

2017 Kitchener's Sustainable Urban Forest Report Card



This report card has been adopted from the The Sustainable Urban Forest – A step-by-step approach
Part Vi – Conducting the Evaluation: Measuring Success (pg. 47).

References

Leff, Michael, September 27, 2016, The Sustainable Urban Forest – A step-by-step approach,
Davey Institute & United States Department of Agriculture, Forest Service.
http://www.itreetools.org/resources/content/Sustainable_Urban_Forest_Guide_14Nov2016.pdf

Kitchener's Sustainable Urban Forest Report Card - 2017

One of the first steps in developing a sustainable urban forest strategy is to identify the current state and gaps of the existing program. To aid in assessing existing programs municipalities in Ontario (e.g. Cambridge, London, Oakville, and Ottawa), Canada and the United States have been using an urban forest sustainability model first proposed in 1997 (Clark et al.) and refined (2011, 2016) as a starting point.

In developing its first urban forest strategy, Kitchener has also developed its first sustainable urban forest report card. The report card will:

- set a baseline position of where we are today;
- identify the key components of a sustainable urban forest;
- identify gaps, assets and areas of achievement;
- identify needs, opportunities and priorities based on available resources, and;
- monitor future progress.

The report card identifies twenty-eight targets that are organized into three categories; 1) Trees and Forests, 2) Community Framework, and 3) Resource Management Approach. Each target describes the key objective, and provides a description of the four performance targets (Low, Fair, Good, and Optimal). With the available background information staff scored each of the targets. The overall assigned score for 2017 is a “low” to “fair” rating.



Figure 1 - 2017 Sustainable Urban Forest Report Card

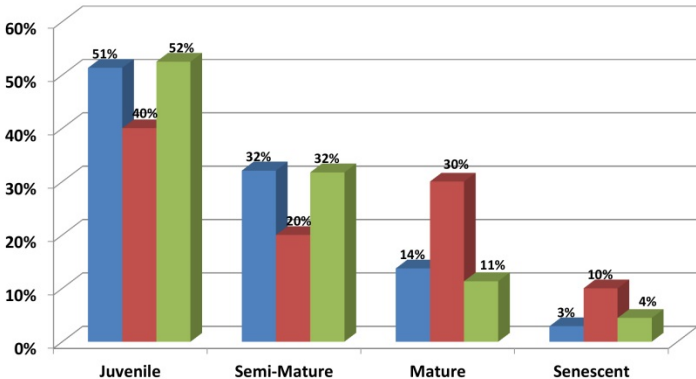
This low score is not surprising recognizing that Kitchener does not currently have an urban forest strategy which would prioritize and work towards improving on the other 27 targets for a sustainable urban forest.

On the next page, Table 1 (Pg3) provides a summary of the identified gaps and accomplishments of the existing program, while Table 2 (Pg4) lists all twenty-eight targets and their score. The remaining pages (5 to 16) provide more detail, including a description of the objective of each target, the ratings and background information. In the future this baseline data can be used to identify the progress being made as Kitchener works towards a sustainable urban forest program.

Table 1 - Summary of gaps and accomplishments

	PLAN for the future and existing urban forest	ENGAGE the community	PROTECT the existing and future urban forest	MAINTAIN and restore the existing urban forest	PLANT the future urban forest
Gaps	No urban forest strategy for public and private urban forest that identifies goals and priorities.	Lack of non-government agency to lead urban forestry issues on private lands is key gap.	With no plan there is no direction for city departments to work towards a sustainable urban forest.	Existing program is reactive, driven by customer complaints.	Existing tree planting is reactive with no plan or policies to direct.
	No canopy cover goal for city and neighbourhoods.	With no plan city goals and role on city and non-city lands is unclear. Significant potential to link with other city goals/programs.	With no plan there is no direction for utilities, contractors and homeowners to employ best practices.	No defined service levels based on the required proactive maintenance for each life stage.	Tree planting is not linked to tree canopy goals, environmental justice and equity, etc.
	No asset management plan for city trees, with plans developed at neighbourhood and natural area level.	While people like trees the level of advocacy and understanding is limited.	No practices / program to protect city trees, except engineering reconstruction.	Unable to meet customer expectations (length of time to remove, stump & replant)	Species diversity and suitability to minimize future costs and risks (e.g. climate change) are not addressed
	Existing operating and capital funding driven by reactive management that has no plan.	No cooperation with other key players (e.g. citizens, business, green industry, region, agencies).	Limited or no best practices in place to maximize benefits and minimize cost/risks.	Street & park trees are not inspected or maintained on a cyclical basis.	Trees are selected and planted without consideration to soil or site conditions.
	No sample based inventory of private lands	Outdated myths (e.g. tree planting is easy) challenge moving towards a sustainable program.	No policies and practices in place for public use and encroachments in natural areas.	Natural area management and required maintenance is reactive.	Restoration and planting in natural areas needs to be tied to strategy, goals and priorities.
Achievements	Inventory of street and park trees, however data is out of date.	Kitchener's Natural Areas Program re stewardship & education	Tree conservation during development occurs through a number of tools.	Cost savings achieved through proactive EAB tree removal program.	New soil quality / quantity standards put in subdivision manual.
	Recent natural area inventories. Data needs to be linked to strategy.	Adopt a tree program supports residents watering trees – requires more support.	City bylaw for city trees, however bylaw is dated.	Trees recognized as a corporate asset	New tree watering program implemented but lacks required capacity.
	LiDar based tree canopy data tied to GIS		Urban forest recognized in City Official Plan	Working towards data driven maintenance system.	

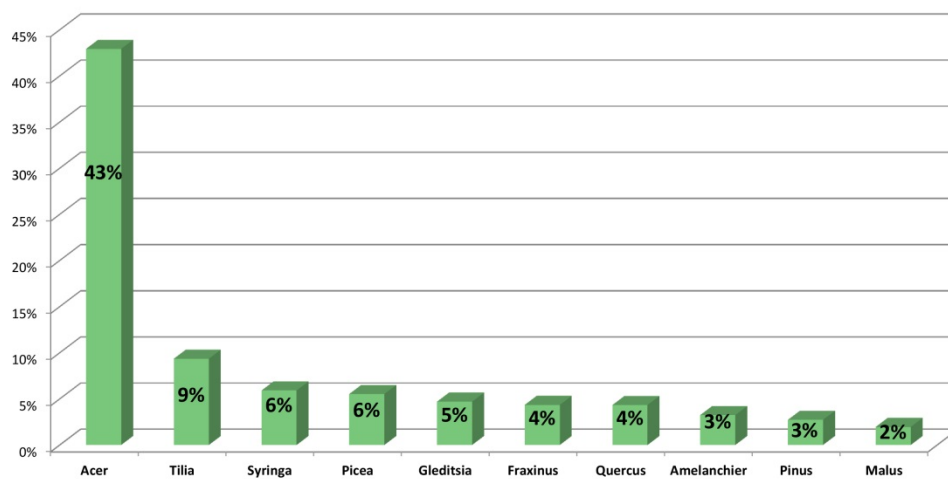
Table 1 - Kitchener's 2017 Sustainable Urban Forest Report Card		Legend
This table compares Kitchener's existing program to the 28 targets for a sustainable urban forest. Underlined targets (T5, T6, T7, R2, R9) are targets that do fully fit in the lower target rating, part of target was rated higher. For details refer to the full report listed in the reference section.		Low
		Fair
		Good
		Optimal
#	Target	2017 Rating
Trees & Forests		
T1	Relative tree canopy cover	not assigned
T2	Age diversity (Size class distribution)	Low
T3	Species diversity	Low
T4	Species suitability	not assigned
T5	<u>Publicly owned trees</u>	<u>Low</u>
T6	<u>Publicly owned natural areas</u>	Fair
T7	<u>Trees on private property</u>	<u>Low</u>
Community Framework		
C1	Municipal agency cooperation	Fair
C2	Utilities cooperation	Low
C3	Green industry cooperation	Low
C4	Involvement of large private and institutional landholders	Low
C5	Citizen involvement and neighborhood action	Fair
C6	General appreciation of trees as a community resource	Fair
C7	Regional collaboration	Low
Resource Management (Asset Management)		
R1	Tree inventory	Fair
R2	<u>Canopy cover assessment and goals</u>	<u>Low</u>
R3	Environmental justice and equity	Low
R4	Municipal-wide urban forestry management plan	Low
R5	Municipal-wide urban forestry funding	Fair
R6	Municipal urban forestry program capacity	Low
R7	Tree establishment planning and implementation	Fair
R8	Growing site suitability	Low
R9	<u>Tree protection policy development and enforcement</u>	<u>Low</u>
R10	Maintenance of publicly owned, intensively managed trees	Fair
R11	Management of publicly owned natural areas	Fair
R12	Tree risk management	Low
R13	Urban wood and green waste utilization	Fair
R14	Native vegetation	Fair

1. Trees & Forests – Targets related to the status of the vegetation resource itself and/or knowledge of that resource.																										
#	Target	Key objective	2017 Rating																							
			Low	Fair	Good	Optimal																				
T1	Relative tree canopy cover	Achieve desired degree of tree cover, based on potential or according to goals set for entire municipality and for each neighborhood or land use.	The existing canopy cover for entire municipality is <50% of the desired canopy.	The existing canopy is 50%-75% of desired.	The existing canopy is >75%-100% of desired.	The existing canopy is >75%-100% of desired – at individual neighborhood level as well as overall municipality.																				
This target was assigned no performance rating because no tree canopy cover goal has been set. In 2014 Kitchener’s tree canopy cover was 26%, prior to the full impacts of Emerald ash borer. It is unclear whether Kitchener’s canopy cover has been increasing or decreasing over time. For more information refer to pages 25-26 of Background Document and the urban forest storymaps www.kitchener.ca/trees.																										
T2	Age diversity (Size class distribution)	Provide for ideal uneven age distribution of all “intensively” (or individually) managed trees – municipality-wide as well as at neighborhood level.	Even-age distribution, or highly skewed toward a single age class (maturity stage) across entire population.	Some uneven distribution, but most of the tree population falls into a single age class.	Total tree population across municipality approaches an ideal age distribution of 40% juvenile, 30% semi-mature, 20% mature, and 10% senescent.	Total population approaches that ideal distribution municipality-wide as well as at the neighborhood level.																				
Age Distribution by Percent Population ■ Street Trees ■ Ideal ■ Park Trees <table><thead><tr><th>Age Class</th><th>Street Trees</th><th>Ideal</th><th>Park Trees</th></tr></thead><tbody><tr><td>Juvenile</td><td>51%</td><td>40%</td><td>52%</td></tr><tr><td>Semi-Mature</td><td>32%</td><td>20%</td><td>32%</td></tr><tr><td>Mature</td><td>14%</td><td>30%</td><td>11%</td></tr><tr><td>Senescent</td><td>3%</td><td>10%</td><td>4%</td></tr></tbody></table>							Age Class	Street Trees	Ideal	Park Trees	Juvenile	51%	40%	52%	Semi-Mature	32%	20%	32%	Mature	14%	30%	11%	Senescent	3%	10%	4%
Age Class	Street Trees	Ideal	Park Trees																							
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This target was assigned a “low” performance rating because that age diversity is highly skewed towards the juvenile and semi-mature life stages. This data is taken from the city tree inventory and only reflects the age diversity of the city’s street and park trees. Analysis does not include other city lands (cemeteries, golf courses) or trees on private lands.																										

1. Trees & Forests – Targets related to the status of the vegetation resource itself and/or knowledge of that resource.

#	Target	Key objective	2017 Rating			
			Low	Fair	Good	Optimal
T3	Species diversity	Establish a genetically diverse tree population across municipality as well as at the neighborhood level.	Five or fewer species dominate the entire tree population across municipality.	No single species represents more than 10% of total tree population; no genus more than 20%; and no family more than 30%.	No single species represents more than 5% of total tree population; no genus more than 10%; and no family more than 15%.	At least as diverse as “Good” rating (5/10/15) municipality-wide – <i>and</i> at least as diverse as “Fair” (10/20/30) at the neighborhood level.

T3 – Street & Park Tree Species Diversity by Genus



This target was assigned a “low” performance rating because 43% of the trees along city streets and parks are from the Acer (maple) genus. This data is taken from the city tree inventory and only reflects the age diversity of the city’s street and park trees. Analysis does not include other city lands (cemeteries, golf courses) or trees on private lands.

T4	Species suitability	Establish a tree population suited to the urban environment and adapted to the overall region.	Fewer than 50% of all trees are from species considered suitable for the area.	>50%-75% of trees are from species suitable for the area.	More than 75% of trees are suitable for the area.	Virtually all trees are suitable for the area.
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This target was assigned no performance rating because no species suitability list has been developed. Species suitability is directly related to two of the challenges identified in the Background Document; Soil Quality & Quantity (page 32) and Climate Change (page 34).

1. Trees & Forests – Targets related to the status of the vegetation resource itself and/or knowledge of that resource.						
#	Target	Key objective	2017 Rating			
			Low	Fair	Good	Optimal
T5	<u>Publicly owned trees (e.g. street & park trees)</u>	Current and detailed understanding of the condition and risk potential of all publicly owned trees that are managed intensively (or individually).	Condition of urban forest is unknown.	Sample-based tree inventory indicating tree condition and risk level.	Complete tree inventory that includes detailed tree condition ratings.	Complete tree inventory that is GIS-based and includes detailed tree condition as well as risk ratings.
The performance indicator for this target was assigned a low to good rating. While the city did inventory its street and park trees (good) between 2007 and 2012, the data has become dated (low) because the inventory has not been maintained or linked to the city's work order system. Some city owned tree assets (e.g. cemeteries, golf courses, etc.) have also not been inventoried. Collecting and maintaining the required data is a key element of an asset management program						
T6	<u>Publicly owned natural areas</u>	Detailed understanding of the ecological structure and function of all publicly owned natural areas (such as woodlands, ravines, stream corridors, etc.), as well as usage patterns.	No information about publicly owned natural areas.	Publicly owned natural areas identified in a "natural areas survey" or similar document.	Survey document also tracks level and type of public use in publicly owned natural areas.	In addition to usage patterns, ecological structure and function of all publicly owned natural areas are also assessed and documented.
The performance indicator for this target is assigned a fair to optimal rating. While some natural areas have had detailed permanent sample plot data collected (optimal) other areas have not been inventoried and key information concerning public use and trails has not been maintained, or ever collected (fair). This data is currently not integrated with Cityworks and has limited integration with the city's GIS / corporate data base system.						
T7	<u>Trees on private property</u>	Understanding of extent, location, and general condition of privately owned trees across the urban forest.	No information about privately owned trees.	Aerial, point-based assessment of trees on private property, capturing overall extent and location.	Bottom-up, sample-based assessment of trees on private property, as well as basic aerial view (as described in "Fair" rating).	Bottom-up, sample-based assessment on private property, as well as detailed Urban Tree Canopy (UTC) analysis of entire urban forest, integrated into municipality-wide GIS system.
The performance indicator for this target is assigned a low to optimal rating. While the city has detailed information, including LiDAR analysis for the city's urban tree canopy(optimal), it has not completed a bottom up, sample based tree assessment on private property (iTree Eco) a key element required to establish a realistic tree canopy cover goal, along with identifying the current economic, environmental and social benefits the urban forest provides (low).						

2. Community Framework – the necessary engagement of stakeholders at all levels and collaboration among them.						
#	Target	Key objective	2017 Rating			
			Low	Fair	Good	Optimal
C1	Municipal agency cooperation	All municipal departments and agencies cooperate to advance goals related to urban forest issues and opportunities.	Municipal departments / agencies take actions impacting urban forests with no cross departmental coordination or consideration of the urban forest resource.	Municipal departments / agencies recognize potential conflicts and reach out to urban forest managers on an ad hoc basis and vice versa.	Informal teams among departments and agencies communicate regularly and collaborate on a project specific basis.	Municipal policy implemented by formal inter department / internal agency working teams on all municipal projects.
The performance indicator for this target is assigned a fair rating because there is currently no coordinated collaboration between city departments and groups regarding urban forestry. The roles and responsibilities for urban forestry are also not clearly defined. At the same time in recent years there has been an increased awareness and interest in the urban forestry across city departments.						
C2	Utilities cooperation	All utilities – above and below ground – employ best management practices and cooperate with municipality to advance goals and objectives related to urban forest issues and opportunities	Utilities take actions impacting urban forest with no municipal coordination or consideration of the urban forest resource.	Utilities employ best management practices, recognize potential municipal conflicts, and reach out to urban forest managers on an ad hoc basis – and vice versa.	Utilities are included in informal municipal teams that communicate regularly and collaborate on a project-specific basis.	Utilities help advance urban forestry goals and objectives by participating in formal interdepartmental / interagency working teams on all municipal projects.
The performance indicator for this target is assigned a low rating because, with the exception of City of Kitchener Engineering road reconstruction projects, there is no municipal coordination to protect trees during activities that could impact city trees. While Kitchener's Tree Bylaw (Chapter 690) requires that city trees be protected this bylaw is not enforced and there are no associated policies or programs to protect city trees.						
C3	Green industry cooperation	Green industry works together to advance municipality-wide urban forest goals and objectives, and adheres to high professional standards.	Little or no cooperation among segments of green industry or awareness of municipality-wide urban forest goals and objectives.	Some cooperation among green industry as well as general awareness and acceptance of municipality-wide goals and objectives.	Specific collaborative arrangements across segments of green industry in support of municipality-wide goals and objectives.	Shared vision and goals and extensive committed partnerships in place. Solid adherence to high professional standards.
The performance indicator for this target is assigned a low rating because, there is no municipal wide plan urban forestry plan that encourages the green industry to work towards. At the same time, many members of the green industry are members of associations (e.g. International Society of Arboriculture) that promote the practice of high professional standards (e.g. Certified Arborist).						

2. Community Framework – the necessary engagement of stakeholders at all levels and collaboration among them.						
#	Target	Key objective	2017 Rating			
			Low	Fair	Good	Optimal
C4	Involvement of large private and institutional landholders	Large private landholders embrace and advance municipality-wide urban forest goals and objectives by implementing specific resource management plans.	Large private landholders are generally uninformed about urban forest issues and opportunities.	Municipality conducts outreach directly to landholders with educational materials and technical assistance, providing clear goals and incentives for managing their tree resource.	Landholders develop comprehensive tree management plans (including funding strategies) that advance municipality-wide urban forest goals.	As described in “Good” rating, plus active community engagement and access to the property’s forest resource.
The performance indicator for this target is assigned a low rating because; there is no municipal wide urban forest plan that identifies the importance and value of working with large private and institutional landholders.						
C5	Citizen involvement and neighborhood action	At the neighborhood level, citizens participate and groups collaborate with the municipality and/or its partnering NGOs in urban forest management activities to advance municipality-wide plans.	Little or no citizen involvement or neighborhood action.	Some neighborhood groups engaged in advancing urban forest goals, but with little or no overall coordination with or direction by municipality or its partnering NGOs.	Many active neighborhood groups engaged across the community, with actions coordinated or led by municipality and/or its partnering NGOs.	Proactive outreach and coordination efforts by municipality and NGO partners resulting in widespread citizen involvement and collaboration among active neighborhood groups engaged in urban forest management.
The performance indicator for this target is assigned a fair rating because, there is no municipal wide plan with defined goals and objectives, however city staff do meet with groups when requested. Some community grants provide opportunities for citizens/groups to plant trees. The recent approval of the neighbourhood strategy places a high level of importance on connecting, engaging and supporting neighbourhood action. As part of the engagement process citizens and groups are being contacted and informed about this project. There is also no non-government agency that is taking the lead for urban forestry stewardship on private lands at this time.						

2. Community Framework – the necessary engagement of stakeholders at all levels and collaboration among them.						
#	Target	Key objective	2017 Rating			
			Low	Fair	Good	Optimal
C6	General appreciation of trees as a community resource	Stakeholders from all sectors and constituencies within municipality – private and public, commercial and nonprofit, entrepreneurs and elected officials, community groups and individual citizens – understand, appreciate, and advocate for the role and importance of the urban forest as a resource.	General ambivalence or negative attitudes about trees, which are perceived as neutral at best or as the source of problems. Actions harmful to trees may be taken deliberately.	Trees generally recognized as important and beneficial.	Trees widely acknowledged as providing environmental, social, and economic services – resulting in some action or advocacy in support of the urban forest.	Urban forest recognized as vital to the community's environmental, social, and economic well-being. Widespread public and political support and advocacy for trees, resulting in strong policies and plans that advance the viability and sustainability of the entire urban forest.
The performance indicator for this target is assigned a fair rating because the community does recognize trees as being important and beneficial, however the majority of residents do not fully recognize the significant economic, environmental and social benefits trees provide the community. A key part of the first phase of engagement is identifying and promoting the ten ways trees help us (biodiversity & wildlife, climate change, stormwater, air quality, soil quality, real estate, public health, cooling the air, food & wood, community well-being)						
C7	Regional collaboration	Cooperation and interaction on urban forest plans among neighboring municipalities within a region, and/or with regional agencies.	Municipalities have no interaction with each other or the broader region. No regional planning or coordination on urban forestry.	Some neighboring municipalities and regional agencies share similar policies and plans related to trees and urban forest.	Some urban forest planning and cooperation across municipalities and regional agencies.	Widespread regional cooperation resulting in development and implementation of regional urban forest strategy.
The performance indicator for this target is assigned a low rating because there is no regional urban forest plan that coordinates municipal action and interaction is limited and focused on specific issues. Recently (2015) the City of Cambridge approved its urban forest management plan.						

3. Resource Management Approach – Plans, practices, and policies to improve and sustain the forest resource.

#	Target	Key objective	2017 Rating			
			Low	Fair	Good	Optimal
R1	Tree inventory	Current and comprehensive inventory of tree resource to guide its management, including data such as age distribution, species mix, tree condition, and risk assessment.	No inventory.	Complete or sample-based inventory of publicly owned trees.	Complete inventory of publicly owned trees and sample-based privately owned trees that is guiding management decisions.	Systematic comprehensive inventory system of entire urban forest – with information tailored to users and supported by mapping in municipality-wide GIS system.

The performance indicator for this target is assigned a fair rating because while the city has an inventory (location, species, diameter, health & structural condition, maintenance) of city trees (streets, parks), that data has become dated and there is currently no sample based inventory of privately owned trees (e.g. iTree Eco). Moving to an asset management framework the tree inventory will play a key role in guiding future management decisions.

3. Resource Management Approach – Plans, practices, and policies to improve and sustain the forest resource.

#	Target	Key objective	2017 Rating			
			Low	Fair	Good	Optimal
R2	<u>Canopy cover assessment and goals</u>	Urban forest policy and practice driven by accurate, high-resolution, and recent assessments of existing and potential canopy cover, with comprehensive goals municipality-wide and at neighborhood or smaller management level.	No assessment or goals.	Low-resolution and/or point-based sampling of canopy cover using aerial photographs or satellite imagery – and limited or no goal-setting.	Complete, detailed, and spatially explicit, high-resolution Urban Tree Canopy (UTC) assessment based on enhanced data (such as LiDAR) – accompanied by comprehensive set of goals by land use and other parameters.	As described for “Good” rating – and all utilized effectively to drive urban forest policy and practice municipality-wide and at neighborhood or smaller management level.

The performance indicator for this target is assigned a low to good rating, while the city does has completed a detailed canopy study, based on 2014 information, and includes LiDAR analysis (good), it has not established a set of canopy cover goals (low) city wide and at the neighbourhood level (planning communities). The LiDAR technology allows cities to accurately identify the existing and potential tree canopy for each land parcel.

3. Resource Management Approach – Plans, practices, and policies to improve and sustain the forest resource.						
#	Target	Key objective	2017 Rating			
			Low	Fair	Good	Optimal
R3	Environmental justice and equity	Ensure that the benefits of urban forests are made available to all, especially to those in greatest need of tree benefits.	Tree planting and outreach is not determined equitably by canopy cover or need for benefits.	Planting and outreach includes attention to low canopy neighborhoods or areas.	Planting and outreach targets neighborhoods with low canopy and a high need for tree benefits.	Equitable planting and outreach at the neighborhood level is guided by strong citizen engagement in those low-canopy/high-need areas.
The performance indicator for this target is assigned a low rating because tree planting and outreach is not determined by equity or needs. Currently tree planting is driven by service requests to replace trees that have been removed and requests for new trees.						
#	Target	Key objective	2017 Rating			
			Low	Fair	Good	Optimal
R4	Municipal-wide urban forestry management plan	Develop and implement a comprehensive urban forest management plan for public and private property.	No plan.	Existing plan limited in scope and implementation.	Recent comprehensive plan developed and implemented for publicly owned forest resources, including trees managed intensively (or individually) and those managed extensively, as a population (e.g., trees in natural areas).	Strategic, multi-tiered plan with built-in adaptive management mechanisms developed and implemented for public and private forest resources.
The performance indicator for this target is assigned a low rating because the city does not have an urban forest management plan. This project will develop Kitchener's first urban forest strategy. The lack of a plan directly limits the ability to work towards the other 27 identified targets.						
R5	Municipal-wide urban forestry funding	Develop and maintain adequate funding to implement municipality-wide urban forest management plan.	Little or no dedicated funding.	Funding only for emergency, reactive management.	Funding sufficient for some proactive management based on urban forest management plan.	Sustained funding from public and private sources to fully implement comprehensive urban forest management plan.
The performance indicator for this target is assigned a fair rating because Kitchener's existing urban forestry program is a reactive program driven by customer complaints and emergencies. A significant backlog of work has been identified and will increase as the young street tree population grows. With no plan in place funding to date for urban forestry has been reactive to specific issues.						

3. Resource Management Approach – Plans, practices, and policies to improve and sustain the forest resource.						
#	Target	Key objective	2017 Rating			
			Low	Fair	Good	Optimal
R6	Municipal urban forestry program capacity	Maintain sufficient well-trained personnel and equipment – whether in-house or through contracted or volunteer services – to implement municipality-wide urban forest management plan.	Team severely limited by lack of personnel and/or access to adequate equipment. Unable to perform adequate maintenance, let alone implement new goals.	Team limited by lack of trained staff and/or access to adequate equipment.	Team able to implement many of the goals and objectives of the urban forest management plan.	Team able to implement all of the goals and objectives of the urban forest management plan.
The performance indicator for this target is assigned a low rating because the city does not have a plan in place, is a reactive program driven by customer complaints, is unable to address the existing backlog, with no capacity to implement new goals.						
R7	Tree establishment planning and implementation	Comprehensive and effective tree planting and establishment program is driven by canopy cover goals and other considerations according to plan.	Little or no tree planting; tree establishment is <i>ad hoc</i> .	Some tree planting and establishment occurs, but with limited overall municipality-wide planning and post-planting care.	Tree planting plan is guided by municipality-wide goals, with some post-planting establishment care.	Comprehensive tree establishment plan is guided by needs derived from canopy and other assessments, maintains species and age diversity, includes both planting and young tree care, and is sufficient to make progress toward canopy cover objectives.
The performance indicator for this target is assigned a fair rating because the city does not have an urban forest management plan that identifies the goals and objectives of tree planting, including the link between tree planting and the setting of a canopy cover goal. Some post planting care tree watering has been undertaken but the program is not fully developed and does not have the capacity to water all trees planted. The importance of such programs is expected to increase in future years as the climate changes and there is an increased frequency of droughts during the spring, summer and fall. The lack of established minimum best practices for the different types of tree planting required across the city is also a key gap.						

3. Resource Management Approach – Plans, practices, and policies to improve and sustain the forest resource.

#	Target	Key objective	2017 Rating			
			Low	Fair	Good	Optimal
R8	Growing site suitability	All publicly owned trees are selected for each site and planted in conditions that are modified as needed to ensure survival and maximize current and future tree benefits.	Trees selected and planted without consideration of site conditions.	Appropriate tree species are considered in site selection.	Municipality-wide guidelines in place for the improvement of planting site conditions and selection of suitable species.	All trees planted in sites with adequate soil quality and quantity, and with sufficient growing space and overall site conditions to achieve their genetic potential and thus provide maximum ecosystem services.

This target was assigned a “low” performance rating because in most cases trees are selected and planted without consideration to site conditions. Site conditions vary widely across the city, in older areas of the city tree planting is relatively easy, however in new areas there can be significant challenges and limitations due to site conditions. This problem has been started to be addressed through putting in place new soil quality and volume requirements for subdivisions through the Development Manual. Additional work in this area is required including implementing a rapid soil assessment process and soil database that will guide the selection of the tree species along with management/restoration practices to improve the structure, function and biological processes of disturbed soil across the city.

R9	<u>Tree protection policy development and enforcement</u>	The benefits derived from trees on public and private land are ensured by the enforcement of municipality-wide policies, including tree care “best management practices.”	No tree protection policy	Policies in place to protect public trees and employ industry best management practices, but inconsistently enforced.	Policies and practices in place to protect public and private trees, generally enforced.	Integrated municipality-wide policies and practices to protect public and private trees, consistently enforced and supported by significant deterrents.
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This target was assigned a low to good rating because while the city does have policies through the planning department that protect trees on private lands(good), the protection of city trees is limited (low). While the City does have a tree bylaw (2001) for city trees (Chapter 790 – Trees), it does not have best management practices in place to protect city trees (except for city engineering reconstruction projects). For private lands, under the direction of the Planning Department the Tree Conservation Bylaw controls the removal of trees for properties 0.405 hectares (1 acre) and larger and the Tree Management Policy protects and enhances the treed landscape and woodlands during the development process. At this time the city does not have a private tree bylaw that controls the removal of individual trees on private lands.

3. Resource Management Approach – Plans, practices, and policies to improve and sustain the forest resource.

#	Target	Key objective	2017 Rating			
			Low	Fair	Good	Optimal
R10	Maintenance of city owned street and park trees	All publicly owned, intensively (or individually) managed trees are well maintained for optimal health and condition in order to extend longevity and maximize current and future benefits.	No maintenance of publicly owned trees, or on a reactive basis only.	Publicly owned trees receive only periodic inspection and maintenance.	Publicly owned trees are inspected and proactively maintained on a cyclical basis.	All publicly owned, intensively managed trees are routinely and thoroughly maintained on ongoing basis according to comprehensive management plan.
This target was assigned a “fair” performance rating because City trees along streets and in parks receive only periodic inspection and maintenance. The existing maintenance program for city owned street and park trees is a reactive program that is driven by customer complaints. Inspections and maintenance occurs when customers identify a problem, or when staff note issues during their regular work. The lack of an urban forest strategy and asset management plan compounds existing issues and supports maintaining a reactive program.						
R11	Management of city owned natural areas*	The ecological integrity of all publicly owned natural areas is protected and enhanced – while accommodating public use where appropriate.	No natural areas management plans or implementation in effect.	Only reactive management efforts to facilitate public use (e.g., hazard abatement, trail maintenance).	Management plan in place for each publicly owned natural area to facilitate appropriate public use.	Management plan for each publicly owned natural area focused on sustaining and, where possible, improving overall ecological integrity (i.e., structure and function) – while facilitating appropriate public use.
This target was assigned a “fair” performance rating because maintenance and management activities within city natural areas are primarily reactive. A few management plans for natural areas have been developed, however there is currently no overall plan that identifies core services, and management/maintenance priorities. With few customer complaints received for natural areas the amount of work carried out in these areas has been limited. The city has developed a natural areas program that supports natural area stewardship and community awareness. With extensive development in the south end of Kitchener the total hectares of natural area the city is responsible for has increased significantly in recent years.						

3. Resource Management Approach – Plans, practices, and policies to improve and sustain the forest resource.

#	Target	Key objective	2017 Rating			
			Low	Fair	Good	Optimal
R12	Tree risk management	Comprehensive tree risk management program fully implemented, according to ANSI A300 (Part 9) “Tree Risk Assessment” standards, and supporting industry best management practices.	No tree risk assessment or risk management program. Response is on a reactive basis only.	Level 1 (limited visual assessment) inspection and follow-up conducted periodically.	Level 2 (basic assessment) conducted periodically, resulting in scheduled follow-ups.	Level 3 (basic assessment) conducted routinely, according to defined cycle and intensive follow-up (i.e., priorities and timelines for mitigation established based on the characterization of risk).
This target was assigned a “low” performance rating because the city does not have a tree risk management program. Response to tree risk is on a reactive basis based on service requests, or issues identified by staff.						
R13	Urban wood and green waste utilization	Create a closed system diverting all urban wood and green waste through reuse and recycling.	No utilization plan; wood and other green waste goes to landfill with little or no recycling and reuse.	While most green waste does not go to landfill, uses are limited to chips or mulch.	The majority of green waste is reused or recycled – for energy, products, and other purposes beyond chips or mulch.	Comprehensive plan and processes in place to utilize all green waste one way or another, to the fullest extent possible.
This target was assigned a “fair” performance rating because while green waste from city trees does not go to the landfill its use is limited to chips and mulch.						
R14	Native vegetation	Preservation and enhancement of local natural biodiversity.	No coordinated focus on native vegetation.	Voluntary use of native species on publicly and privately owned lands; invasive species are recognized.	Use of native species is encouraged on a project-appropriate basis in all areas; invasive species are recognized and discouraged on public and private lands.	Native species are widely used on a project-appropriate basis in all areas; invasive species are proactively managed for eradication to the full extent possible.
This target was assigned a “fair” performance rating because the problems associated with invasive species is recognized but the use of native species on public and privately owned lands is voluntary.						