as Appendix 1, and

That Council continues to support the monitoring and improvement initiatives identified in the Asset Management Plan that will continue to strengthen the City's corporate asset management practices.

Summary

The 2021 Asset Management Plan for the City's core assets (AMP) valued at more than \$5 billion is a strategic guide that supports asset related activities.

The AMP provides a description of City's core assets and the services they support, key performance indicators, and costs to continue to provide services into the future.

The AMP identifies a funding deficit in the tax expenditures required to maintain infrastructure in its current state, largely due to significant infrastructure backlogs. For these tax supported services, the City will need to either reduce service offerings or increase funding to close the funding gap.

The AMP for the self-supported services reflects the impact of the increased funding that was incorporated into the 2019 Water Wastewater Financial Plan. While current funding supports the current service levels, moving forward, further increases in targeted service levels for drinking water and wastewater services may require additional funding.

The AMP for the City's core assets satisfies the Provincial Regulatory requirements (O. Reg. 588/17) due before July 1, 2022. In the upcoming years, AMPs will be prepared for the City's other assets, in compliance with the other phased requirements of O. Reg 588/17.

The AMP also identifies areas for continued improvement in asset management practices and planning that will support making the best possible decisions regarding infrastructure. Staff will continue to work collaboratively to develop long-term financial sustainability strategies that balance service levels, costs, and risks.

Relationship to Strategic Plan

The AMP is a high-level strategic document and, as such, it is aligned with and also supports each pillar of the Strategic Plan. The AMP is a foundational document, to assist the City in creating long-term strategies to chart a course that ensures the City of St. Catharines is a dynamic, innovative, sustainable, and livable community.

Specifically, the recommendation of this report supports the Economic Prosperity pillar within the Strategic Plan as it supports the following key work;

1.1 Develop a Financial Plan as an overarching guiding document that informs all financial decisions and investments.

1.2 Develop a 10-Year Capital Infrastructure Plan that includes all major investments to address City needs, priorities and growth.

Background

Ontario has focused on municipal asset management planning since 2012 when it introduced Building Together: Guide for Municipal Asset Management Plans.

The City developed its first asset management plan in 2013.

While many municipalities in Ontario developed asset management plans, significant differences exist between the completeness, detail, methodology and assumptions municipalities use to develop their current plans. In December 2017, the

province introduced a regulation to guide municipal asset management planning. Provincial Regulation 588/17: Asset Management Planning for Municipal Infrastructure Regulation (O. Reg. 588/17) <https://www.ontario.ca/laws/regulation/r17588>, made under the *Infrastructure for Jobs and Prosperity Act, 2015*, and it came into force on January 1, 2018. O. Reg. 588/17 sets out legislated asset management requirements and reporting deadlines for municipalities which are phased in over four stages. It has since been amended on March 15, 2021 to extend regulatory timelines for phases 2, 3 and 4 by one year. The amended phased schedule is shown below.

Phased schedule

July 1, 2019: Date for municipalities to have a finalized strategic asset management policy that promotes best practices and links asset management planning with budgeting, operations, maintenance, and other municipal planning activities.

July 1, 2022: Date for municipalities to have an approved asset management plan for core assets (roads, bridges and culverts, water, wastewater, and stormwater management systems) that identifies current levels of service and the cost of maintaining those levels of service.

July 1, 2024: Date for municipalities to have an approved asset management plan for all municipal infrastructure assets that identifies current levels of service and the cost of maintaining those levels of service.

July 1, 2025: Date for municipalities to have an approved asset management plan for all municipal infrastructure assets that builds upon the requirements set out in 2024. This includes an identification of proposed levels of service, what activities will be required to meet proposed levels of service, and a strategy to fund these activities.

The City completed the first stage with the adoption a [Strategic Asset Management Policy](#) on April 10, 2019.

On April 8, 2020, GM Blueplan Engineering Limited (GMBP) was retained to develop a corporate asset management plan (AMP) (2020 by-law No. 2020-42, as amended), in order to meet the requirements set out in O. Reg. 588/17 for core assets and for the subsequent development of an asset management plan for the remaining assets identified in the RFP.

The adoption of this AMP will meet the regulatory requirements for Core assets.

In order to further the City's plans to incorporate climate change with Council's endorsement, an application was made for a grant opportunity from the Federation of Canadian Municipalities' Municipal Asset Management Program for Enhanced Climate Change Assessment in conjunction with the Consulting Services for a Corporate Asset Management Plan (EFES-100-2020)

Report

The City owns a wide variety of assets that support the multiple services the City provides. Many of these services that are critical to the people of St. Catharines, rely on well-planned and well-maintained infrastructure.

O. Reg. 588/17 sets out legislated asset management requirements and reporting deadlines for municipalities. In March 2021, the province extended the reporting timelines by one year to assist with challenges many municipalities were having in meeting the deadlines while responding to the COVID 19 Pandemic.

Under the guidance of GMBP the City has worked over the past 16 months to improve asset management planning in-line with industry best practices. GMBP has produced this AMP in consultation with staff. Adoption of this report will achieve compliance with Phase 2 of the regulation ahead of the current July 1, 2022 requirements for core assets. O. Reg. 588/17 requires that this AMP must be approved by a resolution passed by Council.

The current AMP encompasses the core assets defined in O.Reg. 588/17 (roads, bridges and culverts, water, wastewater, and stormwater management assets) as well as additional transportation assets such as sidewalks and trails that support active transportation needs which help support complete streets.

2021 Asset Management Plan - The Purpose of the Plan

Asset management planning is a comprehensive process ensuring delivery of services from infrastructure is sustainable. This AMP details information about infrastructure assets with actions required to provide current levels of service while outlining associated risks. The plan defines the services provided, how the services are provided and what funds are required over the 10 and 25-year planning period.

The 2021 plan has been focused around the following service areas which include the core assets identified in the Regulation.

Service	Supporting assets
Transportation: Provide a safe, efficient, accessible, and sustainable transportation system for all required uses and modes of transportation in accordance with regulatory requirements and expectations of the community	Core assets: Roads including on road cycling facilities; Other Assets: Road signage, streetlights and signals, guiderails. Sidewalks, trails, and pathways identified as active transportation routes
Structures: Connect transportation routes to provide a safe, efficient, accessible, and sustainable transportation system for all required uses and modes of transportation in accordance with regulatory requirements and expectations of the community	Core assets: Bridges and culverts (greater than 3m in span) Other Assets: Smaller span culverts/bridges over watercourses

Service (continued)	Supporting assets
Drinking water: Provide a sustainable and reliable supply of safe, high quality drinking water in accordance with regulatory requirements.	Core Assets: watermains including watermains and services and other associated components. Water metres, one booster pump station and one bulk water facility (water lines to service City owned facilities are in the Building and Facilities service)
Wastewater: Provide sustainable and reliable collection of wastewater that avoids basement flooding and environmental impacts.	Core Assets: Combined and separated sewers, forcemains and services and other associated components. CSO facilities and one pump station. (drains to service City owned facilities are in the Building and Facilities service)
Stormwater Management: Provide effective, sustainable, and reliable drainage of stormwater to both protect and benefit the community and environment.	Core assets: storm sewers and open channels along with Catch basins, outfall and other appurtenances. Oil grit separators and other treatment and or storage control devises such as wetlands and ponds.

The above infrastructure assets have an estimated replacement cost of \$5.02 billion and significant total renewal needs over the next 10 years.

This AMP describes

- the City's core assets and the services they support,
- the strategies used to manage these assets
- current level of service (condition of the assets)
- how much it will cost to continue to provide services into the future.

For each service area the AMP provides information on state of local infrastructure, levels of service, lifecycle management strategy, risks, and data confidence.

State of Local Infrastructure

From existing inventories, assets were grouped into the services they provide. The State of the Local Infrastructure provides a summary of what the City owns, the condition of the assets and what they are worth. The plan also documents the information on data used and the assumptions made to fill gaps in the data. As the city continues to improve data the plan will improve over time.

Levels of Service

To establish the current level of service a number of qualitative and technical metrics were developed with some key performance indicators (KPI) to track going

forward which will help define how the services are currently being delivered. Current service levels and performance measures, will establish a benchmark for setting targeted performance levels that are appropriate and financially sustainable when required under phase 4 of the legislation by July 1, 2025.

The City's anticipated tax supported funding levels are insufficient to continue to provide existing levels of service. The main service risks of the anticipated annual funding for tax supported services are:

- Condition of assets will gradually deteriorate over time
- Failure of assets could cause property damage and risks to health and safety
- Some assets may deteriorate to a point of being unsafe and need to be closed and/or removed from service
- Valuable connections throughout the City that connect communities and support active transportation and the movement of goods and services could be lost

The City's rate supported funding levels were increased through the adoption of the 2019 Water, Wastewater Financial Plan. The annual increase in funding included in the plan was intended to increase service levels for drinking water and wastewater. The AMP reflects how these funding increases above historic levels are raising service levels for the City's customers.

Lifecycle Management Strategy

The AMP looks at the lifecycle activities that need to be undertaken to maintain the current levels of service. The forecast lifecycle costs necessary to provide the services covered by this AMP includes operations and maintenance, renewal, expansion, and disposal of assets.

Under the current funding model water and wastewater services are funded primarily through the rate supported budget. The structures, transportation and the stormwater management services are currently funded through the tax supported budget. As such the analysis for lifecycle management and financial strategy is split into these two major service areas.

The forecast required expenditures to maintain current levels of service for the rate-based assets (water and wastewater) between 2022-2032 is estimated at an equivalent annual cost of \$27 million. The forecast required expenditures to maintain current levels of service for the tax-based assets (storm, transportation and structures) between 2022-2032 is estimated at an average annual cost of \$42 million.

Data Confidence

The plan was completed with the best available data at the time. The AMP documents the information on data sources and the assumptions made to fill gaps in the data. This is of particular importance for the underground infrastructure which cannot be easily visually inspected. The City has a number of ongoing initiatives to enhance condition data and

capacity needs. This improved data will continue to be incorporated over time to improve the reliability of the data.

Expansion of Services

The demand for new services is often created by:

- Population increase and changing demographics
- Lifestyle and shifting trends
- Climate Change/ Extreme weather events
- Community expectations

Population growth forecasts, historical budgets and works identified in the recently completed Transportation Master Plan and Development Charges Study were used to identify expansions to the networks. As master servicing studies are completed, and the public is further engaged these numbers will be further refined.

Demand for new services will be managed through a combination of managing existing assets, upgrading of existing assets and providing new assets to meet demand and service expectations. Demand management practices can include non-asset solutions, insuring against risks and managing failures. Opportunities for demand management will be further developed in future iterations of the AMP as more information becomes available.

Financial Summary

Anticipated funding for tax supported services is derived from past budget information and 2022-2025 Capital Forecast. For the rate-based services all forecasts are aligned with the 10-year Water/Wastewater Financial Plan, and beyond 2029, amounts are held at 2029 levels. Figure 1 below shows that for the tax supported services the average anticipated funding is significantly below the forecast cost to maintain the current average condition. Also, over the next twenty-five years funding would need to grow by 8.09% annually to meet the cumulative tax supported expenditure needs.

Of note, the anticipated rate-based investments identified in the recent 10-year Water and Wastewater Financial Plan, which the City should continue to implement, are sufficient to maintain the current condition and forecast a slight improvement to service, however are still below the optimal renewals identified.

Figure 1: Forecasted Required Funding and anticipated Funding (in \$Millions)*

Major Service Area	2022 - 2032 Average Annual			25 year cumulative	
	Forecast costs for all identified activities	Forecast cost to maintain current average condition	Average Anticipated Funding	Cumulative Expenditure Need	Required Cumulative Funding on top of anticipated funding to maintain current average condition
Rate Supported (water / wastewater)	53	27	31.0	869	0.34% (2030 -2046)
Tax Supported (stormwater / transportation /structures)	52	42	21.2	1,152	8.09%

*Values are in current dollars and do not include inflation

The reality is that the current infrastructure backlogs identified in the AMP were built over many decades. Likewise, the backlog and current gap will need to be addressed over a longer timeframe. Informed decision making depends on emphasizing the consequences of budgets on the service levels provided and risks.

As shown in Figure 1, the City currently does not allocate enough funding to sustain these tax supported services at the existing levels of service and to provide all new services being sought.

There are also different funding gaps for the individual service areas comprising each of these two major service areas. Reallocation of a portion of the total anticipated funding between different asset classes will result in adjusted levels of service and different funding gaps for the various service areas. In the short-term funding can be directed to critical assets with as focus on minimizing risks.

The City will also continue to seek funding solutions to close the infrastructure gap. Actions include lobbying higher levels of government for financial support and accessing grants. The City can also adopt funding strategies that fully utilize the longer debt terms available on long life infrastructure and evaluate options to switch grant funding to debt funding within the rate supported services.

Implementing and integrating asset management practices into operations and maintenance with a focus on preventative maintenance that extends the life of the assets and lower lifecycle costs can assist in addressing the funding gap.

In the long-term stakeholders should be engaged to determine the desired levels of service into the future and the willingness to pay for those services.

Managing Risks

Risk is generally considered to be the multiple of the consequence of an asset failing and the likelihood that the event will occur. Through the development of the AMP, in collaboration with the City's subject matter experts and based on best practices for risk, a risk management framework was developed for each of the asset categories. The intent is to minimize exposure to risk and focus limited funding on existing assets that have high financial, social and/or environmental consequences of failure. Where possible, existing data was used at the asset level to establish a consequence of failure score using a triple bottom line analysis approach to evaluate:

- Social impacts of asset failure, including impacts to customers and Businesses
- Environmental impacts of asset failure
- Economic impacts of failure including the cost to remediate the situation.

Anticipated Annual Funding levels are insufficient to renew all works identified in the medium term. The consequences are increase risks which generally include:

- General deterioration in the condition of the assets and potential safety risks for users
- Watermain breaks and sewer back ups could result in property damage
- Potential load restrictions or closures of structures resulting in potential closures of trails and sidewalks or roads

These risks will be managed within available funding by prioritizing spending based on the risk framework and monitor external funding opportunities to help assist in addressing the gap.

Future Plans

For Phase 3 Municipalities are required to expand their asset management plans to cover all infrastructure for current levels service by July 1, 2024. As part of the original assignment GMBP will work with staff to develop an AMP to meet these requirements. This plan will take a similar approach to incorporate other assets such as:

- City owned shoreline
- Buildings and Facilities (including fire)
- Fleet (including fire)
- Improved lands (including parks, playgrounds and sporting fields) and
- Corporate Infrastructure

The final phase in the regulation (required by July 1, 2025) requires that for each asset category the City shall be required to update the AMP to establish the levels of service

that the City proposes to provide for the next 10 years in accordance with qualitative descriptions and technical metrics. Completion of this phase requires Council to endorse target levels of service that would be selected after considering the related costs and related risk associated with the provision of different levels of service.

In order to be in a position to establish these levels the public will need to be engaged to research customer expectations and levels of satisfaction with those expectations. The Asset Management Working Group has identified the need to develop a communication plan and will work the City's communication staff to formalize this plan over the next year.

COVID-19 Pandemic

The COVID-19 pandemic may impact both funding and levels of service which will need to be assessed in more detail. Longer term changes precipitated by COVID-19 that impact our assets will be reflected in updates to the AMP once these changes can be identified and measured.

Climate Change

The impacts of climate change can have a significant impact on the assets we manage and the services they provide. In the context of the asset management planning process, climate change can be considered as both a future demand and/or a risk.

How climate change will impact on assets can vary significantly depending on the location and the type of services provided, as will the way in which we respond and manage those impacts.

Climate change has the potential to substantially affect the effectiveness and lifespan of infrastructure, and yet climate change is still one of the most complex challenges facing municipalities today. Addressing climate change falls under two categories, Mitigation (taking actions to reduce climate related impacts such as greenhouse gas effects) and Adaptation (changing policy, processes, designs and asset management strategies to reduce the risks and impacts from extreme weather and long-term climatic changes).

As a minimum the City should consider both how to manage its existing assets given the potential climate change impacts, and how to create resilience to climate change in any new works or acquisitions. Additionally, the way in which the City constructs new assets should recognize that there is opportunity to build in resilience to climate change impacts. Building resilience will have benefits of:

- Assets will better withstand the impacts of climate change in the future
- Services can be sustained into the future
- Assets that can endure impacts of climate change may potentially lower the lifecycle cost and reduce their carbon footprint

The City has recently commenced a Climate Changes Adaption and Asset Management Project which will expand the climate change sections of this AMP.

The project will integrate enhanced climate change considerations in the AMP. Detailed analysis will be done to determine probability of events, vulnerability and the development of detailed strategies to deal with how climate change might impact the performance of infrastructure assets and ultimately the level of service received by the customer. With this information, Council will be better able to make informed decisions when allocating resources to infrastructure.

Building off work already done by staff, GMBP will look at climate change events that would impact all assets and conduct a probability analysis. Then focus enhanced risk assessment and climate change adaption strategies for the water and wastewater assets. The methodology and framework developed for Water and Wastewater assets could then be applied across other asset classes in the future.

Monitoring and Improvement Plan

Asset management is continuously evolving. To ensure the City's asset management practices are aligned with best practices there should be continuous improvement of documentation, data, implementation of tools and resources that support asset management across the corporation. The next step is to take the recommendations for improvements from the AMP and refine the City's asset management strategy and roadmap, which will include:

- Condition assessments and studies (including CCTV infiltration and inflow studies and leak detection and other best practices)
- Modelling to determine existing and future capacity needs (considering climate change and growth)
- Decision support tools including IT solutions
- Resources including staffing

Financial Implications

The 2021 AMP should be used to guide prioritization of capital investment needs and potential funding strategies as part of the development of capital budgets, and forecasts, starting with the 2022 Capital Budget

Environmental Sustainability Implications

The AMP uses a triple bottom line approach to sustainability balancing economic, social, and environmental sustainability. All parts of an asset's lifecycle need to have a focus on sustainability including construction, operations, maintenance, renewal, replacement, and disposal in order to have increased environmental benefits and outcomes.

Direct sustainability and environmental benefits vary by asset class. For example, stormwater assets can lead to improved water quality outcomes and transportation assets can lead to reduced greenhouse gas emissions. The City will continue to embed environmental sustainability approaches into asset management programs and projects.

Conclusion

The City's 2021 AMP is being presented for Council's information and approval to achieve compliance with O. Reg. 588/17, Asset Management Planning for Municipal Infrastructure. The analysis contained in this report will be used to inform the ongoing work of the Asset Management Working Group and in the prioritization of capital investment needs and potential funding strategies as part of the development of capital budgets, and forecasts, starting with the 2022 Budget.

Moving forward, City staff guided by recommendations within the AMP will continue to advance the City's asset management processes in line with best practices. Non-core assets, as required by legislation will be worked into the next AMP which will further refine the overall funding gap analysis. Staff will continue to work collaboratively to develop long-term financial sustainability strategies that balance service levels, costs, and risks.

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Appendix

- Appendix 1 - 2021 Asset Management Plan



City of St. Catharines **2021 Asset Management Plan**



Foreword

We want our community to be one where citizens' way of life can continue long into the future and one that can withstand unexpected events and adapt to change.

Our success will be measured by our ability to embrace innovation, ensure sustainability, and improve the livability of the city for citizens of all ages, abilities, and backgrounds.

Well maintained infrastructure is a prerequisite to achieving this vision and ensuring a high quality of life in St. Catharines and communities everywhere.

Infrastructure assets support the provision of safe drinking water and wastewater capacity; powering economies through efficient movement of people and goods; provide venues for cultural expressions and community interaction; and promote healthy lifestyles.

Asset Management is the coordinated effort of the organization to realize value from infrastructure assets. This includes a systematic approach to managing the asset lifecycles while balancing costs, opportunities, and risks against the desired performance of the assets. This Asset Management Plan documents the current state of City assets, the desired levels of service, the lifecycle activities to support them, and the financing strategy to

fund the full asset lifecycle. Ultimately, it supports the City in making the best possible decisions regarding building, operating, maintaining, renewing, replacing, and disposing of infrastructure assets. It also helps achieve the following objectives:

- Ensuring that all City-owned infrastructure assets are sustainable into the future;
- Providing guidance on decisions related to infrastructure asset investment and divestment;
- Providing guidance in the development of standard maintenance and rehabilitation policies;
- Providing a framework for lifecycle and cost / benefit analyses; and
- Promoting better integration of infrastructure decisions within larger strategic, community and land-use goals.

With the development of this Asset Management Plan, the City is well positioned to embark on the next phase of the Asset Management process. This is a key component in achieving the City's vision of St. Catharines being the most dynamic, innovative, sustainable, and livable city in North America.

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Abbreviations

The table below provides a summary of the abbreviations referenced in this document.

Acronym	Definition
AM	Asset Management
AMP	Asset Management Plan
AODA	Accessibility for Ontarians with Disabilities Act.
BCI	Bridge Condition Index
BSC	Budget Standing Committee
CAE	Chief Administrative Officer
City	Corporation of The City of St. Catharines (City of St. Catharines)
CLOS	Customer Levels of Service
ESL	Estimated Service Life
FCM	Federation of Canadian Municipalities
KPI	Key Performance Indicators
LCA	Lifecycle Activities
LOS	Levels of Service
MACP	Manhole Assessment Certification Program
OSIM	Ontario Structure Inspection Manual
PACP	Pipeline Assessment Certification Program
PQI	Pavement Quality Index
PRV	Pressure Reducing Valves
ROW	Right-of-Way
SME	Subject Matter Expert

TLOS	Technical Levels of Service
WSF	Wastewater Storage Facilities



Glossary of Terms

The table below provides a summary of the definitions referenced in this document. Terminology within this document has been developed to align with the ISO55000 series of standards where possible.

Term	Definition
Asset	Items, object or entity that has potential or actual value to an organization. These can be physical (tangible) or non-physical (intangible).
Asset Life	Period from asset creation to asset end-of-life.
Asset Management	Coordinated activity of an organization to realize value from assets.
Asset Portfolio	Assets that are within the scope of Asset Management.
Asset Type	Grouping of assets having common characteristics that distinguish those as a group or class.
Continual Improvement	Recurring activity to enhance performance.
Level of Service	Parameter or combination of parameters, which reflect social, political, environmental and economic outcomes that the organization delivers.

Term	Definition
Lifecycle	Stages involved in the management of an asset.
Objective	Results to be achieved. These can be strategic, tactical or operational. Objectives can be related to different disciplines.
Organization	Person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its objectives.
Organizational Objective	Overarching objective that sets the context and direction for an organization.
Policy	Intentions and direction of an organization as formally expressed by its top management.
Preventive Action	Action to eliminate the cause of a potential nonconformity or other undesirable potential situation.
Risk	Effect of uncertainty on objectives. An effect is a deviation from the expected positive and/or negative.
Stakeholder	Person or organization that can affect, be affected by, or perceive themselves to be affected by a decision or activity.

Executive Summary

The City of St. Catharines is responsible for delivering core services that support its community while enhancing the quality of life experienced by residents. These services include the distribution of drinking water for consumption; conveying wastewater to reduce the risk of health-related issues and environmental impacts; conveying stormwater runoff to mitigate flooding and erosion; and facilitating movement of people, goods, and services via transportation and structure networks.

The City's engagement in improving and enhancing Asset Management practices dates back over 30 years during which time core asset information has been recorded for internal practices such as tracking water mains breaks and pavement management. By 1999, efforts were underway towards formalizing the collection and retention of assets in a structured spatial repository. In 2007 core asset data was moved to an enterprise database, completing the transition to a standardized infrastructure inventory. The 2013 Corporate Asset Management Plan established an internal governance structure and started the process to incorporate Asset Management Planning into asset owning divisions. Furthermore, the City also undertook the development of a Strategic Plan to define the City's vision to ensure economic prosperity, social well-being, environmental stewardship, and a cultural renaissance for the

community. The Strategic Plan and its vision serve as a baseline for defining the Asset Management roadmap. The 2019 Strategic Asset Management Policy further enhanced Asset Management practices to comply with the requirements of O.Reg.588/17.

The City's 2021 Asset Management Plan has been developed to enable the management of infrastructure assets in a way that supports the provision of services to the community. The Asset Management Plan is structured into core services as defined by the Ministry of Infrastructure (water, wastewater, stormwater, transportation, and structures) to provide consistency and ease of understanding for readers. It then concludes with the financial strategy and improvement plan recommendations. Each service included on this plan is subdivided into the following:

- State of Local Infrastructure
- Levels of Service
- Lifecycle Management Strategy
- Data Confidence

This planning document is a strategic guide to support continuous improvement of asset related activities and provide the following:

- Alignment with provincial regulatory landscape;

- Understanding of the current state of City infrastructure necessary to support the core services;
- Defining and measuring key performance indicators that support the provision of core services from a customer and technical perspective;
- Providing an integrated forecast for Asset Management Planning with financial budgeting; and
- Recommending data improvements for enhancement of future iterations of the plan.

Each of the services assessed are dependent on a wide variety of asset categories that have unique functions and components with an estimated value of \$5 billion.

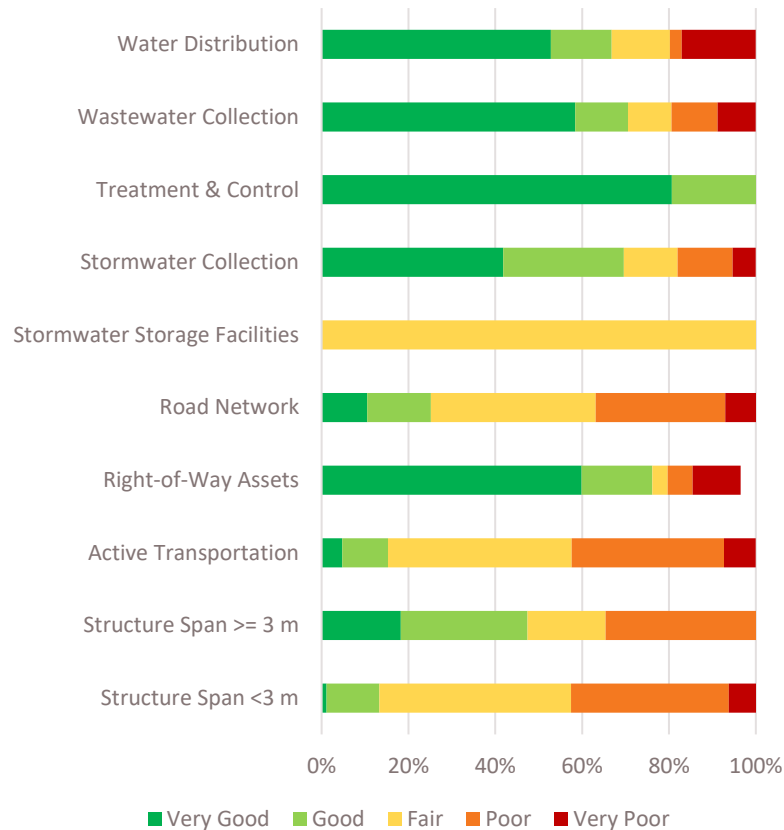
Table ES1 provides an overview of the replacement value of assets within each asset category.

The condition distribution of service functions as a percentage of their replacement value is shown in **Figure ES1**. Overall, the services condition can be summarized as follows: Water, Wastewater, Stormwater and Structures are good and Transportation is fair. It must be highlighted that the Stormwater Discharge category have been excluded from the graph as their condition is unknown.

Table ES1. City's Infrastructure Valuation

Service	Service Function	Replacement Value (2021 Dollars)
Water	Water Distribution	\$ 1,366,701,000
Wastewater	Wastewater Collection	\$ 1,556,414,000
Stormwater	Stormwater Collection	\$ 874,463,000
	Treatment & Control	\$ 824,000
	Stormwater Discharge	Cost to be Determined
	Storage Facilities	\$ 540,000
Transportation	Road Network	\$ 974,445,000
	Right-of-way Assets	\$ 45,358,000
	Active Transportation	\$ 133,783,000
Structures	Bridges and Culverts with a Span equal or above 3 metres	\$ 50,166,000
	Bridges and Culverts with a Span under 3 metres	\$ 15,764,000
Total		\$ 5,018,458,000

It must be highlighted that future iterations of this AMP will include non-core asset classes in the assessment.

Figure ES1. Condition Distribution by Category

Level of service metrics are key drivers for decision-making within the City and aim to document service outcomes from a customer perspective. As part of managing levels of service, the City has documented current and past performance for the indicators as well as metrics to be considered in the future once data becomes available for analysis. The defined frameworks for each core service are to be updated annually to reflect improvement on the City's indicators.

Asset lifecycle activities include the maintenance, rehabilitation, replacement, disposal, improvement, and expansion of assets. These activities have been prioritized based on risk and are funded through the operating and capital budgets at the City. **Figures ES2 and ES3** provide a summary of the forecasted lifecycle investment requirements for the core services; these are based on current activities performed within anticipated budgets and available information. It is understood that as the City improves the AM practices, needs will be revised to match future activities.

There is an investment shortfall for tax-based expenditures of around \$20.8M annually to maintain the current condition of the assets that support stormwater, transportation and structures. The City must either reduce service offerings to their residents or increase funding to be able to maintain services at the current level. The anticipated rate-based investments identified in the recent Water and Wastewater Financial Plan, which the City should continue to implement, are sufficient to maintain the current condition and forecast a slight improvement to service, however are still below the optimal renewals identified. To fully fund the tax and rate-

based asset portfolios by 2046, an 8.09% and 0.34% compound annual increase would be required respectively. Note that this is in addition to general inflationary increases.

COVID-19 may impact both funding and levels of service which will need to be assessed in more detail. Longer term changes precipitated by COVID-19 that impact City assets will be reflected in updates to the AMP once these changes can be identified and measured.

Figure ES2. Forecasted Asset Portfolio for Tax Based Expenditures

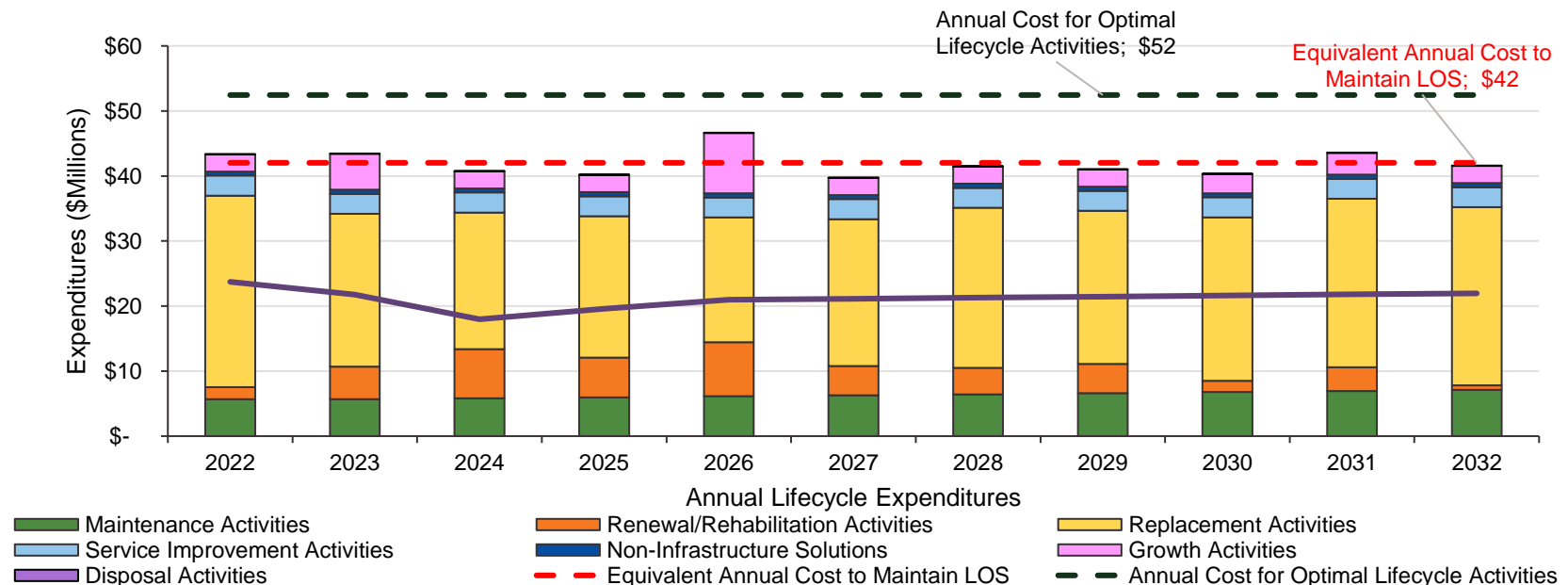
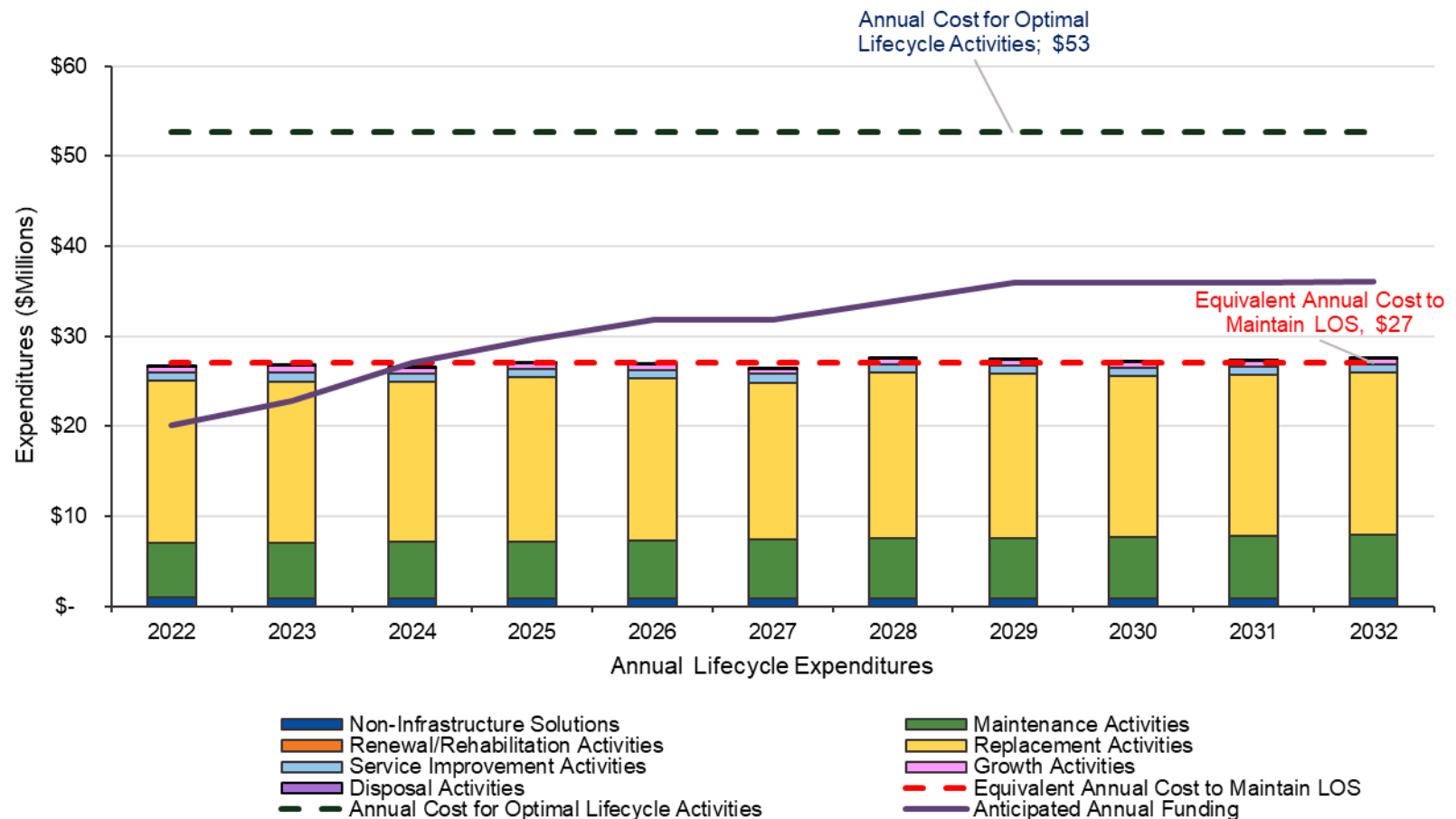


Figure ES3. Forecasted Asset Portfolio for Rate Based Expenditures



An overall data confidence assessment has been conducted as part of this plan. Recommendations for improvements include confirmation of asset inventories and condition, as well as validation of assumptions made throughout the development of the plan.

1.0 Introduction

The Corporation of the City of St. Catharines (City of St. Catharines or City), located within the Niagara Region, has a population of 133,113 as per the 2016 census within a geographic area of 96.1 square kilometres. This Asset Management Plan includes the City's Core Infrastructure with an estimated value of 5 billion distributed between the following core asset classes:



594 kilometres of Water Distribution System



563 kilometres of Sanitary Sewer Collection System



404 kilometres of Storm Sewer Collection System



573 kilometres of Road and
577 kilometres of Sidewalks and Pathways



117 Structures (Bridges & Culverts)

It must be highlighted that the Core Infrastructure has been defined by the Ontario Regulation 588/17– Asset Management Planning for Municipal Infrastructure, as will be further discussed in Section 1.4. Future iterations of this AMP will include non-core asset classes in the assessment.

1.1 City of St. Catharines' Asset Management Journey

The City recognized it needed to improve and enhance its Asset Management practices in 2011 when the *Sustainability Strategy "Tending the Garden City"* was developed with considerations on defining the infrastructure inventory and identifying operating and maintenance requirements. In 2013, the City developed its first Asset Management Plan (AMP), establishing an internal governance structure and starting the process to incorporate Asset Management Planning into all asset owning divisions.

The 2013 AMP identified the following goals:

- Ensure all City-owned infrastructure assets are sustainable into the future;
- Provide guidance in the development of standard maintenance and rehabilitation policies;
- Guide decisions related to infrastructure asset investment and divestment;

- Provide a framework for lifecycle and cost/benefit analyses; and
- Promote better integration of infrastructure decisions within larger strategic, community, and land-use goals.

The City of St. Catharines Strategic Plan (2019 – 2028) sets out the City's vision to ensure economic prosperity, social well-being, environmental stewardship, and a cultural renaissance for the community. To achieve the economic prosperity objective, the City has committed to develop a 10-year capital infrastructure plan that includes all major investments to address City needs, priorities, and growth.

The City approved a Strategic Asset Management Policy in 2019 to further enhance the Asset Management practices and comply with the requirements of O.Reg.588/17. The policy applies to all operational areas and defines principles and objectives that will define the City's practices, as well as the roles and responsibilities of staff required to successfully implement Asset Management.

Like many other municipalities in the area, the City is developing long-term forecasts and implementing the necessary tools to support decision making regarding building, operating, maintaining, renewing, replacing, and disposing of infrastructure assets. A significant component of the plan is a long-term financial projection

to aid with complex decision-making associated with these activities.

This document updates and replaces the 2013 AMP and aligns the City's Asset Management practices with the requirements of O.Reg.588/17 for core assets. This will enable the City to manage its assets and connect day-to-day infrastructure investment decisions with the services provided to residents.



1.2 The City's Guiding Principles for Asset Management

The City's 2019 Strategic Asset Management Policy (the Policy) applies to all operational areas under the direct authority of St. Catharines City Council which contribute to service delivery using City owned infrastructure or assets that require deliberate management. The Policy highlights the strategic alignment of Asset Management practices with the City's Corporate Strategic Plan.

The following guiding principles from the City's Asset Management Policy were adopted as fundamental for the management of the City's assets:

- **Customer focused:** The City will apply Corporate Asset Management practices including defined levels of service to promote confidence of customers in how the City assets are managed, core services are provided, and community wellbeing is fostered for all.
- **Forward looking:** The City will consider current and long-term needs when making decisions and plans to better enable its assets to meet future demands, including changing demographics and populations, customer expectations, legislative requirements, technology, and environmental factors (climate change).
- **Service based:** The City will take a holistic approach to Corporate Asset Management practices both in assessing levels of service, prioritizing capital

spending, and maintaining assets. When assessing levels of service provided by its assets, the City will consider all related assets rather than each asset in isolation.

- **Evidence based:** The City's Corporate Asset Management practices will be based on relevant and reliable information that will form the basis of transparent decision making aimed at reducing asset life cycle costs.
- **Risk based:** The City will take a risk-based approach to prioritizing projects for the acquisition and renewal of assets. Risk will be considered in relation to the likelihood of the asset failing and the impact of asset failure. Asset failures that may impact health and safety shall be ranked as the highest priority for investment.
- **Value based and affordable:** The City will deliver the greatest value from its investment in assets respecting available funding and its customers' ability to pay.
- **Continually evolving:** Corporate Asset Management practices and Asset Management systems will continue to evolve and improve through ongoing evaluation of best practices, innovation, and consideration of future directions, regulations, and requirements.

- **Cooperation and coordination with other governmental plans and strategies:** The City will consider strategies, policies, and plans of other governmental entities established under an act or otherwise to promote integration while providing efficient and effective service delivery for all of our customers and stakeholders.

1.3 City's Mission, Vision and Strategic Goals

To make a positive impact and drive change, in 2015 Council approved the following City mission and vision statements:

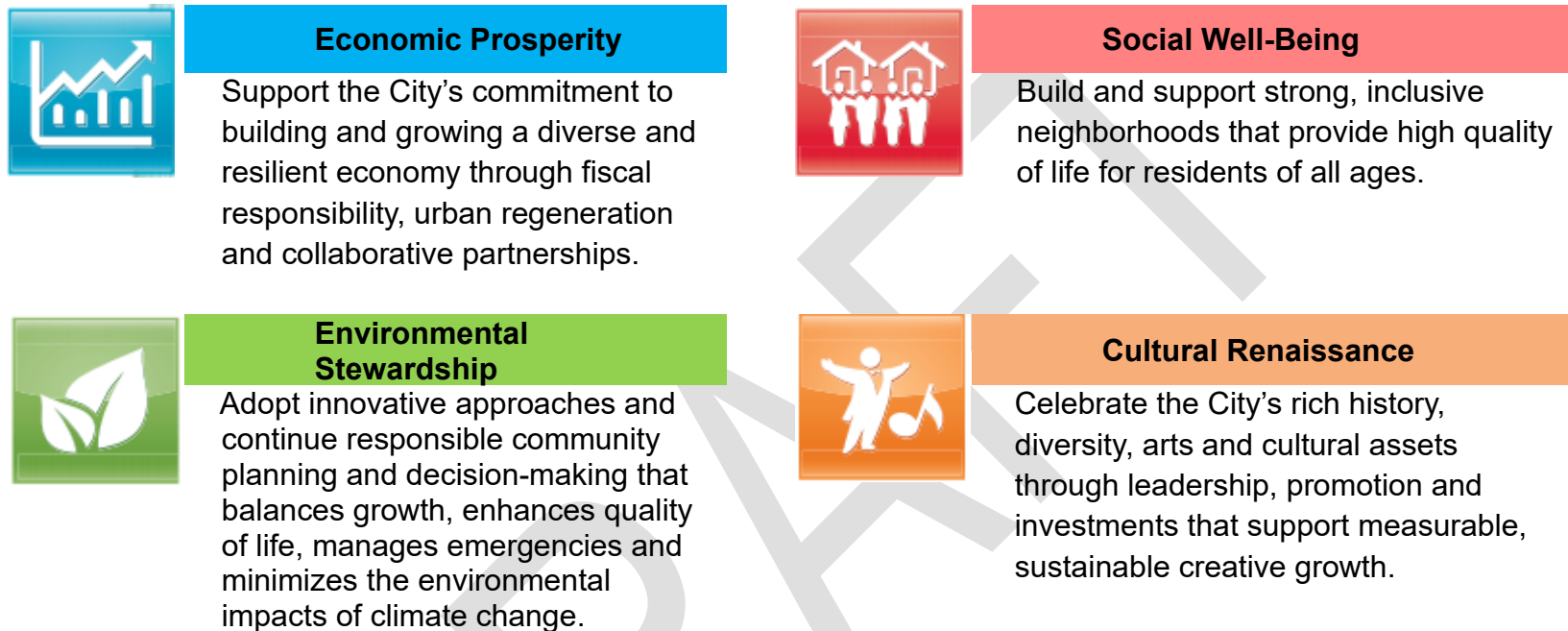
Figure 1. City Vision and Mission Statement



A key component of achieving the City's mission, vision and strategic goals is to ensure that the best possible decisions are made regarding the City's infrastructure assets. The following identifies how they are supported by the Asset Management Plan. The Asset Management Plan:

- Provides the necessary data to implement long-term financial plans to manage the City's infrastructure by tracking accountability through performance indicators;
- Improves transparency of the decisions related to services delivered and all the associated risks and costs;
- Allows the City to benchmark practices to identify areas for improvement; and
- Provides business continuity by documenting the management practices applied to the City's infrastructure.

Furthermore, the City's 2019 – 2028 Strategic Plan has set out a clear path to embracing its mission and vision by defining the following strategic goals:

Figure 2. City of St. Catharines Strategic Goals

1.4 Provincial Asset Management Planning Requirements

In 2012, the Province published 'Building Together: Guide for Municipal Asset Management Plans' (Building Together) to encourage and support municipalities in Ontario to develop Asset Management Plans (AMPs) in a consistent manner. The guide describes a general

approach to structuring AMPs and provides insight into the content that should be included in sections related to the State of Local Infrastructure, Levels of Service, Asset Lifecycle Management Strategies, and Financing Strategies.

Building Together outlines the information and analysis that municipal Asset Management Plans are to include and was designed to provide consistency across the

province for Asset Management. To encourage the development of AMPs, the Provincial and Federal governments also made an AMP a prerequisite to accessing capital funding grants.

In 2015, Ontario passed the Infrastructure for Jobs and Prosperity Act which affirmed the role that municipal infrastructure systems play in supporting the vitality of local economies. After a year-long industry review process, the Province created Ontario Regulation

588/17– Asset Management Planning for Municipal Infrastructure as the first regulation made under the Infrastructure for Jobs and Prosperity Act. O.Reg. 588/17 further expands on the Building Together guide, mandating specific requirements for municipal Asset Management Policies and Asset Management Plans, phased in over a five-year period. **Table 1** summarizes the general requirements and timelines of O.Reg. 588/17, as well as the status of these requirements for the City of St. Catharines.



Table 1. Regulatory Requirements and Timeline for Asset Management Planning based on O.Reg. 588/17

STRATEGIC ASSET MANAGEMENT POLICY Timeline: By January 1, 2019
Update: Every 5 years

A Strategic Asset Management Policy must be developed to articulate specific principles and commitments that will guide decisions around when, why and how money is spent on infrastructure systems.

City Status: Policy FMS-001-2019 was issued April 10, 2019.

MUNICIPAL ASSET MANAGEMENT PLAN – CORE ASSETS Revised timeline: By July 1, 2022, Previously: July 1, 2021
(PHASE 1)

An Asset Management Plan that documents the current levels of service being provided and the costs to sustain them for the core assets which are defined as: water, wastewater, stormwater, roads and bridges infrastructure systems (i.e., ‘core’ assets per O.Reg. 588/17).

City Status: This AMP is intended to align with the requirements of the legislation.

MUNICIPAL ASSET MANAGEMENT PLAN – NON CORE ASSETS Revised Timeline: By July 1, 2024, Previously July 1, 2023
(PHASE 2)

An Asset Management Plan that documents the current levels of service being provided and the costs to sustain them for the remaining assets (i.e., ‘non-core’ assets per O.Reg. 588/17).

City Status: GM BluePlan has been retained by the City to assist in developing sections of the AMP to include assets associated with buildings and facilities, corporate infrastructure (including IT), fleet, improved lands (parks, playgrounds and sporting fields), shoreline protection, and watercourses.

MUNICIPAL ASSET MANAGEMENT PLAN Revised Timeline: By July 1, 2025, Previously July 1, 2024
(PHASE 3) Update: Every 5 years

An Asset Management Plan that outlines the desired levels of service, the costs to achieve the desired levels of service, and the financial strategy to fund the expenditures necessary to achieve the desired levels of service for all infrastructure systems in the City.

City Status: Some components such as the performance forecasts are to be addressed during the development of Phase 1 and 2.

1.5 Asset Management Plan: Definition and Purpose

The Federation of Canadian Municipalities (FCM) has defined an Asset Management Plan as, “a plan for the management of one or more infrastructure assets that combines multi-disciplinary management techniques (including technical and financial) over the life cycle of the asset in the most cost-effective manner to provide a specified level of service.”

The goals of the City of St. Catharines Asset Management Plan are to:

- Develop asset inventory documentation, with any identified gaps filled based on a strategy based on best practices and in consultation with City stakeholders.
- Define current levels of service, targets and key performance indicators (KPIs) that enable the City to quantify and measure efficiency and effectiveness in support of service-centric decision making, as well as communicate the services provided to its residents.
- Provide asset lifecycle strategies to enable the prediction of asset interventions based on condition and strategic business factors such as costs, levels of service, and risks.

- Provide a framework for funding requirements to support levels of service and the lifecycle management strategy.
- Develop a risk management strategy to enable the prioritization of capital investments that will provide the City with a standardized definition of asset criticality and will particularly consider risks related to climate change.
- Recommend improvement actions for data management, resources, and technology.

Part of the complexity with Asset Management is that it is not about doing one thing – it is about building a robust understanding of asset needs and implementing good practices to manage community infrastructure assets. For these reasons, this plan will help support the City’s development of skills and practices in the following competency areas:

- Policy and governance to lead organizational alignment and commitment.
- People and leadership to create and sustain connections across teams.
- Data and information about assets when needed.
- Planning and decision making to ensure policies, objectives, and information consistently guide the organization.

- Contributions to Asset Management practices to support continuous improvement and ensure internal stakeholders are well-informed, especially when communicating and participating in external knowledge sharing.

1.6 City's Asset Management Governance

The City's Asset Management practices are mandated by the Asset Management Plan and directed by the City's Asset Management Policy.

Furthermore, the City's Asset Management practices are intended to support the City's mission and vision statements. This is achieved through ongoing and continuous improvement of the Asset Management Plan. These relationships are illustrated below in **Figure 3**.

Figure 3. City of St. Catharines Governance Framework for the 2021 AMP



1.7 Asset Classes Included in the scope of this Asset Management Plan

This Asset Management Plan includes the City's core assets illustrated below in a parent-child relationship

called the asset hierarchy. Using an asset hierarchy provides the City with the ability to organize and manage its asset information and support decision making. The subsequent chapters in this plan will provide information with the same structure that is detailed below.

Table 2. Hierarchy of Assets Included in the City's 2021 Asset Management Plan

City Service	Service Function	Assets and Components Included
Water	Water Distribution	Water mains (including corresponding service connections), in-line valves, pressure reducing valves, hydrants, curb stops and booster pumping station, bulk water station
Wastewater	Wastewater Collection	Sanitary sewer mains (combined or separated), force mains, maintenance holes, service connections, sewage pump station, wastewater storage facilities
Stormwater	Stormwater Collection	Storm sewer mains, maintenance holes, catch basins, service connections, grates, outfalls
	Treatment & Control	Oil grit separators
	Stormwater Discharge	Open channels
	Storage Facilities	Ponds and constructed wetlands
Transportation	Road Network	Roads (including curbs and on-road bike lanes)
	Right-of-way Assets	Streetlights, signalized intersections, guide rails and signs
	Active Transportation	Sidewalks, pathways and multi-use trails
Structures	Bridges and Culverts with a Span equal or above 3 metres	Bridges and culverts that require regulatory inspections every 2 year or provide crossings of natural water courses.
	Bridges and Culverts with a Span under 3 metres	

1.8 Asset Management Plan Stakeholders

The development of this AMP was led by the Engineering, Facilities and Environmental Services and Financial Management Services departments with the support of the City's Asset Management Working Group. Key representatives from all departments were consulted

through different stages via workshops and contributed to the development of the data necessary to support this Plan. **Table 3** identifies the roles and responsibilities of the corporate stakeholders for developing, implementing, and approving the City's Corporate Asset Management Plan.

Table 3. City's Asset Management Stakeholders, Roles and Responsibilities

Key Stakeholder	Roles and Responsibilities
Council	<ul style="list-style-type: none"> • Final Decision maker of all Asset Management decisions including approval of the Asset Management Policy and Corporate Asset Management Plan • Serve as representatives of citizens to set the level of services delivered, considered in conjunction with the cost-of-service provision and associated risks • Approve funding levels for both capital and operating budgets associated with Asset Management through the annual budget
Chief Administrative Officer (CAO)	<ul style="list-style-type: none"> • Maintains compliance with related Asset Management policy, regulations. • Provides direction that demonstrates commitment to the success of the continued improvement of Asset Management practices and documentation
Asset Management Working Group	<ul style="list-style-type: none"> • Support the CAO in fulfilling their role • Provide corporate collaboration to guide Asset Management Systems • Champion continuous improvement within their respective service areas and the City
Corporate Asset Manager and Engineering Asset Manager	<ul style="list-style-type: none"> • Support Asset Management Working Group in their roles and responsibilities • Support development of City Asset Management System • Coordinate with departments to establish corporate work plans and priorities to meet legislated requirements

Key Stakeholder	Roles and Responsibilities
Departmental Directors	<ul style="list-style-type: none"> • Oversee Asset Management activities that fall within their service area • Contribute in a manner that supports a multi-disciplinary approach to Corporate Asset Management and promotes its ongoing success • Liaise with members of the Asset Management Working Group to ensure they are supporting CAM and that departmental planning is aligned to AMPs
Service Delivery Areas or Asset Operators	<ul style="list-style-type: none"> • Team of staff who engage with internal and external stakeholders daily to deliver services • Oversee Asset Management Planning activities within their respective area • Help set service objectives and monitoring progress • Offer expertise in the development of city plans, strategies, assessments, and workflows • Collect and track asset information and other data related to assets within their functional area • Apply operation, maintenance, rehabilitation, replacement, and disposal practices to achieve levels of service, mitigate risk, and comply with regulatory requirements
Other City Staff	<ul style="list-style-type: none"> • Support the development, implementation, and improvement of the Asset Management system in their daily roles and responsibilities • Capture quality data as part of the daily operations

1.9 Developing the Corporate Asset Management Plan

The Asset Management Plan's initial steps of development included data collection, compiling data, developing an analysis tool, and meeting with various asset system working groups to discuss, review and provide feedback on each component of the Plan. The

AMP was developed for the core service groups, which are presented as main sections in this report as follows:

- Water
- Wastewater
- Stormwater
- Transportation
- Structures

In addition to the sections on each asset group, the final section of the AMP is a financial strategy. This is one of the Plan's key components, as it puts the document into action. The financial plan provides a way for municipalities to integrate Asset Management Planning with financial forecasting.

As suggested by Building Together – Guide for Municipal Asset Management Plans (Ministry of Infrastructure, 2012), the financial management strategy outlines annual expenditure projections in alignment with the long-term investment forecast developed for the lifecycle activities.

The City acknowledges that COVID-19 may impact both funding and levels of service which will need to be assessed in more detail. Longer term changes precipitated by COVID-19 that impact City assets will be reflected in updates to the AMP once these changes can be identified and measured.

The following provides more details on the key sub-sections that were covered as part of the plan tasks and will be presented for each of the core groups.

1.9.1 State of Local Infrastructure

The State of Local Infrastructure section provides a quantitative assessment of the infrastructure owned by the City. The primary objective is to provide a high-level inventory and insights on the overall age, condition, replacement costs, and key metrics of the assets owned by the City based on provided datasets and documents

that were assessed for data maturity (completeness) and confidence (accuracy) and discussed with Subject Matter Experts (SMEs). This section provides the City with:

- A repeatable and consistent methodology to track and report comparative analysis of asset data;
- Transparency in terms of the confidence of the asset data available;
- A consolidated overview of inventory, condition, cost, and performance indicators for each asset class; and
- The ability to track improvements to the background data over time.

The 2013 AMP provided details for bridges, structures, roadways, water mains and service connections, sanitary mainlines, service connections, and maintenance holes. This AMP provides a more detailed discretization of the assets for all core asset groups.

This chapter of the AMP summarizes the inventory of assets and their replacement values and provides the age and condition profiles for each asset category in the City's portfolio. Condition ratings were assigned to all assets across each service area using the condition rating scale shown on **Table 4**. The rating scale is consistent with the Canadian Infrastructure Report Card (2016) to facilitate benchmarking between other Canadian municipalities.

Table 4. Condition Rating Scales Descriptions and Estimated Service Life (ESL) Distribution

Value	Category	Estimated Service Life (Percentage)	Description
0	Unknown	N/A	Not enough data exists to respond.
1	Very Good	80% - 100%	Well maintained, in good condition, new or recently rehabilitated.
2	Good	60% - 79%	Acceptable and generally within the mid-stage of its expected service life.
3	Fair	40% - 59%	Requires attention, it shows signs of deterioration and some elements exhibit deficiencies.
4	Poor	20% - 39%	There is an increasing potential for its condition to affect the service it is intended to provide. It is approaching the end of its service life; the condition is below the standard and a large portion of the system exhibits significant deterioration.
5	Very Poor	0% - 20%	Unfit for sustained service. It is near or beyond its expected service life and shows widespread signs of advanced deterioration. Some assets may be unusable.

1.9.2 Levels of Service

The Levels of Service (LOS) section provides key performance indicators that support the provision of the respective service for each City asset group. Some LOS include mandatory metrics prescribed as part of O.Reg. 588/17. In general, LOS were documented as tables that provided the following information:

- Level of Service Statement: A brief description presented in plain language for public understanding of the service provided to residents based upon the City's core values and mission.
- Key Service Attribute: Provides customer values categorized in terms of safety, reliability, quality, cost efficiency, and environmental stewardship.

- Customer Levels of Service (CLOS): A statement that describes quantifiable metrics of the service delivery outcomes from the perspective of the customer, expressed in non-technical terms that can be easily understood by customer.
- Technical Levels of Service (TLOS): Quantifiable metrics applied against assets that are subject-matter specific inputs or outputs supported by day-to-day activities of the City staff.

Both CLOS and TLOS were defined as current or future metrics based on the City's existing available data. Furthermore, current and target performance were identified and established by City staff. Each Performance Measure should be defined using the SMART acronym (specific, measurable, achievable, relevant, and time-bound).

1.9.3 Lifecycle Management Strategy

The Lifecycle Management Strategy defines the set of planned actions that will enable the assets to provide their desired level of service in a sustainable way while mitigating risks and reducing costs. The goal of this assessment is to capture the deterioration model for each asset category.

Understanding the optimal budget at which lifecycle activities (LCA) sustain the desired LOS at the lowest lifecycle cost is the main objective of this section.

The actions are usually grouped as rehabilitation or replacements and these are supported by the City's operating and capital budgets. Further to the usual maintenance and operations activities, the LCA section is also intended to capture non-infrastructure solutions that extend the asset life (such as policies and procedures) as well as activities that extend beyond the day-to-day operation of the assets such as expansion planning and disposal once end of life is reached. **Table 5** provides a summary of the lifecycle activity types that will be considered for all assets within scope, as defined by the Building Together Guide for Municipal Asset Management Plans.

An Optimal Lifecycle Activities scenario was analyzed for each of the core services. This scenario focused on the cost to achieve optimal renewal. Historic values were used to estimate the maintenance, non-infrastructure solution and expansion and thus may not be optimal. The City can explore those optimal needs and include in this analysis.

Table 5. Lifecycle Activity Type Summary

Lifecycle Activity	Definition
Non-Infrastructure Solutions	Actions or policies that can lower costs or extend useful lives.
Maintenance Activities	Including regularly scheduled inspection and maintenance or

Lifecycle Activity	Definition
	more significant repair and activities associated with unexpected events.
Renewal / Rehab Activities	Significant repairs designated to extend the life of the asset.
Replacement / Construction Activities	Activities that are expected to occur once an asset has reached the end of its useful life and renewal/rehab is no longer an option.
Disposal Activities	Activities associated with disposing of an asset once it has reached the end of its useful life or is otherwise no longer needed by the City.
Service Improvement Activities	Planned activities to improve the asset's capacity, quality, and system reliability.
Growth Activities	Planned activities required to extend services to previously unserved areas or expand services to meet growth demands.

A risk management framework was developed for each of the asset categories in the portfolio to assist with prioritization of investments within the forecasts. Where

possible, geospatial scripts were used to establish a consequence of failure score using a triple bottom line analysis approach to evaluate:

- Social impacts of asset failure, including impacts to customers, businesses, and the City's reputation;
- Environmental impacts of asset failure; and
- Economic impacts of failure including the cost to remediate the situation.

In the context of Asset Management, risk is the multiple of the consequence of an asset failing and the likelihood that the event will occur. The risk framework was developed in collaboration with the City's subject matter experts and based on best-in-class practices for risk assessment. The likelihood of failure is expressed as a percentage and calculated for each asset based on available condition data and deterioration modelling. As previously mentioned, the consequence of failure framework is based on the parameters specific to each asset category based on their financial, social, and environmental impact. **Table 6** provides an overview of the criteria used for the risk analysis and the asset classes within which each criterion was included. The final risk score for each asset has been calculated by multiplying the consequence of failure score by the likelihood of failure score.

Table 6. Risk Framework Categories

Criteria	Definition	Water	Wastewater	Stormwater	Transportation	Structures
Financial						
Replacement Cost	The financial expenditure required for the replacement of the asset or remediation of the asset failure.	✓	✓	✓	✓	✓
Social						
Annual Average Daily Traffic	The volume of road users that would be likely to be impacted if the asset fails.	✓	✓	✓	✓	✓
Pipe Diameter	The larger the pipe diameter, the larger the potential discharge or disruption to service.	✓	✓	✓		
Critical Water Users	The number of critical customers that would be impacted if the asset fails.	✓				
Access to critical customer/facilities like hospitals, schools, and long-term care facilities	The number of critical customers that would be impacted if the asset fails.	✓	✓	✓	✓	
Land Use	A representation of the number and type of affected customers, which would be proportional to service disruption. These represent impact to water quality, businesses, potential for flooding.	✓	✓	✓	✓	✓
Redundancy	The ability to maintain supply if there is an asset failure.	✓				

Criteria	Definition	Water	Wastewater	Stormwater	Transportation	Structures
Sewer Type (combined or separated)	The separation of sewer mains provides the system resiliency against climate events.		✓			
Road sharing	Impacts to transit users and cyclists in the event of asset failure.				✓	✓
Escarpment Crossing	If there is a closure of the segment, there would likely be significant detours at escarpment crossings.				✓	
Functional Class	Number of users that would be impacted as well as the speed limits on the road.				✓	
Structure span	Structures with span greater than 3 metres have more significant impacts upon failure or closure.					✓
Structure impact on adjacent infrastructure	Structure failures adjacent to critical infrastructure (such as highways and railways) have significant impacts					✓
Environmental						
Distance to watercourses, environmentally sensitive areas, or habitat.	Environmental impacts as a result of failure including remediation and potential charges.	✓	✓	✓	✓	✓

The cost associated with each lifecycle activity is also considered as part of the strategy. A long-term investment forecast has been developed for each asset in scope to illustrate the capital and operational needs to support current levels of service. **Table 7** provides a summary of the assumptions made to model the costs

associated with each lifecycle activity type for all core services.

These are based on current activities performed within historical budgets and available information. It is understood that as the City improves the AM practices, needs will be revised to match future activities.

Table 7. Lifecycle Activities Cost Assumptions

Lifecycle Activity	Model Assumptions
Non-Infrastructure Solutions	Developed based on a review of the historical annual budget and using an average of the 2017-2021 budgets (both operating and capital).
Maintenance Activities	Developed based on a review of the 2021 and historical budget.
Renewal / Rehab Activities	Forecasted based on a lifecycle model applied to each asset in the asset register. This is based on the activities that the City has determined that should be completed.
Replacement / Construction Activities	
Disposal Activities	Generally, disposal activities have been incorporated within the replacement and renewal costs for most assets.
Service Improvement Activities	Developed based on the 2017 to 2021 annual expansion costs as a percentage of the 2021 asset portfolio replacement value.
Growth Activities	

1.9.4 Data Confidence

A summary of the data sources used in the analyses of this AMP are included for reference under each asset

category section. For the development of this AMP, the available data was assessed for each asset category and a data quality rating was assigned based on availability and quality of relevant data.

Table 8. Data Quality Rating Scale for all Assets Within Scope

Value	Category	Definition
A	Very Good	No assumptions, with available condition data from a reliable data source, and age and value are known.
B	Good	Minor assumptions are made for condition, age, or replacement values (e.g., most of condition, age, and replacement values are known).
C	Fair	Minor assumptions are made for condition, age, or replacement values from moderately reliable sources.
D	Poor	Data comes from significantly out of date documents or two of condition, age, or replacement values come from a moderately reliable source and the third item is unknown or unreliable.

1.10 Integrating Climate Change into Asset Management

Climate change is one of the most complex challenges facing municipalities today. In recent years, Southern Ontario has experienced a significant number of extreme weather events and its adverse impacts such as flooding, ice storms, power outages, and infrastructure damage. Rising average temperatures, shifting historical precipitation patterns with increased intensity, duration and frequency of storm events and periods of drought, increasing windstorms, and fluctuations in lake levels are anticipated to continue into the future and Asset Management Plans must reflect this reality.

The City's Climate Adaptation Plan (2021) evaluated climate impacts, risks, and vulnerabilities the municipal government currently faces, or is expected to experience in the future, due to climate change. Understanding climate related risks and vulnerabilities that impact the City allows municipal operations, policies, and procedures to best align with the future climate.

Positioning adaptation planning throughout the municipal government will provide proactive decision-making, climate orientated action and implementation focused on creating a climate responsible and resilient community.

The City has partnered with local experts in climate change and Asset Management to ensure that the City's policies and practices adapt to reduce both immediate

and long-term impacts on municipal infrastructure. By assessing the probability and risk associated with various climate factors, various design and operation practices can be altered to proactively build resilience into the systems to help mitigate extreme weather. This strategy will ensure that all asset life is maintained most efficiently.

1.11 Continuous Improvement of the City's Asset Management Program

The City's Asset Management Program is founded on the principles of continuous improvement, transparency, and accountability. Moving forward, the AMP is intended to be a living document that reflects and supports implementation of the Asset Management Policy and Strategic Plan. As a living document, continuous improvement will be driven by:

- Implementing, revising, refining, and reporting Asset Management based on the City's strategic priorities.
- Continual cross-functional collaboration towards identifying AM improvements in processes, systems, data, AMPs, and AMP implementation strategies.
- Monitoring progress on the AMP implementation while quantifying and reporting benefits from AM Program activities.

- Improve with ongoing evaluation of best practices, innovations, and regulatory requirements.

Best practices to achieve continuous improvement include the development of an improvement plan and delivering the improvement plan with defined annual targets, appropriate benchmarks, and responsibilities for internal resources with their associated funding levels, as approved by the City's annual budgeting process. The continuous improvement of the City's AMP is supported by a broader Asset Management strategy that is developed in various forms for guiding the management of the assets to provide governance to City practices.

1.12 Asset Management Plan Assumptions and Limitations

This Asset Management Plan was developed based on the best available information and by employing professional judgement and assumptions to address gaps where necessary. Asset specific assumptions are recorded in the following sections.

Where gaps or opportunities were identified, they have been included in the improvement plan.

Background information and reports related to this AMP are available to the public upon request through the City of St. Catharines.



Estimated Replacement Value

The City's water distribution system is valued at approximately **\$1.4 billion**.

Condition Rating

The overall average condition of the assets for the water distribution system is **Good**.

Water

The City of St. Catharines provides safe drinking water to its residents, businesses, and other consumers. The City owns and operates a Class II residential water distribution system. Drinking water is supplied by the Region of Niagara's Decew Water Treatment Plant which draws water from Lake Erie. As a lower-tier municipality, the City is responsible for the local water distribution system which includes the following assets:

- 594 kilometres of Water Mains
- 3,559 Hydrants
- 5,706 Valves
- 41,816 Water Metres
- 1 Booster Pumping Station
- 1 Bulk Water Station

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2.0 Water

Water is essential to life. It is a service that supports many uses including consumption as drinking water, service for households and commercial uses, fire protection, other municipal services, and even recreational activities such as pools.

The following section summarizes the asset portfolio associated with the City Water Service.

2.1 State of Local Infrastructure

2.1.1 System Valuation

The City's water distribution system obtains potable water from the Region of Niagara and supplies it to consumers including residents, institutions and businesses; as well as uses it for fire protection and to support City services. The City's water system is distributed into three pressure zones within the urban boundary, which historically has provided consistent service to its users. The water distribution system is divided into linear and vertical asset types.

- **Water Linear Assets** represent the majority of the distribution portfolio as they include mains and appurtenances, as well as hydrants, metres, and service connections.

- **Water Vertical Assets** include the facilities required to pump or distribute water in the system.

For the valuation of the water distribution system, the replacement values considered are intended for the replacement of a similar asset (like-for-like) on a complete and standalone basis. These were calculated based on historical values that the City has incurred as part of previous replacements of similar assets. For certain materials (e.g., Ductile Iron), the replacement values that were applied assumed a more modern material (PVC) would be used in the event of a replacement and thus do not align with the "like-for-like" scenario described above. Furthermore, the estimated value for water facilities was calculated from a bottom-up approach based on the assets located within each facility and industry standard costing for these assets.

Based on the approach taken to calculate the replacement values for each asset category, the data confidence grade for this service is as follows:

- **C** for water mains;
- **B** for the remaining linear assets; and
- **D** for vertical assets.

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Confidence**Table 9. Water System Inventory Valuation**

Service Function	Asset Category	Count	Unit	Replacement Value (2021 Dollars)
Water Distribution	Water Mains ^(a)	594,422	Metres	\$ 1,301,682,000
	Hydrants ^(b)	3,559	Each	\$ 33,889,000
	Valves ^(c)	5,706	Each	\$ 13,683,000
	Water Metres	41,816	Each	\$ 17,164,000
	Bulk Water Station ^(d)	1	Each	\$ 140,000
	Water Booster Station ^(e)	1	Each	\$ 143,000
Overall Water System Replacement Value				\$ 1,366,701,000

Notes:

- (a) Water mains asset category includes the water service connections associated with these.
- (b) Hydrants asset category also includes their associated secondary valve.
- (c) The Valves asset category includes only in-line valves, pressure reducing valves, air release valves, and blow-off valves. All other valve types have been recorded under the water main.
- (d) Bulk water station replacement cost was based on historical documentation on the replacement cost for the facility.
- (e) Replacement values for water booster station show the sum of all process and structural assets within the facilities

The overall distribution of replacement values by asset type for the entire water distribution system is shown in **Table 9**. The water mains have the highest replacement value in the portfolio, totaling 95.24% of the entire system, as shown in **Figure 4**. The remaining assets

correspond to 4.76% of the value associated with the water distribution system.

Figure 5 provides a summary of the distribution of replacement values on the water mains based on materials.

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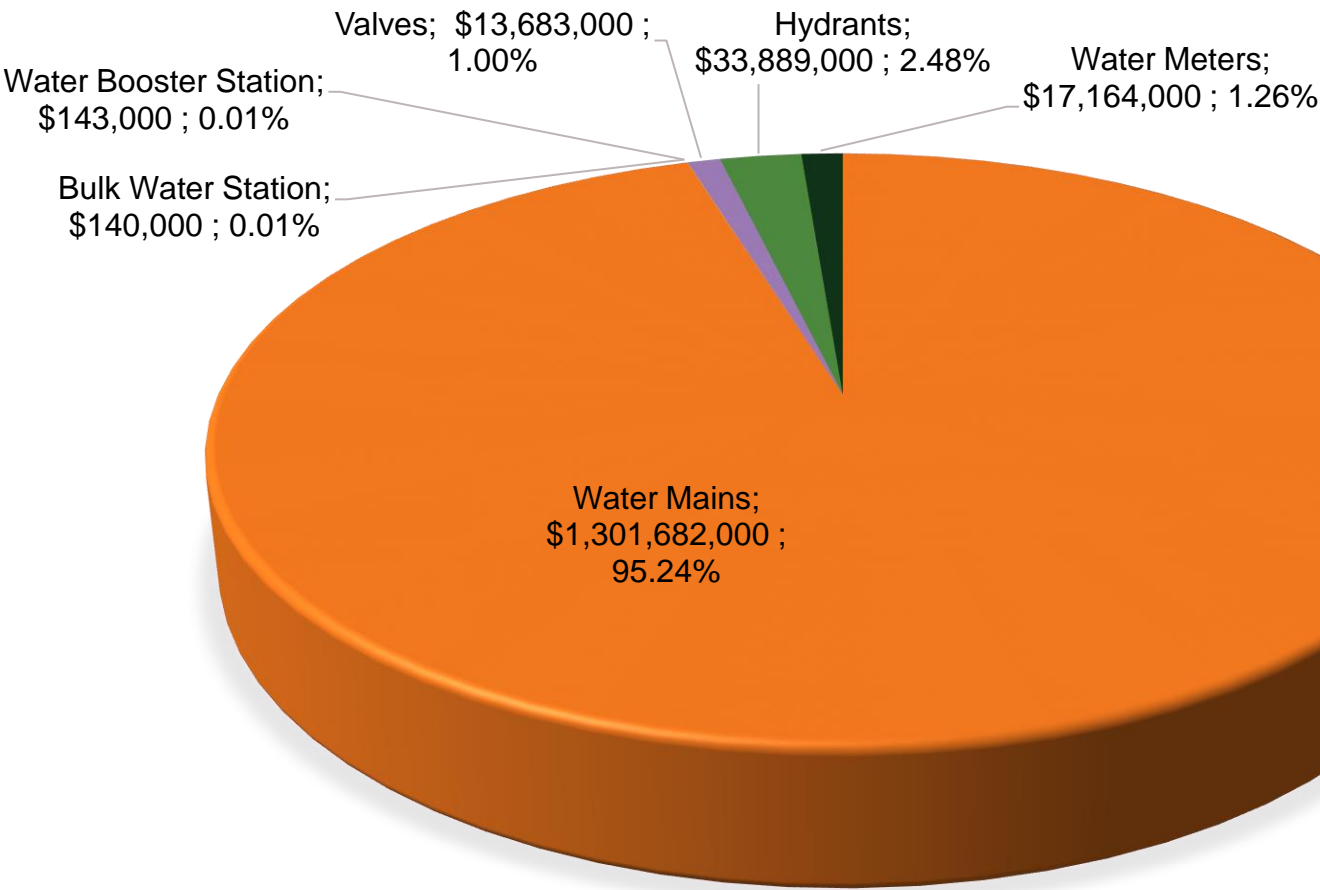
State of Local Infrastructure

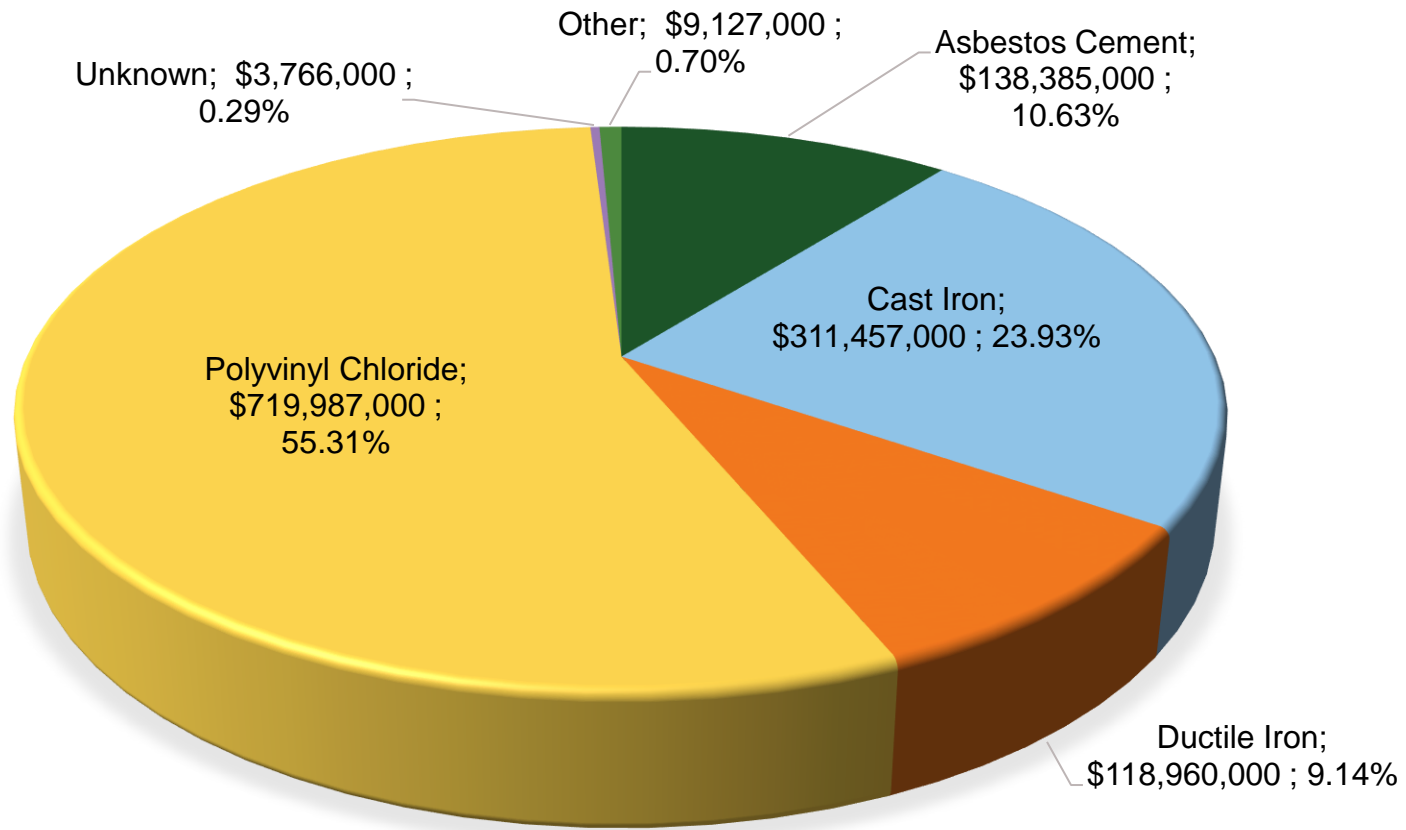
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Figure 4. Asset Replacement Value for All Water Assets



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The figure below summarizes the replacement value for water mains grouped by installation decade. Based on

the distribution, many of the water mains owned by the City are in the relatively early stages of their lifecycles.

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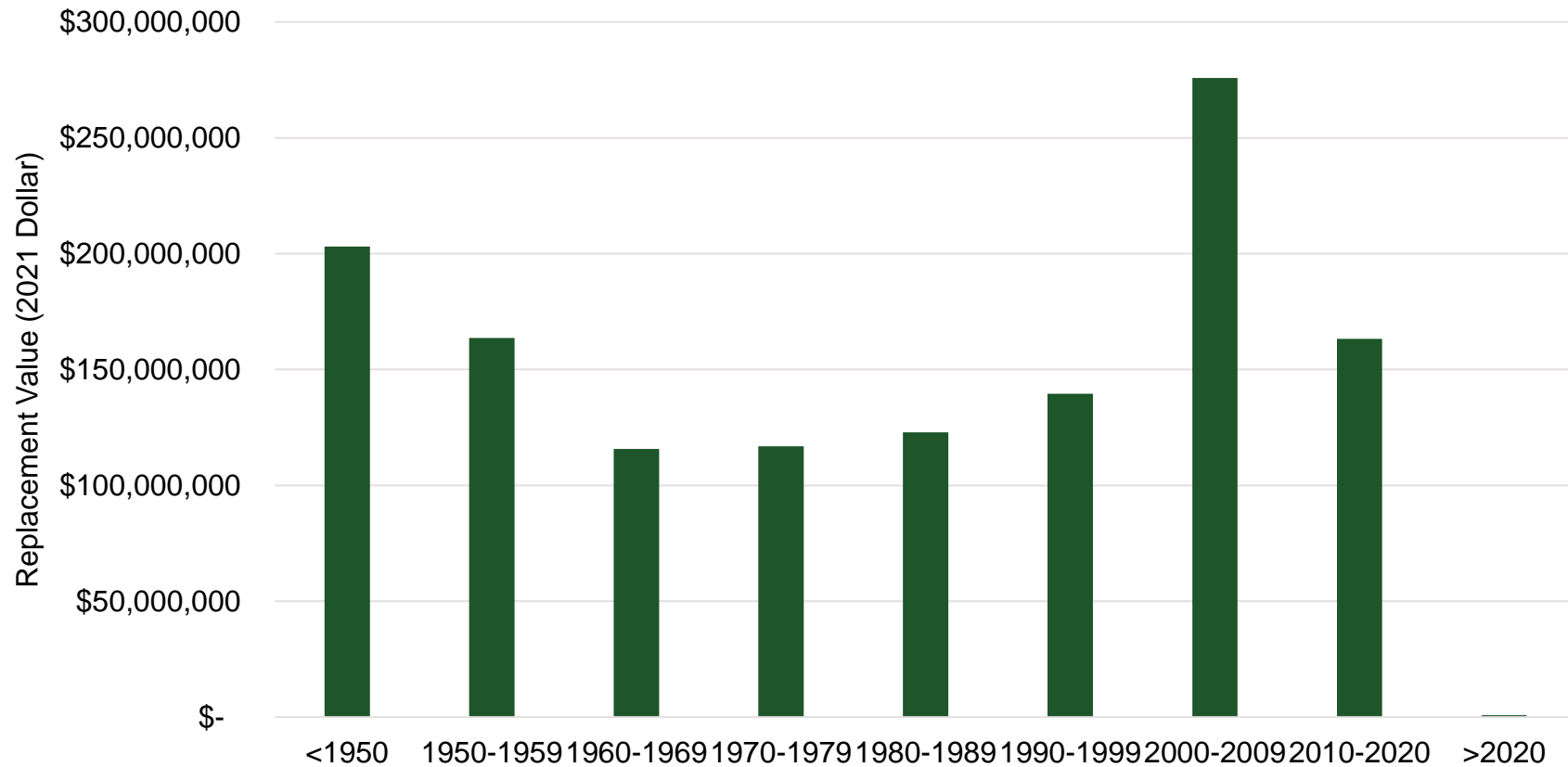
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Figure 6. Distribution by Replacement Value for all Water mains by Installation Decade



The construction materials for water mains (**Figure 5**) and their age (**Figure 6**) are aligned due to the preferred materials changing over time. For instance, in the mid-1970s Polyvinyl Chloride overtook Ductile Iron as the

preferred material for water mains. Thus, since Polyvinyl Chloride was the most popular material while infrastructure spending at the municipal level also began

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to increase, it is currently the most prevalent material in the distribution system.

2.1.2 Water System Condition

Condition was assigned to water system assets using diverse approaches depending on the asset category.

For water mains, the historical number of breaks was considered to determine a break index that is based on:

- Break Rate: The historical number of breaks per 100m of main.
- Break Score: Calculated based on the frequency of those breaks.

The break index is then converted into a performance score, condition score, and condition rating as shown in **Table 10**.

Table 10. Water mains Condition Scale

Condition Score	Condition Rating	Water main Break Index	Water main Performance Score
1	Very Good	0	1
2	Good	0.1-0.2	0.8-0.6
3	Fair	0.2-1	0.6-0.4
4	Poor	1-4	0.4-0.2
5	Very Poor	Over 4	Less than 0.2

The age of the main was also considered for determining the condition of water mains, as per **Table 4**.

The final condition score was calculated by taking the highest of the break-index performance score and the age-based performance score. The condition scale was assigned to all segments in the network individually.

Condition scores for all other water system assets were computed using a deterioration curve based on estimated service life remaining and the scores were converted to a rating based on the criteria in **Table 4**.

The current conditions of water distribution assets have been summarized and weighted by replacement value in **Figure 7**. The overall condition of the water facilities is based on the average condition of its components.

As the group representing the majority of distribution assets, the water main condition distribution by diameter is shown in **Figure 8**, and their location is indicated in **Figure 9**.

Overall, 17% of the water assets are in the very poor rating category (based on replacement value) and 3% are in the poor category.

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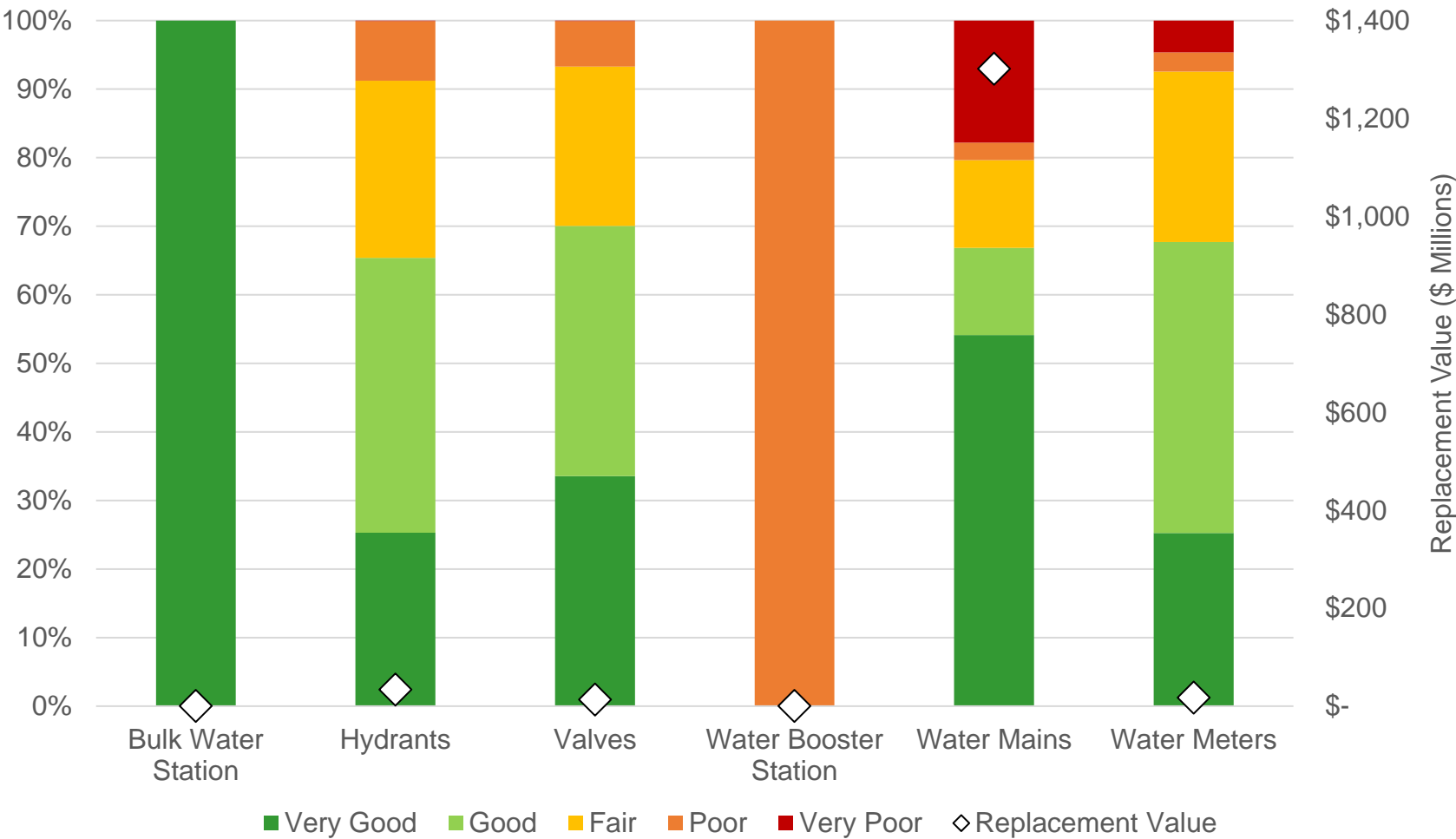
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Figure 7. Condition Distribution by Replacement Value for all Water Asset Types



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Figure 8. Condition Distribution by Diameter for all Water mains

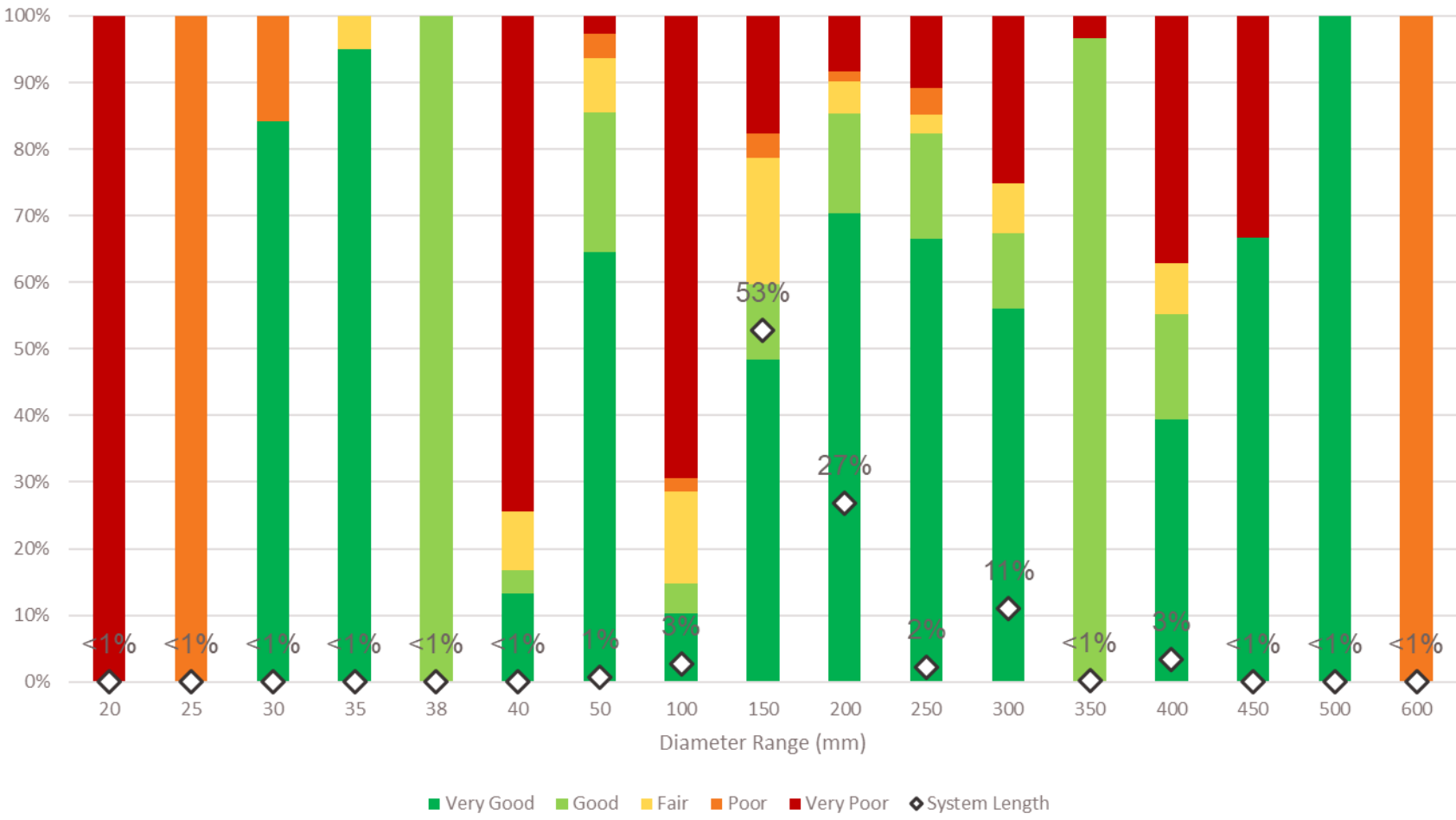
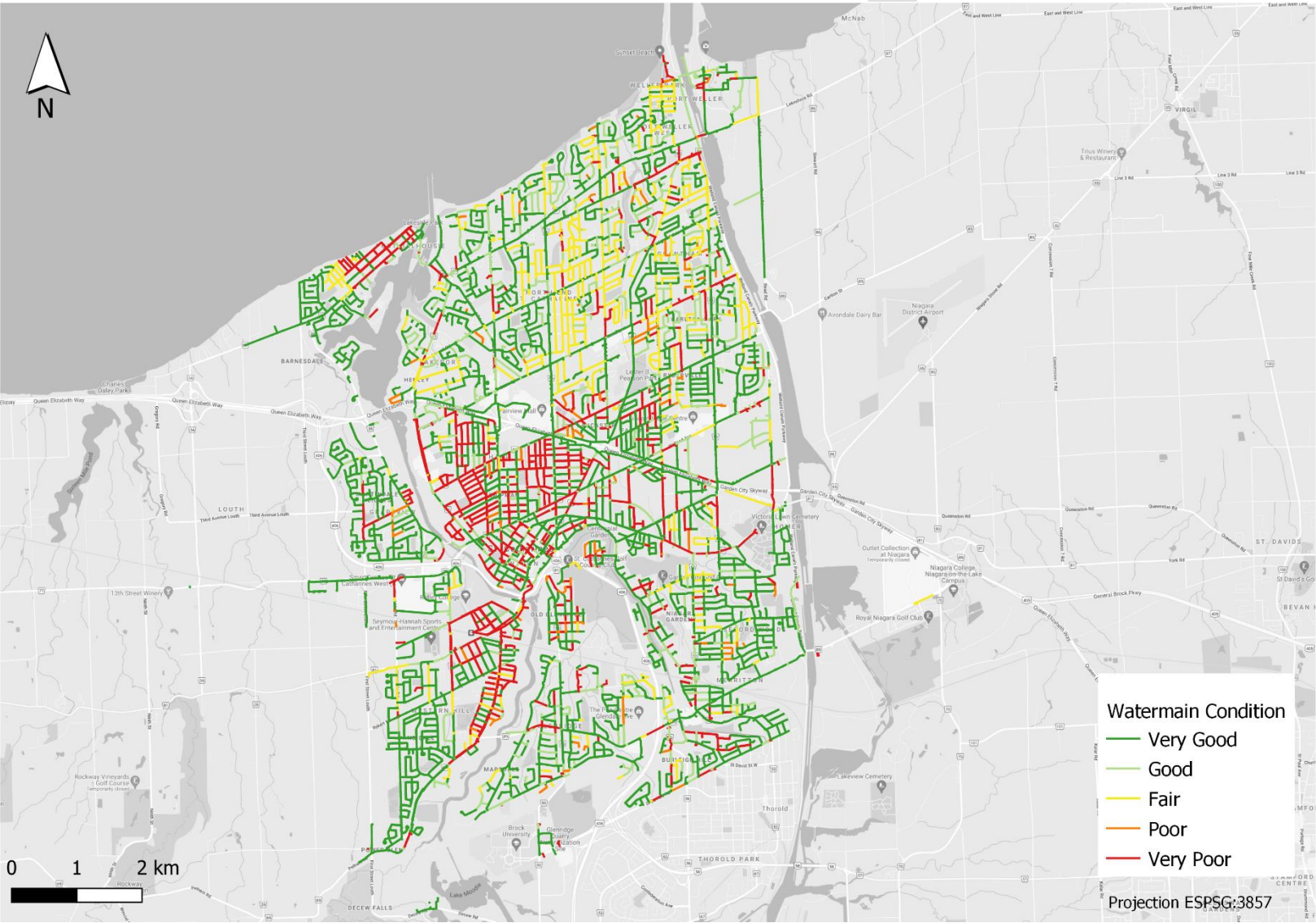


Figure 9. Condition Distribution by location for all Water mains



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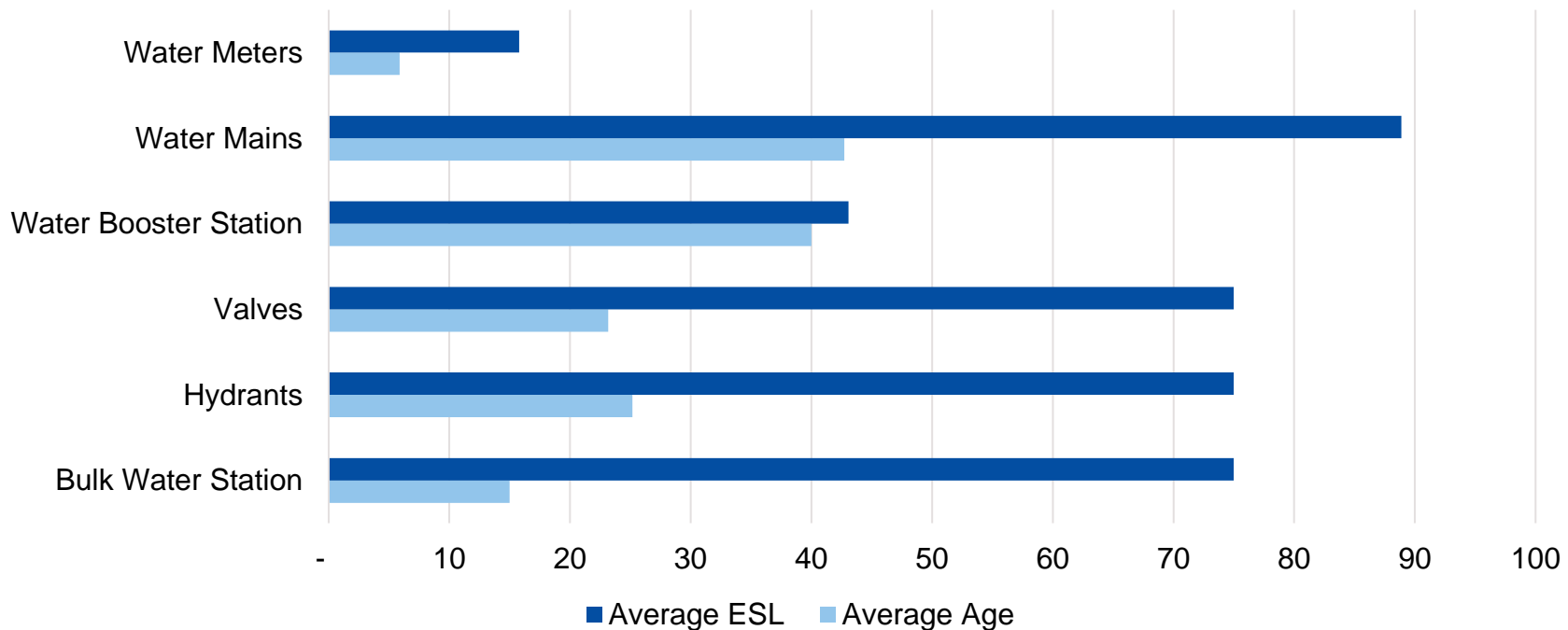
2.1.3 Water Age Summary

Comparing the average age of the assets with the average estimated service life (ESL) provides a representation of the average overall portfolio remaining life. The average age of water asset categories is around half of the average estimated service life, which is in

alignment with the Fair and Good condition distribution reported above.

The ESL is based on asset types and their attributes (i.e., material type for water mains).

Figure 10. Average Age as a Proportion of Expected Service Life by Asset Type All Water Assets

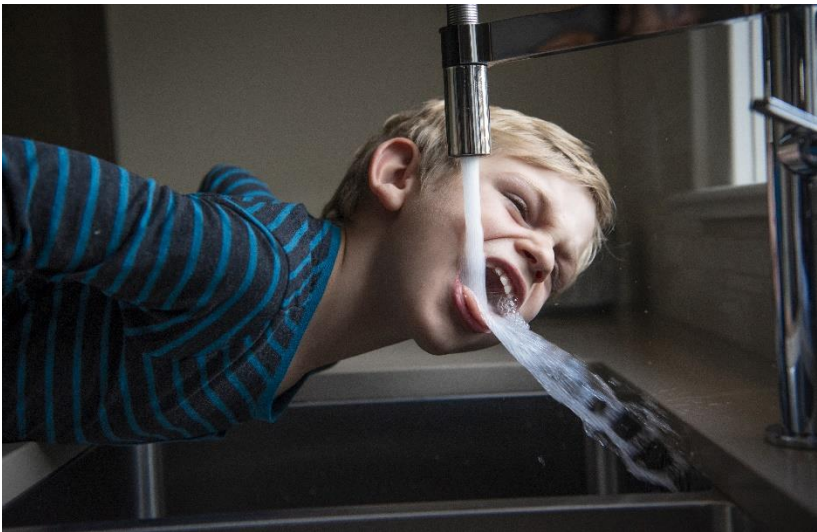


2.2 Water Levels of Service

The City of St. Catharines is committed to providing a sustainable and reliable supply of safe, high quality drinking water in accordance with regulatory requirements.

The Ontario Ministry of Environment, Conservation and Parks (MECP) conducts extensive annual inspections of the City’s water distribution system to determine the compliance of the system with requirements under the Safe Drinking Water Act and associated regulations.

The defined levels of service for the City’s water system are a key driver for the consistent performance that the City delivers to its residents as these provide the planned outcome from a functional perspective.



The Key Service Attributes associated with the water LOS and their associated statements are defined in the table below:

Table 11. Water LOS Service Attributes

Service Attribute	Attribute Statement
Scope	Providing adequate water services to the community
Safety	Water system provides safe potable drinking water
Quality	Providing high quality water to customers
Reliability	Providing water services with minimal interruptions
Environmental Stewardship	Providing a water service in an environmentally conscious manner
Cost Efficiency	Providing water services in an efficient manner
Capacity	Water system supports community fire protection

The following sections provide a summary of the levels of service for the City’s water services including those required by the O.Reg.588/17.

2.2.1 Water Customer Levels of Service

The City’s CLOS provides a means to assess the level to which customer expectations are being met. The

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following provides a summary of the CLOS associated with St. Catharines water service.

- Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system (Scope)**
 The City owns and operates a Class II residential water distribution system, that receives its drinking water from the Regional Municipality of Niagara's Decew Water Treatment Plant. The distribution system is comprised of 594 km of water main pipe, 3,559 hydrants, 1 booster station and a bulk water facility servicing, which service a total of 42,566 customers including 145 bulk water customers. See Figure 9 for a map of the water distribution system.
- Description, which may include maps, of the user groups or areas of the municipality that have fire flow (Scope)**
 Fire flow is provided by 3,559 hydrants within the serviced area.
- Description of boil water advisories and service interruptions (Reliability)**
 There have been no boil water advisories in 2019 or 2020

Additional customer levels of service are provided in **Table 12**.

Table 12. Water CLOS Indicator

Service Attribute	Customer Levels of Service	2020 Performance
Quality	Number of complaints due to rusty / discoloured water	29
	Average Condition of water mains	Good
Reliability	Length of water mains in Poor or Very Poor condition	121 kilometres
	Percentage of water assets in fair or better condition	80%
Cost Efficiency	Annual cost to provide water service (per customer)	\$309.12

The current customer performance is based on billing information, customer service requests received, and the findings from the City's water model.

2.2.2 Water Technical Levels of Service

In addition to setting performance levels associated with customer expectations, the City has also documented

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current technical performance indicators that align or support the CLOS presented in **Table 12**.

The following provides a summary of the TLOS associated with the water service at the City of St. Catharines.

Table 13. Water TLOS Metrics

Service Attribute	Technical Levels of Service	2020 Performance
Scope	Percentage of properties connected to the municipal water system ^(a)	94.2%
Safety	Percentage of water sampling meeting Safe Drinking Water Standards	99.9%
Reliability	Percentage of water assets in poor or better condition	83%
	The number 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 ^(a)	Zero (0)
	The number of connection-days per year due to water main breaks compared to the total number of properties connected to the municipal water system ^(a)	10.6
	Total number of water main breaks	115
	Percentage of customers where service is interrupted due to a water main break	9%
	Number of water main breaks per 100 km	19
	5 year rolling average water main breaks per 100km	19
	5-year average number of water main breaks	111
Environmental Stewardship	Water loss as a percentage of Water Purchased	15%
Cost Efficiency	Preventative maintenance as a percentage of total maintenance	6%
	Maintenance cost per km of distribution network	\$ 8,745
	Capital investment vs sustainable investment forecast	20%
	100-year sustainable investment equivalent annual cost	\$ 42,044,939

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Service Attribute	Technical Levels of Service	2020 Performance
Cost Efficiency (Cont.)	Water linear (Mains + Appurtenances) Reinvestment Rate - (Annual average of projected lifecycle capital budgets as a % of replacement value)	0.9%
	Total water linear asset replacement value	\$ 819,579,254
Capacity	Percentage of properties where fire flow is available ^(a)	98.6%

Notes:

(a) Required by O.Reg. 588/17

2.2.3 Water Future Metrics for Consideration

As part of the definition of levels of service, the City identified possible level of service metrics that could be added to their framework as data becomes available. The following table provides a summary of the metrics that have been proposed for future consideration.

Table 14. Water LOS Future metrics

Service Attribute	Levels of Service Proposed Future Metric	Type of LOS
Reliability	Percentage of system with high or low pressure	Technical

2.3 Water Lifecycle Management Strategy

The levels of service presented in the previous section are supported by the achievement of a variety of lifecycle activities in accordance with the activity types presented in **Table 5**. These activities are targeted to extend the asset life, ensure levels of service are being met, and reduce overall lifecycle costs.

The water service staff implement a variety of lifecycle activities on its entire portfolio. **Table 15** provides a summary of these activities and the risk associated with not doing them.

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Table 15. Water Lifecycle Activities, Associated Risk, and Estimated Lifecycle Cost

Lifecycle Activity Type	Asset Management Practices	Risk Associated with the Activity	Equivalent Annual Cost (2022 to 2032)
Non-Infrastructure Solutions	<ul style="list-style-type: none"> Master plans are developed and updated to provide a baseline for future growth projections in the water system. Hydraulic analysis is conducted to evaluate the capacity of the linear water system and identify areas that require improvements. Condition assessments of booster station and bulk water station as required. The City provides continuous tracking on water quality complaints to ensure customer satisfaction. 	<ul style="list-style-type: none"> Inaccurate growth numbers lead to inadequate estimations for funding requirements and insufficient capacity. Asset deterioration is over or underestimated. Regulatory requirement and standard changes. 	<p>\$ 120,000</p> <p>Based on the historical 2017 to 2021 average expenditures. It is recommended that future studies be identified based on best practices and cost estimates be developed.</p>
Renewal / Rehab Activities	<ul style="list-style-type: none"> Renewal and rehabilitation as identified through ongoing maintenance, inspection, and condition assessments. 	<ul style="list-style-type: none"> Incorrect assumptions of the expected improvement in useful life after maintenance is completed. Increased lifecycle cost if renewal/rehab are done improperly or not as scheduled. Water loss to the environment. 	<p>-</p> <p>Currently done on a reactive basis. A strategy needs to be developed to have a regular program to identify good candidates for the implementation of these technologies at an appropriate time and prior to an asset needing full replacement</p>

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Lifecycle Activity Type	Asset Management Practices	Risk Associated with the Activity	Equivalent Annual Cost (2022 to 2032)
Maintenance Activities	Linear Assets <ul style="list-style-type: none"> Routine maintenance program including flushing of water mains, exercise in-line valves, sampling for lead in service connections, seasonal maintenance of hydrants. Leak detection program and break repairs as needed. Repair program for valves and hydrants as required. Relining (in the future) Vertical Assets <ul style="list-style-type: none"> Routine maintenance program including inspection and equipment checks. 	<ul style="list-style-type: none"> Increased lifecycle cost if maintenance is done improperly or without scheduled frequency. Insufficient maintenance could lead to unplanned and urgent work when there are inadequate resources available (labour, materials, etc.). Insufficient maintenance may contribute to asset failure resulting in service disruptions. 	<p>\$ 4,825,000</p> <p>Based on the 2020 to 2021 budget increase applied annually from 2021 onwards. Incorporating the maintenance of growth assets following construction</p>
Replacement/ Construction Activities	<ul style="list-style-type: none"> Replacement of deteriorated assets. 	<ul style="list-style-type: none"> Coordination with other asset classes (if applicable) might delay or advance timeframe of construction activities. Delays in construction could result in cost over-runs. 	<p>\$ 28,563,000</p> <p>Forecasted based on the lifecycle management activities.</p>
Growth Activities	<ul style="list-style-type: none"> Asset additions to accommodate for population growth in new subdivisions within the City. Linear Appurtenance additions to support changes in system configuration. 	<ul style="list-style-type: none"> Growth activities are delayed or cancelled resulting in system being unable to accommodate increased growth demands. Loss of compensation through Development Charges. 	<p>\$ 224,000</p> <p>Based on the average between the maximum of 2017 to 2021 average capital growth activities and the projected development charges</p>

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Lifecycle Activity Type	Asset Management Practices	Risk Associated with the Activity	Equivalent Annual Cost (2022 to 2032)
Disposal Activities	<ul style="list-style-type: none"> Decommissioning assets at the end of their useful life. Disposal of abandoned or obsolete infrastructure during construction projects. Salvage and reuse of parts where appropriate. Hydrants scrapped if barrel is defected and there is a salvage value associated with their disposal and some are salvaged and used for spare parts. 	<ul style="list-style-type: none"> Improper disposal could lead to environmental impacts and result in cost overruns. 	<p>\$ 40,000</p> <p>Based on the 2017 to 2021 average disposals</p>
Service Improvement Activities	<ul style="list-style-type: none"> Water service improvements are conducted during water main replacement projects, or when at the request of a customer based on pipe diameter and/ or material type to copper or plastic. Water main upsizing based on design standard compliance and flow requirements. Inclusion of water mains looping to minimize dead ends in the water network. Automatic Meter Reader replacement program for older water meters. 	<ul style="list-style-type: none"> Lack of improvements can result in health and safety risks. Loss in efficiency of delivering service. 	<p>\$ 69,000</p> <p>Based on the 2017 to 2021 average service improvement activities</p>

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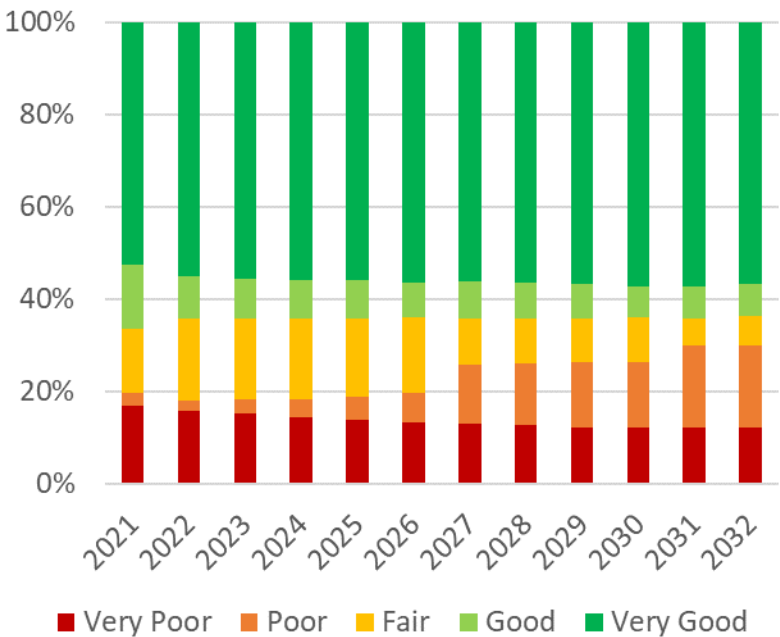
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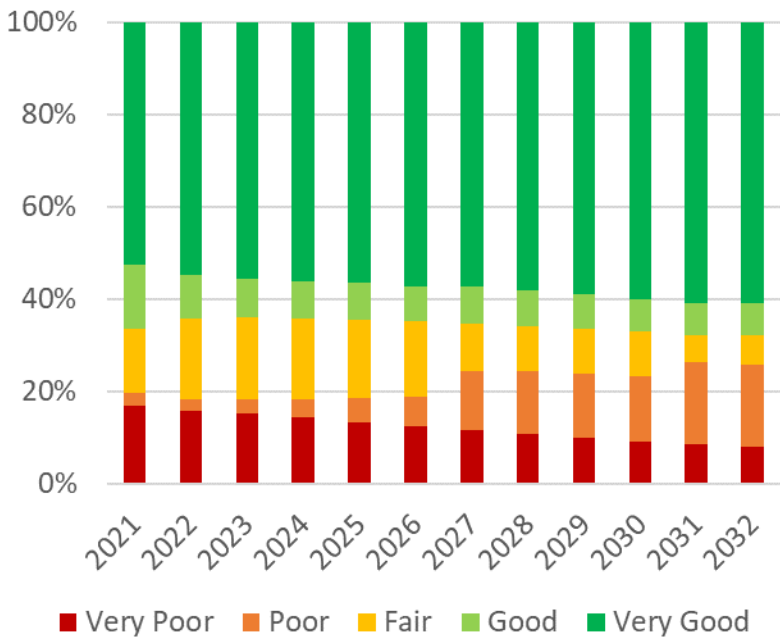
The City uses these strategies to plan work and determine future expenditure needs. The TLOS used in the AM analysis for water assets was defined as maintaining the current portion of assets with poor or better performance. The cost to maintain this scenario was determined to be \$16.2M annually over a 25-year period and resulted in the performance forecast shown in **Figure 11**. The percentage of assets in poor or better condition holds around 83% with slight improvement over the 10-year period.

Figure 11. Water Condition Distribution Performance with Cost to Maintain Performance



The current planned budget was also analyzed to determine if a funding gap exists. However, it was identified in the recent water and wastewater financial plan that an improvement to LOS was required to meet the Community's needs. The current planned expenditures, starting around \$9M in 2021 and increasing to \$19.5M by 2029, resulted in the performance forecast shown in **Figure 12**. The percentage of assets in poor or better condition improves from 83% to 92% over the 10-year period.

Figure 12. Water Condition Distribution Performance with Anticipated Budget



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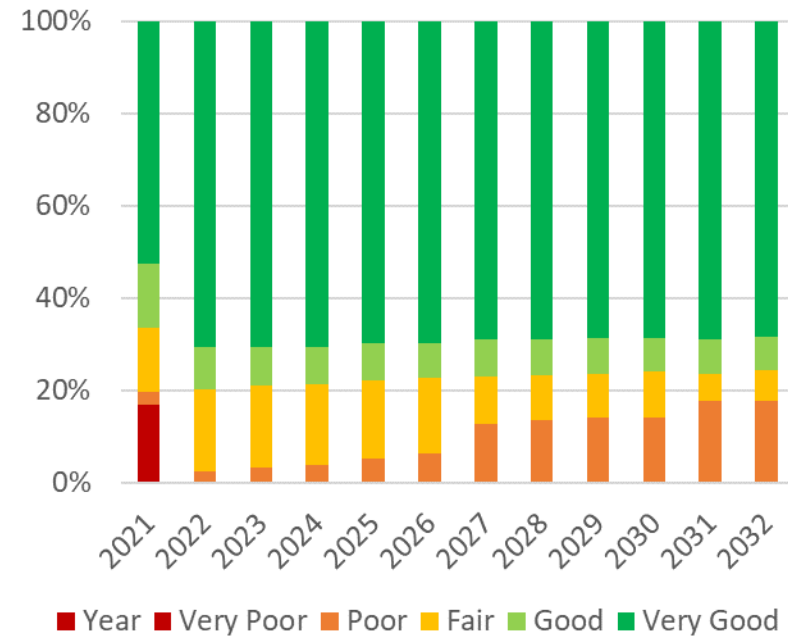
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Additionally, an optimal lifecycle scenario was analyzed, which was used to determine the cost to meet all lifecycle strategies described in **Table 15**. This scenario addresses the backlog and ensures no asset reaches very poor performance. The cost to achieve this scenario was determined to be \$33.7M annually over a 25-year period and resulted in the performance forecast shown in **Figure 13**.

The costs for the 10-year lifecycle forecast are presented in **Figure 14**. The graph shows the forecasted expenditures by lifecycle category for the cost to maintain scenario. The equivalent annual cost to maintain LOS, the annual expenditures for the optimal lifecycle scenario and the anticipated annual funding is also provided on the graph. The City should continue to implement the recommendations from the water and wastewater financial plan.

Figure 13. Water Condition Distribution Performance with Optimal Lifecycle Activities



2. Water

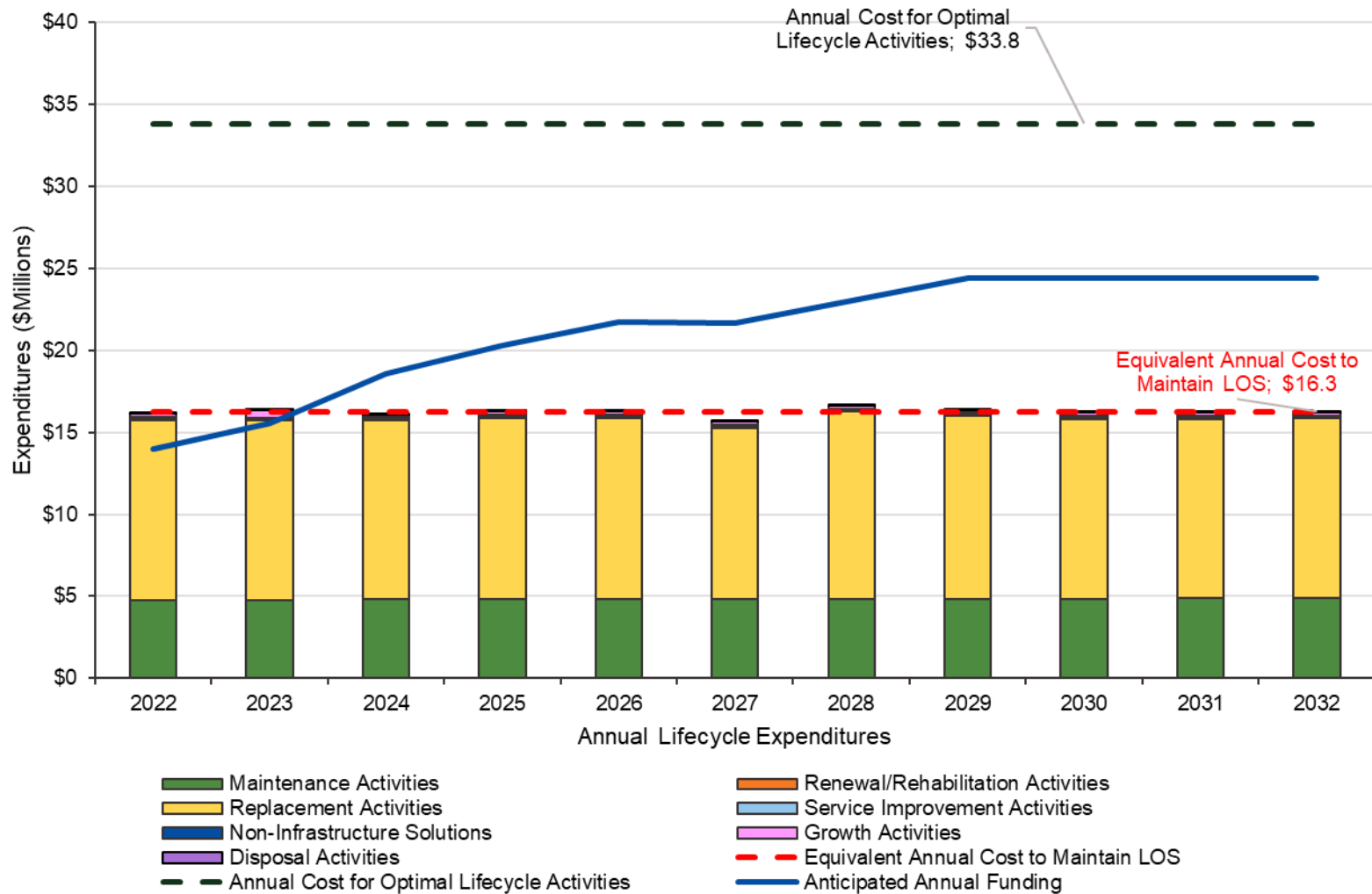
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Figure 14. Water Forecasted Lifecycle Needs



2. Water

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2.4 Water Service Associated Risks

As noted, the assets associated with the water service are key to providing clean and safe drinking water to the community. In addition to the risk associated with the lifecycle activities for this service, as shown on **Table 15**, the following are considered general risks with this service:

- Water main breaks resulting in service disruption;
- Hydrant failure resulting in limited fire flow access;
- Revenue loss due to water meter failure, leaks and water main breaks;
- System operational restrictions due to valve failure;
- Inability to isolate parts of the system due to valve failure;
- Third party damage during repair activities
- Service disruptions and reduction of water quality; and
- Service interruptions as a result of water station failure, both booster pumping and bulk water.

2.5 Water Climate Change Considerations

While the City's location by the Great Lakes would seem to assure its water supply source is relatively secure, water quality can be impacted by climate change and pollution. In the past decade, there have been increased

incidents of algal blooms in Lake Erie and Lake Ontario which threaten fish and wildlife habitat, interfere with recreational activities, as well as increase costs for treating drinking water. Excess nutrients from stormwater runoff, warm temperatures, and sunlight trigger various types of algae growth which can contaminate water and affect its taste and odour.

With climate change, increasing annual average temperatures and a trend towards more heat waves and summer droughts are expected to continue in the future. Dry weather increases peak demand for water which impacts the sizing of various water infrastructure. Rural residents that rely on non-municipal sources will be impacted by droughts that affect evaporation patterns, groundwater recharge, and agricultural production. Various measures for system design and operation will need to be assessed to deal with these issues.

2.6 Water Data Confidence

The following data sources were used to support this chapter's assessment of the City's water assets.

- Water mains, valves, hydrants, and meters: GIS shapefiles of the full inventory for these categories with their associated key attributes such as installation date, type, size, length;
- Unit Cost Summary documentation provided by the City based on historical data;

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- Historical water main break records;
- City Tangible capital asset estimated service life values; and
- Bulk Water Station and Booster Station drawings.

The following assumptions were made during the assessment of the data for the development of the different assessments:

- The water facility inventory was based on high-level information available from the drawings. The cost of these assets was determined based on estimates of similar assets and their age was assumed as per the drawings provided;
- Water main break data from years prior to the initial assessment in the break records were considered with an age approach for condition;
- Missing installation dates in linear assets were filled based on the material standard install date period; and
- Replacement costs were forecasted based on available unit rates for the diameters not included in the original dataset.

A data confidence assessment is provided below:

Table 16. Water Data Confidence Assessment

Asset Category	Confidence Rating	Confidence Data
Water mains	C	Assumptions were made for age, break data, and replacement values from reliable sources.
Hydrants	B	Minor assumptions were made on age and replacement costs
Valves		
Water Meters		
Bulk Water Station	D	Data based on historical information and assumptions on key parameters
Water Booster Station		

Estimated Replacement Value

The City's wastewater collection system is valued at approximately **\$1.5 billion**.

Condition Rating

The overall average condition of the assets for the wastewater collection system is **Good**.

Wastewater

The City collects wastewater from residential, industrial, commercial, and institutional facilities within its boundary to be treated at a Niagara Region's wastewater treatment plants. As a lower tier municipality, the City is responsible for the local wastewater collection system that includes the following portfolio of assets:

563 kilometres of Wastewater Gravity Mains

7,878 Maintenance Holes

5.4 kilometres of Forcemains

9 Wastewater Storage Facilities

1 Wastewater Pump Station

3.0 Wastewater

Conveying wastewater from homes and businesses within the City to the wastewater treatment plants decreases the risk of health-related issues from exposure to bacteria in wastewater, while also mitigating the environmental impact of untreated effluent entering the natural environment.

The following section summarizes the portfolio associated with the City Wastewater Service.

3.1 Wastewater State of Local Infrastructure

3.1.1 Wastewater System Valuation

The City's wastewater collection system is divided into linear and vertical asset types. These serve to convey both wastewater and combined (wastewater and stormwater) flows.

- **Wastewater Linear Assets** represent the majority of the collection portfolio as they include mains, force mains, and service connections. For the purpose of this assessment, service connections were not discretized single asset categories, these were considered components of the sewer mains.

- **Wastewater Vertical Assets** include the facilities required to further pump or store wastewater in the system.

For the valuation of the wastewater collection system, the replacement values considered are intended for replacement of a similar asset (like-for-like) on a complete and standalone basis. These were calculated based on historical values that the City has incurred as part of previous projects for similar assets. Furthermore, the estimated value for wastewater facilities was calculated using a bottom-up approach based on the assets located within each facility and industry standard costing for these assets.

Based on the approach taken to calculate the replacement values for each asset category, the data confidence grade is:

- **D** for the pump station,
- **C** for sewer mains, and
- **B** for the remaining asset categories.

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Table 17. Wastewater System Inventory Valuation

Asset Type	Asset Category	Count	Unit	Replacement Value (2021 Dollars)
Wastewater Collection	Gravity Mains	563,128	Metres	\$ 1,445,630,000
	Force Mains	5,448	Metres	\$ 12,995,000
	Maintenance Holes	7,878	Each	\$ 71,877,000
	Pumping Station ^(a)	1	Each	\$ 962,000
	Wastewater Storage Facility	9	Each	\$ 24,950,000
Overall Wastewater System Replacement Value (2021 Dollar)				\$ 1,556,414,000

Notes:

(a) Replacement values for pump stations were based on an estimate of the replacement of each of the assets within these facilities

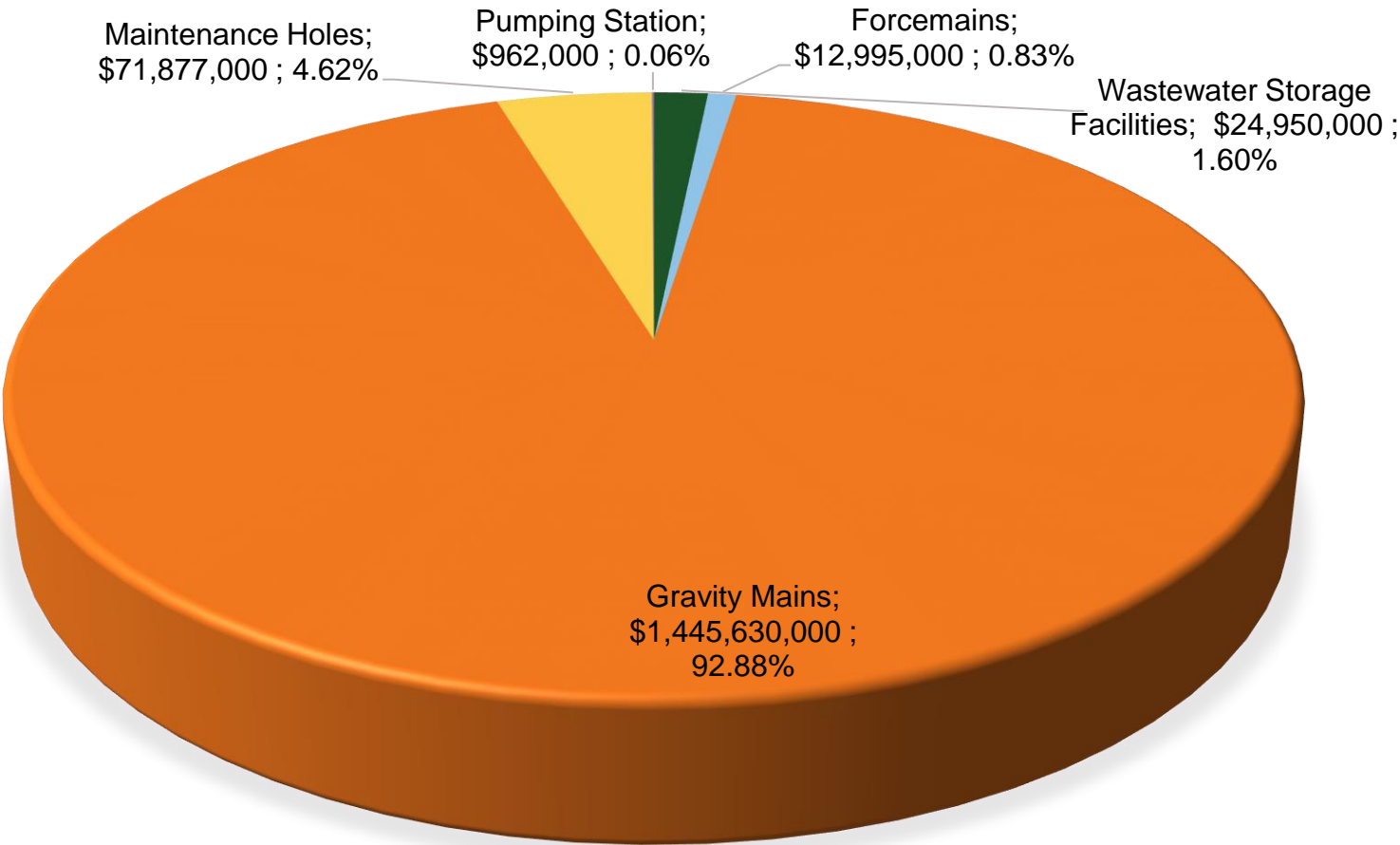
The overall distribution of replacement values by asset type for the wastewater collection system is as shown in **Figure 15**. The wastewater gravity mains have the highest replacement value in the portfolio, totaling 92.88% of the entire system. The remaining assets correspond to 7.12% of the value associated with the wastewater collection system.

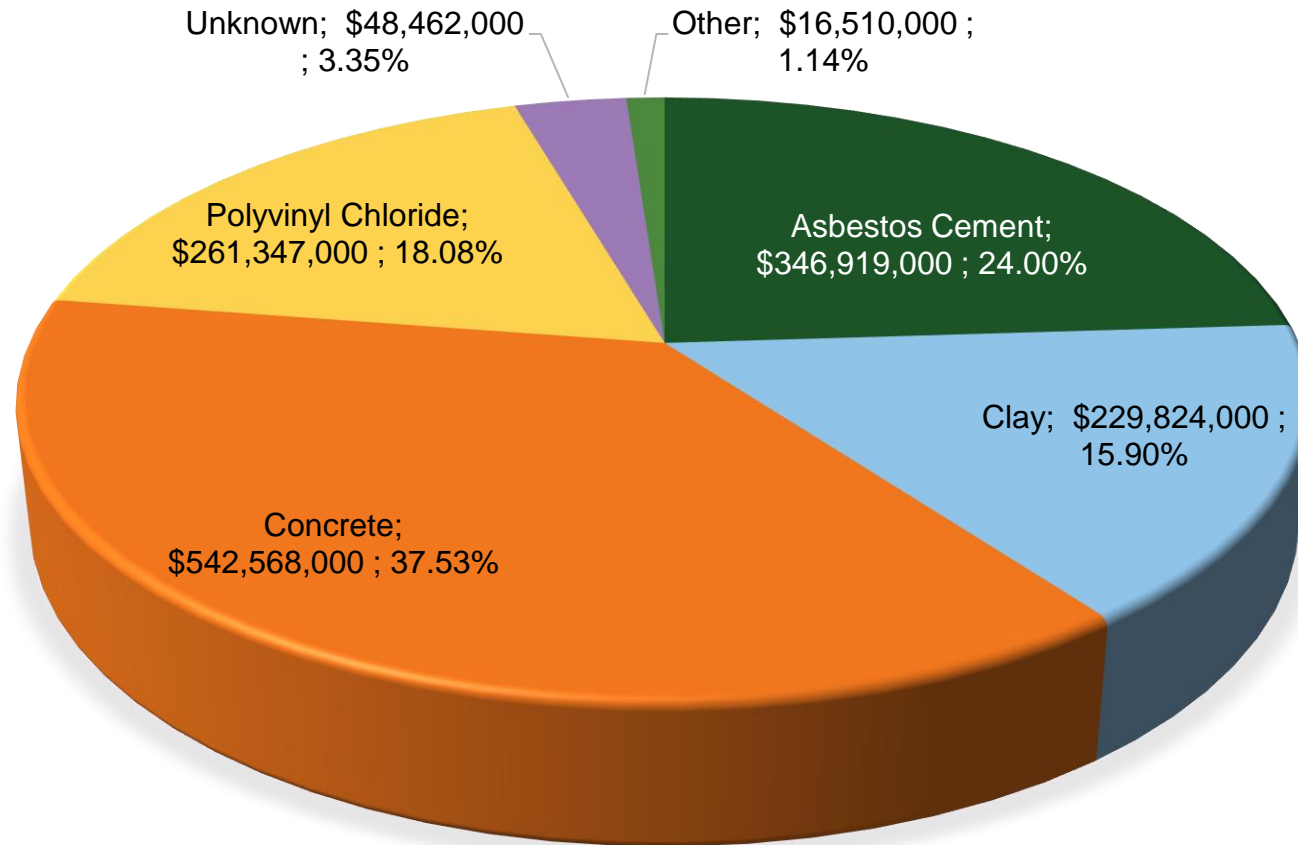
As wastewater gravity mains represent the majority of the wastewater collection asset replacement values, **Figure 16** provides a summary of the distribution of replacement values based on materials.



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Figure 15. Asset Replacement Value for All Wastewater Assets



3. Wastewater**State of Local
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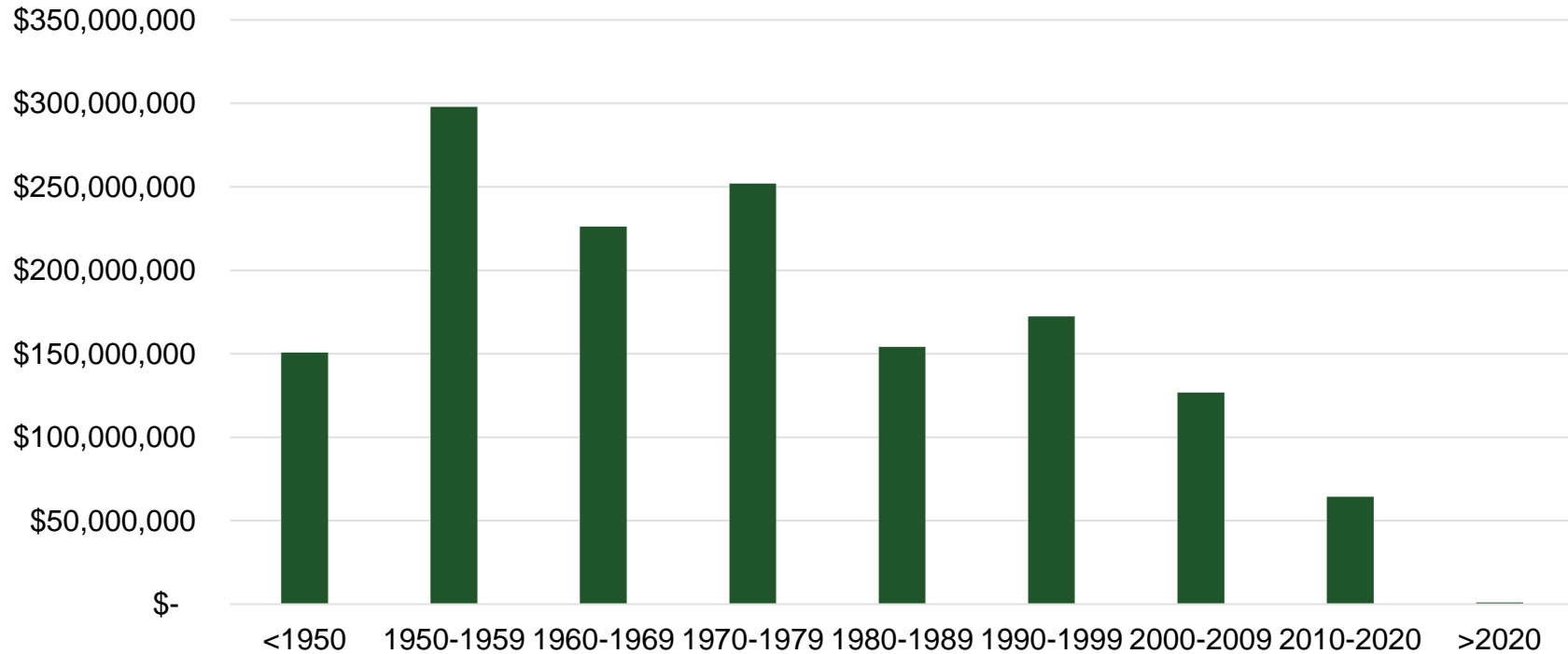
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To further assess the wastewater gravity mains, as the major asset category within the wastewater service, the

figure below summarizes the decade of the year of installation by replacement value.

Figure 17. Distribution by Replacement Value for all Wastewater Gravity Mains by Installation Decade



As shown in **Figure 17**, a large portion of the wastewater collection portfolio was constructed over 70 years ago which indicates that these assets will be reaching the end of their useful life in the coming years resulting in increasing capital requirements.

3.1.2 Wastewater System Condition

Using Markov probability distributions based on observed and predicted conditions, a condition score was computed for each asset into five rating categories ranging from Very Good to Very Poor. The City has

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completed condition assessments on wastewater sewers and maintenance holes according to the NASSCO PACP standards. The assessments of pipes without a recent CCTV inspection were completed using zoom camera inspections which is limited in that approximately 30% of the pipe is assessed. The assumption is that the observed section is indicative of the remaining pipe, however this may not always be the case. Where the condition assessment scores were available, they have been used to determine the associated condition rating. The recent zoom camera project recommends targeted CCTV inspections to refine the data. **Table 18** provides a summary of the rating scale for sewer mains. The condition of the other wastewater asset classes is based on the scale in **Table 4**.

Table 18. Sewer Mains and Maintenance Holes Condition Scale

Condition Score	Condition Rating	Pipeline & Maintenance Holes Structural Score (PACP & MACP)
1	Very Good	0-1
2	Good	2
3	Fair	3
4	Poor	4
5	Very Poor	5

The current condition of assets has been summarized and weighted by replacement value in **Figure 18**. As the group representing the majority of distribution assets, the condition distribution of gravity mains has been represented by diameter in **Figure 19**, which also indicates the percentage of system length. The condition ratings are visualized in the map shown in **Figure 20**.

It should be noted that the sewers' performance data was assessed using zoom camera and CCTV inspections, each of which has its limitations. Staff have come across many sewers that have been observed to be in good condition through the inspections but were actually in very bad condition when exposed for any reason. Additionally, sewers that were near other construction activity started crumbling and provoked replacements that were not originally scheduled within projects.

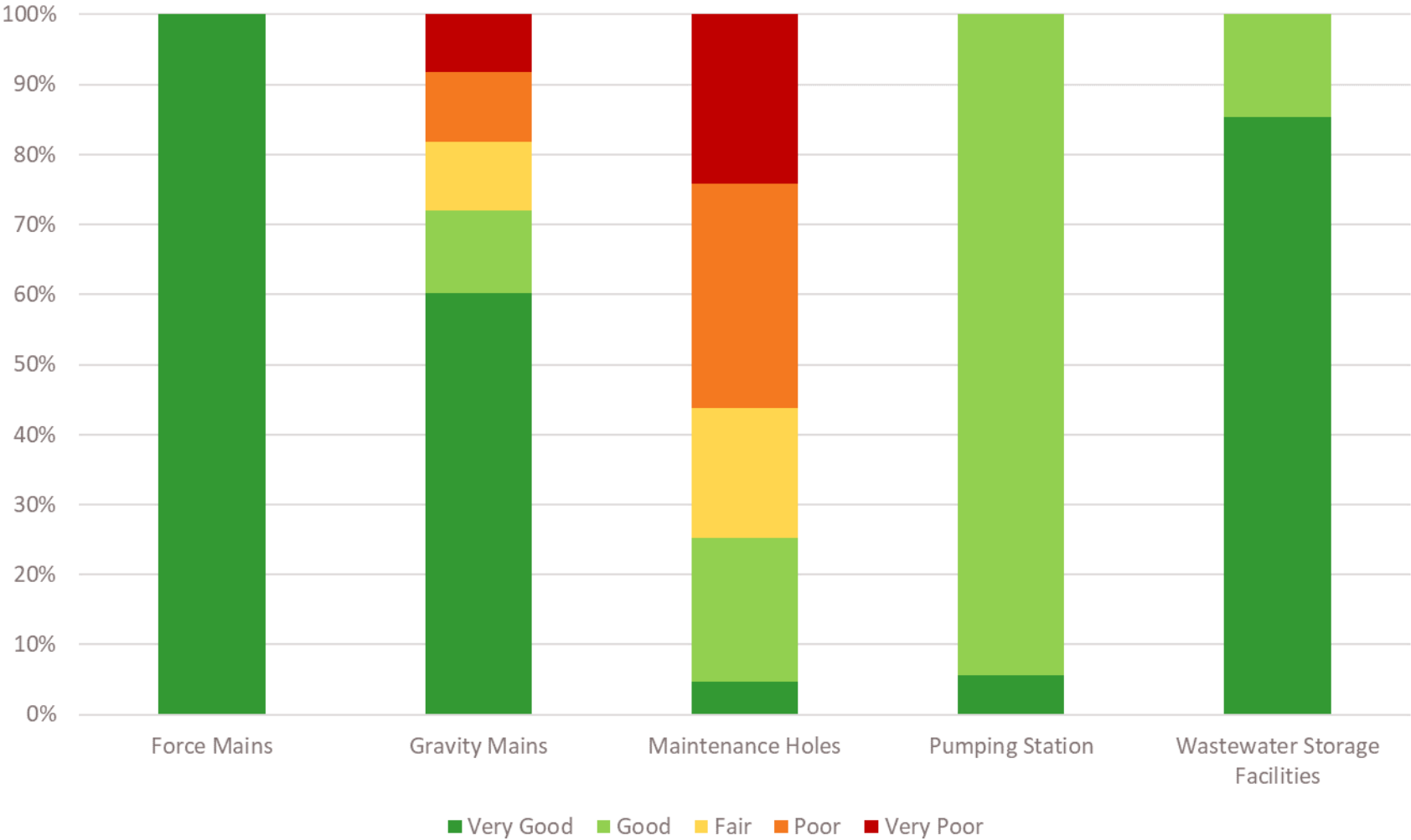
The overall condition of the wastewater facilities is based on the average condition of its components.

Overall, 9% of the wastewater assets are in the very poor rating category (based on replacement value) and 11% are in the poor category.

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Figure 18. Condition Distribution by Replacement Value for all Wastewater Asset Types



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Figure 19. Condition Distribution by Replacement Value for all Wastewater Mains

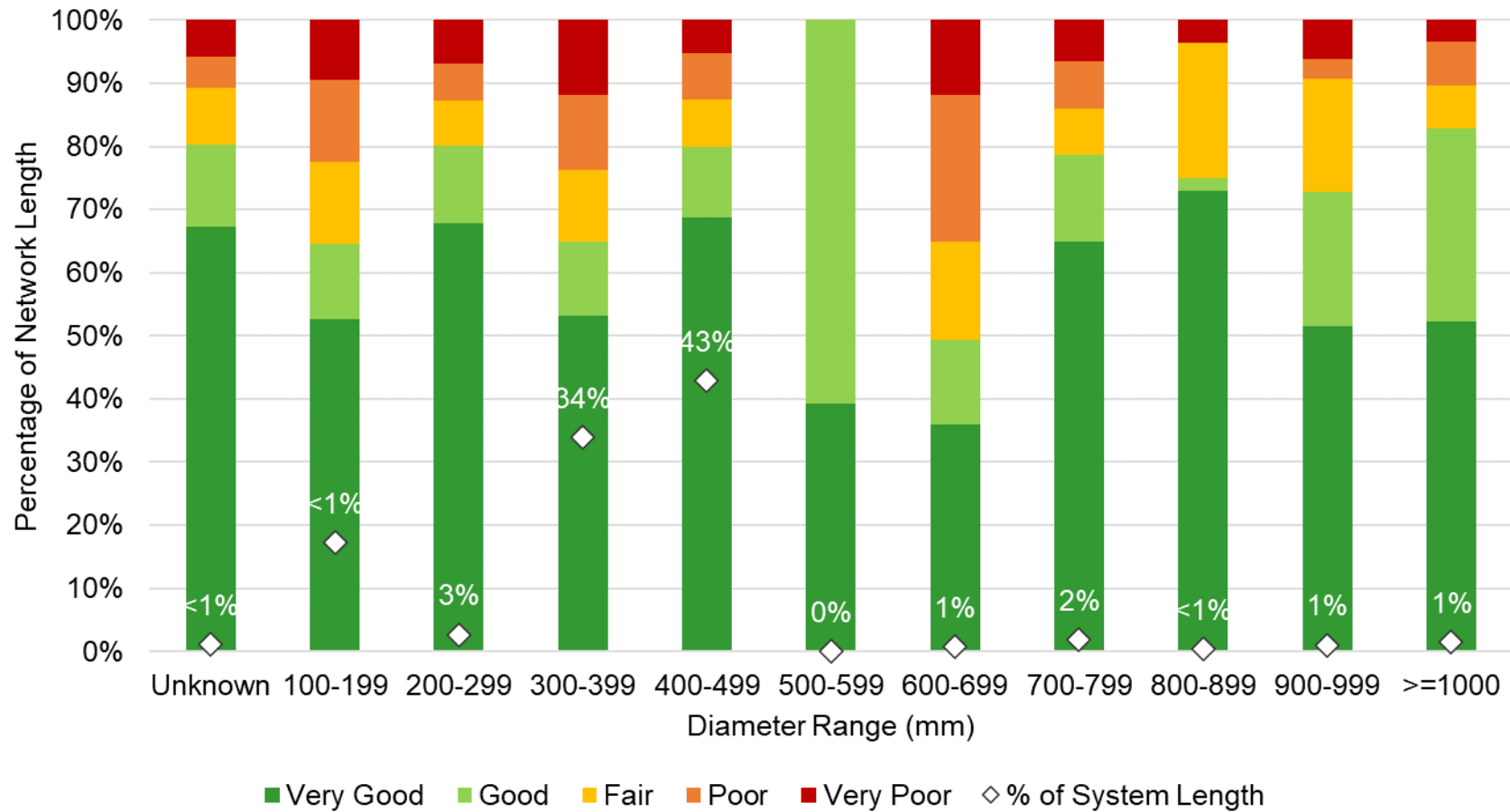
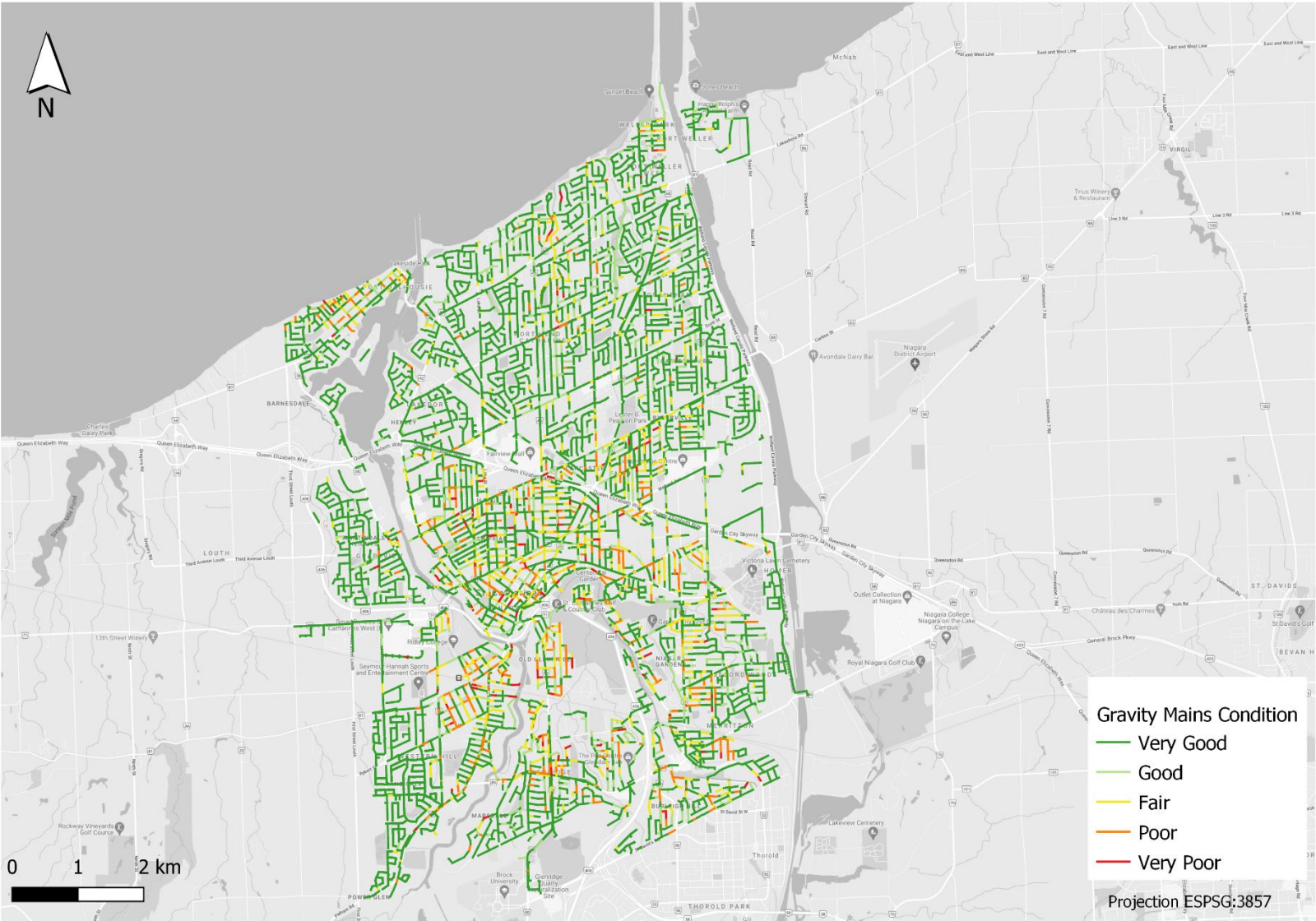


Figure 20. Condition Distribution by Location for all Gravity Mains



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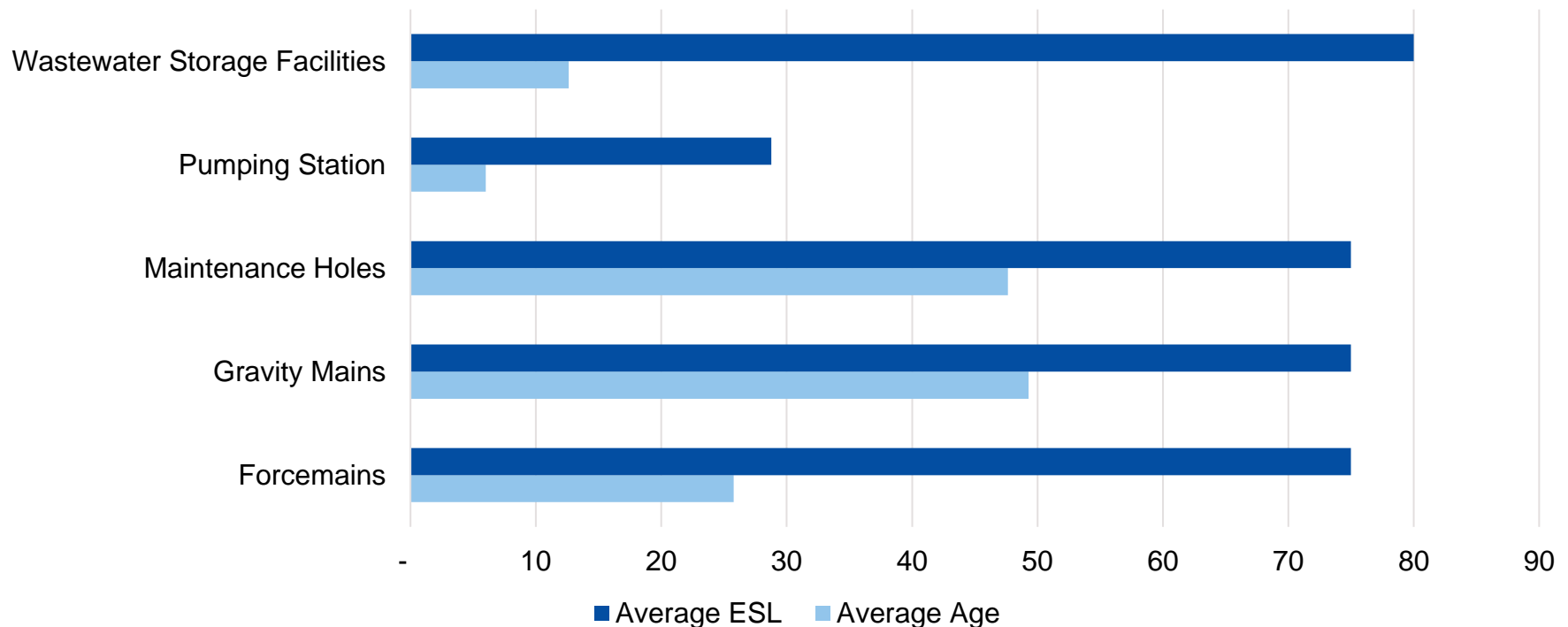
3.1.3 Wastewater Age Summary

Comparing the average age of the assets with the average estimated service life (ESL) provides a representation of the average overall portfolio remaining life.

The figure below summarizes the average ages of each asset type in the wastewater collection system.

It is apparent that the gravity mains are performing better than their age suggests. One concern was that old, vitrified clay sewers could be observed as good from CCTV inspections but are actually very brittle and susceptible to collapse. It is recommended that the staff further review the performance data, especially for older assets.

Figure 21. Average Age as a Proportion of Expected Service Life by Asset Type All Wastewater Assets



3.2 Wastewater Levels of Service

The City wastewater services are based on providing sustainable and reliable collection of wastewater that avoids basement flooding and environmental impacts.

The City follows the Ontario Ministry of Environment, Conservation and Parks (MECP) Design Guidelines for Sewage Works as minimum standard for the design, review, approval and installation of sewage works.

As part of the City’s efforts to improve wastewater services, the City has implemented a program to separate combined sewers into individual wastewater and stormwater mains, improving the resiliency of the system. An additional benefit of separating storm and wastewater sewers is that it reduces the quantity of stormwater being treated at the wastewater treatment plants, therefore reducing costs.

The Key Service Attributes associated with the wastewater LOS and their associated statements are defined in the **Table 19**.

Table 19. Wastewater LOS Service Attributes

Service Attribute	Attribute Statement
Scope	Providing adequate wastewater services to the community
Reliability	Providing wastewater services with minimal interruptions
Environmental Stewardship	Providing wastewater services that have minimal impacts on the environment
Cost Efficiency	Providing wastewater services in an efficient manner

The following sections provide a summary of the levels of service for the City’s wastewater services including those required by the O.Reg.588/17.

3.2.1 Wastewater Customer Levels of Service

The City’s CLOS provides a means to assess the level to which customer expectations are being met. The following provides a summary of the CLOS associated with St. Catharines wastewater service.

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- **Description of the user groups or areas of the municipality that are connected to the municipal wastewater system. (Scope)**

Within the urban boundary there are 563 km of City-owned main sewers that drain to Region-owned trunk sewers which carry wastewater to one of the two sewage treatment plant. The system also has nine wastewater storage facilities to store sewage that cannot be accommodated in the existing sewers during wet weather.

- **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. (Reliability)**

75% of the City's collection system is combined or partially combined sewers. During large rainstorms, the volume of flow can exceed the capacity of the sewer system. When this happens, a portion of the flow is diverted away from the wastewater plant and untreated sewage, mixed with storm water, is released directly into the environment. The diversions occur at a series of overflow regulator chambers located along the combined sewer system. The strategically located overflow regulators are designed to prevent sewer backups. The system also has nine wastewater storage facilities to temporarily store sewage that

cannot be accommodated in the existing sewers during wet weather. The stored sewage is then released into the sewer system at a favorable time when the sewers can accommodate the extra volume.

- **Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches. (Reliability)**

There are 53 locations where combined sewers can outlet to the environment. The number of overflows incidences is directly related to the duration and intensity of wet weather. Based on a hydraulic model of the sewer system, there were 21 overflow occurrences resulting in 48 ML discharged to the environment at eight locations in 2020.

- **Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes. (Reliability)**

In areas with combined sewers, water may enter the system directly through catch basins. Other sources of inflow to the sewer main can result from: stairway drains, driveway drains, floor drains/basement sump pumps, uncapped yard

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cleanouts and downspouts. Groundwater infiltration can also enter from foundation drains.

Even in areas that are fully separated, water can still flow into the sanitary sewers through maintenance hole covers or infiltrate through pipe defects such as cracks, or offset joints and poor service connections.

- **Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to avoid events that could cause sewage to overflow into streets or backup into homes. (Reliability)**

Sanitary sewer design follows the Ontario Design Guidelines for Sewer Works and the St. Catharines Engineering Standards Manual.

CCTV and smoke testing programs identify sources of infiltration and inflow and guide repairs.

- **Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system. (Reliability)**

This regulatory metric is not applicable to the City as the sewage treatment plants are owned and operated by the Regional Municipality of Niagara.

Additional customer levels of service are provided in **Table 12**.

Table 20. Wastewater CLOS Indicator

Service Attribute	Customer Levels of Service	2020 Performance
Quality	Average Condition of Sewers	Good
Reliability	Length of Sewers in poor and Very poor condition	48 kilometres
	Percentage of wastewater assets in fair or better performance	81%
Cost Efficiency	Annual cost to provide wastewater service (per customer)	\$330

3.2.2 Wastewater Technical Levels of Service

The City has defined technical requirements and key performance indicators that support internal reporting. The following provides a summary of the TLOS associated with the wastewater service at the City.

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Table 21. Wastewater TLOS Metrics

Service Attribute	Technical Levels of Service	2020 Performance
Scope	Percentage of properties connected to the municipal wastewater system ^(a)	94%
Reliability	Percentage of wastewater assets in poor or better performance	91%
	Percentage by km of network with issues prone to blockages	6%
	Total number of Wastewater Storage Facilities	9
	The number 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 ^(a)	0.00052
Reliability (Cont.)	The number of connection-days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system ^(a)	0.0106
	The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system ^(a)	This metric is not applicable to the City as the sewage treatment plants are owned and operated by the Regional Municipality of Niagara.

Notes:

(a) Required by O.Reg. 588/17

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3.3 Wastewater Lifecycle Management Strategy

The levels of service presented in the previous section are supported by the achievement of a variety of lifecycle activities for wastewater assets in accordance with the activity types presented in **Table 5**. These activities extend the asset life and reduce overall lifecycle cost.

The water service staff implement a variety of lifecycle activities on its entire portfolio. **Table 22** provides a summary of these activities and the risk associated with not doing them.

Table 22. Wastewater Lifecycle Activities, Associated Risk, and estimated Lifecycle Cost

Lifecycle Activity Type	Asset Management Practices	Risk Associated with the Activity	Equivalent Annual Cost (2022 to 2032)
Non-Infrastructure Solutions	Linear Assets <ul style="list-style-type: none"> Capacity analysis to confirm the capacity of the wastewater system in current flow demands. Hydraulic Analysis is conducted to evaluate the capacity of the linear wastewater system and identify areas that require improvements. Flow Monitoring program in place to calibrate and confirm estimates related to hydraulic model. CCTV and maintenance hole inspections. Smoke testing program in place to identify cross connections between sewer and storm systems. 	<ul style="list-style-type: none"> Potential risk of sewer backup and basement flooding. Asset deterioration is over or underestimated. Regulatory requirement and standard changes. Reduced ability to understand potential impacts of climate change on the infrastructure. 	<p>\$ 912,000</p> <p>Based on the historical 2017 to 2021 average expenditures. It is recommended that future studies be identified based on best practices and cost estimates be developed.</p>
	Vertical Assets <ul style="list-style-type: none"> Annual reports to Ministry on overflows 		

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Lifecycle Activity Type	Asset Management Practices	Risk Associated with the Activity	Equivalent Annual Cost (2022 to 2032)
Maintenance Activities	Linear Assets <ul style="list-style-type: none"> Routine maintenance program including sewer flushing and reaming and spot repairs. As required clearing of blocked lateral connections. Vertical Assets <ul style="list-style-type: none"> Routine maintenance program including inspection and equipment checks. 	<ul style="list-style-type: none"> Increased lifecycle cost if maintenance is done improperly or not with scheduled frequency. Resource limitations to conduct unplanned, urgent work. Insufficient maintenance may contribute to asset failure resulting on service disruptions. 	<p>\$ 1,680,000</p> <p>Based on the 2020 to 2021 budget increase applied annually from 2021 onwards. Incorporating the maintenance of growth assets following construction.</p>
Renewal / Rehab Activities	Linear Assets <ul style="list-style-type: none"> Relining of sewer, including laterals. Plastic maintenance hole inserts are used if the maintenance hole is identified as a major source of infiltration through the pick holes. 	<ul style="list-style-type: none"> Incorrect assumptions of the expected improvement in useful life after maintenance is completed. Increased lifecycle cost if renewal/rehab are done improperly or not as scheduled. Increased costs to treat increased amounts of inflow & infiltration 	<p>-</p> <p>Currently done on a reactive basis. A strategy needs to be developed to have a regular program to identify good candidates for the implementation of these technologies at an appropriate time and prior to an asset needing full replacement</p>

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Lifecycle Activity Type	Asset Management Practices	Risk Associated with the Activity	Equivalent Annual Cost (2022 to 2032)
Replacement / Construction Activities	<ul style="list-style-type: none"> Replacement of deteriorated assets. 	<ul style="list-style-type: none"> Coordination with other asset classes (if applicable) might delay or advance the timeframe of construction activities. Delays in construction could result in cost over-runs. 	<p>\$ 15,068,000</p> <p>Forecasted based on the lifecycle management activities.</p>
Disposal Activities	<ul style="list-style-type: none"> Decommissioning assets at the end of their useful life. Disposal of abandoned or obsolete infrastructure during construction projects. 	<ul style="list-style-type: none"> Improper disposal could lead to environmental impacts and result in cost overruns. 	<p>\$ 2,000</p> <p>Based on the 2017 to 2021 average disposals</p>
Service Improvement Activities	<p>Linear Assets</p> <ul style="list-style-type: none"> Annual replacement program to separate combined sewers. Sewer main upsizing/downsizing based on design standard compliance and flow requirements. 	<ul style="list-style-type: none"> Lack of improvements can result in health and safety risks as well as negative environmental impacts. Continued cost to treat inflow and infiltration. Reduced capacities in the system to accommodate new developments without upgrades. 	<p>\$ 884,000</p> <p>Based on the 2017 to 2021 average service improvement activities</p>

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Lifecycle Activity Type	Asset Management Practices	Risk Associated with the Activity	Equivalent Annual Cost (2022 to 2032)
Growth Activities	<ul style="list-style-type: none">Asset additions or upsizing to accommodate for population growth in new and existing sub-divisions within the City.	<ul style="list-style-type: none">Growth activities are delayed or cancelled resulting in system being unable to accommodate increased growth demands.Reduced capacity in the system to accommodate new developments without upgradesReduced ability to adapt to increased intensity rainfall events.	<p>\$ 396,000</p> <p>Based on the 2017 to 2021 average growth activities. There were no development charges forecasted for this service.</p>

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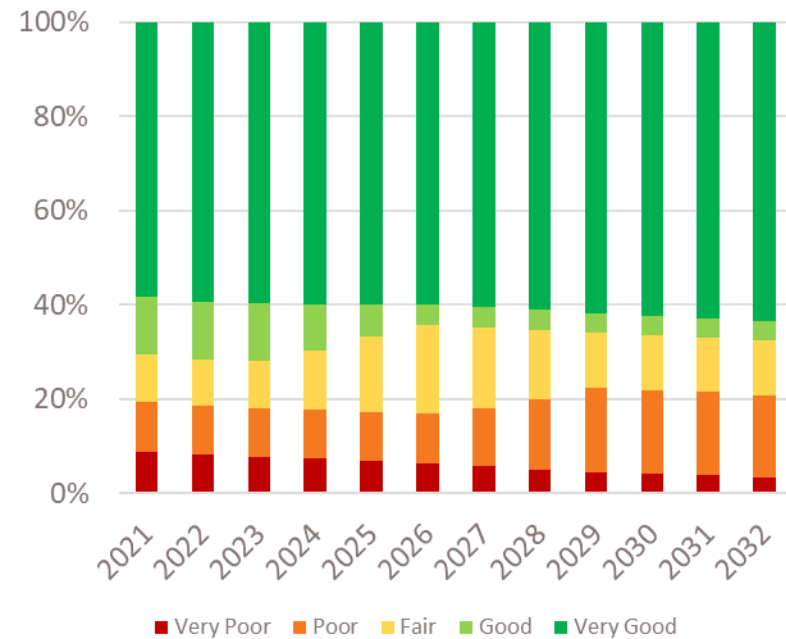
The City uses these strategies to plan work and determine future expenditure needs. The TLOS used in the AM analysis for water assets was defined as maintaining the current portion of assets with poor or better performance. The cost to maintain this scenario was determined to be \$10.9M annually over a 25-year period and resulted in the performance forecast shown in **Figure 22**. The percentage of assets in poor or better condition holds around 91%.

Figure 22. Wastewater Condition Distribution Performance with Cost to Maintain LOS



The current planned budget was also analyzed to determine if a funding gap exists. The current anticipated investments go from \$6.3M to ~\$12M by 2029. This resulted in the performance forecast shown in **Figure 23**. The percentage of assets in poor or better condition increases to 97% by 2032.

Figure 23. Wastewater Condition Distribution Performance with Anticipated Budget



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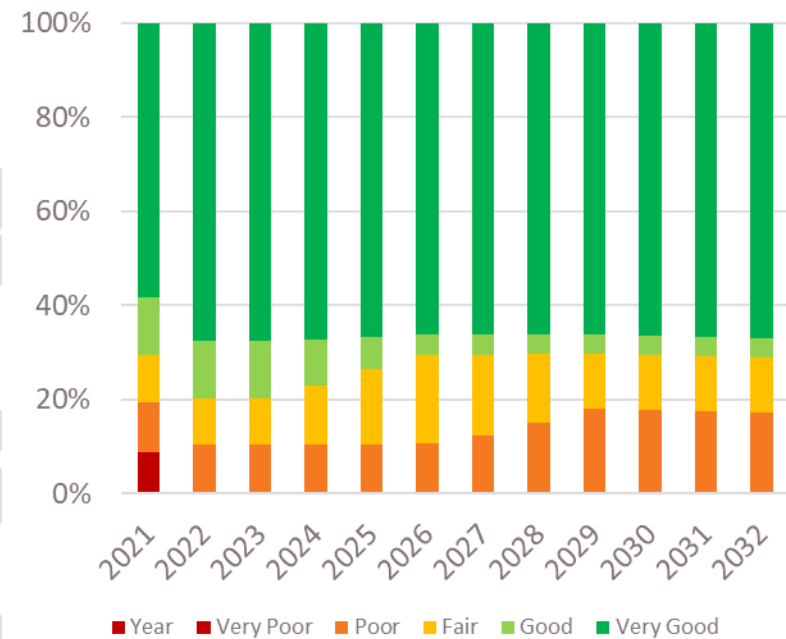
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Additionally, an optimal lifecycle scenario was analyzed, which was used to determine the cost to meet all lifecycle strategies described in **Table 22**. This scenario addresses the backlog and ensures no asset reaches very poor performance. The cost to achieve this scenario was determined to be \$18.9M annually over a 25-year period and resulted in the performance forecast shown in **Figure 24**.

The reason the anticipated investment levels increase above the annual Cost to Maintain LOS are because the data currently relies on the zoom camera and CCTV condition assessments for the sewers. The City has found that these approaches can overestimate how well the sewers are performing. Recommendations for data review are provided in the conclusions.

The costs for the 10-year lifecycle forecast are presented in **Figure 26**. The graph shows the forecasted expenditures by lifecycle category for the cost to maintain scenario. The equivalent annual cost to maintain LOS, the annual expenditures for the optimal lifecycle scenario and the anticipated annual funding is also provided on the graph. It is recommended that the City should continue with anticipated spending.

Figure 24. Wastewater Condition Distribution Performance with Optimal Lifecycle Activities



3. Wastewater

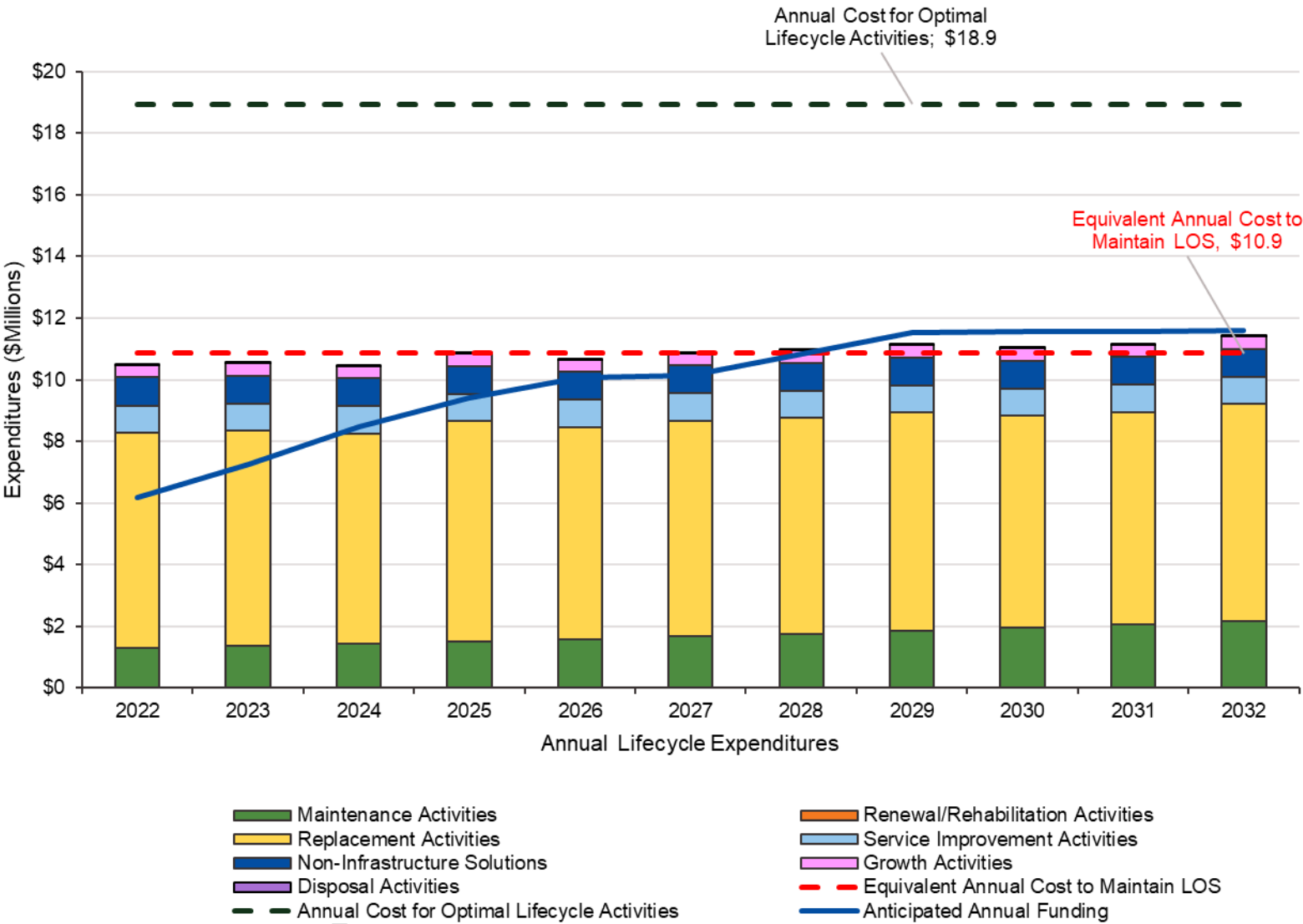
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Figure 25. Wastewater Forecasted Lifecycle Needs



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3.4 Wastewater Service Associated Risks

In addition to the risk associated with the lifecycle activities for this service described in **Table 22**, the following are considered general risks with this service:

- Gravity main deterioration could result in a collapsed sewer, possible sinkholes, third party damage, and environmental contamination;
- Capacity limitations could result in increased releases to the environment;
- Sewer backups could take place as part of failures on the overall system or due to capacity issues;
- The failure of storage facilities could result in system backups or increase release of sewer into the environment; and
- Pump station failure could result in sewer backups including overflows and potential basement flooding.

3.5 Wastewater Climate Change Considerations

The wastewater collection system is greatly influenced by wet weather conditions which cause inflow and infiltration of rainwater into the system, decreasing its capacity for sanitary flow and increasing the cost of treatment. With climate change, increases in the intensity, duration, and frequency of rain events leads to more runoff entering the

system and the greater likelihood of basement flooding and discharges of combined flow to local waterbodies. Similarly, more rain and less snow in the winter as well as rain on snow and ice during freeze-thaw cycles increases the chance of flooding.

Preventative maintenance, rehabilitation of wastewater infrastructure, and increased focus on green infrastructure and low impact development which replicates pre-development hydrology are critical to moderate increased flood risk. This includes actions for residents such as disconnecting downspouts and foundation drains from the sewer system to decrease peak flows. This helps reduce the need for expensive wastewater storage facilities which store peak flows to reduce combined sewer overflows. Design and operating modifications and development of emergency response procedures can also help mitigate some predicted adverse impacts.

3.6 Wastewater Data Confidence

The following data was used to support this chapter's assessment of the City's wastewater assets.

- Gravity mains, force mains, and maintenance holes: GIS shapefiles of the full inventory for these categories with their associated key attributes such as installation date, diameter, and length;

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- Unit cost summary documentation provided by the City based on historical data;
- City tangible capital asset estimated service life values;
- Pumping station drawings;
- Combined sewage storage facility inventory with install dates and replacement cost for most assets; and
- City zoom camera inspection database.

The following assumptions were made during the assessment of the data:

- Gravity main and forcemain condition data was taken from the zoom camera and CCTV inspection peak structural PACP scores. While zoom camera inspections covered most of the sewer system, there are limited recent CCTV inspection records for a large portion of the system.
- The wastewater pumping station inventory was based on high-level information available from the drawings. The costs of these assets were determined using estimates based on similar assets and their age was assumed as per the drawings provided; and

- Replacement costs were forecasted based on available unit rates for the diameters not included on the original dataset.
- Growth and expansion have been assumed based on projected development charges and historical growth budgets, however the City has a large portion of combined sewers, and expansion needs should be quantified moving forward.

A detailed data confidence assessment is provided in **Table 22:**

Table 23. Wastewater Data Confidence Assessment

Asset Category	Confidence Rating	Confidence Data
Gravity Mains	C	Condition was based on Zoom Camera and CCTV inspections. Age was used where not available.
Force Mains	B	Minor assumptions were made on age, replacement costs, and condition
Maintenance Holes		
Wastewater Storage Facility		
Pumping Station	D	Data based on historical information and assumptions on key parameters

Estimated Replacement Value

The City's stormwater collection system is valued at approximately **\$876 million**.

Condition Rating

The overall average condition of the assets for the stormwater collection system is **Good**.

Stormwater

The City of St. Catharines collects stormwater from within its boundary to be released to Lake Ontario. The City is responsible for the stormwater collection system that includes the following assets:

- 404 kilometres of Stormwater Mains
- 31 Oil & Grit Separators
- 6,484 Maintenance Holes & Catchbasins
- 3 Stormwater Ponds
- 1 Constructed Wetland
- 11 Open Channels

It should be noted that stormwater collection is generally the responsibility of the City except in situations where the primary purpose is to drain a Regional right of way. Therefore, all sewer 675mm and less on Regional roads are the responsibility of the Region.

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4.0 Stormwater

Stormwater infrastructure collects and conveys rainwater runoff from wet weather events, minimizing flooding and erosion. As we see more frequent and greater intensity storms the importance of the stormwater collection system is ever increasing.

The following section summarizes the portfolio associated with the City's Stormwater Service.

4.1 Stormwater State of Local Infrastructure

4.1.1 Stormwater System Valuation

The City's stormwater collection system is comprised of linear infrastructure that includes stormwater mains, oil and grit separators, stormwater maintenance holes, and catch basins. For the purpose of this assessment, service connections were considered components of the stormwater mains. It should be noted that while roadside ditches provide a service, there is currently limited information on them, and therefore they have not been incorporated into the analysis.

For the valuation of the stormwater collection system, the replacement values are developed based on replacement with similar assets (like-for-like) on a complete and standalone basis. These were calculated based on

historical values and market replacement costs for the similar specification assets.

Based on the approach taken to calculate the replacement values for each asset category, the overall data confidence grade is **C** for stormwater mains, maintenance holes, and catch basins and **D** for all remaining assets.

It should be noted that the asset register information is based on the system that is in place and does not take into account identifying the gaps in the performance or needs of the overall system.



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Table 24. Stormwater System Inventory Valuation

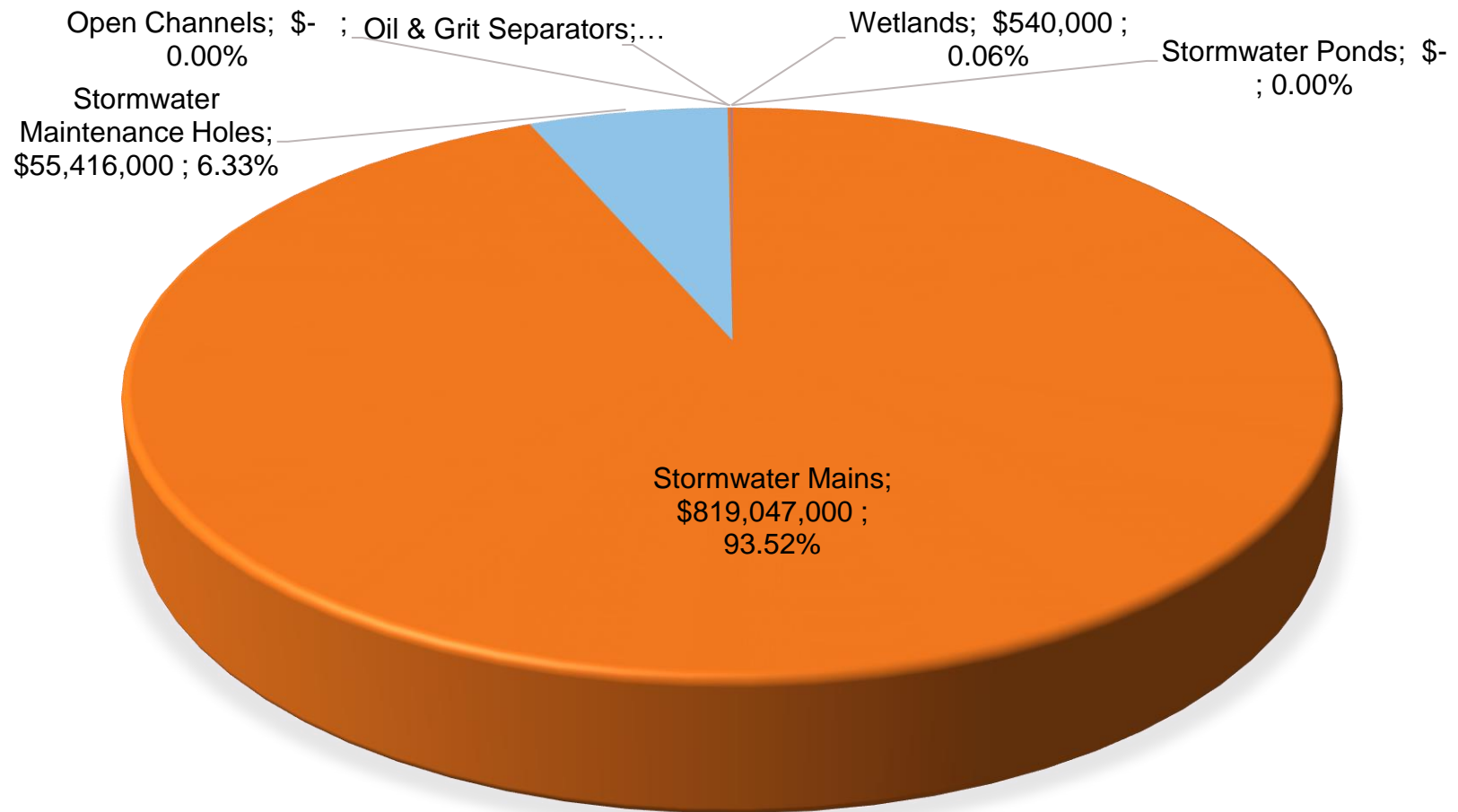
Asset Type	Asset Category	Count	Unit	Replacement Value (2021 Dollars)
Stormwater Collection	Stormwater Mains ^(a)	403,982	Metres	\$ 819,047,000
	Stormwater Maintenance Holes	6,484	Each	\$ 55,416,000
Treatment & Control	Oil & Grit Separators	31	Each	\$ 824,000
Stormwater Discharge	Open Channels	3,575	Metres	TBC
Storage Facilities	Wetlands	1	Each	\$ 540,000
	Stormwater Ponds	3	Each	TBC
Overall Stormwater System Replacement Value				\$ 875,827,000

(a) Stormwater mains include 13,236 catch basins in the City's portfolio.

The overall distribution of replacement values by asset type for the entire stormwater collection system is as shown in **Figure 27**. The stormwater mains have the highest replacement value in the portfolio, totaling 94% of the entire system. The remaining assets correspond to 6% of the value associated with the stormwater collection system.

As stormwater mains represent the majority of the stormwater collection asset replacement values, **Figure 31** provides a summary of the distribution of replacement values based on materials.

It should be highlighted that stormwater associated operational costs are covered by wastewater; however, as it has been stated, the City is moving toward separating the costs associated with this service.

4. Stormwater**State of Local
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Confidence**Figure 26. Asset Replacement Value for All Stormwater Assets**

4. Stormwater

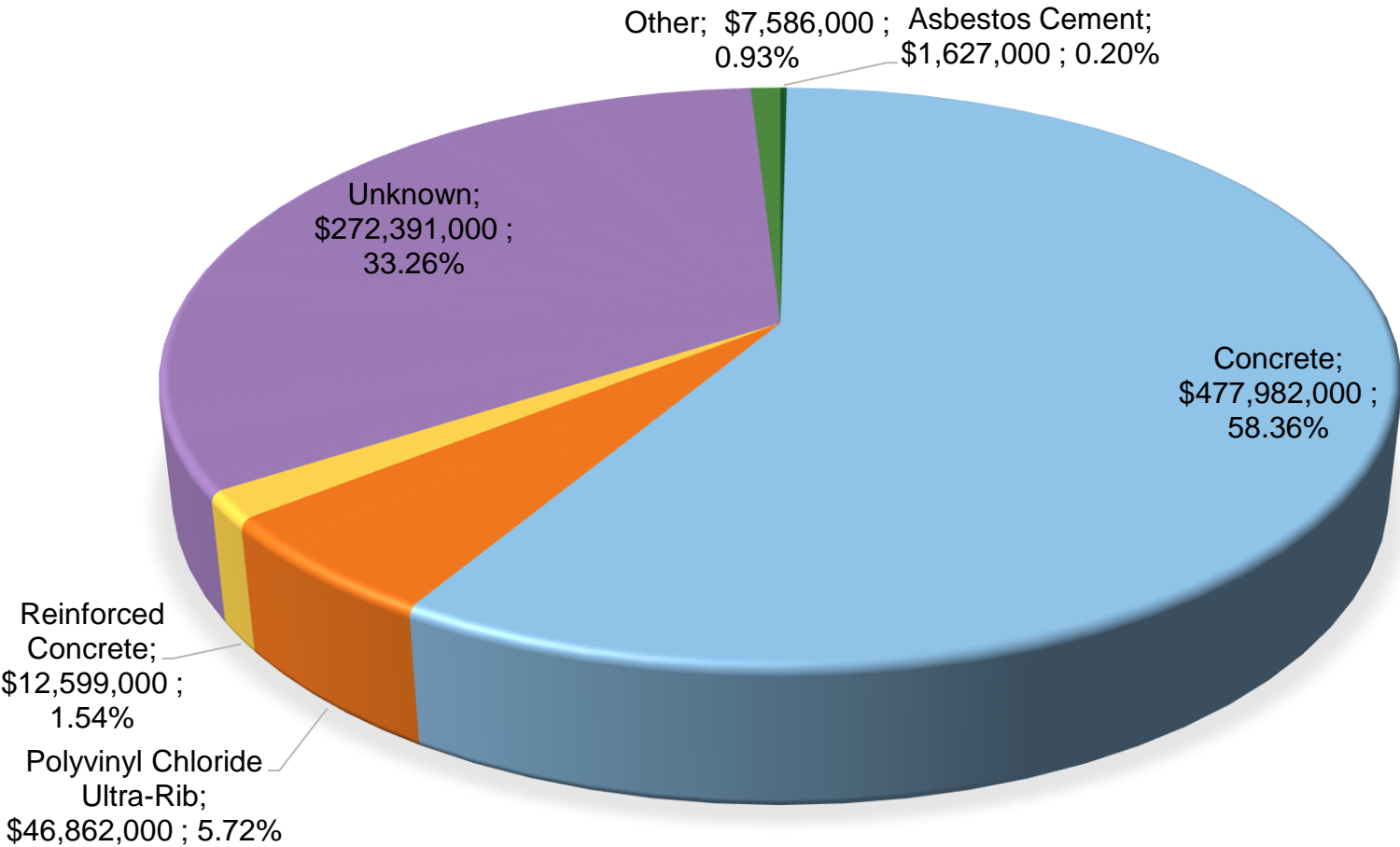
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Figure 27. Asset Replacement Value for All Stormwater Mains by Material Type



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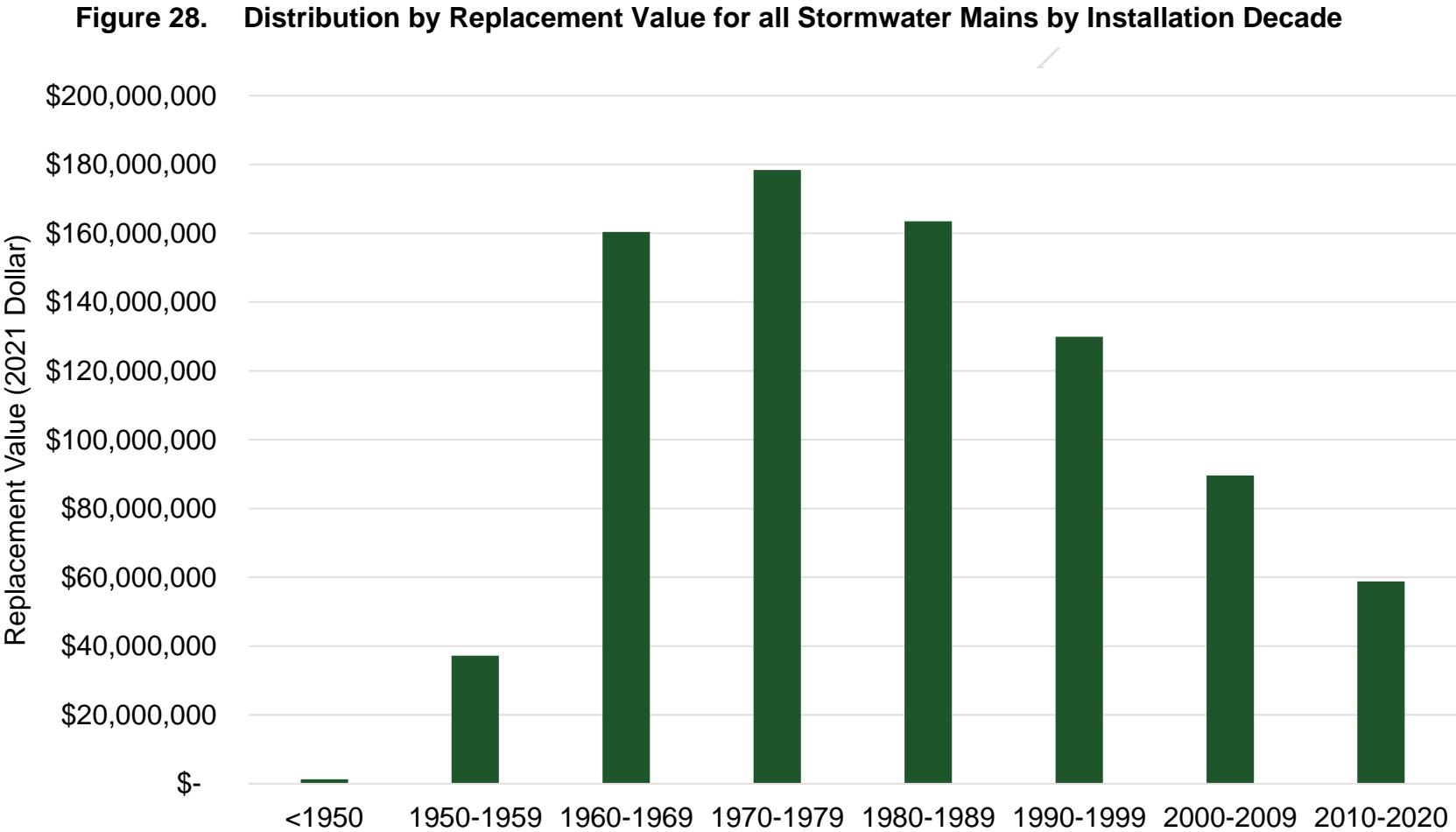
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The figure below summarizes the decade of the year of installation by replacement value.



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4.1.2 Stormwater System Condition

Using deterioration curves based on estimated remaining life as per **Table 4**, a condition score was computed for each asset into five rating categories ranging from Very Good to Very Poor. For storm sewers, where a PACP condition score was available, the score was used to estimate the condition. The assessments were completed using zoom camera inspections which is limited in that approximately 30% of the pipe is assessed.

The assumption is that this is indicative of the remaining pipe, however, it is known that this is not always the case and should be validated in the future. Where that was not available, a Markov deterioration model was used to estimate the condition based on age. The current condition of assets has been summarized and weighted by replacement value in **Figure 30**.

The stormwater main condition distribution has been represented by diameter in **Figure 31** indicating the percentage of system length these represent. The condition ratings are visualized in the map shown in **Figure 32**.

Overall, 5% of the stormwater assets are in the very poor rating category (based on replacement value) and 13% are in the poor category.



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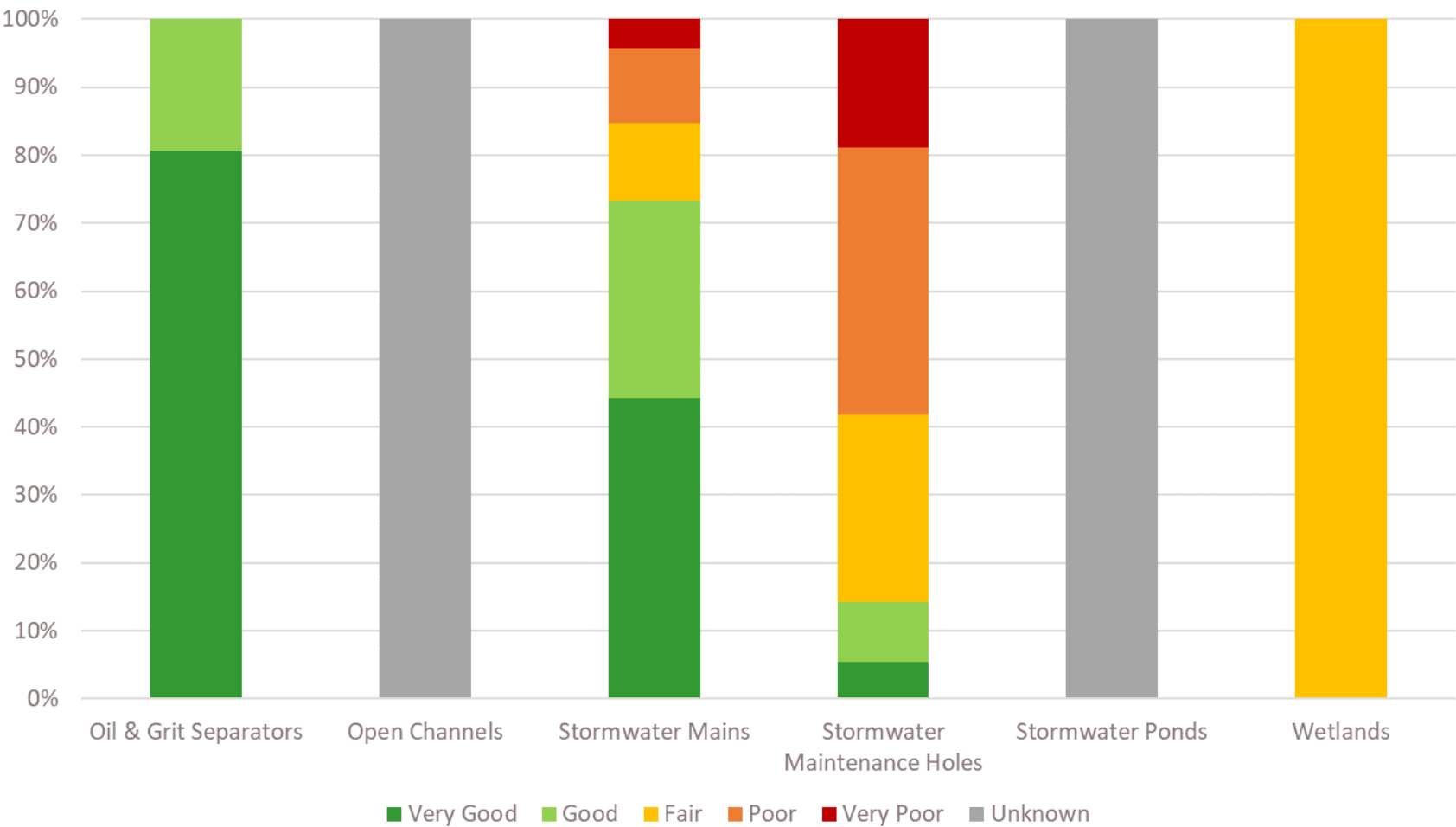
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Figure 29. Condition Distribution by Replacement Value for all Stormwater Asset Types



Note: 67% of “Stormwater Maintenance Hole” assets are based on condition inspections according to the Manhole Assessment Certification Program (MACP). Where condition data was not available, age has been used to estimate condition.

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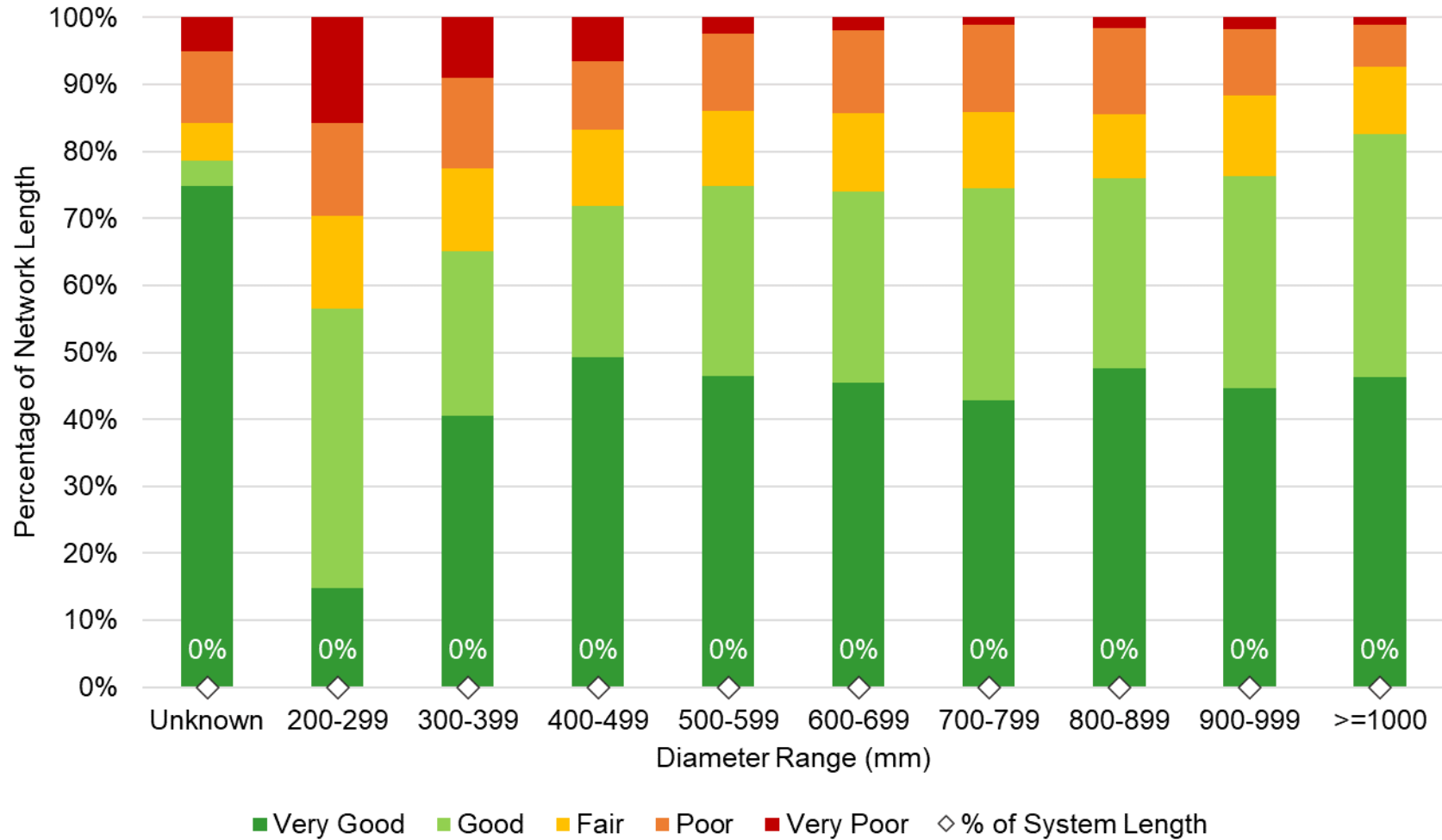
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Figure 30. Condition Distribution by Replacement Value for all Stormwater Mains



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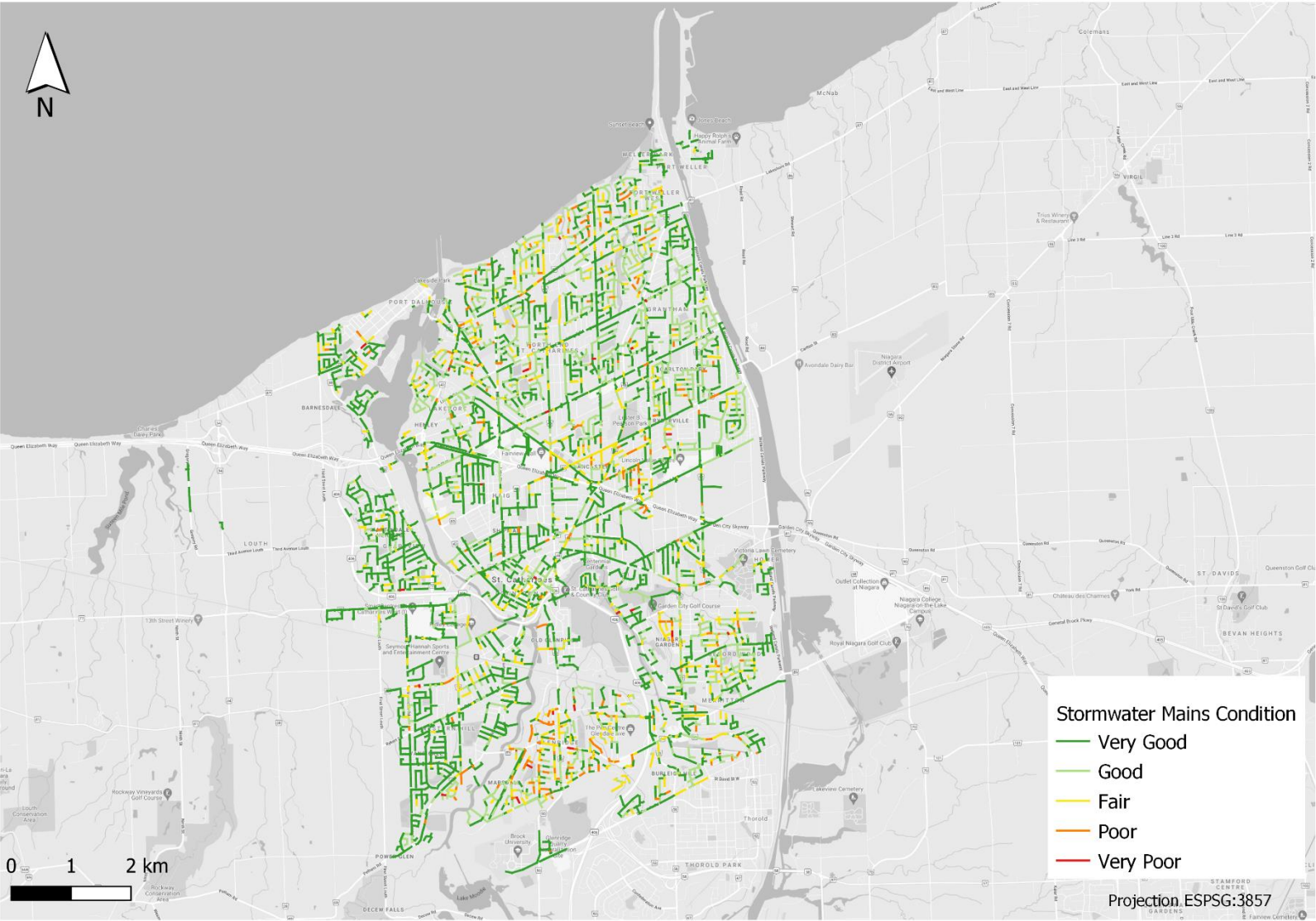
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Figure 31. Condition Distribution by Location for all Stormwater Mains



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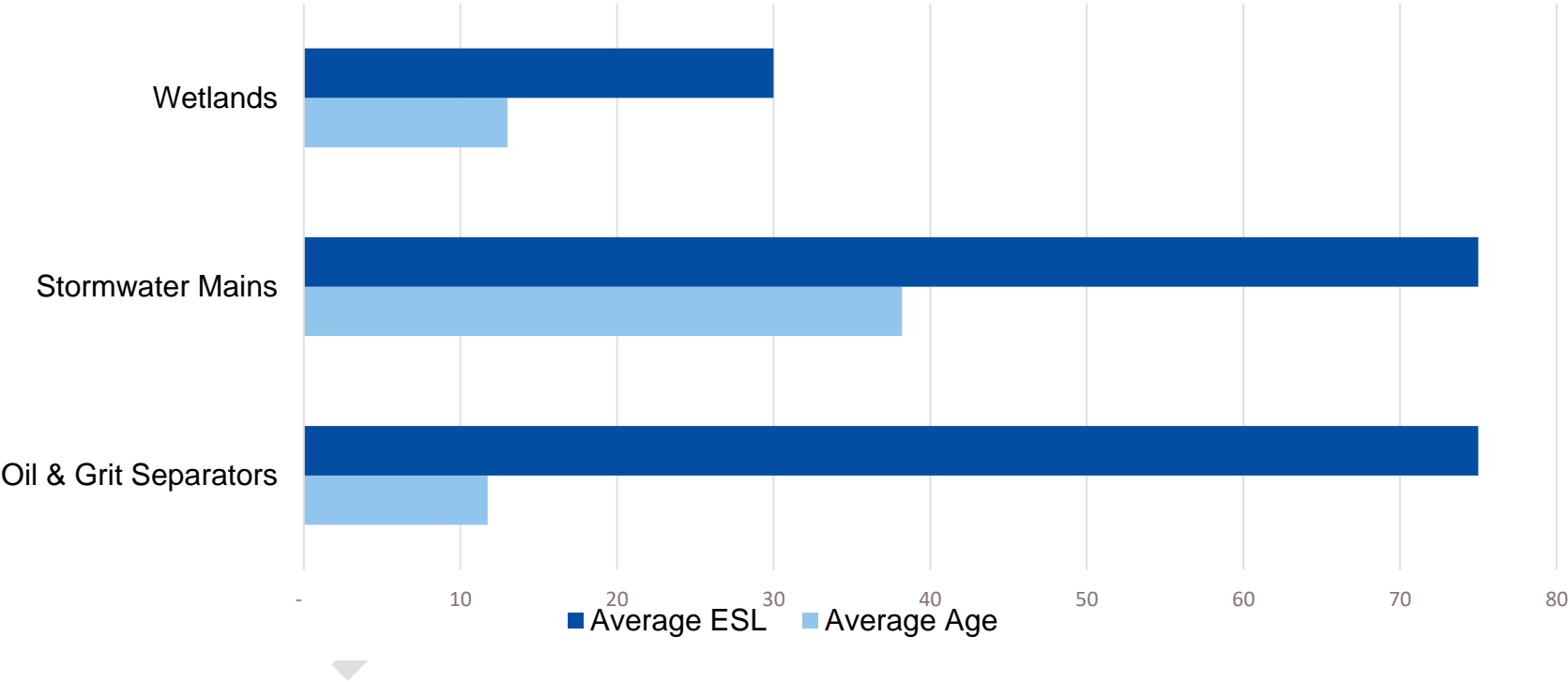
4.1.3 Stormwater Age Summary

By comparing the average age of the assets against the average estimated useful life, an understanding of the asset remaining life can be ascertained. The figure below

summarizes the average age of each asset type in the stormwater collection system.

Stormwater Ponds and Open Channels installation dates are unknown and therefore these have been excluded from **Figure 33**.

Figure 32. Average Age as a Proportion of Expected Service Life by Asset Type All Stormwater Assets



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4.2 Stormwater Levels of Service

The City is committed to providing effective, sustainable, and reliable drainage of stormwater to both protect and benefit the community and environment.

The Key Service Attributes associated with the stormwater LOS and their associated statements are defined at the table below:

Table 25. Stormwater LOS Service Attributes

Service Attribute	Attribute Statement
Scope	Providing adequate stormwater services to the community.
Reliability	Providing stormwater services with minimal impact to the community.
Environmental Stewardship	Providing stormwater services that protect and benefit the environment.
Cost Efficiency	Providing stormwater services in an efficient manner.

The following sections provide a summary of the levels of service for the City's stormwater services including those required by the O.Reg.588/17.

4.2.1 Stormwater Customer Levels of Service

The City's CLOS provides a means to assess the level to which customer expectations are being met. The

following provides a summary of the CLOS associated with the stormwater service at the City.

- **Description, which may include maps, of the user groups or areas of the municipality that are protected from flooding, including the extent of the protection provided by the municipal stormwater management system (Scope)**

To protect areas from flooding, storm water is conveyed across the City through 404 km of storm water pipes as well as along overland drainage routes, swales, ditches, and natural watercourses. Some older established areas utilize combined sewers to drain storm water; these assets are included in wastewater system. Oil and Grit Separators, stormwater ponds and a constructed wetland help control the quantity and quality of the storm water.

The following table provides additional CLOS metrics for the City stormwater services.

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Table 26. Stormwater CLOS Metrics

Service Attribute	Customer Levels of Service	Current Performance
Scope	Total number of catch basins	13,236
	Total length of stormwater network	404 kilometres
Quality	Average Condition of storm mains	Good
Reliability	Length of storm mains in poor or very poor condition	20 kilometres
	Percentage of stormwater assets in fair or better performance	82%
Cost Efficiency	Annual cost to provide stormwater service (per household)	\$148

4.2.2 Stormwater Technical Levels of Service

In addition to setting performance levels associated with customer expectations, the City has also defined technical requirements and key performance indicators that align or support the CLOS presented on **Table 26**.

The following provides a summary of the TLOS associated with the stormwater service at the City of St. Catharines.



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Table 27. Stormwater TLOS Metrics

Service Attribute	Technical Levels of Service	2020 Performance
Scope	Percentage of properties in municipality resilient to a 100-year storm ^(a)	Currently not available, however the planned budgeted storm water master plan (SWMP) project will be able to partly address this metric. ¹
	Percentage of the municipal stormwater management system resilient to a 5-year storm ^{(a)2}	54% ²
Reliability	Percentage of stormwater assets in poor or better condition	95%
	Percentage of catchbasins inspected and cleaned annually.	19%
	Percentage of storm sewers and appurtenances in Poor or Very Poor condition.	5%
	Number of complaints of flooding during a wet weather event.	1
	Percentage of network inspected within last 5 years.	38%
Env. Stewardship	Percentage of inspections & maintenance carried out on oil/grit separators annually	0% in 2020 61% in 2019

¹ The currently budgeted storm water master plan (SWMP) project will be able to partly address this metric, but it is not yet clear if the SWMP work will fully address this point. The SWMP will not be delivered in time to meet the Core AMPs deadline.

When storm water design is undertaken consideration is given to 100-year storm events (and other storm events) and any new subdivision or land development are asked to comply with City design standards.

² When storm water design is undertaken, consideration is given to 5-year storm events (and other storm events) and any new subdivision or land development are asked to comply with City design standards. Since 1980 storm sewers have been typically designed to meet a 5-year storm. It is assumed that all sewer constructed since then or a minimum 54% of system is designed to be resilient to the 5-year storm. This number will be further refined with the development of SWMP.

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Service Attribute	Technical Levels of Service	2020 Performance
	Percentage of constructed wetlands in Poor or Very Poor condition	0%
Cost Efficiency	Maintenance cost per 100 km of stormwater network	\$72
	Capital investments in comparison with sustainable investment forecast	25%
	Stormwater Conveyance Reinvestment Rate	0.1%

Notes:

(a) Required by O.Reg. 588/17

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4.2.3 Stormwater Future Metrics for Consideration

As part of the definition of levels of service, the City identified possible level of service metrics that could be added to their framework in the future as data becomes available. The following table provides a summary of the metrics that have been proposed for future consideration.

Table 28. Stormwater LOS Future metrics

Service Attribute	Levels of Service Proposed Future Metric	Type of LOS
Reliability	Percentage of community with stormwater quality control	Customer
	Percentage of stormwater management facilities in Poor or Very Poor condition	Technical
Env. Stewardship	Percentage of community with stormwater quality treatment control	Technical
	Number of Stormwater	Technical

Service Attribute	Levels of Service Proposed Future Metric	Type of LOS
	management ponds that have exceeded their target dredging frequency	

4.3 Stormwater Lifecycle Management Strategy

The levels of service presented in the previous section are supported by the achievement of a variety of lifecycle activities in accordance with the activity types presented in **Table 5**. These activities are targeted to extend the asset life, ensure levels of service are being met, and reduce overall lifecycle costs.

The stormwater service staff implement a variety of lifecycle activities on its entire portfolio. **Table 29** provides a summary of these activities and the risk associated with not doing them.

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Table 29. Stormwater Lifecycle Activities, Associated Risk, and Estimated Lifecycle Cost

Lifecycle Activity Type	Asset Management Practices	Risk Associated with the Activity	Equivalent Annual Cost (2022 to 2032)
Non-Infrastructure Solutions	<ul style="list-style-type: none"> Capacity analysis to confirm the capacity of the stormwater system in current flow demands. Master Plans are developed and updated to provide a baseline for future growth projections in the stormwater system. Natural watercourses review to include the assessment of channels for stormwater management. CCTV inspections.³ 	<ul style="list-style-type: none"> Growth projections follow an accelerated rate not following planned estimates. Inadequate planning assumptions can provide incorrect forecasted estimates. Regulatory requirement and standard changes. Reduced ability to understand potential impacts of climate change on the infrastructure. 	<p>\$ 179,000</p> <p>Based on the historical 2017 to 2021 average expenditures. It is recommended that future studies be identified based on best practices and cost estimates be developed.</p>
Maintenance Activities	<ul style="list-style-type: none"> Routine maintenance program including spot repairs, catchbasin sump cleanout, outfall inspections, vegetation removal in culverts, wetlands, watercourses, ponds, and open channels. As required clearing of blocked lateral connections. Targeted reactive ditching program. 	<ul style="list-style-type: none"> Increased lifecycle cost if maintenance is done improperly or not with scheduled frequency. Resource limitations to conduct unplanned, urgent work. Insufficient maintenance may contribute to asset failure resulting in service disruptions. 	<p>\$ 1,051,000</p> <p>Based on a review of comparable stormwater O&M programs with an average O&M cost of \$2,593/km of network. It is recommended that this cost be evaluated based on stormwater maintenance investment needs.</p>

³ Historically storm sewers have not been CCTV inspected. Based on recommendations from a recent Zoom Camera Inspections Project, storm sewers are currently being prioritized for CCTV inspections. Once the priority CCTV inspections are completed, a system to periodically inspect and monitor the condition of storm sewers needs to be established and completed on required/necessary cyclical basis.

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Lifecycle Activity Type	Asset Management Practices	Risk Associated with the Activity	Equivalent Annual Cost (2022 to 2032)
Renewal / Rehab Activities	<ul style="list-style-type: none"> Relining of stormwater mains. Coordinated renewal and rehabilitation activities with the stormwater mains. Dredging, re-grading, and excavating open channels, wetlands, and ponds to ensure the proper flow of water. 	<ul style="list-style-type: none"> Incorrect assumptions of the expected improvement in useful life after maintenance is completed. Increased lifecycle cost if renewal/rehab are done improperly or not as scheduled. 	<p>\$ 25,000</p> <p>Forecasted based on the lifecycle management activities.</p> <p>Currently done on a reactive basis. A strategy needs to be developed to have a regular program to identify good candidates for the implementation of these technologies at an appropriate time and prior to an asset needing full replacement</p>
Replacement / Construction Activities	<ul style="list-style-type: none"> Replacement of deteriorated assets or based on client's complaints. Replacement of concrete structures for concrete open channels. 	<ul style="list-style-type: none"> Coordination with other asset classes (if applicable) might delay or advance the timeframe for construction activities. Delays in construction could result in cost over-runs. 	<p>\$ 4,793,000</p> <p>Forecasted based on the lifecycle management activities.</p>
Disposal Activities	<ul style="list-style-type: none"> Decommissioning assets at the end of their useful life. Disposal of abandoned or obsolete infrastructure during construction projects. 	<ul style="list-style-type: none"> Improper disposal could lead to environmental impacts and result in cost overruns 	<p>-</p> <p>Stormwater assets are sometimes left in place or disposal is included within the removals associated with replacement/construction activities</p>

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Lifecycle Activity Type	Asset Management Practices	Risk Associated with the Activity	Equivalent Annual Cost (2022 to 2032)
Service Improvement Activities	<ul style="list-style-type: none"> Annual program to separate combined sewers. Stormwater main upsizing based on design standard compliance and flow requirements. Installation of storm sewers in areas with ditches Replacement of ditches based on identified needs due to flooding and drainage 	<ul style="list-style-type: none"> Lack of improvements can result in health and safety risks. 	<p>\$2,298,000</p> <p>Based on the historical 5-year capital funded service improvements as a percentage of the replacement value of the network</p>
Growth Activities	<ul style="list-style-type: none"> Asset additions to accommodate for population growth in new and existing sub-divisions within the City. Annual sewer separation provides capacity within the system to accommodate growth. 	<ul style="list-style-type: none"> Growth activities are delayed or cancelled resulting in system being unable to accommodate increased growth demands. Reduced ability to adapt to increased intensity rainfall events. 	<p>\$ 1,020,000</p> <p>Based the average projected development charges</p>

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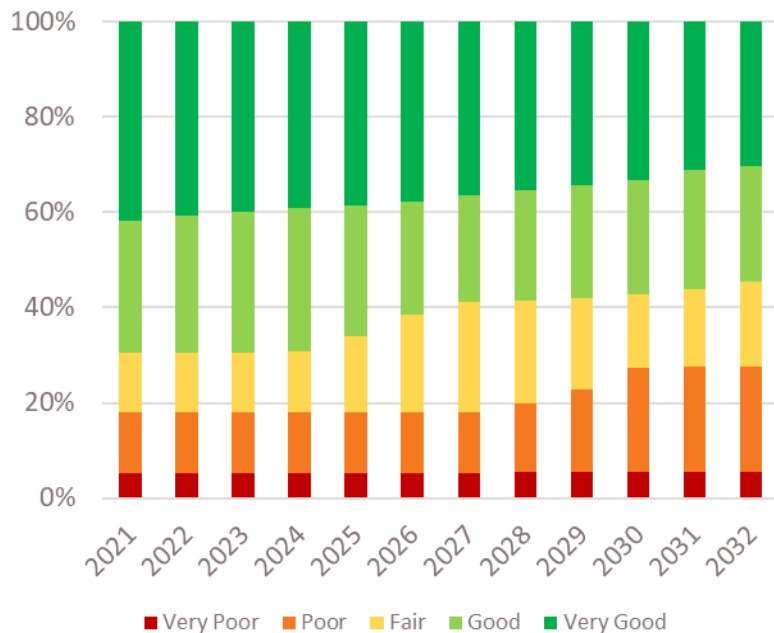
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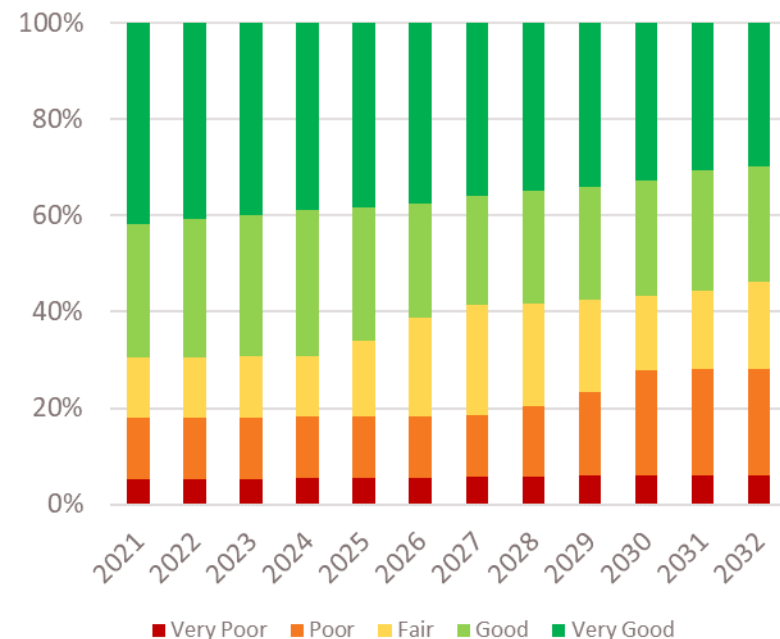
The City uses these strategies to plan work and determine future expenditure needs. The TLOS used in the AM analysis for wastewater assets was defined as maintaining the current portion of assets with poor or better performance. The cost to maintain this scenario was determined to be \$5M annually over a 25-year period and resulted in the performance forecast shown in **Figure 33**. However, this is broken down to be \$500K annually until 2032 and then \$6M annually onwards. The percentage of assets in poor or better condition holds around 95%.

Figure 33. Stormwater Condition Distribution Performance with Cost to Maintain LOS



The current planned budget was also analyzed to determine if a funding gap exists. The current anticipated investments, \$4.3M annually, resulted in the performance forecast shown in **Figure 34**.

Figure 34. Stormwater Condition Distribution Performance with Anticipated Budget



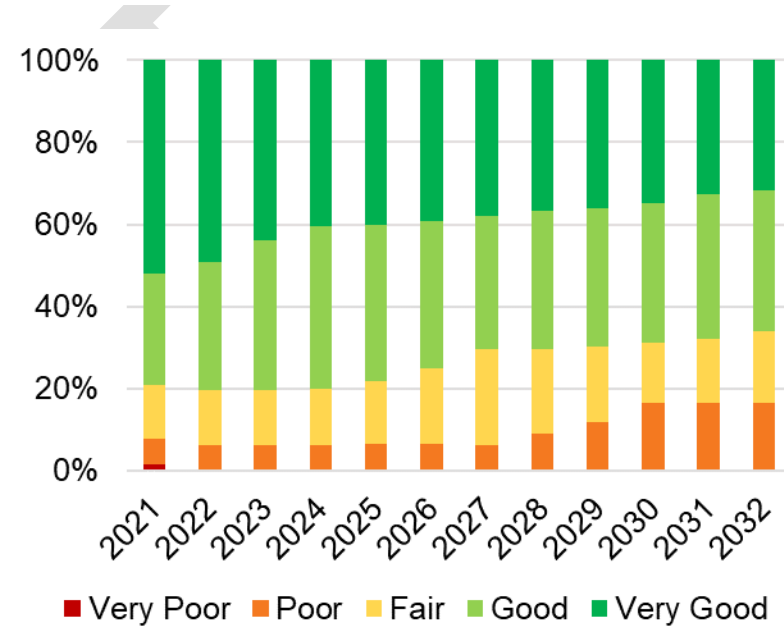
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Additionally, an optimal lifecycle scenario was analyzed, which was used to determine the cost to meet all lifecycle strategies described in **Table 29**. This scenario addresses the backlog and ensures no asset reaches very poor performance. The cost to achieve this scenario was determined to be \$9.3M annually over a 25-year period and resulted in the performance forecast shown in **Figure 35**.

The costs for the 10-year lifecycle forecast are presented in **Figure 36**. The graph shows the forecasted expenditures by lifecycle category for the cost to maintain scenario. The equivalent annual cost to maintain LOS, the annual expenditures for the optimal lifecycle scenario and the anticipated annual funding is also provided on the graph. It is recommended that the City should consider moderate investment increases to address the replacement and operational needs for the existing system.

Figure 35. Stormwater Condition Distribution Performance with Optimal Lifecycle Activities



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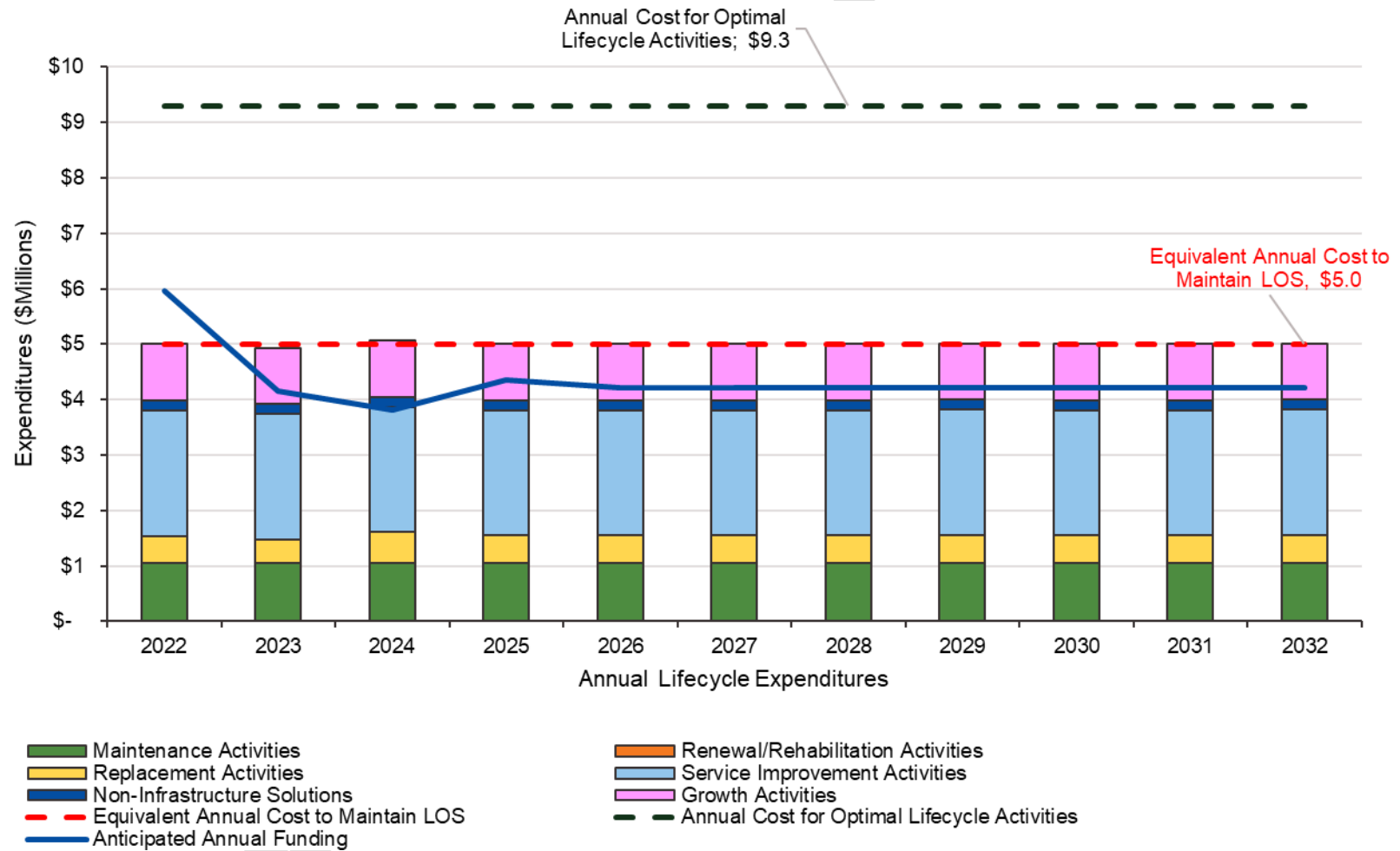
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Figure 36. Stormwater Forecasted Lifecycle Needs



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4.4 Stormwater Service Associated Risks

As noted, the assets associated with the stormwater service are key to conveying runoff in the community in order to mitigate flooding events. In addition to the risk associated with the lifecycle activities for this service, as shown in **Table 29**, the following are considered general risks with this service:

- Capacity limitations could result in increased flooding; and
- Infiltration into mains due to structural defects could result in decreased system capacity.

Until a fully separated stormwater system is in place, it should be noted that the risk associated with the stormwater system will also impact the wastewater system.

4.5 Stormwater Climate Change Considerations

While the stormwater collection system is essential for conveying excess runoff, it is also essential to change the way we think about rainwater. In the past, stormwater systems were primarily designed to carry runoff quickly away to the nearest waterbody. It is generally now recognized that rainwater should be considered a valuable resource that is best managed as close to its source as possible to replicate the hydrologic system that

was in place prior to development. As municipalities develop and are paved, there is less available ground for runoff to infiltrate and recharge groundwater levels. Furthermore, it is understood that the intensity of rainfall events is likely to increase in the future; this further increases the capacity requirements of both natural and constructed stormwater drainage systems.

Low impact development and green infrastructure policies will contribute to reducing the peak flows of runoff which can lead to flooding issues. As storm system infrastructure is maintained and replaced over time, opportunities for implementing these policies can be encouraged as they can incorporate many social and environmental benefits to the City.

4.6 Stormwater Data Confidence

The following condition data was used to support this chapter's assessment of the City's stormwater assets.

- Stormwater mains, maintenance holes, oil grit separator, wetlands, ponds and open channels: GIS shapefiles of the full inventory for these categories with their associated key attributes such as installation date, diameter and length;
- Unit cost summary documentation provided by the City based on historical data;
- The City's tangible capital asset estimated service life values; and

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- The zoom camera inspection database.

The following assumptions were made during the assessment of the data for the development of the different assessments:

- Stormwater main data was taken from the zoom camera inspection peak structural PACP results;
- Missing installation dates in linear assets were filled based on the install date of nearby related assets (i.e., road for stormwater mains);
- Oil grit separator costs were assumed based on available information;
- Replacement costs were forecasted based on available unit rates for the diameters not included on the original dataset;
- Wetland replacement costs were based on recent construction records; and
- Estimated service lives not available in the City’s tangible capital asset database were assumed based on industry best practices.

A data confidence assessment is provided in **Table 30**.

Table 30. Stormwater Data Confidence Assessment

Asset Category	Confidence Rating	Confidence Data
Stormwater Mains	C	Minor assumptions were made on age, replacement costs, and condition from reliable sources.
Stormwater Maintenance Holes & Catch basins		
Oil & Grit Separators	D	Data based on historical information and assumptions on key parameters.
Open Channels		
Wetlands		
Stormwater Ponds		

Estimated Replacement Value

The City's transportation system is valued at approximately **\$1.1 billion**.

Condition Rating

The overall average condition of the assets for the transportation system is **Fair**.

Transportation

The City of St. Catharines is responsible for roadways and right-of-way assets. Roadways are classified under several categories such as Arterial, Collector, and Local. Right of way assets include items such as streetlights and signalized intersections. In summary, the City owns:

574 kilometres of Roadways

578 kilometres of Sidewalks and Pathways

13 kilometres of Guide Rails

13,300 Streetlights

54 Signalized Intersections

22,000 Signs

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5 Transportation

The movement of people, goods and services is a key component in ensuring quality of life and supporting daily needs of City's customers.

The City's local transportation network is connected to the Provincial highways via the Queen Elizabeth Way (north end) and 406 (downtown area) which are under the jurisdiction of the Ministry of Transportation. Furthermore, the local system also provides linkage to various regional roads that are under the jurisdiction of the Niagara Region.

The following section summarizes the City's Transportation Service.

5.1 Transportation State of Local Infrastructure

5.1.1 Transportation System Valuation

The City's transportation system is comprised of the following roads and right-of-way assets:

- **Road** assets include all road classes as per the Ministry of Transportation (arterial, collector, and local) and sub classifications as identified in the City's

Transportation Master Plan. It must be highlighted that attributes recorded against the road indicate those that include bike lanes, or bus routes.

- **Right-of-Way Assets** include those that provide support to other transportation assets, such as traffic signals, signs, guide rails, and streetlights.
- **Active Transportation** include those assets that provide multiple uses (walkways, off-road cycling) associated with transportation assets like sidewalks, pathways, and multi-use trails.

For the valuation of the transportation system, the replacement values are based on the replacement of similar assets (like-for-like) on a complete and standalone basis. These have been calculated based on historical costs and market values.

The overall data confidence grade for road assets is **B**, while the remaining assets' overall confidence is **C**.

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Table 31. Transportation System Inventory Valuation

Asset Type	Asset Category	Asset Sub-Category	Count	Unit	Replacement Value (2021 Dollars)
Roads	Arterial	Downtown Corridor	5,245	metres	\$ 10,699,000
		Main Mixed Use	39,993	metres	\$ 79,502,000
		Main Residential	19,005	metres	\$ 36,328,000
		Rural Corridor	12,442	metres	\$ 16,141,000
	Collector	Collector Industrial	15,246	metres	\$ 27,172,000
		Collector Mixed Use	15,161	metres	\$ 28,627,000
		Collector Residential	18,847	metres	\$ 31,556,000
	Local	Local Community Street	431,134	metres	\$ 726,380,000
		Downtown Community	3,118	metres	\$ 5,721,000
		Rural Community	13,601	metres	\$ 12,319,000
Right-of-Way Assets	Guide rails	Not Applicable	12,633	metres	\$ 1,586,000
	Streetlights ^(a)		13,358	Each	\$ 25,926,000
	Signalized Intersections		54	Each	\$14,969,000
	Signs		22,040	Each	\$ 2,877,000
Active Transportation	Sidewalks and Pathways	Emergency	430	metres	\$ 194,000
		In boulevard Multi-use trail	778	metres	\$ 175,000
		Park Access	1,471	metres	\$ 331,000
		School Access	1,093	metres	\$ 246,000
		Sidewalk - Conventional	474,020	metres	\$ 106,654,000
		Sidewalk - Curbface	81,553	metres	\$ 22,019,000
		Walkway	18,327	metres	\$ 4,124,000
		Other	177	metres	\$ 40,000
		Off-Road Trails ^(b)	109	kilometres	TBC
Overall Transportation System Replacement Value					\$ 1,153,586,000

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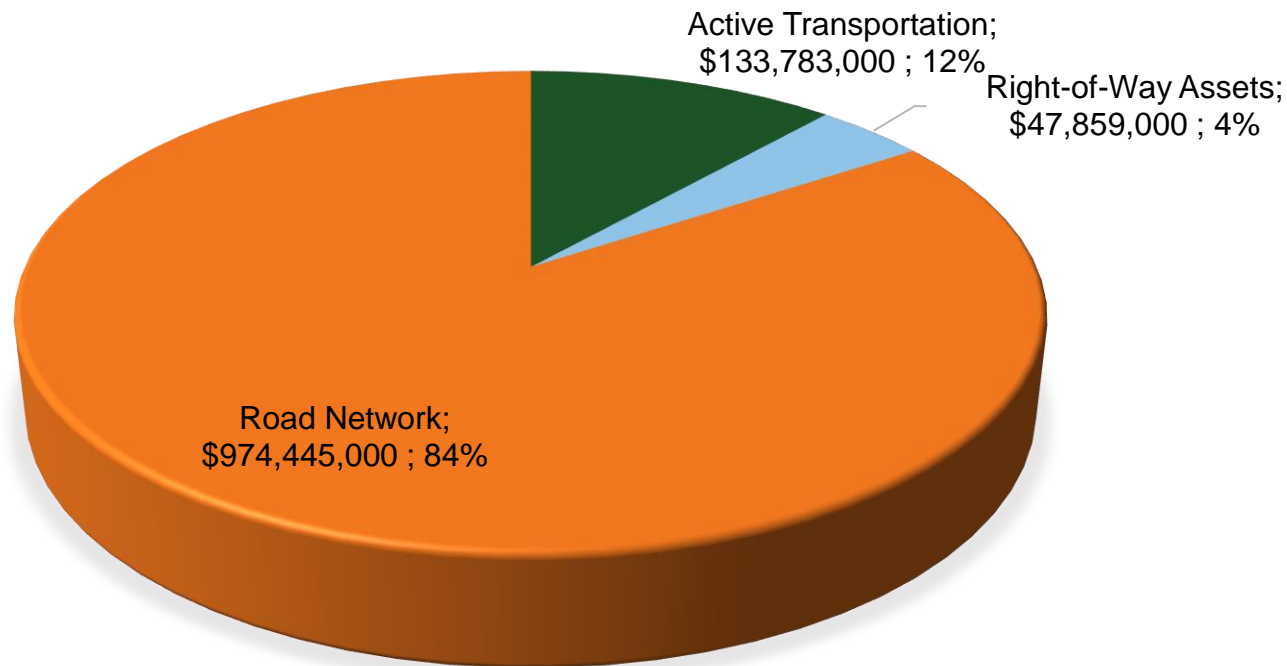
Note:

- (a) Streetlights includes only those with recent LED fixtures installed, a total of 1,439 City owned streetlights have been excluded from the assessment at this stage.
- (b) The Off-Road Trail network is currently being developed as part of the Transportation Master Plan.

The overall distribution of replacement values by asset type for the entire transportation system is as shown

below. The roads have the highest replacement value in the portfolio, totaling 84% of the entire transportation system. It must be highlighted that arterial roads owned by the Region have been excluded from the assessment. Furthermore, the bike lanes that are part of the road are considered within the road assets as an attribute. This attribute is used to further define risks associated with levels of service and prioritizing capital projects.

Figure 37. Asset Replacement Value for All Transportation Assets



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State of Local Infrastructure

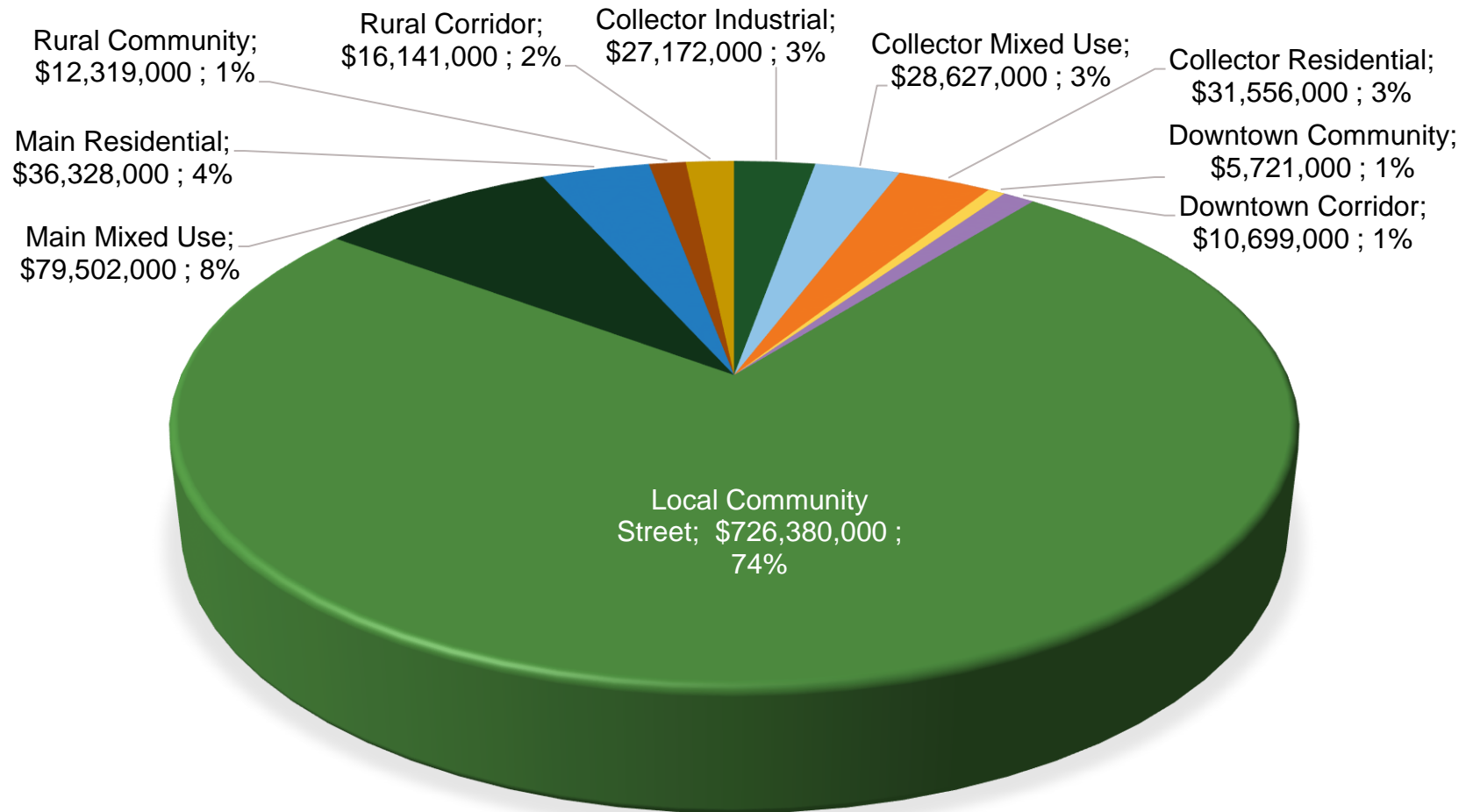
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As roads represent the majority of the transportation asset replacement values, the following provides the distribution of replacement values based on road category.

Figure 38. Asset Replacement Value for All Road Assets



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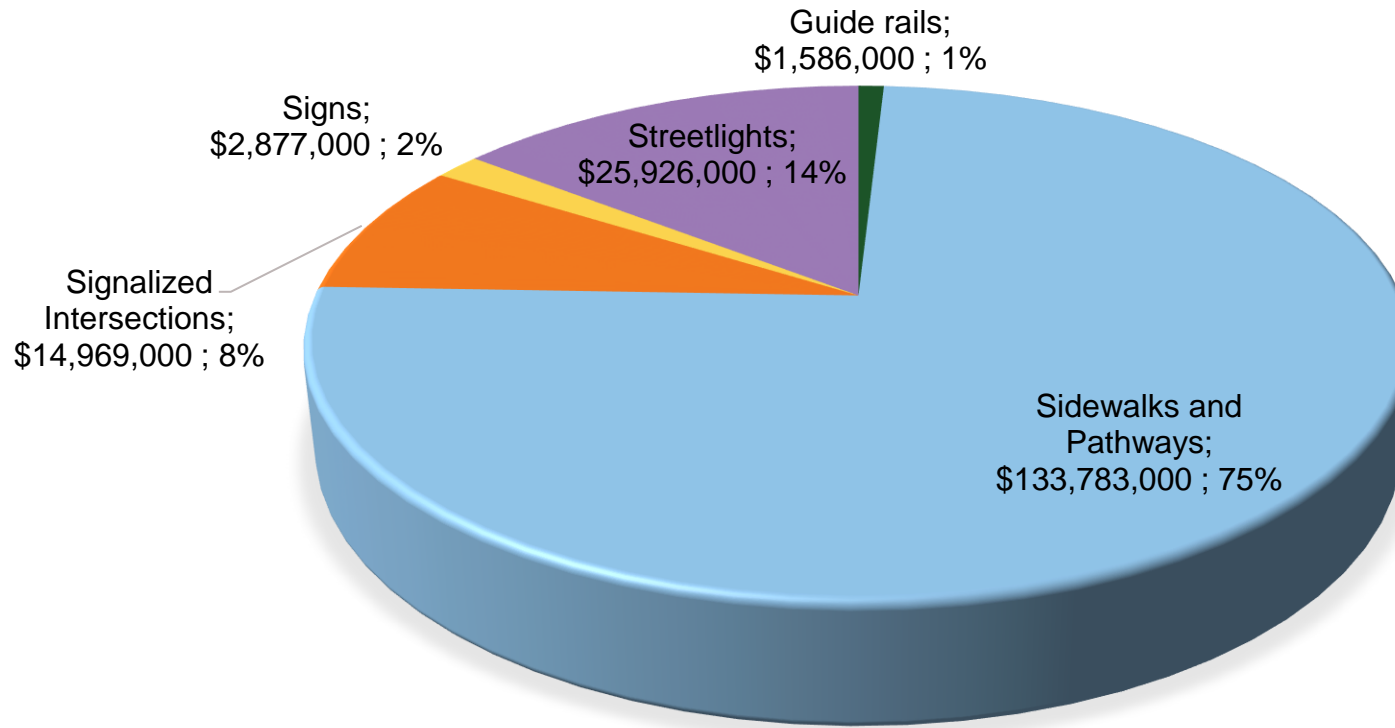
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As shown in **Figure 38**, the local community streets represent the majority of the replacement values on road assets, followed by main mixed-use roads.

Figure 39 provides a summary for the transportation assets beyond the roadway and indicates that sidewalks and pathways represent the majority of the portfolio (74% of the total).

Figure 39. Asset Distribution Value for All Other Transportation Assets



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5.1.2 Transportation System Condition

Using deterioration curves based on estimated remaining life and the condition provided as pavement quality index (PQI), a condition score was computed for each asset into five rating categories ranging from Very Good to Very Poor. **Table 32** provides a summary of the scale for roads.

Table 32. Roads Condition Scale

Condition Score	Condition Rating	PQI: Concrete and Gravel	PQI: Composite and Flexible
1	Very Good	81-100	81-100
2	Good	61-80	61-80
3	Fair	41-60	41-60
4	Poor	21-40	12.6-40
5	Very Poor	0-20	0-12.5

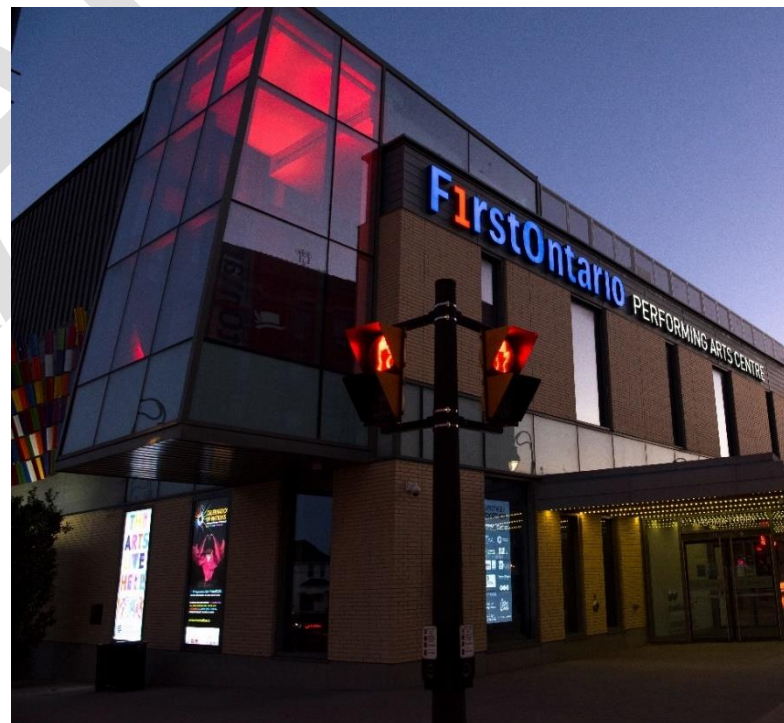
The condition of streetlights was calculated based on the estimated service life of the full structure as one asset; and no discretization was made to separate the condition of the pole and fixtures due to limited data. This approach may result in condition being based partly on the lamp fixture which is the lowest cost portion of the asset. A pole condition assessment that will be completed in the future will provide updated condition estimates with a higher degree of confidence. Only those that have recently have fixture replacement have been included as part of the assessment.

The signs condition and age were projected based on the degradation of the condition assessment results from 2018.

All other transportation assets condition is based on **Table 4** on page 14.

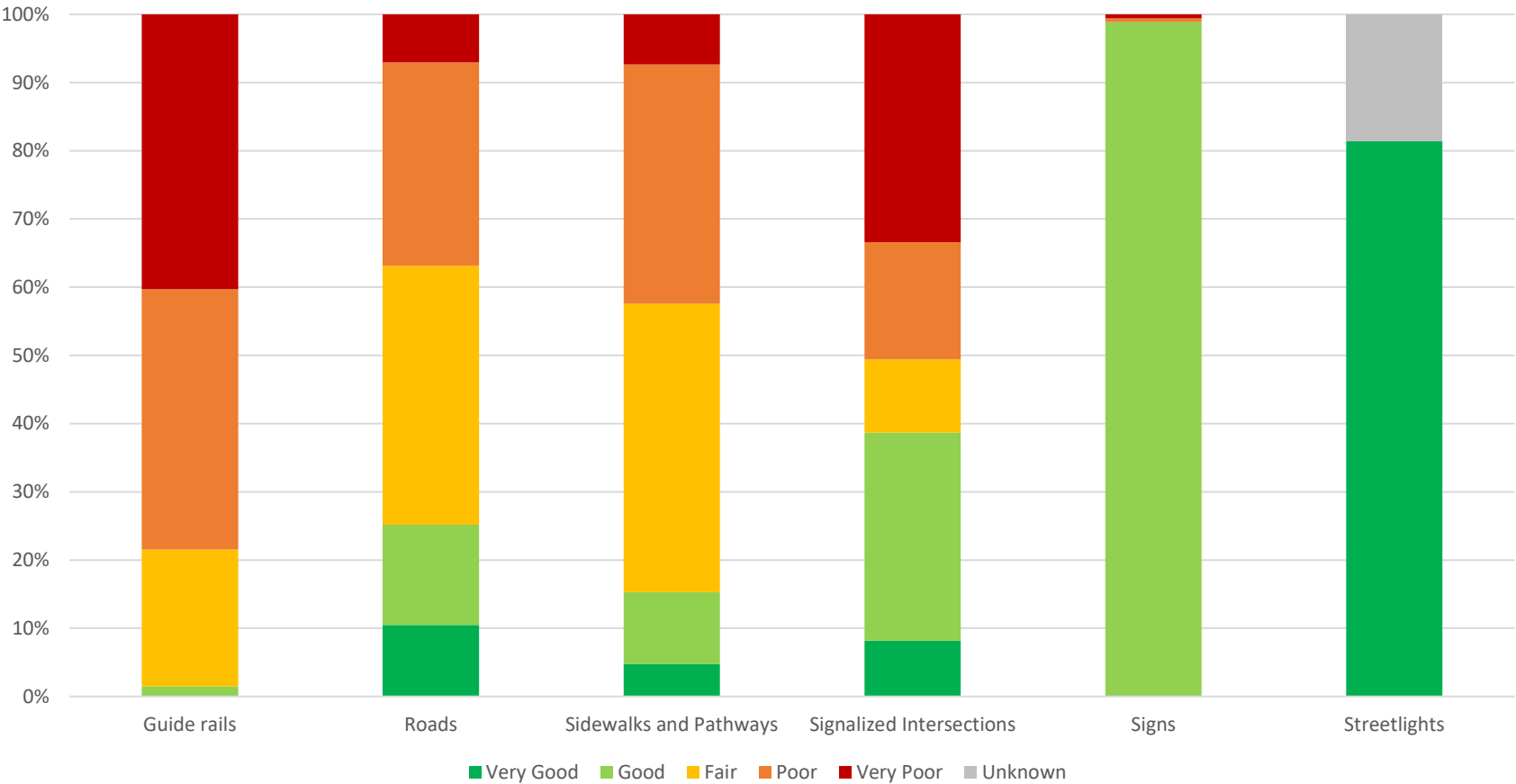
The current condition of all transportation assets has been summarized and weighted by replacement value in **Figure 40**.

Overall, 7% of the transportation assets are in the very poor category, and 30% are in the poor category.



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Figure 40. Condition Distribution by Replacement Value for all Transportation Asset Types



Note: The streetlights category includes streetlights with unknown installation dates. 3,047 of 16,442 streetlight assets do not have an installation date recorded in the data, therefore the condition is unable to be estimated at this time. This estimate also only includes the heads and the condition of poles are unknown.

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Understanding that roads are the major category for the transportation service, **Figure 41** provides the specific distribution of condition for the different road types based on the categories defined in the Transportation Master Plan. As shown in the figure, the majority of the roads are in Fair condition. The geographic distribution of road condition is shown in **Figure 42**.

Figure 41. Condition Distribution by Replacement Value for all Roads Assets

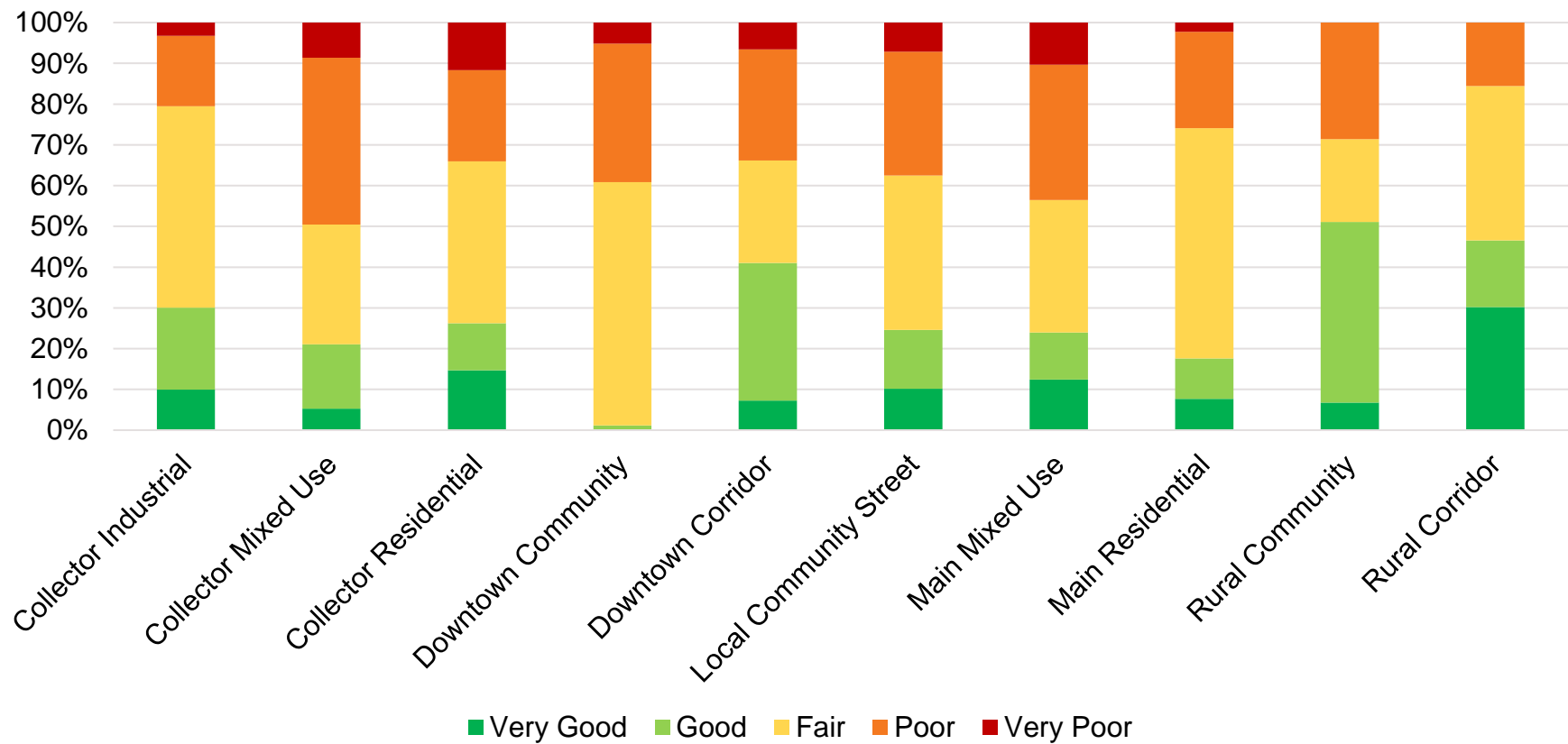
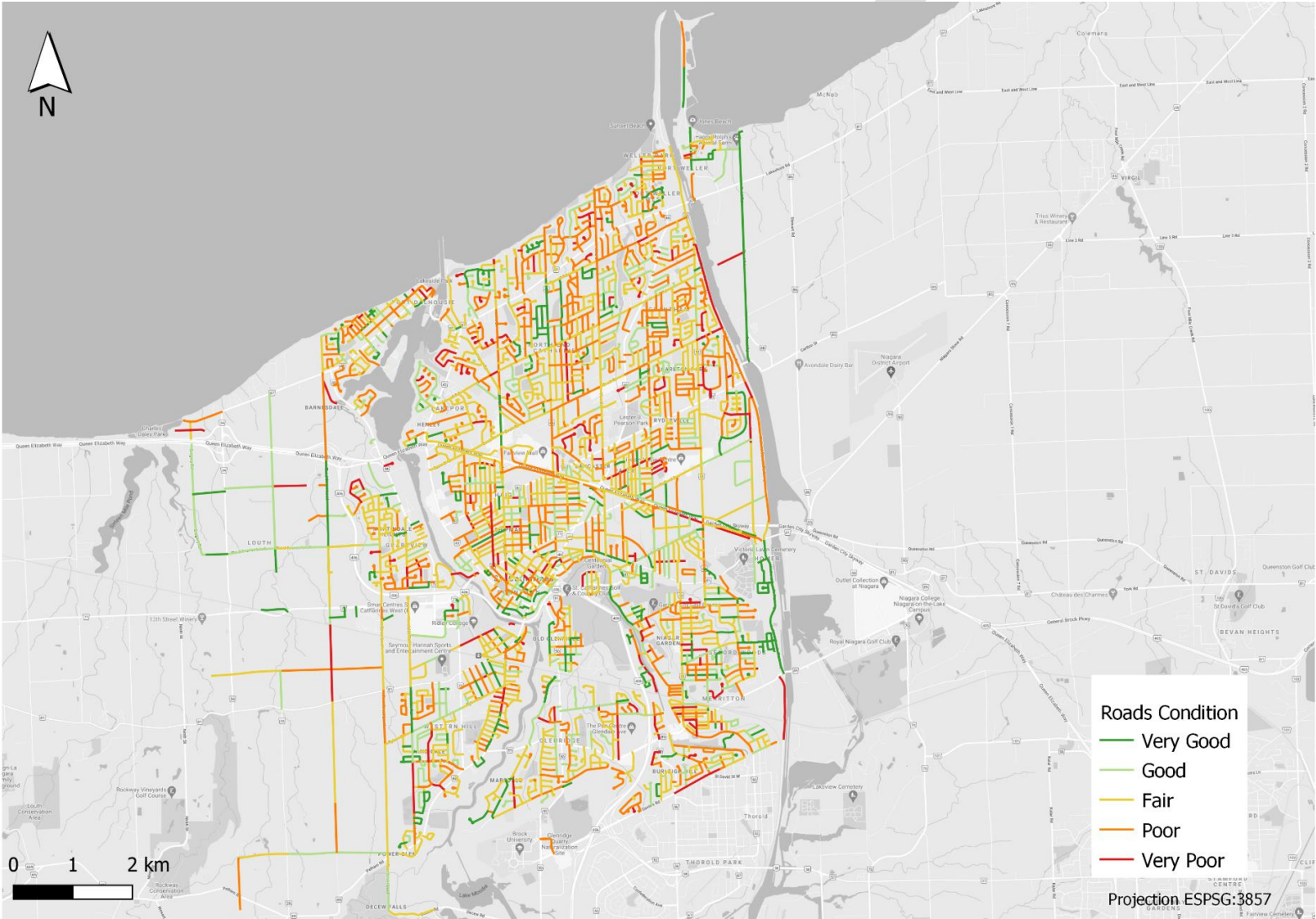


Figure 42. Condition Distribution by Location for all Roads



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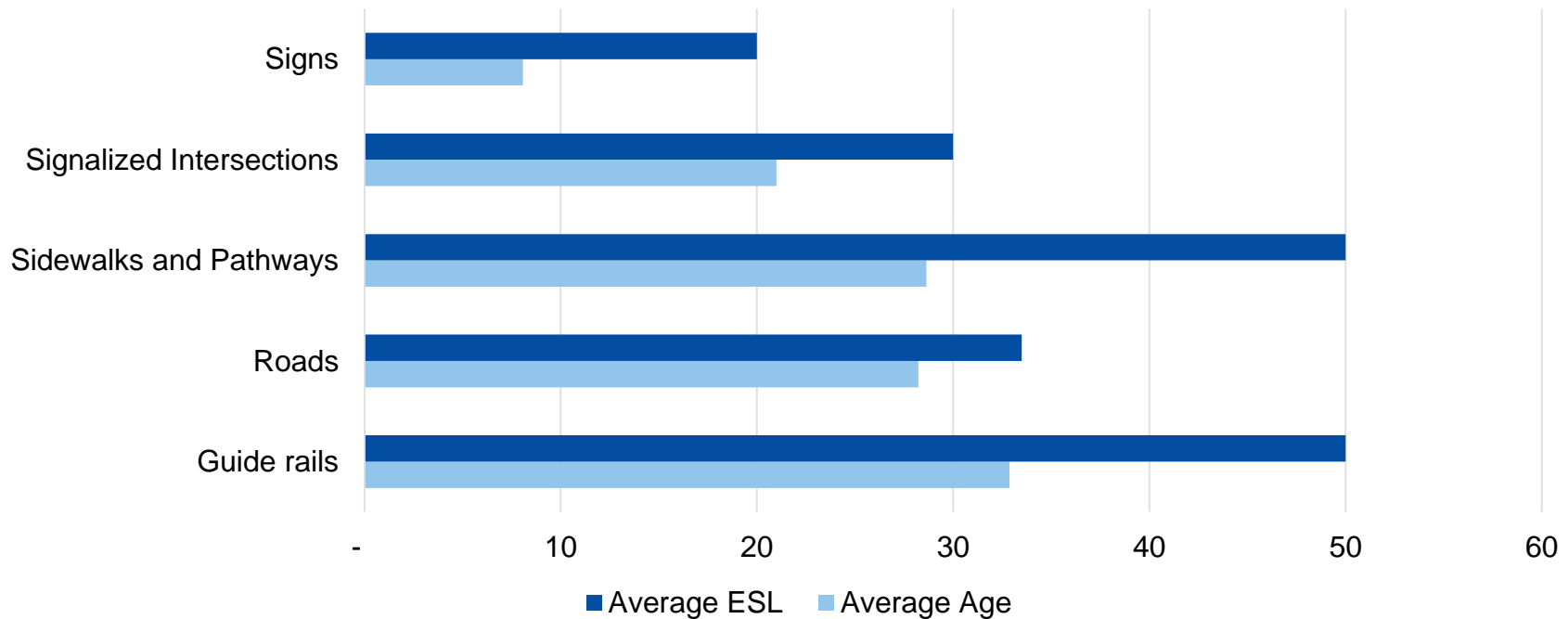
5.1.3 Transportation Age Summary

By comparing the average age of the assets against the average estimated useful life, the overall average remaining life of the assets can be derived.

The figure below summarizes the average ages of each asset type in the transportation system. As can be seen in the figure, the only transportation asset nearing end of

their service life are roads. Furthermore, as above noted, the streetlights' age is based on available information and does not represent the differences between poles and recently replaced fixtures and therefore these have been excluded.

Figure 43. Average Age as a Proportion of Expected Service Life by Asset Type All Transportation Assets



5.2 Transportation Levels of Service

The City of St. Catharines is committed to providing a safe, efficient, accessible, and sustainable transportation system for all required uses and modes of transportation in accordance with regulatory requirements and expectations of the community.

The Key Service Attributes associated with the transportation LOS and their associated statements are defined in the table below.

Table 33 Transportation LOS Service Attributes

Service Attribute	Attribute Statement
Scope	Providing adequate transportation services to the community
Safety	Providing an operational and accessible transportation network that is safe for all modes and uses of the transportation network.
Quality	Providing a transportation network at the appropriate material quality with smooth and safe surfaces.
Reliability	Providing a transportation network that is reliable.
Environmental Stewardship	Providing a transportation network that is environmentally conscious.

Service Attribute	Attribute Statement
Cost Efficiency	Providing a cost-efficient transportation network for all modes.

The following sections provide a summary of the levels of service for the City’s transportation services including those required by the O.Reg.588/17.

5.2.1 Transportation Customer Levels of Service

The City’s CLOS provides a documented measure of customer-focused outcomes. The following provides a summary of the CLOS associated with the transportation service.

- **Description, which may include maps, of the road network in the municipality and its level of connectivity. (Scope)**
The existing road network in the City of St. Catharines includes provincial, regional, and municipal roads. Municipal roads are classified as either arterial roads, collector roads, or local roads, in decreasing order of size and capacity.
- **Description or images that illustrate the different levels of road class pavement condition. (Quality)**
The City of St. Catharines adheres to and follows the American Society for Testing Materials Pavement Condition Index (PCI) rating system

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model when defining pavement condition. Where a PCI of 100 indicates a perfect surface and zero indicates a surface that has completely deteriorated.

Ride comfort Index (RCI) is also gathered, and Pavement Quality Index (PQI) is based on both ride comfort and/or condition.

These standards are followed by the third-party consultants engaged by the City to perform pavement inspections.

The following table provides additional CLOS metrics for the City transportation services.

Table 34. Transportation CLOS Metrics

Service Attribute	Customer Levels of Service	2020 Performance
Safety	Number of complaints about leaf/debris/snow obstructions in cycling facilities or sidewalks	429
Quality	Average pavement condition of paved roads	Fair
	Percentage of road network with fair or better pavement condition	66%

Service Attribute	Customer Levels of Service	2020 Performance
Quality (continued)	Length of roads in poor and very poor condition	215.4km
	Percentage of Transportation assets in fair or better performance	63%
Env. Stewardship	Percentage of streetlights that are energy efficient	93%
Cost Efficiency	Total cost to provide transportation services (Roadway, Structure, Street Lighting) (\$/household)	\$350.22

5.2.2 Transportation Technical Levels of Service

In addition to setting performance levels associated with customer expectations, the City has also defined technical requirements and key performance indicators that align or support the CLOS presented on Table 34.

The following provides a summary of the TLOS associated with the transportation service.

Table 35. Transportation TLOS Metrics

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Service Attribute	Technical Levels of Service	2020 Performance
Scope	Number of lane-kilometres of arterial roads (Class 1 and Class 2 highways) as a portion of square kilometres of land area of the City ^(a)	0.1
Scope (Cont.)	Number of lane-kilometres of collector roads (Class 3 and Class 4 highways) as a portion of square kilometres of land area of the City ^(a)	2.7
	Number of lane-kilometres of local roads means (Class 5 and Class 6 highways) as a portion of square kilometres of land area of the City ^(a)	9.0
Safety	Length of off-road trails ^(b)	109 kilometres
	Length of roads with dedicated bike lanes ^(b)	6.2 kilometres
	Length of routes with paved shoulders ^(b)	16 kilometres

Service Attribute	Technical Levels of Service	2020 Performance
	Length of Signed Route with sharrow ^(b)	8 kilometres
	Length of Signed Route (no sharrow) ^(b)	2 kilometres
	Length of in-boulevard multi-use trails	Less than 1 kilometre
	Total length of on-road and off-road cycling facilities ^(b)	141 kilometres
Safety (Cont.)	Number of complaints that action a by-law ticket related to snow removal on residential areas	26
	Number of complaints about snow removal in downtown core	0
	Number of complaints about leaf/debris obstructions in cycling facilities or sidewalks	429
Quality	For paved roads in the municipality, the average pavement condition index value (PCI) ^(a)	47

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Service Attribute	Technical Levels of Service	2020 Performance
	For unpaved roads in the municipality, the average surface condition ^(a)	Fair
	Average Ride Condition Index (RCI)	42
	Percentage of roads that are paved	99.8%
Reliability	Percentage of Transportation assets in poor or better condition	92%
	Percentage of roads/paved area in poor or very poor condition	37%
	Percentage of Minimum Maintenance Standard Inspections completed on time as per MMS O. Reg 239/02	99%
	Percentage of Minimum Maintenance Standard Repairs completed on time as per MMS O. Reg 239/02	92%
	Percentage of streetlights owned by the City with	93%
Env. Stewardship		

Service Attribute	Technical Levels of Service	2020 Performance
	LED or low energy fixtures	
	Volume (in Liters) of anti-icing liquids applied to roads per lane-kilometre	15.58
	Volume of sand applied to roads per lane-kilometre	1.22 Ton
	Volume of salt applied to roads per lane-kilometre	4.69 Ton
	Total roadway replacement value	\$ 974,444,527
Cost Efficiency	Preventive maintenance as a percentage of total maintenance records	13%
	Maintenance cost per km of road network for non-winter control activities	\$ 5,508
	Maintenance cost per km of road network for winter control activities	\$ 3,404
	Capital investments in comparison with sustainable investment forecast	20%

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Service Attribute	Technical Levels of Service	2020 Performance
	Transportation reinvestment rate	0.9%

Notes:

(a) Required by O.Reg. 588/17

(b) Metrics developed from Transportation Master Plan, which includes Regional roads.

5.2.3 Transportation Future Metrics for Consideration

As part of the definition of levels of service, the City identified possible level of service metrics that could be added to their framework as data becomes available. The following table provides a summary of the metrics that have been proposed for future consideration.

Table 36. Transportation LOS Future metrics

Service Attribute	Levels of Service Proposed Future Metric	Type of LOS
Safety	Percentage by kilometre of sidewalks that are AODA compliant	Technical

Service Attribute	Levels of Service Proposed Future Metric	Type of LOS
	Length of sidewalks that are AODA compliant	Technical
	Percentage of pedestrian crossings and crossings that are FADM/AODA compliant	Technical
	Number of pedestrian crossings and crossings that are FADM/AODA compliant	Technical
	Total number of pedestrian crossings and crossings	Technical
	Number of locations identified for traffic control enhancements	Technical
Reliability	Percentage of guide rails in poor or very poor condition	Technical

5.3 Transportation Lifecycle Management Strategy

The levels of service presented in the previous section are supported by the achievement of a variety of lifecycle activities in accordance with the activity types presented in **Table 5**. These activities are targeted to extend the

asset life, ensure levels of service are being met, and reduce overall lifecycle costs.

The water service staff implement a variety of lifecycle activities on its entire portfolio. **Table 37**Table 15 provides a summary of these activities and the risk associated with not doing them.

Table 37. Transportation Lifecycle Activities, Associated Risk, and Estimated Lifecycle Cost

Lifecycle Activity Type	Asset Management Practices	Risk Associated with the Activity	Equivalent Annual Cost (2022 to 2032)
Non-Infrastructure Solutions	<ul style="list-style-type: none">Master Plans are developed and updated to provide a baseline for future growth projections in the transportation network.Traffic studies and counts are conducted to evaluate the capacity and flow efficiency of the transportation system.Condition assessments are conducted to determine the condition of the assets on the network such as: roads and streetlights.Third party assessments are conducted to develop a base inventory for assets such as: roads and guide rails.	<ul style="list-style-type: none">Inadequate planning assumptions can provide incorrect forecasted estimates.Regulatory requirement and standard changes.Reduced ability to understand potential impacts of climate change on the infrastructure.	<p>\$ 389,000</p> <p>Based on the historical 2017 to 2021 average expenditures. It is recommended that future studies be identified based on best practices and cost estimates be developed.</p>

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Lifecycle Activity Type	Asset Management Practices	Risk Associated with the Activity	Equivalent Annual Cost (2022 to 2032)
Renewal / Rehab Activities	<ul style="list-style-type: none"> Scheduled rehabilitation activities such as resurfacing. Repair of shoulders and sidewalks. 	<ul style="list-style-type: none"> Incorrect assumptions of the expected improvement in useful life after maintenance is completed. Increased lifecycle cost if renewal/rehab are done improperly or not as scheduled. 	<p>\$ 10,545,000</p> <p>Forecasted based on the lifecycle management activities.</p>
Maintenance Activities	<ul style="list-style-type: none"> Inspections are conducted in accordance with the Minimum Maintenance Standards and the necessary maintenance activities are triggered based on findings. Sweeping of roads is conducted four times per year to reduce dust and pollutant loadings (all roads swept in spring, curbed roads swept twice in summer, fall leaf pickup all roads in fall). Downtown is swept weekly. Completion of winter maintenance such as snow plowing and salting. Grinding, roller patching, crack sealing, spot repairs, and mud jacking. 	<ul style="list-style-type: none"> Increased lifecycle cost if maintenance is done improperly or not with scheduled frequency. Resource limitations to conduct unplanned, urgent work. Insufficient maintenance may contribute to asset failure resulting on service disruptions. Unsafe road conditions due to insufficient maintenance. 	<p>\$ 5,019,000</p> <p>Forecasted based on the lifecycle management activities.</p>

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Lifecycle Activity Type	Asset Management Practices	Risk Associated with the Activity	Equivalent Annual Cost (2022 to 2032)
Replacement/ Construction Activities	<ul style="list-style-type: none"> Replacement of deteriorated assets. 	<ul style="list-style-type: none"> Coordination with other asset classes (if applicable) might delay timeframe of construction activities. Delays in construction could result in cost over-runs. 	<p>\$ 21,616,000 Forecasted based on the lifecycle management activities.</p>
Disposal Activities	<ul style="list-style-type: none"> Decommissioning assets at the end of their useful life. Disposal of abandoned or obsolete infrastructure during construction projects. Contaminated soils are disposed in accordance with regulation based on Geotechnical reviews conducted in construction projects. 	<ul style="list-style-type: none"> Improper disposal could lead to environmental impacts and result in cost overruns. 	<p>- Disposal costs are included with replacement costs</p>
Service Improvement Activities	<ul style="list-style-type: none"> Retrofit of transportation system to include active transportation facilities. City is implementing a replacement program to convert streetlight heads to energy efficient components. Sidewalks program is intended to replace them for AODA compliant ones to improve accessibility in the network based on system condition. Granular trails maybe converted to hard surfaces. Fish habitat additions to include fish crossings. 	<ul style="list-style-type: none"> Lack of improvements can result in health and safety risks. Increased service expectations come with increased cost implications. 	<p>\$ 827,000 Based on the 2017 to 2021 average service improvement activities</p>

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Lifecycle Activity Type	Asset Management Practices	Risk Associated with the Activity	Equivalent Annual Cost (2022 to 2032)
Growth Activities	<ul style="list-style-type: none">Additions to support changes in demand and as per developments in the area.	<ul style="list-style-type: none">Growth activities are delayed or cancelled resulting in system being unable to accommodate increased demands.	<p>\$ 1,986,000 Based the average projected development charges</p>

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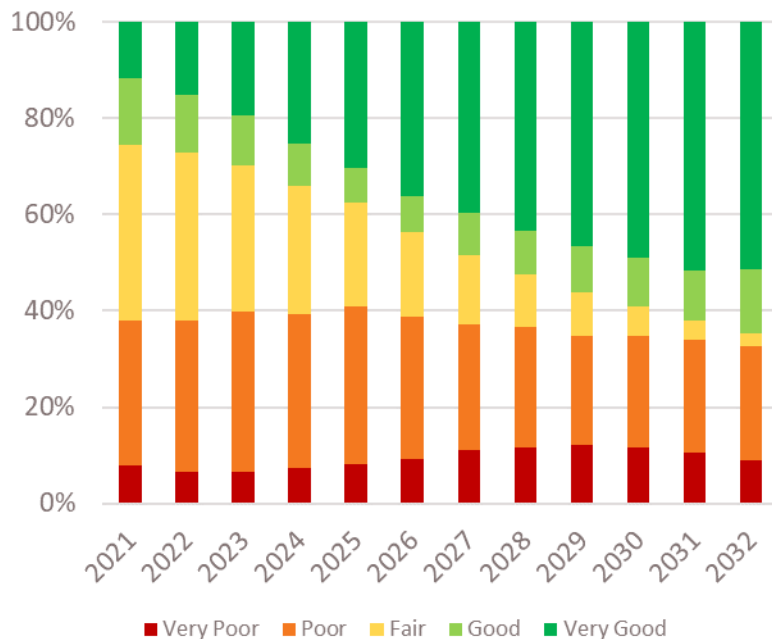
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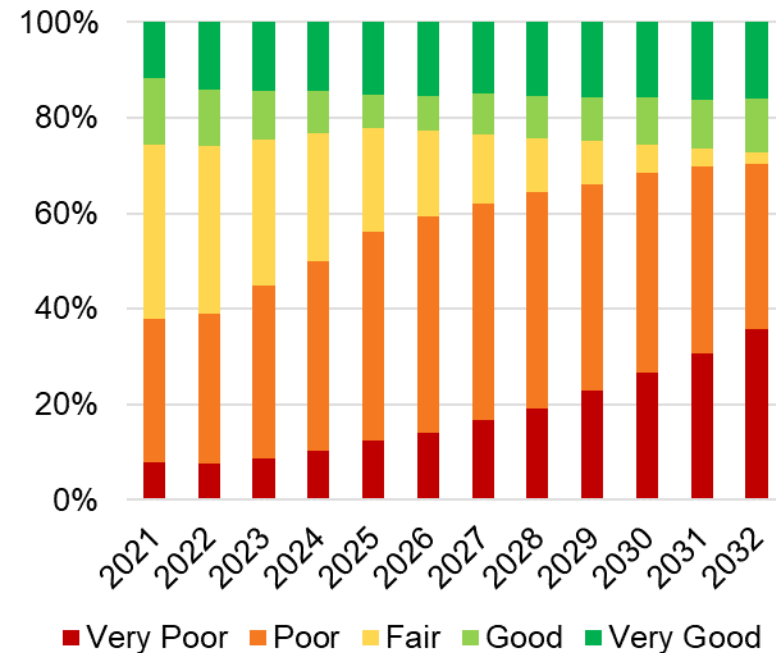
The City uses these strategies to plan work and determine future expenditure needs. The TLOS used in the AM analysis for water assets was defined as maintaining the current portion of asset with poor or better performance. The cost to maintain this scenario was determined to be \$35.3M annually over a 25-year period and resulted in the performance forecast shown in **Figure 44**. The percentage of assets in poor or better condition holds around 92%.

Figure 44. Transportation Condition Distribution Performance with Cost to Maintain LOS



The current planned budget was also analyzed to determine if a funding gap exists. The current anticipated investments, \$15.8M annually, resulted in the performance forecast shown in **Figure 45**. The percentage of assets in poor or better condition declines to 64% by 2032. This suggested an investment shortfall of \$19.5M annually.

Figure 45. Transportation Condition Distribution Performance with Anticipated Budget



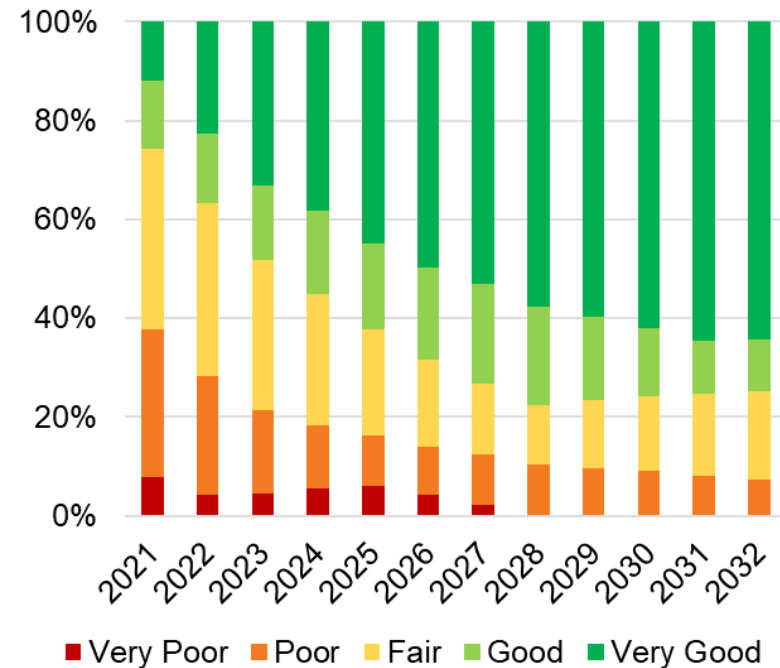
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Additionally, an optimal lifecycle scenario was analyzed, which was used to determine the cost to meet all lifecycle strategies described in **Table 37**. This scenario addresses the backlog and ensures no asset reaches very poor performance. The cost to achieve this scenario was determined to be \$40.4M annually over a 25-year period and resulted in the performance forecast shown in **Figure 46**.

The costs for the 10-year lifecycle forecast are presented in **Figure 47**. The graph shows the forecasted expenditures by lifecycle category for the cost to maintain scenario. The equivalent annual cost to maintain LOS, the annual expenditures for the optimal lifecycle scenario and the anticipated annual funding is also provided on the graph. The City should explore options to increase the investment levels for Transportation assets within the next 2-3 years.

Figure 46. Transportation Condition Distribution Performance with Optimal Lifecycle Activities



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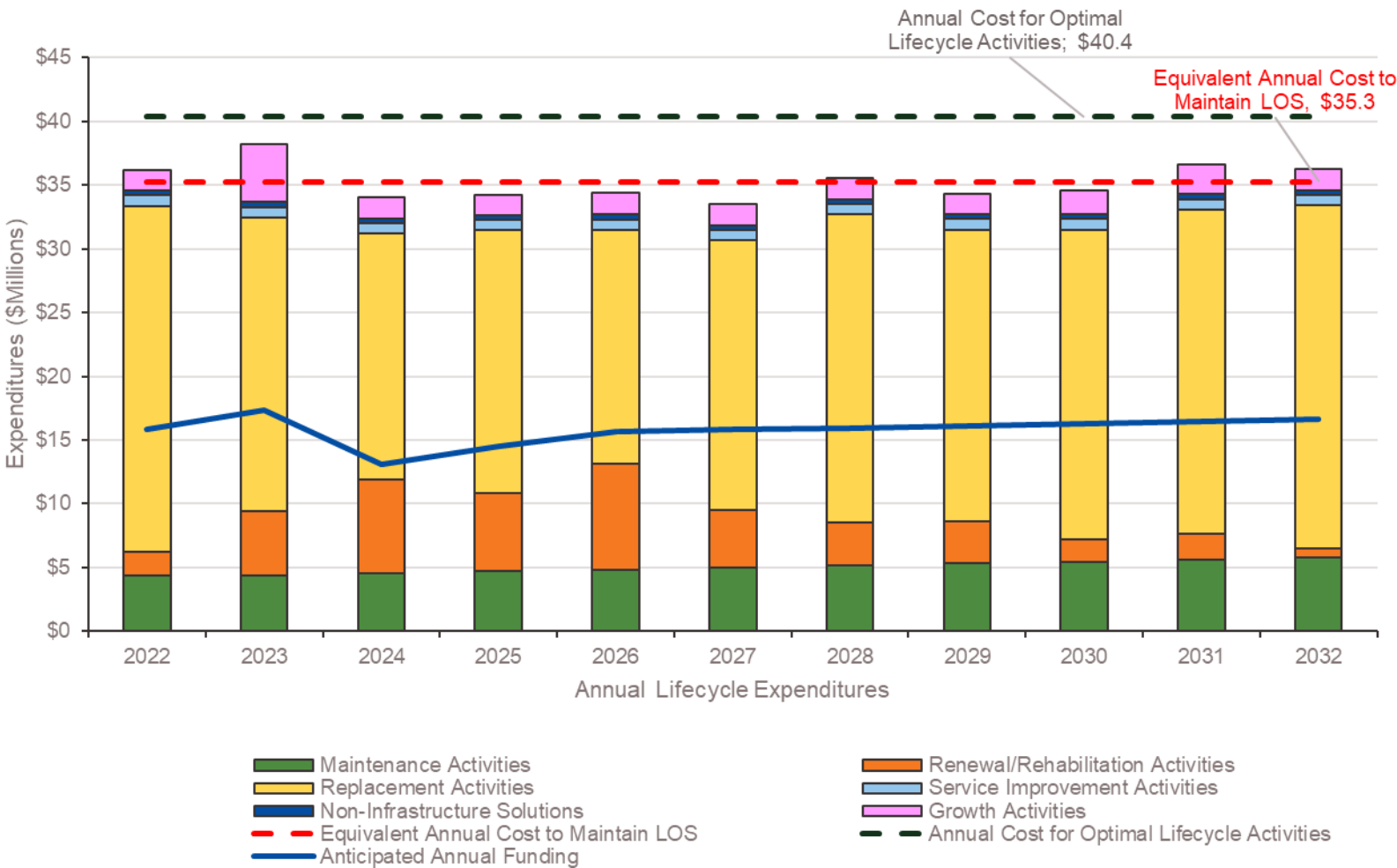
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Figure 47. Transportation Forecasted Lifecycle Needs



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5.4 Transportation Service Associated Risks

In addition to the risks associated with the lifecycle activities for this service, as shown on **Table 37**, the following are considered general risks with this service:

- Road's deterioration could result in closures and therefore impact the flow of traffic in the City;
- Signalized intersection, streetlight and sign failure could disrupt traffic flow and increase the risk of traffic collision in the area;
- Sidewalk failure could result in reduced accessibility; and
- Guiderail failure could result in increased risk to drivers or pedestrians.

In addition to the above, failure of assets from other services (like underground infrastructure or flooding) could impact the transportation network resulting in increased deterioration, erosion, and potentially full road closures.

5.5 Transportation Climate Change Considerations

The City's road network and related assets are also vulnerable to the impacts of climate change. Extreme flooding can cause structural damage as well as disruptions to traffic as roadways are expected to convey stormwater during 100-year events which may need to be

revised as climate change alters the frequency and intensity of extreme events.

Higher summer temperatures can cause pavements to soften and expand, which allows ruts and potholes to form more easily, increasing the need for more frequent maintenance and reconstruction.

Climate change is anticipated to increase the probability of high wind speeds and gusts which may impact the design and maintenance of right-of-way assets which must withstand these forces.

5.6 Transportation Data Sources

The following condition data was used to support this chapter's assessments of the City's transportation assets.

- Roadmatrix database with segment inventory, installation date, and PQI information;
- The guide rail inventory from previous assessment included all the necessary attributes;
- Niagara Region signalized intersection data;

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- Signs and streetlights: GIS shapefiles of the full inventory for these categories with some key attributes. Guiderail locations were also provided as a shapefile;
- Unit Cost Summary documentation provided by the City based on historical data; and
- The City's tangible capital asset estimated service life values.

The following assumptions were made during the analysis:

- Signalized intersection replacement costs were assumed based on available data. Their installation date was assumed to be the latest legal drawing date;
- Missing installation dates in linear assets were filled based on the install date of nearby related assets (i.e., mains for roads); and
- Estimated service lives not available in the City's tangible capital asset were assumed based on industry best practices.

A data confidence assessment is provided below:

Table 38. Transportation Data Confidence Assessment

Asset Category	Confidence Rating	Confidence Data
Roads	B	Minor assumptions were made on age, replacement costs and condition from known values.
Guiderail		
Streetlights	C	Minor assumptions were made on age, replacement costs, and condition from reliable sources.
Signs		
Sidewalks		
Signalized Intersections		

Estimated Replacement Value

The City's structures are valued at approximately **\$66 million**.

Condition Rating

The overall average condition of the structures is **Good**.

Structures

The City of St. Catharines structures provide a safe and efficient flow of people and goods. The City is responsible for the following:

- 71 Bridges
- 46 Culverts

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6 Structures

The movement of people, goods, and services is a significant aspect of our everyday life and is supported by the City's Structure assets.

6.1 Structures State of the Local Infrastructure

The following section summarizes the quantity and state of the structures asset portfolio.

6.1.1 Structures System Valuation

The City's structure system is comprised on standard categories based on OSIM requirements, in the following:

- **Span (< 3m)** encompasses bridges and culverts (under 3 metres span)⁴
- **Span (>= 3m)** encompasses bridges and culverts (over 3 metres span)

These have been further divided into vehicular and pedestrian bridges and culverts to indicate the service type they support. It should be noted that the spans <3m category excludes most CSP culverts and all driveway culverts.

These are culvert that provide crossing of natural water courses. Driveway culverts and other roadside culverts

For the valuation of the transportation system, the replacement values are based on replacing the asset with a similar asset (like-for-like) on a complete and standalone basis. These were calculated based on costs provided during the latest OSIM inspections completed in 2020. In the absence of OSIM data, historical values from similar projects were used.

Based on the approach taken to calculate the replacement values for each asset category, the data confidence grade is **A**.



that are part of the ditch system will be inventoried and included with the storm water system in future.⁴

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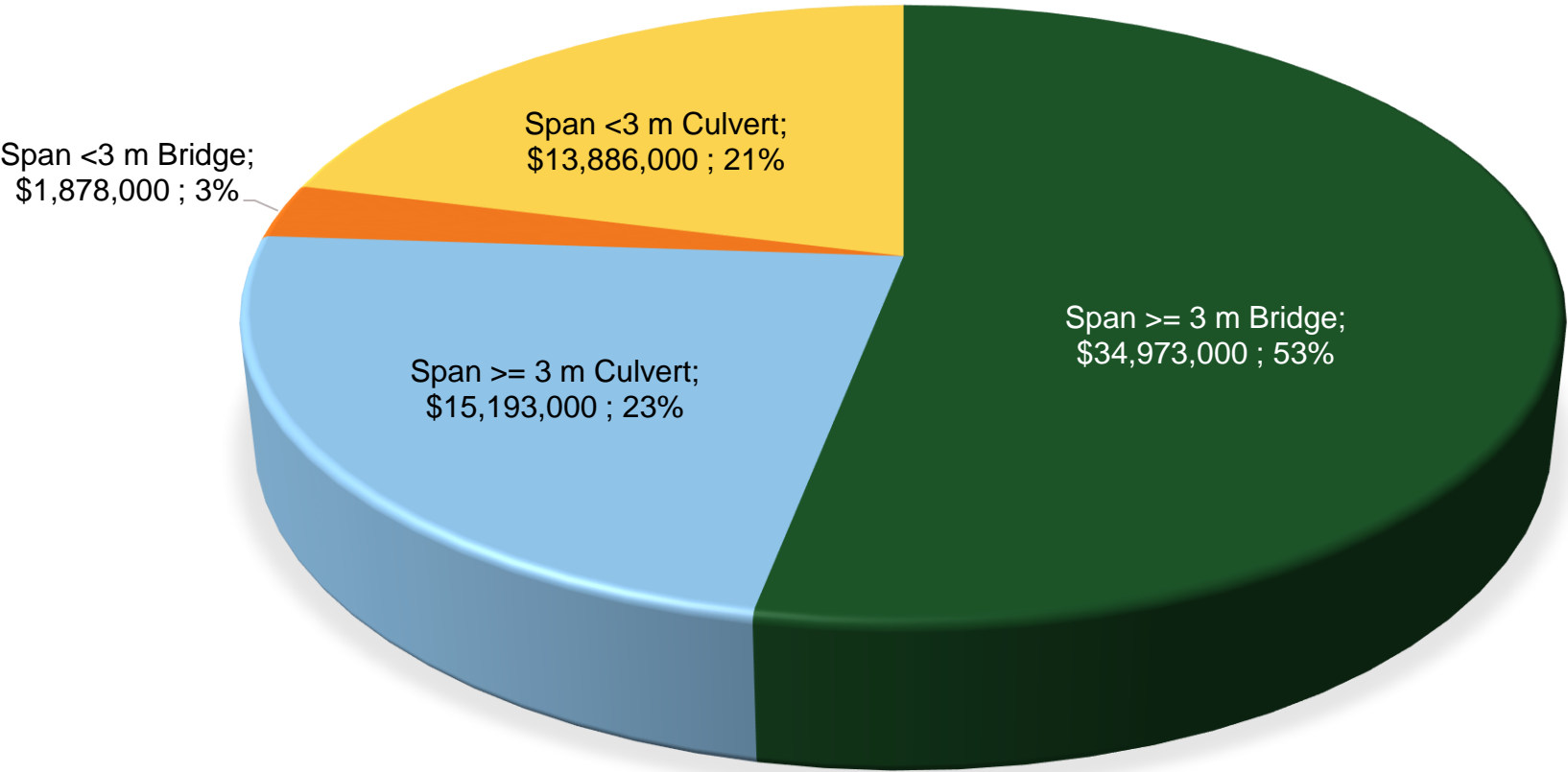
Table 39. Structures Valuation

Asset Type	Asset Category	Count	Unit	Replacement Value (2021 Dollars)
Structures	Span (\geq 3m) - Bridge	54	Each	\$ 34,973,000
	Span (\geq 3m) - Culvert	17	Each	\$ 15,193,000
	Span (< 3m) - Bridge	15	Each	\$ 1,878,000
	Span (< 3m) - Culvert	31	Each	\$ 13,886,000
Overall Transportation System Replacement Value				\$ 65,930,000

The overall distribution of replacement values by asset type for all structures is as shown below in **Figure 48**. Bridges (\geq 3m) have the highest replacement value and make up about 53.05% of the portfolio. Culverts in both size categories account for another 44.1% of the portfolio in approximately equal proportions and Bridges (< 3 m) make up the remaining 2.85%.



Figure 48. Asset Replacement Value for All Structures Assets



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6.1.2 Structures System Condition

Using deterioration curves based on estimated remaining life and the condition provided as part of the OSIM inspection bridge condition index (BCI), a condition score was created for each asset into five rating categories ranging from Very Good to Very Poor as shown below.

Table 40 provides a summary of the condition scale.

Table 40. City of St. Catharines Structures Condition Scale

Condition Score	Condition Rating	BCI
1	Very Good	80-100
2	Good	70-79
3	Fair	60-69
4	Poor	40-59
5	Very Poor	0-39

The current condition of assets is summarized and weighted by replacement value in **Figure 49**.

As shown in the figure, the structures with spans over three metres are overall in Good and Fair condition. The structures under three metres also have an average of Good condition.

Overall, 1% of the structure assets are in the very poor category and 35% are in the poor category.



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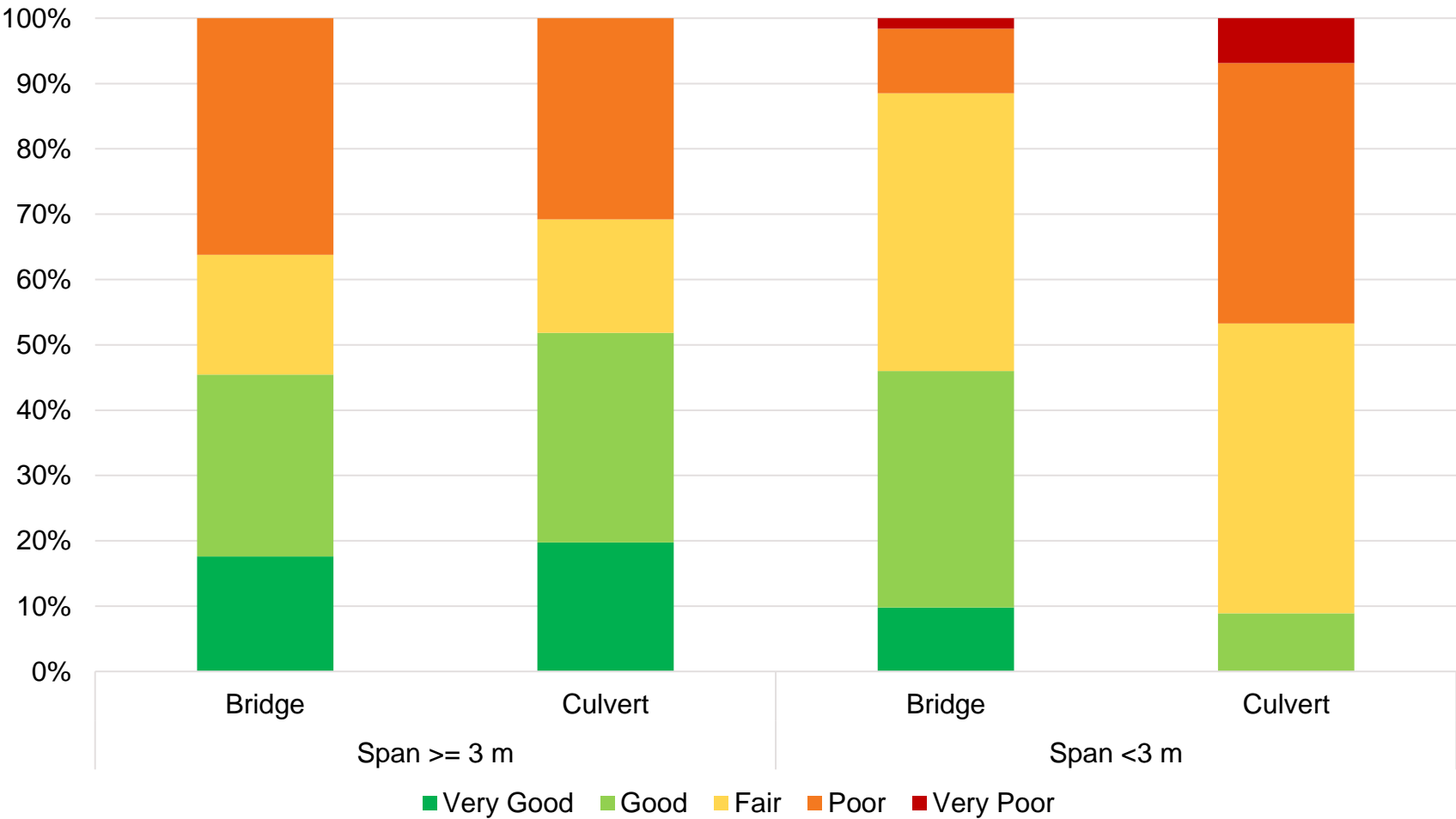
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Figure 49. Condition Distribution by Replacement Value for all Structure Asset Types



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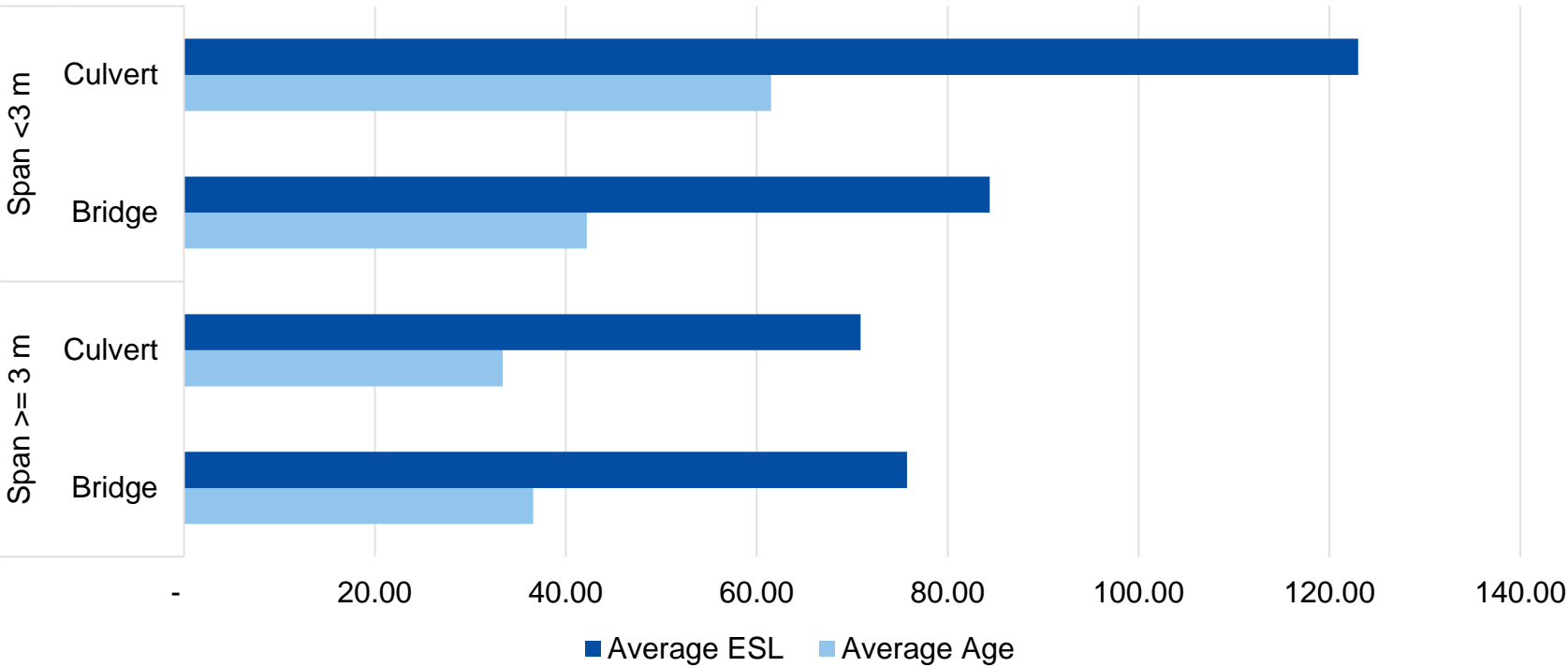
6.1.3 Structures Age Summary

By comparing the average age of the assets against the average estimated useful life, the estimated remaining life of the portfolio from an age perspective can be understood.

The figure below summarizes the average ages of each structure asset type.

The results align with those asset categories that indicated the majority of their assets are in Good and Fair condition as these are around mid-way of their estimated useful life.

Figure 50. Average Age as a Proportion of Expected Service Life by Asset Type All Structures Assets



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6.2 Structure Levels of Service

The City of St. Catharines is committed to providing safe, efficient, accessible, and sustainable structures that support the transportation system for all required uses and modes of transportation in accordance with regulatory requirements and expectations of the community.

The City has set a minimum quantitative target for its bridge assets of 60 BCI, which is equivalent to bridge structure being in fair condition. This proactive approach results on bridges not reaching Poor or Very Poor condition states.

The City also strives for no disruptions to vehicular or pedestrian traffic due to load restrictions, and that travel routes are safe with no harmful environmental impacts.

The Key Service Attributes associated with the transportation LOS and their associated statements are defined in the table below:

Table 41. Structures LOS Service Attributes

Service Attribute	Attribute Statement
Scope	Providing adequate transportation services to the community by maintaining accessible structures.

Service Attribute	Attribute Statement
Safety	Providing safe and accessible structures.
Quality	Providing structures at the appropriate material quality.
Reliability	Providing structures that are reliable.
Environmental Stewardship	Providing structures that are environmentally conscious.
Cost Efficiency	Providing cost efficient structures for all transportation modes.

The following sections provide a summary of the level of services for the City's structures including those required by the O.Reg.588/17.

6.2.1 Structures Customer Levels of Service

The City's CLOS documents the asset performance from a customer perspective. The following provides a summary of the CLOS associated with the structures in the City of St. Catharines.

- **Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists). (Scope)**

Bridges & Culverts on roads support all classes of vehicles including motor vehicles, heavy transport vehicles, buses, and emergency vehicles, as well

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as pedestrians and cyclists. Pedestrian bridges support both pedestrians and cyclists.

- **Description or images of the condition of bridges and/or culverts and how this would affect their use. (Quality)**

City of St. Catharines follows the standards and best practices outlined in the Ontario Structure Inspection Manual in order to determine the condition of the bridges and culverts. Third party consultants who are experts in the design and assessment of bridges are engaged to complete these assessments.

Additional customer levels of service are provided in **Table 42.**

Table 42. Structures CLOS Indicator

Service Attribute	Customer Levels of Service	2020 Performance
Quality	Average Condition of structures	Good
Reliability	Number of structures in Poor or Very Poor condition	34
	Percentage of structures in fair or better performance	64%

Service Attribute	Customer Levels of Service	2020 Performance
Cost Efficiency	Annual cost to provide structure service (per household)	\$29

6.2.2 Structures Technical Levels of Service

The City has defined technical requirements and key performance indicators that support internal reporting. The following provides a summary of the TLOS associated with the structures service.

Table 43. Structures TLOS Metrics

Service Attribute	Technical Levels of Service	Current Performance
Scope	Total number of bridges and culverts with a span of 3 metres or greater	71
	Number of pedestrian bridges with a span of 3 metres or greater	38
	Total number of bridges and culverts with a span less than 3 metres	46
	Number of pedestrian bridges with a span less than 3 metres	2

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Service Attribute	Technical Levels of Service	Current Performance
Safety	Percentage of bridges in the municipality with loading or dimensional restrictions ^(a)	5%
Quality	Percentage of bridges in poor or better condition	99%
	For structural bridges in the municipality, the average bridge condition index value (span of 3m or greater) ^(a)	69.5
	Smaller bridges in the municipality, the average bridge condition index value (span less than 3m) ^(a)	60.3
	For structural culverts in the municipality, the average bridge condition index value. (span of 3m or greater) ^(a)	72.2

Service Attribute	Technical Levels of Service	Current Performance
	Smaller span culverts in the municipality, the average bridge condition index value (span less than 3m at water courses) ^(a)	60.3

Notes:

(a) Required by O.Reg. 588/17

6.2.3 Structures Future Metrics for Consideration

As part of the definition of levels of service, the City identified possible level of service metrics that could be added to their framework as data becomes available. The following table provides a summary of the metrics that have been proposed for future consideration.

Table 44. Structures Future Metrics

Service Attribute	Levels of Service Proposed Future Metric	Type of LOS
Safety	Percentage of culverts that meet MTO capacity requirements	Technical

6.3 Structures Lifecycle Management Strategy

The levels of service presented in the previous section are supported by the achievement of a variety of lifecycle activities in accordance with the activity types presented in **Table 5**. These activities are targeted to extend the

asset life, ensure levels of service are being met, and reduce overall lifecycle costs.

The structures service staff implement a variety of lifecycle activities on its entire portfolio. **Table 45** provides a summary of these activities and the risk associated with not doing them.

Table 45. Structures Lifecycle Activities, Associated Risk, and Estimated Lifecycle Cost

Lifecycle Activity Type	Asset Management Practices	Risk Associated with the Activity	Equivalent Annual Cost (2022 and 2032)
Non-Infrastructure Solutions	<ul style="list-style-type: none">Condition assessments are conducted to determine the condition of the assets above three metres on the network bridges (OSIM inspections).	<ul style="list-style-type: none">Growth projections follow an accelerated rate not following planned estimates.Inadequate planning assumptions can provide incorrect forecasted estimates.Regulatory requirement and standard changes.Reduced ability to understand potential impacts of climate change on the infrastructure.	<p>\$ 69,000 Based on the historical 2017 to 2021 average expenditures</p>

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Lifecycle Activity Type	Asset Management Practices	Risk Associated with the Activity	Equivalent Annual Cost (2022 and 2032)
Maintenance Activities	<ul style="list-style-type: none"> Inspections are conducted in accordance with the Minimum Maintenance Standards and the necessary maintenance activities are triggered based on findings. Sweeping on bridges is conducted as part of the road sweeping program as presented on Section 5. 	<ul style="list-style-type: none"> Increased lifecycle cost if maintenance is done improperly or not with scheduled frequency. Resource limitations to conduct unplanned, urgent work. Insufficient maintenance may contribute to asset failure resulting on service disruptions. 	<p>\$ 247,000</p> <p>Based on the 2020 to 2021 budget increase applied annually from 2021 onwards. Incorporating the maintenance of growth assets following construction.</p>
Renewal / Rehab Activities	<ul style="list-style-type: none"> Repairs are conducted as identified in the OSIM inspections. 	<ul style="list-style-type: none"> Incorrect assumptions of the expected improvement in useful life after maintenance is completed. Increased lifecycle cost if renewal/rehab are done improperly or not as scheduled. 	<p>\$ 710,000</p> <p>Forecasted based on the lifecycle management activities</p>

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Lifecycle Activity Type	Asset Management Practices	Risk Associated with the Activity	Equivalent Annual Cost (2022 and 2032)
Replacement / Construction Activities	<ul style="list-style-type: none"> Replacement of deteriorated assets. 	<ul style="list-style-type: none"> Coordination with other asset classes (if applicable) might delay timeframe of construction activities. Delays in construction could result in cost over-runs. General deterioration in the condition of the structures and potential safety risks for users. Potential load restrictions on structure. Premature failures resulting in potential closures of trails and sidewalks and roads. 	<p>\$ 1,119,000</p> <p>Forecasted based on the lifecycle management activities</p>
Disposal Activities	<ul style="list-style-type: none"> Decommissioning assets at the end of their useful life. Disposal of abandoned or obsolete infrastructure during construction projects. 	<ul style="list-style-type: none"> Improper disposal could lead to environmental impacts and result in cost overruns. 	<p>\$ 43,000</p> <p>Based on the 2017 to 2021 average disposals</p>
Growth Activities	<ul style="list-style-type: none"> Additions to support changes in demand and as per developments in the area. 	<ul style="list-style-type: none"> Growth activities are delayed or cancelled resulting in system being unable to accommodate increased growth demands. 	<p>\$ 591,000</p> <p>Based on the average distribution of the \$ 6,500,000 projected development charges for a new structure in 2026</p>

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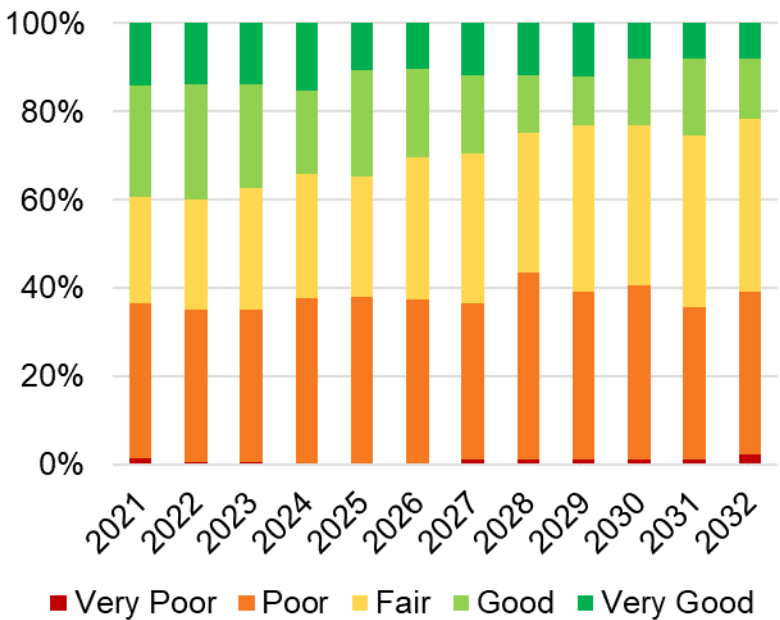
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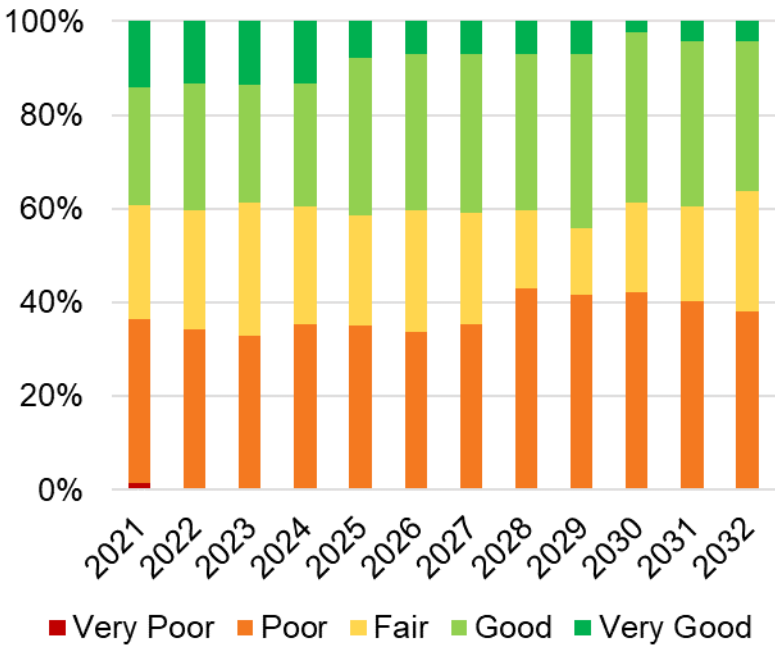
The City uses these strategies to plan work and determine future expenditure needs. The TLOS used in the AM analysis for wastewater assets was defined as maintaining the current portion of asset with poor or better performance. The current planned budget of \$1.8M annually appears to maintain LOS and resulted in the performance forecast shown in **Figure 51**. However, this is without adding additional structures, which would require an increase to annual investments. The percentage of assets in poor or better condition holds around 99%. This suggests that the anticipated budget is enough to maintain current LOS.

Figure 51. Structures Condition Distribution Performance with Anticipated Budget



Additionally, an optimal lifecycle scenario was analyzed, which was used to determine the cost to meet all lifecycle strategies described in **Table 45**. This scenario addresses the backlog and ensures no asset reaches very poor performance. The cost to achieve this scenario was determined to be \$2.8M annually over a 25-year period and resulted in the performance forecast shown in **Figure 24**.

Figure 52. Structures Condition Distribution Performance with Optimal Lifecycle Activities



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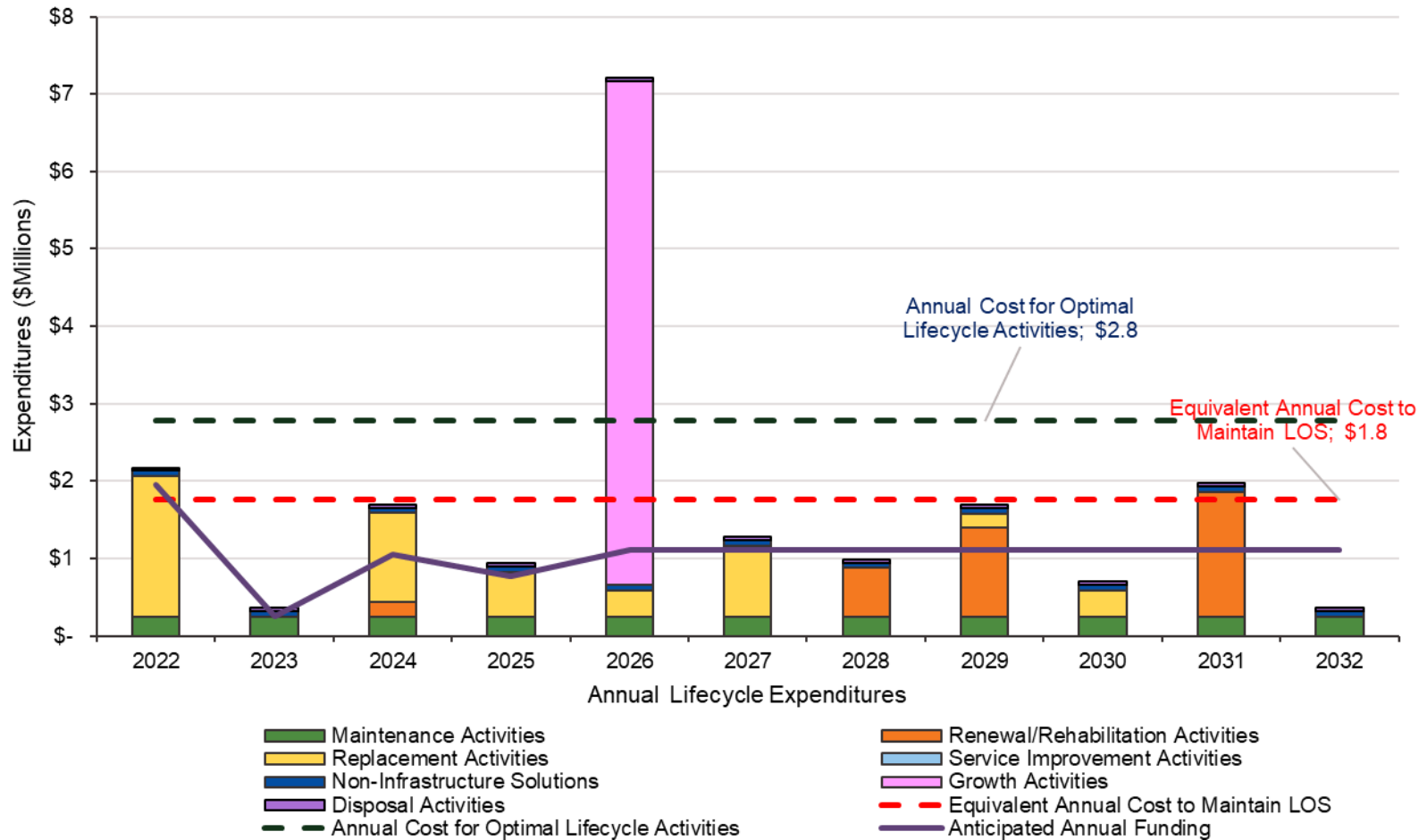
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The costs for the 10-year lifecycle forecast are presented in **Figure 53**. The graph shows the forecasted expenditures by lifecycle category for the cost to maintain scenario. The equivalent annual cost to maintain LOS, the annual expenditures for the optimal lifecycle scenario and the anticipated annual funding is also provided on the graph. It is recommended that the City should continue with anticipated spending.

Figure 53. Structures Forecasted Lifecycle Needs



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6.4 Structures Service Associated Risks

In addition to the risk associated with the lifecycle activities for this service described in **Table 45**, the following are considered general risks with this service:

- Deterioration of structures could result in load restrictions, closure, or potentially collapse; and
- Culvert failure could result in erosion to road bases and sink holes.

6.5 Structures Climate Change Considerations

Depending on their location, various City structures may be more susceptible to the impacts of climate change than others. Culverts are designed to convey flows based on past historical storm events and development projections. As storms increase in intensity, the resulting flows may exceed their capacity, increasing flood risk and the potential for structural damage or collapse during extreme storm events. As these assets are renewed, design modifications may be required to improve their future performance.

Similarly, during extreme storm events, bridges over waterbodies may be subject to high flood levels for which they were not designed. Hot and cold temperature

extremes and freeze/thaw cycles may weaken concrete or structural components. It is essential that vulnerable structures be evaluated, and any necessary improvements are planned for future consideration.

6.6 Structures Data Sources

The following condition data was used to support this chapter's assessments of the City's structure assets.

- 2020 OSIM Inspection database

No assumptions were made during the assessment of the data for this asset group.

A data confidence assessment is provided below:

Table 46. Structures Data Confidence Assessment

Asset Category	Confidence Rating	Confidence Data
Span (\geq 3m) - Bridge	A	No assumptions
Span (\geq 3m) - Culvert		
Span ($<$ 3m) - Bridge		
Span ($<$ 3m) - Culvert		

7 Financial Strategy

The financial strategy of this AMP aims to identify the appropriate funding levels required to provide the intended levels of service. It takes into consideration revenues, operating and capital expenditures, debt, and any future commitment for all the asset classes in the plan.

The City's budgets are developed to allocate the necessary funding to provide services, maintain, and construct infrastructure assets. These are based on required costs (expenditures) and available funding (revenues). The City allocates a portion of their revenues from property taxes and utilities to support current year projects, contribute to reserve funds, and make debt repayments.

Property taxes fund the City's core asset programs and services including stormwater management, road and structure operations, active transportation, and right-of-way maintenance. Water and wastewater are funded by rates.

In terms of expenditures, the City categorizes their budget into the following:

- **Operating budget:** Supports the day-to-day activities and functions conducted to provide City services. Samples of the expenditures funded from the operating budget include staff salaries, equipment maintenance, materials supply, and facilities services. These are expensed within the fiscal year.
- **Capital budget:** Includes large expenditures associated with construction or purchase of infrastructure. It leverages the debt and reserve funds available to manage the financial position over a ten-year period. Defining capital budgets includes the evaluation of long-term investment proposals along with estimating future cash flows.

As part of the annual budget development process, the City ensures continued financial sustainability through effective financial planning and risk management.

The following sections describe the interrelations between the City's infrastructure investment needs and the financing strategies.

7.1 Operating Revenues and Expenditures

The City's operating revenues for core and non-core assets by funding sources are as outlined below:

Table 47. Tax & Non-Tax Operating Revenues by Funding Source (\$'000)

Funding Source	2019	2020	2021
General Levy	91,908	95,729	97,678
Urban Service Area Levy	12,690	12,792	13,354
Investment in CIP	(1,200)	(1,250)	(1,250)
Tax Appeals and Write offs	(880)	(920)	(920)
Commercial /Industrial Vacancy Rebate	(320)	(320)	(170)
Supplemental Taxes	665	695	522
Municipal Utilities	549	527	536
Universities and Hospitals	668	676	700
Other Revenues	10,781	11,297	10,810

Source: City Operating Budget 2021 and 2020

The other operating budget revenues include contributions from other governments, rents, concessions, franchises, fines, penalties, and interest, income from investments, surplus from previous year, transfer from reserve, reserves support, and miscellaneous revenues.

An additional source of revenue for the City is via the water and wastewater rates which are dedicated to the

provision of the related services. The following provides a summary of rate support between the City and the Niagara Region expenditures.

Table 48. Rates Gross Operating Revenues and Distribution (\$'000)

Funding Source	2019	2020	2021
Water and Wastewater Rates Revenue	50,030	54,942	55,234
City of St. Catharines Expenses	17,942	20,954	19,913
Related Region of Niagara Expenses	32,088	33,988	35,261

Source: City 2021 Water and Wastewater Budget Book

The net historical and projected operating budget for the assets included in this plan are shown below.

Table 49. Net Operating Budget by Service (\$'000)

Service	2019	2020	2021
Water	3,233	6,027	5,776
Wastewater	4,220	2,955	2,900
Stormwater	-	154	204

Service	2019	2020	2021
Transportation	6,913	5,255	5,341
Structures	317	497	488

Since 2020 discrete budgets for Stormwater for the assets included in this plan have been included in the operating budget. The City has stated that it is moving to further separate the costs associated with this service.

7.2 Capital Financing and Expenditure

The capital budget is used for major investments like construction of infrastructure, supporting non-infrastructure solutions like technical studies and master plans. The capital budget for each service is shown below.

Table 50. Capital Budget by Service (\$'000)

Service	2019	2020	2021
Water	6,828	8,166	8,129
Wastewater	2,000	4,786	4,761
Stormwater	3,241	4,367	2,783
Transportation	7,672	10,004	11,388
Structures	3,864	2,420	1,290

It should be noted that the water and wastewater anticipated funding was developed based on the current Water and Wastewater Financial Plan up to 2029. The breakdown of the funding is shown in **Table 51**.

Table 51. Water and Wastewater Funding (\$'000)

Year	Water	Wastewater
2021	8,129	4,762
2022	9,166	5,358
2023	10,726	6,262
2024	13,761	7,473
2025	15,420	8,397
2026	16,904	9,033
2027	16,814	9,081
2028	18,151	9,743
2029	19,514	10,418

7.3 Reserves & Reserves Funds

The City has a number of reserve funds that are each used to support the capital program requirements. The source of these includes tax, grants, and Development Charges.

7.4 Debenture Financing

The City debenture funding can be utilized as a source for annual capital investments and is utilized after all other applicable funding has been applied. Debenture financing allows the City to spread the costs of capital over the term of debt rather than requiring funding in the year of construction. Debt management is necessary to ensure that the City maintains an appropriate debt level.

The City has a Council approved debt management strategy that is part of their capital budget; for more detail refer to *Capital Financing Report FMS-B011-2021*. For additional details please refer to Section 4 of the City's capital budget book.

7.5 Projected Financing Strategies

For the purpose of the analysis, the investment needs have been assessed against the projected tax and rate funds for the next ten (10) years. The assumed annual expenditures are based on the lifecycle costing analysis outlined for each asset group.

The expenditure summary provided under each service section and in the following pages is based on the investment required to maintain levels of service, specifically the proportion of assets in poor or better performance.

The future projections were developed using the assumptions shown in **Table 52**.

Table 52. Forecasted Funding Assumptions

Activity Type	Model Assumption
Asset at End of Life	Reflects the current assets that have overdue treatments in 2022 and require replacement.
Non-Infrastructure Solutions	Estimated based on the current five years average for these expenditures.
Maintenance Activities	Developed based on a review of the historical maintenance expenditures as a percentage of the portfolio replacement value.
Renewal/Rehabilitation Activities	Forecasted based on a lifecycle model applied to each asset in the asset register.
Replacement Activities	Forecasted based on a lifecycle model applied to each asset in the asset register.
Disposal Activities	If available, these were calculated as an average of current disposal activities costs.

Activity Type	Model Assumption
Service Improvement Activities	Calculated as a percentage of the replacement cost of the total portfolio based on the average of the service improvement investments of the last five years.
Growth Activities	<p>Calculated as the maximum value between:</p> <ul style="list-style-type: none">• Historical 5-year average growth as a percentage of the replacement cost of the total portfolio.• Projected Development Charges. <p>Population and employment forecasts, and resulting impacts on demand from growth, are assessed and documented in the City of St. Catharines Development Charges Background Study (June 2021).</p> <p>Forecasted capital and significant operating expenditures due to increase in demand from growth are assessed in the City of St. Catharines Development Charges Background Study (June 2021). It is assumed that growth projections in the City's financial forecasts, used in the development of this AMP, include and align with the projections from the DC Study.</p>

The resulting graphs reflect the forecasted amounts for each of the activity types and summarize the equivalent annual costs over the 10-year period. **Figure 54** provides the summary of the tax-based expenditures which includes the transportation, structures, and stormwater asset portfolios. This portfolio has an annual equivalent annual cost of \$42 million to maintain the current LOS. There is an investment shortfall for tax-based expenditures of around \$20.8M annually to maintain the current condition of the assets that support storm, transportation and structures. The City must either reduce service offerings to their residents or increase funding to be able to maintain services at the current level.

Figure 54. Forecasted Asset Portfolio for Tax Based Expenditures

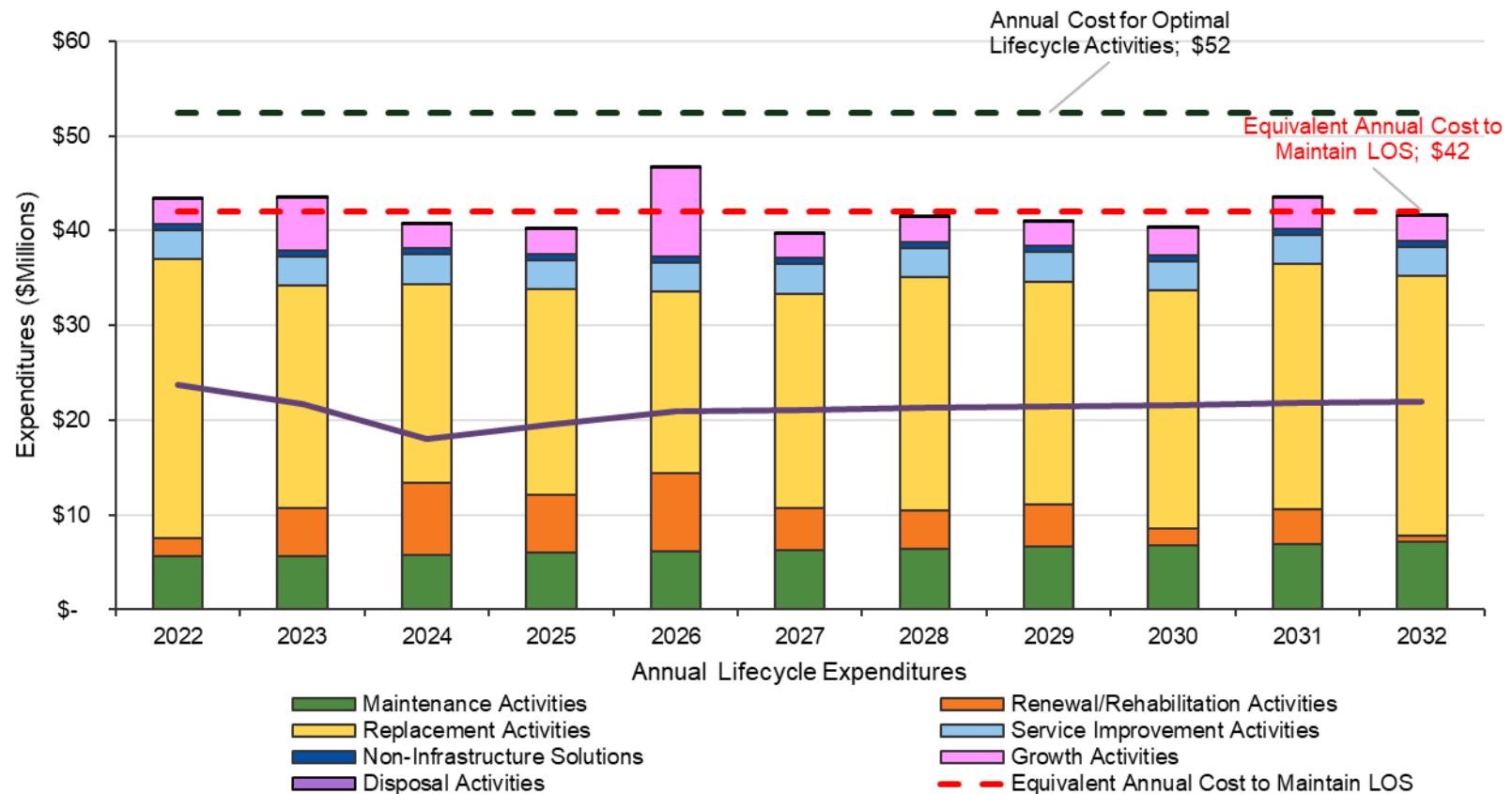
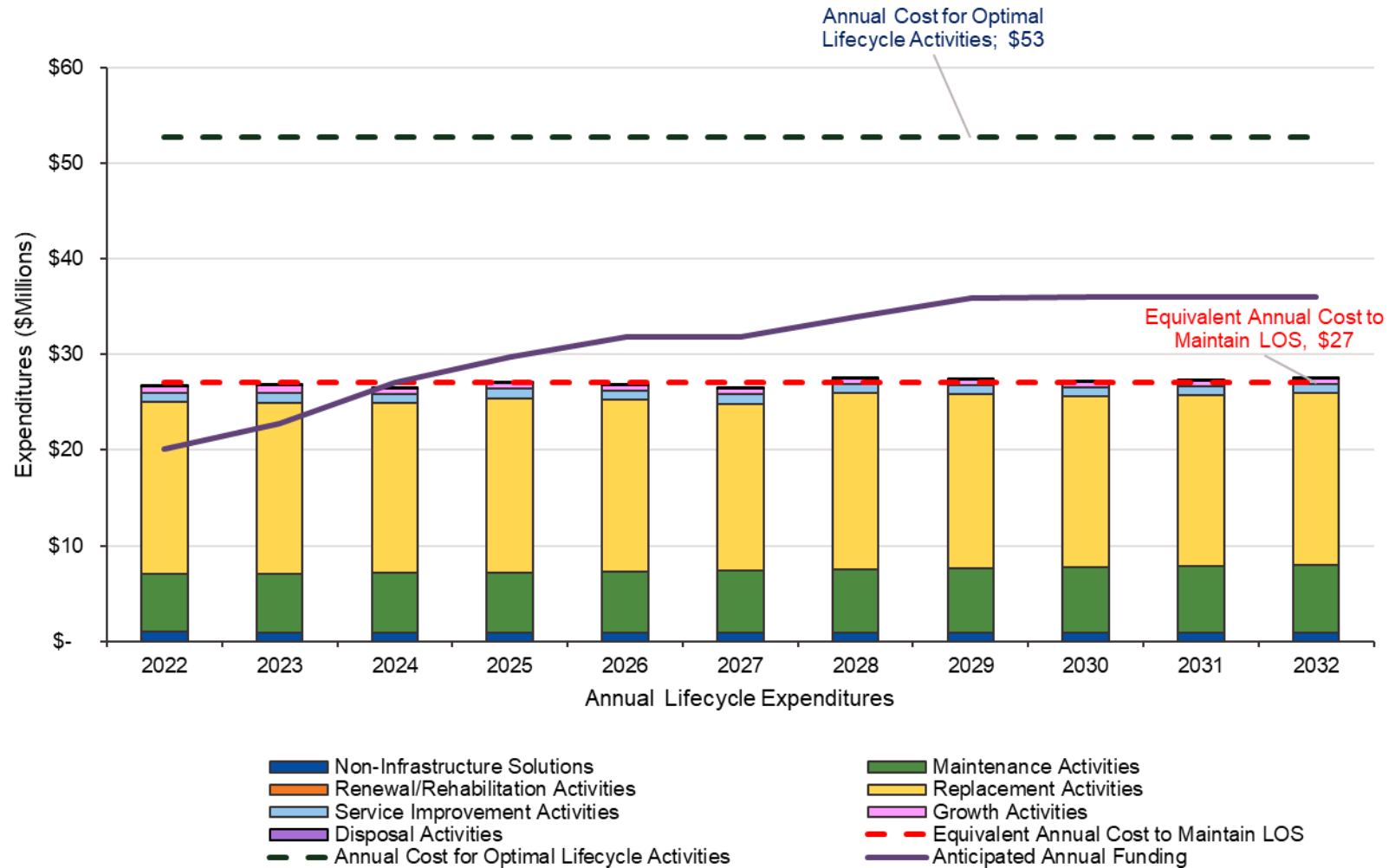


Figure 55 provides the summary of the rate-based expenditures which includes the water and wastewater asset portfolios, which has an equivalent annual cost of \$27 million. The anticipated rate-based investments identified in the recent Water and Wastewater Financial Plan, which the City should continue to implement, are sufficient to maintain the current condition and forecast a slight improvement to service, however are still below the optimal renewals identified.

Figure 55. Forecasted Asset Portfolio for Rate Based Expenditures



One method to gain an understanding of the forecasted required funding and the planned available funding is to view the costs cumulatively over time. **Figure 56** and **Figure 57**, provide the cumulative forecasted capital funding needs versus the cumulative available funding for 2022 to 2046. The grey area represents the cumulative capital expenditures, based on the same lifecycle cost estimate information presented in **Figure 54** and **Figure 55**.

The red line on each graph represents the current forecasted funding. The forecasted funding for the tax-based assets is based on the City's currently planned capital funding from 2021 to 2025. Beyond 2025, the average annual 5-year funding has been used. For the rate-based assets, the forecasted funding is based on the water and wastewater financial plan to 2029 (as

previously presented in **Table 51**). Beyond 2029, the annual average funding from 2021 to 2029 has been used.

The black line on each graph represents the compound annual budget increase required beyond the currently planned funding to fully fund the cumulative capital expenditures by 2046. It should be noted that for tax assets, the compound annual funding increase starts from 2026 onwards, and for the rate assets, the increase starts from 2030 onwards. The figures show that to fully fund the tax and rate-based asset portfolios by 2046, an 8.09% and 0.34% compound annual increase would be required respectively. Note that this is in addition to general inflationary increases.

Figure 56. Forecasted Cumulative Tax Based Funding

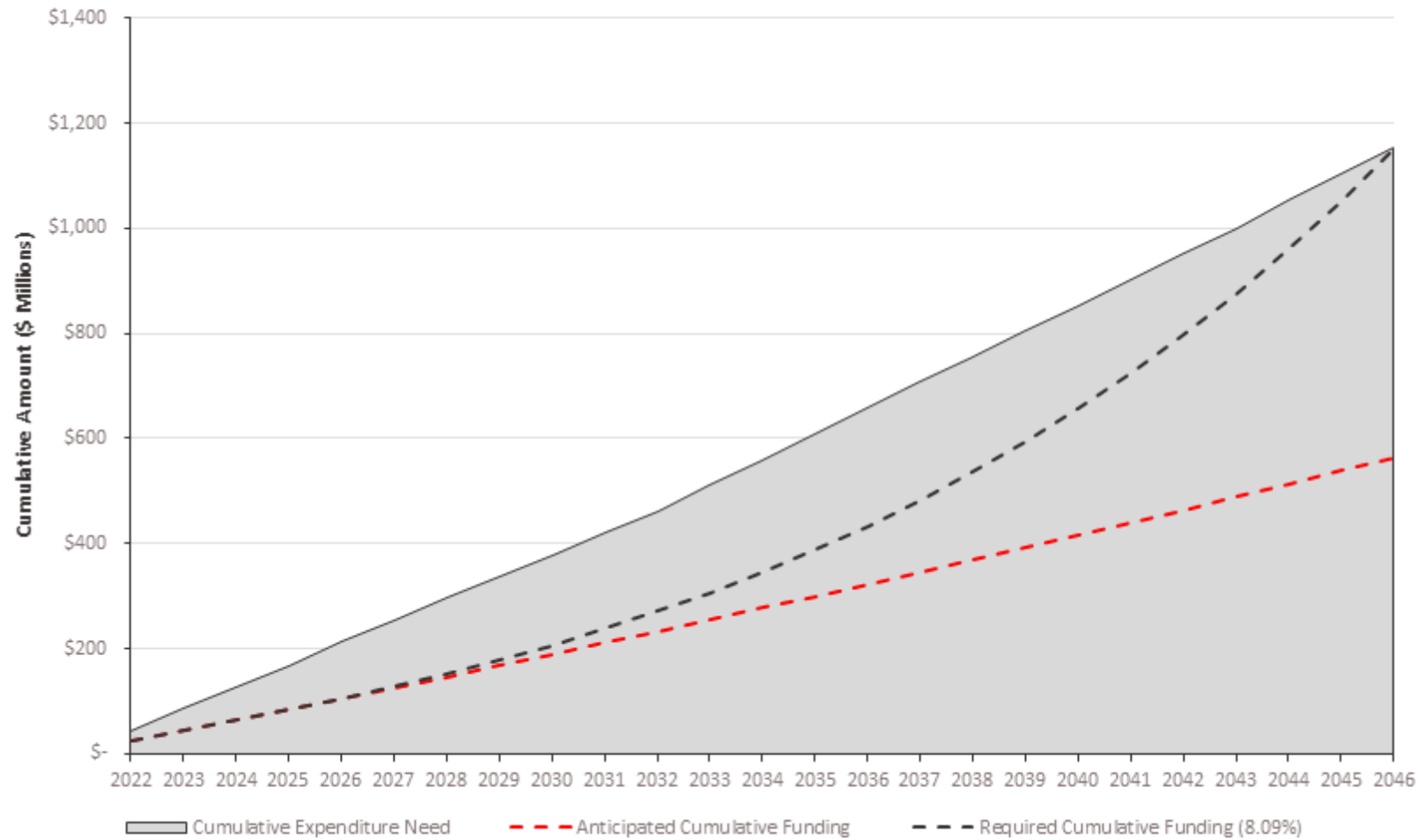
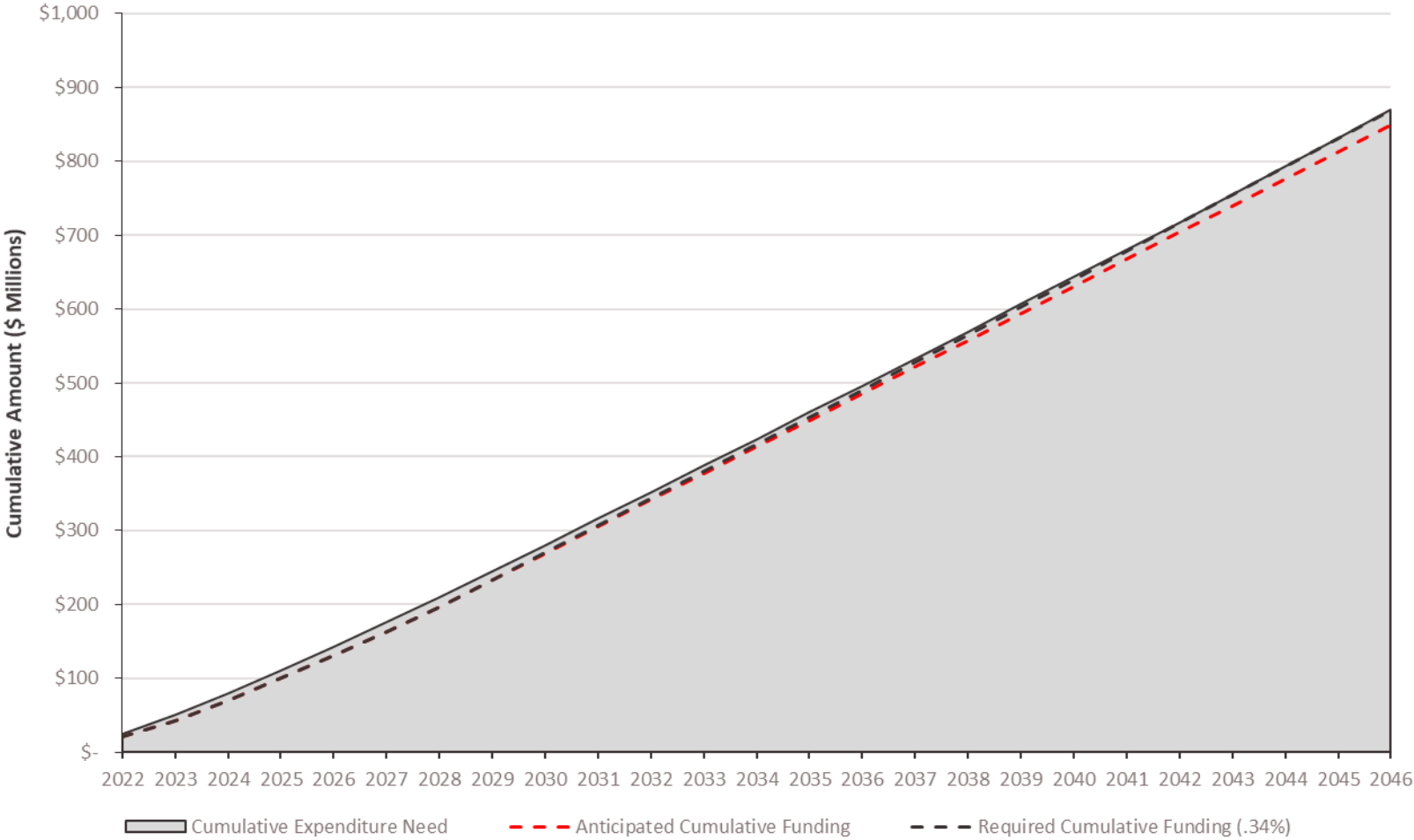


Figure 57. Forecasted Cumulative Rate Based Funding



8 Conclusions

The City is generally managing and planning for the future core asset needs in a successful manner. As described in the sections earlier, only Transportation exhibits an investment shortfall to maintain current LOS.

Additionally, a few recommendations can be drawn:

Explore opportunities to understand the largest operating costs. Significant operating costs are a fundamental lifecycle cost that can be overlooked, and this may be an excellent time to consider updating the existing work management system'. Asset-centric management of work can help the City establish a baseline of costs related to levels of service and assets and may provide opportunity to optimize maintenance as a lifecycle activity. This will enable the City to move towards an optimized and preventative approach to maintenance.

Improve the accessibility of data. A significant amount of data was centralized for this assignment. The City may consider continuing to integrate disparate data sets so that asset management analysis, and other business processes, can be more readily conducted.

Improve data quality, suitability, and confidence. This will continue to be a significant element in asset management. Collecting all data is not the objective – collecting relevant and repeatable data that informs asset managers and decision-makers is the key. The City

should continue to define the data that provides the most value for specific tasks, and then focus on enhancing the data suitability and confidence in a strategic sense. Relevant data that is up to date, accurate and fit for use is a fundamental enabler in successful asset management. For example, the current wastewater and stormwater main performance data may not reflect all the parameters that staff use to plan future work.

Build on the success of this AMP. The City can use the annual AM review to both look back and project forward, celebrate successes and learn from efforts made. Some levels of service and performance measures identified in this AMP can provide valuable performance feedback and an opportunity for the City to check in on progress. Performance management programs can also connect to these levels of service.

Continue to prepare for upcoming legislative requirements. In alignment with upcoming legislative asset management deadlines, continue preparations for new asset management prescribed requirements, including new regular asset management effectiveness review and reporting, maintaining public consultation and communication of data, and discussions/negotiations around proposed levels of service, costs and risk using the updating asset management information in the AMP. In particular, the levels of service within this AMP are based on legislative requirements. For the next AMP update, consider setting levels of service first based on corporate goals and objectives, since these define the

City's priorities and guide future spending. Also set levels of service based on citizen needs - the expectations of the public have a direct impact on the level of service demanded from infrastructure.

9 Improvement Plan

Asset Management practices at the City of St. Catharines rely on making the best possible decisions regarding infrastructure. As part of the development of this AMP, opportunities for improvement of asset management practices and the asset management plan were identified. When establishing an improvement plan, it is useful to consider international standards and well-known asset management guidance for advancing Asset Management capabilities including:

- ISO 55000;
- International Infrastructure Management Manual (IIMM) 2015; and
- BSI PAS55:2008.

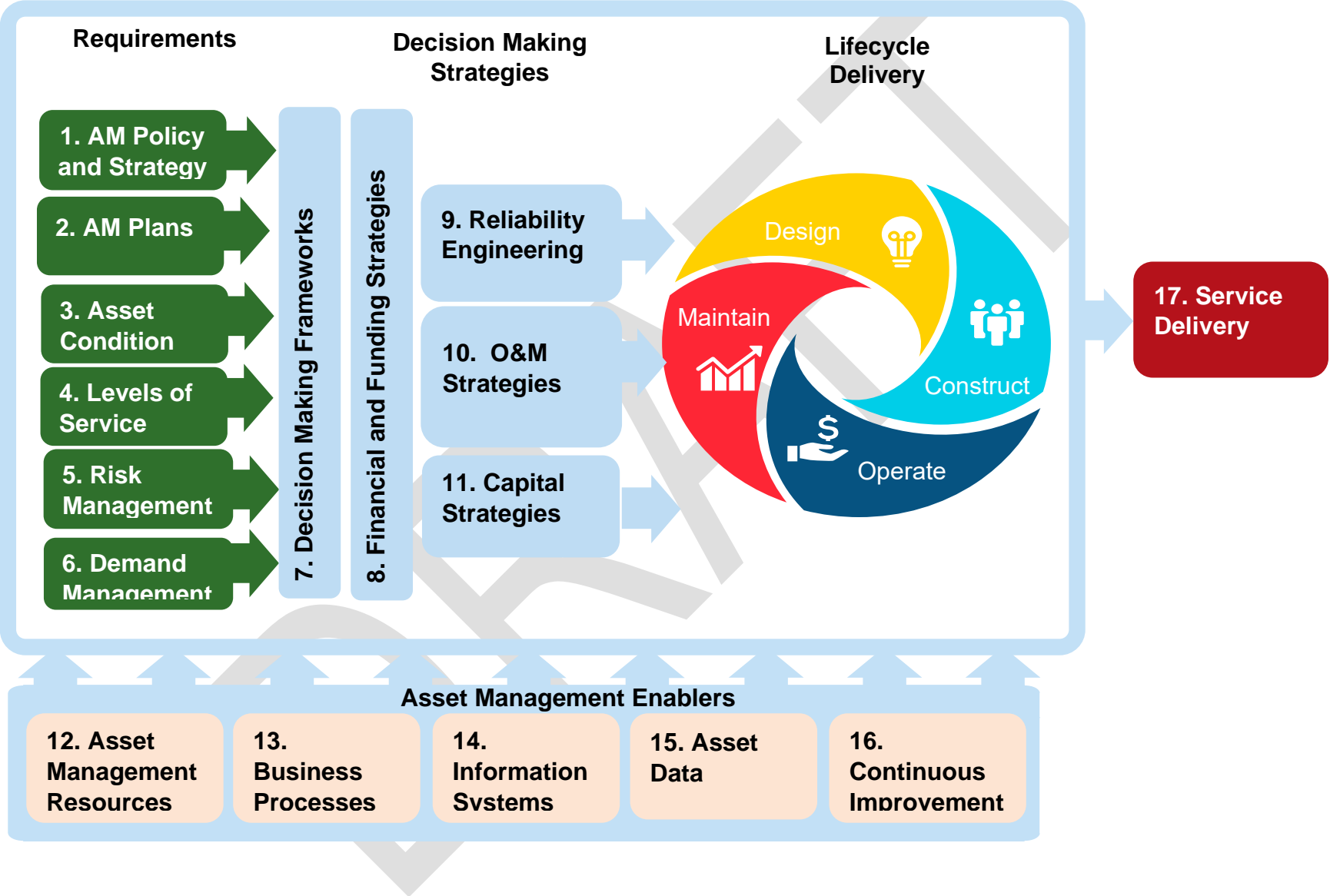
These standards were developed over several years with international collaboration and are widely regarded as best practices for the field of Asset Management. Key recommendations have been categorized according to

Figure 58 on the next page, which organizes efforts related to Asset Management into:

- **Asset Management Requirements:** key documentation that defines the governance, objective and direction of the AM practices;
- **Decision Making Strategies:** tools that support decision making with a full asset lifecycle perspective; and
- **Asset Management Enablers:** processes and resources available to ensure Asset Management remains a well-established component of successful service delivery.

Understanding that the City is committed to improving the Asset Management practices over the long-term, the following provides a summary of recommended improvements. These are provided to guide strategic decisions for the City to continually improve levels of service, asset reporting (valuation and condition), risk, and therefore improve future iterations of the AMP for core and non-core assets.

Figure 58. Asset Management Capability Framework



Source: Adapted from IPWEA, 2015 and ISO/IEC 550001

9.1 Asset Management Requirements

As indicated in Section 1, the City has proactively been working on developing the necessary documentation to guide their AM practices. The following sub-sections provide an overview of continuous improvement opportunities for each framework element.

9.1.1 Asset Management Policy and Strategy

As discussed in Section 1, the City has an Asset Management Policy in place and an Asset Management Working Group has been established in which representatives from all departments are part of the decision making associated with AM and with the updates of objectives, policies, and procedures.

A key factor to consider as part of this is the overall City staff buy-in beyond those that are directly involved in the AM working group and AM projects. It is recommended that the City establish communications strategies for the asset management policy and strategy, which may include in-house AM posters, staff on-boarding training that outlines the AM policy, and other practices to promote the role and advantages of Asset Management to all levels of staff.

Outcome: Improved corporate buy-in.

9.1.2 Asset Management Plan

This document and the subsequent non-core AMP will fulfill the requirements for Asset Management Plans as

set out by O.Reg. 588/17. It is recommended that ongoing work be conducted to improve background data and the processes for the development of asset management plans.

Outcomes: Meet Provincial legislative requirements for Asset Management Plans.

9.1.3 Asset Condition

To establish continuity between services, it is recommended to develop a standardized condition assessment protocol and templates to ensure condition and capacity information are collected and returned in a defined structure. The protocol would outline the restrictions, assumptions, and requirements of the work as well as how to complete the template. This template would be set up for ease of transfer to an internal or external user and would have the ability to be seamlessly uploaded to the respective system post completion. This of course needs to align with the business processes, City reporting needs, and roles and responsibilities in place; for example, incoming data should be verified prior to upload. The templates may include but not be limited to the following:

- Defining the level of detail required for condition, capacity, and risk;
- Defining the level at which assets will be identified (granularity) for condition assessments;

- Assigning grading standards for each process group for condition as well as performance; and
- Defining the costing methodology, including threshold, defining labour requirements, etc.

Outcomes: High confidence in data that can be used to inform decision-making processes related to capital planning and lifecycle activity planning.

9.1.4 Levels of Service

Both CLOS and TLOS were established for core assets as part of this AMP. However, processes need to be put in place to capture data for LOS metrics identified as future measures. It is recommended to put in place a full LOS program that will allow an annual review, revisions based on data availability and the identification of additional metrics required.

Moreover, in order to understand customer expectations, it is recommended for the City to conduct a customer satisfaction survey to gauge the citizens' feedback and priorities based on funding constraints.

Outcomes: Sets targets for levels of service and provide an understanding of the costs to provide the levels of service.

9.1.5 Risk Management

An enterprise risk management framework and management system will streamline the process of

establishing and identifying risks to which the City is exposed. It is recommended to consider a formal risk assessment protocol as part of the condition assessment templates, as per section 9.1.3.

Outcomes: Well defined and repeatable processes to assess asset risk that will aid in decision-making activities at the City.

9.1.6 Demand Management

The completion of Master Plans will help the City develop a greater understanding for the Capital Projects that need to be planned. This can enable the City to ensure there is capacity within its infrastructure systems to accommodate a growing population.

Outcomes: Improved understanding of needs for capital planning initiatives.

9.2 Decision Making Strategies

The City has multiple systems in place to manage the different services; however, limited integrations are in place and the decentralized information increases challenges in the AM review processes.

9.2.1 Decision Making Framework

By establishing formal processes for decision making and choosing and implementing a software system that will support the process, the City will be able to make well-

informed choices and ensure their infrastructure is being managed in a financially sustainable way.

Outcomes: Well established processes and systems to support them so the City can make well informed and defensible decisions.

9.2.2 Financial and Funding Strategies

It is recommended that the City continues to integrate and create alignment between the current financial plans and the asset management plan. This includes developing long-term forecasts for all asset classes in alignment with the lifecycle strategies outlined in the asset management plan. This includes ongoing continuous improvement of asset state of good repair needs (through condition assessments) and capacity needs (through master planning and growth studies).

Outcomes: Aligned funding strategy and asset management plan.

9.2.3 Reliability Engineering

The City is working towards improving the recording of asset failure in their systems. It is recommended that the City establish a plan to acquire the necessary resources (staff and budget) to implement a more proactive approach based on reliability engineering and industry best practices. This will be refined as the potential impacts of climate change on the assets is better

understood and strategies to build resilience are developed.

Outcomes: Improved reliability and optimized lifecycle costs.

9.2.4 Operations and Maintenance

As part of this AMP, an asset register was drafted to record key data and a centralized source of asset information for the City. In order to keep the register updated, it is critical to audit and develop comprehensive strategies around all work processes that capture assets and asset information, such as updating asset information and retiring assets while maintaining historical data. For that reason, the City should connect asset data within the Computerized Maintenance Management System, tying asset data to day-to-day activities. In addition, the City should implement integrations to ease the flow of information between specialized systems and their Computerized Maintenance Management System to reduce the manual transfer of information.

It is also recommended to assess the adequacy of current operations and maintenance budgets since the current asset management plan is based on existing budgets which maybe underfunded.

Outcomes: Improved operations and maintenance processes and funding.

9.2.5 Capital Works Strategy

Well established capital planning is a key component of effective service delivery as it provides the opportunity to look forward and identify what projects need to be done in order to maintain levels of service at the City. By implementing an AM system as recommended in Section 9.2.1, the City will be able to establish a baseline of projected investments. A formal prioritization document should be created to standardize the decision-making criteria between the different services.

In addition, it is recommended that the City establishes processes to evaluate assets that are co-located, such as assets within the right of way. Corridor analysis tools, such as the integrated corridor coordination tools currently in place at the City should be utilized to support decision-making.

Outcomes: A prioritized list of projects that will aide in establishing funding requirements.

9.3 Asset Management Enablers

These initiatives form the foundation the City needs to continually be successful in their AM practices.

9.3.1 Asset Management Resources

The City Asset Management Working Group should continue to have frequent meetings and review asset management resourcing requirements across the organization. The City should also evaluate establishing

a dedicated asset management team with dedicated asset management staff.

Outcomes: Continuous improvement of asset management practices.

9.3.2 Business Processes

Documenting current and optimized target business processes for all AM capabilities with clear data flow will improve the successful completion of AM activities. Furthermore, establishing roles and responsibilities provides structure and ownership to the continued maintenance of asset information.

This will include a detailed review of processes currently in place at the City to identify ways they can be improved and ensure they reflect new technology systems.

Outcomes: Allows for visibility in business processes, status, and accountability.

9.3.3 Information Systems

The main system to consider is the asset register which provides a complete list of assets in the City, regardless of ownership or status. Accurate, up-to-date, and mineable asset data is key to making informed and defensible decisions with respect to the management of assets in the short and long term. Asset registers are typically structured in a hierarchy for ease of access to information, and to allow for the summary and analysis of data at multiple levels as needed. The main purpose of

this approach is to reduce the need for managing duplicated datasets as this is resource and cost intensive. The City should consider implementing a formal decision support system in conjunction with a CMMS as well as the registry

Outcomes: Provides a Corporate “single source of truth”, for asset data, including condition, capacity, cost, and criticality. This would enable a full and complete “cradle to grave” description of a singular asset or system based on accurate data for improved decision making.

9.3.4 Asset Data

As outlined through the asset portfolio sections, assumptions have been made and documented for the development of this plan with the goal of reducing gaps identified in future iterations of the AMP.

It should be highlighted that despite the different levels of data confidence recorded in the document, the information gathered is considered to generate a reliable plan for the City’s asset portfolio. Further refinements will provide improved estimates.

The following provides a summary of the recommended asset data improvements for the City:

Table 53. Recommended Asset Data Improvements

Service	Recommendation
Water & Wastewater	Bulk water station, water booster station, and wastewater pumping station inventories were created based on drawings with the associated attributes. To improve the quality of these asset categories, it is recommended that the City implement a condition assessment program for both facilities in order to develop a comprehensive inventory of the structural and process assets with their associated age, condition, and replacement costs. It is also recommended that wastewater storage facilities are assessed, and formalized operations and maintenance schedules are established for these facilities.

Improvement Plan

Service	Recommendation
Wastewater & Stormwater	Sewer and maintenance holes condition were based on peak structural PACP condition ratings from the zoom camera assessments. It is recommended that the City continue to implement this approach and target detailed CCTV condition assessments based on condition and priority. It is recommended for additional modeling to be completed for wastewater and stormwater to understand capacity needs and potential impacts due to climate change. This includes the completion of Master Plans to identify areas that require service improvements and expansions to the system. Through these exercises, it is recommended to validate all O.Reg. 588/17 level of service measures applicable to the asset class.
Stormwater	Oil grit separator replacement costs were assumed independently of the details of each asset (size, location). To improve the quality of the dataset it is recommended that the City develop a comprehensive inventory for this

Service	Recommendation
	asset category, including validation of key attributes and detailed cost estimates.
Stormwater	Open channel, wetland, and stormwater pond asset inventories provide high-level details of these assets. To improve the quality of the dataset, the City should develop a comprehensive inventory for these asset categories, including validation of the following key attributes: location, confirmation of the necessary components (i.e., inlet, outlet, and structure for ponds) and detailed cost estimates. It is also recommended to complete an inventory for roadside ditches, culverts, and natural assets that require capital or operating expenditures or require management by the City.
Transportation	The signalized intersection inventory is maintained by Niagara Region, it is recommended that the City coordinate improvement of the install dates information over time.
Transportation	Streetlights are to be considered as a combination of the pole, arm, and

Service	Recommendation
	fixture in terms of condition. The City should conduct a full streetlight condition assessment to get a more accurate representation of the actual condition of these assets. It is recommended to collect condition data for sidewalks to understand overall condition. In addition, it is recommended to establish expansion and service improvement needs to meet the target right-of-way cross section and level of service requirements.
Structures	For future OSIM inspections, it is recommended to align the condition categorization scale with that provided in this AMP in addition to the BCI.
All	Review data gaps and work towards filling/refining the datasets. It is recommended to develop standardized base data across assets and where possible have the data collected in the field to reduce errors
All	Estimated service lives were assumed based on best practices where these were not available in the City's

Service	Recommendation
	tangible capital asset policy and register. These should be added for future reference.

9.3.5 Continuous Improvements

Asset Management is always evolving and to ensure the City's Asset Management practices are in alignment with best practices it is important to make a concerted effort to continually improve documentation, data, tools, and resource availability. This involves the following:

- Refining and reviewing progress of Asset Management roadmap initiatives; and
- Conducting a full AM maturity assessment as a baseline to set a target maturity for the next years and update it on a set frequency to understand progress against targets.

It is recommended that the City establishes resources and an implementation plan to complete the assessed improvements and prioritize the order of work based on the available resources.

Outcomes: Up to date AM practices that support the needs of the City of St. Catharines.



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Corporate Report City Council

Report from: Office of the Chief Administrative Officer

Report Date: September 17, 2021

Meeting Date: October 4, 2021

Report Number: CAO-155-2021

File: 10.4.99 and 10.12.43

Subject: Positioning the City for Success: Strategic Plan Alignment and Connectivity with Corporate Priorities

Strategic Pillar:

This report aligns with the following St. Catharines Strategic Plan pillars: economic, social, environmental and cultural.



Recommendation

That Report CAO-155-2021, regarding Positioning the City for Success: Strategic Plan Alignment and Connectivity with Corporate Priorities, be received for information; and

That Councillor _____ be appointed to the Deputy CAO Recruitment Panel.

Summary

Moving forward, the Corporation has renewed its focus to better align with and enhance connectivity between Council's Strategic Plan and the Corporation's priorities, long-term goals and initiatives. Along with these efforts, staff will improve measurement, reporting and communication of our progress and successes – to better highlight how the Corporate activities fall in line with Council's strategic direction. To position the City for success, as part of the next steps, the City needs to focus in five key areas: strategy, structure, processes, people and culture.

Relationship to Strategic Plan

Together with our community and guided by our strategic goals, we will provide quality municipal services that enhance our social fabric, environmental sustainability, and cultural vitality; contributing to economic prosperity of our community.

Specifically, to the Strategic Plan, this report outlines the next steps to help the City meet those strategic objectives, achieve Corporate priorities, as well as further improve communication.

Background

For background purposes for Council and the public, the City published its first Strategic Plan in 2015 and established the four strategic pillars: economic, social, environmental, and cultural. It also identified numerous tactics, and in doing so, did not adequately reflect or fully encompass the breadth of Corporate priorities, projects, and initiatives identified as short- and long-term goals. Upon reflection, by specifically identifying tactics within the Strategic Plan – it in fact excluded a lot of Corporate activities which fell in line with the strategic direction of Council.

The Strategic Plan was reviewed in 2019 and again in 2021, as the pandemic provided an opportunity for the City to reflect on the plan with a different lens. In the most recent review, a number of recommendations were made for the next term of Council to consider through a [report to Council](#). In particular it notes opportunities including the development of key performance indicators; improved communication between Council and staff; improving internal capacity at the City; and amending the plan's objectives.

Report

While strategic planning is still a fairly new process supported by Council and the Corporation as the path forward, there have been lessons learned and opportunities identified for improvement along the way. Specifically, with measurement, reporting, and communication of progress and successes, as well as the need for the appropriate resources to be allocated where needed to ensure the City can achieve those priorities.

Through the strategic planning process, it has been clear internally that much of the staff activities – projects, initiatives and long-term goals identified within their respective workplans – do align with Council's Strategic Plan.

The City has, however, identified a gap in communication whereby staff need to better demonstrate and communicate how those Corporate projects and initiatives align with the strategic direction of Council. Opportunities to close the gap in communication will be realized with a new City website and better alignment and connectivity between Corporate work plans and the strategic objectives moving forward.

It also means if the City truly is committed to its future success in achieving those objectives within the Strategic Plan, the Corporation must develop a strategy that has built-in the flexibility required for the Corporation to pivot where necessary and take the appropriate actions.

Positioning the City for Success

As the proposed next steps, specifically, in order to ensure the City is positioned for success in achieving the objectives of the Strategic Plan (and the Corporate priorities,

projects, and initiatives that align with objectives) the City will focus on five key areas: strategy, structure, processes, people and culture.

Strategy

A Corporate strategy is the driver for the other four areas of focus to position the City for success, and is the required first step, as the **strategy** will define the required **structure**, **processes** will be developed that are based on that structure, which in turn will better identify how **people** - staff resources - should be allocated and support the creation of a workplace **culture** that is supportive of staff efforts.

Structure

Organizational structures need to be dynamic in order to pivot when required to the rapidly changing needs of the Corporation. This need to be flexible has been further highlighted during the pandemic as a necessity. The City needed to adjust the way it interacted with the residents, in some instances change the way the City does its business and find new and innovative ways of delivering programs and services. The City continues to review its service delivery structure as well as the organizational structure.

Processes

Certainly, the COVID-19 pandemic also highlighted the need for the City to review its processes in order to not only meet the objectives of the Strategic Plan but also continue to deliver programs and services in an efficient way that also makes better use of resources and enhances customer service. Certainly, as the City continues to upgrade its software applications and along with the City's website redesign, City Hall will be even more accessible to the public with enhanced online services, improved processes and more user-friendly website for both mobile and desktop applications. In the third-party review of the City's service delivery structure, opportunities were also identified to improve processes, systems and procedures in Council report [CAO-249-2019](#). Staff are beginning to action several of those opportunities, including the review of the City's existing financial systems that will evaluate the feasibility of leveraging the Region of Niagara's solution through the sharing of services. These technical and operational enhancements will be vital to ensuring staff can continue to deliver exceptional service to residents.

People

In order to continue to make advancements in the objectives of the Strategic Plan, the City needs to better support its staff and ensure they are being provided with the tools to be productive, successful and provide exemplary services and programs to the community. As the landscape of the modern workplace has changed dramatically, and again was highlighted during the pandemic, there have been improvements to the tools and technology available to staff, as well as review and development of policies and procedures that will create a stronger foundation moving forward – but there are more opportunities that should be capitalized upon. One potential area currently under review is a flexible policy that could allow some staff to continue to work from home on a more permanent basis – and along with the continual technological advances – the City ensures the valued services and programs to the public continue to be provided and meet the objectives of the Strategic Plan.

Culture

As a Corporation, the City's success relies heavily on the staff that provide innovative, creative, solution-focused, and customer-based approaches in the delivery of services and programs. As a result, a workplace culture that is supportive, inclusive and fosters opportunities for staff to flourish is vital. While the leadership level has and continues to foster a positive working environment, there is always room for improvement and opportunities to further support staff. Some potential initiatives to better develop and enhance a positive workplace culture could include additional team building, more opportunities for feedback and input from staff, more regular two-way communication, and ensuring supervisors, managers, and Senior Leadership Team are accessible and available to all staff.

Deputy CAO

The Deputy CAO position is currently vacant, and it is being recommended to start recruitment immediately based on the revised organizational structure. As per the Corporation's Hiring Policy, HR-01-19, the Mayor and one Councillor are to be included on the interview panel. Included within the recommendation is the appointment of one Councillor to sit on the interview panel.

Financial Implications

There are no financial implications associated with this report.

Environmental Sustainability Implications

There are no direct environmental implications associated with this report, however the indirect implications are numerous as the City continues to better align with and enhance connectivity between Council's Strategic Plan and the Corporation's priorities, long-term goals and initiatives.

Conclusion

To better position the City for success, a strategy needs to be developed; the structure – both in service delivery and organizational – needs to be considered; renewed policies and processes should be implemented; there must be flexibility with the allocation of staff resources and the Corporation must continue to develop a positive workplace culture that allows staff, and in turn the City as a whole, to flourish.

Prepared, Submitted and Approved by

David Oakes

Chief Administrative Officer



Corporate Report City Council

Report from: Office of the Chief Administrative Officer

Report Date: September 17, 2021

Meeting Date: October 4, 2021

Report Number: CAO-154-2021

File: 10.4.99

Subject: Audit and Accountability Fund Intake 2 – Public Report

Strategic Pillar:

This report aligns with the following St. Catharines Strategic Plan pillars: economic, social, environmental, and cultural.



Recommendation

That Council support the findings of the Public Report to pursue moving to Peoplesoft Financials as the City's enterprise resource planning system; and

That staff work with the Region of Niagara to develop an operating model and service agreement for the City to leverage the Region's instance of Peoplesoft Financials; and

That staff report back to Council by the end of Q4 2021 with information on a potential partnership with the Region of Niagara related to leveraging the Region's instance of Peoplesoft Financials.

Summary

Over the past four months, consultants from Ernst & Young LLP have worked with staff to complete a feasibility analysis and recommendation for the City to upgrade outdated financial systems and software with a more robust solution. The result of this work is a report (Appendix 1) with a recommended direction on how the City should proceed, complete with a risk analysis and financial implications associated implementation.

This report satisfies the guidelines for the Audit and Accountability Fund – Intake 2 issued by the Province of Ontario through the Ministry of Municipal Affairs and Housing.

Relationship to Strategic Plan

Replacing and improving outdated technical systems was identified as an opportunity in the Audit and Accountability Fund Public Report presented to Council on November 27, 2019. By expanding on that opportunity and providing a feasible implementation strategy, the City is addressing a core need to better deliver services to residents. If implemented, staff will have access to more robust and efficient financial systems that will enable stronger decision making, and in turn help to progress key components of Council's Strategic Plan.

Through this project, the City is also seeking to leverage a shared service opportunity between municipalities. This type of cooperation between municipalities has been a focus for the Provincial government over the past several years, and its importance has been reiterated by Council.

Background

On May 21, 2019, the Premier of Ontario announced the creation of the \$7.35 million Audit and Accountability Fund for large urban municipalities and school boards in Ontario to, "...help municipalities become more efficient and modernize service delivery while protecting front line jobs." The Audit and Accountability Fund is a conditional grant program available to 39 large urban municipalities and 10 school boards across Ontario.

In December 2019, The City of St. Catharines submitted the report "Opportunities to Modernize City Processes & Improve Service Delivery" to the Province as a requirement for receiving funding from the Audit and Accountability Fund program.

In the 2019 Audit Findings Report to Council on October 5, 2020 from the City's external auditors KPMG, some of the limitations and shortfalls within the City's existing financial system were identified. KPMG also recommended that available software solutions be reviewed going forward.

On November 17, 2020, Minister Steve Clark – through the Ministry of Municipal Affairs and Housing – distributed guidelines for the Audit and Accountability Fund – Intake 2, which will allow large municipalities to benefit from further Provincial funding to conduct service delivery and administrative expenditure reviews, with the goal of finding efficiencies while protecting and modernizing critical front-line services.

On March 29, 2021, after submitting an Expression of Interest to the Municipal Services Office and being granted \$250,000, Council approved the award of a Sole Source contract to complete the scope of the Audit and Accountability Fund – Intake 2 project to Ernst & Young LLP at a cost of \$250,000 + HST.

The Region of Niagara uses Peoplesoft as their enterprise resource planning (ERP) system, which was implemented with functionality that allows for other Municipalities to leverage the software for their own purposes. The City of St. Catharines currently shares a few systems with the Region of Niagara, and with the current need of a replacement to the City's existing ERP, partnering with the Region and building on their

investment is a good investment for the taxpayer of both St. Catharines and the Niagara Region.

Report

Scope of Work

The scope of work proposed by staff focused on evaluating the City's existing enterprise resource planning (ERP) system, and whether or not the existing ERP solution used at the Region of Niagara could support the requirements of the City's business processes related to:

- Service-to-cash
- Procure-to-pay
- Record-to-report

By first understanding the City's requirements, the scope of work also includes the cost, effort and timeframe required for the City to transition to a new ERP system.

The scope of this project is a direct result of the work completed during the Audit and Accountability Fund – Intake 1 project which identified several transformational and operational opportunities for the City to explore further.

Deliverables

The primary requirement for the Audit and Accountability Fund – Intake 2 is a public report submitted to the Province of Ontario that supports the scope of work.

Ernst & Young LLP have provided staff with a report (Appendix 1) that supports the scope of work by examining the feasibility of the City leveraging the Region of Niagara's existing ERP system. Within the business case, a risk-assessment, financial analysis, feasibility analysis, and timeline for implementation have been provided. Additionally, Ernst & Young LLP identifies the benefits and efficiencies that can be realized by proceeding with implementation.

The analysis that informs the report was completed from May 2020 to September 2020, during which Ernst & Young LLP – with the support of staff – collected and analyzed internal data, interviewed stakeholders and consulted staff from the Region of Niagara. This approach and subsequent business case culminate in a clear recommendation for the City to consider and a roadmap of future steps should the City elect to proceed with implementation.

Staff will now need to review the recommendation in the report and evaluate the feasibility of implementation when considering the cost, resources and timing required.

Next Steps

Upon approval, staff will begin to work through the pre-implementation activities outlined in the Public Report in preparation for the implementation of Peoplesoft.

Staff will also begin to work with the Region of Niagara on an operating model and service agreement for Peoplesoft Financials. Staff will report back to Council by Q4 2021 seeking approval to enter into an agreement with the Region of Niagara and to confirm the forecasted budget amounts included in the draft 2022 capital budget and four-year forecast and seek Council approval for this multi-year project amounts.

Financial Implications

The public report prepared by Ernst & Young LLP (Appendix 1) recommends proceeding with the implementation of Peoplesoft to replace an aging ERP that would address significant organizational concerns, including improving operational efficiency and reducing risk exposure.

Pre-Implementation work is required to prepare the City for the implementation of a new ERP, as detailed in the Public Report, and is estimated to cost approximately \$950,000. There are adequate capital dollars available for pre-implementation work approved in previous capital budgets.

The recommended implementation strategy is estimated to cost the City an additional \$5.1 million. Long-term cost savings, efficiencies, and an improvement in service delivery have been identified as key benefits from this implementation strategy. Additionally, proceeding with this strategy of leveraging work completed by the Region of Niagara provides a considerable estimated capital cost savings of \$2.8 million when compared with pursuing implementation alone.

Implementation amounts have been included in the draft 2022 capital budget and four-year forecast.

Complete details regarding the financial implications to the City can be found in Appendix 1. As staff work with the Region of Niagara to develop an operating model and service agreement for the City to leverage their instance of Peoplesoft Financials estimated cost of the pre-implementation and implementation strategy will be confirmed and additional details regarding the financial implications of pursuing implementation will be provided in a future update to Council.

Environmental Sustainability Implications

As the Corporation continues to evaluate its systems and processes there will be an opportunity to reduce paper-based processes through future improvements and enhancements.

Conclusion

As of October 4, 2021, staff have fulfilled the guidelines for the Audit and Accountability Fund – Intake 2, established by the Ministry of Municipal Affairs and Housing. Additionally, Ernst & Young LLP have completed their work as outlined in the awarded request for proposal.

Upon Council approval, staff will begin completing pre-implementation activities as recommended in the public report and will report back to Council by the end of Q4 2021.

Prepared and Submitted by

Jacob Ledda
Project Manager, Corporate Initiatives

Approved by

David Oakes
Chief Administrative Officer

Appendices

1. Audit and Accountability Fund – Intake 2 Public Report

City of St. Catharines ERP Business Case and Implementation Roadmap

Council report

October 2021

Disclaimer

Ernst & Young LLP (EY) prepared the attached report only for the City of St. Catharines ("the City," "St. Catharines," "Client") pursuant to an agreement solely between EY and the Client. We have completed our engagement to provide a business cases for the implementation of a new ERP system. Our services to date were performed in accordance with our engagement agreement, and our procedures were limited to those described in that agreement.

Between May 2021 and September 2021, EY performed a high-level review of the City's procure-to-pay, service-to-cash, and record-to-report processes through inquiry with required stakeholders to determine if the identified ERP system by the City would meet their requirements. EY worked closely with the City to capture their high-level requirements. The benefits, risks, costs, and efforts were also identified as part of this review. An implementation roadmap was developed with recommended activities, in which associated resources, costs, effort, and timelines have also been estimated. All related estimates are subject to further discussion and therefore may materially change based on various factors.

Our work has been limited in scope and time and we stress that more detailed procedures may reveal issues that this engagement has not. The procedures summarized in this report do not constitute an audit, a review or other form of assurance in accordance with any generally accepted auditing, review or other assurance standards, and accordingly we do not express any form of assurance.

Consistent with our engagement agreement, the business case report is intended solely for the information and use of the management and Council of the City of St. Catharines and is not intended to be and should not be used by anyone other than these specified parties. EY did not express any form of assurance on accounting matters, financial statements, any financial or other information or internal controls. EY expressly disclaims any duties or obligations to any other person or entity based on its use of the attached report. Any other person or entity must perform its own due diligence, inquiries, and procedures for all purposes, including, but not limited to, satisfying itself as to the financial condition and control environment of the City and any of its funded operations, as well as the appropriateness of the accounting for any particular situation addressed by the report. EY did not conclude on the appropriate accounting treatment based on specific facts or recommend which accounting policy/treatment the City or any funded operations should select or adopt.

The observations and business cases relating to all matters that EY provided to the City were designed to assist the City in reaching its own conclusions and do not constitute EY's concurrence with or support of Client's accounting or reporting or any other matters.

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Executive summary

Purpose, scope and background



Report purpose

To understand the costs and effort required to leverage the current ERP system that is currently being used by the Niagara Region compared to implementing a new ERP without the Region.



Scope

The scope of this review project is to evaluate whether the current Niagara Region ERP system can support the requirements of the City's business processes with regards to:

- i. Service-to-cash (S2C)
- ii. Procure-to-pay (P2P)
- iii. Record-to-report (R2R)

By understanding the requirements of the City, it can be determined which modules and functionality of the Niagara Region's ERP system could be leveraged by the City. This will inform the cost, effort, and timelines required for the City to transition to a new ERP system. All other processes were out of scope, and the requirements of those processes were not reviewed.



Background

Fiscal responsibility requires effective financial management, which is made challenging given the City's many outdated and disconnected systems.

Findings from the Audit and Accountability Fund - Intake 1 Project emphasize the City's need to embark on IT system modernization, greater controls and audit functions, as well as the ability to support the journey towards a modernized budget.

This business case was completed by having workshops with the City to understand their business process as it relates to S2C, P2P, and R2R, in addition to consultations with IT and the Niagara Region.

Executive summary

Business case findings and key benefits



Business case findings

As evidenced through this analysis, the Region's ERP system satisfies the City's core requirements and will cost comparatively less to implement if the City leverages the investment already made by Niagara Region than if the City were to implement a new ERP on its own

Ultimately, it is feasible for the City to proceed with the implementation of Niagara Region's ERP system, working closely with the Niagara Region to utilize their existing software instance as the starting point for set up and configuration

Recommended modules to implement

- Account Payable (AP module)
- Purchasing (PO module)
- Accounts Receivable (AR)
- Billing (BI)
- General Ledger (GL)
- Project Costing (PC)
- Asset Management (AM)
- Commitment Control (KK)



Key benefits

1. Improve decision-making - Financial information will be captured in the ERP system with the new chart of accounts, that will allow for accurate, timely, and efficient reporting that could lead to more informed decision making.
2. Reduce risk exposure - The Region's ERP instance allows for more financial controls to be implemented and executed in addition to storing backup that might otherwise be misplaced or accidentally deleted on the server. [Address audit finding]
3. Increase efficiency - Niagara Region's ERP system would allow for various manual tasks to be eliminated, thereby saving employee's time that allow them to focus on more value added activities that the City currently does not have the time to complete.

\$2.8m

Less in one-time implementation costs if leveraging the Region's system

\$400-450K

Less in annual recurring implementation costs if leveraging the Region's system

\$5.2m

Savings from leveraging Region's ERP system (NPV over a 7 year period)

\$950k

Pre-implementation costs to set the City up for success

Executive summary

Multiple events and findings have provided evidence that after more than 20 years with the current ERP system, if a new system is not adopted than the City may be exposing itself to unnecessary challenges.

01 Fraud and misstatements

- ▶ As identified in recent audit findings, current system limitations would continue to require staff to occasionally make manual data changes which bypasses system-enforced internal controls and can create opportunities for fraudulent activities
- ▶ Furthermore, system functionality limitations would continue to lead to an ever growing Chart of Accounts and inability to proactively track project costs, which can increase the potential for material misstatements

02 Burden of system upkeep

- ▶ When vendor provided support for the current system is no longer available, in-house IT resources will need to assume responsibility for all system maintenance
- ▶ As the current systems software ages, it will also become increasingly difficult and costly to maintain hardware that is compatible/adaptable to run it

03 Cyber security risk

- ▶ An end-of-life system typically requires active patching and manual updates to code by in-house IT teams because these services are no longer provided by the software vendor for the product
- ▶ This increases the likelihood and potential severity of cyber attacks that could impact not only the current ERP, but also other systems connected to it as part of the City's IT "ecosystem"

04 Lack of organizational agility

- ▶ Continued use of manual, paper-based processes associated with using the current system increases the time required to make informed decisions and diminishes the City's ability to "plan ahead"
- ▶ Additionally, the effort to maintain integrations will continue to increase due to functionality limitations, which will divert IT resources from other higher value activities and projects

05 Difficulty attracting/retaining talent

- ▶ Given the high degree of manual and transactional work demanded by the current system and competitive job market, it will continue to be challenging to recruit and maintain a highly skilled workforce
- ▶ It will also become increasingly difficult to effectively maintain the current system, as in-house IT who is relied on for their legacy knowledge of the system could leave the organization
- ▶ Likelihood of replacing talent with the skill set required to maintain the current system would be difficult and expensive

These impacts are more likely to be felt if the City continues to operate with the current system which could diminish the City's reputation, erode public trust, and diminish St. Catharines' future financial sustainability.

Executive summary

Assessed fit of ERP solution with finance business processes

After reviewing the S2C, P2P, and R2R processes, evidence suggests the City can leverage the Region’s existing ERP to significantly improve several of its core financial processes.

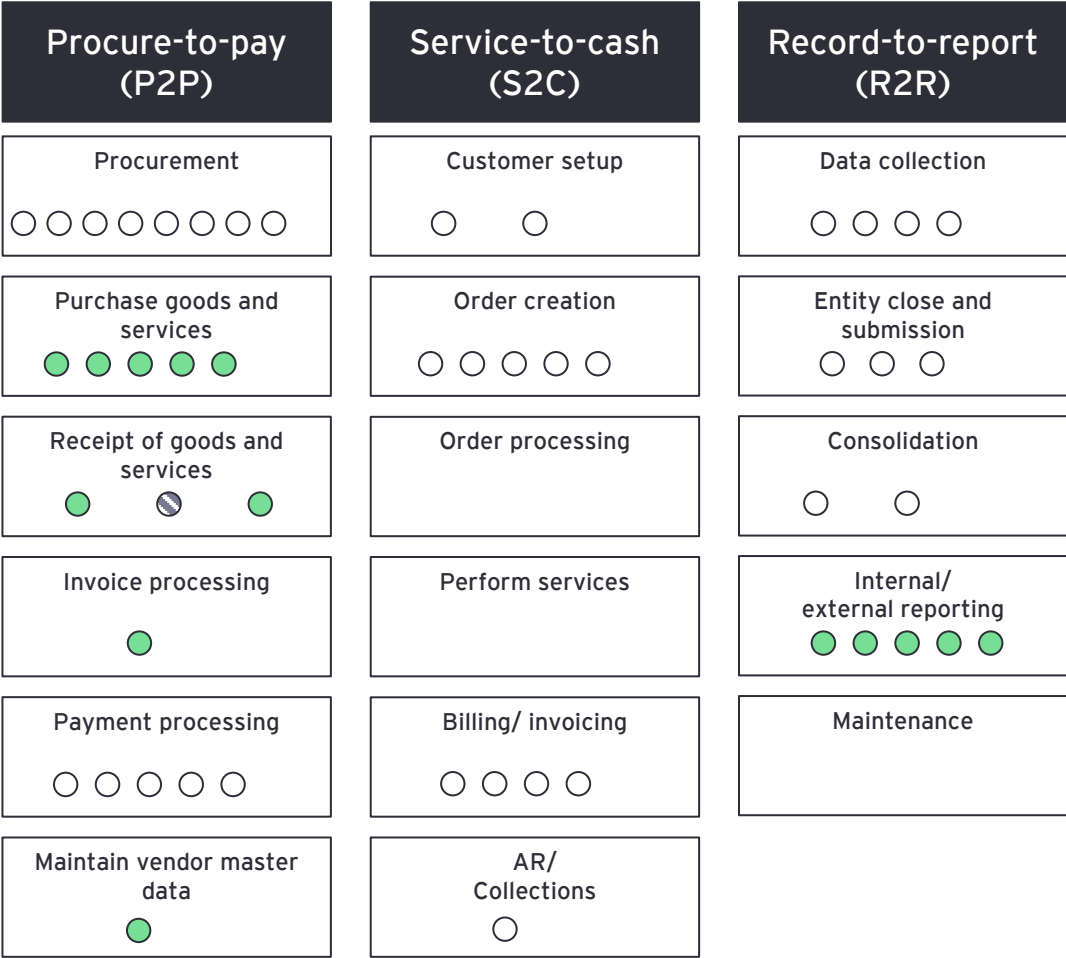
In addition to the processes that were in-scope, there were two other modules that the Region has that the City could leverage to address audit findings (Project Costing, this was reviewed from an L2 perspective).

P2P | Soliciting bids would still be completed through the current process leveraging Bids and Tender. The remaining procurement and payment processes would leverage the Region’s ERP system. Vailtech AP would be retired as part of this transition.

S2C | The majority of Service-to-cash processes will remain the same (e.g. water and tax billing and departments that have a current POS system). Departments that do not have a POS system would leverage the new ERP system’s Billing and AR functions to bill and collect for services rendered (e.g. rent, cost recovery on damaged property, cost recovery from the Region). Vailtech AR would be retired as part of this transition.

R2R | The new ERP system would be leveraged to complete financial and internal reporting requirements. Therefore Vailtech GL would be retired.

Other financial processes | Project costing would no longer be tracked manually. Project costing within the new ERP system would be leveraged to track project costs and forecasts.



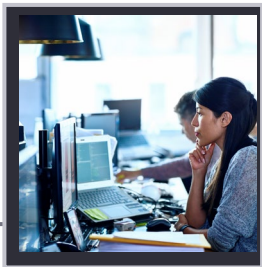
The circles represent L3 processes that fall under the L2 process. The visual above represents whether there is a fit, a gap, a partial fit, or is not applicable (n/a) as it relates to the City’s business requirement at an L3 level. For the detailed fit-gap analysis, refer to the appendix.

Case for change

Recent audit findings, end-of-life software, and an opportunity to partner with the Region demand the City take action



According to the Audit Findings Report, the City faces two significant financial reporting risks that must be addressed: fraud risk from revenue recognition and from management override of controls due to Vailtech limitations.



Vailtech accounting software lacks the functionality required for efficient financial management and reporting where internal controls are system enforced.



The system has been in place for over 20 years, is at end-of-life and no longer supported.



Niagara Region recently implemented a new ERP system successfully, with few customizations, and are willing to onboard the City to use their system.



If the City is successful in becoming a 'tenant' in Niagara Region's ERP system instance, other lower-tier municipalities will be able to follow suit, thus increasing the savings delivered to the Region and Province.

An end-of-life system with insufficient functionality and system controls is driving the need to implement a new ERP system that will modernize finance processes and empower City staff to manage the City's finances more effectively to the benefit of residents, and to improve the information that Council receives so that they can make more informed decisions.

Case for change | Vision

New financial software has a critical role in driving the City towards more efficient operations and improved financial decisions



The City cited better customer service, efficiency, risk reduction, and improved decision-making as reasons for implementation

- ▶ A strategic visioning workshop was held in June with over 14 members of the Financial Management Services and IT department from leadership to staff
- ▶ The purpose of this session was to explore desired outcomes of implementing new financial software at the City against the backdrop of major challenges and opportunities facing the finance function today and in the future

The City's vision for a new financial software can be summarized into five key aspirations:



Accelerate the modernization of finance service delivery at the City by improving customer service to departments, leadership, Council, and the public



Minimize the City's capital expense of upgrading from Vailtech by leveraging the investment made by Niagara Region in replacing their financial software with a new ERP system



Increase efficiency through finance process automation, freeing up internal capacity for more value-add work



Improve the accuracy and timeliness of forecasting, budgeting and reporting, providing for more informed decision-making



Reduce the City's risk exposure largely by enhancing internal controls and strengthening cybersecurity

Case for change | Desired outcomes

New software will support all levels of the organization in improving customer and employee experience while reducing risk



Outcome

Senior Leadership and Council are equipped with quality, timely financial information and insights, thereby increasing confidence in Administration and the use of public funds

Metrics

- ▶ Reduction in the number and value of financial misstatements
- ▶ Increased accuracy of operating and capital project costing (to increase accuracy of revenue recognition)
- ▶ Degree of accuracy and ease in developing a Financial Plan to inform all financial decisions and investments (measured in weeks to completion)
- ▶ Degree in which City needs, priorities and growth are addressed by the development of a 10-year Capital Infrastructure Plan (availability of capital project and asset information required to track against the plan)



Departmental teams benefit from an even higher level of customer service from Finance that was formerly unattainable due to system limitations

- ▶ Reduction in the time and number of follow ups required to complete monthly bank reconciliations
- ▶ Reduction in the number of GL accounts compared to pre-implementation
- ▶ Reduction in the number of days required for quarter and year end financial statement close
- ▶ Reduction in the time required to prepare departmental budgets as there is readily available actuals from the new ERP system

















Staff are empowered with the knowledge, skills, abilities and ongoing support required to be successful in delivering on their daily responsibilities in a way that maximizes their personal impact

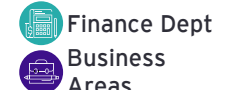
- ▶ Degree of participation in training sessions
- ▶ Reduction in the number of employee support 'tickets' or inquiries launched
- ▶ Increased Employee satisfaction with process, policy, and technology changes
- ▶ Reduction in number of system workarounds in practice post-implementation

Benefits and risks | Benefits across people, process and technology

Benefits of the new system will impact stakeholders across the organization improving the efficiency and reliability of operations.

















Benefit Category	Benefit Description	Stakeholder Group Impacted
Process: Deliver effective and efficient processes in the right location	<ul style="list-style-type: none"> Reduction in cycle time can reduce the amount of time employees currently spend on budget development by up to 50% allowing for an increased focus on service delivery. 	 
	<ul style="list-style-type: none"> Improving timelines and quality of information by implementing leading practices like rolling forecasts can reduce the time for administrative review of the budget by up to 70%. 	 
	<ul style="list-style-type: none"> Ongoing transparency and insight into the City's finances for SMT and Council can reduce the time to budget approval as they can rely on the financial information provided in the budget. 	 
	<ul style="list-style-type: none"> Improved access to information promotes strategic conversations to strengthen evidence based decision making and allows prioritization in line with the strategic plan . 	  
	<ul style="list-style-type: none"> Reducing repetition and leveraging technology can reduce manual data entry and management, lowering the error rate and the amount of time correcting the errors in the system. This will increase availability for staff to focus on more value added activities. 	
	<ul style="list-style-type: none"> Reconsidering legacy financial policies can help the City fund and finance priorities more effectively as some of these policy conditions can now be captured in the Region's ERP system as a control and monitored automatically through approval workflows. 	
	<ul style="list-style-type: none"> Strengthened internal controls can be achieved through an improved workflow approval process. Niagara Region's ERP system provides controls at the point of data entry ensuring that all required fields for Data Management are completed. All transactions are posted to valid chartfield combinations, open budgets, and open periods. Security roles allow for precision with respect to pages and processes, available to the user based on roles and permission lists. As such, only users who are given access to enter specific data are able to, providing further control. 	
	<ul style="list-style-type: none"> Improved process efficiency through the utilization of the new ERP system's Tree Manager functionality, providing multiple rollups and groupings of accounts for reporting, combination editing, and ChartField security purposes. 	 

Legend



Benefits and risks | Benefits across people, process and technology



Benefits of the new system will impact stakeholders across the organization improving the efficiency and reliability of operations.

Benefit Category	Benefit Description	Stakeholder Group Impacted
People: Build an organization with the right resources with the right skills in the right locations	<ul style="list-style-type: none"> It is anticipated that additional capacity will be created as the system will help reduce the number of manual tasks that need to be completed. This will likely lead to staff availability that allows them to complete more value added activities that the City did not previously have the capacity to complete. With these new value added activities being completed, it will provide an opportunity for staff to gain new experiences and skills. In addition, to fully leverage the capabilities of a new ERP system, staff would need to be trained accordingly so that they have the right skill set to succeed. 	 
	<ul style="list-style-type: none"> There is a potential benefit of improved employee morale due to increase ease of day-to-day tasks, resulting in increased talent attraction and retention. 	 
Technology: Define system architecture and tools to enable value-adding activities	<ul style="list-style-type: none"> Improved accuracy and reliability of financial reports and budgets resulting in increased public confidence in the City's financial decision making and resource allocation 	
	<ul style="list-style-type: none"> Established single source of data to support improved data governance, driving informed decision making and reducing manual extraction of data from various platforms. This increases the timeliness and reliability of the required information to make timely and more informed decisions. 	  
	<ul style="list-style-type: none"> Improved functionality of systems including the ability to adjust project accounts within funds and eliminating the need to generate numerous new general ledger accounts. This will help track various projects and costs therefore removing activities to try and gather this information from multiple sources. 	 
	<ul style="list-style-type: none"> Compatibility of systems increases the opportunity for system integration and reduced staff maintenance of data transfers and information management. 	 
	<ul style="list-style-type: none"> Reduction in the number of accounts used in system through the use of ChartFields enabling specific values to be analyzed (e.g. Department), activated and inactivated separate from other component parts of the string. Accounts can also be inactivated. This will increase the control environment and assist with amounts being booked to the correct accounts. 	  
	<ul style="list-style-type: none"> Current Niagara Region ERP system has the capability to scale to accommodate the City. 	

Legend

-  Public
-  Council

-  SLT
-  IT Dept

-  Finance Dept
-  Business Areas



Benefits and risks | Value of pre-implementation activities

Several of the aforementioned challenges could be reduced by the completion of pre-implementation activities

Pre-implementation activities will play an important role in mitigating several of the challenges previously outlined, including:

Implementation challenge	Supporting Rationale
Staff Capacity	<ul style="list-style-type: none"> ▶ Report rationalization, data cleansing, Chart of Accounts clean-up, and business process analysis pre-implementation activities will be the most significant contributors to a reduction in workload and back-fill required during implementation
Water/Tax Update	<ul style="list-style-type: none"> ▶ If a new system for Tax and Water accounts receivable (sub-ledger) and billing processing can be implemented in advance of beginning the ERP system implementation, significant re-work in developing interfaces can be avoided. The future state S2C architecture would also be simplified because Vailtech Integrated Cash (POS system) could be eliminated and direct interfaces with Niagara Region's ERP system can be built between external systems that would otherwise need to stay connected to Vailtech Integrated Cash
Policy Alignment	<ul style="list-style-type: none"> ▶ An activity to update major policies and standards the year in advance mitigates the risk of implementing workflows or configurations that are in conflict as well as project delays caused by last-minute policy reviews and lengthy approval steps with SLT and/or Council
Unclear Roles	<ul style="list-style-type: none"> ▶ An important element of the policy and standards refresh pre-implementation work is a review of the current Delegation of Authority matrix. If this can be done in advance, system configuration and security role set-up will be much more efficient and in a manner that accurately enforces the policy
System Integration	<ul style="list-style-type: none"> ▶ Early documentation of shadow systems is an important pre-implementation activity that will reduce the likelihood of "surprises" in terms of late discovery of interfaces, connected third-party systems, and areas of testing that will require attention during implementation
Data Issues	<ul style="list-style-type: none"> ▶ Risk and cost of implementation will be significantly reduced by completing data profiling, cleansing and mapping as pre-implementation activities; part of this work also includes constructing a local database
Clarity of Integrations	<ul style="list-style-type: none"> ▶ Advance business process analysis will validate specific hand-offs/transfers, uploads, and extractions of data from the current ERP system and inform a preliminary mapping of data during pre-implementation

Summary of savings comparison of Scenario 1 & 2

Financial analysis

Scenario 1: Leverage Niagara Region's ERP

	Year 0 2023	Year 1 2024	Year 2 2025	Year 3 2026	Year 4 2027	Year 5 2028	Year 6 2029	Year 7 2030
Total (One time + recurring - cost Avoidance)	\$ (5,092,000)	\$ (375,000)	\$ (385,000)	\$ (394,000)	\$ (403,000)	\$ (412,000)	\$ (422,000)	\$ (432,000)
Net Present Value (NPV) over a seven year horizon	\$ (7,294,701)							

Scenario 2: Implement ERP without the Region

Total (One time + recurring - cost avoidance)	\$ (7,902,000)	\$ (769,000)	\$ (786,000)	\$ (804,000)	\$ (822,000)	\$ (840,000)	\$ (859,000)	\$ (878,000)
Net Present Value (NPV) over a seven year horizon	\$ (12,479,591)							
Difference in NPV between Scenario 1 & 2	-\$ 5,184,000*							

Assumptions

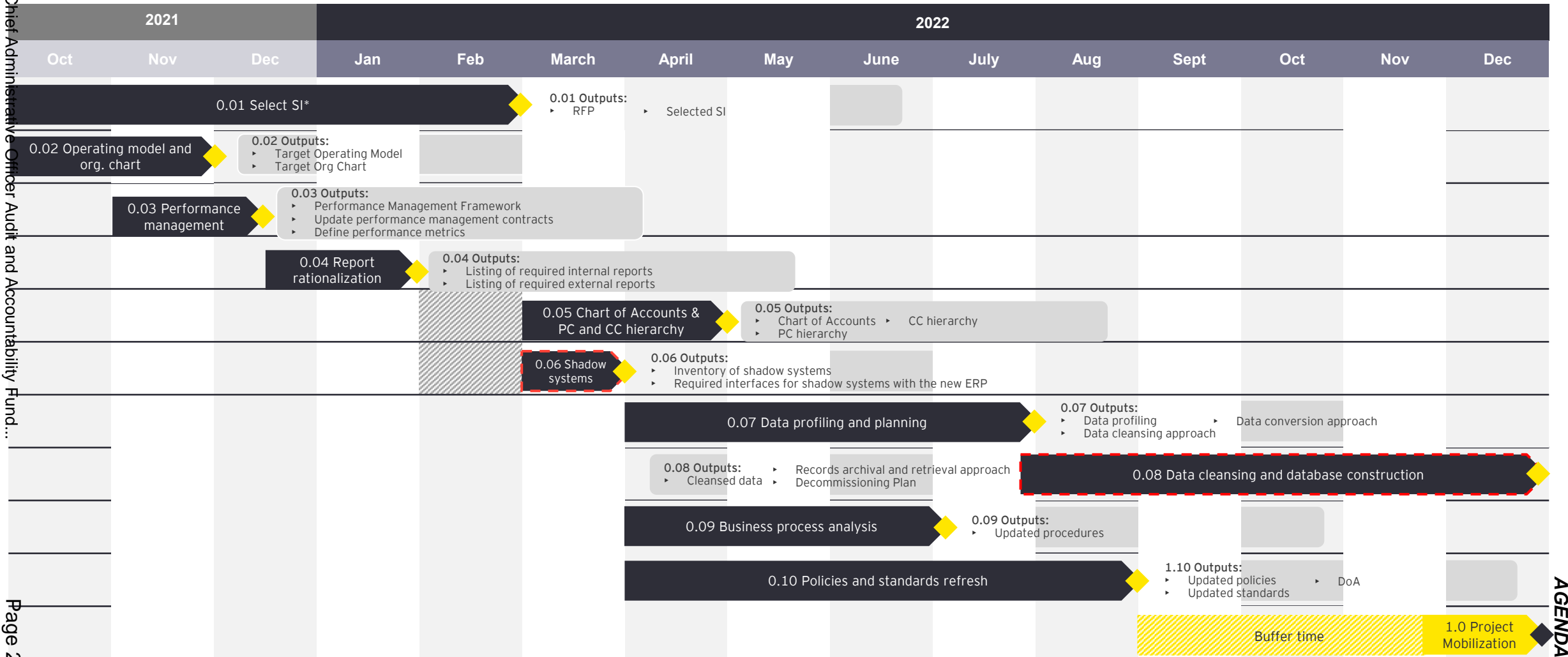
- A discount rate of 3.5% and an inflation factor of 2% was used to calculate NPV under both scenarios.

Using a NPV calculation, the estimated total cost of Scenario 1 whereby the City leverages the Region's ERP is approximately \$5.2M less than what it would cost under Scenario 2 for the City to implement a new ERP without the Region. Under Scenario 1 is estimated to cost \$400,000 to \$450,000 less annually than under Scenario 2 over the system's first seven years of operation.

*Financial estimates may range +/- 20%.

High-level pre-implementation roadmap

12-16 months worth of pre-implementation activities is recommended for completion by the end of 2022 to prepare for a new ERP



Note: It is targeted selection of SI will take place over a 6 month time frame beginning in September 2021, with contract finalization to follow.

Legend



Built in time to account for year end processes to take place in February



Pre-implementation activities



Implementation activities



Activity duration is yet to be determined

Pre-implementation resourcing requirements

Overview

The following resources are recommended to provide knowledge and capacity for the City to effectively prepare for the subsequent system implementation and would carry out the necessary pre-implementation activities with engagement and consultation from the City, as required. It is anticipated that minimal involvement from the Region would be needed during this period.

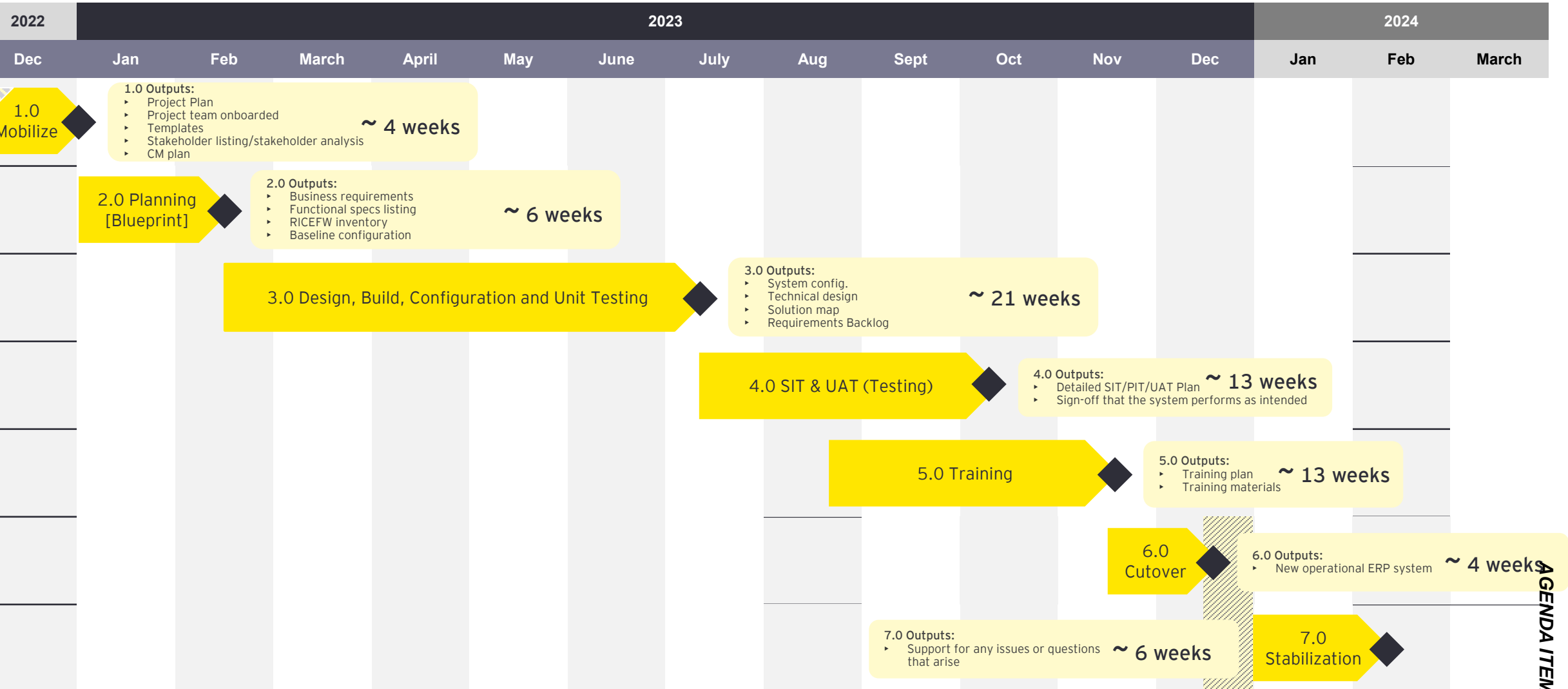
Resource Type	Resource Role
Contracted	Executive Advisor ⁺
	Project Manager ⁺
	Sr. Business Analyst
	Business Analyst
	Technical System and Data SMR
	Technical Analyst

Activity									
0.01 Select Systems Integrator (SI)	0.02 Operating model and organizational chart	0.03 Performance management	0.04 Report rationalization	0.05 Chart of accounts & PC and CC hierarchy	0.06 Shadow Systems	0.07 Data profiling and planning	0.08 Data cleansing and database construction	0.09 Business process analysis	0.10 Policies and standards refresh
X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X
			X	X	X	X		X	X
			X	X	X	X		X	X
			X	X	X	X	X	X	
						X			

The total pre-implementation costs taking into account resources and timelines to complete these activities to set the implementation up for success is approximately \$950k*.

High-level implementation roadmap

Implementation activities will take place over 2023 with a targeted transition to the new system by December 2023 before fiscal year end



Implementation resourcing requirements

Overview

Across the 7 phases of system implementation technical and non-technical staff will be required including internal support from City staff, external subject matter experience related to change management and system knowledge and regional resources with prior exposure to system implementation at the Region.

Resource Type	Resource Role
City	Executive / Project Sponsors
	Business Lead (Management)
	Change Management Lead
	Finance Business Analyst (R2R, P2P, S2C)
	Project Management BA
	Solution Architect
	Data Conversion SMR
Contracted	Executive Advisor
	Project Manager
	Change Management Advisor
	Functional Lead (incl. Test Lead)
	Functional Analyst (R2R, P2P, S2C & PC/AM)
	Technical Lead
	Data Conversion Lead
	Developers (x3)
Region	New ERP System Administrator
	Database Architect (DBA)
	Developer
	Developer

Phase						
1.0 Project Mobilization	2.0 Planning [Blueprint]	3.0 Design, Build and Configure, Unit Test	4.0 SIT & UAT Testing	5.0 Training	6.0 Cutover and go-live activities	7.0 Stabilization
X	X	X	X	X	X	
X	X	X	X	X	X	
X	X	X	X	X	X	
	X	X	X	X	X	
	X	X	X	X	X	
	X	X	X	X	X	
X	X	X	X	X	X	X
X	X	X	X	X	X	X
	X	X	X	X	X	X
	X	X	X	X	X	
X	X	X	X	X	X	
	X	X	X	X	X	
		X	X	X		
	X	X	X	X	X	
		X	X			
		X	X			

Sustainment team

The proposed sustainment team would support the City to maintain the new ERP solution in collaboration with the Region.

Ref.	Resource	Description	Loaded Cost*	Staffed at
1.0	Business Analysts (BA)*	<p>General responsibilities</p> <ul style="list-style-type: none"> ▶ Translate business requirements from the City to technical requirements for implementation by the Region ▶ Gather and communicate security requirements to the New ERP System Administrator at the Region ▶ Regularly work with Finance staff, Developers and other Business Analysts to resolve issue <p>General Ledger/Commitment Control (GL/KK) Specific</p> <ul style="list-style-type: none"> ▶ Work directly with Financial Accounting and Budgeting to confirm that all data, financial reporting, audit needs are being met by the new ERP system ▶ Write and design new reports, create and migrate queries for accounting and budgeting staff, maintain the Chart of Accounts, Trees, Combination Edits ▶ An accounting designation would be an asset, if not a requirement <p>Accounts Payable / Purchasing (AP/PO) Specific</p> <ul style="list-style-type: none"> ▶ Support both procurement and payables modules ▶ Purchasing and AP will have a high number of integrations, a high number of processes to support (Requisitioning, Purchasing, Vouchers, Payment, Vendor Maintenance) <p>Accounts Receivable/Billing (AR/BI) Specific</p> <ul style="list-style-type: none"> ▶ Provide support to both receivables and billing processes ▶ Note this role is anticipated to require a lesser degree of effort given that Water & Tax billing module are to be maintained <p>Project Costing / Asset Management Specific (PC/AM) Specific</p> <ul style="list-style-type: none"> ▶ Support both asset management, and project costing processes and reporting ▶ Work directly with project managers and teams to confirm timely entry of project data and delivery of project reports ▶ Support capital asset listing within the ERP system's Asset management function on a monthly basis 	<p>▶ \$100k - \$110k per resource</p>	<p>▶ City (3 FTE)</p> <p>*Note that one BA could likely support both AP/PO and PC/AM given the Region has one FTE dedicated to PC/AM. Ideally, BAs are cross-trained to provide effective coverage.</p>

Sustainment team

The proposed sustainment team would support the City to maintain the new ERP solution in collaboration with the Region.

Ref.	Resource	Description	Loaded Cost*	Staffed at
2.0	New ERP System Developer	<ul style="list-style-type: none"> ▶ Create, modify, and maintain application engine programs, components, and interfaces within the new ERP system's software suite ▶ Work directly with Business Analysts to resolve issues which require a technical approach ▶ Note that Developers may be delegated work based on their particular skill set (e.g. Integration broker) or in some cases specialize in supporting a specific module ▶ It is assumed that the cost of this additional FTE would be added to a pool of Developers at the Region to provide for additional capacity required to support the City's instance across various modules 	▶ \$100k - \$110k	▶ Region (1 FTE)
3.0	New ERP System Administrator and Infrastructure Maintenance Support	<ul style="list-style-type: none"> ▶ Provide technical knowledge and support required to maintain and configure web servers, application servers, and process scheduler servers ▶ Perform software installations including routine updates/fixes, major product upgrades, patches, enhancements, customizations and new version releases ▶ Assist with security changes ▶ Work closely with Business Analysts at the City, Developers at the Region and broader members of the Niagara Region infrastructure maintenance and support team 	▶ \$100k - \$110k	▶ Region (1 FTE)

The total annual costs of sustaining the new system is estimated to be approximately \$525k*.

Timing considerations

Several internal and external dependencies exist that will influence a timely implementation of the new ERP system, these dependencies have been built into the high-level roadmap.

Dependency	Description
New Tax and Water system	The City of St. Catharines is currently exploring its Vailtech Water and Tax systems with a new system. The implementation of the new ERP system should start after the implementation of the new Water and Tax system to avoid additional work to integrate these systems with the new ERP.
Region resource availability	The Niagara Region is currently going through an upgrade. Therefore the Region will not have the available resources to support the ERP implementation until January 2023. Pre-implementation activities should be completed before January 2023 so that the ERP implementation can start on time and key milestones achieved.
Go-live considerations	The go-live of the new ERP system should be in early January 2024 so that all the financial reporting for the year can be reported out of one system. The following modules are proposed to go-live with or shortly after the GL go-live: Accounts Payable, Consolidations, Expenses Allocations/Projections, Reporting, Close Management & Reconciliations, FP&A.
Municipal and provincial election cycles	Consideration should be given to the alignment of pre-implementation and system implementation activities with the upcoming municipal election (October 2022) and provincial election (June 2022). Wrap up of pre-implementation activities should be underway by the end of August 2022 with buffer time assigned starting in September 2022 until Project Mobilization commences in December 2022 following the election. Following any changes in the City's Council, Finance and SLT members will need to be prepared to re-communicate project priority, timelines, benefits, and costs, where required to facilitate a smooth project mobilization process in January 2023.

Conclusion

Key takeaways

- ▶ The City's end-of-life system, with insufficient functionality and system controls, is driving the need to implement a new ERP system to modernize finance processes and empower City staff to manage the City's finances more effectively to the benefit of residents
- ▶ The purpose of this business case is to understand the feasibility for the City to consider adopting the Region's ERP system versus implementing a new ERP independently
- ▶ Several benefits of implementing a new ERP system have been identified with specific consideration to process improvements, enabling the workforce, and creating more opportunities for value-add activities as a result of technology
- ▶ While there are risks associated with transitioning to a new ERP system, a series of pre-implementation activities have been recommended to optimize project timelines and a successful implementation
- ▶ Based on a financial analysis, if the City leverages the Region's ERP instead of proceeding to implement a new system independently, a savings of approximately \$5.48 million is estimated over the system's first seven years of operation

The analysis indicates it is feasible for the City to leverage the Niagara Region's ERP system, working closely with the Region to utilize their existing software instance as the starting point for set up and configuration.

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Corporate Report City Council

Report from: Community, Recreation and Culture Services, Programs and Cultural Services

Report Date: September 15, 2021

Meeting Date: October 4, 2021

Report Number: CRCS-127-2021

File: 16.6.2 & 68.32.99

Subject: Private Watson Monument Stakeholder Engagement

Strategic Pillar:

This report aligns with the following St. Catharines Strategic Plan pillars: cultural.



Recommendation

That Council approve the removal of the Private Watson Monument from City Hall and its relocation to the Victoria Lawn Cemetery resulting from the stakeholder consultation process; and

That staff create replacement plaques for the North West Resistance and the Boer War and install the plaques alongside other military plaques on City Hall; and

That staff work with a conservator to apply preventative conservation to bring the Private Watson Monument to safety, but make no further efforts to reverse any existing damage or restore the monument to its original condition; and

That staff create and install new interpretive materials to re-contextualize the monument; and

Further, that Council provide early approval of the 2022 Capital Budget to an upset limit of \$100,000.

Summary

This report provides a summary of stakeholder recommendations related to the Private Watson Monument.

Relationship to Strategic Plan

- The recommendations of this report support the Cultural Renaissance Goal of the Strategic Plan: Celebrate the City's rich history, diversity, arts and cultural assets through leadership, promotion and investments that support measurable, sustainable creative growth.

Background

At its meeting on [July 27, 2020](#), City Council passed the following motion:

WHEREAS in 2009 the City's Cultural Services Director presented Report 547, regarding War Memorial and Outdoor Art Condition Assessments, which was commissioned to identify how deteriorated some of the City's outdoor structures are and what is needed to maintain and restore them; and

WHEREAS the same report identified that the Private Alexander Watson monument at City Hall had urgent deterioration issues that must be addressed; staff were asked to develop a 5-year Outdoor Art & Memorial Restoration Strategy to be considered in the 2010 Budget; and

WHEREAS since that time the City of St. Catharines in June 25, 2018 signed the Memorandum of Understanding with the Niagara Regional Native Centre; and

WHEREAS Report CAO-156-2018 noted the City's responsibilities to implement the Calls to Action outlined in the Truth & Reconciliation Commission's report;

THEREFORE, BE IT RESOLVED that staff be directed to consult with the following groups on the relocation of the statue of Private Alexander Watson from the front lawn of City Hall:

- Heritage Advisory Committee
- Public Art Advisory Committee
- Anti-Racism Advisory Committee
- Descendants of the Watson family
- Niagara Regional Métis Council
- Métis National Council
- Niagara Regional Native Centre
- The Historical Society of St. Catharines
- Lincoln and Welland Regiment Association
- The National Inventory of Canadian Military Monuments and Veterans' Affairs Canada
- MP Chris Bittle
- MPP Jennie Stevens
- Royal Canadian Legion Branch 24; and

BE IT FURTHER RESOLVED that staff be directed to report back on this consultation with a relocation strategy and include options and costs for possible

relocation of the statue that includes contextualization of its history and how this is an opportunity to the education of future generations on why the City did this and its importance to our commitment to Truth & Reconciliation.

At its meeting on January 18, 2021, City Council passed a motion to defer discussion regarding the relocation of the Private Watson Statue until staff reports back to Council with the results of its consultations with the groups identified in the motion from July 27, 2020.

This report provides a summary of the public consultation and a removal and relocation strategy for the monument.

Report

Public Consultations

As directed by Council, staff held stakeholder consultations to provide information related to the Private Watson Monument, currently located on the front lawn of City Hall, to garner community input with regards to its future.

Staff consulted with the stakeholder groups identified in Council's [July 27, 2020](#) motion with the exception of descendants of the Watson family, as none were identified through this process.

Due to the COVID-19 pandemic, consultations were held via Zoom. Of the ten stakeholders and stakeholder groups that participated, three groups opted to forgo the online presentation but provided comments in writing as an alternative. Additionally, staff followed up with each stakeholder and stakeholder group after the consultations to provide an opportunity for additional comments.

The engagement sessions included a presentation on the monument's history and community significance, current condition, and Council's directives to date (Appendix 1). The full stakeholder presentation was also recorded and made available on the City's YouTube channel to any of the stakeholders who were not able to participate in the scheduled meetings.

Each stakeholder group was asked to comment on the questions below:

1. What is your opinion of the Private Watson Monument either being removed or staying at City Hall?
2. If the monument is relocated, where do you suggest it go?
3. Considering its current condition, should the City of St. Catharines restore this monument?
4. How do you see this monument contributing to the City's story?
5. In what ways do you see this project contributing towards the recommendations of the Truth and Reconciliation Report?

The open-ended questions gave respondents the opportunity to discuss the monument's historical and present-day significance, and to generate options for its possible future restoration and/or relocation.

Summary of Results

Council asked staff to conduct stakeholder consultations with specified groups. Of the 13 groups identified, 10 groups participated, and no living relatives of Private Watson were identified. For aggregate data compiled from the stakeholder consultations, see Summary of Findings, Appendix 2. The following summarizes stakeholder responses to each of the five questions posed:

Question 1: What is your opinion of the Private Watson Monument either being removed or staying at City Hall?

On the subject of the Private Watson Monument's current prominent location on the grounds of City Hall, the majority of stakeholders (50%) support the statue's removal. A further 30% would support either keeping or removing it. Only 20% opposed the removal of the monument, citing concerns that given its age and current condition, it would not survive a move. This was a concern also raised in the Maltby and Associates Inc. report ([Report CRCS-006-2021](#)) brought to Council in January 2021 which describes how the monument would need to be disassembled in order for it to be removed or relocated.

Question 2: If the monument is relocated, where do you suggest it go?

In response to the question of a new location, there were four suggested locations brought forward by stakeholders: Victoria Lawn Cemetery (either close to Private Watson's burial location or in the vicinity of other military memorials); Memorial Park on St. Paul Street (where the main cenotaph is located); the Lake Street Armoury; or on the grounds of the St. Catharines Museum. Of these four locations, three are owned by the City of St. Catharines.

More than one-third of the respondents (35.7%) viewed Victoria Lawn Cemetery as the best location for the Private Watson Monument due to it being the original intended location for the statue and the place where Watson was laid to rest. Other locations were suggested only if Victoria Lawn Cemetery was found not to be a viable option.

Question 3: Considering its current condition, should the City of St. Catharines restore this monument?

This option entails moving forward with removing the Private Watson Monument from City Hall grounds as outlined in Maltby & Associates Inc. report. Most stakeholders (40%) support preserving the monument to safety and applying preventive conservation only, meaning that no efforts be made to reverse existing damage or restore the monument to its original condition. A further 20% of stakeholders felt that further investigation was required but made it clear that they would not want to see significant investment or extraordinary lengths taken to have the Private Watson Monument restored given its long-deteriorated state.

Concerns about the monument's condition have been raised in Council reports dating back to 2009 ([Report 547](#)). At this time, it is unclear whether or not the monument can be restored. The Maltby & Associates Inc. report recommends relocating the monument to an indoor environment that is safe, secure and able to support its weight. The monument would remain indoors for a minimum of one year, to allow it to fully dry out, before any testing takes place. After one year, the monument's condition would be assessed and safe removal of the coating tested. Early estimates indicate that restoration could cost upwards of \$100,000. The Public Art Advisory Committee agrees with the Maltby & Associates Inc. report that the actual limestone statue underneath the coating applied in 1971 likely has little aesthetic value now and may not be worth restoring.

Deaccession and disposal, although not the most popular option (10%), would be justifiable given the monument's current condition and may be necessary if it cannot be reassembled *in situ* after being removed from City Hall. It is unclear what the costs will be to bring the monument to safety. In addition, there may be unforeseen costs in the future related to remedial work needed to avoid liability issues. Taking preservation measures to stabilize or slow down its rate of deterioration were recommended by the conservator, including relocating the statue to an indoor facility (a challenging proposition given the weight of the structure) or to an outdoor location with a covering to protect it from the elements.

Question 4: How do you see this monument contributing to the city's story?

The majority of stakeholders (90%) recognized the monument's historical significance as the oldest of its kind in Canada, dedicated to the passing of a specific local soldier and erected through a community fundraising campaign. Moreover, they acknowledged it as having taken on greater significance as a longstanding downtown landmark (since 1886) and the *de facto* war memorial for St. Catharines' fallen soldiers prior to World War One.

Due to its historical value, the majority of stakeholders support preserving the monument in some form, even if that means only preserving a portion. Of particular interest are the plaques; however, because they are badly deteriorated, inaccurate (the Boer War plaque is missing one name), and not original (they were part of the 1971 restoration), the plaques have little historical value. If the monument is moved from City Hall, new plaques will need to be created to honor those who died in the North West Resistance and the Boer War and should be installed alongside the other military plaques at City Hall.

Question 5: In what ways do you see this project contributing towards the recommendations of the Truth and Reconciliation Report?

While the public petition and the Anti-Racism Advisory Committee has condemned the monument as "a symbol of oppression," calling for its removal and deaccession, 90% would like to see the City retain the monument in some form. In particular, Indigenous stakeholders view the complete removal of the monument as a form of erasure and an attempt to "sanitize" history. Instead, they would prefer to see a more complete version of history told. This is in line with the municipal best practice to "retain and explain" contentious monuments for future generations and bring previously ignored histories and voices to the forefront.

The majority of stakeholders (80%) see this as an opportunity to include the Indigenous perspective and want to see new interpretive materials developed and installed to re-contextualize the monument. All agree that if the monument is retained, it should be accompanied with new interpretive materials regardless of its final location. This approach is also in alignment with the Truth and Reconciliation Commission's Call to Actions, contributing specifically to Action 62(i) which calls upon governments to "make age-appropriate curriculum on... Aboriginal peoples' historical and contemporary contributions to Canada." New interpretive materials can serve this educational purpose and reframe the conversation in a manner that tells a more complete and inclusive truth.

Financial Implications

The preferred option recommended through the stakeholder consultation process is to remove the monument from City Hall, preserve it to safety, and reinstall it at Victoria Lawn Cemetery with new interpretive materials.

If it is the will of Council to relocate Private Watson to Victoria Lawn Cemetery, it is recommended that no further restoration efforts be applied and that only preventive maintenance be applied if the monument is found to pose a safety or liability issue in the future. Once relocated, the monument would be treated like any other artefact in the Civic Art Collection up to and including deaccessioning.

There is a distinct possibility that the monument may not survive the move and may need to be deaccessioned after removal from City Hall. If relocation and preservation to safety are possible, the preferred option will require an initial estimated project budget of up to \$100,000.

Budget Costing

The following budget from [Report CRCS-006-2021](#) from January 2021 includes fees and expenses of the riggers, monument builders and conservation consultant / coordinator.

Conservation Consultant	\$6,000.00
Rigger (includes crane & flatbed rental)	\$28,000.00
Monument Builders	\$20,000.00
Concrete Base	\$1,200.00
Reinstallation	\$20,000.00
Development and Installation of Interpretive Materials	\$5,000.00
Replacement plaques for City Hall	\$8,000.00
Subtotal	\$88,200.00
10% Contingency	\$8,820.00
Total	\$97,020 + HST

The estimate cost of this option is approximately \$97,020, which does not include the cost of excavating the soil and mulch from around the monument, road closures and associated policing, and remediation of the site.

Environmental Sustainability Implications

There are no environmental implications associated with this report.

Prepared by

Noora Rizvi
Culture Supervisor

Submitted by

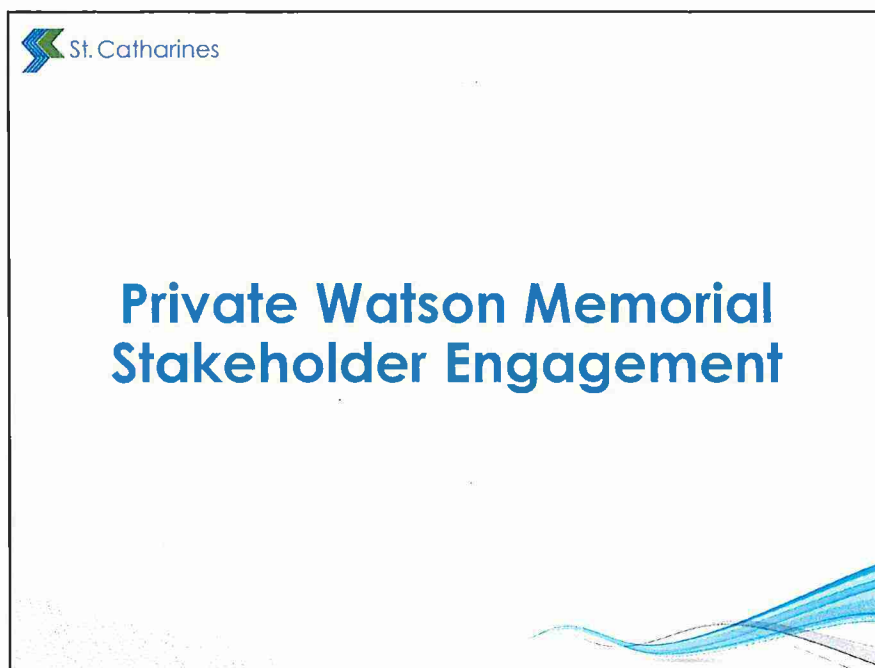
Lori Mambella
Manager, Programs and Culture Services

Approved by

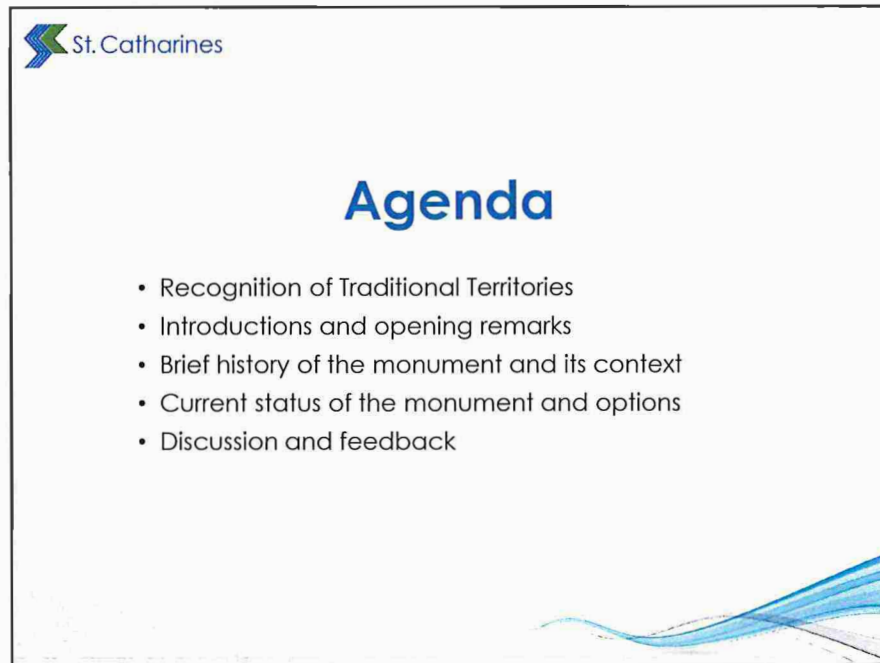
Phil Cristi
Director, Community, Recreation and Culture Services

Appendices

- Appendix 1 – Private Watson Monument Stakeholder Engagement – PowerPoint presentation and script (dated July 20, 2021)
- Appendix 2 – Private Watson Monument – Summary of Findings – Aggregate Data from Stakeholder Consultations (Apr to Sep 2021)



Welcome to our stakeholder consultation related to the Private Watson Memorial.

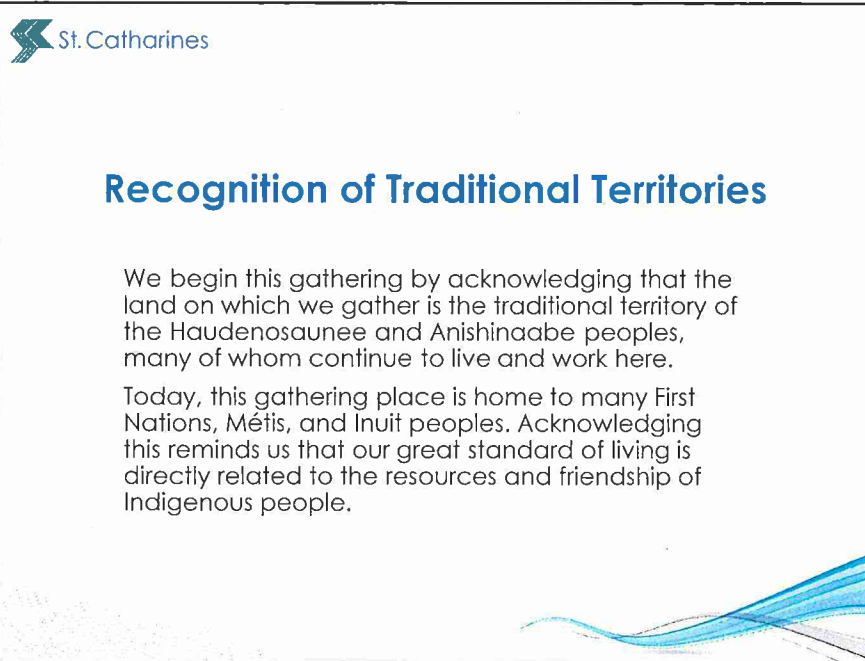


Our agenda for this evening will be as follows:

I will provide a brief history of the monument and the contextual history of the Northwest Resistance and Louis Riel to provide the background to erection of the monument and war memorials in the community prior to the First World War.

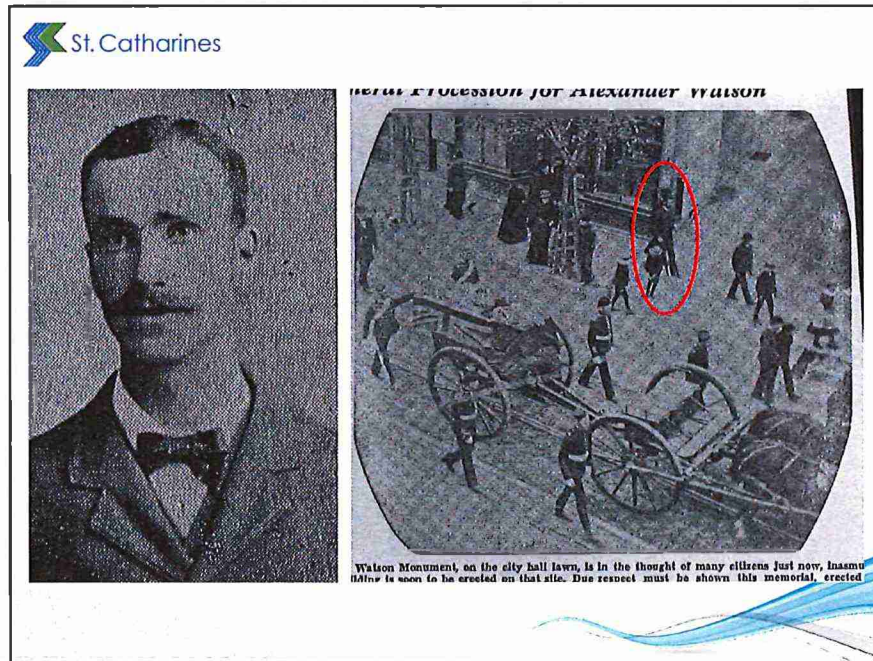
Then we will cover the current status of the monument and the direction provided by City Council at their meeting of July 27, 2020.

The last part of our agenda will be a discussion and feedback opportunity for you to tell us your thoughts on the future of the Watson Memorial.



We begin this gathering by acknowledging that the land on which we gather is the traditional territory of the Haudenosaunee and Anishinaabe peoples, many of whom continue to live and work here.

Today, this gathering place is home to many First Nations, Métis, and Inuit peoples. Acknowledging this reminds us that our great standard of living is directly related to the resources and friendship of Indigenous people.



Let's begin with a short history of the memorial itself. What is the story behind the object, why was it built and who was Private Watson?

The monument was erected to the memory of Private Alexander Watson, who fought with the 90th Winnipeg Battery Rifles, Canadian Volunteers, in what was called at the time, the Northwest Rebellion.

Watson grew up in St. Catharines but had moved to Winnipeg approximately 4 years before he was involved in the Rebellion – so roughly around 1880. His parents continued to live in the community.

Alexander Watson was mortally wounded on May 12, 1885, in the last action of that conflict – the Battle of Batoche and he died of his wounds three days later. He was 28 years old.

A funeral was held for Watson in Winnipeg and then his body was shipped to St. Catharines where a second funeral was held, along with a funeral procession through the city and on to Victoria Lawn Cemetery where he is buried and where his gravestone sits.

The photo on the left of this slide is of Watson and was taken a year before his death. On the right is a photo of his funeral procession passing along Ontario Street. Watson's father, David Watson is seen in this photo – he is the man with the umbrella and top hat, following the procession.

Watson was buried with full military honours at Victoria Lawn Cemetery in 1885, and his statue at City Hall was produced a year later.



Before we move on with the Watson Memorial itself, let's look for a few minutes at the Northwest Resistance and how it fits within this story.

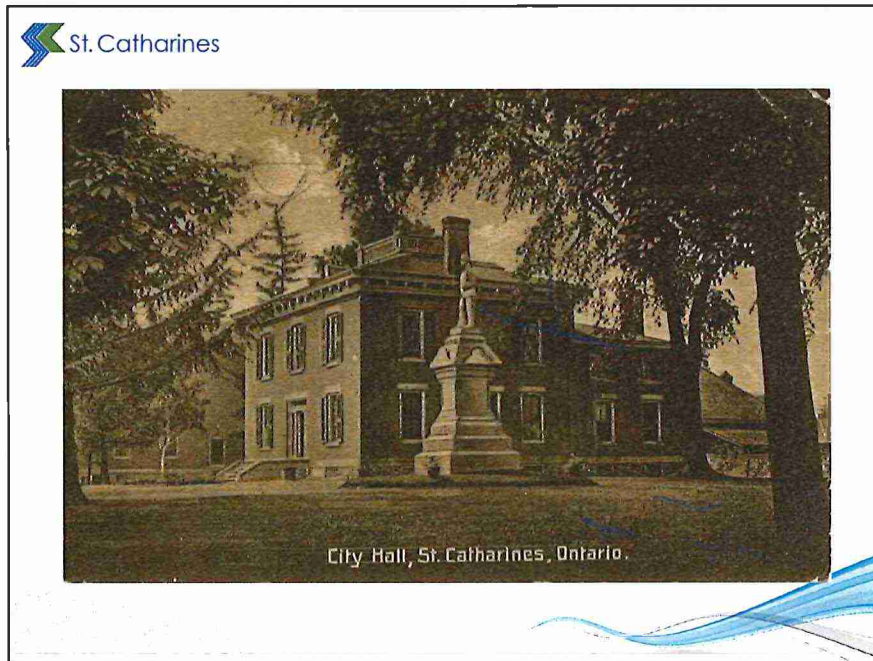
According to the Canadian Encyclopedia: The North-West Rebellion (or North-West Resistance) was a violent, five-month insurgency against the Canadian government, fought mainly by Métis and their First Nations allies in what is now Saskatchewan and Alberta. It was caused by rising fear and insecurity among the Métis and First Nations peoples as well as the white settlers of the rapidly changing West. A series of battles and other outbreaks of violence in 1885 left hundreds of people dead, but the Métis and First Nations people and their allies were eventually defeated by federal troops. The result was the permanent enforcement of Canadian law in the West, the subjugation of Plains Indigenous Peoples in Canada, and the conviction and hanging of their leader - Louis Riel.

The Red River and North-West Rebellions are known by many names, including the "Riel Rebellions," the "Manitoba Rebellion" and the "Saskatchewan Rebellion." They are also known as the "Red River Resistance," the "1885 Resistance" and the "Northwest Resistance." The terms rebellion and resistance are synonyms, but depending on which one is used, the perspective from which historical events are understood changes.

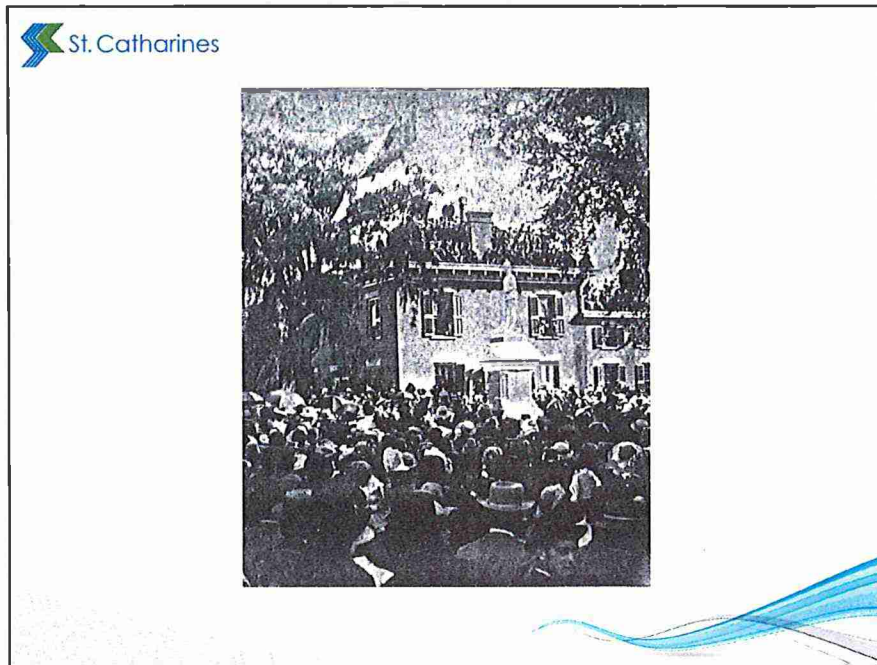
Indigenous studies scholars and many historians refer to the Métis and First Nations uprisings as resistances, meaning reactions against European colonization. This is because Métis and First Nations are understood to have established self-governance on their own land long before Rupert's Land was transferred to the Dominion of Canada.

The Red River and North-West Resistances in the west are today considered emblematic of violent colonialism in Canada throughout the country's nation-building phase. These conflicts represent the first time that the Canadian government sent armed troops against the Indigenous people in Western Canada with the intention of moving them off the land that they lived on. The Métis people and their allies had been attempting to negotiate peacefully with the Canadian government for years prior to these conflicts and through a series of inflammatory actions and government mismanagement, what had been potentially a diplomatic negotiation, conflated into armed conflict.

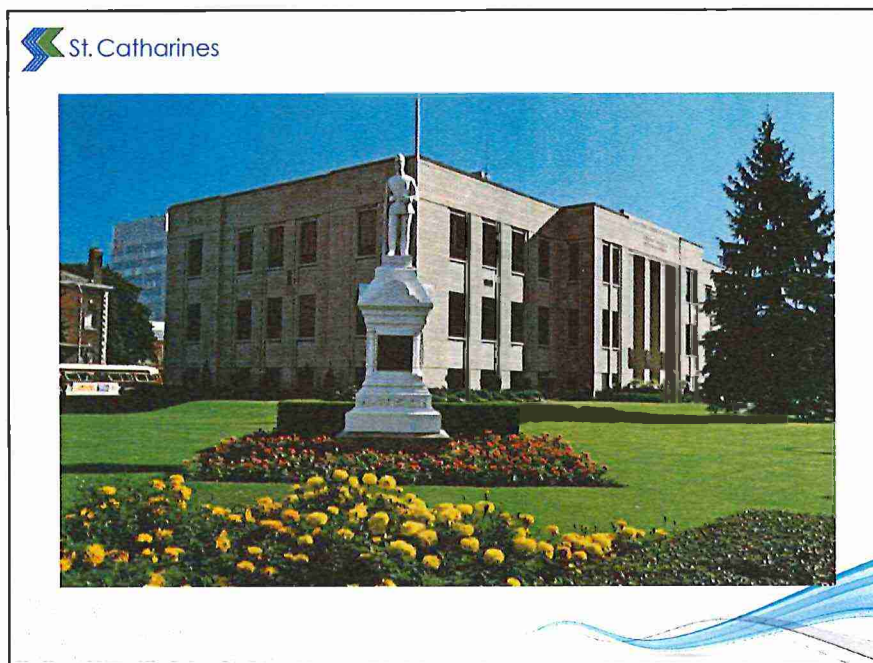
The North-West Resistance represents for Métis and First Nations people some of the worst examples of colonial treatment of Indigenous People in the west and the beginning of the attempted extermination of Indigenous people and culture throughout our country's history.



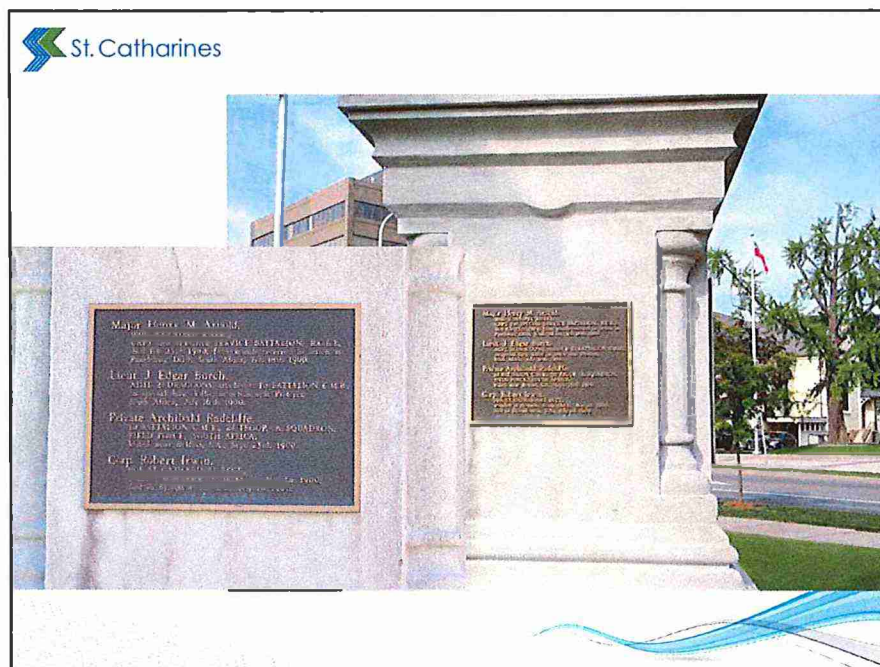
In 1886, a public subscription was taken up to erect a memorial to Private Watson and permission was granted by the City to do so. The monument was erected in memory of Private Watson but was also intended to represent all volunteers who fell in the North West Resistance. The man on top of the statue represents a Canadian Volunteer in the At-Ease position. The limestone statue was built in 1886 by James Munroe's Marble Works located at 193 St. Paul Street West. The original intention was to place the Watson statue at Victoria Lawn Cemetery, the place where Watson was laid to rest, but the proponents of the monument gained permission from City Council to place the monument on the grounds of the City Hall. The monument was originally placed on the green in front of the old city hall building – roughly where the parking lot enters from Church Street.



The monument was unveiled on Tuesday, September 14, 1886. The newspaper at the time reported that it was the largest crowd ever seen in the city and you can certainly see that a large crowd attended the unveiling. The paper attributed this to the attendance of General Middleton, commander of the forces who suppressed the North West Resistance, who came to the city to unveil the new statue.



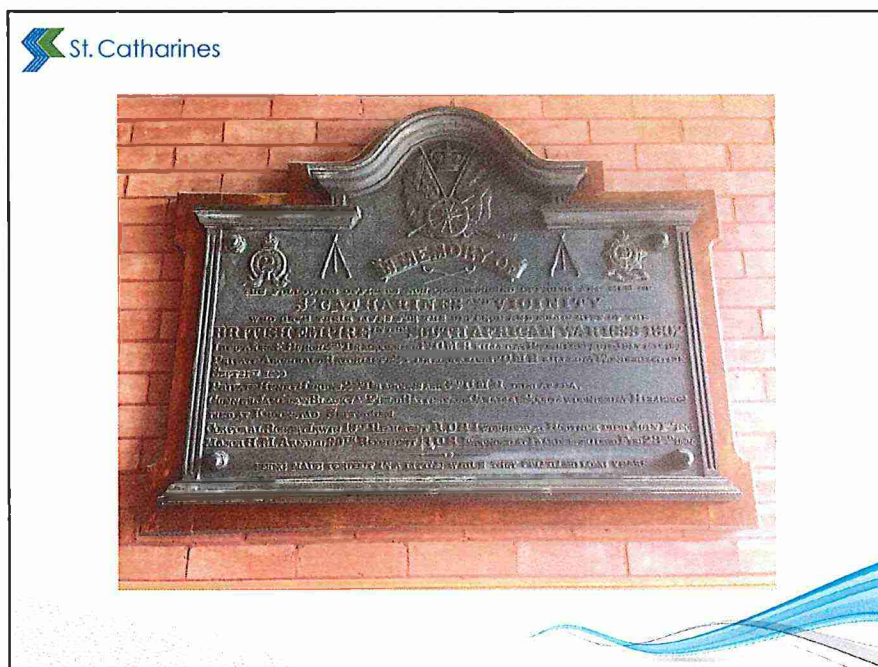
In 1936, the Watson Memorial was moved from its original location to its current location on the James Street side of the property, when the new City Hall was built. This postcard of the memorial dates from post 1974 (as you can tell from the age of the St. Catharines Transit bus in the background and the Corblos building) as the memorial looked at the time.



Watson's Memorial continued to be the only war memorial in the community for the rest of the 19th Century. The building of large scale war memorials in communities was not a common practice until the First World War.



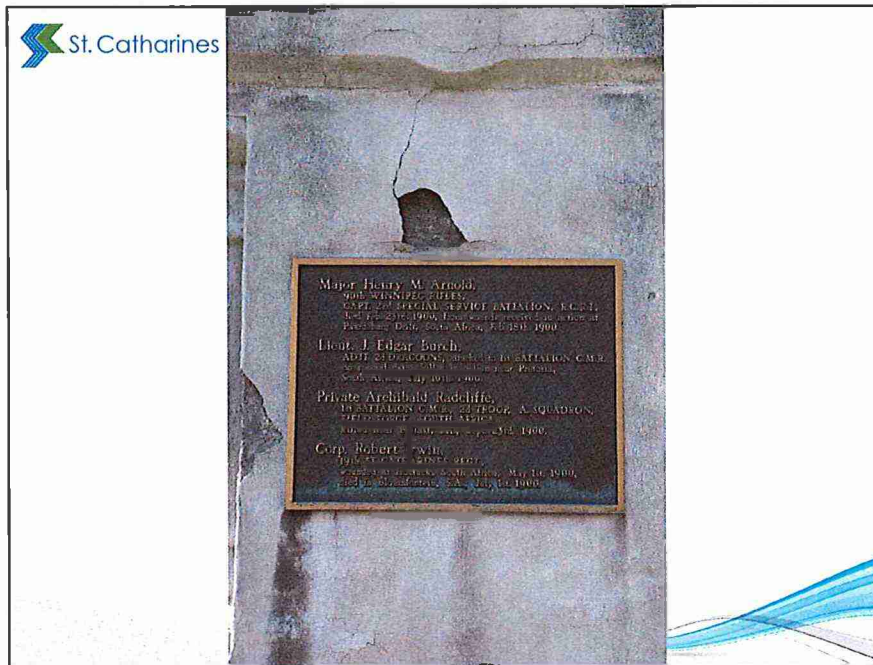
5 local men were killed in South Africa, although the plaque on Watson's Monument only lists 4 of those 5.



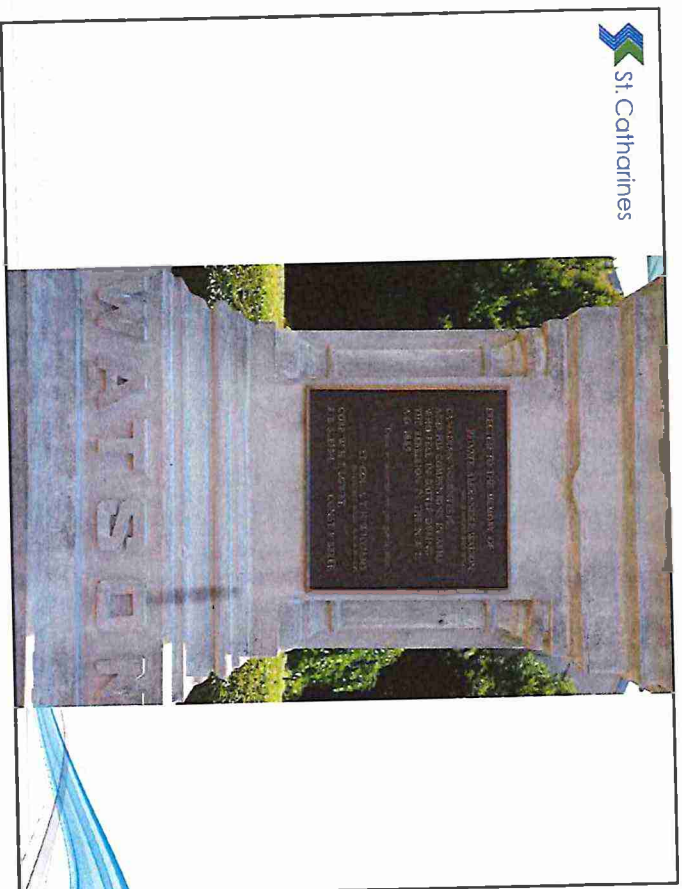
A plaque to the local men who fought in South Africa is also located at the Lake Street Armoury – which you can see here. It is a contemporary plaque from the period (likely installed soon after the war or possibly when the Armoury was built).

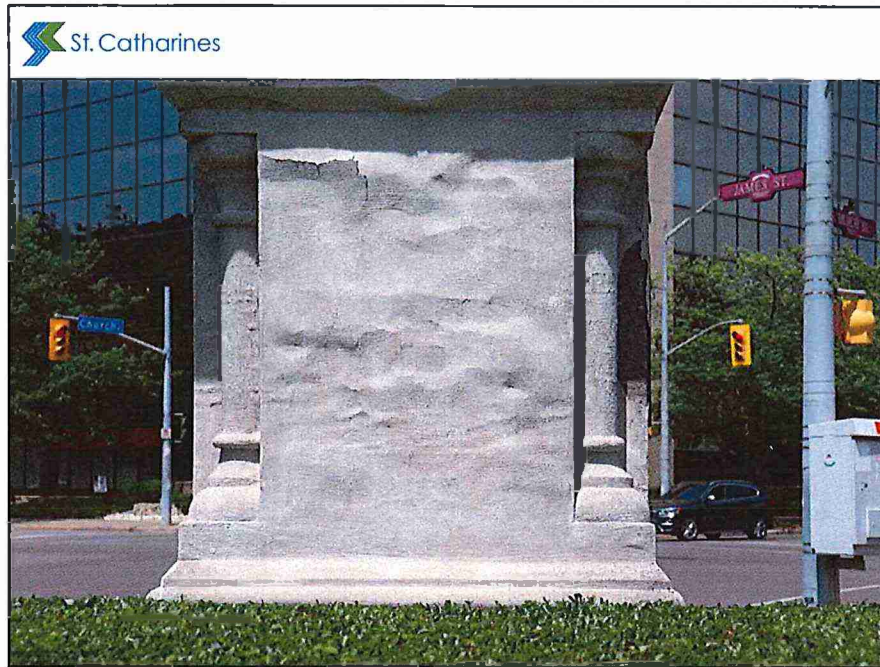



The Private Watson monument is constructed of limestone and has been identified as at risk from deterioration since as early as 1971 when the condition was described as “extremely hazardous.” In 1982, to try and preserve the deteriorating monument, Isbister Restorations Ltd., did some preservation to the monument “using a combination of jet-water cleaning and mortar and epoxy glue bonding agents.” A hard, brittle coating was applied to the entire monument by the contractor.



While this coating may have served the purpose to stabilize the monument for a short period of time, the preservation technique was not reversible and did not really stop the deterioration of the underlying limestone and today the epoxy coating that was applied in 1982 is peeling away from the monument and is in very poor condition. At the same time, this applied coating has also made it more difficult to see the underlying condition of the monument, making it difficult to see exactly what is going on with the underlying stone.



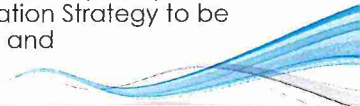




St. Catharines

Motion of Council July 27, 2020

- WHEREAS in 2009 the City's Cultural Services Director presented Report 547, regarding War Memorial and Outdoor Art Condition Assessments, which was commissioned to identify how deteriorated some of the City's outdoors structures are and what is needed to maintain and restore them; and
- WHEREAS the same report identified that the Private Alexander Watson monument at City Hall had urgent deterioration issues that must be addressed; staff were asked to develop a 5-year Outdoor Art & Memorial Restoration Strategy to be considered in the 2010 Budget; and



On July 27, 2020, City Council considered a report relating to the current condition of the Private Watson Memorial and its future.

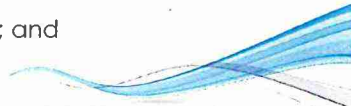
They made the following motion as a result of the report – scroll through the slides of the final motion.



- WHEREAS since that time the City of St. Catharines in June 25, 2018 signed the Memorandum of Understanding with the Niagara Regional Native Centre; and
- WHEREAS Report CAO-156-2018 noted the City's particular responsibilities to implement the Calls to Action outlined in the Truth & Reconciliation Commission's report;
- THEREFORE BE IT RESOLVED that staff be directed to consult with the following groups on the relocation of the statue of Private Alexander Watson from the front lawn of City Hall:




- Heritage Advisory Committee
 - Public Art Advisory Committee
 - Anti-Racism Advisory Committee
 - Descendants of the Watson family
 - Niagara Métis Council
 - Métis National Council
 - Niagara Regional Native Centre
 - The Historical Society of St. Catharines
 - Lincoln and Welland Regiment Association
 - The National Inventory of Canadian Military Monuments and Veterans' Affairs Canada
 - MP Chris Bittle
 - MPP Jennie Stevens
 - Royal Canadian Legion Branch 24; and
- Carried as Amended



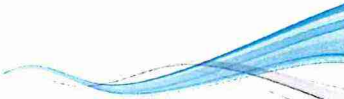


- BE IT FURTHER RESOLVED that staff be directed to report back on this consultation with a relocation strategy and include options and costs for possible relocation of the statue that includes contextualization of its history and how this is an opportunity to the education of future generations on why the City did this and its importance to our commitment to Truth & Reconciliation.
- Yeas: Councillors Porter, Sorrento, Townsend, Williamson, Dodge, Garcia, Kushner, Littleton, Miller, Phillips, and Mayor Sendzik
- Nays:



St. Catharines

Questions for Discussion

- What is your opinion of the Private Watson Memorial either being removed or staying at City Hall?
- If the monument is relocated, where do you suggest it go?
 - Considering its current condition, should the City of St. Catharines restore this monument?
- How do you see this monument contributing to the City's story?
- In what ways do you see this project contributing towards the recommendations of the Truth and Reconciliation Report?



As a part of this stakeholder engagement process, we have come up with 5 questions from which we are looking for feedback.



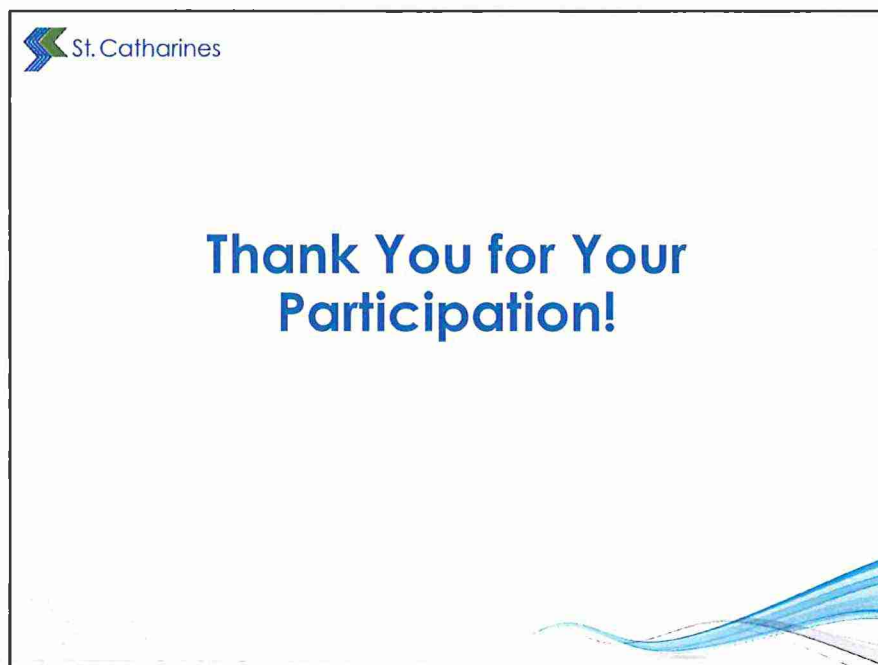
St. Catharines

Additional Comments

For additional opportunity for
you or others in your
organization to provide
comments related to
Private Watson's memorial,
please send an email to:

kpowell@stcatharines.ca

If you'd like to provide additional comments related to the questions asked in this engagement session, please email Kathleen Powell, Acting Supervisor of Cultural Services at the email address on the screen.



Thank you very much for participating in our stakeholder engagement and please free to contact us should you have any additional questions or concerns.

Private Watson Monument – Summary of Findings Aggregate Data from Stakeholder Consultations (Apr to Sep 2021)

QUESTION 1: What is your opinion of the Private Watson Monument either being removed or staying at City Hall?	
Remove	50%
Either	30%
Do Not Remove*	20%

**Respondents opposed to removal were concerned the monument would not survive the move*

QUESTION 2: If the monument is relocated, where do you suggest it go?*	
Victoria Lawn Cemetery	35.7%
Memorial Park	28.5%
Armoury	14.3%
Museum	7.1%
Do Not Relocate (keep at City Hall)	14.3%
Do Not Relocate (Deaccession)	7.1%

**Each respondent could propose and select multiple locations*

QUESTION 3: Considering its current condition, should the City of St. Catharines restore this monument?	
Preservation (to safety)	40%
Full Restoration	20%
Requires Further Investigation	20%
Preserve a Portion	10%
Do Not Restore (Deaccession)	10%

QUESTION 4: How do you see this monument contributing to the City's story?	
Historical Value	90%
No Value (symbol of oppression)	10%

QUESTION 5: In what ways do you see this project contributing towards the recommendations of the Truth and Reconciliation Report?*	
Opportunity to re-contextualize the monument and include Indigenous perspective	80%
No Opinion	20%

**All agreed that if the monument is retained, an interpretive panel should be added*



By-laws to be considered Monday, October 4, 2021

- (a) A By-law to amend By-law No. 89-2000 entitled "A By-law regulating traffic and parking on City Roads." (One reading – with respect to parking prohibitions on Andrea Drive, McCaffery Cr., Northrup Cr., and Peacock Bay. Delegation of Powers and Duties By-law No. 2020-156.)
- (b) A By-law to assume and declare certain lands to be a highway and to be known as Olde School Court. (One reading – with respect to Olde School Estates Subdivision - lands municipally known as 63 Cecil Street. Delegation of Powers and Duties By-law No. 2020-156.)
- (c) A By-law to authorize a Transfer Payment Agreement with Her Majesty the Queen in right of Ontario as represented by the Minister of Infrastructure. (One reading – with respect to Investing in Canada Infrastructure Program (ICIP): COVID-19 Resilience Infrastructure Stream – Local Government Intake Stream Projects for 2021 City Wide Trail Improvements P21-155. Delegation of Powers and Duties By-law No. 2020-156.)
- (d) A By-law to amend By-law No. 2021-28 entitled "A By-law to authorize a Renewal Agreement with Niagara Region Animal Control Services Inc.". (One reading – with respect to correcting an error in commencement date. General Committee, March 8, 2021, Item No. 2.1.)
- (e) A By-law to confirm the proceedings of council at its meeting held on the 4th day of October 2021. (One reading - with respect to confirming the proceedings of the meeting held on October 4, 2021.)