

2017 Infrastructure Status and Outlook

The **City of Cambridge** with a population of 129,920 as per 2016 census is a modern, inclusive city with a rich architectural heritage providing a window to the past. Economic diversity, natural beauty, and vibrant culture have helped to make Cambridge the second largest community within the fast-growing Waterloo region.

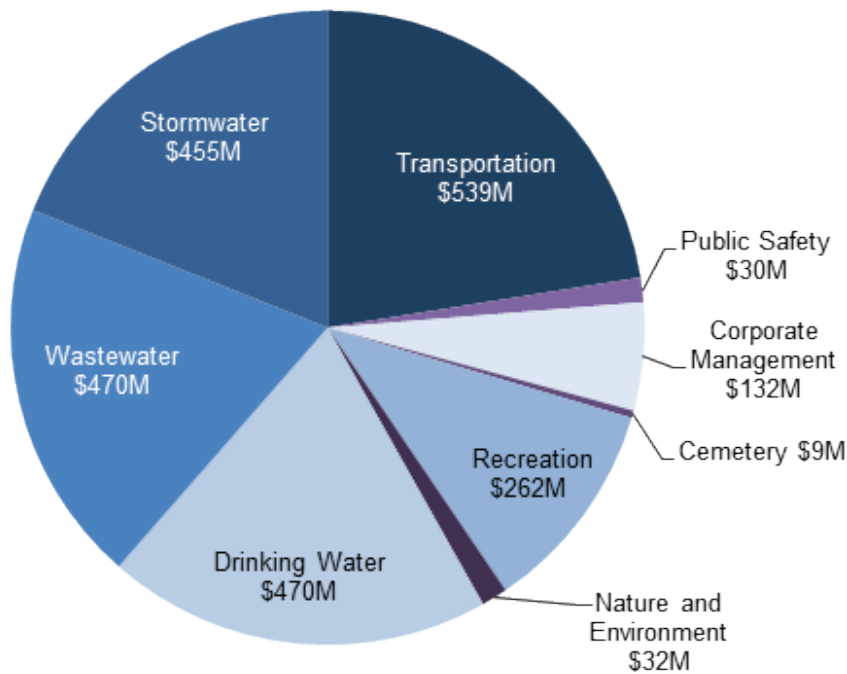
The City's goals are to keep our infrastructure in a state of good repair to provide reliable and efficient services, build new infrastructure for service improvement and to support future growth, and to implement priorities identified by the City's strategic plan *Cambridge Connected*.

The City owns, operates and maintains public infrastructure with an estimated replacement value of \$2.4 Billion. The estimated replacement value does not include land value. This report provides an overview of the current state of the City's infrastructure and highlights the City's improvement priorities.

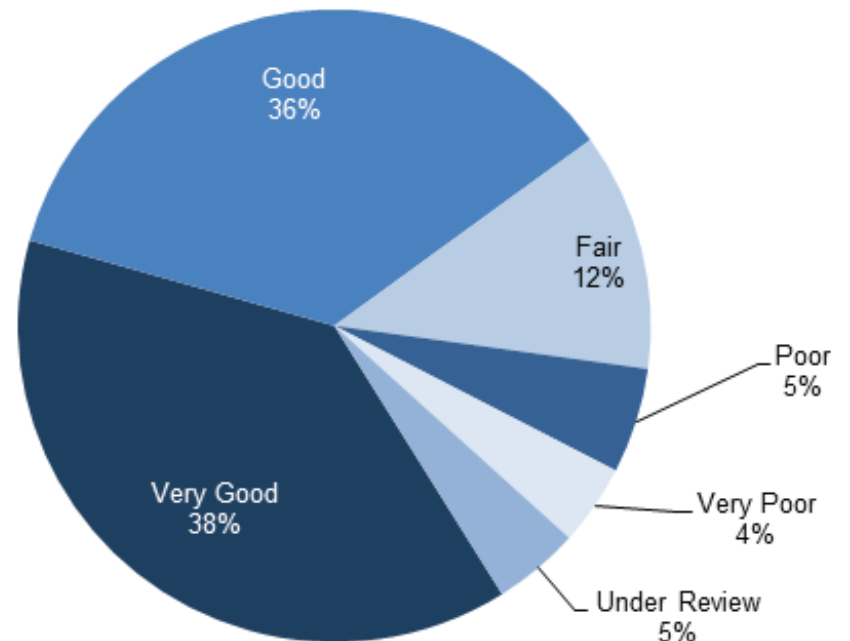
What do the symbols mean?

Very Good	Most assets are new or recently rehabilitated. Well maintained with no deficiencies.
Good	Most assets are at an early stage of useful life. Assets may require minor preventative maintenance. Some assets with superficial wear and tear.
Fair	Most assets are at a mid-stage of useful life. Assets in this group require regular inspection and operational maintenance. Some assets are due for renewal.
Poor	Most assets are at a later stage of useful life. Assets with observable deterioration requiring regular repairs to prevent service interruptions.
Very Poor	Most assets are at a final stage of useful life and due for replacement or renewal. Assets show major signs of deterioration and require ongoing repairs with a history of service interruptions.


Replacement Value - 2.4B



Infrastructure Condition



Infrastructure Overview

Infrastructure	Service Objective	Infrastructure Summary	Current Status and Forecast
<p>City of Cambridge</p> <p>Good</p> 	<p>To maintain infrastructure to provide reliable and efficient services, build new infrastructure for service improvement and to support future growth, and to implement priorities identified by the City's strategic plan <i>Cambridge Connected</i>.</p>	<p>The City owns, operates and maintains transportation infrastructure such as roads, bridges, streetlights, and trails; recreation facilities such as arenas, swimming pools, community centers, and outdoor fields; green infrastructure such as trees, parks, and natural areas; water distribution pipes; wastewater collection pipes and pumping stations; drainage pipes, culverts and ponds; fire stations; cemeteries; corporate facilities; fleet; and information technology (IT) infrastructure.</p>	<p>More than 74% of the City's infrastructure is in very good or good condition with 9% in poor or very poor condition. The City's proposed 2018-2027 capital budget is \$432 million which includes \$270 million to maintain existing infrastructure and \$162 million to build new infrastructure. The infrastructure gap is \$145 million (\$100 million for transportation and stormwater infrastructure and \$45 million for other infrastructure). The City continues to work with all levels of government to identify funding opportunities and to explore alternative revenue streams to address this gap. To minimize service interruptions, the City has adopted risk-based, integrated capital planning and prioritization for projects.</p>

Getting Around - Transportation



Infrastructure	Service Objective	Infrastructure Summary	Current Status and Forecast
Transportation System (Roads) Good 	Maintain an efficient network of roads, bridges and related infrastructure to provide safe passage of vehicles to transport people and goods.	The City owns and maintains 500 km (1,000 lane km) of road network, and maintains 77 km (237 lane km) of roads owned by the Region of Waterloo. The transportation system includes: <ul style="list-style-type: none"> • 24 bridges/major culverts • More than 10,000 street lights • 16,000 traffic signs • 4 km of guiderails • 25 parking lots Estimated replacement value is \$433 million.	The condition of the road system has significantly improved over the last 10 years. 214 lane km (21%) has been renewed with 20 lane km renewed in 2017. The City has converted 65% of streetlights to LED and remaining streetlights will be converted in 2018. The proposed 2018-2027 capital budget provides adequate funding to maintain bridges/culverts in good condition. The total infrastructure gap includes projects to improve the existing transportation system to support future growth. The City has initiated a transportation master plan (<i>Moving Cambridge</i>) to identify opportunities and address future transportation needs such as active transportation, public transit, parking, and vehicular traffic. The City has established a framework for assessing the condition of retaining walls, which is ongoing. 73% of the City's road network is in very good or good condition.
Active Transportation Good 	Provide safe and accessible sidewalk, trails, walkway, bike lanes and related infrastructure to promote active lifestyles and transit use for residents and visitors.	The City owns and maintains an active transportation network which includes: <ul style="list-style-type: none"> • 677 km of sidewalk and walkways • 230 km of bike lanes • 96 km of trails • 47 pedestrian crossings The City provides winter maintenance service for 150 km of sidewalk and walkways and 49 km of trails. Estimated replacement value is \$105 million.	New active transportation infrastructure built through 2017 capital investment includes a pedestrian bridge over the Grand River, new multi-use trails on Conestoga Boulevard, Melrose Street, in Greenway and Soper parks, and a section of Devil's Creek trail. Improvements are based on the 2010 Trails Master Plan and 2008 Bikeway Network Master Plan in consultation with the Cambridge Trails Advisory Committee and Cambridge Cycling Focus Group. Sidewalks, walkways and trails are inspected annually to identify and address safety issues. The proposed 2018-2027 capital budget provides adequate funding to address current repair and rehabilitation needs for existing active transportation infrastructure.

Things To Do - Recreation



Infrastructure	Service Objective	Infrastructure Summary	Current Status and Forecast
Recreation Good 	Support healthy lifestyles by providing affordable programs and activities, accessible play grounds, indoor and outdoor sports facilities and accessible facilities for community groups and organizations.	The City owns and/or operates: <ul style="list-style-type: none"> • 6 arenas • 5 pools • 5 community/senior centers • 2 theaters • The farmer's market building • 74 sports fields • 22 sports courts • 64 playgrounds • 11 splash pads • Numerous park amenities such as picnic shelters, grand stands, change rooms and washroom facilities Estimated replacement value is \$224 million.	Condition assessments for indoor recreation facilities were completed in 2017. Detailed condition assessments of outdoor recreation facilities will be completed in 2018. Accessibility improvements of various recreational facilities, playgrounds, sport fields and park amenities are progressing well with 9 playgrounds replaced in the last 2 years. A functional review of indoor recreational space will be completed in the coming years. The proposed 2018-2027 capital budget provides adequate funding to maintain recreation infrastructure in current condition. Energy efficiency improvement projects are proposed for a number of facilities with help from greenhouse gas (GHG) reduction grants and energy conservation reserves. In the next 10 years, 20 playgrounds (of 64) are proposed for replacement. The average remaining service life for playgrounds is 15 years.
Idea Exchange (Library) Good 	Provide access to information resources, offer cultural programming and serve as a community hub that supports and inspires the public in the exploration of reading, arts, innovation and lifelong learning..	The City owns and maintains 5 Idea Exchange locations including Design at Riverside. Estimated replacement value is \$38 million.	The condition of Idea Exchange infrastructure is good. The Old Post office building is currently under construction and is expected to open in 2018 as an additional Idea Exchange community space. The proposed 2018-2027 capital budget includes \$4 million to maintain existing Idea Exchange infrastructure.

Cemetery



Infrastructure	Service Objective	Infrastructure Summary	Current Status and Forecast
<p>Cemetery</p> <p>Fair</p>	<p>Provide a variety of dignified options for the disposition of human remains in accordance with provincial regulations.</p>	<p>The City owns, operates and maintains:</p> <ul style="list-style-type: none"> • 7 cemeteries (3 active) • 2 mausoleums • 3 chapels • 14 columbarium • 9 km of access roads <p>Estimated replacement value is \$9 million.</p>	<p>The condition of cemetery infrastructure is fair. In 2017, a columbarium was installed at New Hope cemetery. The installation of columbariums in recent years has resulted in more affordable spaces for the disposition of remains. Installation of another columbarium is planned for Mount View cemetery in 2018.</p> <p>The proposed 2018-2027 capital budget provides adequate funding to improve infrastructure condition.</p>

Water Management



Infrastructure	Service Objective	Infrastructure Summary	Current Status and Forecast
<p>Water Distribution System</p> <p>Good</p>	<p>Provide safe, reliable potable water with adequate pressure for fire protection service.</p>	<p>The City owns, operates and maintains 519 km of water pipes, and operates and maintains 61 km of transmission pipe owned by the Region of Waterloo. The Region owns, operates and maintains all water treatment and storage facilities and wells. The water system also includes:</p> <ul style="list-style-type: none"> • 5,183 valves • 3,418 hydrants • over 39,000 service connections <p>Estimated replacement value is \$470 million.</p>	<p>The condition of the water system has significantly improved over the last 10 years. 54 km has been renewed with 4.4 km renewed in 2017. Increased capital investment reduced water losses and system breaks. The City has also adopted preventative maintenance and a leak identification program in order to minimize water losses and improve water quality.</p> <p>The proposed 2018-2027 capital budget provides adequate funding to maintain the current system condition. 14% of the water system is due for replacement before 2030. The average remaining service life is 43 years.</p>
<p>Wastewater Collection System</p> <p>Good</p>	<p>Provide a reliable system to collect wastewater from homes and businesses and to convey wastewater for appropriate treatment to protect environment and properties.</p>	<p>The City owns, operates and maintains a 523 km wastewater collection system. The Region of Waterloo owns, operates and maintains three sewage treatment plants within the City. The collection system includes:</p> <ul style="list-style-type: none"> • 17 pumping stations • 7,570 manholes • over 39,000 service connections. <p>Estimated replacement value is \$470 million.</p>	<p>The condition of the wastewater system has improved in the last 10 years. 34 km (6%) has been renewed with 3.8 km renewed in 2017. This includes the 1.5 km Hespeler trunk sewer rehabilitation using trenchless technology. Proactive inspections and flushing programs minimize sewage blockages, reduce inflow and infiltration, and identify required operational repairs and capital renewal needs. CCTV inspection for 90% of the system has been completed.</p> <p>The proposed 2018-2027 capital budget provides adequate funding to maintain the current system condition. 10% of pipes and 10 pumping stations are due for replacement before 2030. The average remaining service life for the wastewater collection system is 43 years.</p>
<p>Storm Water Drainage System</p> <p>Good</p>	<p>Provide appropriate drainage of stormwater from city streets to minimize flooding and to convey stormwater for appropriate treatment and release in accordance with provincial regulations.</p>	<p>The City owns, operates and maintains a 364 km stormwater (SWM) system, and maintains a Region-owned, 67 km pipe network located within regional road right-of-ways. The system includes:</p> <ul style="list-style-type: none"> • 88 SWM ponds • 6,650 manholes • 9,600 catch basins • 13 km of drainage culverts <p>Estimated replacement value is \$455 million.</p>	<p>The condition of the stormwater system has improved over the last 10 years. 19 km (5%) has been renewed with 2.2 km of the pipe network replaced in 2017. CCTV inspection for 88% of the pipe network has been completed. The City developed an inspection and maintenance program for SWM ponds. Detailed inspections and assessments of 21 ponds were completed and 14 of the inspected ponds require sediment removal to restore original function.</p> <p>The sediment removal work is not included in the proposed 2018-2027 capital budget. Further, detailed inspection and assessment of remaining ponds is required in the next 5 years. To maintain the current condition, 6% of the pipe network is due for replacement before 2030. The average remaining service life for the stormwater system is 46 years.</p>

Public Safety



Infrastructure	Service Objective	Infrastructure Summary	Current Status and Forecast
Fire Stations / Fleet Fair 	Provide fire protection and prevention services during emergency situations offering relief, assistance and education.	The City owns and operates five fire stations to provide fire protection and prevention services to residents, business and industry. Estimated replacement value is \$30 million.	Detailed condition assessments of fire station buildings were completed in 2017. The construction of fire station six is progressing well and scheduled for completion in 2018. The proposed 2018-2027 capital budget includes \$12 million to improve fire station buildings, fleet and equipment. An assessment to identify short and long term renewal needs for fire fleet and equipment is in progress and will be completed in 2018.

Nature and Environment



Infrastructure	Service Objective	Infrastructure Summary	Current Status and Forecast
Forestry, Horticulture and Natural Area Fair 	Maintain sustainable natural areas, and to promote urban forestry and good stewardship of the urban canopy program.	The City owns and maintains: <ul style="list-style-type: none"> • More than 63,250 trees • 25,000 square meters of horticultural beds • More than 150 planters • More than 413 hectares of parkland The urban canopy is estimated at 27% coverage as stated in the 2015 Urban Forest Plan. Estimated replacement value is \$32 million.	The condition of green infrastructure is fair. The City is engaged in implementing two long-term plans: the Urban Forest Plan (2015-2034) and the Emerald Ash Borer Action Plan. The proposed 2018-2027 capital budget provides adequate funding for the removal of trees affected by Emerald Ash Borer. Additional capital funding and continued community involvement will be required to maintain green canopy levels and implement the Urban Forest Plan.

Getting Stuff Done



Infrastructure	Service Objective	Infrastructure Summary	Current Status and Forecast
Corporate facilities, Fleet and IT infrastructure Good 	Provide the public with civic amenities, and provide City staff with a safe professional work environment, and the tools, equipment and technological infrastructure appropriate to provide reliable and accessible service to the public.	The City provides civic service through City Hall and Historic City Hall, located at 50 Dickson Street, and outside services through the Bishop Operations Centre and other satellite facilities. The City is responsible for capital maintenance of a number of facilities leased to local not-for-profit groups and businesses. The City also owns and maintains more than 200 vehicles and pieces of heavy construction equipment to provide community services (snow clearing, grass cutting and street sweeping, etc.), complete preventative maintenance and emergency repairs (water main breaks, etc.), and to maintain City infrastructure in good repair. The City also owns IT systems including hardware and software. Estimated replacement value is \$132 million.	The condition of corporate infrastructure is good. A facility maintenance reserve has been established to provide sustainable funding to maintain City facilities in good condition. In 2017, a number of corporate initiatives such as continuous improvement and Service Cambridge were undertaken to implement priorities identified through the corporate strategic plan. The City is also in the process of implementing an IT strategic plan. The proposed 2018-2027 capital budget provides adequate funding to maintain existing corporate infrastructure and to implement technology initiatives.