Corporation of the City of Cambridge
Council Meeting - Workshop
Agenda

Date: Thursday, October 26, 2023, 5:00 p.m. - 7:00 p.m.
Location: Council Chambers

Additional materials may be distributed at the workshop.
Note: This meeting is a Council Workshop and no delegations will be registered; only directions to staff and motions to receive for information will be permitted.

1. Meeting Called to Order
2. Disclosures of Pecuniary Interest
3. Presentations
   3.1 Asset Management – State of Infrastructure Workshop
      Presentation by Sheryl Ayres, Chief Financial Officer, and Yogesh Shah, Deputy City Manager - Infrastructure Services on the current state of infrastructure at the City of Cambridge.
4. Motion to Receive
5. Adjournment
Asset Management – State of Infrastructure
October 26, 2023
Table of Contents

1. Asset Management(AM) Evolution
2. O. Reg 588/17 and AM Plan - 2020
3. State of Infrastructure
4. Life Cycle Management and Levels of Service
5. Infrastructure Renewal Needs
6. Funding Scenarios & Strategy
7. Next Steps and Conclusion
Asset Management Evolution
Asset Management Evolution
The Ontario Context

- **Walkerton Inquiry**
  - Full-cost pricing
  - 2002

- **Ontario Building Together Guide**
  - Guide for municipal asset management plans
  - 2012

- **Municipal Asset Management Regulation**
  - O.Reg. 588/17
  - 2018

- **PSAB 3150**
  - TCA accounting
  - 2009

- **Infrastructure for Jobs and Prosperity Act**
  - Authority for the Province to regulate municipal asset management planning
  - 2016

City of Cambridge
Asset Management
Cambridge Journey

• 2005 - Asset Management (AM) division established
• 2007 - Asset information warehouse and Work Management System implemented
• 2009 - Water and wastewater long range financial plan adopted (revised 2014 & 2019)
• 2013 - AM Plan published – Compliance to “Building Together”
• 2015 - AM division mandate revised to all assets/services
• 2017 - State of Infrastructure and outlook report
• 2019 - Strategic AM Policy adopted – Compliance to O. Reg 588/17
• 2020 - AM Plan approved - Compliance to O. Reg 588/17 phase 1 and beyond
O. Reg. 588/17 and AM Plan – 2020
AM Planning Regulation

Our efforts achieve early compliance with Regulation 588/17 Asset Management Planning for Municipal Infrastructure.

- **Strategic Asset Management Policy** (July 1, 2019)
  - Requires municipalities to outline commitments to best practices and continuous improvement

- **Asset Management Plan: Phase 1** (July 1, 2021)
  - For core assets:
    - Inventory of assets
    - Current levels of service measured by standard metrics
    - Costs to maintain levels of service

- **Asset Management Plan: Phase 2** (by July 1, 2023 - 2024)
  - Builds out the Phase 1 plan to include all assets & updated policy

- **Asset Management Plan: Phase 3** (by July 1, 2024 - 2025)
  - Builds on Phase 1 and 2 by adding:
    - Proposed levels of service
    - Lifecycle management and financial strategy
Strategic Asset Management Policy

1. Strategic Alignment
2. Stakeholder Engagement
3. Guiding Principle to be applied in AM Planning (15 +)
4. Community Planning
5. Climate Change
6. Financial Planning and Budgeting
7. Governance and Continuous Improvement
   • Role of Council, CAO and Steering Committee
Role of Council

• Authority of the Strategic Asset Management Policy
• Approve the Asset Management Plan and its update every five years; and
• Conduct annual reviews of the AM Plan implementation progress, that includes:
  • Progress on ongoing efforts to implement the AM plans;
  • Consideration of the Strategic AM Policy;
  • Any factors affecting the ability of the City to implement its AM plans;
  • Consultation with senior management;
  • A strategy to address these factors including the adoption of appropriate practices; and
  • Support ongoing efforts to continuously improve and implement the AM plans.
Asset Management Plan

• State of Infrastructure (inventory, condition, current replacement value and Age)
• Level of Service (current and future service levels)
• Asset Life Cycle Management Strategy
• Financial Strategy
Asset Management Plan - 2020

- Compliance to O. Reg. 588/17 – Phase 1 requirement and more
- $2.7 billion in Current replacement value -2019
- Overall Condition of assets rated “Good”
- 74% of asset condition rated as very good and good
- 11% of asset condition rated as very poor and poor
- Funding gap of $137 million after provision of $45 million debt financing the remaining funding gap was $92 million over 10-year forecast
## Asset Management Plan -2020
### Funding gap

<table>
<thead>
<tr>
<th>Service Area</th>
<th>Funding Gap</th>
<th>Funding Sources / Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water and wastewater</td>
<td>Fully funded</td>
<td>Water rates / Long range financial plan</td>
</tr>
<tr>
<td>Storm Water</td>
<td>$21M</td>
<td>Storm water utility and Debt</td>
</tr>
<tr>
<td>Transportation</td>
<td>$49M</td>
<td>Infrastructure levy / External Funding / Debt</td>
</tr>
<tr>
<td>Recreation &amp; Culture</td>
<td>$52M</td>
<td>User fees &amp; rates, External Funding, Debt, Sponsorship, Public Private partnership</td>
</tr>
<tr>
<td>Corporate / Other</td>
<td>$15M</td>
<td>External Funding / Infrastructure Levy</td>
</tr>
</tbody>
</table>
# O. Reg. 588/17 compliance
## Core Assets

### O. Reg. 588/17 Milestones

<table>
<thead>
<tr>
<th></th>
<th>Phase 1 – July 1, 2021</th>
<th>Phase 2 – July 1, 2023</th>
<th>Phase 3 – July 1, 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>O. Reg. 588/17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milestones</td>
<td>Asset Inventory</td>
<td>Current LoS</td>
<td>Costs to maintain LoS</td>
</tr>
<tr>
<td>Transportation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Environmental Services</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

- ✓ Compliant
- ⬤ Partially Compliant
- ☠ Not Compliant
# O. Reg. 588/17 compliance

## Non-core assets

<table>
<thead>
<tr>
<th>O. Reg. 588/17 Milestones</th>
<th>Phase 1 – July 1, 2021</th>
<th>Phase 2 – July 1, 2024</th>
<th>Phase 3 – July 1, 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Asset Inventory</td>
<td>Current LoS</td>
<td>Costs to maintain LoS</td>
</tr>
<tr>
<td>Emergency Services</td>
<td>Not required for Phase 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recreation &amp; Culture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Management</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Compliant
- Partially Compliant
- Not Compliant
State of Infrastructure
State of Infrastructure

Asset Inventory

City Assets - $3.8 Billion

- Transportation - $722M
- Water - $723M
- Wastewater - $762M
- Storm Water - $809M
- Indoor Recreation - $284M
- Civic Buildings - $148M
- Fleet and IT Assets - $66M
- Library - $60M
- Fire - $66M
- Parks - $124M
## Inventory – Core Assets

### Transportation – $722M

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Inventory</th>
<th>Current replacement Costs (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roads</td>
<td>1,031 lane-km of roads 16,894 m of retaining walls 30 Bridges, 4,800m guide rails 11,419 streetlights</td>
<td>$538</td>
</tr>
<tr>
<td>Active Transportation</td>
<td>683 km of sidewalks, 9 km of walkways 129 km of trails, 54 pedestrian bridges</td>
<td>$172</td>
</tr>
<tr>
<td>Parking</td>
<td>23 parking lots</td>
<td>$12</td>
</tr>
</tbody>
</table>
## Inventory – Core Assets

### Environmental Services – $2,294M

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Inventory</th>
<th>Current replacement costs (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stormwater</td>
<td>395 km pipes + 170 km leads, 11,000 catch basin and maintenance structures, 17 km of culverts, 89 storm ponds + 25 infiltration gallery</td>
<td>$809</td>
</tr>
<tr>
<td>Drinking Water</td>
<td>550 km Pipes, 40,900 meters, 6000 valves, 3200 Hydrants</td>
<td>$723</td>
</tr>
<tr>
<td>Wastewater</td>
<td>557 km pipes, 8,179 maintenance structures, 40,479 service connections, 19 pumping stations</td>
<td>$762</td>
</tr>
</tbody>
</table>
## Inventory – Non-Core Assets
### Parks, Outdoor and Indoor Recreation - $455M

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Inventory</th>
<th>Current replacement Costs (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forestry</td>
<td>60,000 Trees, 3 Green house, 275 Flower beds and 84 Planters</td>
<td>$57</td>
</tr>
<tr>
<td>Parks</td>
<td>371 Hectares, 136 parcels</td>
<td></td>
</tr>
<tr>
<td>Outdoor Recreation</td>
<td>102 sports fields, 71 playgrounds, 8 outdoor fitness stations, 11 Spray pads, 67 parks washrooms &amp; picnic shelters, 1 Bike Park, 3 Skateboard Parks</td>
<td>$54</td>
</tr>
<tr>
<td>Indoor Recreation</td>
<td>6 Arenas, 4 Pools, 6 Community Centers, 2 Museums, 2 Theaters, Market, Soccer Dome</td>
<td>$284</td>
</tr>
<tr>
<td>Library</td>
<td>5 Library / Idea Exchange Locations (buildings only)</td>
<td>$60</td>
</tr>
</tbody>
</table>
## Inventory – Non-Core Assets

**Fire Protection, Resource Management - $294M**

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Inventory</th>
<th>Current replacement costs (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cemetery</td>
<td>8 Cemetery, 17 Columbarium, 9 km of roads</td>
<td>$14</td>
</tr>
<tr>
<td>Fire protection</td>
<td>6 Fire Stations, 33 Fleet Vehicles</td>
<td>$66</td>
</tr>
<tr>
<td>Corporate, Operations and Leased Buildings</td>
<td>40 Buildings and Structures</td>
<td>$148</td>
</tr>
<tr>
<td>Fleet (Excl Fire Protection)</td>
<td>283 Vehicle, Equipment, Fuel station</td>
<td>$39</td>
</tr>
<tr>
<td>Information Technology</td>
<td></td>
<td>$27</td>
</tr>
</tbody>
</table>
State of Infrastructure

Asset Condition

- Very Good- $1655M
- Good- $1026M
- Fair- $511M
- Poor- $299M
- Very Poor- $121M
- Unknown- $146M
## State of Infrastructure

### Asset Condition

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>$723M</td>
<td>19.2%</td>
</tr>
<tr>
<td>Wastewater</td>
<td>$762M</td>
<td>20.2%</td>
</tr>
<tr>
<td>Drainage</td>
<td>$809M</td>
<td>21.5%</td>
</tr>
<tr>
<td>Transportation</td>
<td>$550M</td>
<td>14.6%</td>
</tr>
<tr>
<td>Active Transportation</td>
<td>$172M</td>
<td>4.6%</td>
</tr>
<tr>
<td>Library</td>
<td>$60M</td>
<td>1.6%</td>
</tr>
<tr>
<td>Fire</td>
<td>$66M</td>
<td>1.8%</td>
</tr>
<tr>
<td>Cemetery</td>
<td>$14M</td>
<td>0.4%</td>
</tr>
<tr>
<td>Forestry</td>
<td>$57M</td>
<td>1.5%</td>
</tr>
<tr>
<td>Parks - Outdoor Recreation</td>
<td>$54M</td>
<td>1.4%</td>
</tr>
<tr>
<td>Buildings - Civic</td>
<td>$148M</td>
<td>3.9%</td>
</tr>
<tr>
<td>Buildings - Indoor Recreation</td>
<td>$284M</td>
<td>7.5%</td>
</tr>
<tr>
<td>Parks</td>
<td>$194M</td>
<td>5.1%</td>
</tr>
<tr>
<td>IT Infrastructure</td>
<td>$27M</td>
<td>0.7%</td>
</tr>
<tr>
<td>Fleet</td>
<td>$39M</td>
<td>1%</td>
</tr>
<tr>
<td>All Assets</td>
<td>$3765M</td>
<td>100%</td>
</tr>
</tbody>
</table>

- **Very Good**: $1655M (43.9%)
- **Good**: $1026M (27.2%)
- **Fair**: $511M (13.5%)
- **Unknown**: $146M (3.9%)
- **Poor**: $299M (7.9%)
- **Very Poor**: $121M (3.2%)
State of Infrastructure

Asset Condition - Buildings

- Very Good: $80M (14%)
- Good: $354M (63%)
- Fair: $46M (8%)
- Poor: $56M (10%)
- Very Poor: $6M (1%)
- Unknown: $24M (4%)

Buildings - $566M
State of Infrastructure

Water System renewal profile

Water System Renewal Need Profile

% Length of System

```
2020  2030  2040  2050  2060  2070  2080  2090  2100
12    4     3     13    13    15    16    13    6
```

**Notes:** Needs shown in the decade prior to the current decade is considered to be backlogged having reached end of serviceable life. Renewal priority of specific backlogged infrastructure is determined based on risk analysis and actual current condition.

Source: Asset Inventory Registry - am.forest_water_system_cap
Life Cycle Management and Levels of Service
Condition Degradation
Pavement

VERY GOOD

GOOD

FAIR

POOR
Condition Degradation

Pavement

Pavement Degradation

VERY GOOD
GOOD
FAIR
POOR
VERY POOR
Life Cycle Management Strategy
Pavement Management

Pavement Degradation

Pavement Condition

<table>
<thead>
<tr>
<th>Condition</th>
<th>Average Age</th>
<th>Lane Km</th>
<th>Replacement Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>VERY GOOD</td>
<td>18</td>
<td>539</td>
<td>$127,214,653</td>
</tr>
<tr>
<td>GOOD</td>
<td>31</td>
<td>194</td>
<td>$46,737,193</td>
</tr>
<tr>
<td>FAIR</td>
<td>41</td>
<td>238</td>
<td>$54,903,648</td>
</tr>
<tr>
<td>POOR</td>
<td>50</td>
<td>38</td>
<td>$8,372,311</td>
</tr>
<tr>
<td>UNKNOWN</td>
<td>7</td>
<td>18</td>
<td>$3,818,650</td>
</tr>
<tr>
<td>Others</td>
<td>61</td>
<td>2</td>
<td>$324,585</td>
</tr>
</tbody>
</table>

35 1,028 $241,171,042

Source: Pavement Condition -am.road_condition_summary
Life Cycle Management Strategy
Water System Breaks
Life Cycle Management Strategy

Inspection and Condition Assessment

- Road Patrol – as per MMS requirements
- Annual Sidewalk Inspections
- Bi-annual Inspection of Bridges
- CCTV Inspections for Wastewater and Storm water pipes
- Leak Detection and monitoring system breaks for water systems
- Circle checks for vehicle and equipment
- Playground inspections
Life Cycle management Strategy
Risk based Prioritization

Managing Asset Risk

Consequence of Failure

Likelihood of Failure

1. Operational Maintenance
2. Proactive Inspections
3. Inspection, Mitigation & Rehabilitation
4. Operational Maintenance & Repairs
5. Repair & Replacement on Failure
6. Inspection, Repairs & Replacement
7. Mitigation & Replacement

City of Cambridge
Infrastructure Renewal Needs
Infrastructure Needs

Playgrounds

- 71 City owned playgrounds
- 35 needs replacement in next 10 year based on 20-year life cycle
- 30 proposed to be replaced with additional 7 are unfunded over 10-year forecast
- 17 Playground build prior to 2003
- 39 of 71 are installed prior to 2013
## Replacement needs

### Linear Infrastructure

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Total Length (km)</th>
<th>Life Span (years)</th>
<th>Aged Based Needs -km (Total length /Life Span)</th>
<th>Average Annual Renewal - km (last 5 years)</th>
<th>Average Annual Renewal - km (next 5 years)</th>
<th>Proposed Renewal - km 2024</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road reconstruction</td>
<td>515</td>
<td>40</td>
<td>13</td>
<td>3.2</td>
<td>3.5*</td>
<td>2.8</td>
</tr>
<tr>
<td>Road resurfacing</td>
<td></td>
<td></td>
<td></td>
<td>2.4</td>
<td>1.7</td>
<td>2.8</td>
</tr>
<tr>
<td>Stormwater System</td>
<td>395</td>
<td>80</td>
<td>5.0</td>
<td>1.9</td>
<td>1.5</td>
<td>1.3</td>
</tr>
<tr>
<td>Water System</td>
<td>550</td>
<td>70</td>
<td>7.8</td>
<td>4.3</td>
<td>4.6</td>
<td>2.2</td>
</tr>
<tr>
<td>Wastewater System</td>
<td>557</td>
<td>80</td>
<td>7.0</td>
<td>3.2</td>
<td>4.6</td>
<td>2.6</td>
</tr>
</tbody>
</table>

56.5 km (19 km each year) roads resurfaced in 2008-2010

* includes Black bridge road and Townline road funded from Debt and DC
Infrastructure Needs

• Storm water management facilities
• Riverside dam reconstruction
• Recreation complex and Preston Auditorium Expansion
• Decommissioning & repurposing 3 Arenas, Dolson Pool & facilities
• Preservation and protection of City owned Heritage buildings
• Place making initiatives
• Master Plans
  • Older Adult, Arts & Culture and Recreation
  • Parks, Cemetery and outside services facilities
  • Fire Services
Challenges & Opportunities

- Accessibility improvements
- Climate Adaptation and Green Infrastructure
- Net zero / Gold LEED Certified buildings / Green Building Standards
- Active Transportation
- Community Expectation / Levels of Service
- Demographics
- Growth plans and development charges
Funding Scenarios and Strategy
## Funding Scenario
### Linear Infrastructure

<table>
<thead>
<tr>
<th>Asset Renewal</th>
<th>Aged Based Needs (Total Length /Life Span)</th>
<th>Condition Based Needs ($15M)</th>
<th>Current Funding ($9M)</th>
<th>Partial Funding 1 ($10.5M)</th>
<th>Partial Funding 2 ($12M)</th>
<th>Partial Funding 3 ($13.5M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road reconstruction (km/year)</td>
<td>13</td>
<td>3.2</td>
<td>2.5</td>
<td>3.1</td>
<td>3.4</td>
<td>3.3</td>
</tr>
<tr>
<td>Road resurfacing (km/year)</td>
<td>12.1</td>
<td>4.8</td>
<td>5.6</td>
<td>10.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stormwater System (km/year)</td>
<td>5.0</td>
<td>2.2</td>
<td>2.7</td>
<td>2.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water System (km/year)</td>
<td>7.8</td>
<td>5.2</td>
<td>6.0</td>
<td>6.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wastewater System (km/year)</td>
<td>7.0</td>
<td>4.1</td>
<td>3.7</td>
<td>3.9</td>
<td>4.0</td>
<td></td>
</tr>
</tbody>
</table>
Funding Scenario
Pavement Condition

Road Condition (PQI)

- Current ($9M)
- Partial Fund ($10.5M)
- Partial Fund ($12M)
- Partial Fund ($13.5M)
- Fully Funded ($15M)
Roads – Critical Length
Levels of Service

Road Critical Length (m)

– Current
– Partial Fund ($10.5M)
– Partial Fund ($12M)
– Partial Fund ($13.5M)
– Fully Funded
Infrastructure Needs
Unfunded needs 2024-2033

- Fire Services - $25M
- Parks - $13M and more
- Recreation Facilities - $4.7M and more
- Operations Facility - $5.1M and more
- Corporate facility - $1M
- Stormwater - $6M for non-linear infrastructure
- Transportation - $12.4M additional for Milling St / Dickson Streetscape, parking lot, streetlights
- Transportation / Stormwater - $60M for linear infrastructure replacement / renewal
## Funding Strategy - Debenture

### Total tax impact?

<table>
<thead>
<tr>
<th>Project</th>
<th>Total Budget</th>
<th>Tax Funded Debenture</th>
<th>DC funded Debenture</th>
<th>Other City Reserves and DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fountain St soccer*</td>
<td>$13.4</td>
<td>$9.8</td>
<td>$3.6</td>
<td></td>
</tr>
<tr>
<td>Preston Auditorium*</td>
<td>$29.2</td>
<td>$15.9</td>
<td>$9.6</td>
<td>$3.7</td>
</tr>
<tr>
<td>Recreation Complex - 2024</td>
<td>$112.7</td>
<td>$21.5</td>
<td>$46.6</td>
<td>$44.6</td>
</tr>
<tr>
<td>Black bridge Road - 2024</td>
<td>$20.6</td>
<td>$6.9</td>
<td>$13.7</td>
<td>-</td>
</tr>
<tr>
<td>Riverside dam -2025</td>
<td>$19.8</td>
<td>$19.3</td>
<td>-</td>
<td>$0.5</td>
</tr>
<tr>
<td>Townline Road - 2026</td>
<td>$11.6</td>
<td>$5.8</td>
<td>$5.8</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$207.3</strong></td>
<td><strong>$69.4</strong></td>
<td><strong>$85.5</strong></td>
<td><strong>$52.4</strong></td>
</tr>
</tbody>
</table>

*Existing Approved projects*
Summary

• Over $730M capital investment over next 10 years
• Includes provision of $52M tax supported debt and $87M DC supported debt
• $126M unfunded needs - $66 million identified projects and $60 linear infrastructure needs
• Additional staff resources to execute infrastructure renewal capital projects or to maintain aging infrastructure and maintain service levels will be required
• Plan for additional resources to support growth
Funding Strategy

- Stormwater Management Funding
- Reserve Contribution
- Special Infrastructure Levy
- Debt Limit
- User Rates and Fees
- Sponsorship
- Public Private Partnerships
Next Steps
Next Steps

• 2024 - 2025 - Compliance to O. Reg. 588/17 - AM Policy review, AM Plan Phase 3
• 2024 - Drinking water and wastewater infrastructure is fully funded - long range financial plan
• 2024 - Storm water utility
• 2024 - 2025 - Rates and User fees study
• 2024 - Infrastructure levy for Transportation infrastructure
• 2023-2024 - Continue to explore Sponsorship opportunities
Conclusion

• City has adopted multi-criteria project prioritization to minimize service disruption risk

• Balancing capital investment, operating expenditure, affordability, corporate risks, long term service and financial sustainability is part of City’s infrastructure investment decisions

• Strategies and proposed solutions to address funding gap will be presented to council for consideration during 2024 budget process
Asset Management is a journey and not a system or solution to business problem!
Thank you!

Questions?

Yogesh Shah
Deputy City Manager,
Infrastructure Services
shahy@cambridge.ca