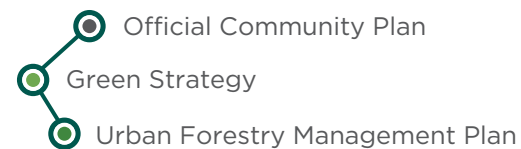


URBAN FORESTRY MANAGEMENT PLAN





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EXECUTIVE SUMMARY

Saskatoon's urban forest, including trees on public and private land, is of great environmental, social, and economic value. The trees store and sequester over 708,000 tonnes of carbon annually, provide a sense of community, and can contribute to quality of life. Since 2005, the forest canopy has increased by more than 25%. According to recent estimates, the economic value of public trees (excluding shelterbelts and afforestation areas) is more than \$530 million.

At the same time, climate change, limited diversity, insects, diseases, and difficult growing environments are ongoing threats to the urban forest. Tree protection policies and specifications must be improved to address these challenges and to ensure balance and clarity in cases of competing interests. The Urban Forest Management Plan (UFMP or the Plan) is a key step, providing clear recommendations and coordination to support tree protection and tree growth for the next ten years and beyond.

The vision of the UFMP is *to improve quality of life through trees*. In line with this, the overarching goals of the plan are:

- to communicate the benefits provided by the urban forest
- to identify how the urban forest fits within other City of Saskatoon initiatives
- to identify areas where the urban forest would benefit from additional growth and/or resources
- to provide a plan to address gaps to ensure a more resilient urban forest; and
- to have a sustainably-managed urban forest for future generations

The City of Saskatoon (the City) needs to plan, grow, manage, protect, and partner to keep the urban forest vibrant, healthy, and resilient for decades to come. The UFMP outlines specific and defined recommendations based on background studies, public engagement, and internal stakeholder discussions. Recommendations focus on four areas:

- planning for trees
- growing the urban forest
- managing the urban forest
- protecting the urban forest

Specific timeframes, key performance indicators (KPIs), and accountability are included for each recommendation.



Our trees offer immeasurable value as they provide a sense of community and enhance our quality of life.

1.0 INTRODUCTION

Saskatoon is a prairie city in the heart of the Northern Great Plains, just south of the Aspen Parkland. Except for the riparian zone that flanks the South Saskatchewan River, this is not a naturally treed landscape. To the quarter million people who call Saskatoon home, the urban forest is a critical component of a healthy, vibrant, and sustainable city.

Climate change, infill development, difficult growing environments, and expanding ranges of insects and diseases make it a priority to do more than protect trees. The City needs a common language that Parks staff, City Councillors, residents, and developers can use to communicate the value of trees and to understand the reasons behind the policies and bylaws protecting the urban forest. We need to plan, grow, manage, and protect in order to create a resilient urban forest that remains a valuable asset into the future.

The multi-year Urban Forest Management Plan will provide a structured approach to protecting and enhancing the environmental, social, and economic benefits provided by the urban forest, while also supporting the City's Strategic Goals of Environmental Leadership and Sustainable Growth.

1.1 Strategic Alignment

The City's Official Community Plan, Climate Action Plan, and Green Infrastructure Strategy identify green spaces and generally the urban forest as important assets in supporting sustainable growth, environmental leadership, and quality of life.

A healthy urban forest is an indicator of success in the City's strategic goal of environmental leadership:

"Saskatoon thrives in harmony with its natural environment, conserves resources, and consistently demonstrates environmental leadership. ... There is more green space per resident, thanks to a commitment to urban and grassland parks and an urban forest that is healthy and growing."

(Strategic Plan 2018-2021, p. 20)

In addition, the Low Emissions Community Plan of the Climate Action Plan identifies planting trees as a mitigation opportunity; specifically, afforestation contributes significantly to carbon sequestration.

The Green Infrastructure Strategy recommends the following action related to the urban forest:

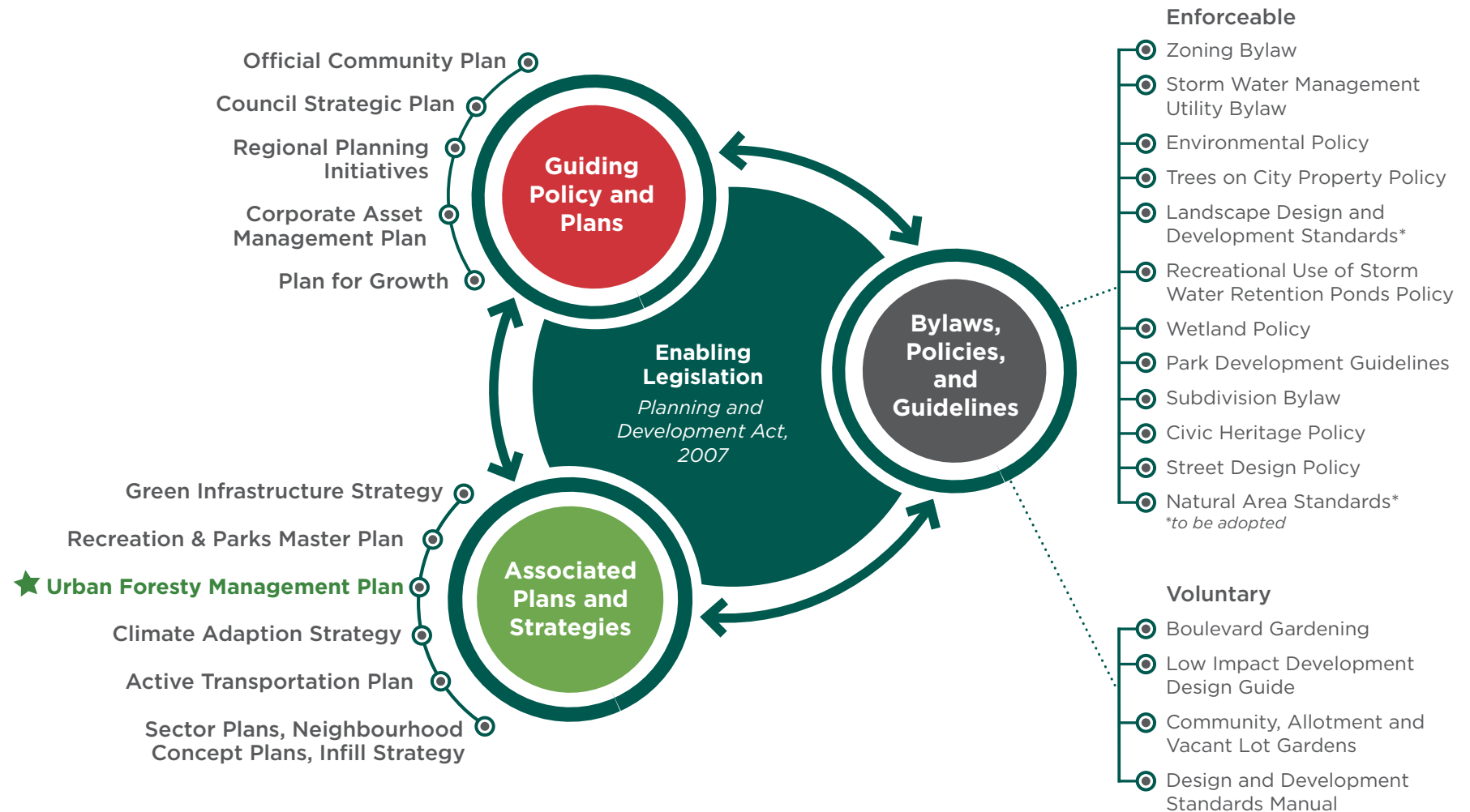
Action 10: Protect and grow the urban forest.

- 10.1: Ensure existing trees are protected, including through policy and bylaw updates.
- 10.2: Review and improve existing programs related to tree watering, maintenance, inventory, and planting techniques.
- 10.3: Continue to trial new tree species to increase biodiversity.
- 10.4: Design sustainable tree planting sites to ensure adequate soil volume, quality, and space for trees.
- 10.5: Develop community education and outreach programs to increase public awareness, stewardship, and partnerships.

The Urban Forest Management Plan is the final piece in Saskatoon's overall urban forest strategy. It outlines specific recommendations to strengthen the urban forest and achieve our vision.

FIGURE 1

Figure 1 illustrates current strategies, plans, planning tools, and enabling legislation relevant to the urban forest. (City of Saskatoon Canopy Assessment - Background Review, p. 8).



INTRODUCTION

1.2 Vision and Guiding Principles

The vision for Saskatoon's Urban Forest Management Plan is **to improve quality of life through trees**. We maintain and protect Saskatoon's urban forest, contributing to a sustainable, livable, and vibrant city for today's and future generations.

an interconnected green network, we are using applicable guiding principles developed as part of the Green Infrastructure Strategy to help guide UFMP goals, objectives, and actions. Table 1 identifies these guiding principles and how the urban forest and urban forestry team contribute to each.

Due to the close connection between Saskatoon's Green Infrastructure Strategy and the role of the urban forest in creating


TABLE 1 – UFMP GUIDING PRINCIPLES & CONTRIBUTIONS

Guiding Principle	Contributions of the Urban Forest
<i>Climate Change Adaptation and Mitigation</i>	The urban forest stores and sequesters approximately 708,000 tonnes of carbon dioxide annually. Trees provide shade; transpiration reduces heating and cooling needs in buildings. Forested areas reduce the urban heat island effect.
<i>Ecological Integrity</i>	The urban forest, including boulevard and park trees, enhances wildlife habitat connectivity.
<i>Education and Awareness</i>	The Urban Forestry team pursues educational opportunities and partnerships that help communicate the value of urban forests. The Urban Forestry team and partners tell the story of the value of trees in our urban landscape, i.e., trees act as carbon sinks in capturing and storing carbon dioxide, provide habitat for wildlife, provide beauty and comfort.
<i>Equitable</i>	The urban forest canopy is distributed throughout the city, including equitable and inclusive consultation to add trees to areas with less canopy.
<i>High Quality</i>	We are committed to increasing the urban forest canopy and maintaining its health.
<i>Integrated and Multifunctional</i>	The urban forest offers integrated functions with other municipal services, such as decreasing storm water runoff by improving soil permeability.
<i>Public Safety</i>	Assess and mitigate hazard trees. Crime Prevention Through Environmental Design (CPTED) is considered when designing treed park spaces.

Guiding Principle	Contributions of the Urban Forest
<i>Recognizable and Unique Places</i>	Trees are part of what makes areas unique and contribute to natural heritage value. They are part of the views that make Saskatoon beautiful.
<i>Sustainable</i>	The Triple Bottom Line Policy is used to guide decisions about the urban forest. ¹
<i>Well-being</i>	Trees provide access to nature for community well-being.

¹ Triple Bottom Line Policy is defined in Policy C08-001 as “an approach to sustainability whereby environmental health and integrity, social equity and cultural well-being, and economic prosperity and fiscal responsibility are integrated into decision making in a way that produces equitable solutions and mitigates undesirable trade-offs.” <https://www.saskatoon.ca/sites/default/files/documents/city-clerk/civic-policies/C08-001.pdf>





*For Alfred Browne,
Saskatoon's first Parks
Superintendent, planting
trees was a joy, not a job.*



2.0 BACKGROUND

The development of the UFMP was preceded by the following background documents and processes:

- Urban Forest Management Plan – Comprehensive Engagement Report
- Review of Saskatoon's Tree Protection Policy and Practices
- City of Saskatoon Canopy Assessment – Background Review
- City of Saskatoon Canopy Assessment – Geospatial Summary Report
- City of Saskatoon Urban Forest Canopy Modelling Methodology

Each document was used extensively in the formation of this plan and the development of recommendations.

Trees are living assets that provide many environmental, social, and economic benefits. The urban forest includes trees that are naturally occurring and trees that have been planted. The trees found in parks, natural/naturalized areas, the river valley, ravines, roadways, private yards, commercial, and industrial lands are all part of the urban forest.

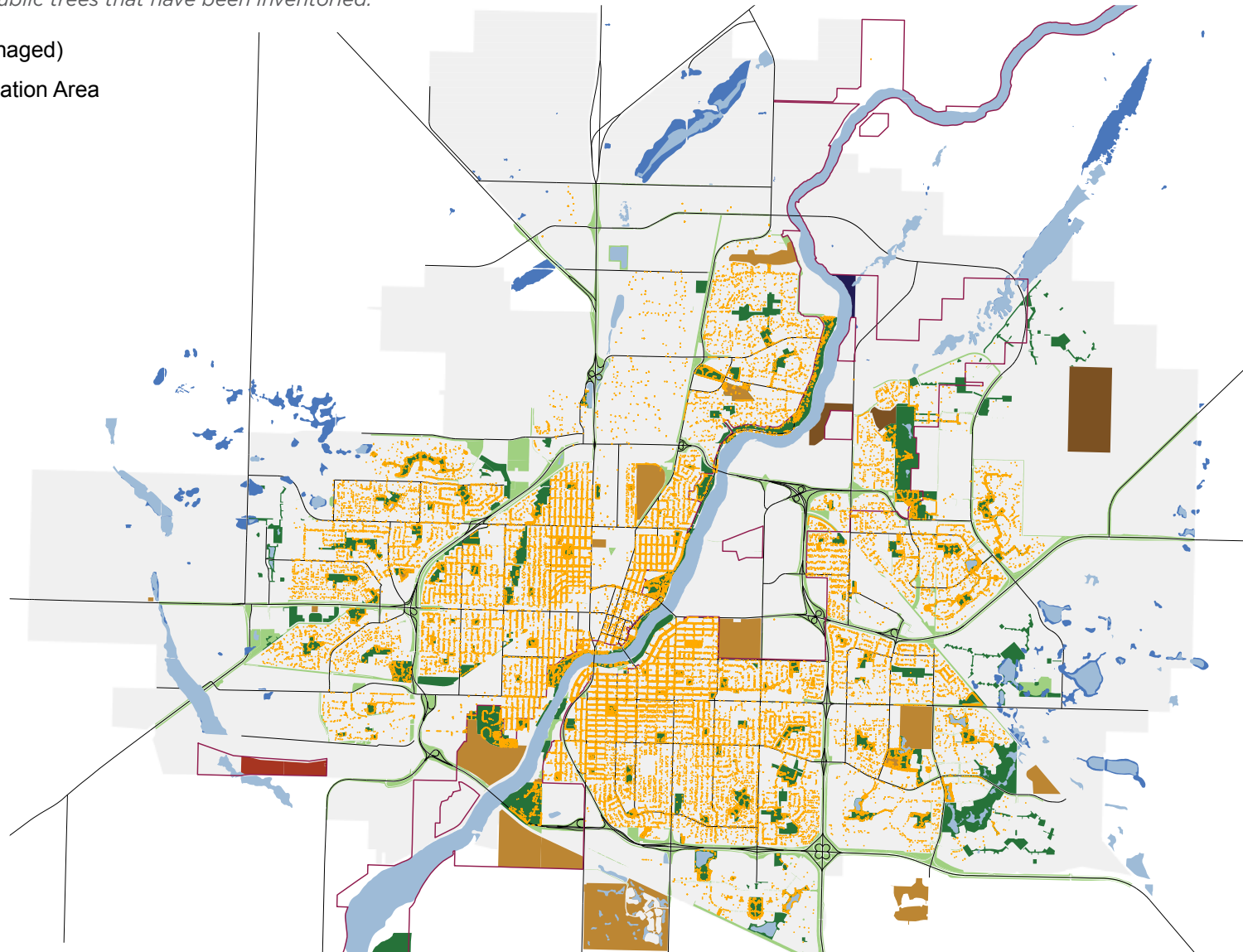
Alfred Browne, named Saskatoon's first Parks Superintendent in 1911, established the first tree nursery and planted approximately 30,000 trees in the 42 years he managed Parks. Today, Saskatoon is home to a wide range of tree species, planted throughout the city. The Parks Department is responsible for the care of approximately 107,000 public trees as well as additional planting. The City, community partners, developers, and citizens have continued to plant trees and increase the diversity of tree species. This intentional diversification increases the resilience of the urban forest.

BACKGROUND

FIGURE 2

Figure 2 provides an overview of the current state predominant characteristics of the urban forest. Yellow dots/areas show public trees that have been inventoried.

- Trees (Publicly Managed)
- Meewasin Conservation Area
- Water/Pond/River
- Wetlands
- Special Use Space
- Grasslands
- Conservation Area
- Park
- Other Open Space
- Afforestation Area



Continued on page 13

FIGURE 3 – COMMONLY USED TREE CATEGORIES

**CIVIC FACILITY TREES**

- Trees that are on civic facility sites such as Leisure Centres, Cemeteries, Golf Courses, Libraries, Fire Halls, etc.
- Unique benefits: facility character, shade
- Unique challenges: pests

**FRUITING/ORCHARDS/FOOD FOREST TREES**

- Trees that produce edible fruit or other food crops and are accessible to the public to harvest and support wildlife.
- Unique benefits: provide fresh local food for the community, support wildlife
- Unique challenges: fallen fruit on sidewalks or other nuisance spots; public eating fruit before ripening, territoriality

**PARK TREES**

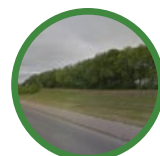
- Trees located in City parks
- Unique benefits: habitat, park character, creative play, shade, block unsightly views
- Unique challenges: conflict with adjacent land use, rough play, risk to people and trees in high use parks (e.g. festivals), lack of age diversity leading to simultaneous die-off

**REMNANT TREE STANDS**

- Natural stands of aspen and other species, shelter belts that have been kept and incorporated in to open spaces.
- Unique benefits: conserve existing natural features, habitat, ecological services
- Unique challenges: tend to accumulate wind-blown garbage, can be a site for unlawful activities, presence of invasive species such as European Buckthorn

**RIPARIAN FOREST TREES**

- Trees in the South Saskatchewan River Valley
- Unique benefits: conserve existing natural features, habitat, ecological services, erosion control and slope stability
- Unique challenges: large area to manage, presence of invasive species such as European Buckthorn, beaver cutting trees, development pressure, unsightly disease such as black knot

**ROADWAY SHELTERBELT TREES**

- Trees planted along major roadways, such as Circle Drive, and in inter-change greens.
- Unique benefits: some aesthetic appeal for motorists and adjacent properties
- Unique challenges: difficult conditions for establishment and maintenance; limited sound attenuation

**SCHOOL GROUND TREES**

- Trees on school property. May have been planted by the former Schools Plant Legacies in Trees (SPLIT) program.
- Unique benefits: Teaching opportunities, creative play, shade, reduce stress
- Unique challenges: limited space, knowledge and cost of maintenance

**PUBLIC TREES IN RESIDENTIAL AREAS**

- Trees in the right-of-way including median trees, boulevard trees adjacent to the curb, boulevard trees along the back-of-sidewalk, trees in buffers.
- Unique benefits: regulate temperature of streets, reduce wind and dust, traffic calming, street character
- Unique challenges: pests and disease, lack of age diversity leading to simultaneous die-off, soil conditions are often too compact or nutrient/water deficient to support proper growth

**PUBLIC TREES IN COMMERCIAL AREAS**

- Trees planted on public property in squares and plazas or in amenity strips of the right-of-way in business improvement districts, industrial areas and other commercial areas. These areas have a concentration of business, offices, and cultural venues. High pedestrian traffic in these areas.
- Unique benefits: regulate temperature of streets, reduce wind and dust, traffic calming, street character, increase business traffic
- Unique challenges: pests and disease, limited space, soil conditions are often too compact or nutrient/water deficient to support proper growth

**TREES ON PRIVATE PROPERTY**

- Trees on residential, commercial, industrial or institutional property.
- Unique benefits: increase property values, shade buildings, conserve energy, block unsightly views
- Unique challenges: limited regulatory tools for managing or protecting private trees, limited knowledge of inventory and cost of maintenance

3.0 ENGAGEMENT

Meaningful stakeholder engagement forms the core of our Urban Forestry Management Plan. Input was collected through a social media campaign, online survey, and workshops and meetings with 145 participants and four key stakeholder groups. Taken together, this input was used to inform UFMP project goals, including:

- identify community values and interactions
- assess function of current processes and policies
- identify and evaluate actions
- select preferred actions and prioritize for implementation

3.1 Community Values and Interactions

Cultural Significance vs Social Significance

Trees with cultural significance appear to hold more value for residents than those without cultural significance. Participants indicated that avoidance of impacts or higher levels of compensation for damage or removal should be required for trees with this designation. Culturally or historically significant trees can include those in recognized spaces, such as Woodlawn Cemetery, commercial areas, school yards, boulevards, or privately-owned trees that contribute to the “street character” of a neighbourhood.

Participants valued the social significance of trees as an important characteristic. While similar terminology was used to describe socially and culturally significant trees (e.g. “sense of place”), it appears that culturally significant trees are largely place and composition-based, while socially significant trees are valued more for their function.

Such trees may lose their significance if damaged, removed, or replaced, because the value is not only in the tree itself *but in what the tree represents to the resident at a specific place in time*. For example, memorial trees in Woodlawn Cemetery are culturally significant because they were planted in recognition

of fallen soldiers. As the trees mature, the meaning of their presence changes. Removing the mature trees could be seen as dishonouring fallen soldiers and planting new trees in their place would not hold the same cultural significance as the original tree.

The same concept can be applied to the “street character” of older neighbourhoods. Mature, monoculture treelines are characteristic of many older neighbourhoods in Saskatoon. In addition to the ecosystem services the trees provide (e.g. shade,



cooling, wildlife habitat, increased property values), the presence of the trees also seems to contribute to a sense of identity and place for residents. While removal of a single tree may not raise concern, participants indicated that removal of several trees can drastically change the appearance and “feel” of a neighbourhood.

Socially significant trees (e.g. mature trees in parks), however, can be removed or replaced without upsetting the social significance of the location if the functions of shade or recreation remain intact.

Species and Distribution

Tree species and distribution were mentioned several times. One non-scientific measure is that many participants consider certain tree species more valuable than others. Cottonwood and American elm trees appear to hold higher value than maples and ash, with Siberian elm considered least valuable of the species mentioned. Participants use terms such as “monoculture,” “diverse,” and “isolated” to describe the distribution of trees in the city.

Location

Participants often referenced tree location, explaining that a tree planted in the “wrong location” is less valuable than a tree planted in a more suitable location. The “wrong location” includes areas where trees experience elevated levels of stress, such as lack of sun, water or soil, limited space to grow, and contamination and vandalism from human activity. It also includes areas where tree growth has negatively impacted human activity or infrastructure or has infringed on privately owned or managed land.

Application to the UFMP: In our recommendations, feedback and input on cultural/social significance, species, and location will be applied and incorporated where appropriate.



3.2 Function of Current Policies and Processes

Mitigation through Planning and Design

A significant portion of participants indicated that protection of trees through avoidance or mitigation of impacts was preferred to requiring compensation for removal of trees. There is belief that many instances of human/tree conflict can be predicted and avoided with proper planning and design. They encouraged exploration of opportunities to learn from past conflicts or to enhance the health and sustainability of trees through informed planning, design, and innovation.

Where large trees exist, smaller native species and grasses should be introduced in the understory to help with tree canopy and attrition. Succession planting with native species is also an important consideration as it can limit the impacts of sudden loss in mature trees.

Decision Making Process

The theme of “worth,” is not to be confused with cost, also emerged in the engagement process. Some participants used terms like “worthwhile” or “worth it” to determine if a proposed development was justified in comparison to its impacts on trees. In response to a scenario in which trees in the riparian forest are removed to accommodate widening of an existing trail, participants indicated the loss was acceptable because it would provide improved access for residents to appreciate the remaining trees. However, they expected the forest to be properly maintained, with the least amount of disturbance possible and any fallen trees remaining in the forest to provide wildlife habitat. In this scenario, the added value of the suggested mitigation measures increased the worth of the development and offset the value of the lost trees.

The perception of fairness was another theme that emerged in the engagement. Participants felt that if impacts to trees were unavoidable to maintain essential services for residents, then

the compensation level should be lower than in scenarios where removal of a tree is optional.

Application to the UFMP: A variable compensation level based on the specific situation will be investigated as part of a recommendation.


3.3 Actions Identification and Evaluation

Participants from four stakeholder groups identified several urban forestry actions for consideration relating to tree planting, tree protection, and tree care, including what to plant, where to plant, and specific locations to target. Specifically, suggestions included:

- Explore partnerships and community involvement
- Maximize or update existing programs/policies
- Offer incentives
- Recognize and celebrate national tree days
- Plant for growth, health, and sustainability
- Develop a public tree bylaw/policy update
- Examine development of a private tree bylaw

The full summary of actions from stakeholders is summarized in Appendix 1.

Application to the UFMP: The input collected from the engagement process contains excellent suggestions that will be considered for incorporation into relevant action plans for specific recommendations. It should be noted that a Private Tree Bylaw is not a priority at this point in time.

A photograph of a suburban neighborhood. In the foreground, a person wearing a white shirt and light-colored pants is walking a small white dog through a field of tall, dry grass. Behind them is a black metal fence. In the background, there are several large, modern houses with dark roofs and stone accents. The sky is clear and blue. On the right side of the image, there is a green vertical bar with a pattern of white circles and lines.

In 2019, the value of the urban forest was estimated at more than \$532,000,000.

4.0 SASKATOON'S URBAN FOREST

Background studies on Saskatoon's forest canopy and tree protection policies and practices were undertaken in 2019. This included a more objective measure of the status of our urban forest as well as a measure of the forest canopy and recommendations for targets related to canopy cover, diversity, and suitability of tree species for the future climate.

4.1 Benefits of the Urban Forest

Trees on City property are living assets. In the future, trees and related environmental features should be one of the asset categories in the City's Corporate Asset Management Plan, which is currently "limiting green infrastructure valuation and suggesting a lack of awareness of the urban forest as a community resource." (Canopy Assessment - Background Review, p. 15)

Trees and forests have environmental, social, and economic benefits in a cityscape, listed in detail below:

Environmental and Ecological

1. Reduce heat island effect.
2. Improve air quality by filtering dust, absorbing carbon monoxide, sulphur dioxide, nitrogen oxides, airborne ammonia, heavy metals and by producing oxygen.
3. Improve water quality by shading streams/lowering water temperature, and filtering out pollution.
4. Moderate temperatures, reducing the energy needed for heating and cooling.
5. Counteract greenhouse impacts and global climate change by removing carbon from the atmosphere.
6. Reduce exposure to ultraviolet rays by offering shade and absorbing up to 95% of UV radiation.
7. Provide essential habitat and corridors for wildlife movement while linking humans to our natural environment.
8. Reduce damage from storm water runoff by absorbing rainfall or delaying its flow into drainage areas.



Social and Health

1. Provide aesthetic value and improve quality of life.
2. Create a sense of privacy and add character to surroundings.
3. Promote environmental responsibility and ethics.
4. Reduce stress (e.g. research has shown that people who drive to work along tree-lined streets tend to arrive less stressed than those who travel along roadways without trees).
5. Play a role in traffic calming.

Economic

1. Reduce energy costs for winter heating and summer cooling by as much as 24%.
2. Increase land and property values by as much as 20%; properties near green spaces also have a higher value.
3. Attract and maintain businesses and tourism, contributing to economic stability.

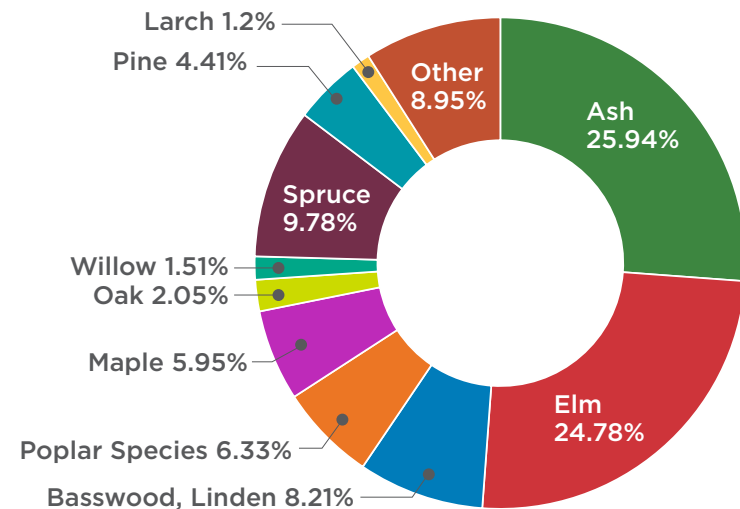
4.2 Risks to the Urban Forest

Saskatoon's urban forest is constantly changing due to urban growth, redevelopment, invasive pests, weather events, aging trees, and replacement of aging infrastructure (e.g. sidewalks, roadways, and irrigation). Risks to the overall canopy cover and the resilience of the urban forest include:

- Climate change
- Lack of diversity (e.g. reliance on elm and ash)
- Insects (e.g. emerald ash borer, cottony ash psyllid)
- Disease (e.g. Dutch elm disease)
- Development (e.g. removing or damaging trees during construction; utilities conflicting with potential tree planting locations)
- Lack of a coordinated effort among residents, the City, conservation groups, and private industry to support and grow the urban forest.

FIGURE 4

Figure 4 illustrates Saskatoon's current forest inventory. Note the higher populations of elm and ash, which are vulnerable to Dutch elm disease and emerald ash borer.



Did you know?

Urban development can have long-term effects on mature trees, many of which take years to manifest. For example, soil compaction from paving and root damage during excavation may kill a tree over time. Damage can be prevented by taking appropriate protection measures at the right stages of development.

4.3 The Value of Our Urban Forest

Unlike other infrastructure, trees increase in value over time. In 2019, the value of public trees (excluding shelterbelts and afforestation areas) was estimated at more than \$530 million. This value does not include ecosystem services (as described in Figure 5), which add additional direct and indirect economic value. For example, trees filter air pollutants such as carbon monoxide, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide (Figure 5). The entire urban forest stores 682,000 tonnes of CO₂ and sequesters an additional 26,750 tonnes of CO₂ per year (Figure 6). The estimate only includes the carbon stored in above ground woody tissue and does not include carbon stored in the roots or surrounding soil.

FIGURE 5

Tree canopy ecosystem services estimates per year for the urban forest extrapolated from similar prairie cities.

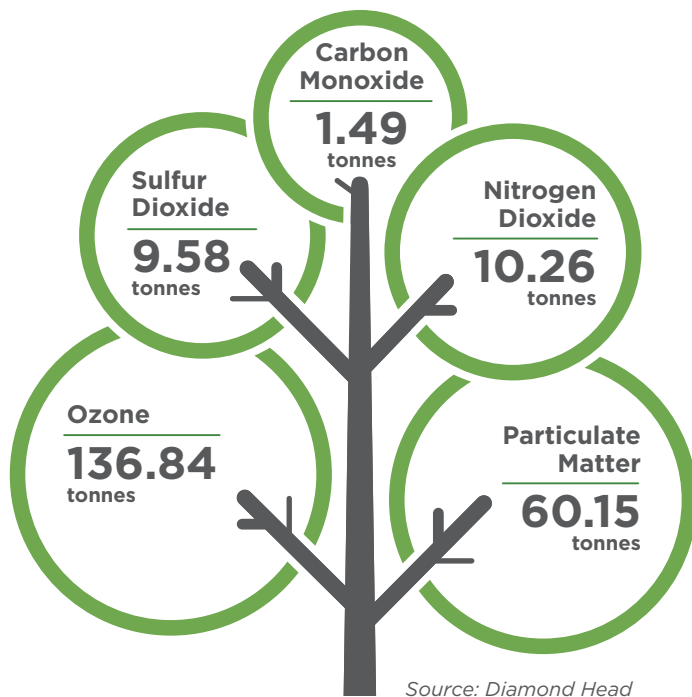


FIGURE 6

Figure 6 illustrates tonnes of carbon sequestered a year by Saskatoon's urban forest in terms of vehicles or household CO₂ emissions.

CO₂ Emissions* Sequestered by Trees Annually
26,750 tonnes



**Approximately 8,200 cars (Source: Natural Resources Canada)*

4.4 The Forest Canopy

Canopy mapping and assessment is essential for Saskatoon to be able to set canopy cover and planting targets, and to better manage the urban forest resource in the long term. There are an estimated 256,000 plantable spots in the city. The majority or 60% fall on private land with residential zoning. However, plantable spots on public land make up just over 40% of all plantable spots, totalling just over 100,000 opportunities.

Tree canopy cover represents the percentage of an area covered by the canopy of trees when viewed from above. This metric has become a popular measure of urban forest performance and is widely used across the world when benchmarking and measuring change over time to evaluate success in urban forest management.

Tree canopy cover is commonly used when reporting on the urban forest because:

1. it is relatively easy to measure remotely and is less costly than field sampling
2. it is comparable within and between cities
3. the size of the area measured does not matter
4. the concept is easy to understand and communicate to the public



Canopy mapping and assessment is essential for Saskatoon to be able to set canopy cover and planting targets and to better manage the urban forest over the long term. Understanding how canopy cover changes by neighbourhood and land use may help Saskatoon craft stronger tree protection policy in areas of rapid development or densification. This background information helps us understand the extent of canopy city-wide and provides an accurate summary by neighbourhood, zoning, and public/private ownership.

Canopy assessment will help Saskatoon fulfill the fundamental value, set out in the City's Official Community Plan, of being a sustainable community (Section 2.1). Effective stewardship of the urban forest, equitable and democratic land use decision-

making of the forest resource, conservation of the urban forest as a heritage resource, and accurate baseline data that allows for quantification of economic benefits of the urban forest, all support the sustainable community value expressed in the OCP.

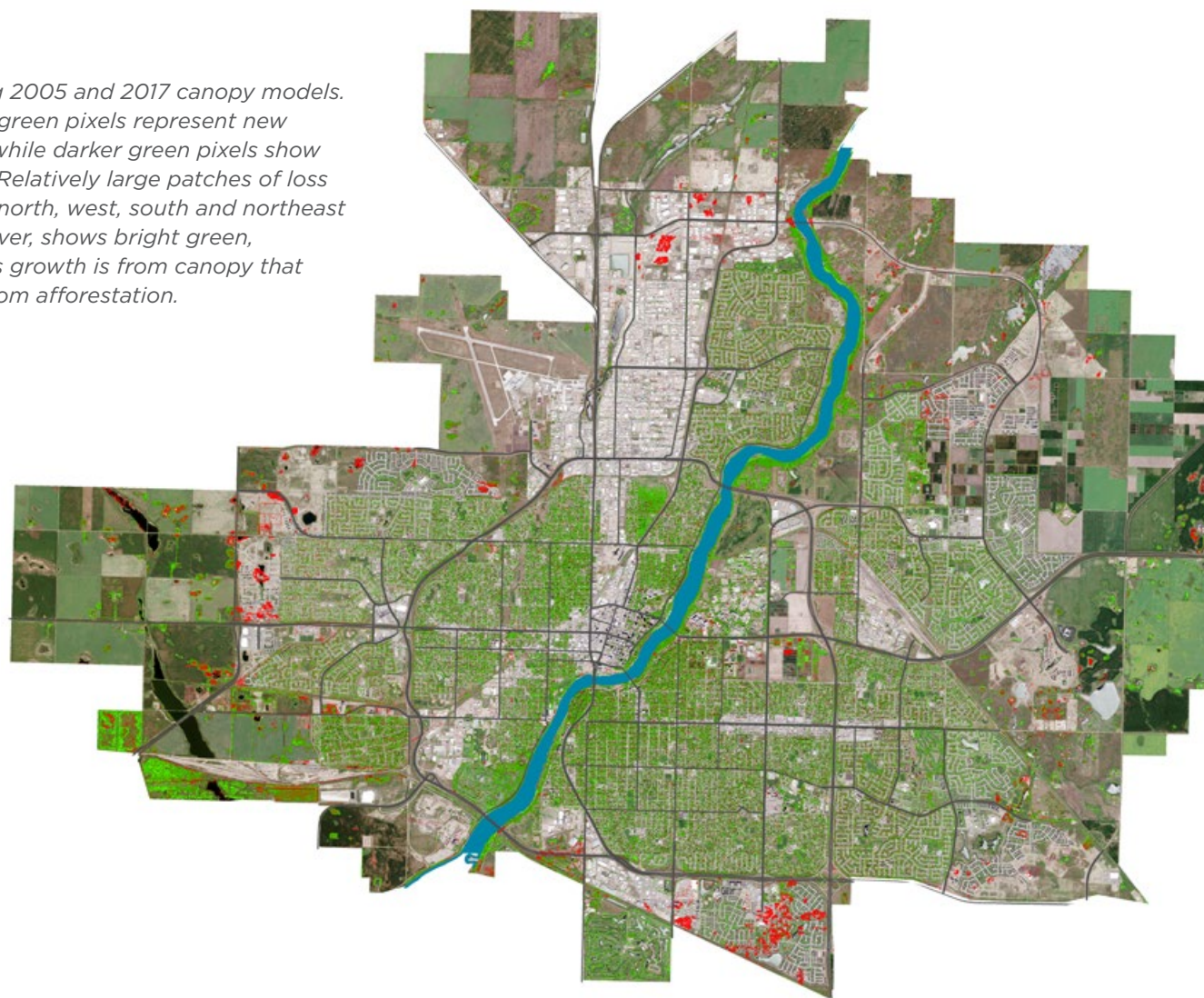
Extensive GIS mapping was used to assess the amount of canopy change between 2005 and 2017 and to estimate planting opportunities. The detailed methodology is covered in the Saskatoon Canopy Assessment Summary Report. Overall accuracy of the assessment is approximately 91%.

In 2005, Saskatoon's canopy cover was estimated at 8.00%; while in 2017, it was estimated at 10.10% – an increase of 26.25%.

SASKATOON'S URBAN FOREST

FIGURE 7

Canopy change detection mapping using 2005 and 2017 canopy models. Red pixels represent canopy loss, bright green pixels represent new canopy added between 2005 and 2017, while darker green pixels show canopy that has persisted through time. Relatively large patches of loss can be seen at the urban margins to the north, west, south and northeast of the city centre. Much of the city, however, shows bright green, representing canopy growth. Most of this growth is from canopy that existed in 2005 expanding rather than from afforestation.

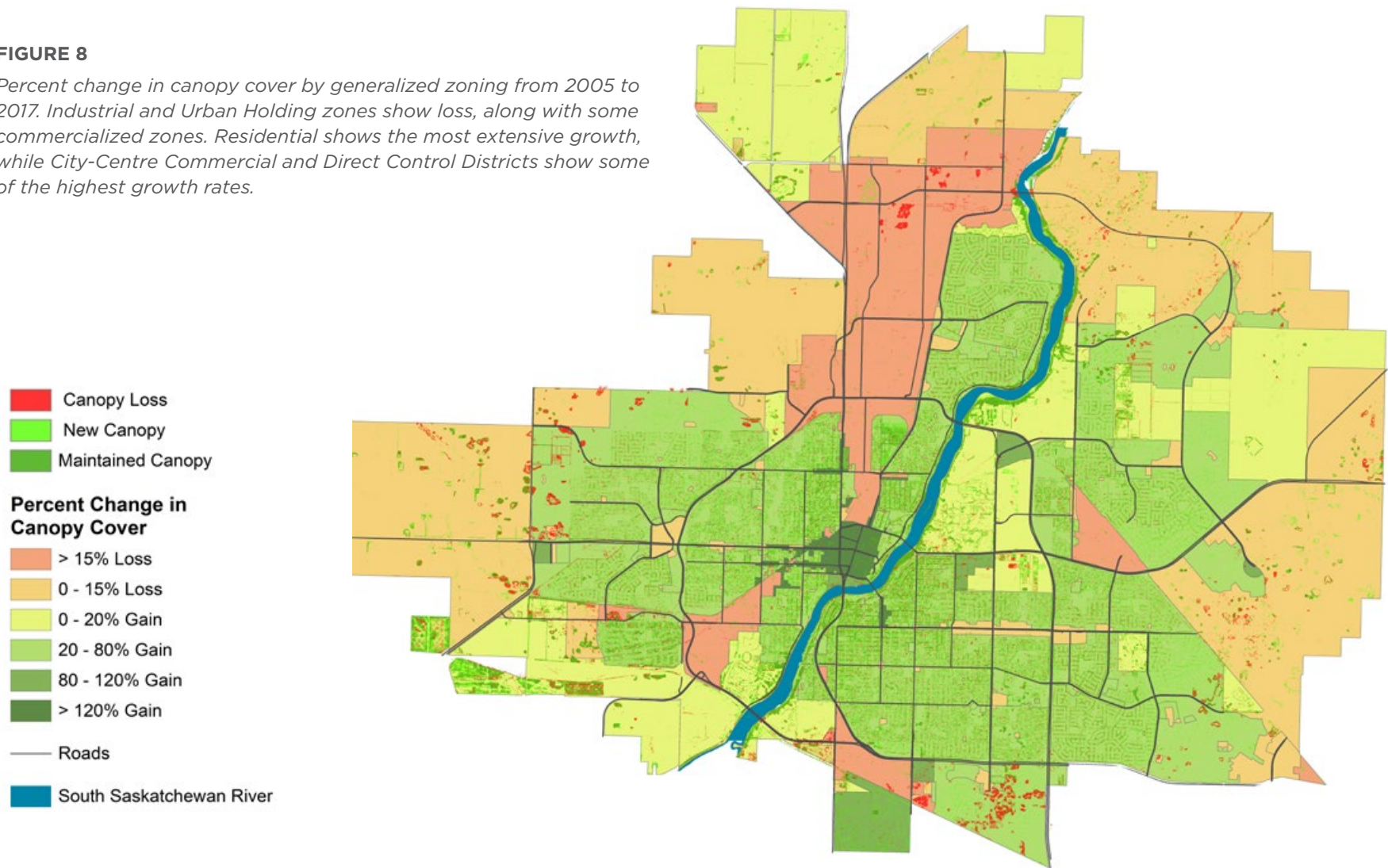


In both time periods, Special Use and Residential areas have the highest canopy cover percentage, while Industrial and Commercial zones have the lowest (Special Use growth was mostly driven by Woodlawn Cemetery). Residential zones also have the largest area of canopy, followed by Agriculture and Urban Holding. Industrial

and Commercial zones, in contrast, tend to have very low canopy cover percentages. Canopy in Arterial Commercial was as low as 0.36% in 2005, though it grew more than 200% to 1.13% in 2017. Most zones show canopy growth over time, except for some Commercial zones and the Heavy Industrial zone.

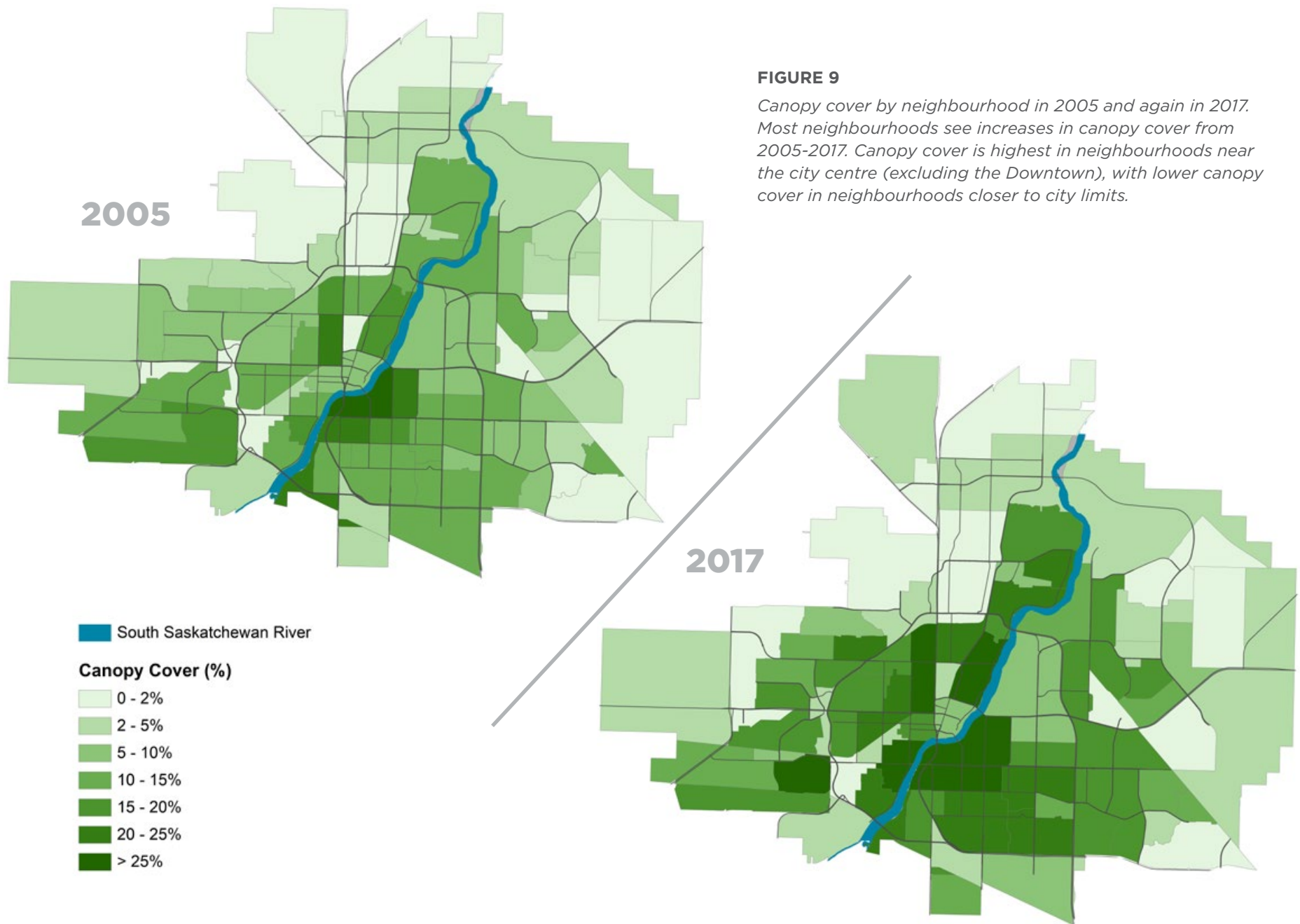
FIGURE 8

Percent change in canopy cover by generalized zoning from 2005 to 2017. Industrial and Urban Holding zones show loss, along with some commercialized zones. Residential shows the most extensive growth, while City-Centre Commercial and Direct Control Districts show some of the highest growth rates.



Most neighbourhoods show an increase in canopy over time, with several notable exceptions (Figure 9). Neighbourhoods that began developing more recently, such as Brighton, University of Saskatchewan Lands South Management Area, Kensington, and Marquis Industrial show relatively large canopy declines from

2005-2017. As noted above, tree removals in these areas tend to be relatively large copses or stands that occur near water bodies and wetlands.



When considering canopy on public and private land, the observed growth trend holds for both ownership categories. The percentage of canopy on public land is higher than on private land (Table 2). However, the area of public canopy is smaller, with a lower growth rate over the period 2005-2017. Public land saw an increase in canopy cover of 37% compared to an increase of approximately 47% on private land. Parks have the highest canopy cover on public land, followed by right of ways (ROWs) and non-park City-owned parcels.

In summary, Saskatoon has seen a significant increase in canopy cover between 2005 and 2017, with the potential for further growth in the future.

Overall, canopy cover for Saskatoon was estimated between 9-10% for 2017, compared to a range between 6.33% and 8% in 2005. Canopy gain increased across residential neighbourhoods but was lost in areas where new development has taken place. While we expect the canopy to increase in new residential neighbourhoods over the next 10 years, it is unlikely to increase in industrial areas.



TABLE 2

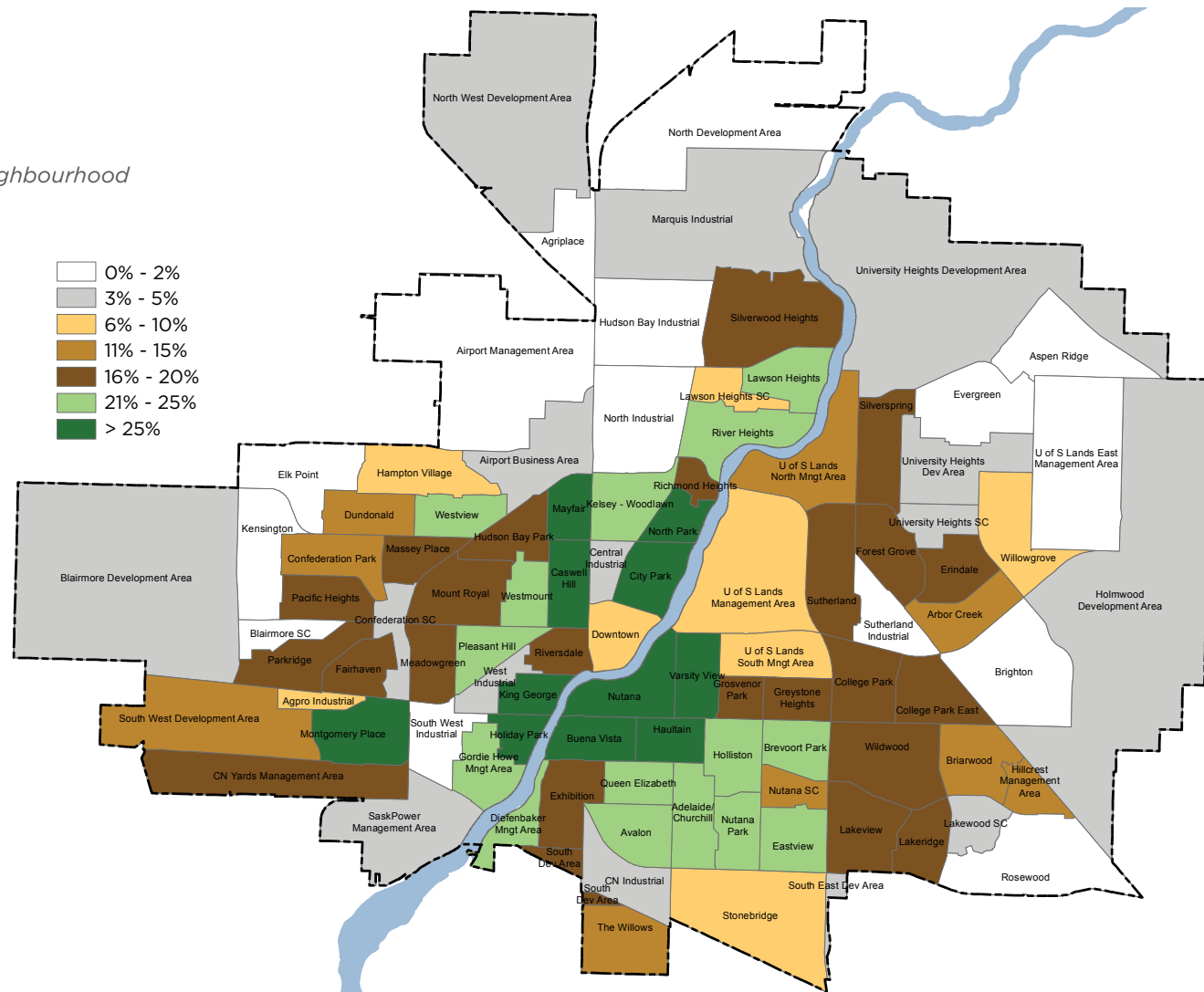
Public and Private Canopy summary statistics. Both land ownership types experience canopy growth from 2005-2017, with canopy growth on private land slightly higher.

Type	2017 Canopy Area (ha)	2017 Canopy Percent	2005 Canopy Area (ha)	2005 Canopy Percent	Difference in Percent Canopy	Percent Change
Public Land	881.46	9.55	643.18	6.97	2.58	37.05%
Private Land	1245.54	8.62	849.83	5.88	2.74	46.56%

SASKATOON'S URBAN FOREST

FIGURE 10

Urban Forestry Canopy Cover by Neighbourhood



The Canopy Assessment recommended the following targets for the Urban Forestry Program:

- 15-20% canopy cover by 2060
- 90% species suitable for future climate change
- <3.5% annual mortality in trees less than five years old
- >30 years Safe Useful Life Expectancy (SULE) for 90% of urban forest

Application to UFMP: It will be important to set canopy cover targets, revising the Urban Forestry Management Plan a minimum of every five years and facilitating greater protection of mature trees. These targets will be determined based on program objectives, which will be developed as part of the implementation of this plan.

4.5 Canopy Modelling – Exploring Saskatoon's Canopy and Planting Potential

Diamond Head Consulting Ltd. was engaged to produce a canopy growth model to explore Saskatoon's canopy potential. Local tree information was used to populate the model's inputs and parameters, whenever possible. To estimate Saskatoon's canopy potential, the model used Saskatoon's 2017 canopy cover (summarized by land use) and an analysis of potential planting opportunities.

Saskatoon's canopy projection model takes the 2017 canopy area and projects it forward based on anticipated growth, mortality, and tree planting rates. Planting opportunities were used to estimate the canopy cover potential for each land use category and ultimately for the entire city. Planting opportunities by land use are shown in Table 3.

Given uncertainties around site constraints, only 50% of the opportunities initially calculated were used in the canopy forecasting

TABLE 3 - PLANTING OPPORTUNITIES BY LAND USE

Ownership	Land Use	Plantable Spots	Modelled Spots (50%)
Public	Rights of Way (ROWs)	58,604	29,302
	Parks	8,216	4,108
	City-Owned Properties	40,220	20,110
Private	Arterial Commercial	1,060	530
	Business Park	376	188
	City-Centre Commercial	346	173
	Direct Control Districts	1,711	856
	District Commercial	431	216
	Heavy Industrial	3,822	1,911
	High Density Residential	176	88
	Light Industrial	7,882	3,941
	Low Density Residential	92,163	46,082
	Low-Medium Density Residential	4,822	2,411
	Medium Density Residential	5,113	2,557
	Mixed Use	202	101
	Neighbourhood Commercial	122	61
	Office/Institutional Low Density	1,026	513
	Office/Institutional Med-High Density	2,709	1,355
	Special Use	124	62
	Urban Holding Area	23,838	11,919
Totals		252,963	126,482

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model. A significant number of plantable spots fall on private land within residential zoning. However, spots on public land account for 40% of all plantable spots; most of these are also in residential zones, but sizeable proportions occur in Urban Holding Area and Industrial zones, too. Agriculture was removed from plantable spot calculations based on the premise that most permeable surfaces in agricultural areas are better used for crops rather than tree planting. An exception was made for parks in Agricultural zones, where 714 plantable spots were determined to exist.

The age distribution for the entire tree canopy was determined using Saskatoon's tree inventory and calculating the percent of the tree population in each of five Diameter at Breast Height (DBH) classes (see Table 4). The equivalent percent of the City's canopy area was determined by adjusting the canopy percentage until the tree count estimated by the model closely matched population distribution percentages. The age distribution by DBH on public land is assumed to be a reasonable representation of the age distribution on private land.

The age classes chosen to model were:

- New: 1-5 years since planting
- Young: 6-20 years since planting
- Semi-mature: 21-40 years since planting
- Mature: 41-60 years since planting
- Old: >60 years since planting



Did you know?

The City currently follows a seven-year pruning cycle for boulevard trees and a 13-year cycle for park trees.

TABLE 4 - TREE AGE CLASS AND % OF TREE CANOPY

Age Class	DBH Class	% of Tree Population	Equivalent % of Tree Canopy
New	</=5 cm	11	1
Young	6-20 cm	38	12
Semi-Mature	21-40 cm	23	19
Mature	41-60 cm	18	36
Old	>60	11	32

Table 5 identifies the age and canopy prediction (in m²) and the average increase per year. It is assumed that trees in Saskatoon grow 1 cm in diameter per year.

TABLE 5 - TREE AGE CLASS AND PER YEAR CANOPY INCREASE

Age Class	Years	Canopy Cover Prediction of Each Age Class (m ²)	Per Year canopy increase (m ²) between age classes
New	1-5	7	-
Young	6-20	20	2.9
Semi-Mature	21-40	51	2.6
Mature	41-60	126	2.5
Old	>60	223	1.8

Application to the UFMP: The data in this section demonstrates the tremendous opportunities to increase the canopy cover in Saskatoon, in both public and private areas. This is reflected in the recommendations.

4.6 Current Forest Management and Protection Practices

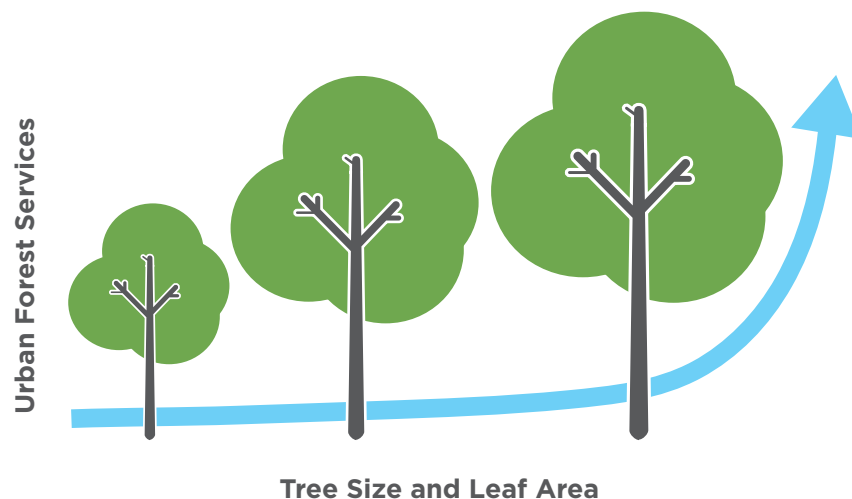
This section summarizes tree protection policies and practices set out by the City of Saskatoon. It reviews the current approach to tree protection in the city, benchmarks Saskatoon's tree protection policies, specifications, bylaw(s) and procedures against comparator municipalities, assesses the strengths and shortcomings of Saskatoon's current approaches, and provides recommendations to enhance tree protection in Saskatoon.

Although several of the comparator municipalities reviewed in this report have implemented policies and practices for protection of trees situated on privately-owned lands, this review focuses on the protection of municipally owned and managed trees.

Large and healthy urban trees provide disproportionately more services and benefits than small trees, primarily due to their

FIGURE 11

Graphic representation of the relationship between tree size, leaf area, and provision of services (blue arrow). Due to their exponentially greater leaf area (Kenny, 2000), large trees provide disproportionately more services and benefits than smaller trees.



exponentially greater leaf area (see Figure 11) (Kenney, 2000). While it is important that all trees be considered worthy of preservation, municipalities should consider large trees as particularly significant constraints to site alteration that merit particular attention and protection.

Perhaps the most pressing challenge to an important subset of any urban tree population (both municipally owned and managed street trees) is site development. Trees are impacted by development in two major ways: they may conflict spatially with the location of proposed buildings or associated elements (e.g., driveways, services, etc.) or they may be inadvertently or deliberately injured or destroyed during the course of site development (i.e., construction). Injury to existing trees can occur through a variety of mechanisms, such as:

- **Soil compaction** inhibits a tree's ability to uptake water and nutrients from, and exchange respiratory gases with, the soil; It can ultimately result in tree decline or mortality. Soil compaction is typically caused by equipment/personnel movement or materials storage within the tree's root zone.
- **Root cutting** predominantly occurs during excavation and can impair tree access to water and nutrients, initiate root and stem decay, destabilize trees, and potentially result in tree failure (uprooting) or mortality.
- **Physical injury** to the main stem or branches can result in a loss of photosynthetic area (i.e., tree canopy) and initiate decay, potentially resulting in tree failure or mortality.
- **Contamination and burning** occurs through dumping or spillage of chemicals or effluent, installation of excessively alkaline or acidic fill, or scorching of leaves by vehicle exhausts.

Five key aspects of a comprehensive and effective tree protection program include:

- **Tree protection policy:** a statement or document that establishes the responsibilities, duties, practices, processes, and performance standards for tree protection.

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- **Tree protection specifications:** technical guidance for the implementation of various tree protection measures.
- **Tree protection bylaw(s):** municipal legislation regulating practices and processes related to a tree population deemed to be significant by the municipality.
- **Procedures:** practices and procedures in place to ensure trees are effectively managed, maintained, and protected in accordance with municipal requirements.
- **Outreach and education:** efforts to educate City staff, members of the community, and other stakeholders about the importance and value of tree protection as well as about municipal tree protection requirements.

As growth and development continue apace, the City is already experiencing challenges to consistent and effective protection of City-owned trees, particularly in municipal road rights-of-way in proximity to building and development sites. Until recently, City staff report multiple instances wherein City-owned trees were not adequately considered at the appropriate stages of building and development, application review, and approval, only to suffer otherwise avoidable injury or destruction during the implementation phase.

Unless improvements are made to various aspects of the City's approach to tree protection, adverse impacts on City-owned trees will undoubtedly occur during the building and development process. This will be further exacerbated by stressors such as climate change, difficult urban growing conditions, and tree pests.

TABLE 6: SUMMARY OF STRENGTHS OF COMPARATOR MUNICIPALITIES' APPROACHES TO TREE PROTECTION

Municipality	Key Strengths
<i>Edmonton</i>	<p>User-friendly brochures summarize key tree protection requirements.</p> <p>Innovative use of zoning bylaw (credits for tree protection) encourages tree protection despite lack of enabling legislation for tree protection bylaw.</p> <p>Specialized infill staff teams work with Urban Forestry and are knowledgeable about tree protection requirements.</p> <p>Tree protection permits are well-integrated with other municipal permits.</p> <p>Clearly-articulated process for addressing tree removal requests.</p>
<i>Oakville</i>	<p>Three-part tree permitting process applicable to all construction scenarios that require municipal approval.</p> <p>Integration of arborists/foresters into Development Engineering (i.e., planning approval) department reduces complexity and ensures trees are considered in all plan reviews.</p> <p>Significant bylaw support for public tree protection (four bylaws).</p> <p>Arborist licensing ensures arborists meet education and qualification criteria.</p> <p>Annual contractor information sessions promote awareness of and compliance with tree protection requirements, and facilitate Town review of applications by ensuring higher quality of first-round submissions.</p>


Continued on page 31

Municipality	Key Strengths
<i>Ottawa</i>	<p>Formal program/process for street tree protection during infill development.</p> <p>Municipal trees are protected by bylaw.</p> <p>Highly detailed [albeit complex] information about tree protection requirements on City website.</p> <p>Bi-weekly tree protection audit process in place [although irregularly implemented].</p>
<i>Regina</i>	<p>Separate policies for tree protection and tree removal.</p> <p>Both policies are very clearly written and address a wide range of scenarios.</p> <p>Policy support for cost recovery by Urban Forestry in the event of damage to trees as a result of other City operations.</p> <p>Strong consistency between tree bylaw and tree removal/protection policies.</p> <p>Bylaw allows City the flexibility to consider and authorize removal of public trees upon request of “interested person”, subject to review of factors and payment of costs and partial compensation.</p>
<i>Toronto</i>	<p>Bylaw protection for City-owned street trees.</p> <p>Tree declaration form to pre-screen all applications for tree issues.</p> <p>Tree protection is managed separately from other components of development application review.</p> <p>Application and scope of policy and bylaw are clearly articulated.</p> <p>Inspection and enforcement team ensure compliance with bylaws and permit conditions.</p> <p>Revenue-neutral contravention inspection fee charged to offenders, so enforcement and inspection are not tax base funded.</p> <p>Clearly defined tree removal permit refusal criteria.</p>
<i>York Region</i>	<p>Clear and easy to apply tree compensation/valuation methodology.</p> <p>Most comprehensive technical specifications for tree protection among comparator (and most other) municipalities.</p> <p>Detail drawings to support written specifications for most tree protection measures.</p> <p>Clearly defined and comprehensive submission procedures and requirements.</p>



Application to the UFMP: Potential improvements include updating policies, clarifying specifications, creating clear bylaws, and improving tree protection in projects in proximity to existing trees. The following were considered in the process of outlining recommendations:

- a) Create a new “Tree Policy” to replace the outdated “Trees on City Property Policy”
- b) As part of the building permit application review:
 - establish a mandatory tree protection process as part of the building development permit application
 - require applicants to prepare and submit tree protection plans
 - require applicant monitoring and reporting of site conditions
 - integrate tree protection conditions between various permit types
- c) Revise and consolidate tree protection specifications
- d) Enact a public tree protection bylaw
- e) Improve the building and development permit tree review process
- f) Enhance tree protection on all City of Saskatoon projects
- g) Enhance the tree inventory
- h) Undertake internal outreach and education efforts with relevant civic Departments
- i) Engage external stakeholders
- j) Improve tree protection webpage and fact sheets



***“Trees provide a quality of life
that no other asset can provide.”***

— Engagement participant

4.7 Urban Forest Report Card Summary

As part of the background work, a report card was created to measure the current state of Saskatoon's urban forest and potential improvements as highlighted in previous sections. The supplemental *Canopy Assessment - Background Review* gives Saskatoon's existing urban forestry management program an overall rating of "fair." The detailed report card identifies successes and areas that require improvement.

FIGURE 12 - CITY OF SASKATOON URBAN FOREST REPORT CARD



PLAN

- Awareness of the urban forest as a community resource
- * Green infrastructure asset valuation
- * Clear and defensible urban forest canopy assessment and goal
- Municipal-wide urban forest strategy
- * Municipal-wide biodiversity or green network strategy
- Policy for tree protection and replacement

- Policy for conservation of sensitive ecosystems, soil or permeability
- Municipal urban forestry program capacity
- Urban forest funding to implement the strategy

GROW





- City tree planting program design, planning and implementation
- Development requirements to plant trees in private land
- Streetscape and servicing specifications and standards for planting trees
- Equity in planting program delivery
- Forest restoration and native species planting
- Selection and procurement of stock in cooperation with nursery projects
- Climate adaptation/mitigation intergration with tree planting projects and landscaping

MANAGE



- Tree inventory
- Knowledge of trees on private property
- Natural areas inventory
- Maintenance of publicly-owned, intensively managed trees
- Extreme weather response planning
- Tree risk management
- Pest and disease management
- Waste biomass utilization

*optimal soon. Continued on page 35

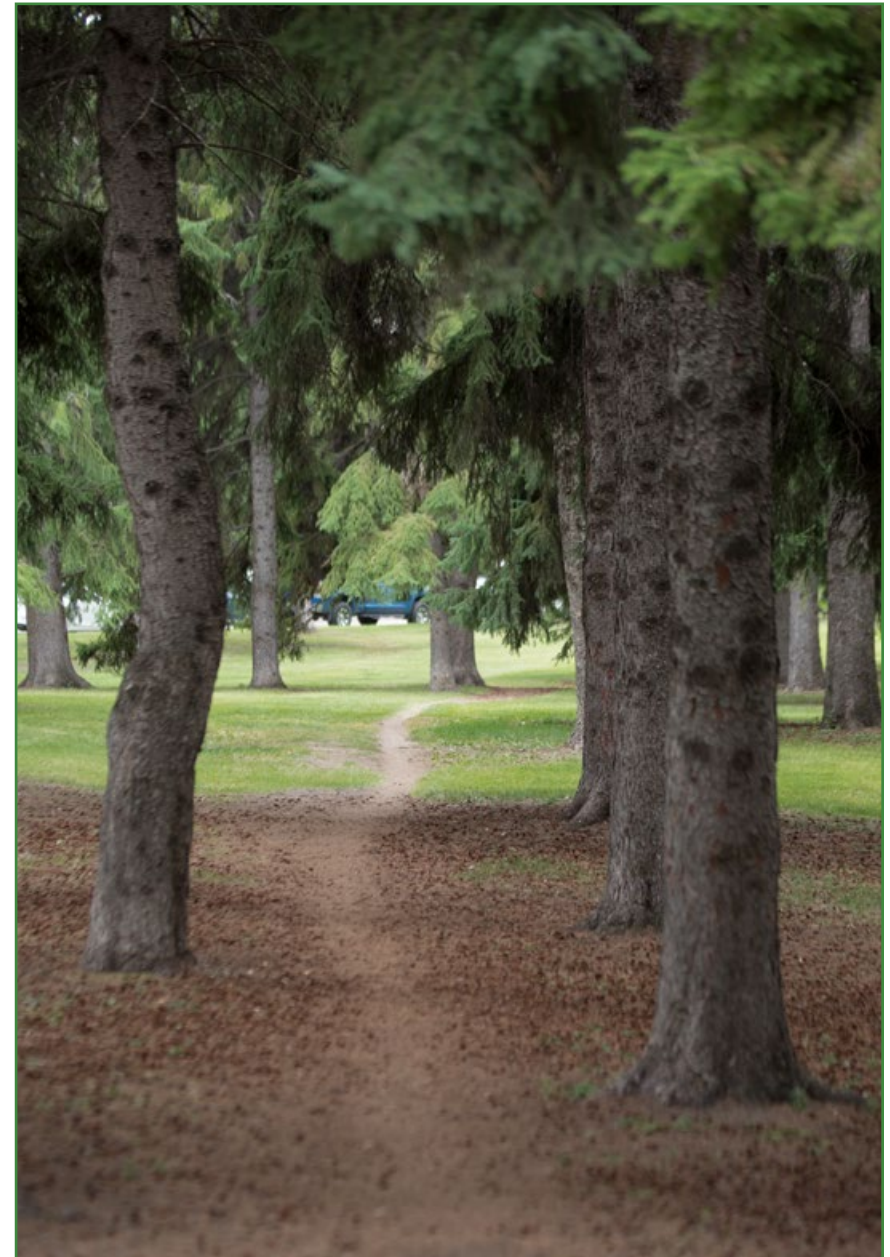
PROTECT

-  *Interdepartmental cooperation on urban forest strategy implementation*
-  *Internal protocols guiding City tree or sensitive ecosystem protection*
-  *Standards of tree protection and tree care observed during development or by local arborists and tree care companies*
-  *Cooperation with utilities on protection (and pruning) of City trees*

PARTNER

-  *Citizen involvement and neighbourhood action*
-  *Urban forest research*
-  *Regional collaboration*
-  *Community food production*

Application to the UFMP: The Report Card provides an excellent overview of the strengths and weaknesses relating to Saskatoon's Urban Forest. Throughout the recommendations, the overarching goal is to move the needle from 'fair' to 'optimal' over the next ten years. The report card will be used annually to gauge our performance at a higher level as recommendations are completed.



5.0 THE 10 YEAR PLAN

Saskatoon's urban forest is under increasing stress due to urban growth, redevelopment in established areas, impacts from invasive pests, extreme weather events, and aging trees. The purpose of Saskatoon's Urban Forestry Management Plan is to provide a structured approach to protecting and enhancing the environmental, social, and economical services provided by the urban forest now and in the future.

The Urban Forestry team is committed to:

- creating plans that meet long-term recommended targets and objectives
- increasing forest canopy and diversity of tree species
- managing the urban forest with an eye to meeting long-term goals
- protecting mature trees on public property
- partnering with other organizations and educating the public so that all Saskatoon residents are working together toward the common goal of a healthy, growing, and resilient urban forest

Specific and defined recommendations based on the background reports, public engagement, and internal stakeholder discussions are listed below. The recommendations below also attempt to directly improve on the Urban Forest Report Card above. **Specific timeframes, key performance indicators (KPIs), and accountability for progress are included for each recommendation to ensure the UFMP is sustainable over the long term — to set a foundation for the next ten years and beyond. Some recommendations will require additional capital and resources to implement, to be brought forward during future budget deliberations.**

1. Planning for Trees

1.1 Require additional urban forestry considerations in sector, concept, and infrastructure/utility development processes to ensure that protection, compensation, and planting considerations are proactively communicated and addressed, to ensure utility conflicts are minimized.

Background: In the past few decades, there have been instances where utility conflicts have hindered tree planting locations along boulevards and front yards.

Timeframe: 2021 – onward

KPIs: Percentage of concept and infrastructure/utility

development plans with urban forestry considerations included at the outset of planning

Accountability: Director (Parks)

1.2 Enhance tree planting plans in consultation with internal and external partners, including the formation of an interdepartmental working group.

Background: At present, tree planting plans for various projects and developments are not as collaborative as they could be. In the future, tree planting opportunities will be planned and implemented by collaborating with additional stakeholders, using a One City approach.

Timeframe: 2021 – onward

KPIs: Review success of tree planting plans semi-annually; creation of working group with representation from Landscape Construction & Design, Urban Design, Urban Forestry Construction & Design, Major Projects, and Developers; percentage of trees planted in appropriate locations

Accountability: Parks Superintendent (Urban Forestry)

- 1.3 *Attempt to secure alternate funding sources for tree planting, such as provincial, federal, and/or Federation of Canadian Municipalities grant programs.*

Background: Urban Forestry is planning a strategic approach to searching for and obtaining, where possible, funding to assist with canopy cover objectives and contribute to sustainability and greenhouse gas reduction targets.

Timeframe: 2021 – onward

KPIs: Number of successful applications

Accountability: Parks Superintendent (Urban Forestry)

2. Growing the Urban Forest

- 2.1 *Increase canopy cover by 15-20% by 2060 (as informed by the canopy assessment and canopy forecasting model).*

Background: Increasing the benefits and size of our urban forest is a core recommendation of our Urban Forestry Management Plan.

Timeframe: Begin in 2021

KPIs: Average change in canopy cover per hectare (city-wide)

Accountability: Parks Supervisor (Urban Forestry)

- 2.2 *Diversify tree species, genera, and families in the urban forest outside of natural areas – no more than 10% of any single species and no more than 20% of any genus.*

Background: This target will drive species selection, diversification, and trials while also lowering risk to the urban forest from tree pests.

Timeframe: 2021 – onward

KPIs: Increase in percentages of less common species, decrease in percentages of ash and elm; achieve by trialing new trees and planting trees that are less common

Accountability: Parks Superintendent (Urban Forestry)

- 2.3 *Track, monitor, and address young tree mortality and safe useful life expectancy of trees, including adapting watering/irrigation and soil volume and quality.*

Background: Typical street tree mortality ranged from 3.5-5% in meta-analysis of 11 studies; Safe Useful Life Expectancy (SULE) is an important measure of the health and survival of the largest, most beneficial trees. Defining targets in these areas will improve performance, reduce replanting, and save on new planting costs.

Timeframe: 2021 – onward

KPIs: Young tree mortality – target of <3.5% annual mortality in trees less than 5 years old (year planted); Safe Useful Life Expectancy – target age >30 years for 90% of the population.

Accountability: Parks Superintendent (Urban Forestry)

3. Managing the Urban Forest

- 3.1 *Develop a tree maintenance strategy for specific areas, including City land, properties, and facilities (e.g. Woodlawn Cemetery, Saskatoon Forestry Farm Park and Zoo, Leisure Centres, golf courses, berms) and for riverfront natural areas, including a potential management plan for riverfront areas in partnership with Meewasin.*

Background: City land, properties, and facilities do not follow a defined tree maintenance service level or pruning

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cycle. Similar to park and boulevard trees, trees on other City properties require a standard level of care and attention to ensure trees remain healthy, safe, and able to provide benefits to the community.

Timeframe: 2022 – onward

KPIs: Completion of a tree inventory and strategy specific to City-owned sites and facilities; Developed and funded management plan for riverfront natural areas, including determining jurisdictional management of riverfront natural forest stands

Accountability: Operations Manager (Parks); Parks Superintendent (Urban Forestry); Facilities and Recreation & Community Development representatives.

3.2 *Expand use of non-potable/reclaimed water for tree establishment.*

Background: Other municipalities capture water from spray pads, store it in underground tanks, or utilize water from storm ponds, and then use the water for tree planting. Facilities, Sustainability and Saskatoon Water would be part of this initiative, through the City's Water Conservation Strategy.

Timeframe: 2022 – onward

KPIs: Litres of water reclaimed for tree establishment; potable water saved

Accountability: Operations Manager (Parks)

3.3 *Increase monitoring and data analysis of trees in business districts, including sharing of trends related to mortality, vandalism, maintenance plans, and new planting success rates.*

Background: Trees in the business districts are an essential part of the core districts; however, these trees face additional stresses and impacts due to their environment. Specifically, they are planted in near hard surfaces that can make survival more difficult.

Timeframe: Begin in 2022

KPIs: Health of trees in intense sites, such as downtown and medians

Accountability: Parks Supervisor (Urban Forestry)

3.4 *Examine a new tree maintenance and planting service level specific to business districts.*

Background: Trees that are lost, especially from vandalism or disease, are a significant detriment to business districts in particular. Current service levels should be examined to facilitate:

- Enhanced pruning and maintenance of larger trees
- Examine planting of basket trees, at an increased cost, where tree loss has been a recurring issue or significant gaps in the canopy exist
- Development of an enhanced service level would involve collaboration with business district stakeholders.

Timeframe: Begin after initial data has been collected in 3.3

KPIs: Reduction in business district tree loss rates due to vandalism, disease, and other causes; change in business district canopy cover

Accountability: Parks Supervisor (Urban Forestry); Operations Manager (Parks); Parks Superintendent

3.5 *Design and implement an integrated tree inventory and work order management system with mobile access.*

Background: Increasing efficiency and performance of the public tree inventory and work order management system is crucial to ensure maximum return on investment. Specifically, field employees need access to a mobile inventory system to update the status of tree pruning and maintenance requests.

Timeframe: Begin in 2022

KPIs: Full integration of new software management system

Accountability: Operations Manager (Parks); Parks Superintendent (Urban Forestry)

3.6 *Increased public awareness and education on the urban forest, including making tree map inventory accessible to the public and improving the City's tree protection webpage and fact sheets.*

Background: Urban Forestry receives many requests to determine whether trees are on public or private property. By making a public tree inventory public, a portion of these requests will transition to online self-service (available 24/7), increasing access and convenience for citizens and reducing costs for the City.

Timeframe: Begin by 2023

KPIs: Inventory (including mapping) is accessible online for free; change in website visits; fact sheet distribution

Accountability: Parks Superintendent (Urban Forestry); Information Technology

4. Protecting the Urban Forest

4.1 *Update the current Policy – “Trees on City Property” and develop a public tree bylaw to ensure clarity on protection, growth, and preservation, with the overall purpose of significantly improving the City's ability to protect public trees.*

Background: There is an opportunity to improve and address the following issues:

- Expand protection to public trees on rights-of-way, in easement areas and natural areas that are not defined park spaces.
- Include or reference up-to-date, technically robust standards and specifications for a variety of tree protection measures.

Timeframe: Begin by 2021 in conjunction with 4.2

KPIs: New policy and bylaw completed

Accountability: Director (Parks); Operations Manager (Parks); Parks Superintendent (Urban Forestry)

4.2 *In consultation with the building and development industry, develop a formalized tree protection process that ensures clarity and balance for all stakeholders where trees are in close proximity.*

Background:

- The City has a goal of increasing infill development. As such, trees and infill projects can be seen as competing
- The intent of this goal is to develop a process that and way to determine when, what, and why priorities take precedent, and to provide clarity on solutions.
- This recommendation also relates to the Mayor's Infill Roundtable (2017), Barrier 1.5: *Value and requirements of tree protection is not communicated early enough in the process and sometimes challenges infill realities.*

Timeframe: Begin by 2021 in conjunction with 4.1

KPIs: New process implemented within target timeframe

Accountability: Director (Parks); Operations Manager (Parks); Superintendent (Urban Forestry)

4.3 *Revise and consolidate tree protection specifications from seven different City documents into a single series of specifications for use across all types of projects that may affect trees on City property.*

Background: Currently, tree protection specifications are not user friendly and can lead to a lack of clarity across documents. This recommendation also includes working with internal partners to review, evaluate, and update existing regulatory documents to present clear, consistent requirements that support protection of designated, suitable spaces for trees in newly developed areas.

Timeframe: 2022

KPIs: New specifications completed within target timeframe; specs are written in industry-accepted format and include standard detail drawings

Accountability: Parks Superintendent (Urban Forestry)

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4.4 *Develop an Invasive Species Management Strategy, with potential regional collaboration between the City, RM of Corman Park, Meewasin, and the Province.*

Background: Cottony Ash Psyllid is a recent example of the need to identify threats to the urban forest early on; Emerald Ash Borer presents an even larger threat in the future. A unified strategy would help proactively mitigate threats from Dutch Elm Disease, Emerald Ash Borer, European Buckthorn, and wild boar for example.

Timeframe: Begin in 2022

KPIs: Completion of a Strategy, with involvement from regional partners by 2024

Accountability: Operations Manager (Parks); Parks Superintendent

4.5 *Engage the public and key stakeholders to consider the desire, costs, and benefits of a private tree bylaw.*

Background: Many other cities have enacted a public tree bylaw to extend protection and canopy benefits to private properties for trees of significance.

Timeframe: Begin in 2025

KPIs: Public engagement completed

Accountability: Director (Parks)

4.6 *Undertake outreach and education efforts with relevant civic Departments and the public.*

Background: As the program responsible for spearheading the City's tree protection efforts, it is incumbent upon Urban Forestry to lead efforts to increase awareness of the value of the urban forest and the importance of, and methods for, effective tree protection during any site work, both internally and externally. For example, improved education and understanding around ornamental, edible, invasive, native and naturalized trees. There is also the potential for a

more robust monitoring strategy, specifically for the health of urban riparian forests (beyond Dutch Elm Disease), with an opportunity to engage citizen scientists for monitoring.

Timeframe: Begin in 2021

KPIs: Number and scope of internal outreach and education efforts (e.g. project-specific working groups, lunch and learn workshops, open channels of communication) to promote and assist other Departments in incorporating tree protection measures throughout the planning, design, and implementation stages of projects and operations.

Accountability: Parks Supervisor (Urban Forestry); Parks Superintendent (Urban Forestry)

4.7 *Parks works with other internal Departments to develop a formalized valuation approach for trees, to be included in other types of reporting, such as the Parks Asset Management Plan.*

Background: Trees are of significant value (in Saskatoon, public trees [excluding shelterbelts and areas] are valued at \$530 million), yet unlike other valuable assets, our trees are not accounted for on any balance sheet or other valuation method.

Timeframe: 2022-2023

KPIs: Public trees are valued as an asset that changes in value over time.

Accountability: Operations Manager (Parks); Parks Superintendent






6.0 KEEPING THE PLAN ALIVE

The Urban Forestry team will review the UFMP annually as part of the Parks' annual business planning process and modify any targets, goals, objectives, responsibilities, and action items as needed. Implementation of recommendations may necessitate additional capital and/or operating requirements that, if required, will be brought forward for consideration at the appropriate time. This will ensure the plan remains a "living document" that can be used when external changes occur.

Annual progress reporting and success tracking will happen within the Urban Forestry team and with the Director of Parks, including progress updates through the Parks Annual Report. The UFMP will undergo a formal review every five years.



*Saskatoon's 'man of the trees',
Richard St Barbe Barker,
described the forest as 'a
society of living things, the
greatest of which is the tree.'*

APPENDIX 1 - STAKEHOLDER FEEDBACK SUMMARY

Appendix 1 is a summary of specific suggestions and feedback received from stakeholders on Tree Planting, Tree Protection, and Tree Maintenance during the Engagement phase of the UFMP. Note that statements below do not necessarily imply inclusion or exclusion in the Plan.

Feedback Received – Tree Planting

Approximately 47% of Civic Satisfaction & Performance Survey participants were satisfied with the level of tree planting provided by the City. Participants from workshops and meetings identified the following actions related to tree planting.

Suggestions – What to plant:

- Where solar panels are present, consider use of low growing tree or shrub species.
- Consider resilient native species plantings on berms.
- Plant more fruiting trees, especially native varieties, and shrubs in parks and other public spaces.
- Avoid planting fruiting trees in business areas.
- Incorporate species to facilitate year-round colour.
- Since elm and ash comprise 50% of the current canopy, it is important to encourage resilient and diverse species planting.
- Plant aspen for low maintenance waste land areas.
- Explore the Northern Acclaim honey locust.

Suggestions – Where to plant:

- Create and maximize use of suitable space for trees:
 - require that development be designed with spaces identified at the outset for trees.
 - require businesses to plant trees on their property.
 - require more sustainable planting sites in new neighbourhoods.

- replant areas with damaged or dying trees.
- avoid locations with poor soil quality, such as along roadways where use of salt or other ice treatments is common.
- monitor future trends in utilities services to prepare tree planting plans flexible enough to accommodate new technologies.

• Suggestions – planting locations to target:

- examine a second green belt around the city to complement the perimeter road.
- plant more trees:
 - downtown
 - along the river
 - in new neighbourhoods
 - on Riversdale boulevards
 - near new roadways
 - in high use areas of each business improvement district

Suggestions – How to plant:

- Explore partnerships and community involvement:
 - incorporate ceremony and tree teachings into tree planting.
 - partner with community organizations to secure funding for tree planting and host volunteer tree planting events in parks or on vacant public property.
 - explore opportunities to partner with property owners.
 - work with Meewasin to replicate the recent food forest pilot in another location.

APPENDIX

- work with schools to explore planting opportunities for youth.
- work with Meewasin to trial new tree species and coordinate plantings.
- Maximize or update existing programs/policies:
 - shift the community tree planting program from an “opt in” service to an “opt out” service; better communicate the existence of the program to current and new residents.
 - remove current regulatory barriers that prevent planting of fruit trees and food forests.
 - align City processes to make it easier for developers to assist in increasing forest canopy levels in new developments.
 - update private landscape requirements to accommodate and encourage sustainable tree planting.
- Offer incentives:
 - encourage developers to plant more trees by offering credits to those who go above and beyond the existing tree requirements on their projects.
 - offer developers a credit for boulevard planting in their developments.
 - offer residents incentives for planting trees in their yards.
- Recognize and celebrate national tree days:
 - formally recognize and plan education and tree planting ceremonies around national days of awareness, such as Arbor Day, Maple Leaf Day, National Forest Day, and Earth Day.
- Plant for growth, health, and sustainability:
 - incorporate more naturalized tree plantings.
 - ensure that trees have space for the root zone.
 - plant more communities of trees instead of rows.
 - avoid use of open tree grates.
 - explore secondary or successional plantings that mimic natural habitat and contribute to tree health.

Feedback Received – Tree Protection

Approximately 44% of Civic Satisfaction & Performance Survey respondents were satisfied with the level of tree protection provided by the City. Participants from workshops and meetings identified the following actions related to tree protection.

- Develop a public tree bylaw/policy update:
 - explore all design alternatives before approving removal and compensation for a tree.
 - require consideration of the footprint of a mature tree in the design stage of a development.
 - design developments with climate impacts and the adaptation benefits of trees in mind.
 - update the rezoning or building permit process to include estimated destruction of trees on a property as a result of a new development; consult neighbouring residents on the development and provide an opportunity to voice their level of support for the development.
 - require tighter enforcement and education for contractors on infill projects.
- Examine development of a private tree bylaw:
 - Comments were received regarding the consideration of a private tree bylaw that includes rules for shared trees and education for developers/contractors; to be modelled after the Heritage Tree Protection Guidelines.
 - some participants were supportive of developing a private tree bylaw to:
 - protect older trees from being unnecessarily removed
 - protect private trees from the spread of disease
 - some participants were not supportive of developing a private tree bylaw for the following reasons:

- too much infringement on property rights
- education about proper tree care would be a better approach
- difficult to regulate
- prefer to hire an arborist directly
- too many bylaws already regulating private property

In addition, participants mentioned it would be beneficial to develop a publicly accessible tree inventory, as this would create opportunities for education, especially around the value of trees. The inventory could be built in a way that supports community education by inviting the public to share observations about both heritage and ailing trees in Saskatoon.

Feedback Received – Tree Care

Approximately 59% of Service Satisfaction Survey respondents were satisfied with the level of tree care provided by the City.

Participants from workshops and meetings identified the following actions related to tree care.

- Consider and enhance soil health.
- Focus efforts on reducing tree stressors to improve survival rates and prevention of pest infestation.
- Improve maintenance of shelter belt trees. Remove dead trees to improve aesthetics at City entrances.
- Work with contractors to establish pruning best practices.
- Share tree care tips with residents.
- Determine which department is responsible for maintenance of park and civic facility trees.
- Create a Natural Forest Plan to secure funding/resources and determine who is responsible for management of natural stands and afforestation areas.







City of
Saskatoon

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