



Natural Spaces & Climate Adaptation

Part of the City of Kitchener's Parks Master Plan



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Spaces

Community Health & Wellness

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Acknowledgement

Places & Spaces is focused on the park service provided to the Kitchener community. Parks and open spaces are integral to communities, providing spaces where people play, explore, and build connections with the environment and with others.

The City is uniquely positioned to provide, care for, maintain, and secure public access to parks and open spaces for all members of its communities. The City of Kitchener recognizes that these public spaces are planned and built on land that is the traditional territory of the Chonnonton, Anishinaabe and Haudenosaunee Peoples. We recognize our responsibility to serve as stewards for the land and honour the original caretakers who came before us. Our community is enriched by the enduring knowledge and deep-rooted traditions of the diverse First Nations, Métis, and Inuit in Kitchener today. The significance of this land to Indigenous communities is respected, and we value the role that parks and open spaces can play in Reconciliation.

The City of Kitchener acts as a steward for almost 2,000 hectares of land as part of a parks and open space system. Through the implementation of Places & Spaces, we will work to better understand and address community needs and the barriers preventing use of these spaces, so that all community members in Kitchener might feel welcome, safe, and able to use our parks and open spaces.

The background of the slide is a photograph of a forest. The top half shows a dense canopy of green leaves, with sunlight filtering through. The bottom half shows a path made of dirt and fallen leaves, lined with tall, thin trees. The path leads into the distance, creating a sense of depth.

Introduction

This section focuses on the background information and specific details that inform the context for the recommendations made for this topic.

Background

With climate change comes more volatile weather events such as intense storms, more frequent freeze-thaw cycles, and increasing temperatures overall. In the wake of the resulting environmental, social, and economic risks, simply protecting and managing the natural environment is no longer enough. Climate change adaptation and mitigation strategies are needed. This requires intentional, ongoing, and city-wide approaches. Through several approved policies and strategies, the City of Kitchener has made specific commitments to manage, protect, and enhance natural assets, to proactively adapt to changing weather patterns resulting from climate change, and to reduce carbon emissions.

While other initiatives are already underway, alignment between these approved plans and the Parks Master Plan will support a cross-departmental collaboration to reach key goals and objectives already endorsed

by Council. This section of the Parks Master Plan will discuss recommendations related to how parks and open spaces can directly support these approved objectives.

Connected strategies

Sustainable Urban Forest Strategy (SUFS, 2019)

In January 2022, Council approved a tree canopy target of 30% in each ward by 2050 and a target of 33% across Kitchener by 2070. This targeted approach to growing the tree canopy over time will involve increasing the maintenance of existing trees and implementing a tree planting program with an equity-driven approach. This means planting more trees in areas of the city where they will have a greater impact on climate change mitigation, or in areas where people must rely on tree shade for their everyday well-being, promoting social equity. The City's partnership with Reep Green Solutions, an environmental not-for-profit that has been helping people in Waterloo Region live sustainably, subsidizes tree planting costs for residents so that more trees are planted on private property. Strategic implementation of the tree canopy targets has been underway since 2022. Current progress toward tree canopy targets can be viewed on the City of Kitchener's online urban forest map: [Discovering Our Urban Forest](#).

New trees require significant initial inputs such as adequate and good quality soil, watering, staking, and mulching for the first two years. Young trees require

structural pruning in the first 20 years to make them easier to manage as they mature. It takes several decades for investments in new trees to realize a return.



From a cost-benefit perspective, large-stature trees start to provide a return on the initial investments when they reach the semi-mature life stage (40 years).



Kitchener's Sustainable Urban Forest Strategy, 2019

City of Kitchener Official Plan, A Complete & Healthy Kitchener (2014); Kitchener 2051 (Underway)

Shade, as provided by mature trees and shade structures, is identified in Kitchener's Official Plan as an essential component when planning or retrofitting community facilities and public parks.

Kitchener Changing for Good; Our corporate climate action plan for sustainability (2019-2022); CorCAP 2.0 (underway)

Initiatives through the City's Corporate Climate Action Plan (CorCAP) have reduced greenhouse gas emissions through actions that transition the City's fleet, including

maintenance equipment used in parks, away from fossil fuel use. Work on fleet optimization continues through CorCAP.

Integrated Stormwater Master Plan (ISWM-MP, 2016)

In 2016, City of Kitchener Council approved a comprehensive, city-wide Integrated Stormwater Master Plan to manage stormwater for the next 15 years. This plan showed that only 25% of runoff in the city is managed through stormwater facilities. This means 75% of runoff from heavy rainfall and snow melt flows into storm sewers contaminating local creeks with surface pollutants picked up by water runoff.

The goals of the master plan include improved resilience against climate change and enhanced community safety. These goals will be achieved by improving water quality, reducing the risk of flooding by intercepting water before it rushes into creeks and streams and reducing erosion in watercourses. As we experience more intense storms and frequent freeze-thaw cycles, creating more space for stormwater to collect will reduce flooding and erosion and will allow suspended sediment to settle, releasing cleaner water into local creeks.

Actioning the 2016 ISWM-MP includes adding eight stormwater facilities to existing parks:

1. Cherry Park
2. Concordia Park
3. Country Hill Park
4. Countryside Park
5. Idlewood Park
6. Meadowlane Park
7. Millwood Park
8. Prospect Park

Parkland Naturalization pilot project (2022-present)

Work is already underway through the Parkland Naturalization Program, a pilot project, to transition select park areas to naturalization areas. The selected areas are currently hard to maintain as turf and present an opportunity to try alternatives such as native wildflower plantings.

What is biodiversity?

Biodiversity is the interconnectedness of all forms of life on our planet; is the variety of life in an ecosystem and the relationships between these lifeforms and their habitat. Biodiversity supports our food, our soil, our weather, and the air we breathe. Climate change has altered terrestrial, marine, and freshwater ecosystems around the world.

Biodiversity in parks and open spaces can be improved all over the city by intentionally supporting more diverse local plants and animals through naturalization.

What is naturalization?

Naturalization is the process of transforming a cultivated landscape to a naturalized one by reintroducing species native to a given area or that are well adapted to the climate of that area. Naturalized landscapes are designed to mimic natural habitats such as forests, wetlands, or meadows. They help support many types of plant, animal, and insect life. Natural areas that are biodiverse are more adaptable and resilient to climate change.

The City of Kitchener uses naturalization to bring ecological and aesthetic diversity of landscapes into public parks and open spaces. The City's naturalization priority is to create sustainable landscapes that increase biodiversity, strengthen corridors between natural areas, and increase access to nature in parks. By increasing biodiversity and pulling more carbon dioxide out of the environment, Kitchener's parks and open spaces can help reduce some of the negative impacts of climate change.

Simply protecting natural areas is no longer enough. Increasing area and improving the health of naturalized areas will create more sustainable parks while reducing traditional landscaping and long-term maintenance costs. However, on-going invasive species removal and management are essential parts of all naturalization initiatives, particularly during establishment.

While mown turf areas are typically used by the City to calculate and assess the overall provision of park space against target rates, engagement has demonstrated a shift in public understanding of what is considered useable park space. The outcomes of the Parkland Naturalization Pilot Project will help to determine the best way to expand the area of naturalized spaces while continuing to enhance park user experiences.

Turf areas and maintenance

Open turf areas are important in parks to support unprogrammed play and unstructured enjoyment of park spaces such as imagination games, gathering for a picnic, or enjoying a game of catch with friends.

Maintenance of turf areas is completed using several types of equipment including ride-on mowers for larger grass areas, and hand-held equipment such as line trimmers to complete detailing work. Cutting routes are completed on a two-to-four week rotation during the growing season. Ride-on mower routes and detailing routes are completed separately and may not be completed on the same day or week.

What is green infrastructure?

Green infrastructure is a collection of natural assets and built elements that provide environmental benefits in urban spaces. Built environmental interventions are sometimes called low-impact development (LID). The combination of natural assets and LID elements contributes to cities that are more resilient to climate change.

Green infrastructure increases the city's biodiversity, helps manage water quality and runoff, and contributes to health and wellness for people. This section of the Parks Master Plan will focus on natural assets and LID elements that can enhance a park's resilience to climate change, and contribute to visitor enjoyment, and environmental protection.



Examples of green infrastructure

Natural assets

1. Wetlands
2. Forests
3. Parks
4. Meadows
5. Lawns and gardens
6. Healthy soils

Low impact development

7. Rain gardens
8. Bioswales
9. Trees in the urban environment with soil cells
10. Naturalized stormwater management (SWM) ponds
11. Permeable Pavement
12. Perforated pipes
13. Infiltration trenches

We define green infrastructure as the natural vegetative systems and green technologies that collectively provide society with a multitude of economic, environmental, health, and social benefits.

Ontario Green Infrastructure Coalition



The Grand River watershed

The Grand River stretches 280 kilometers, connecting villages, towns, and cities; and forests, wetlands, and grasslands. Its meandering corridor is both a city boundary and a natural heritage feature and was designated as one of Canada's heritage rivers in 1994. The river has shaped the evolution and development of Kitchener as a city.

For thousands of years, the Grand River watershed and all its tributaries were a source of sustenance, transportation, and spiritual connection for Indigenous communities living on their traditional territories.

The Grand River is located within the bounds of the Between the Lakes Treaty, No. 3, established between the Crown and Mississaugas of the Credit in 1784 and ratified in 1792. Through the Haldimand Treaty of 1784 the Six Nations, which includes the Mohawk, Seneca, Oneida, Cayuga, Onondaga, and Tuscarora nations, were granted an area of 10 km on either side of the entire length of the Grand River in recognition of their support to the British during the American Revolution. This area is called the Haldimand Tract.

Any parks and open space use within the Haldimand Tract and Treaty lands must recognize and acknowledge the importance of these lands to First Nations rightsholders, and their role in opportunities for action toward Reconciliation. The Grand River remains an important cultural and spiritual place for First Nations rightsholders and Indigenous persons living and working in Kitchener today.

A vision for a continuous open-space network

The 2010 Parks Strategic Plan identified seven areas along the Grand River corridor that could complete the vision of a continuous public open space system along the river. It was recognized that protecting these lands as part of the river experience was not expected in the short or medium term, nor necessary to meet objectives outlined in the Official Plan. Completing the Grand River park strategy is an action toward the 2023-2026 Strategic Plan goals.

Grand River access points

In 2015, the Province of Ontario and Regional Tourism Organization 4 (RTO4) commissioned and published the

Grand River Access Point Standards Manual & Pilot Design Plans document. The goal of the document is to reinforce the importance of the Grand River as a destination for recreational tourism and aims to standardize each access point with similar design, layouts, signage, and facilities.

In total, 32 river access points were identified from Lake Belwood to the mouth of the river at Lake Erie, near Port Maitland.

Of those, five access point areas were identified in Kitchener:

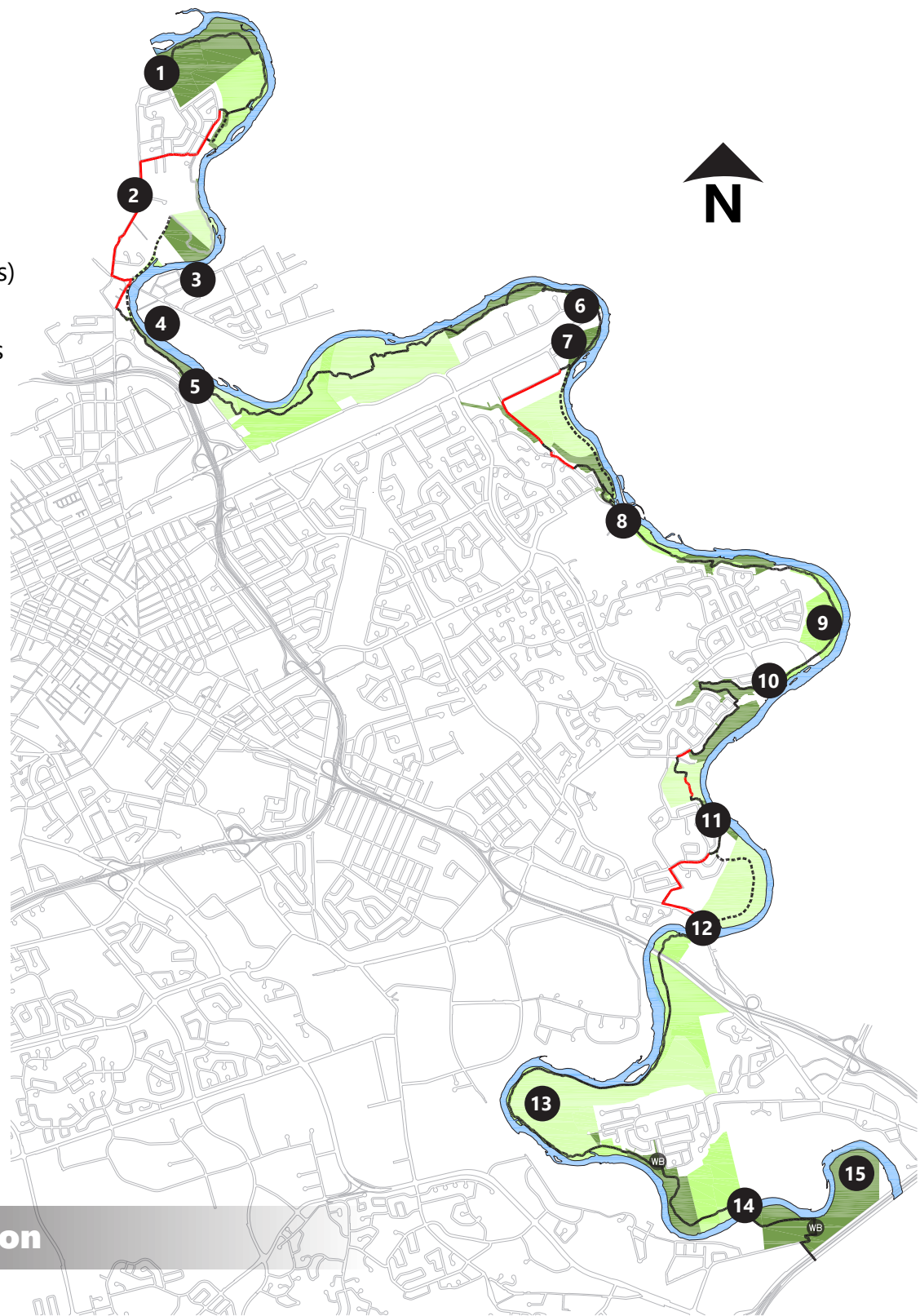
1. Bridgeport
2. Bingemans
3. Stanley Park Optimist Natural Area
4. Otterbein
5. Freeport

Since the standards were established, Kitchener developed the new Idlewood Access Point in 2020, and re-developed the existing Otterbein Access Point in 2023. The new and renovated access points offer improved accessibility, signage, temporary canoe storage, and washroom facilities.



Grand River corridor open space system

1. Kiwanis Park
2. Walter Bean Grand River Trail (on-road bypass)
3. Schaefer Park
4. Joe Thompson Park & Bridgeport Sportsfields
5. Riverbend Drive Viewpoint
6. Stanley Park Optimist Natural Area
7. Kolb Park
8. Otterbein Access Point (Region of Waterloo)
9. Grand River Flats (GRCA)
10. Idlewood Access Point
11. Chicopee-Vale Viewpoint
12. Freeport Access Point
13. Deer Ridge Trail (GRCA)
14. Pioneer Tower bridge
15. Doon Valley Golf Course







Data Sources

This section highlights the relevant sources of information and research used to develop recommendations for this topic. A total of 12 data sources, including engagement, have informed the Parks Master Plan recommendations. For more detailed information on each data source, please refer to the Places booklet.



Legislation



Equitable engagement



Engagement with the broader community



Engagement with City of Kitchener departments



Engagement with partner organizations



Comparative analysis



External research



Policy



City of Kitchener strategies



Region of Waterloo strategies



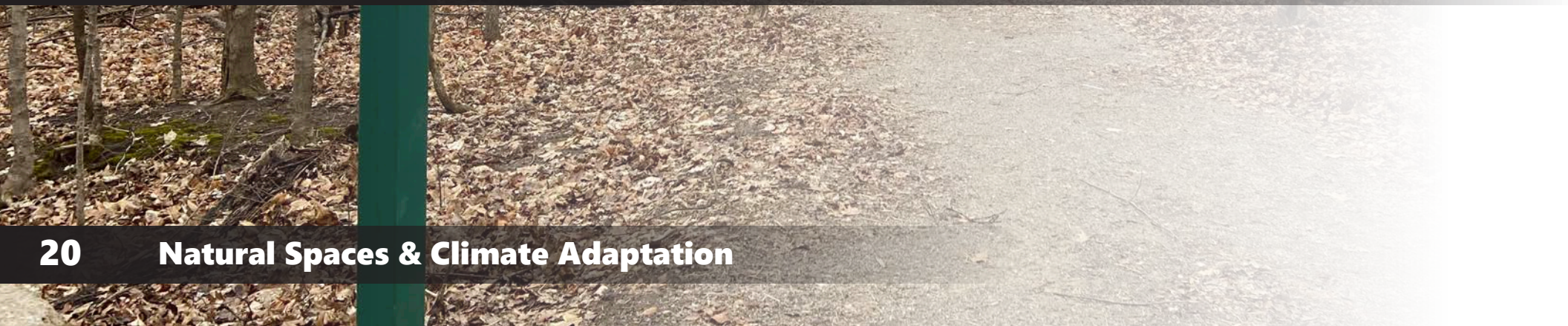
Best practices



City of Kitchener staff experience



Findings



Several themes emerged across topic areas, engagement audiences, and data collection methods. The following section reflects major themes that cut across several datasets from engagement methods. Findings relevant to more than one theme are reflected in each. For more detailed information on the overall engagement effort, please refer to the Places booklet.

Inclusion

Through engagement, there was strong support for more opportunities to interact with nature and naturalized spaces in parks both for ecological benefit and because they are considered part of unstructured play experiences in parks. Through public feedback, respondents most often described their current play in parks in a similar way to how they used to play in parks when they were young, including enjoying nature, naturalized spaces, and nature trails; enjoying picnic areas; and having places to sit in the shade.

Accessibility

Shade was a main conversation topic among community advocate consultation group participants, particularly as a means of creating accessible and welcoming parks. Key considerations for increasing shade in parks include:

- Considering how shade can decrease visibility which can both provide privacy and also decrease feelings of safety;
- Ensure accessibility of shaded areas;
- Equitable distribution of shade;
- Natural and artificial shade;
- Shade over play equipment, near public transit stops, and as a climate mitigation measure;
- Shady spaces to sit and rest, including benches with backs and picnic tables.



Environmental sustainability

This entire booklet is centred around environmental sustainability and therefore this theme is highlighted within other theme categories as well.

Public feedback highlighted the importance of creating more naturalized environments and park settings including wild spaces for ecosystems to thrive. Also important is for the City to invest in climate change mitigations like integrated stormwater management, permeable pavement, and rain gardens in parks.



Regardless of the improvements that you're hoping to make, please take care not to disrupt what little natural areas that we have.



Health and wellbeing

Changes to improve the environment will inherently improve the health & well-being of the public through improved air and water quality, flood prevention, cooling the environment on hot days, and contributing to climate change mitigation. The experience of a healthy ecosystem in the city can contribute to a person's overall well-being.



Regardless It's tough because it can provide a [habitat] for animals and insects and benefit biodiversity, but it can also cause problems with pests like mice and ticks.



Engagement highlighted that respondents are satisfied to very satisfied with grass quality and mowing frequency. The top concern among respondents if grass in parks is left to grow longer is ticks followed by accessibility, and ease of cleaning up after pets. The top benefit was the positive environmental impact of natural spaces. City of Kitchener partner conversations highlighted the importance of setting realistic maintenance expectations for turf areas.

Information

Establishing new naturalization areas can take several years of active management and it can take time for the area to look appealing. A key part of communicating the benefits of naturalization is to include signage and information for interested residents.

Engagement feedback highlighted the value of teaching people about the importance of natural spaces as well as the plants and animals that live there, with information about how natural spaces and parks contribute to social and physical health. Learning more about the health benefits of natural spaces and about their significance to local Indigenous culture is also important to respondents. Sharing information regarding natural spaces can support the environmental sustainability of nature.

Safety

Careful consideration of how shade can decrease visibility which can both provide privacy and also decrease feelings of safety was noted during engagement.

Stable paths of travel in naturalized areas is important for safe enjoyment of these spaces.

Partnerships

Collaboration among internal staff departments with overlapping policies and strategies, as well as with local community partners such as Reep Green Solutions is key to a coordinated effort to make progress toward positive climate adaptations city-wide.



Recommendations

This section summarizes the recommendations specific to this topic that are informed by the broad and local context, data sources, and findings. Each recommendation begins with a number representing the order in which its implementation is prioritized. For a comprehensive list of all recommendations made for this master plan update and the implementation framework, please refer to the Places booklet.

Parks and open spaces can continue to support achieving the targets set out by approved City policies, strategies, and master plans by deliberately incorporating natural assets and low impact development (LID) elements in renovated parks. This includes retrofitting integrated stormwater management, growing the urban forest in parks, and transitioning turf areas to meadow or naturalization areas. The future of green infrastructure in parks and open spaces is to comprehensively and proactively design spaces that balance environmental benefits with enjoyable park experiences.





Grow the urban tree canopy

Use parks and open spaces to help implement the Sustainable Urban Forest Strategy tree canopy targets.

The urban forest plays a vital role in supporting biodiversity and protecting wildlife habitats. Tree planting is a long-term investment and care must be taken to plan for and plant them correctly to ensure their long-term benefits. Trees are one of the most publicly supported investments in parks; however, new tree plantings are often the first to be considered for removal from a project scope to save on costs. By prioritizing tree plantings in new and renovated parks, this ongoing investment in a healthy urban tree canopy can provide ecological, health and wellness, and economic benefits.

Other LID approaches can be considered in urban developments as ways of enhancing growing space for trees in low canopy areas. Soil cell technologies, an LID approach for trees, are modular underground systems that

provide structural support under paved areas preventing the compaction of growing medium for trees planted in highly urban areas. Soil cells can accommodate underground utilities while providing enough space for roots to promote tree growth. Another example is to consider, where eligible spaces exist, areas to receive permeable pavement surfaces. These are pavements that are either porous surfaces, or are non-porous surfaces that have gaps to permit water to flow through the pavement. Permeable paving can support urban tree health by making water more available to tree roots in urban environments.

Continuing to advance the Sustainable Urban Forest Strategy (SUFS) tree canopy targets in parks and open spaces is critical to the success of quality park service delivery. Recognizing their long-term importance for the city will protect the specific inclusion of new tree plantings in eligible new and renovated park projects where identified in SUFS.

Acquire floodplain lots for open space network

Continue or initiate active pursuit of properties in targeted floodplain areas.

It remains a priority for the City to explore suitable acquisition opportunities in the Grand River corridor as part of a parkland acquisition strategy under development.

Continue Grand River access improvements

Prioritize and improve Grand River canoe launch access points to established standards.

The Grand River Access Point Standards Manual & Pilot Design Plans document identified five access points to the Grand River within Kitchener. Of those locations, two have been built to these standards: Idlewood Access Point and Otterbein Access Point.

Two existing access locations remain to be renovated: Stanley Park Optimist Natural Area, and Freeport Access Point. Committing to the renovations of these two access points will create accessible, consistent, and recognizable access points to the Grand River.

The Bridgeport area requires a further study of feasible locations for an access point.

10: Increase biodiversity in parks

Using an asset management approach, identify strategic parkland areas that can be transitioned to naturalized areas through park renovation projects. Design plantings to mimic nature as much as possible in species diversification.

Naturalized areas contribute to biodiversity and provide direct ecological benefits to humans. Natural landscapes are inherently low maintenance, are self-renewing and can continue to foster a sense of environmental stewardship for people in urban areas.

By proactively identifying more areas to naturalize in new and renovated parks during design stages a biodiversity management approach that reduces resources required to maintain turf over large areas can be resourced through park projects. When designed planting areas are considered in new or renovated parks, native species should be prioritized and plant selection informed through engagement with First Nations rightsholders and local urban Indigenous organizations.

20: Less intensive turf

Diversify turf species to improve biodiversity and reduce cutting rotations.

Transitioning away from large swaths of turf areas while also introducing turf seed mixtures that include more drought-tolerant plant species can reduce turf-cutting rotations. A reduction in cutting rotations will in turn reduce overall contributions to greenhouse gas emissions through operational practices, an action that is in alignment with CorCAP commitments.



The City of Kitchener's Corporate Climate Action Plan (CorCAP) aims to achieve meaningful and measurable carbon emission reductions throughout its operation, while also adapting to impacts resulting from climate change.



***Kitchener Changing for Good;
Our corporate climate action plan for
sustainability, 2019-2022***

22: Green infrastructure integration in existing parks

Establish integrated design and development standards and criteria for retrofit stormwater management adaptations, natural assets, and low-impact development (LID) in park spaces.

Retrofit stormwater management adaptations identified in the 2016 Integrated Stormwater Master Plan (ISWM-MP) have challenged the City to explore ways to add climate-adaptive infrastructure into parks while preserving valuable recreation and community spaces. “Sponge parks”, spaces that creatively incorporate stormwater function into park spaces, are being used successfully elsewhere in Canada and worldwide while also capturing the imagination of park visitors.

Creating forward-thinking design standards between recreation spaces and stormwater function inspired by a “sponge park” concept is key to successfully integrating climate-adaptive strategies in existing park spaces in Kitchener. With increasing environmental volatility comes the need to consider more city sites for inclusion of stormwater management and LID when renovation

opportunities are identified.

Open stormwater ponds are not accepted as parkland through new developments because they are engineered facilities that are subject to specific zoning and regulations for their maintenance. Stormwater management facilities, including but not limited to wet ponds and infiltration galleries, remain excluded as eligible parkland dedication in new developments.

Recommendations summary



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Use parks and open spaces to help implement the Sustainable Urban Forest Strategy tree canopy targets.



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Continue or initiate active pursuit of properties in targeted floodplain areas.



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Photo by Innertainment

