Winnipeg Comprehensive Urban Forest Strategy

February 2023 | Final Draft



Winnipeg

ACKNOWLEDGEMENTS

Diamond Head Consulting Ltd. (DHC) has prepared this Strategy for the City of Winnipeg. DHC acknowledges the participation and support of City of Winnipeg departments and staff in preparation of the document.

Draft Date
February 2023

Winnipeg

Prepared by:

DIAMOND HEAD

Land and water acknowledgement

Winnipeg is located in Treaty No. 1 Territory, the home and traditional lands of the Anishinaabe (Ojibwe), Ininew (Cree), and Dakota peoples, and in the National Homeland of the Red River Métis. Our clean drinking water comes from Shoal Lake 40 First Nation, in Treaty No. 3 Territory.

Executive summary

Winnipeg's urban forest is vital to the fabric and health of our city. Faced with the combined pressures of invasive pests and disease, climate change, and development, clear direction and outcomes are needed now more than ever to steer the management of Winnipeg's urban forest, ensuring its continuity for the enjoyment of future generations. This document is Winnipeg's first comprehensive urban forest strategy. It provides a 20-year vision for the City's urban forest, identifying key recommendations and strategic actions to help protect, preserve, and enhance Winnipeg's tree canopy towards achieving a canopy cover of 24 percent by 2065. Progress will be monitored and actions will be reviewed and updated every four years. This strategy is the product of two years of collaborative effort between City staff and consultants, and is rooted in an engagement process that involved local stakeholders and the broader community.



WINNIPEG'S VISION FOR THE URBAN FOREST

An abundant, healthy, diverse, and resilient urban forest that is an essential component of the health and wellbeing of Winnipeg's people and communities



More than three million trees make up Winnipeg's urban forest. Over the coming decades, increasing pressures from pests and disease, climate change, and continued urban development will impose unprecedented strain on Winnipeg's forest resources.

An analysis of the City's public tree inventory identified that more than 50 percent of the City's public trees are at risk due to current invasive pests alone. In Winnipeg's native riverbottom forests, many American elms have already been lost due to Dutch elm disease and green ash are also at risk from emerald ash borer (an invasive pest). Unfortunately, once emerald ash borer has established itself in a centre, there is little hope for the local ash population. In Winnipeg, the pest is expected to kill most of the ash trees. This type of relatively sudden change in biodiversity representation has uncertain consequences on fragile riparian ecosystems.

Winnipeg's urban forest is facing unprecedented changes. The Comprehensive Urban Forest Strategy will address these changes by guiding our approach to how we plan for our forest assets, where and what we plant, how we will manage, what we protect, and with whom we can partner to achieve our vision for an abundant, healthy, diverse, and resilient urban forest.

At present, Winnipeg's urban forestry program is not adequately resourced to stabilize or increase canopy cover, or to minimize risk to tree assets. Implementing the recommendations in this strategy will require budget increases. However, the cost of taking no action is anticipated to lead to higher expenditure overall because it will result in more expensive risk mitigation, higher risks to public safety and liability to the City, more frequent tree removals, higher service call rates, and the net loss of ecosystem services values, which have indirect costs for human and environmental health impacts.

Under the current management approach, **it is anticipated that Winnipeg could lose approximately 25 percent of its tree canopy by 2065**. If EAB establishes, then approximately 50 percent of Winnipeg's tree canopy may be lost. This strategy includes 25 policy recommendations to stabilize (with EAB) or increase Winnipeg's canopy cover to 20% by 2045 and 24% by 2065. To achieve this target, approximately 17,000 new trees per year will need to be planted on all suitable properties across the City, in addition to replacement street and park tree planting for each tree removed in that timeframe.

The strategic framework shown in Figure 1 provides the vision, principles, goals and targets to both proactively and adaptively manage our urban forest assets so that they may thrive in the future. The framework is aligned with the *Winnipeg Parks Strategy* and with urban forest management and planning best practices. Ten principles underpin the strategy and provide a foundation to guide future decision-making. A complete description of the framework and detailed recommended actions can be found in Section 5 of this document.

Urban forest strategic framework

VISION FOR THE URBAN FOREST					
An abundant, healthy, diverse, and resilient urban forest that is an essential component of the health and wellbeing of Winnipeg's people and communities					
PRINCIPLES					
1	Contribute to a healthy and beautiful city	**5**	Build strong partnerships	**8**	Support reconciliation
2	Mitigate and adapt to climate change	**6**	Protect our existing urban forest	**9**	Respect cultural heritage
3	Provide equitable service delivery	**7**	Maintain healthy and safe trees	**10**	Learn and manage adaptively
4	Enhance biodiversity and ecological function				

GOALS				
Plan accountably	**Plant strategically**	**Manage adaptively**	**Protect prudently**	**Partner purposefully**
To achieve an equitable distribution of connected tree and forest assets that will improve the health of our people and communities	To grow a robust and sustainable urban forest that will maximize benefits for human health and ecological function	To improve tree health and safety, achieve planned levels of service, and respond to unplanned demand for services	To preserve and protect Winnipeg's urban forest canopy where it will maximize benefits for human health and ecological function	To foster reconciliation and stewardship that will build capacity to achieve goals and respond to challenges

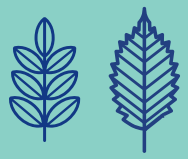
TARGETS							
							
Canopy cover: 20% by 2045 24% by 2065	**American elms lost annually:** No more than 2%	**Public planting:** No more than 5% potential planting sites vacant	**Public tree replacement:** 1:1 (one tree replaced for every tree removed)	**Public tree diversity:** No more than 10% species and 20% genus	**Public tree loss annually:** No more than 1.5%	**Pruning cycles:** 7-years for street trees 12-years for park trees	**Customer satisfaction:** at least 50% across all services

Figure 1 - Urban Forest Strategic Framework components

Priority policy actions

The urban forest strategy includes 25 policy recommendations supported by just over 100 actions to be implemented over 20 years (see "5. Urban forest policy recommendations" on page 62). A sub-set of **priority policy actions** for implementation in the **first 5 years** of this plan are highlighted in Table 1.

Table 1. Priority policy actions for implementation in the first 5 years

Priority policy actions	Poliy ref (policy #)	Cost estimate
Planning		
1. Adopt targets for urban forestry levels of service and commit to biennial reporting	1	$$$
2. Create a City tree policy to guide tree planting, preservation, protection, removal, and maintenance decisions	2	$$
3. Include trees as natural assets and their value in the corporate asset management plan	3	$
4. Collaborate across City departments through integrated policy and project approaches that meet urban forestry objectives and contribute to poverty reduction, stormwater interception, improved streetscape outcomes and urban tree waste management	4	$
5. Measure progress regularly, review Urban Forest Strategy Action Plan every four years, and update recommendations as needed to improve progress towards service targets	5	$$$
Planting		
6. Increase new and replacement tree planting in streets and parks	6	$$$$
7. Plan for and prioritize tree planting where it is most needed	7	$$
8. Increase the diversity of urban species in the City's public tree population and develop plans to proactively replace aging or dying elm and ash	8	$$
9. Update specifications, details and planting standards to maximize the health and life expectancy of newly planted City trees	9	$
10. Maximize the quantity and quality of trees planted with development with updates to zoning bylaws and development agreement parameters	10	$$
11. Provide incentives to encourage private land tree planting with partner-funded programs	11	$$
12. Expand and enhance naturalized forest and riverbank areas through natural areas management plans and planting with partner-funded programs	12	$

Cost estimates:

$: within existing resources/costed in other City strategy

$$: <$100,000

$$$: $100,000 to $500,000

$$$$: >$500,000

Priority policy actions	Poliy ref (policy #)	Cost estimate
Management		
13. Maintain and regularly update an inventory of urban forest assets, including creating or procuring a work management system	13	$$$
14. Follow a best practices program for tree care and tree risk management for City-owned trees	14	$$$$
15. Rapidly remove dead, diseased, and dangerous trees	15	$$$$
16. Minimize the use and impact of common practices in winter road management that harm City-owned trees	16	$$$
17. Ensure tree inventory data is available internally across departments	17	$
18. Monitor natural area forest cover and prioritize invasive species removal where overstory canopy losses are expected	18	$$$
Protection		
19. Pursue revisions to the City of Winnipeg Charter to enable the City to regulate tree preservation and protection on private property, create a Development Arborist position and document tree protection standards	19	$$$
20. Increase protections for City-owned trees in by-laws and update tree protection specifications	20	$$$
21. Update the Ecologically Significant Natural Lands Strategy and identify a city-wide green infrastructure network to prioritize habitat protection and restoration	21	$
Partnerships		
22. Establish mutually-respectful partnerships with First Nations, Métis, and Inuit governments, organizations, and individuals	22	$
23. Empower residents to participate in urban forest management by enabling smaller caliper trees to be planted on City property by residents and community groups under an agreement	23	$
24. Develop and implement a communications and stewardship plan and develop community planting program	24	$$$
25. Work with partners including nurseries, community organizations, universities, Trees Winnipeg, the Province of Manitoba and professional networks to implement the Urban Forest Strategy	25	$$$

Cost estimates:

$: within existing resources/costed in other City strategy

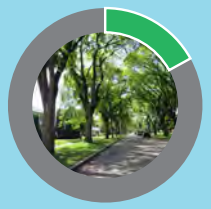
$$: <$100,000

$$$: $100,000 to $500,000

$$$$: >$500,000

WINNIPEG'S URBAN FOREST

3 MILLION
Trees city-wide



17%
Canopy cover (2018)

$3 BILLION
Compensatory value

58%
of public tree inventory is ash & elm

CHALLENGES

Climate Change
Warmer summers means more hot days and less moisture for trees. The frequency of extreme events like heat waves and heavy, wet snowfalls is expected to increase.

Urbanization
Winnipeg is growing, with new development at the urban fringe and densification in existing areas changing the landscape for trees.

Pests & Disease
Dutch elm disease and emerald ash borer could impact more than 50% of Winnipeg's public trees. Warmer temperatures will improve pest survival and growth.

Winnipeg risks losing almost 50% of its public trees in the next 40 years to pests and disease

OUR PLAN

Vision
An abundant, healthy, diverse, and resilient urban forest that is an essential component of the health and wellbeing of Winnipeg's people and communities

Goals
1. **PLAN** accountably
2. **PLANT** strategically
3. **MANAGE** adaptively
4. **PROTECT** prudently
5. **PARTNER** purposefully

City-wide Targets
1. 20% canopy cover by 2045
   24% canopy cover by 2065
2. No more than 2% annual loss of city-wide American elm

Public Tree Targets
3. No more than 5% of potential planting sites vacant
4. One tree replaced for every tree removed
5. No more than 10% species and 20% genus in public inventory
6. No more than 1.5% annual loss of public trees
7. Prune street trees on a seven-year cycle and park trees on a 12-year cycle
8. At least 50% customer satisfaction rate across all services

Table of Contents

1. INTRODUCTION 1

2. BACKGROUND AND CONTEXT 4

3. OPPORTUNITIES AND CHALLENGES 30

4. URBAN FOREST BASELINE AND SERVICE TARGETS 48

5. URBAN FOREST POLICY RECOMMENDATIONS 62

6. MEASURING PROGRESS 77

APPENDIX A - DISCUSSION PAPER (DOWNLOAD SEPARATELY) 80

APPENDIX B - BYLAW COMPARISONS (DOWNLOAD SEPARATELY) 80

APPENDIX C - PHASE 1 AND PHASE 2 ENGAGEMENT SUMMARY (ATTACHED) 80

1. Introduction

Winnipeg's urban forest plays a vital role in shaping the city's character and identity. Trees and forests are often the defining features of our river corridors, streets, parks, and neighbourhoods. In Winnipeg, colourful trees signal the changing of seasons. Trees and forests also provide critical ecosystem services like shade and cooling on hot days, rainwater interception to reduce localized flooding and clean stormwater, and habitat for animals. Municipalities are increasingly recognizing urban forests as an essential part of city infrastructure – a natural asset that delivers ecosystem services throughout communities. As climate change brings new challenges, the urban forest is expected to play a significant role in environmental health and promoting and protecting the health and wellbeing of the people in our communities.



Urban forestry is the act of managing trees, forests, and natural ecosystems in and around urban communities to maximize the physiological, social, economic, and aesthetic benefits that these features provide[1].

Three main interconnected components form the urban forest system, including: City-owned street and park trees, City-owned natural areas (including forests), and trees growing on private land. **More than three million trees** are estimated to be growing in Winnipeg - 300,000 of those are inventoried City-owned street and park trees, and the remainder grow in natural areas and on private land.

Many people may think of urban forest management as a municipal responsibility. In reality, management extends to the many stakeholders who have a role in the stewardship of trees on both public and private land, including private citizens.

The Urban Forest Strategy builds on the State of the Urban Forest report, which offers an evaluation of the current extent and composition of Winnipeg's urban forest, as well as existing management practices[2]. The Strategy was also informed by input and feedback collected through two comprehensive phases of public and stakeholder engagement.

What is the urban forest?

The urban forest is the combination of all trees and associated vegetation, soil, natural processes, and cultural elements on public and private land in an around towns, cities, and other communities (Figure 2).

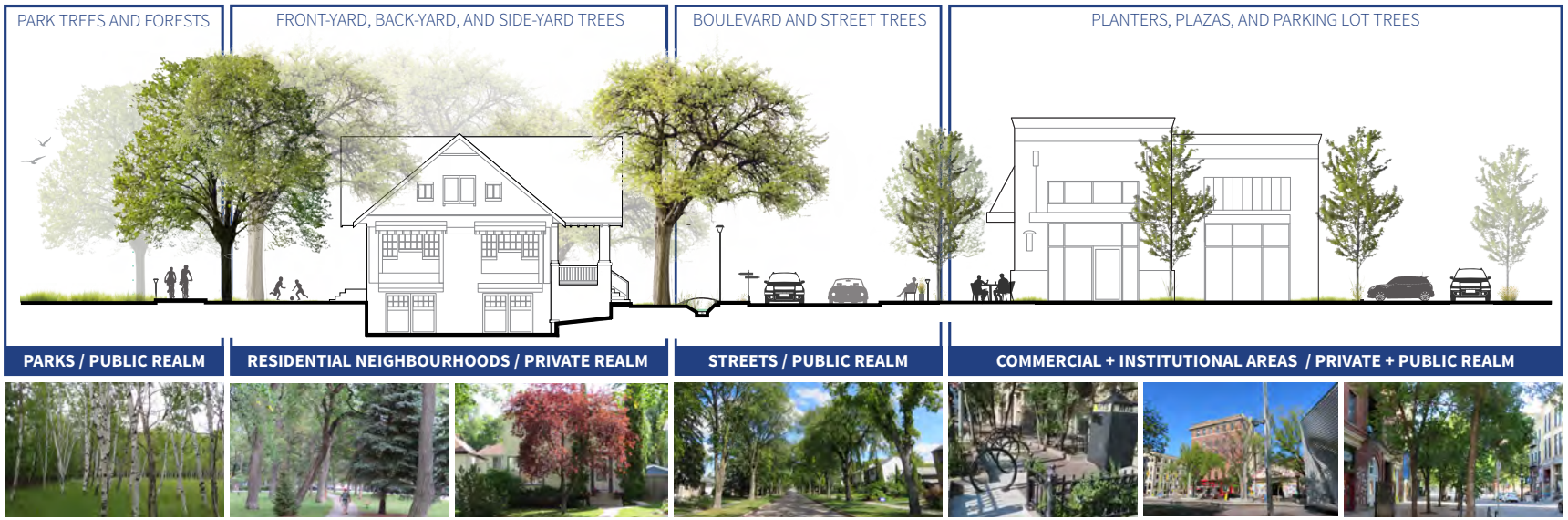


Figure 2 - Winnipeg's urban forest includes all trees and associated vegetation, soil, natural processes, and cultural elements.

Strategy purpose

Winnipeg's Comprehensive Urban Forest Strategy puts forward the broad long-term vision for the City's urban forest and provides clear direction and measurable outcomes necessary to achieve the vision. This document also contains goals, policies, and actions intended to improve the City's capacity to manage its urban forest assets to meet the needs of the community, adapt to change, formalize service delivery, and build partnerships.

The Urban Forest Strategy guides:

- How the urban forest will be planned to achieve an equitable distribution of benefits that will improve the health of our people and communities.
- Where and how trees will be planted to grow a robust and sustainable urban forest that delivers urban forest services where they are most needed.
- How trees will be managed to adapt to challenges, improve tree health and safety, and achieve planned levels of service
- Where and how the urban forest should be protected to sustain urban forest canopy and community benefits.
- How to partner to increase capacity to grow and manage the urban forest raise awareness of its importance.

By implementing the Strategy, the City will prioritize resources, strengthen policy, and broaden partnerships to achieve a vision for an urban forest that contributes to the health and wellbeing of all people and communities.

Document structure

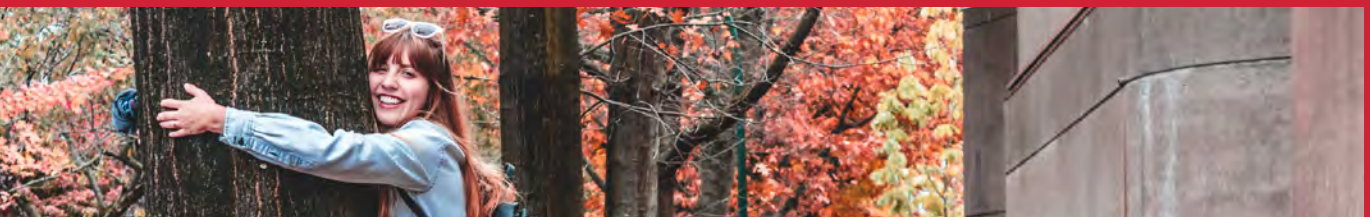
The Comprehensive Urban Forest Strategy is organized into seven main sections:

1. **Introduction** – introduces the urban forest, the purpose of the Strategy, and the structure of the document.
2. **Background and context** – identifies the value of trees to Winnipeg, provides relevant historical contexts, and presents the key urban forestry services and relationship to supporting City policies and plans.
3. **Opportunities and challenges** – presents key opportunities and challenges for managing Winnipeg's urban forest reflected in the policies and actions included in the urban forest strategic framework.
4. **Urban forest baselines and service level targets** – describes baselines and targets for the provision of healthy tree assets throughout Winnipeg.
5. **Urban forest strategic framework** – outlines the vision, key values, defining levels of service, and associated goals for planting, management, protection, and stewardship including the strategies and actions needed to meet each goal.
6. **Measuring progress** – summarizes the key targets set to measure progress and provides timelines for reporting.
7. **Appendices**

2. Background and context

Section 2 presents the current state of the urban forest and informs the urban forest strategic framework. The section delves into the importance of Winnipeg's urban forest, relevant history, engagement results, management context, and how the Urban Forest Strategy relates to other policies and plans. The discussion expands on the i-Tree Eco benefit analysis work reported in the State of the Urban Forest report (Appendix A).





Winnipeg's urban forest

- Stores more than 500,000 tonnes of carbon
- Removes 270 tonnes of pollutants annually
- Prevents more than one million cubic metres of stormwater from entering drains annually

The importance of trees: benefits of Winnipeg's urban forest

Trees provide vital environmental, economic, cultural, and social benefits to the community. People have understood the value of trees and forests in a variety of ways throughout history. In the relatively new field of urban forestry, the benefits provided to humans by trees and ecosystems are often called ***ecosystem services***. Increasingly, municipalities are managing trees in cities as assets, just like sewers and streetlights, to maximize benefits, reduce risks, and provide a satisfactory level of service for a sustainable cost. The following sections explore a sampling of the diverse benefits trees provide to people and communities.

Environmental benefits

Trees help moderate the environment and, as a keystone structure in natural ecosystems, create microclimates, increase soil nutrients, and support habitat for plants, animals, and insects. Along Winnipeg's rivers, trees and other plants are critical for reducing soil erosion and stabilizing the riverbanks. Trees can also help our community mitigate and adapt to climate change by storing and sequestering carbon, intercepting rainwater, and providing shade and cooling during hot days.

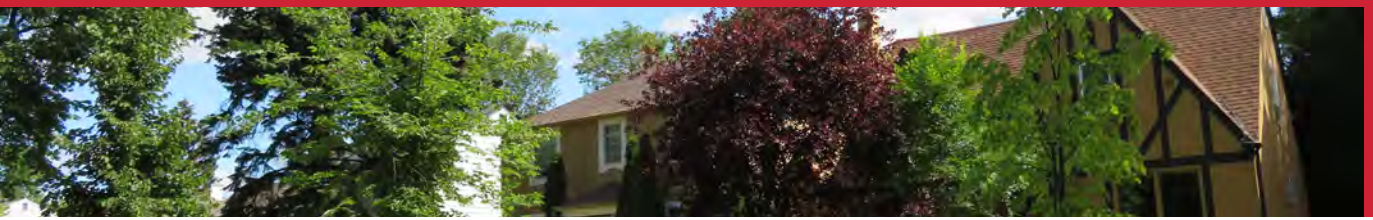
Storing and sequestering carbon – Trees sequester and store carbon, critical for reducing the atmospheric concentration of carbon dioxide contributing to greenhouse gas emissions to mitigate the effects of climate change. The plants and soils that make up native grasslands are also critical for carbon storage in the prairies. Winnipeg's entire urban forest stores an estimated 509,000 tonnes of carbon in trees, resulting in an estimated total value of $39.2 million. Each year, trees sequester an estimated 39,000 tonnes of carbon dioxide which is roughly twice that generated annually from building electricity in Winnipeg[3].

Provision of habitat – The urban forest provides critical habitat for native plants and animals, particularly in the city's naturalized areas that are home to hundreds of millions of native trees. These riverbottom aspen and oak forests foster high biodiversity of native species, including endangered species and habitats. Throughout Manitoba, there are 25 animals and eight plants listed as endangered under the *Endangered Species and Ecosystems Act* and many rely on the tall grass prairie ecosystems found within our natural areas[4].

Cleaning air – Clean air is important for human health. Trees remove particulate matter including carbon monoxide, nitrogen dioxide, sulfur dioxide, ozone, and PM2.5 while producing oxygen for us to breathe. Our city's entire urban forest removes an estimated 274.2 tonnes of pollutants per year and produces approximately 15,000 tonnes of oxygen annually.

Stormwater reduction and erosion control – Urbanization increases the overall abundance of hard surfaces, which reduces rainwater infiltration into soil and increases surface runoff. The water that runs off these hard surfaces during storm events can overwhelm the drainage system resulting in surface flooding, contamination of waterways, and erosion of riverbanks. Trees can help reduce runoff by catching and slowing water with their leaves and stems, while their root systems hold soil together to reduce bank erosion. Trees in Winnipeg prevent an estimated one million cubic metres of stormwater from entering the stormwater system each year.

Shading and cooling – Trees are nature's air conditioners and, on hot summer days, provide shade and cool our city streets and buildings. Cooling benefits are especially important in urban areas where the abundance of hard surfaces (like pavement) results in a temperature several degrees higher compared to surrounding rural areas, known as the urban heat island effect. Climate projections indicate that heat waves in Winnipeg will increase from three to four days to seven days or more by 2051-2080[56]. Tree canopy can help offset the urban heat island effect, particularly once tree canopy exceeds 40 percent in a city block[7].



Trees support:

- Placemaking
- Spirituality
- Traditional practice
- Connection to local culture
- History of landscape

Health and wellbeing benefits

Winnipeggers visit the urban forest to recreate, appreciate the landscape, and experience nature. Trees also encourage socialization and reduce feelings of isolation, observed through stewardship activities and recreation activities forming connections between individuals with the shared respect for the urban forest.

Reducing stress and improving overall health – Physical activity is well-known to improve overall health. Living close to a greenspace encourages outdoor exercise and increases opportunities for physical activity, which in turn helps to reduce anxiety, stress and depression. The act of forest bathing (known in Japan as Shinrin-Yoku) is the practice of fully immersing oneself in the natural world[8]. Studies show promising physical and mental health benefits of the practice including increasing immune system functioning by increasing natural killer cells; doctors are also starting to prescribe 'nature' to patients[9]. In 2020 during COVID-19, use of regional parks across Winnipeg increased by 51 percent[10]. Canada's first national nature prescription program 'PaRx' was launched in 2021. Licensed health-care professionals can create nature prescriptions and offer patients a Parks Canada Discovery Pass free of charge.

Connecting children with nature – Research shows nature helps children develop connections to their surrounding environment and improves their mental, physical, and social health[11]. Increased neighbourhood tree cover has been shown to increase the level of play and physical activity among children[12]. In addition, forest schools - several of which currently operate in Winnipeg - are an approach to educating children and providing them with the benefits of interaction with nature. This approach is strongly linked with Indigenous ways of teaching and knowing[13].

When asked to draw their favourite place in one study, 96 percent of children illustrated an outdoor scene[14]. However, an American study found the average child spends over seven hours a day in front of a screen, highlighting the importance of nearby, accessible nature[15].

Reducing heat-related illness – Extreme heat can cause heat stroke and exacerbate underlying health conditions. Extreme heat events are increasing in duration across Canada and trees can mitigate risk factors by cooling temperatures and lowering the urban heat island effect[16]. Maximizing tree canopy is critical, especially in areas with vulnerable populations who are more susceptible to heat related illnesses[17]. Trees in the urban environment decrease the risk for heatstroke and are associated with a decrease in morbidity and mortality from the effects of heat due to their role in decreasing air and surface temperatures, as well as reducing exposure to ultraviolet radiation[18].

Cultural benefits

Trees provide an opportunity for place-making, spirituality, traditional practices, and connection to local culture and heritage.

Creating a sense of local identity – Trees are iconic in Winnipeg and are part of the city's identity. Sometimes called a prairie oasis and an elm city, Winnipeg has a long-standing tradition of urban forestry with significant elm plantings occurring early in the city's history. Place-making and memories are made through the shared experiences and stories of significant trees, heritage streets, and natural forests.

Connections to Indigenous culture and relationship to land - Winnipeg is located in Treaty No. 1 Territory, the home and traditional lands of the Anishinaabe (Ojibwe), Ininew (Cree), and Dakota peoples, and in the National Homeland of the Red River Métis. Our clean drinking water comes from Shoal Lake 40 First Nation, in Treaty No. 3 Territory. The tall grass prairie ecosystem has long been managed and utilized by Indigenous people, such as for growing and harvesting food and medicinal plants. This connection to the landscape and longstanding relationship to the land and land-based practices are held sacred today. Due to the conversion of these ecosystems to agriculture and urbanized land use with the onset of European colonization, only one percent of these tall grass prairie remains in central North America.

Connections to horticultural heritage – The land which now houses our city has a rich legacy of horticulture. Indigenous peoples' cultivated corn and other plants with useful medicinal, food and material properties. European settlers in the late 19th and early 20th century started gardens and farms for food production, and planted trees for shelterbelts and street trees for civic beautification[19].



When Dutch elm disease began impacting trees in St. Vital's Bois des Esprits, wood carvers and Save Our Seine members worked with the City to create a landmark from a 150 year old tree slated for removal. In 2004, wood spirits were carved into the north and south facing sides of the tree. The north face was named Woody, and the south facing side was given the name Mhitik in an Ojibway naming ceremony.

Bois des Ésprits was protected from development in 2003 through a cooperative effort on the part of Save Our Siene, the City, the Province, and the developer. While Woody-Mhitik is no longer standing, many wood spirits have been carved out of dead trees over the years to watch over the forest and raise awareness of the importance of land conservation.



Trees can:

- **Reduce the need for air conditioning by 30%**
- **Cut heating bills by 20-50%**
- **Raise property value 3-15%**
- **Encourage shoppers to spend 9-12% more**

Economic benefits

The urban forest contributes to the city's economy by reducing building energy costs, encouraging spending in business areas, decreasing health costs, promoting tourism, and providing other cost-saving ecosystem services.

Energy savings – Planting the right tree in the right place can yield energy use savings for the building owner. Research shows planting trees can reduce air conditioning usage by 30 percent and cut heating bills by 20-50 percent[20]. Trees planted on the north, northwest and east side of buildings provide shade to reduce air conditioning costs. Trees planted as shelterbelts can shield against wind and snow.

Increase shopping - Trees can benefit the local economy by beautifying and shading streets. A 2005 study found shoppers spend 9-12 percent more in central business districts with high quality canopy cover[21]. The same study found shoppers travel greater distances and spend more time visiting districts with high quality trees.

Health savings – Research shows trees provide health benefits that can reduce hospital stays and risk of heat illness and improve mental and physical health[22]. Heat waves can cause heat stroke and exacerbate existing health conditions leading to higher instances of sudden death[23]. Blocks with higher tree canopy are cooler on hot days and tree shade provides refuge for those seeking relief from outdoor or indoor heat. Research has also shown living adjacent to a greenspace decreases illness and disease of people with similar income levels[24]. One study from Toronto found having 11 additional trees in a city block was associated with a decrease in cardiometabolic health conditions equivalent to those in a neighbourhood with a $20,000 higher median income[25]. Research also found the spread of emerald ash borer across 15 American states was associated with 21,000 additional deaths from cardiovascular and respiratory disease, largely affecting wealthier areas with higher canopy[26].

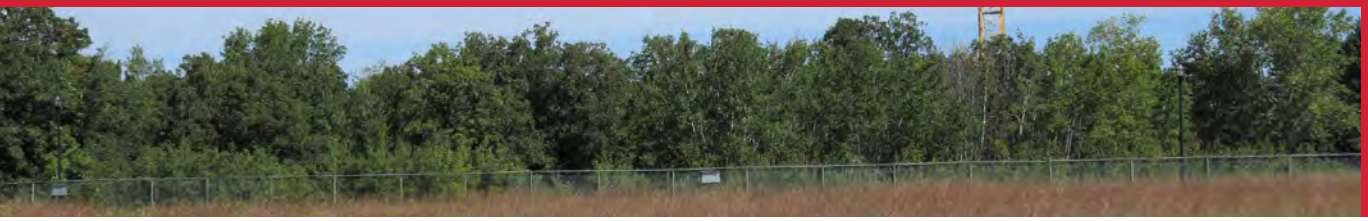
Marketing the City – Winnipeg's urban forest attracts tourists and new residents to Winnipeg who appreciate the forested parks and the shade and beauty of the mature boulevard trees in many areas. A treed city and the values associated with it can establish cities as green leaders and encourage other cities to follow suit.

Healthy food systems – Urban forests inclusive of food producing trees support population health by maintaining equitable access to affordable, safe, nutritious and culturally appropriate foods[27]. They also provide opportunities for city residents to interact with nature, learn about where their food comes from and what local foods can be grown in Winnipeg's climate. When working in partnership with community organizations and schools, they can contribute food to community-based food programs, facilitate community connectedness and wellbeing by bringing people together, and creating opportunities to learn food skills and traditional teachings[28]. Access, skills and partnerships built around urban forests could potentially lead to economic opportunities.

Value of ecosystem services – Winnipeg's trees are estimated to have a compensatory value of more than $3.3 billion, and store almost $40 million worth of carbon. An i-Tree Eco study estimated the value of annual benefits provided by Winnipeg's whole urban forest at more than $14 million per year. The 2019 i-Tree Eco analysis estimated the equivalent value of ecosystem services including pollution removal, carbon stored and sequestered, annual avoided runoff and building energy savings. More findings on the ecosystem services provided by the whole city and from trees in the City inventory can be found in the State of the Urban Forest report (Appendix A, downloaded separately).

In 1957, a group of 12 women took action to prevent the removal of a large elm at conflict with Wolseley Avenue. When City crews attempted to remove the tree, the women linked arms and formed a human chain around the tree, successfully preventing it from being cut down. The tree was eventuallly removed, but the legacy of community involvement in the protection of Winnipeg's urban forest can be observed to this day. You can visit the R.A. Steen Community Centre to see the Wolseley Elm Plaque commemorating the event just east of the community centre.





1887

Arbor Day adopted as an official public holiday in Winnipeg

A history of trees: growing Winnipeg's urban forest

Winnipeg's urban forest is part of the ancestral lands of the Anishnaabe (Ojibway), Ininew (Cree), Oji-Cree, Dene, Dakota, and the Métis Nation. These Nations have rights and responsibilities to future generations to maintain and strengthen their distinct spiritual relationship with their traditional territories, lands, and waters. Native prairie ecosystems in and around Winnipeg have been altered by European settlement and colonial influences in westward expansion. Today, Winnipeg's population is nearly 767,000 people, of which over 85,000 are First Nations, Inuit, and Métis people, and is projected to add more than 55,000 people by 2025[29].

Winnipeg has the largest Indigenous population of any city in Canada. Settler colonialism and residential schools disrupted Indigenous land management and connections to culture on the lands now known as Winnipeg. The appropriation of so-called vacant land and resources by settlers dispossessed Indigenous people of access to their land, and erased Indigenous presence to justify settler presence. Today's urban forest reflects the priorities and values of settler colonialism and more work must be done to create a more inclusive city that understands its past and commits itself to the principle of mutual respect.

Becoming an Elm City

Prior to colonial settlement, Winnipeg's landscape was dominated by tallgrass prairie maintained by Indigenous land management. Aspen and oak forests dotted the landscape and riverbottom forests of elm, ash and maple fringed the rivers. Forest cover increased with colonial settlement. The prairie was transformed into an elm city through the concerted efforts of the provincial and municipal governments.

The first Arbor Day tree celebration was held in Nebraska in 1874, and it became a national event in the United States by the 1880s. Manitoba followed suit, adopting Arbour Day as a public holiday in 1887. During this time, Winnipeg nurseries began delivering trees throughout the city and



Figure 3 - Point Douglas area around 1875 showing the un-treed prairie landscape



Figure 4 - Photo depicts tree planting on Broadway Avenue looking west, circa 1916 (source: "Broadway Winnipeg", University of Alberta Libraries).



2016 to 2020

33,000 American elms lost in Winnipeg to Dutch elm disease

the City began dedicating land as parks (including the historic River Park and private Elm Park, which is now the Elm Park neighbourhood)[30,31].

In the early 1900s, elm seedlings were transplanted from river valleys and planted along streets, creating today's legacy of mature elm tree canopies over Winnipeg streets[32]. In the early 20th century, American elm, Manitoba maple, and green ash were commonly planted.

The arrival of Dutch elm disease in 1975 posed a significant threat to Winnipeg's urban and natural forests. This devastating wilt disease is predominantly spread by Manitoba's native elm bark beetles, which carry the fungal spores from tree to tree.

The City and Province learned from the decimation of the American elm population in the United States, acting quickly to introduce legislation to protect elms and initiating a program of rapid detection and removal of infected trees annually to slow the spread of the disease. The program was effective, and today Winnipeg has the largest population of urban American elms of any city in North America and possibly the world.

In recent years, removal rates have been increasing due to the aging elm population, several years of drought, and a backlog in removals of diseased trees.

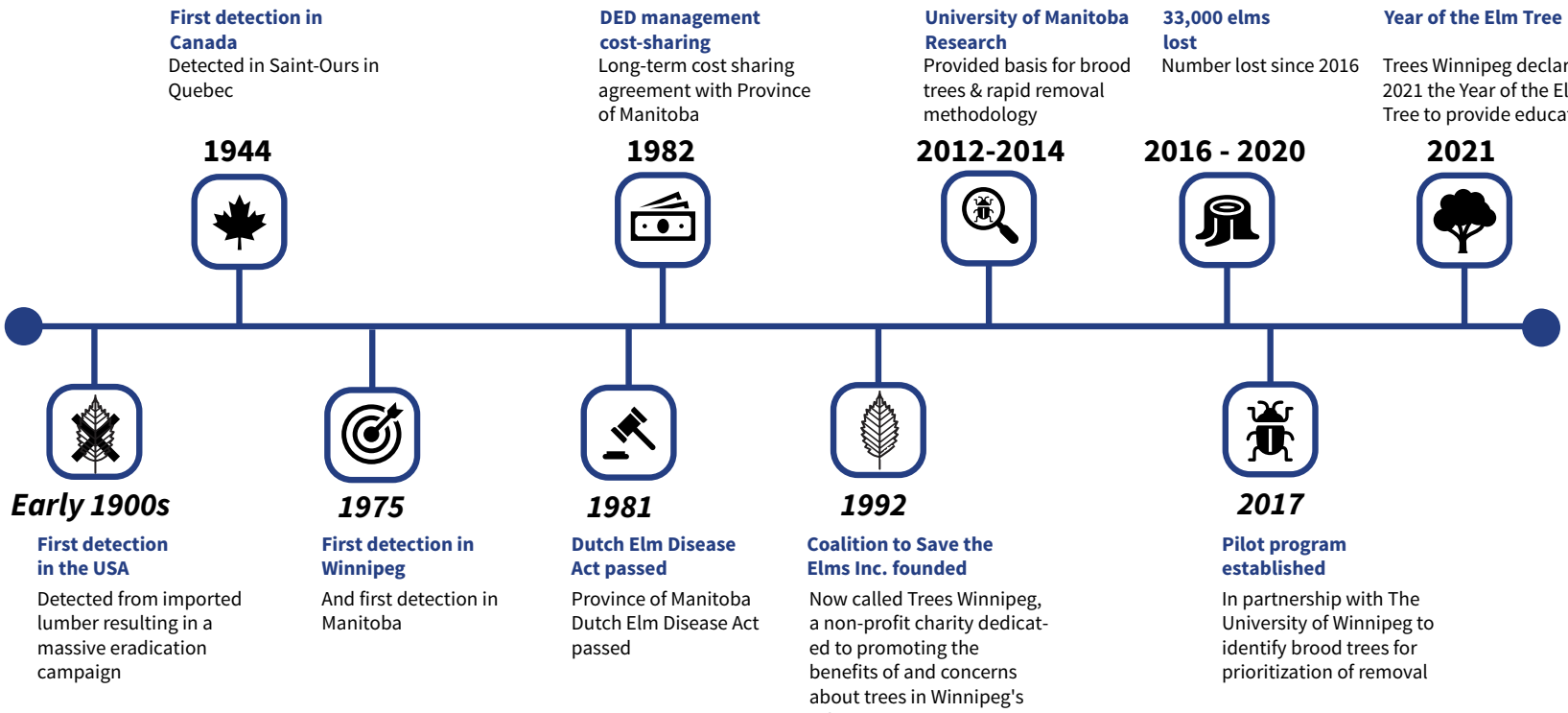


Figure 5 - A timeline of Dutch elm disease in Winnipeg

The oversight of trees: managing Winnipeg's urban forest

Management of the more than three million trees in Winnipeg's urban forest is a responsibility shared by many stakeholders (Figure 6). The City primarily manages trees on streets and in parks but also works with a range of stakeholders to help plan, manage, and plant trees in general.

Property owners are primarily responsible for managing trees on their respective lands; however, the City has a role in regulating private land through the development process and providing Dutch elm disease management. Other stakeholders also support tree planting and tree care on private land.



STAKEHOLDERS	City street and park trees	City natural area trees	Private trees
City of Winnipeg	**Public Works - Urban Forestry** - Primary responsibility for trees in streets and parks.	**Public Works - Naturalist Services** - Primary responsibility for natural areas. **Public Works - Urban Forestry** - Provides support on forest health, risk management, and tree removal services in natural areas.	**Planning, Property, and Development** - Regulates tree protection and replacement with development. **Public Works - Urban Forestry** - Conductes Dutch elm disease surveillance and tree removals on private land.
	Many City departments play a role in urban forest management. See table 1 for a description of the services different departments provide.		
Residents and landowners	Receive services from, advocate for, and participate in stewardship of street and park trees.	Receive services from, advocate for, and participate in stewardship of natural areas.	Plant and manage trees on private properties.
Government of Canada	Provides emerald ash borer regulations, disaster mitigation, and adaptation funding to prevent, mitigate, or protect against the impacts of climate change with public natural infrastructure and assets associated with afforestation and re-forestation.		N/A
Community organizations & educational institutions	Are key stewardship partners across all components of the urban forest, partnering to provide services such as education and advocacy, grant funding, ReLeaf and other tree planting programs, emerald ash borer surveillance, and research.		
Province of Manitoba	Regulates prevention, control, and monitoring of Dutch elm disease and Manitoba Arborist Legislation.		
Manitoba Hydro	Prunes branches and removes trees in proximity to its assets. Provides funding for forest enhancement to non-profit, non-government organizations.		
Private industry arborists, landscape architects, and nurseries	Provides contract services for tree planting, pruning, materials removal, and consulting across all components of the urban forest.		

Figure 6 - Who manages Winnipeg's urban forest?

Table 2. City departments and divisions that work with the Urban Forestry branch to manage Winnipeg's urban forest

Urban Forestry branch				
Key interactions				
Department, division, or branch	Street and parks	Natural areas	Private	Service interactions
Public Works divisions				
Asset Management	●	●		Tree and green infrastructure asset management
Communications	●	●	●	311, service request process, 311 scripts, media, public engagement
Engineering	●	●		Road renewal, construction planning and design, project management, underground structures/services
Finance	●	●		Budgeting, expenditures, accounts payable, and recoveries
Fleet Management Agency	●	●		Procurement, rental, life cycle management of equipment
Human Resources (division of Public Works)	●	●		Support for recruitment and human resource concerns, collective agreement, training (includes Operator Training Branch)
Safety (Branch of Public Works)	●	●		Safety management program
Innovation and Technology (division of Public Works)	●			Tree inventory, data compilation, technology procurement and support, timekeeping
Parks and Open Space (division of Public Works)	●			Home of Urban Forestry Services, input and support in planting, protection and management of street and park trees
Insect Control (branch of Parks and Open Space division, Public Works)	●			Provide elm bark beetle monitoring and control, tree defoliator monitoring and control, emerald ash borer monitoring and tree injections, technical support - street and parks
Naturalist Services (branch of Parks and Open Space division, Public Works)		●		Planting - Natural areas restoration on public land and input to development planning Protection - Protection and preservation of trees in natural areas related to development and construction Management - Input to disease management and removals in natural areas, invasive pest management, trail maintenance Engagement - Living Prairie Museum, habitat restoration and volunteer groups
Streets Maintenance (division of Public Works)	●			Construction and maintenance of streets, winter road and sidewalk maintenance
Transportation (division of Public Works)	●			Transportation planning and design (complete streets, walking, cycling, transit, road network), managing visibility on rights-of-way, school zones
Other departments				
City Clerk's	●	●	●	Supporting work of Council, reporting to Council
Corporate Finance	●	●		
Materials Management	●	●		Procurement, sustainable procurement policy
Risk Management	●	●	●	Claims, risk management
Office of the CAO	●	●	●	
Corporate Support Services	●	●	●	Information services and project management, employee development, safety management program
Legal Services	●	●	●	Contracts, bylaws
Planning, Property and Development	●	●	●	Zoning, urban design, park planning, development permit landscape review, planning checklists, inspections, tree planting securities, tree protection and preservation, land acquisition and sale, leases, easement (regarding Real Estate Division - which may impact or preserve trees); secure parkland dedication, impose conditions of development for boulevard tree planting (Land Development Branch).
Water and Waste	●	●		Stormwater and land drainage planning and construction, underground utility maintenance, resource/waste management, emergency services support
Office of Sustainability	●	●		Climate adaptation planning, ecosystem services evaluation

(Left) Native plant nursery located behind the Naturalist Services branch office in Charleswood. Most plants are grown from seed or cuttings collected within the city limits. This ensures that the plants are adapted to local conditions.

(Right) Native plant nursery showing a variety of trees, shrubs, grasses and forbs. Many of the species grown in the Naturalist Services branch nursery are not available from the commercial nursery trade. Growing a wide variety of locally adapted species promotes biodiversity during habitat restorations.



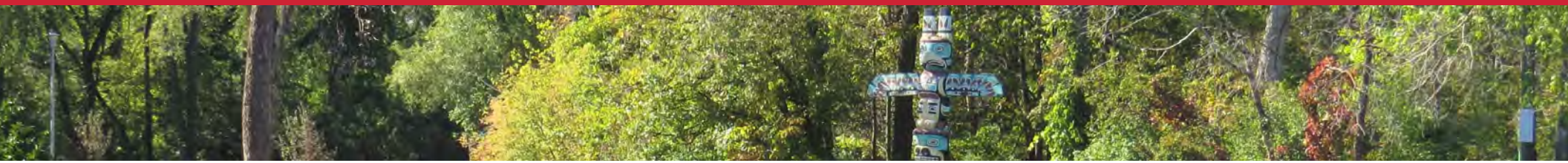


(Below) Preparing the nursery for winter. Since the plants are still in pots their roots require extra protection and insulation in order to survive the winter. Plant pots are stacked and covered with flax straw and plastic to ensure the plants survive the winter.



Naturalist Services staff plant nursery-grown trees at a volunteer planting in Charleswood.





Supporting trees: integrating Winnipeg's policies and plans

The Urban Forest Strategy sits within a hierarchy of existing City policies and plans that enable and guide implementation. Existing plans, strategies, and policy tools supporting trees in Winnipeg are outlined in this section and categorized by those which enable, guide, and are associated with the Strategy, as well as bylaws and other policies.

Enabling legislation

Three pieces of legislation define the City's authority to act on issues related to urban forest management: the *City of Winnipeg Charter*, the *Planning Act, and* the *Forest Health Protection Act*. The relationship between urban forest management and enabling legislation is illustrated in Figure 7.

City of Winnipeg Charter

The City of Winnipeg Charter enables Winnipeg to enact bylaws that may relate to the growing, control, and removal of trees, soil, and vegetation, and the protection of sensitive lands such as riparian areas. Council may pass bylaws regarding the physical impacts of development including establishing a system to require permits for development and impose terms and conditions on approvals.

The Planning Act is the provincial legislation that authorizes, describes, and identifies the hierarchy of Winnipeg's land use planning framework. Under the law, Winnipeg must adopt a development plan to guide plans and policies respecting the City's purposes and physical, social, environmental, and economic objectives, as well as plan implementation. Secondary plans are adopted by Council to address any matter or matters within Council's authority or within the *Development Plan By-law*. Secondary plans have great influence on the physical form of the City and the shape of its forest environment, by dealing with subdivision and building standards, land use and development practices, and sensitive lands protection.

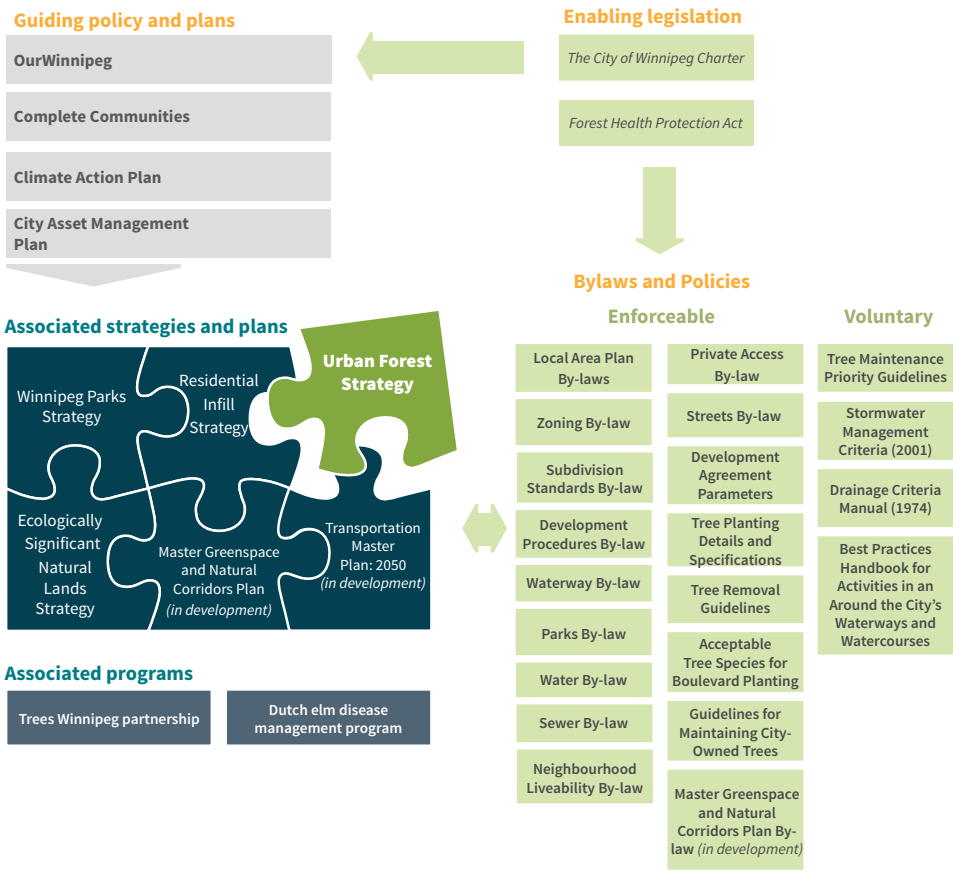
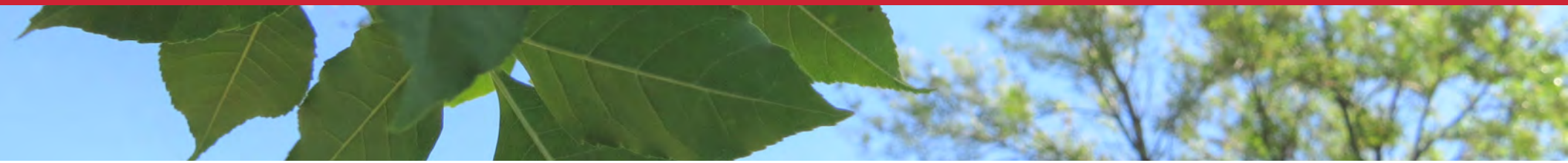


Figure 7 - The diagram above outlines Winnipeg's plans and policies that have been reviewed towards developing Winnipeg's Urban Forest Strategy. Guiding policy and plans such as Our Winnipeg provide broad direction and support for the Urban Forest Strategy. Associated plans, such as the Ecologically Significant Natural Lands Strategy, complement and will be complemented by the implementation of the Urban Forest Strategy. Bylaws, policies and guidelines are tools to implement the various plans and strategies on the ground.



The Forest Health Protection Act

The Forest Health Protection Act is the provincial legislation that grants the City authority to carry out Dutch elm disease management and enforcement on all properties, including private property. It also regulates qualifications and activities of arborists in the arboriculture and urban forestry industry. The Forest Health Protection Act also identifies a Heritage Tree Program for the province including permitting municipalities to enact bylaws to protect heritage trees on municipal land.

Guiding policies and plans

OurWinnipeg 2045

OurWinnipeg 2045 is the City's development plan, authorized under the Planning Act and adopted as *Our Winnipeg Plan By-law* No. 67/2010. It establishes the urban structures that define Winnipeg and will accommodate its growth in various forms.

OurWinnipeg 2045 lays the groundwork for the development of the Urban Forest Strategy by contemplating several key directions, including: management of City-owned trees as a capital asset; public realm improvements and park acquisition; biodiversity protection, pest management, and conservation of environmentally sensitive lands; collaboration with neighbouring municipalities, and; enhanced stormwater management and green infrastructure. Additional directions supporting the Urban Forest Strategy are provided in associated plans to OurWinnipeg 2045, such as *Complete Communities.*

Complete Communities

Complete Communities is a secondary plan adopted following the approval of OurWinnipeg 2045. It is a secondary plan that provides direction to the City's urban form and development and establishes the urban structures that advance specific policies within the city's land use and zoning framework. The Urban Forest Strategy must address Winnipeg's defined urban structure in advancing policy to manage and grow the city's trees.

Climate Action Plan

The *Climate Action Plan* provides a framework to proactively, meaningfully, and effectively mitigate climate change by reducing greenhouse gas emissions. The plan highlights several initiatives for city-wide deployment under an integrated urban forest strategy, including using advanced site improvements like structural soil cells in constrained planting environments, implementing integrated stormwater management planning, and supporting tree planting on private land through partnership with community programs.

The Climate Action Plan broadly directs the Urban Forest Strategy to:

- Prepare an urban forestry strategic plan that includes key indicators based on public health and climate mitigation considerations, with recommendations tailored to Winnipeg's diverse communities and urban structure
- Support equity in urban forestry program and service delivery among Winnipeg's neighborhoods and communities
- Develop a Citizen Engagement Strategy to amplify and support urban forestry initiatives and the work of community partners
- Support equity in urban forestry program and service delivery among Winnipeg's neighbourhoods and communities
- Develop a methodology to quantify the value of ecological goods and services and natural assets

City Asset Management Plan

Winnipeg's *City Asset Management Plan* (published in 2018) summarizes the inventory, overall replacement value, age, and condition of all the City's major asset groups. The asset management framework attempts to describe the value and scope of Winnipeg's infrastructure, the condition and remaining service life of city assets, and the funding deficit in relation to restoring or continuing city assets in acceptable condition.

Trees are only partly accounted for within this plan. Tree data represents assets located in parks and on boulevards only; trees in natural areas are not inventoried, other than elm and ash species. Tree asset values are reported as the average replacement value from City policy multiplied

(Left) Winnipeg is trying a unique approach to landfill management by piloting soil fabrication in support of the City's Biosolids Master Plan. The City is currently in the process of making the program permanent. The photo on the left depicts the fabricated soil spread on the closed Summit Road Landfill.

(Right) The photo on the right depicts the established native prairie landscape at the closed Summit Road Landfill. The goal is to establish a native prairie landscape using biosolids from wastewater treatment, woodchips from trees impacted by Dutch elm disease and emerald ash borer, and sand and grit from spring operations.







by the number of inventoried trees. Asset valuation for trees is currently limited in scope and application.

The Asset Management Plan identified that resources are insufficient for necessary maintenance within Parks and Open Space. Developer-provided trees are being added to the City's tree inventory without a long-term view to urban forestry program capacity.

Biosolids Master Plan

The *Biosolids Master Plan* (2014) was developed to identify options to recover and reuse nutrients and such as composting and soil products, and land application. Some of these options utilize wood chips generated from the management of Winnipeg's urban forest.

Associated strategies and plans

Residential Infill Guidelines

Winnipeg's *Small-scale and Low-Rise Residential Development Guidelines for Mature Communities* guidelines influence the capacity for tree preservation and replacement in areas where infill development is envisioned. The retention of mature trees with infill is prioritized, particularly for front yard and boulevard trees; an arborist report is required to guide tree preservation and protection during development. The quantity and size (at maturity) of new trees required with each development is dictated by lot width or linear feet. The requirement for new trees can be satisfied by preserving existing trees. The guidelines also include minimum percentage lot areas and setbacks that must be reserved for soft landscaping. Encroachment of underground parking beneath setback areas required for landscaping is discouraged to ensure the long-term viability of mature trees and vegetation.

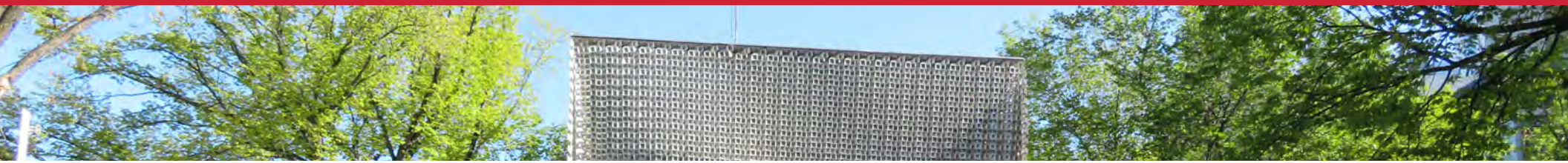
Ecologically Significant Natural Lands Strategy

The *Ecologically Significant Natural Lands Strategy* (ESNL) defines criteria for designating natural areas for protection through development agreements, easements, or acquisition by the City. Natural areas are lands and/or waters having natural or native biotic communities representatives of the natural ecology of the region, significant animal or bird communities, cultural or historical significance, connectivity between natural areas for both wildfire and the public, and/or proximity to waterways.

The foundation of the ESNL is the inventory process, which identifies areas needing assessment to develop appropriate protection and management actions. The inventory process, directed by the City of Winnipeg Naturalist Services Branch, applies a consistent methodology to determine the relative value of a natural area. Assessed sites are rated for their habitat characteristics and classified into one of four grades. A risk determination is made in consideration of habitat quality and scarcity to guide designation. Distinct natural habitat types within the City include riverbottom forest, aspen forest, and oak forest. The ESNL provides a framework for identifying significant natural lands, including natural forests.

Winnipeg Parks Strategy

Winnipeg has developed strategies for each recreation and parks services to help guide investments in facilities, services, programs, standards, and procedures over a 25-year term. The *Winnipeg Parks Strategy* in particular supports the Urban Forest Strategy goals through policies related to demonstrating exemplary land stewardship by preserving, protecting, and enhancing significant and high-quality natural areas and urban forests.



Bylaws

A summary of the key bylaws that regulate trees is shown in Figure 8, and all bylaws are summarized below.

Development Procedures By-law 104/2020

The *Development Procedures By-law* outlines the process for development applications and related matters and differentiates development application types with associated approval bodies along with the associated governance structure and public hearing process.

Zoning By-law No. 200/2006

The *Zoning By-law* determines building setbacks and minimum lot sizes throughout the City of Winnipeg. The bylaw also establishes general requirements for landscaping during the design of developments, including that all yards must contain a minimum of one tree for every 30 feet of linear street frontage. The bylaw presents a credit system for trees retained on site during development, though credits from preserved trees cannot offset the number of trees already required in street frontage landscaping on public land.

Subdivision Standards By-law No. 7500/99

The *Subdivision Standards By-law* No. 7500/99 specifies that development must meet requirements under the development agreement entered by the City and a developer. The development agreement requires the developer to construct or install all required services and improvements as provided for in the development agreement Parameters, which detail the size and shape of street boulevards, utilities, and other public realm elements. The development agreement requires the developer to sell lands to the City to provide for land drainage flow as well as requiring the developer to dedicate lands to the City for parks or provide an equivalent cash payment. Standards, policies, and guidelines produced by the City regarding tree planting and care may be inserted as attachments into the Development Agreement.

Waterway By-law No. 5888/92

The *Waterway By-law* creates a regulated area within 350 feet of the normal summer water level of specified rivers and 250 feet of the normal summer water level of specified creeks, subjecting these areas to additional development permit review by the City's Director of Planning or designate. No work is permitted within regulated areas that will restrict or impede surface or sub-surface water flow, endanger the stability of any land, including the bed of a waterway, cause land to slip into a waterway, or adversely alter the channel of a waterway. The bylaw provides indirect protection to trees within regulated areas.

Park By-law No. 85/2009

The *Park By-law* stipulates behavior prohibited in City parks, including damage to and unauthorized removal of trees.

Water By-law No. 107/2015

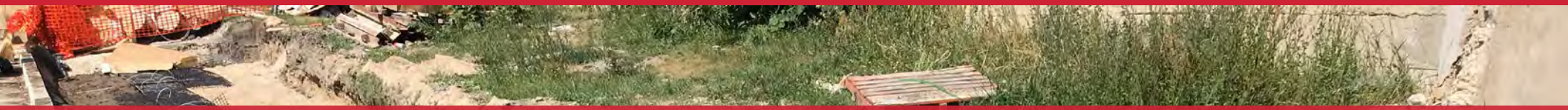
The *Water By-law* governs the provision of potable water to properties in the City of Winnipeg, including the design of irrigation systems using City water.

Neighbourhood Liveability By-law No. 1/2008

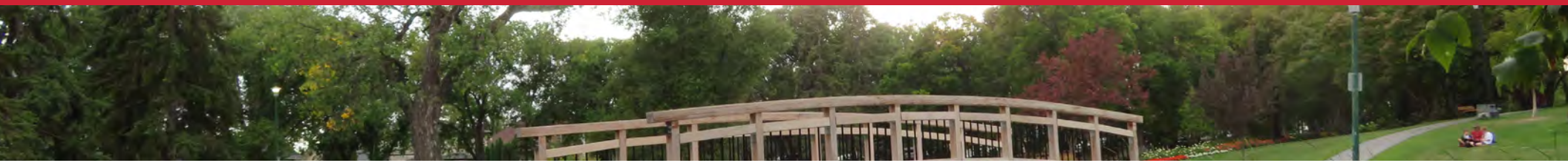
Winnipeg's *Neighbourhood Liveability By-law* governs public nuisance and safety hazards on private properties in the city. Hazards can include deficient drainage, erosion, tree hazards, and conflicts with City works. The bylaw also regulates the use of open-air fire, requiring a permit from the Fire Chief for most burning not related to domestic cooking or heating. The bylaw further prohibits damage to and unauthorized removal of boulevard trees.

Private Access By-law No. 49/2008 + Streets By-law No. 1481/77

The *Private Access By-law* and *Streets By-law* prohibit unauthorized removal of public right-of-way trees. The Streets By-law also regulates private trees posing safety risks to public rights-of-way.



Soil cell systems are one method of stormwater management used in various hardscapes throughout Winnipeg. These systems provide sufficient soil volume for roots to grow, and also slow down and clean stormwater runoff before it enters the sewer system. The systems are designed to create sustainable growing sites for trees to thrive for the benefit of residents and business patrons who enjoy areas that would otherwise be treeless spaces. One example of soil cell systems in place is on James Street to accommodate new tree plantings within the hardscape.



Other policies

Tree Planting Details and Specifications (in review)

The City of Winnipeg is currently reviewing guidelines to direct planting in the downtown area and on regional streets. Appendices to these specifications include detailed design drawings and construction information. Minimum soil volumes outlined in the guidelines are 8.5 m^3 to 12.75 m^3 per tree. The specifications also provide general instruction on the use of four "preferred" hardscape tree planting options: structural cells, vaults, raised planters, and structural soils. Tree protection during construction is also guided under this standard, and pre-calculated tree protection zones based on tree size determine the placement of required tree protection barriers around City-owned trees, however smaller barriers may be approved on a case by case basis. Installation of tree protection barriers is guided by the Urban Forestry branch and barriers cannot be removed without City authorization.

Tree Removal Guidelines

The City applies these guidelines under the authority of the Private Access By-law, Neighbourhood Liveability By-law, and Park By-law to evaluate requests for the removal of City-owned trees. In general, the City prohibits the removal of healthy trees larger than 30 centimetres in diameter at breast height (DBH) due to the benefits these trees provide, but trees of any size may be approved for removal pending further consultation with the City Forester. Removal requests are granted on a case-by-case basis and only after receipt of the required compensation. Trees less than 10 centimetres DBH can be replaced at approximately the same size and the customer is responsible for removal and must forward the replacement cost to the Urban Forestry branch. Trees of 10-30 centimetre DBH are not easily replaced and are valued according to methods provided by the Council of Tree and Landscape Appraisers. In natural stands, replacement is 1:1 for trees of five centimetres, or one replacement tree for each 7.5 centimetres of DBH for trees 10 centimetres or larger.

Acceptable Tree Species for Boulevard Planting

Planting species of trees other than those listed in this standard requires the written approval of the City Forester. All trees planted must meet the specifications in the policy and stock must be of the quality specified in the most recent edition of the Canadian Standards for Nursery Stock as published by the Canadian Nursery Landscape Association. The standard includes the general provision that all tree seed source and rootstock must be capable of surviving in hardiness zone 3 or lower. No species of ash (Fraxinus spp.) is acceptable for planting due to the high risk of damage and decline associated with emerald ash borer.

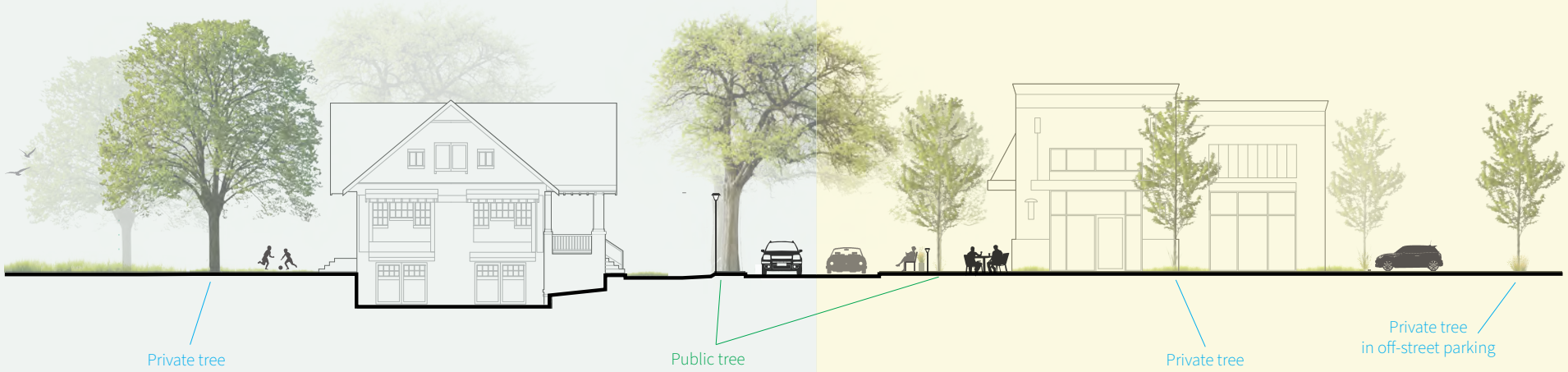
Boulevard Tree Planting Guidelines as Required under Development Agreements

This standard applies to the default development agreement entered by the City and a developer, and requires the developer, in accordance with plans and specifications approved by the City Forester, to plant boulevard trees that will become City-owned. The developer must stake the proposed planting locations for review by the Land Development branch prior to any planting taking place. Following planting, City technicians from the Planning, Property, and Development branch will inspect the planting to confirm it has been completed to the satisfaction of the City's tree planting details. The approval issued at this stage commences the maintenance period, which is generally no less than two years. The final inspection takes place to verify trees are acceptable to the City. Approval at this stage signifies the Land Development branch will accept the trees in writing, releasing the developer from further maintenance obligations. The guidelines also instruct developers to meet requirements for species diversification and spacing within boulevards.

Bylaws and policies that apply to...

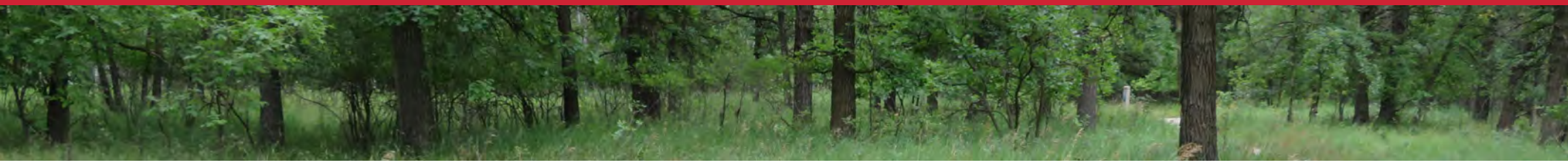
Outside downtown

Downtown



	Private tree	Public tree	Private tree	Private tree in off-street parking
Tree planting	The **Zoning By-law** requires tree planting outside of one- or two- family residential zones. The **Small-scale and Low-rise Residential Development Guidelines for Mature Communities** requires tree planting with infill development. Planting requirements are based on lot width or linear feet of frontage.	Public trees may be planted by the City or its delegates or by a developer as required within a **Development Agreement**. The **Tree Planting and Maintenance Specification** applies to all trees planted, whether by a developer or the City or its delegates. Planting by the City or its delegates downtown and on regional streets is guided by the **Tree Planting Details & Specifications Downtown Area and Regional Streets.** A **Development Agreement** typically requires developers to complete boulevard tree planting as part of an application under the **Subdivision Standards By-law** or **Zoning By-law.** Tree numbers are guided by the **Boulevard Tree Planting Guidelines as Required Under Development Agreements**, and are subject to **Boulevard Planting Concept Plan** approval. Species must conform with the **Acceptable Species for Boulevard Planting**. Trees planted this way remain the responsibility of the developer until final acceptance by the City.	The **Downtown Zoning By-law** may require a development application to include a **landscape plan**. There is no specific requirement for tree planting, unless the permit relates to an off-site parking facility. **Urban design review** may consider and make recommendations for landscaping.	The **Downtown Zoning By-law** requires a development application for an off-street parking facility to incorporate tree planting as part of a **Landscape Plan**. The bylaw contains specifications that must be followed for tree siting, species selection, and maintenance.
Tree retention or removal	The **Zoning By-law** gives credit towards landscaping requirements for each tree greater than 2.5 inches (6 cm) DBH retained. No requirements for tree protection are specified. The **Small-scale and Low-Rise Residential Development Guidelines** credit retained trees towards landscaping and requires tree protection.	The **Boulevard Tree Planting Guidelines as Required Under Development Agreements** specify only trees that have been in the ground for two growing seasons will be considered for final acceptance. Removal and replanting during the maintenance period requires notification to the City. Trees impacted by construction receive protection under the **Tree Planting and Maintenance Specification** or **Tree Planting Details & Specifications Downtown Area and Regional Streets.** **Tree Removal Guidelines** apply whenever a request for the removal of a public tree is made to Urban Forestry, under the authority of the **Private Access By-law, Streets By-law, Neighbourhood Liveability By-law,** and **Parks By-law**. Public trees approved for removal are replaced by Urban Forestry per the ratios and compensation outlined by the guidelines. Requests to remove trees larger than 30 cm diameter may be declined, subject to further consultation with the City Forester.	The **Downtown Zoning By-law** has no provisions guiding the retention and removal of trees during development.	The **Downtown Zoning By-law** has no provisions guiding the retention and removal of trees during development.
Tree maintenance	The **Zoning By-law** requires owners to maintain required trees in healthy growing condition. Additionally, all private tree owners have a responsibility under the **Neighbourhood Liveability By-law** and **Streets By-law** to manage their trees for public safety and nuisance hazards.	Tree provided under a **Development Agreement** must be maintained by the developer under the required terms until final inspection and acceptance by the City. The **Tree Planting and Maintenance Specification** applies. Private tree owners may arrange maintenance under the **Guidelines for Maintaining City-owned Trees.** The City attempts fo follow a block program under the **Tree Maintenance Priority Guidelines.**	All private owners have a responsibility under the **Neighbourhood Liveability By-law** and **Streets By-law** to manage their trees for public safety and nuisance hazards.	The **Downtown Zoning By-law** contains requirements for tree maintenance to preserve sightlines between public streets and adjacent properties, drainage, and encroachment on walkways.

Figure 8 - Summary of bylaws and policies that currently regulate the planting, retention, removal, and maintenance of Winnipeg's trees on public and private land.



Tree Planting and Maintenance Specification

The *Tree Planting and Maintenance Specification* applies to all planting and maintenance work on City-owned trees conducted internally and put out to tender by the City, including planting work associated with a development agreement. The planting and maintenance specifications incorporate the *City of Winnipeg Standard Construction Specifications* in its entirety, as well as standard construction drawings. Guidance is provided for tree placement and layout, supply and pre-planting care of trees, planting soil, watering requirements, trunk protection and supports, mulching, and planting timing and procedures.

Guidelines for Maintaining City-Owned Trees

Property owners may arrange to prune, remove, plant, and apply pest or disease treatments to City-owned trees on boulevards and in parks, using a pre-qualified contractor at their own expense. A legal agreement that identifies the roles and responsibilities of the applicant and the contractor is provided. This document must be submitted by the applicant for review by the Urban Forestry branch and the work must be approved before work can commence.

Tree Maintenance Priority Guidelines

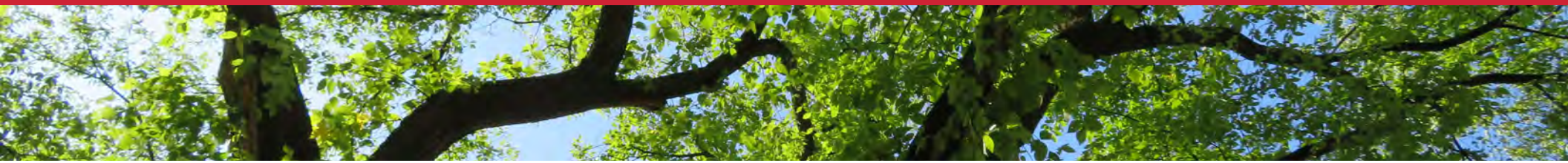
The City attempts to follow a strategic block-pruning program to address pruning needs for boulevard and park trees. Residents may submit individual pruning requests, which are scheduled and completed on a priority basis. Priority 1 is a tree carrying a high risk of injury to people or damage to property and should be done as soon as operationally possible. Priority 2 is any tree that is not an immediate safety concern for risk of injury or damage but may become so in the future. Pruning is performed in the interests of long term tree health and structure, therefore, the City does not entertain requests for pruning where the given reason is related to nuisance or aesthetics.

Stormwater Management Criteria

In 2001, the City organized a task group to explore alternative designs for land drainage systems. The resulting report proposed design criteria for alternatives to the standard stormwater retention pond design, to be used as baseline requirements for developers proposing new land drainage systems. The criteria contemplate the inclusion of stormwater management facilities in naturalized areas and constructed wetlands. Wetland treatment is subject to review by the City Naturalist and/or City Forester.

Drainage Criteria Manual for the City of Winnipeg

Published in 1974, the *Drainage Criteria Manual* proposes the assessment criteria for drainage systems in the City of Winnipeg and the evaluation of alternatives. The manual predates the popularization of green infrastructure concepts, but is generally supportive of technologies that promote groundwater infiltration and reduce erosion — outcomes that broadly support urban forest health.



Federal policies

The Government of Canada is an influence on urban forestry through the control and research functions of its agencies. Additionally, the City of Winnipeg must comply with federal legislation protecting species at risk, fisheries, migratory birds, and certain classes of plants and plant products.

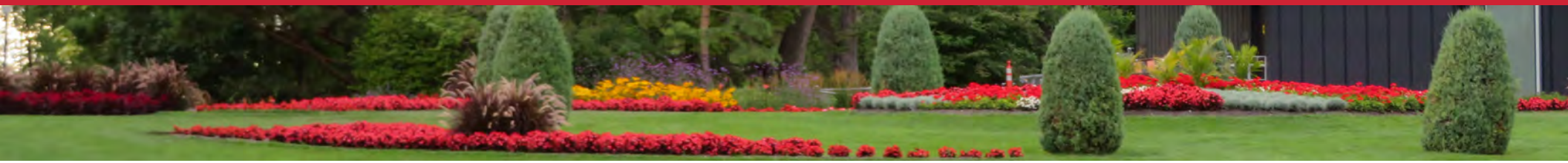
Canada Food Inspection Agency

Canada Food Inspection Agency (CFIA) is responsible for the enforcement of the federal *Plant Protection Act* and regulations. CFIA adopts regulatory measures to prevent and control the introduction and spread of plant pests in Canada. This includes monitoring and regulating the transport of plants and plant products as the principal pathways of introduction and spread for many plant pests. The transport of regulated materials requires federal permits. CFIA introduced directives in July 1997 to restrict the importation and transport of elm material as a defense against the spread of Dutch elm disease. Additional controls on firewood were introduced in 2001. All of Manitoba is considered a regulated area for controls on the transport of elm plant material and firewood. In August 2003, CFIA introduced phytosanitary control requirements on wood products to prevent the introduction and spread of emerald ash borer. The City of Winnipeg is a regulated area under the directive since the detection of emerald ash borer in the city in 2017, but surrounding communities are not.

In addition to issuing control directions, CFIA conducts surveillance to verify the status of regulated and non-regulated areas. CFIA Plant Health Surveillance Unit plans and executes the national survey program for plant pests, and develops protocols, guides, and tools to assist local governments with pest control. For example, CFIA assisted the City of Winnipeg in surveillance as part of the City's emerald ash borer response in 2017.

Canadian Forest Service

The Canadian Forest Service (CFS) administers forest health monitoring, national forest inventory, wildfire, climate change, cumulative effects, and extension programs to support forest management in Canada. The CFS provides scientific and technical support in forest pest management, including, since 2002, research into sampling and monitoring, economic impacts, and biological and chemical control mechanisms for emerald ash borer. The City of Winnipeg has provided branch samples to the CFS for research into the emerald ash borer life cycle, which will in turn guide the City's future response efforts.



Summary of policy gaps

The review of Winnipeg's existing regulatory environment for trees reveals areas where the City can adopt or amend policy to secure improved outcomes for the urban forest. Some trees in Winnipeg are better protected than others. Policies that address good urban forest management are likewise incomplete. This partly reflects the City's ongoing development of a vision for its urban forest — a vision firmly established by the Urban Forest Strategy.

To secure a resilient urban forest, Winnipeg first needs to adopt a city-wide canopy cover target. The absence of a measurable goal for tree cover in the city could previously be explained by the lack of canopy cover data. With new geospatial information on the extent of the City's trees, Winnipeg can begin to set, measure, and monitor related goals for tree loss and replacement by land use or neighbourhood, more effectively schedule maintenance of public trees, and review tree protection with an eye for performance.

With clearly established goals for city-wide and sub-area canopy cover, the City can begin to address gaps in tree protection. With a majority of Winnipeg's tree canopy believed to occur on private land, the absence of a tree bylaw (or equivalent) to help manage and maintain tree canopy is a critical barrier to preserving urban forest values in the face of forest health and climate challenges. On public land, existing tree protection policies can be consolidated within a new City Tree Policy to harmonize tree protection standards across capital projects, provide clarity on best management practices, and improve community relationships.

Alongside enhanced tree protection, the Urban Forest Strategy encourages Winnipeg to embrace the ecological role of the urban forest in providing valuable climate adaptation and mitigation, habitat, and other ecosystem services. As the City updates its asset management plan, it can use new data from monitoring to account for unpriced benefits of the urban forest management program and support increased protection or enhancement of natural areas during the land development process.

Section 5 contains specific actions to fill these and other policy gaps identified by the background review.

Public insights on trees: engaging on Winnipeg's urban forest

The success of the Urban Forest Strategy rests on public input and buy-in. The City has undertook a comprehensive public engagement process to ensure Winnipeggers' values, priorities, and opinions were considered in the Urban Forest Strategy's development. Phase 1 was completed in 2020, followed by a Phase 2 engagement in 2022 winter. A summary of what we heard is provided in Appendix C.

Phase 1 public engagement

Phase 1 of public engagement took place in late 2020. It focused on developing a community-supported vision for the urban forest that reflects community perspectives on the city's identity, culture, and aspirations. It also sought public input on opportunities to preserve, grow, and enhance the urban forest. Residents were invited to provide input through a survey, mapping tool, discussion forum, webinar, self-guided walking tour, and virtual walking tour. In-person walking tours were planned but were cancelled due to COVID-19 and provincial public health orders. Stakeholder organizations were also invited to provide input at a stakeholder workshop and through a stakeholder conversation guide.

Public participation

- Over 4,300 visitors to the project webpage
- 1,753 survey respondents
- 72 attendees at the online presentations
- 96 mapping tool submissions
- 16 emails
- Nine posts on the forum
- 40 attendees at the stakeholder workshop and five submissions of the stakeholder conversation guide

"Biodiversity needs to be improved. Although our elm forest is beautiful, the monoculture urban forest has proven to have detrimental impacts. Diversifying our canopies would have a huge amount of benefits in the long run."

- Forum respondent

"I'm worried that we will lose all of our largest mature trees to invasive pests and diseases. I hope that in 20 years, we have been successful in slowing the spread of these pests and that we have planted more shade trees to replace the ones we have lost." **- Walking tour respondent**

Survey findings

- 82 percent of respondents wanted to increase the current tree canopy (Figure 9).
- 49 percent of respondents live on a street with regularly spaced, large trees and 53 percent would most prefer that same streetscape over any other alternative (Figure 10).
- 84 percent of respondents have been personally impacted by tree loss and 70 percent of respondents rated the impact on themselves as severe to very severe.
- Toward a vision: Respondents want to see tree canopy that includes diverse, large healthy trees spread across the city with a focus on planting on residential streets.
- The community particularly valued trees for the habitat they provide, air purification, natural experiences, and shading and cooling.

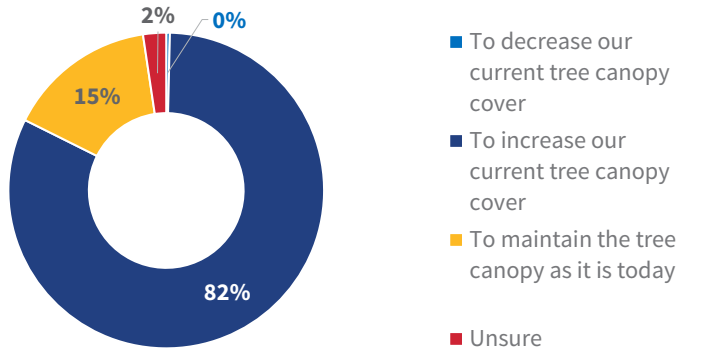


Figure 9 - Survey respondent preferences for Winnipeg's canopy cover target

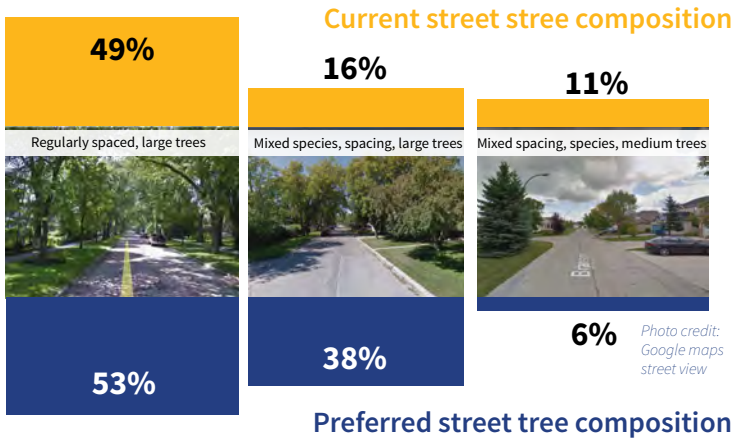


Figure 10 - Top three street tree compositions that respondents noted as currently existing on their street and what is preferred

Mapping findings

In the mapping tool, participants were asked to think about trees and geography, then identify both places they value (Figure 11; left) and places where the canopy could be improved (Figure 11; right). Locations were valued primarily because of their beautiful mature trees, their large, forested areas, and/or their variety of ecosystem services. Areas flagged for improvement were noted as needing more timely removal of dead, dying, or diseased trees, as well as increased replacement, planting, and/or pruning.

Stakeholder workshop/conversation guide findings

Stakeholders suggested many improvements such as: increasing replacement planting; finding new and innovative approaches to planting; improving connectivity and the focus on biodiversity; improving tree care; expediting removals; increasing public engagement and education; and, bolstering partnerships with Trees Winnipeg and other active groups and organizations.

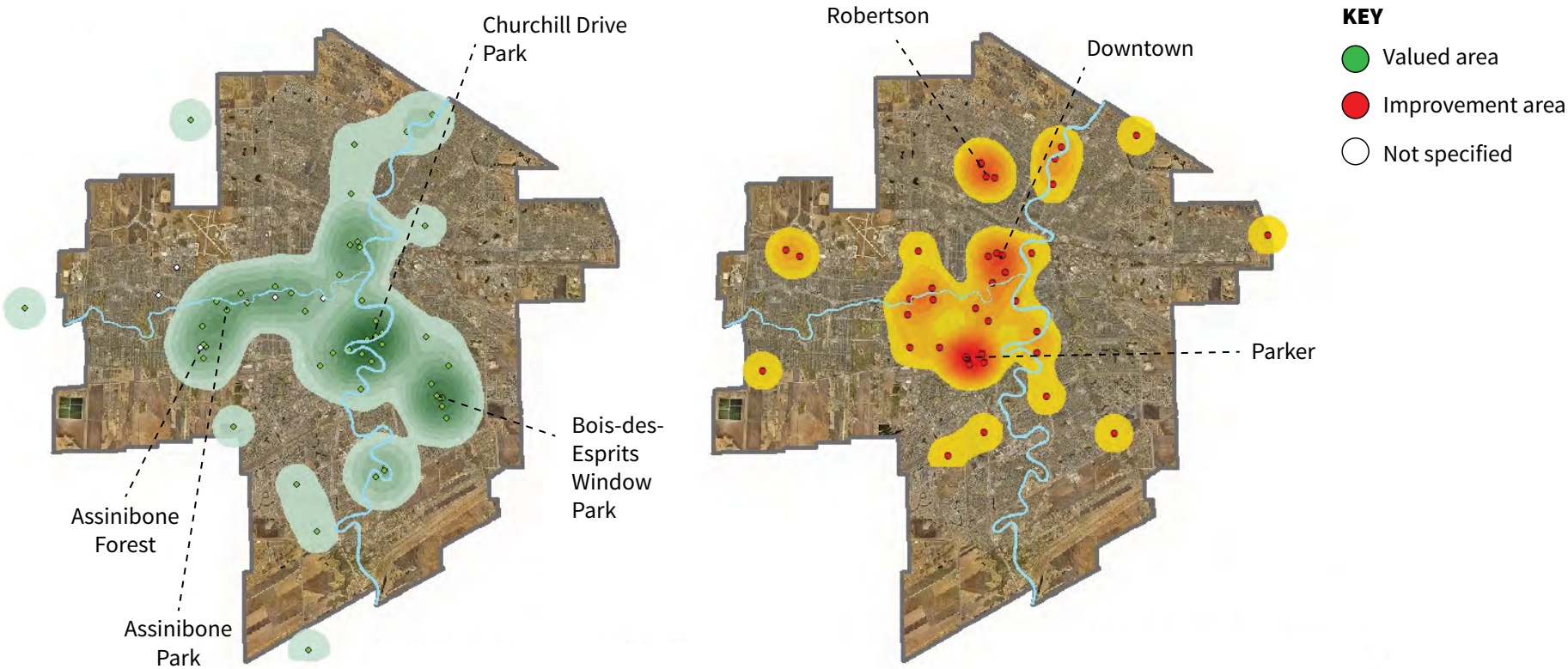


Figure 11 - Heat mapping results for places valued and places needing improvement from responses. The callout areas are where notable hotspots occurred.

"Making it easier for resident associations and communities to help out more."

- Workshop participant

Phase 2 public engagement

Phase 2 of public engagement took place in spring 2022. It informed the public of the draft strategy and solicited input on targets and priorities for implementation. Feedback helped guide the project team in prioritizing actions, finalizing the plan, and ensuring the city's urban forest can grow into the future. Residents were invited to provide feedback through a survey, a comments tool, and two online open houses. Stakeholder organizations were also invited to an online stakeholder workshop.

Public participation

- Over 1,667 visitors to the project webpage
- 838 survey respondents
- 39 attendees at the online open houses
- 21 attendees at the online stakeholder workshop

Survey findings

- Survey respondents considered all five policies under the Plan section to be a priority (Figure 12)
- Survey respondents would like the City to prioritize planting trees in streets, parks, and areas where they are most needed, maximizing tree health and life expectancy, and expanding/enhancing naturalized forest and riverbank areas in the Planting section.
- Survey respondents would like the City to prioritize best practices for tree care and risk management, rapidly removing dead, diseased, and dangerous trees, and monitoring natural area forest cover and prioritizing invasive species removal in the Management section.
- Survey respondents would like the City to prioritize increased protections for City-owned trees and creating a connected and protected network of public trees, parks, and natural area forests in the Protect section
- Survey respondents considered all four policies under the Partner section to be a priority. (Figure 13)

Stakeholder workshop

During the workshop, stakeholders identified gaps in policies and actions addressing developer practices that harm trees, suggesting more robust arborist report standards and more rewards and penalties for trees removed for development. Concerns were also expressed about the 1:1 tree replacement target being inadequate to fill the backlog of planting sites and keep pace with potential losses. Damage to City trees from mowing, the lack of watering young trees and the importance of young tree pruning were also discussed.

"Connect strategy with zoning! [There are] Examples of greensapce development being impacted by zoning requirements. Connection between [the] two documents would be empowering."

- Workshop participant

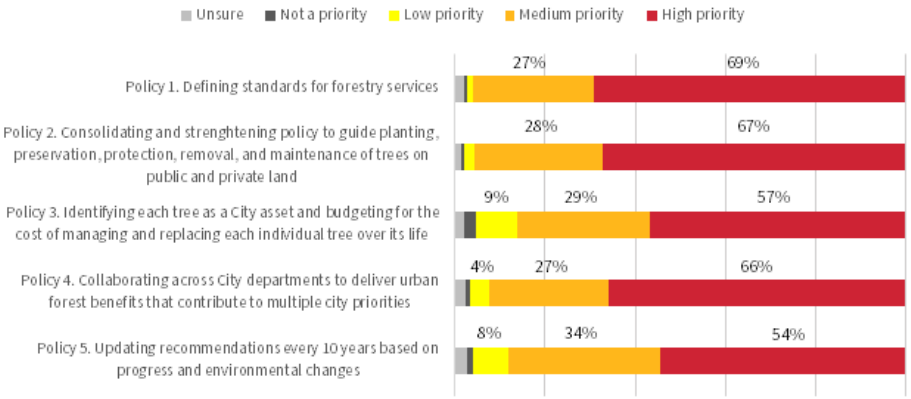


Figure 12 - Policy priorities for the Plan section of the Winnipeg Urban Forest Strategy

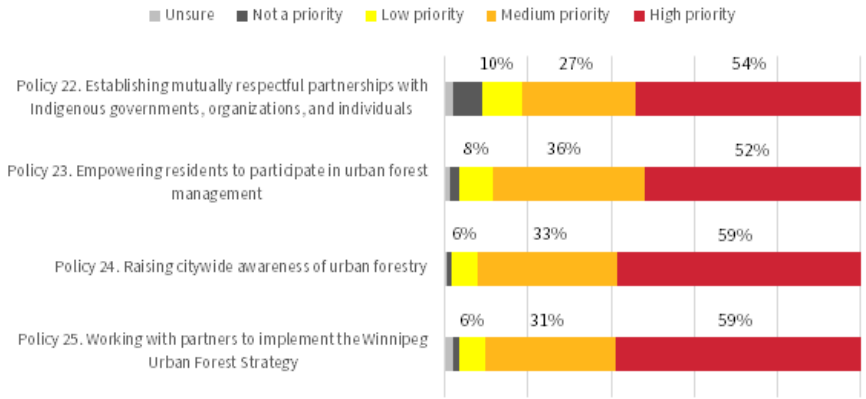


Figure 13 - Policy priorities for the Plan section of the Winnipeg Urban Forest Strategy

3. Opportunities and challenges

Section 3 describes the key opportunities and challenges for managing Winnipeg's urban forest, including healthy people, healthy forests, urbanization, equity, reconciliation, stewardship, and urban forest program sustainability. Priorities for addressing opportunities and challenges are reflected in the policies and actions included in Section 5.



Healthy people

Climate change is expected to create challenges for both our people and our urban forests. Cities everywhere are facing serious threats related to public health, infrastructure costs, economic viability, and social equity associated with climate change. Climate resilience can be augmented through focused attention on the Winnipeg's urban forest canopy, and activities that help mitigate air pollution and the urban heat island effect while also enhancing human health and well-being outcomes.

The Urban Forest Strategy aligns with Winnipeg's Climate Action Plan, which sets a vision toward a holistic relationship with climate change and emphasizes the value of all things being connected. Trees and forests can help cities mitigate and adapt to climate change by capturing and storing carbon, intercepting rainwater to reduce localized flooding and providing shade and cooling on hot summer days.

It is a priority to contribute to the health of our community by:

- Establishing and achieving levels of service to meet demonstrated community need
- Prioritizing tree planting and protection where it will provide the greatest benefits for our communities
- Maximizing the quantity and quality of trees planted in streets, parks and with new developments
- Collaborating across City departments to deliver co-benefits for climate adaptation, health and wellbeing through integrated policy and project approaches



Some areas of the city are hotter than others on summer days. The urban heat map (Figure 14) shows the relative hot spots and cool spots on land surfaces across Winnipeg on a hot summer day in July 2017. The coolest areas tend to be permeable areas with high tree canopy, irrigated landscapes like golf courses, and the river valleys. Areas with little tree canopy and abundant impermeable road and building surfaces tend to be hotter. Higher temperatures increase the risk of heat related illness and mortality, particularly for people who are vulnerable due to underlying physical and mental health and social factors.

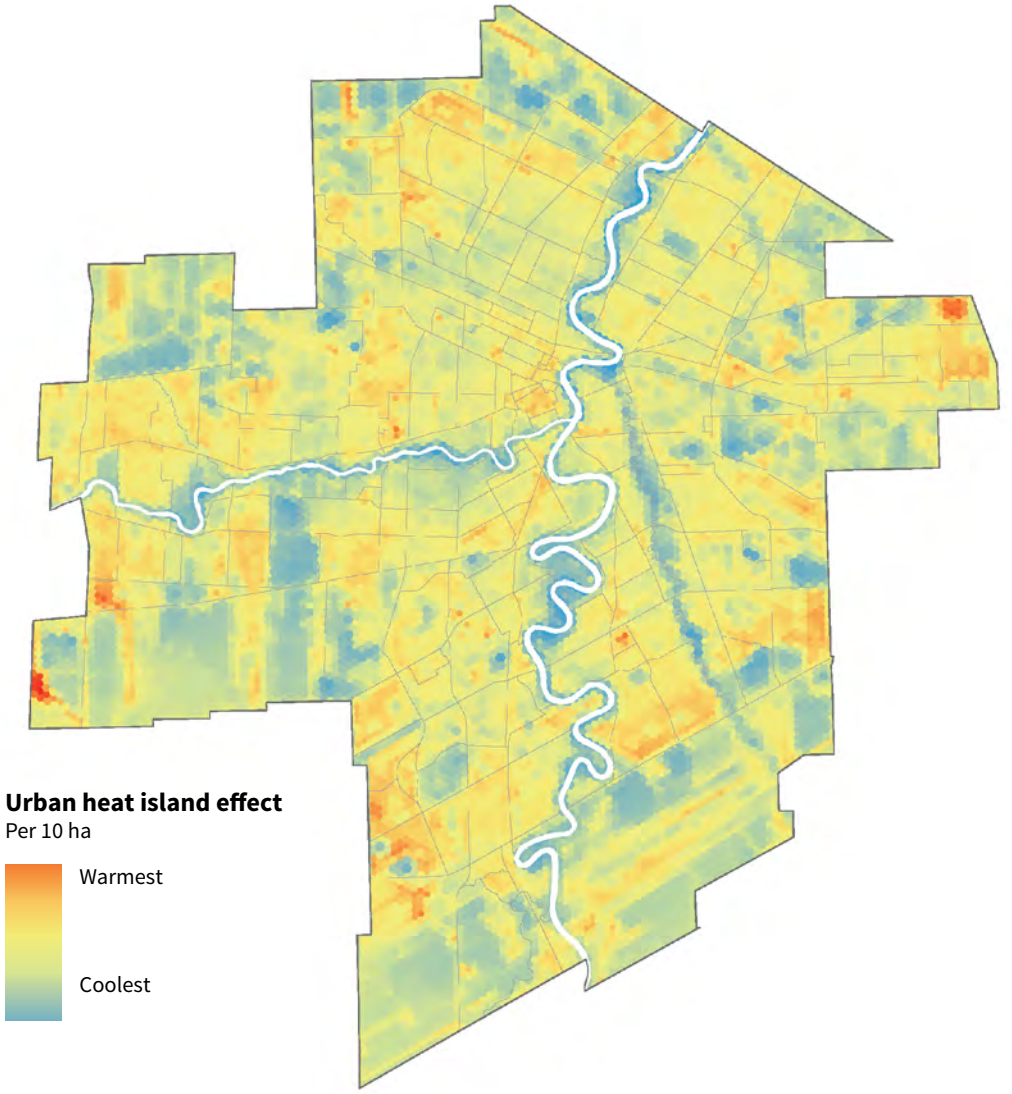
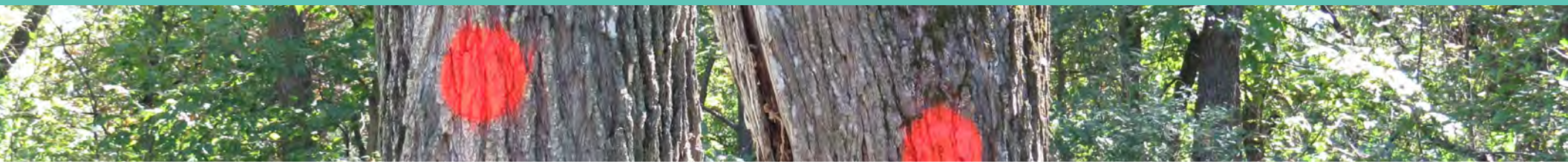


Figure 14 - The urban heat map illustrates the hottest and coolest locations in each neighbourhood based on the average temperature of the surrounding 10 hectares.

Heat waves in Winnipeg are expected to increase from three to four days to seven days or longer by 2051-2080. Streets with low tree canopy are warmer on hot days than streets with more trees. Many of the older inner-city streets have canopy cover exceeding 40 percent, which significantly reduces the temperature on these streets on hot summer days.







Healthy forests

While trees help cities adapt to climate change, trees themselves also feel its effects. Though precipitation levels are expected to increase through winter, spring, and fall, summers are expected to be warmer and drier, which will subject trees to increased drought stress. Extreme events such as heat waves and heavy, wet snowstorms are expected to increase in frequency and may result in more tree damage. Warmer growing seasons have a direct effect on the life cycle of insects and may result in increasing insect populations, which is particularly concerning for emerald ash borer, elm bark beetle and gypsy moth, or newly introduced pests.

Increasing diversity, slowing mortality, and reducing susceptibility to existing insect pest threats will be essential to reducing vulnerability in Winnipeg's urban forest population. Just over half of Winnipeg's public tree population is susceptible to emerald ash borer and Dutch elm disease. Figure 15 shows the distribution of inventoried elm and ash in Winnipeg (public and private land). All areas of the city have vulnerable tree populations with significantly high populations of ash found within the Red and Seine River's natural areas. Elm and ash, compared to all other types of trees in the inventory, provide the vast majority of ecosystem services to the city and are critical to the natural biodiversity in the region.

It is a priority to improve the overall health of the urban forest by:

- Ensuring that policies guiding tree planting, protection, removal and maintenance decisions are consistent with industry standards and best practices
- Following a best practices program for tree care and tree risk management for public trees
- Increasing the diversity of urban species in the public tree population and proactively replacing aging or dying elm and ash
- Maximizing the health and life expectancy of newly planted urban trees in City streets and parks
- Minimizing the use and impact of cultural practices that harm public trees
- Rapidly removing dead, diseased and dangerous trees
- Monitoring natural area forest cover and prioritizing invasive species removal where overstory canopy losses are expected

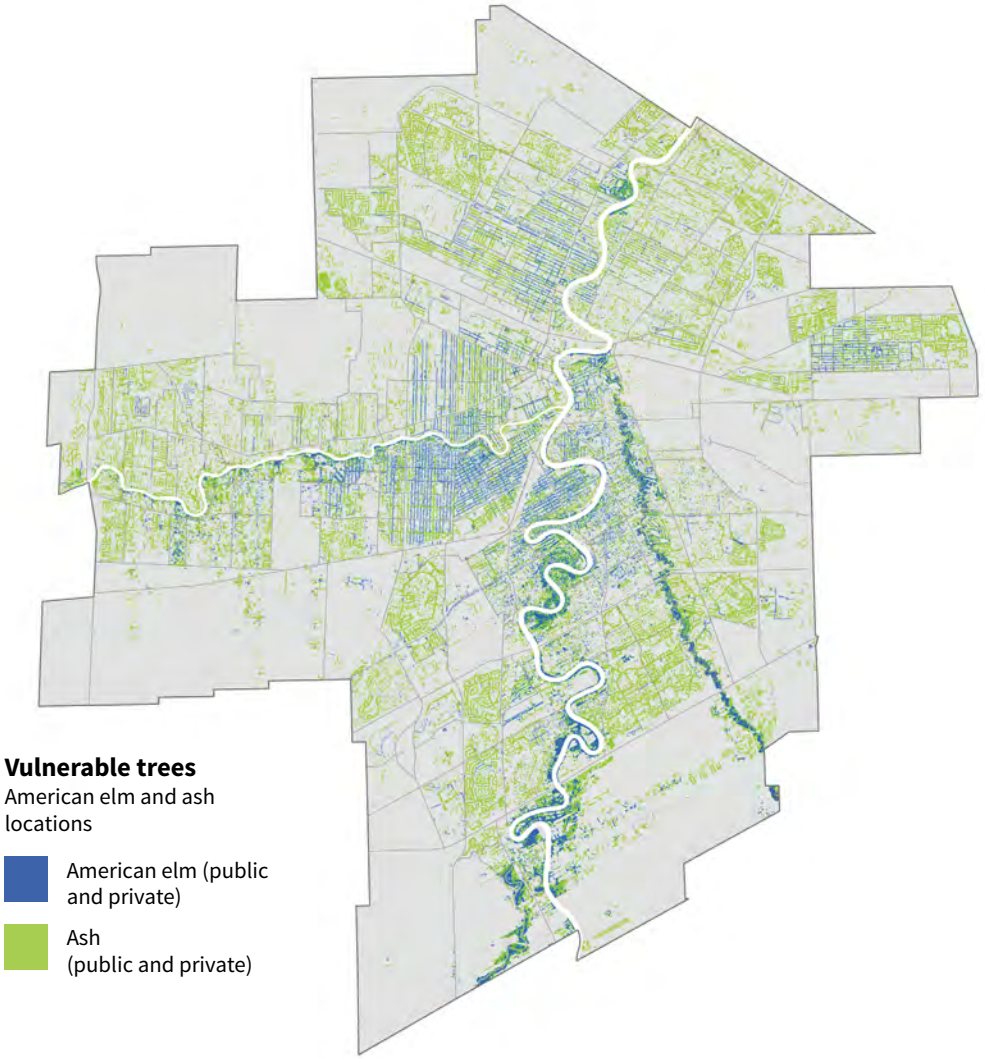


Figure 15 - Vulnerable American elm and ash populations on public and private land mapped throughout Winnipeg with neighbourhood boundaries

Mature American elm trees have shaped the character and identity of many Winnipeg neighbourhoods. As Dutch elm disease continues to threaten Winnipeg's elm canopy, the loss of these majestic trees is deeply felt by those who live nearby. It is not uncommon to find heartfelt notes, cards, or ribbons left on trees marked for removal, illustrating the impact of the loss on the community.





Urbanization

Winnipeg is growing, both through new development at the urban fringe and with densification of existing urban areas. New development can result in both gain (e.g., where trees are added to what was prairie) and loss (e.g., where aspen forest is cleared). Densification of existing urban areas with infill development often means existing trees have to be removed and trees on neighbouring properties may be damaged. Winnipeg addresses some of these challenges in existing policies related to zoning and various guidelines and specifications for development, however, current policies particularly related to private land lack adequate protection and preservation of existing trees and associated enforcement.

Council has directed the public service to consider a tree protection bylaw for private properties. Cities in some parts of Canada use tree bylaws to regulate the protection and replacement of trees on private or public land. Tree bylaws typically function so that trees of a certain type (e.g., size, species, location) are protected and cannot legally be removed unless the owner obtains a tree permit (see Appendix B for a comparison of tree bylaws in Canada, downloaded separately). Often, tree bylaws are enacted to regulate tree removals and require tree replacements in order to safeguard community tree benefits.

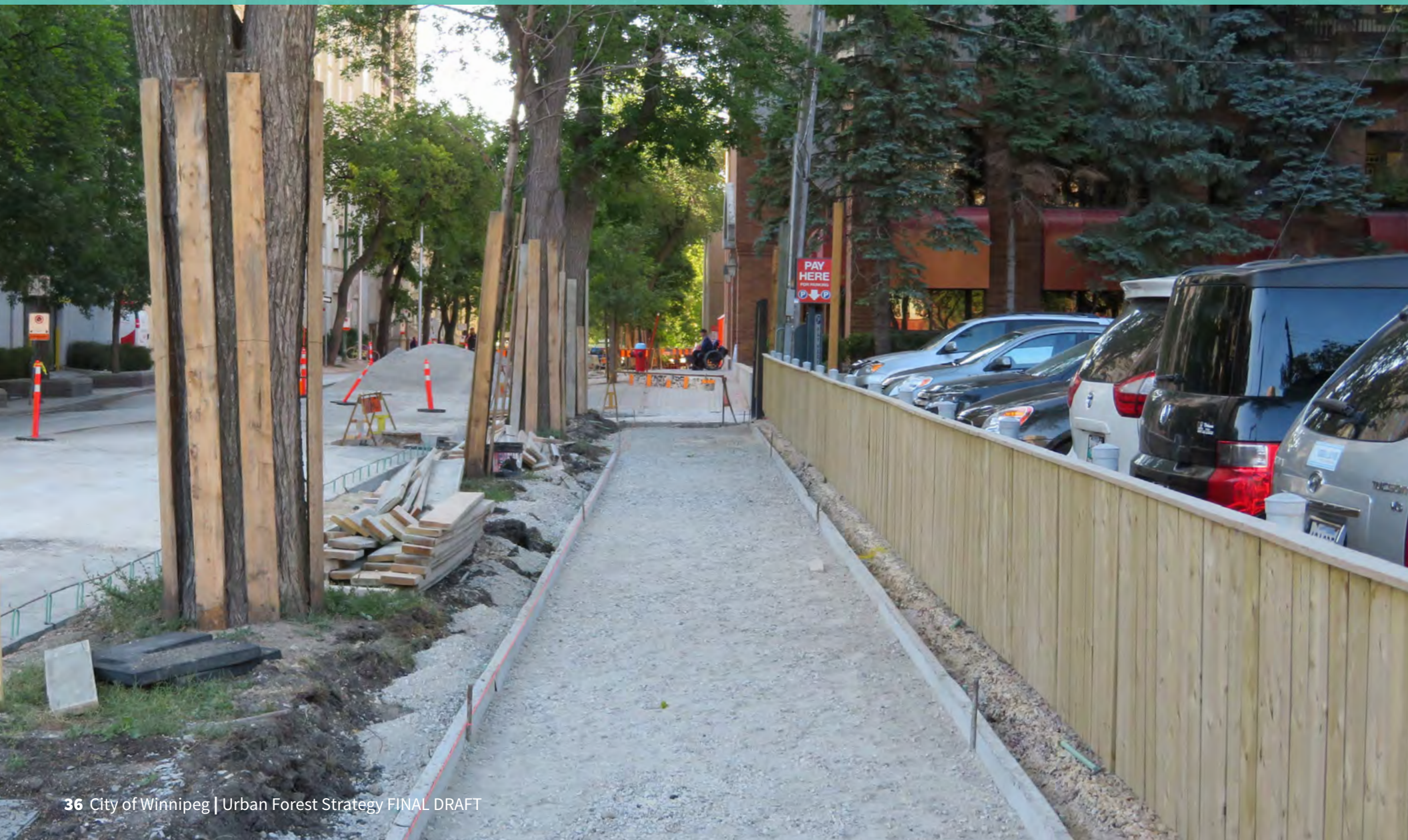
Tree bylaws and related regulations can have significant implications for resourcing to administer the bylaw process and review planned tree removals and protection for retained trees. The increased cost and resourcing should be focused in areas where the greatest improvement to tree retention and protection can be achieved.

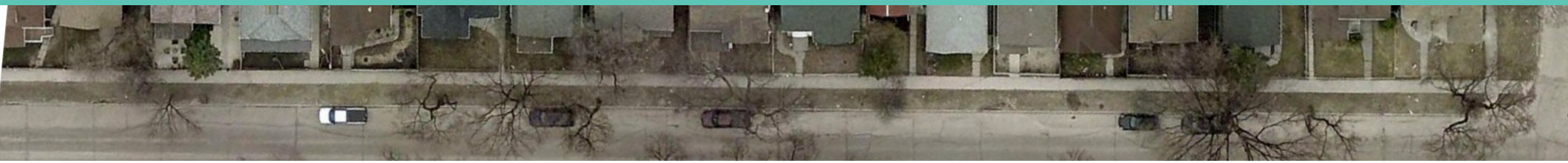
It is a priority to minimize the impacts of urbanization on the urban forest by:

- Increasing protections for trees and soil on private and public land
- Maximizing the quantity and quality of trees planted with development
- Expanding and enhancing naturalized forest and riverbank areas
- Creating a connected and protected green infrastructure network of urban trees, parks and natural area forests



Urbanization, or the process of an area being made more urban during development, typically increases the extent of paved or built surfaces. Trees and soil are often removed to accommodate new buildings or paved areas. When this work happens around existing trees, they can be damaged by excavation or machinery unless good tree protection measures are in place. Urbanization also reduces the volume of soil and the amount of water available to trees, which often means they are less healthy and have shorter lives than trees growing in permeable areas like parks. In urbanized areas, adequate soil volume needs be protected or built into projects for trees to live long, healthy lives.





Equity

Trees and their associated benefits and services are not distributed equitably across Winnipeg. Poverty can be a significant barrier to health, wellbeing, and social equity. People living in poverty may have fewer means to access private amenities that can reduce vulnerability to heat, such as shady back yards and in-home or in-car air conditioning, or provide other benefits of views and access to nature that people often receive from backyards or travel destinations. For some people, public trees and forests provide a main opportunity to keep their home cooler, provide shade as they walk to school or work, or to experience nature.

In Winnipeg, areas of higher poverty were identified in the 2020 Defining Higher Needs Neighbourhoods report to the Standing Policy Committee on Protection, Community Services and Parks. Areas of higher poverty were identified using 2016 Census data (Figure 16).

These higher poverty areas were compared with the City's public tree inventory, temperature data from a hot July day, and satellite derived canopy data. As shown in Figure 17, areas of higher poverty had significantly:

- Lower tree density per hectare
- Fewer trees per person
- Lower average canopy cover
- Lower tree diversity
- Higher average temperatures

No significant difference in the density of vacant planting sites was found in areas of higher poverty as compared to other areas.

In older neighbourhoods, these results are in part explained by the historic street tree planting pattern, which has created streets of fewer but older, larger elm trees. Other higher poverty neighbourhoods are characterized by higher densities of people and impermeable surfaces or infrastructure that has limited the density of trees.

The benefits of trees and forests should be available to all Winnipeggers and all individuals and groups should have equitable access to urban forestry services and governance.

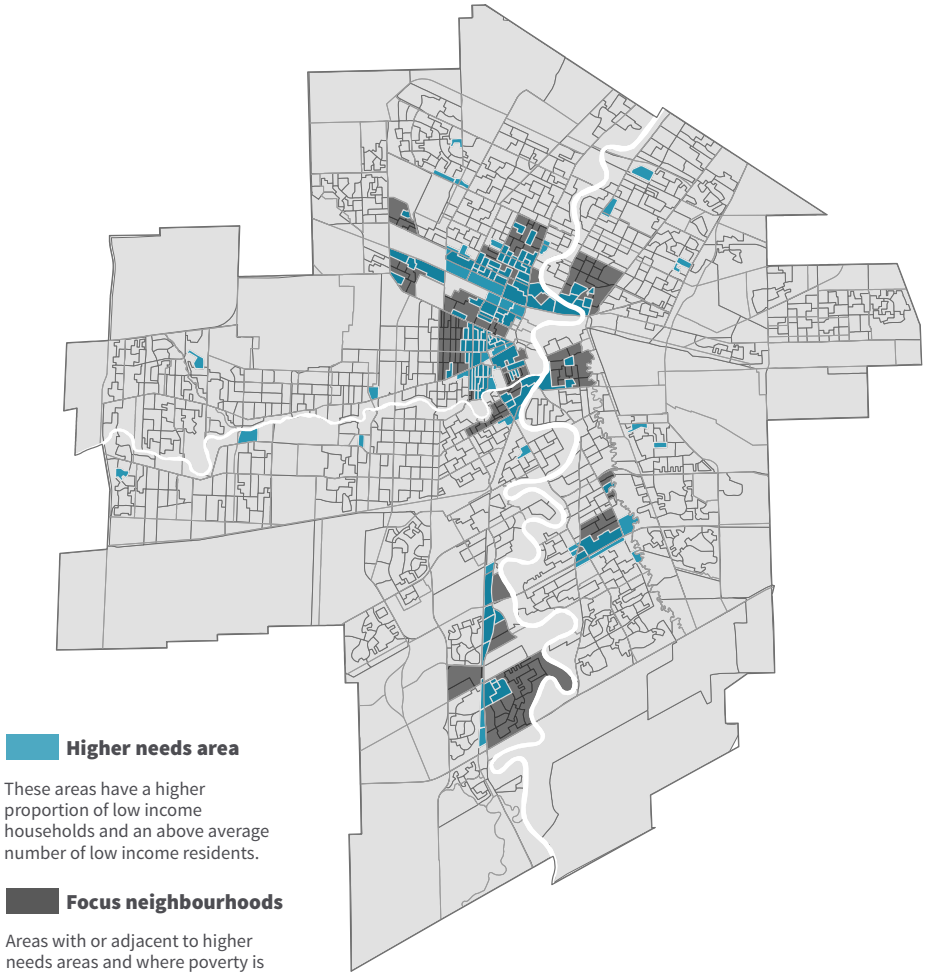
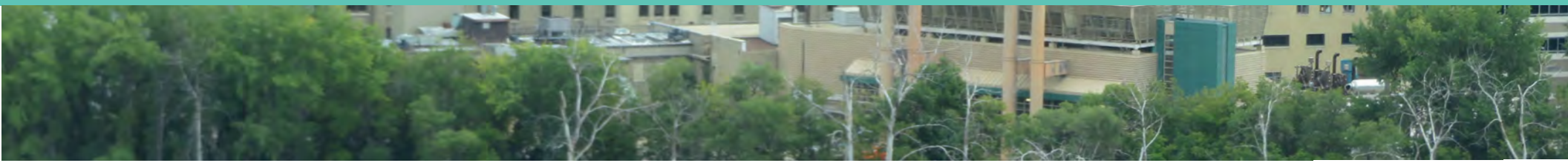


Figure 16 - Areas of higher needs identified in the 2020 Defining Higher Needs Neighbourhoods report

Data: Target group profile of Market Basket Measure (MBM) population, Census, 2016

Geographic level: Dissemination area (DA) - Statistics Canada standard geographic area composed of one or more neighbouring dissemination blocks and is the smallest standard geographic area for which all census data are disseminated (typically with a total population of 400 to 700 persons)



Exploring the urban forest through an equity lens reveals inequities in the distribution of canopy cover and related health and wellbeing benefits such as shade and cooling on hot days (Figure 17). The lower diversity of existing trees in high poverty areas indicates that tree populations in these areas may also be more vulnerable to canopy loss due to Dutch elm disease and emerald ash borer.

Inequities also exist in terms of access to and influence on decision making about where urban forestry services and resources are prioritized. Winnipeg is growing and diversifying, with an increasing proportion of the population identifying as a visible minority. New Canadians account for almost 25 percent of the city's population and may have needs and preferences that differ from what has typically been provided in terms of tree planting and management. The urban forestry system needs to be able to evaluate and respond to changing community needs.

It is a priority to improve equity in urban forest management by:

- Developing a customer service framework which prioritizes socially equitable service delivery and considers geographic areas of higher poverty
- Collaborating across City departments to deliver poverty reduction co-benefits through integrated policy and project approaches
- Prioritizing tree planting and replacement in areas of higher poverty
- Working with community partners to provide programs to plant trees, foster stewardship and contribute to poverty reduction

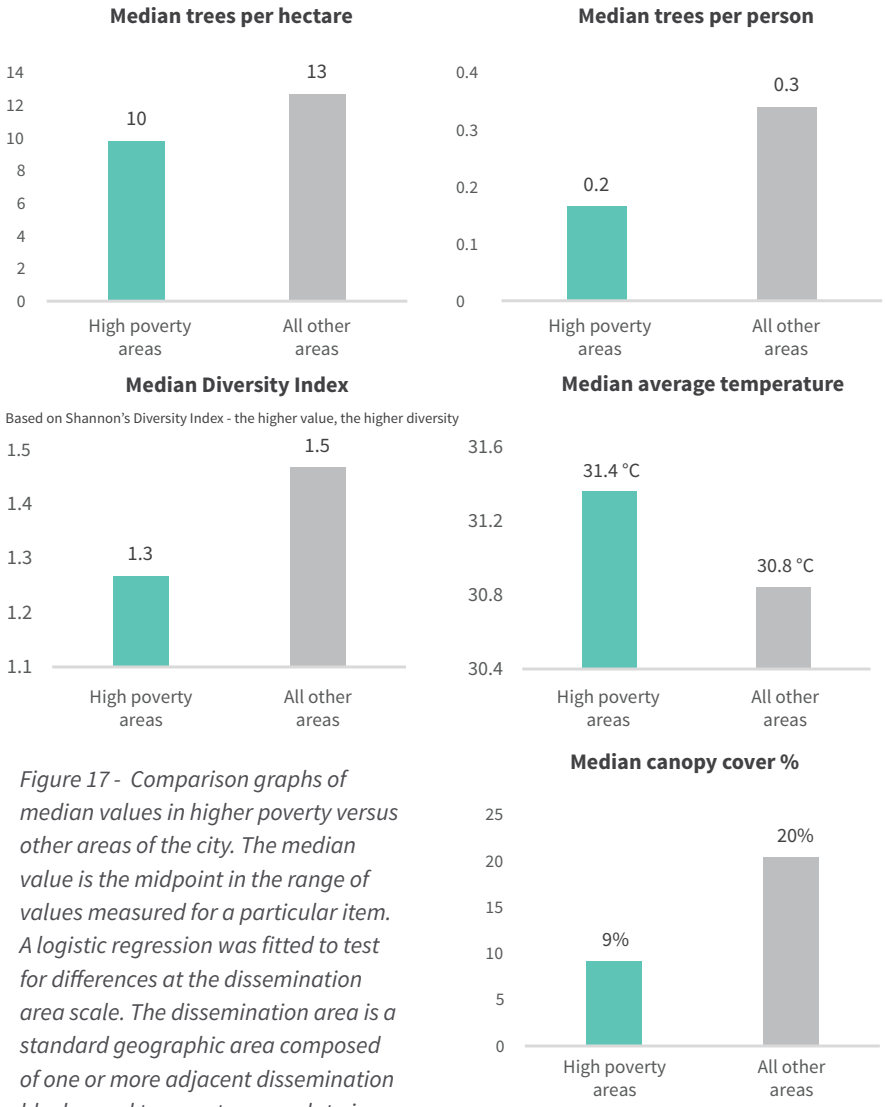
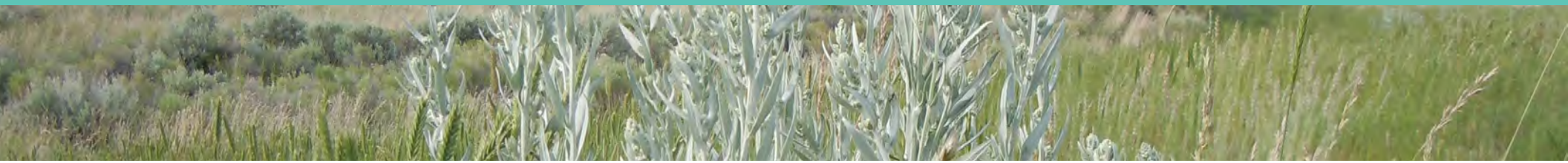


Figure 17 - Comparison graphs of median values in higher poverty versus other areas of the city. The median value is the midpoint in the range of values measured for a particular item. A logistic regression was fitted to test for differences at the dissemination area scale. The dissemination area is a standard geographic area composed of one or more adjacent dissemination blocks used to report census data in Canada.



The establishment and stewardship of Winnipeg's urban forest has always been a close partnership between municipal and provincial government and private homeowners. Winnipeg residents have been long-time advocates for tree preservation and Dutch elm disease management and have been active participants in workshops, volunteer programs, citizen science projects, and planting programs. Today, non-profit organizations, residents' associations, school groups, and individual homeowners continue to support and grow Winnipeg's canopy through a variety of stewardship activities, including planting and caring for trees on their private properties, which contributes to the diversity and resiliency of Winnipeg's urban forest as a whole.





Reconciliation

Winnipeg has the highest Indigenous population among Canadian cities. In 2016, Winnipeg declared the Year of Reconciliation and the Winnipeg Indigenous Accord was subsequently adopted by Council as a tool for communities to establish mutually respectful partnerships with First Nations, Métis, and Inuit governments, organizations, and individuals towards advancing reconciliation work across Winnipeg.

The City of Winnipeg has targeted support for Indigenous-focused and led projects and initiatives since 2000. The Indigenous Relations Division (IRD) was created in 2013 to coordinate such programs and initiatives. IRD has been tasked with leading the design and implementation of the five Truth and Reconciliation Calls to Action relating to municipalities, the development of the Missing and Murdered Indigenous Women and Girls, and Two-Spirited Peoples (MMIWG2S+) Calls for Justice, Winnipeg's Indigenous Accord, and other initiatives.

The City of Winnipeg is committed to a Journey of Reconciliation. More work must be done to build and maintain respectful relationships with Indigenous peoples, organizations, communities, and governments including in the realm of urban forest management in Winnipeg.

It is a priority to foster reconciliation through urban forest management by:

- Establishing mutually-respectful partnerships with First Nations, Métis, and Inuit governments, organizations, and individuals
- Working together with local Indigenous communities to incorporate Indigenous perspectives into plant species selection and climate adaptation approaches for Winnipeg's urban forest and natural areas
- Shifting planting and management actions on sites of Indigenous significance as determined by the Indigenous community
- Collaborating to adopt a cultural landscape plan through the Winnipeg Parks Strategy

Stewardship

Management of the more than three million trees in Winnipeg's urban forest is a responsibility shared by many stakeholders. Successful implementation of Winnipeg's Strategy will require strong partnerships and active participation from a broad range of individuals and organizations.

More than 91 percent of participants in the project's Phase 1 survey had participated in a stewardship activity in the last five years, with the most common activities including pruning or planting a tree on private property. Property owners sometimes also hire qualified contractors to perform work on City-owned trees (with City approval) located on boulevards and in parks.

Numerous community organizations in Winnipeg are active in planting, watering, tree health care, trail maintenance, research, education, and advocacy for the urban forest. Community organizations include Neighbourhood Associations and Tree Committees, Bishop Grandin Greenway, Coalition to Save The Lemay Forest, Friends of Fisher Park, Friends of the Harte Trail, Manitoba Eco-Network, Manitoba Urban Forest Council, OURS Winnipeg, Save Our Seine, Sustainable South Osborne Community Co-op, Transcona Trails, Trees Winnipeg, Wildwood Heritage and Conservation Committee, Sustainable South Osborne Community Co-op. These organizations are critical to successfully implement the Strategy and achieving Mayor Brian Bowman's Million Tree Challenge initiative to plant one million trees by the time Winnipeg's population reaches a million residents (predicted to be by 2040).

Within and external to the City, numerous departments and agencies influence urban forest management, and their collaboration is needed to implement the Strategy.

It is a priority to strengthen urban forest stewardship by:

- Empowering residents to participate in urban forest management
- Providing incentives to encourage private land tree planting
- Raising the profile of urban forestry city-wide
- Working with existing partners and broadening partnerships to implement the Urban Forest Strategy
- Strengthening communication and information sharing between departments and other agencies external to the City

Forest (the park was named by Anishnaabe Elder Peetanacoot Nenakawekapo, which means "Wandering Spirit") in the northeast corner of St. John's Park are examples of what future opportunities for reconciliation may look like[33]. The idea from Winnipeg education professor Lee Anne Block was in response to the Calls to Action, specifically education on reconciliation and the history of colonialism[34]. The park's goal is to 'help people reflect, heal and learn from the past' and the trees plant





Urban forest program sustainability

Winnipeg's urban forestry program provides a wide variety of services to the public and to other City departments for the management of City-owned street and park trees. There is a growing gap between the maintenance and renewal costs of City-owned trees and the City's urban forestry operating and capital budgets. A significant challenge in providing urban forestry services in Winnipeg today involves responding to the unprecedented forest health impacts faced by the urban forest while continuing to meet the needs and expectations of the public and operate within limited resources. A clear, strategic approach and well-defined levels of service will help to clarify expectations and prioritize resources to address current service gaps.

Valuing tree assets

Cities are increasingly incorporating green infrastructure assets like trees, bioswales, and forests into their asset management strategies and Winnipeg is no exception. Asset management helps guide cities in desiging, installing, maintaining, and replacing assets over time and in understanding how much budget needs to be allocated to maintain or renew different assets.

Assets are usually assessed in terms of their condition, life expectancy, and replacement value. Grey infrastructure assets, like pipes or sidewalks, are at their peak value when they are first installed and then decline with wear and tear. Unlike grey assets, trees are living and increase in value for most of their lifecycle. In fact, they need to be in the ground for at least 40 years to reach their peak value and, if healthy, can remain at that peak for decades.

The 2018 City Asset Management Plan included a valuation for public inventoried trees at $226 million based on a simple replacement cost of $740 per tree as a 1:1 tree replacement. This replacement valuation did not account for the fact trees grow and their value increases with size, age, and health. Since it is not feasible to replace a large tree with a large tree, replacement approaches following best practices often plant an equivalent diameter of trunk compared to the tree removed. Valuing trees based on their size and condition would provide a better indication of the true cost of replacing Winnipeg's tree assets, and the cost avoided by investing in maintenance to maximize their safe useful life expectancy. Municipalities such as London and Ajax (ON) use diameter based replacement ratios to calculate replacement values.

Winnipeg currently requires diameter based replacement for trees removed due to construction and development under the City's Tree Removal Policy and Guidelines. Compensation for City-owned trees is assessed using the two methods described below.

- **Manitoba Hydro removals**: Compensation is charged at a rate of $740 for each 10 centimetres in diameter removed. **2021 replacement value of the public tree inventory would translate to $740 million.** Manitoba Hydro construction projects compensate for trees at a rate that reflects most projects occur in natural areas and typically result in higher volume of smaller diameter trees being removed.

- **All other removals:** Compensation is charged at a rate of $740 for each tree 10 centimetres in diameter or less removed. Compensation for trees greater than 10 centimetres in diameter is assessed using the Council of Tree and Landscape Appraisal formula (calculated using i-Tree Eco). **2021 replacement value of the public tree inventory would translate into $683 million using this methodology,** or 2% of the replacement value of all City infrastructure (Figure 18)**.**

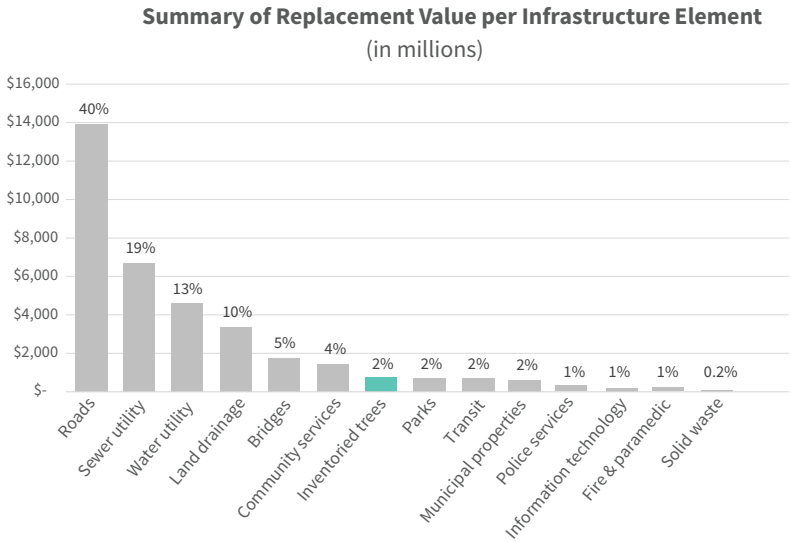
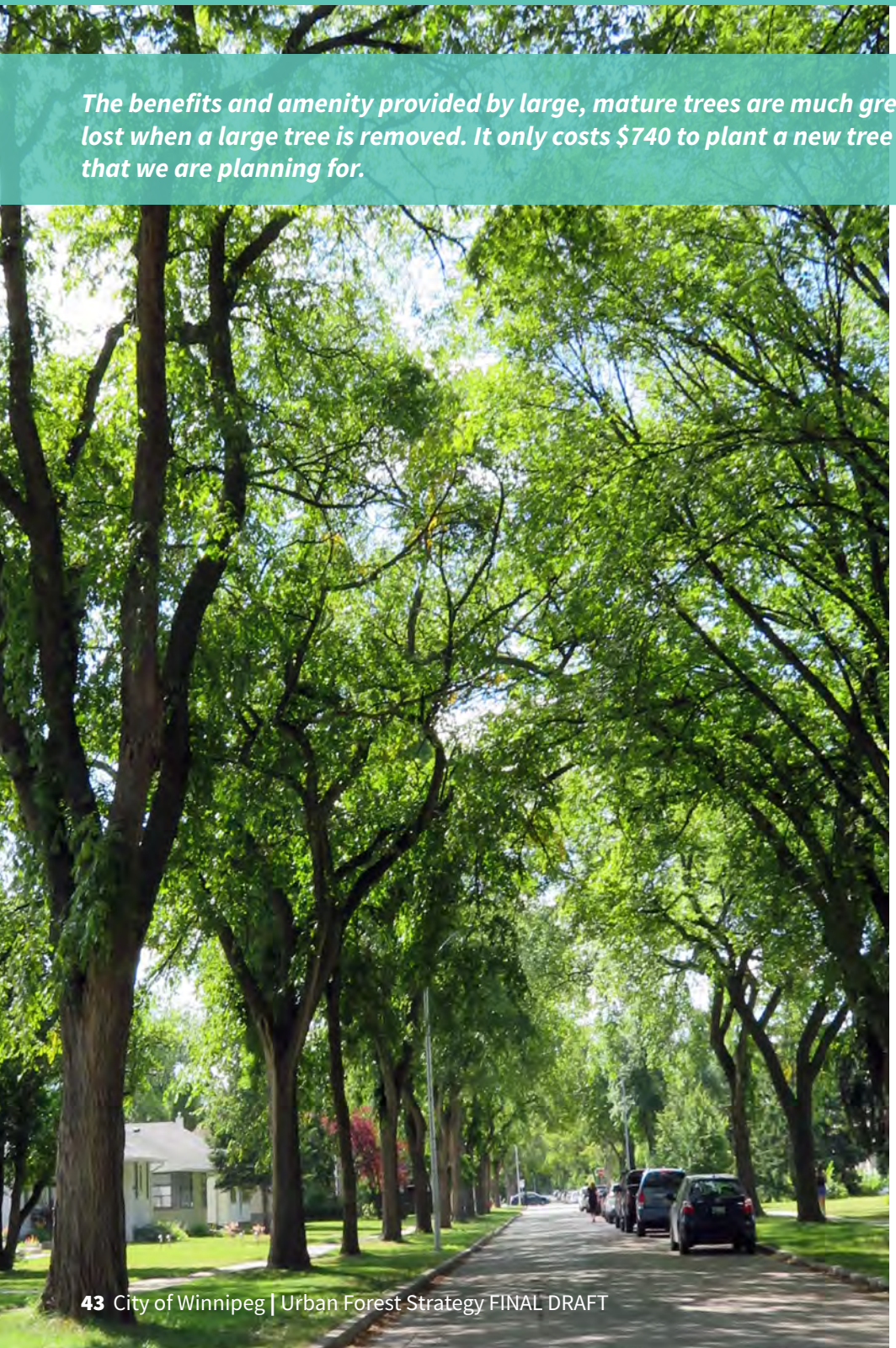


Figure 18 - Summary of the replacement values reported in the 2018 City Asset Management Plan and inventoried trees if the Tree Removal Guidelines compensation approaches were used

The benefits and amenity provided by large, mature trees are much greater than that of young trees. It takes decades to replace the value lost when a large tree is removed. It only costs $740 to plant a new tree but it takes another 40 years for that tree to mature into the asset that we are planning for.





Maximizing tree condition and life expectancy

Tree asset management aims to maximize the benefits and minimize the risk from trees for least costs. Given that the benefits of trees grow with time, maximizing their health and life expectancy is essential. Tree assets cost the most at the beginning and end of their life cycles (planting and removal), so extending their time in healthy maturity ensures the urban forest maximizes the return on investment in tree planting and maintenance.

Take the example of a linden tree planted in a Winnipeg street. The City pays for planting, watering, and annual maintenance of the linden throughout its life until it is removed. The tree produces benefits as it grows, and we can use i-Tree Eco to estimate values for amenity, carbon storage, and sequestration, avoided runoff, energy savings, and pollution removal throughout its life.

If the linden lives a long life, it will produce benefits that provide a positive return on the City's investment (Figure 19). However, if it dies as a young tree, it will fail to produce those benefits and the City will lose money on its investment over time. Figure 20 shows the estimated financial impact of that linden tree dying by the time it is 10 years old, and being removed and replaced repeatedly. At the end of the 100 year period, it is estimated that the City would have incurred a net loss of more than $18,000 for one representative tree. On top of that, there is a lost opportunity cost from the benefits that could have been provided by a long-lived tree during the same period.

Maintaining healthy trees will maximize their life expectancy and ensure that the City receives a positive return on its investment in the urban forest.

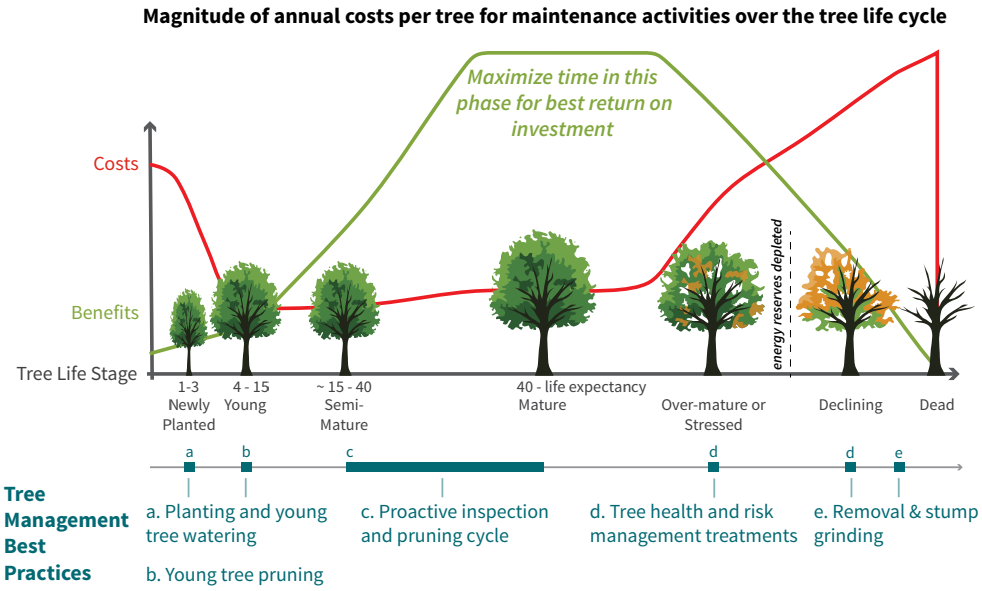
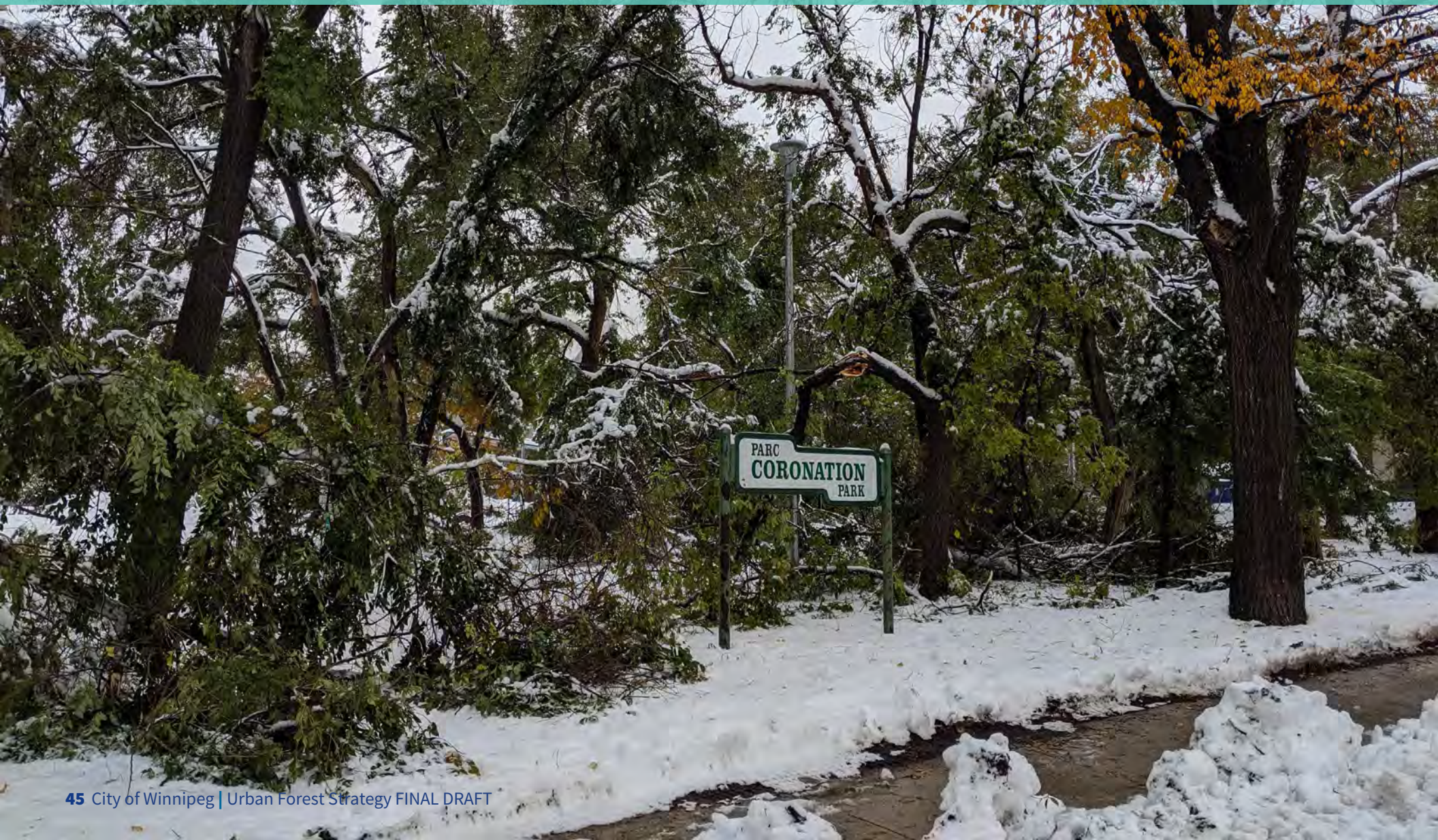


Figure 19 - Tree life cycle costs and benefits



Figure 20 - Cumulative financial loss estimated for a linden tree if removed and replaced every ten years

City of Winnipeg arborists undertake all aspects of public tree care including planting, pruning, tree removals, and assessments, but must also be readily available to respond to storm damage and emergency calls. In October 2019, Winnipeg experienced one of the most destructive winter storms in recent memory. Approximately 30,000 trees were damaged by this storm event, generating a total of over 6,700 service requests from the public over the course of 45 days. City of Winnipeg Urban Forestry crews were joined by arborists from neighbouring municipalities and private tree care companies to assist with this unprecedented storm response, attending to fallen trees, broken limbs, and various other public safety risks throughout the city.





Risks to the sustainability of Winnipeg's urban forest program

To be sustainable, Winnipeg's urban forest program needs to deliver adequate service levels for the least possible cost. Several issues risk the sustainability of the urban forest program. These issues generally impact the condition and safe useful life expectancy of tree assets and, if not addressed, could ultimately lead to a widespread loss of benefits and a high cost to reactively manage risks. These issues and the risks if not resolved are summarized in Table 3.



Table 3. Urban forestry program priority issues with a high impact on budgets and resourcing

Current issue	Risks if not resolved
Pruning cycle has lengthened to 31 years	• Structural problems will not be detected until issues are advanced, limiting tree asset service life and resulting in premature tree removal and/or more costly risk mitigation, and increased risk to public safety • Mature trees with structural problems will typically remain in the landscape until a service call is received, increasing risks to public safety and liability to the City • When storms occur, damage is likely to be more extensive due to the prevalence of structural problems in the tree population • Costs of responding to demand calls, mitigating risks that could have been prevented, and responding to storm damage are likely to be higher
High numbers of service calls for demand pruning and storm response	• Program resources redirected from other tasks to tree removals • Increasing number of trees in the landscape with structural issues as the pruning cycle continues to lengthen, and growing number of service calls with longer wait periods for service as existing resources are limited to respond to calls in a timely manner
Average annual tree mortality rate has increased from 1.3% to 1.9%	• Increasing tree mortality annually means that the average life expectancy for public trees is decreasing • Decreasing life expectancy means more frequent replanting, increased tree planting costs and reduced benefits that will impact the long term value and sustainability of the program
Emerald ash borer and cottony ash psyllid are establishing in Winnipeg threatening 33% of public tree assets	• If emerald ash borer becomes widespread, most urban forestry resources will need to be redirected to rapid removal at an estimated cost of $105 million over 10 years • The annual tree mortality rate for all City-owned tree assets is expected to increase to 4% or more at the peak of ash mortality (more than 10% mortality per year for ash)

Current issue	Risks if not resolved
High volume of Dutch elm disease tree removals due to high infection rates	• Increasing infection spread rates from diseased trees left in the landscape beyond June of the following year, resulting in growing backlog of trees to remove, higher loss of trees and benefits, and higher cost of services for removal and replacements • Program resources redirected from other tasks to tree removals • The annual elm removal rate peaked at just under 4% due to disease in 2018 before the removal backlog was brought under control
Trees removed from the public landscape are replaced less than half of the time	• Net loss of trees and tree canopy in areas that used to have established canopy • Net loss of ecosystem services particularly in areas with high elm populations
An estimated 40,600 planting sites are vacant	• The urban forestry program will not be maximizing limited public permeable space and the benefits produced from trees, including those critical for climate mitigation and adaptation
Areas with higher poverty have lower urban forestry levels of service	• Areas of higher poverty are underserved in terms of trees and tree canopy, increasing vulnerability to heat and reducing access to ecosystem services in these areas
Approximately 2,000 new trees are added to the City's inventory each year from development with no additional budget to maintain	• The City will not be maximizing the benefits produced from these trees due to lack of resources to maintain them to maximize their life cycle • Loss of investment • Unsustainable operational impact

Addressing the issues described in Table 3 would improve the sustainability of the urban forest program by maximizing the benefits provided while minimizing risk for least cost. Resolving these issues will require increases in budgets from current levels. However, the cost of taking no action is anticipated to be higher in the medium-term based on more expensive risk mitigation, higher risks to public safety and liability to the City, more frequent tree removals, higher service call rates, and the net loss of ecosystem services values, which have indirect costs for human and environmental health impacts.

It is a priority to improve urban forest sustainability by:

- Establishing and achieving levels of service to meet demonstrated community need
- Including natural assets and their value in the corporate asset management plan
- Maintaining and regularly updating an inventory of urban forest assets
- Maximizing the health and life expectancy of newly planted urban trees in City streets and parks
- Rapidly removing dead, diseased, and dangerous trees
- Following a best practices program for tree care and tree risk management for public trees

4. Urban forest baseline and service targets

Section 4 describes the current state of the urban forest as baselines against which future progress can be assessed. These targets are intended to drive progress towards achieving Winnipeg's vision for an urban forest that is abundant, healthy, diverse, and resilient.



Baseline

Winnipeg's 2018 canopy cover estimated at 17%

Service target

20% canopy cover by 2045
24% canopy cover by 2065

City-wide canopy cover

Winnipeg's canopy cover was estimated at 17 percent in 2018 using i-Tree Canopy with a leaf-off orthophoto (Figure 21). To map canopy cover extent in 2020, we used Landsat-derived canopy imagery from the University of Maryland's global forest change analysis[35]. Due to low resolution from the Landsat imagery, this data was not used to estimate canopy percentages, however, the imagery is useful to show low to high canopy cover (Figure 22).

Canopy cover is highest along river corridors, including the Red and Seine Rivers, in the Assiniboine Forest, and around the River Heights neighbourhoods. In terms of land uses, the highest canopy cover is found in parks and the lowest is found in commercial land uses.

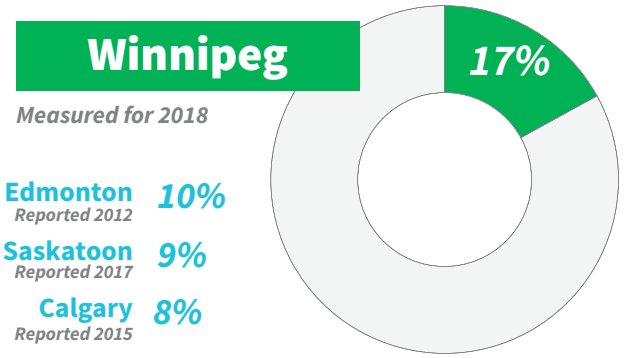


Figure 21 - In 2018, Winnipeg's canopy cover was 17 percent

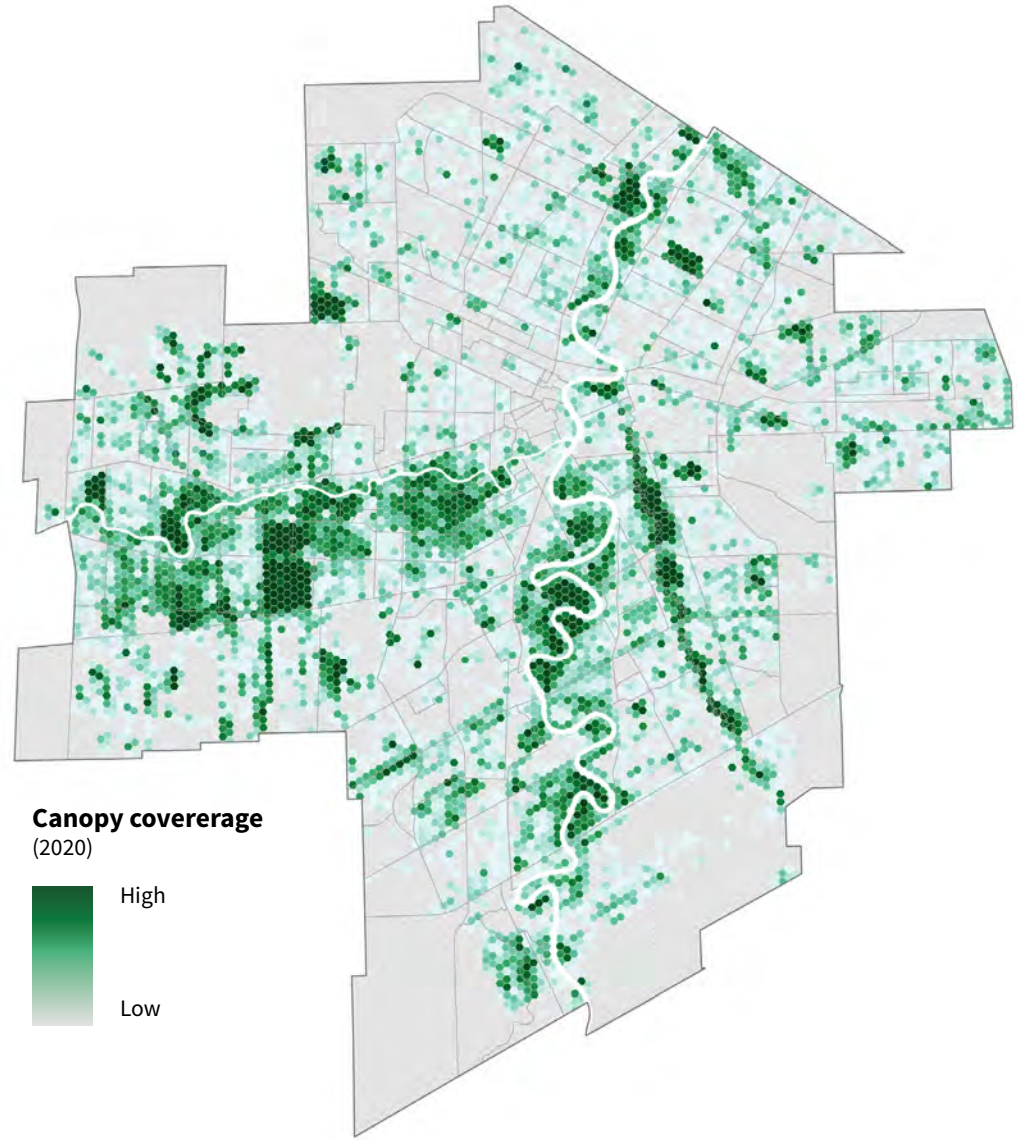


Figure 22 - Low to high canopy cover for 2020 using Global Forest Cover Change (Hansen et al. 2013) data mapped in 10-hectare grids and shown with neighbourhood boundaries

Setting a city-wide canopy cover target

Potential planting opportunities were estimated to determine a canopy cover target for Winnipeg. Based on opportunities, it is anticipated that a best-case scenario **canopy cover target of between 17 and 24 percent by 2065** will be possible. However, the upper range of the target will only be feasible if emerald ash borer is slow to establish and elm loss due to Dutch elm disease is capped at two percent per year. Twenty-four percent canopy cover is an ambitious target because it assumes an overall mortality rate of 1.5 percent, that all opportunities are planted and all trees removed are replaced.

Figure 23 presents a range of future canopy cover scenarios:

1. **Best-case:**
   a. **Canopy projected to increase to 24 percent (without EAB)** if planting is increased, every tree removed is replaced and mortality rates remain similar to today.
   b. **Canopy projected to remain at 17 percent (with EAB)** if planting is increased but all ash are lost to emerald ash borer. This scenario assumes one fifth of the tree canopy would be lost based on the proportional leaf area of ash estimated in i-Tree Eco study presented in the State of the Urban Forest Report in Appendix A, downloaded separately.
2. **Status quo:**
   a. **Canopy projected to decline to 13 percent (without EAB)** if similar mortality and planting rates are maintained compared to today, and elm mortality is high (four percent).
   b. **Canopy projected to decline to nine percent (with EAB)** if similar planting rates are maintained compared to today but elm mortality is high (four percent) and all ash are lost to emerald ash borer.

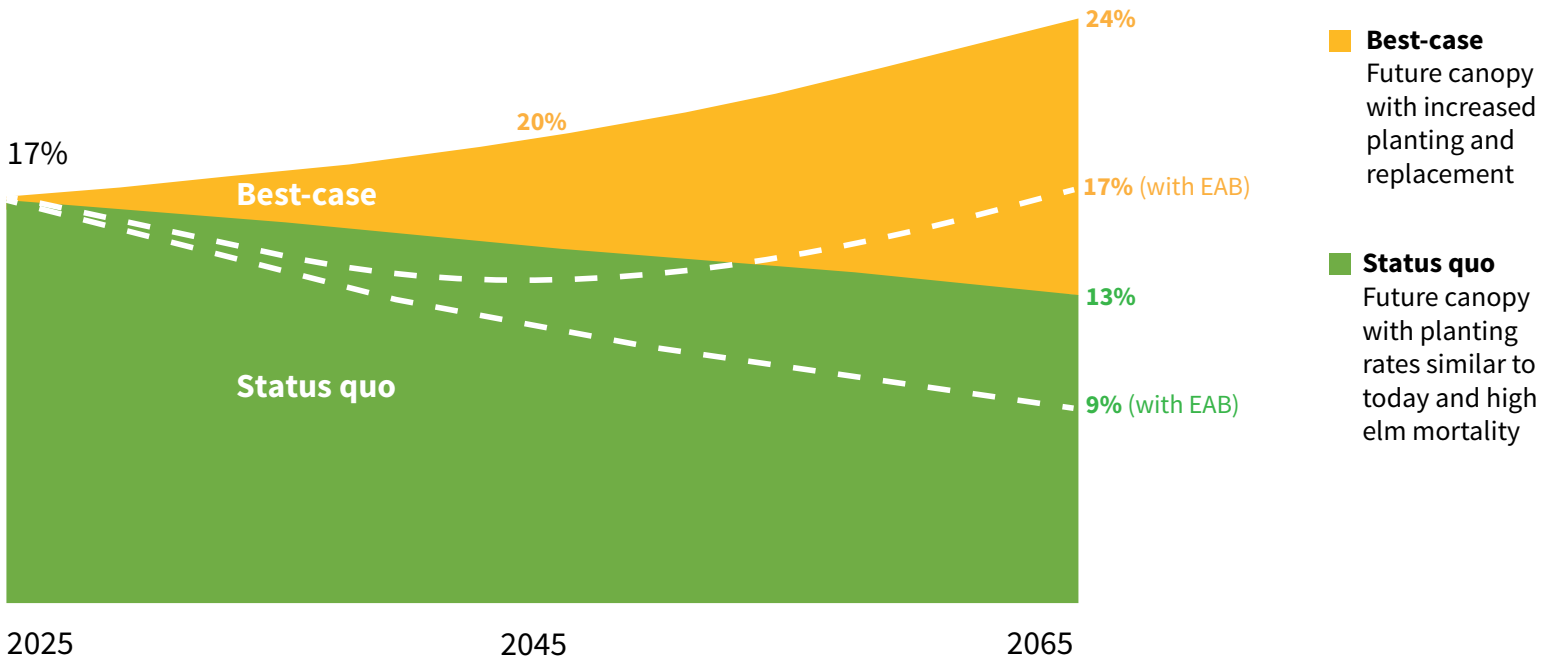


Figure 23 - Potential canopy cover outcomes for different planting and loss scenarios with and without emerald ash borer (EAB)

Achieving a best-case canopy cover target

Table 4 outlines the targets and the estimated rates of planting required to achieve a 24 percent canopy cover target city-wide by 2065 (or to maintain 17 percent if emerald ash borer establishes). The greatest potential to increase canopy cover is found on private residential lands, future development lands, in vacant sites, on new roads, and in parks through restoration of natural forest areas. The canopy cover targets were determined by estimating the available planting spaces on public land, the density of trees that could be planted into private land and the time it would take for new tree canopy to grow. The target is ambitious and more than doubles the City's current tree planting rates. The 24 percent target also reflects the fact that Winnipeg is located within a grassland ecoregion, and that rural and parkland areas will naturally support lower canopy cover than cities in forested ecoregions. Table 4 details the policies and programs that would be required to achieve this canopy cover target.

Table 4. How the best-case canopy cover target can be achieved over Winnipeg's land uses

Land use	Land Area *(ha)*	2065 Canopy Cover Target	Approximate # of New Trees Required to 2065	Approximate Annual Planting Rate *(net new)*	How could this be achieved?*
Residential	15,079	24%	146,000	3,300	ReLeaf would need to result in Winnipeggers planting approximately 3,000 trees per year and redevelopment would need to at least replace all trees removed
Future development	8,046	20%	240,000	5,300	Assumes developed land will plant or retain at least 30 trees per hectare on private land, in streets and in parks, while also retaining or restoring at least 5% of the area as natural forest in parkland
Agriculture	2,112	9%	-	-	No action proposed
Right-of-way	8,228	19%	140,000	3,200	40,000 trees would be planted in vacant spots and developments would be adding 2,000 new street trees per year
Manufacturing	5,795	12%	33,000	750	*New recommendation – require industrial locations to incorporate landscape buffers and tree planting (see example next page)
Parks	5,215	60%	139,000	3,200	At least 3,000 new trees per year, much of it riverbank
Commercial	1,661	15%	48,000	1,100	Require surface parking to incorporate landscape buffers and 1 tree per 6 stalls
Educational and institutional	325	30%	8,000	200	ReLeaf and partner programs to plant 200 trees per year on educational and institutional properties
Downtown	228	15%	4,000	100	100 trees to be planted per year with road upgrades and new development
Total City	**46,690**	**24%**	**758,000**	**17,150**	

** Achieving future canopy cover assumes that the population of new trees planted will average ~45 m^2 canopy area per tree in the year 2065, and that existing canopy will either be retained or replaced in addition to new tree planting.*

Baseline

12% of potential planting sites vacant

Service target

No more than 5% of potential planting sites vacant

City-wide tree planting

Increasing canopy cover in Winnipeg by one percent of total city area requires 464 hectares of new tree canopy, or approximately 45,000 large trees or 100,000 small to medium trees. Today, tree planting tends to be composed of 60 percent large trees and 40 percent small trees and it is assumed that this ratio will continue.

Table 4 outlines the estimated new tree plantings required to reach 24 percent canopy cover by 2065. It is estimated that **approximately 760,000 new trees, or about 17,000 new trees per year, will need to be planted over the next 44 years** (in addition to tree replacements). These trees would be planted on both public and private land through a combination of incentive programs, public land planting programs and regulatory tools.

Vacant locations for tree planting

The City has inventoried more than 42,000 vacant tree planting locations on public land (Figure 24). Historically, only 60 percent of these sites have ended up being suitable for planting because adjacent infrastructure and landscape features change over time. As a result, we estimate that approximately 26,000 of these locations are likely to be suitable for planting. Another 14,500 trees have been removed and not replaced, bringing the total estimate of vacant planting locations on public land to 40,500 (a combination of new sites and missing trees). These vacant locations represent a vacancy rate of 12 percent in a possible population of 340,500 inventoried trees. The City's planting program is not presently keeping up with replanting and the vacancy rate is growing. It is recommended that a target be set to reduce the vacancy rate to no more than five percent by 2065.

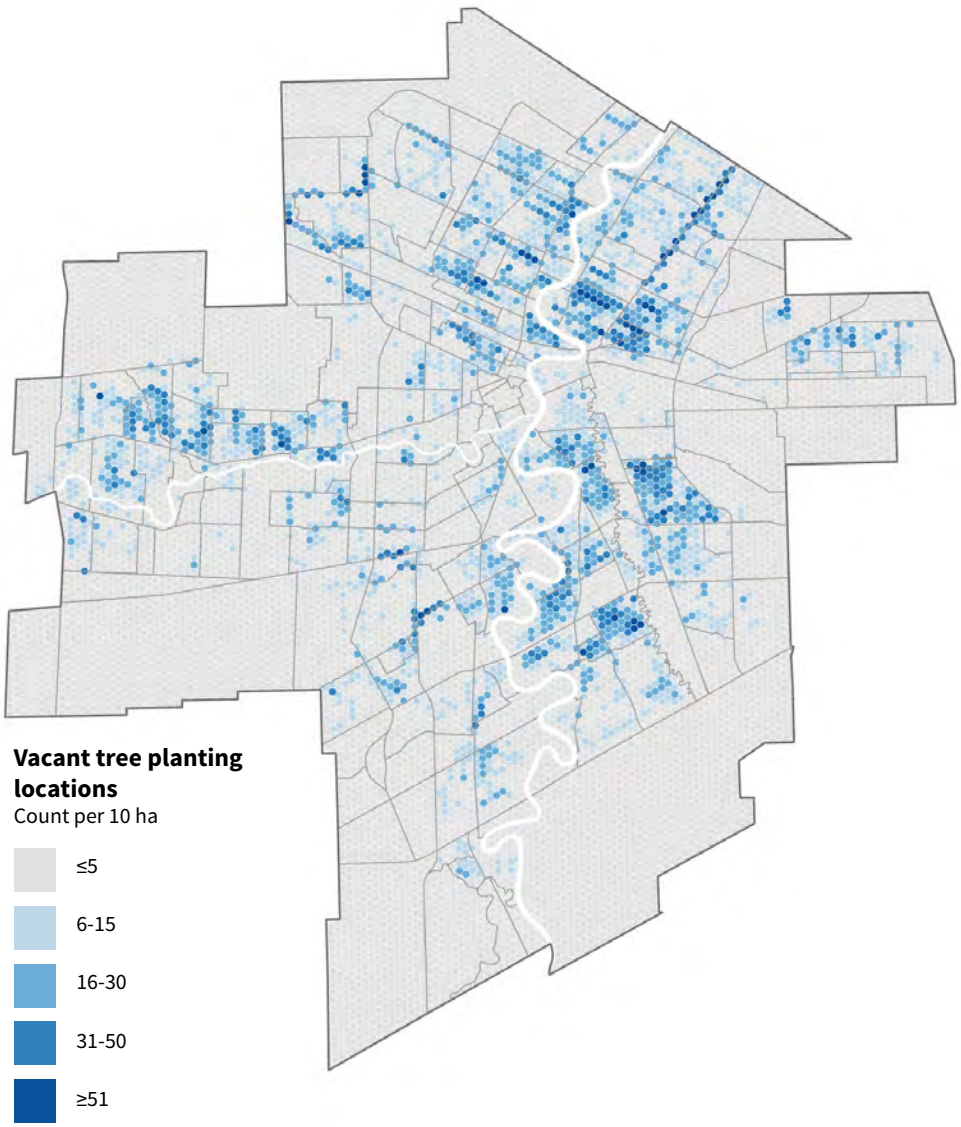


Figure 24 - Count of vacant tree planting locations identified in 2020 by ten hectare area with neighbourhood boundaries

Baseline

Less than one tree replaced for every three trees removed

Service target

1:1 (one tree replaced for every tree removed)

Public tree replacement

From 2016 to 2020, the City replaced an average of 2,000 trees on streets and parks annually but removed an average of 5,100 trees (Figure 25). In 2019 and 2020, fewer than one in three trees removed were replaced. It is recommended that the City set a target to replace every tree removed in order to prevent the erosion of Winnipeg's tree canopy, and to meet the City's target to increase canopy cover. It is anticipated that this will require replacing between 4,000 and 6,000 trees on public land per year based on historic tree removal numbers.

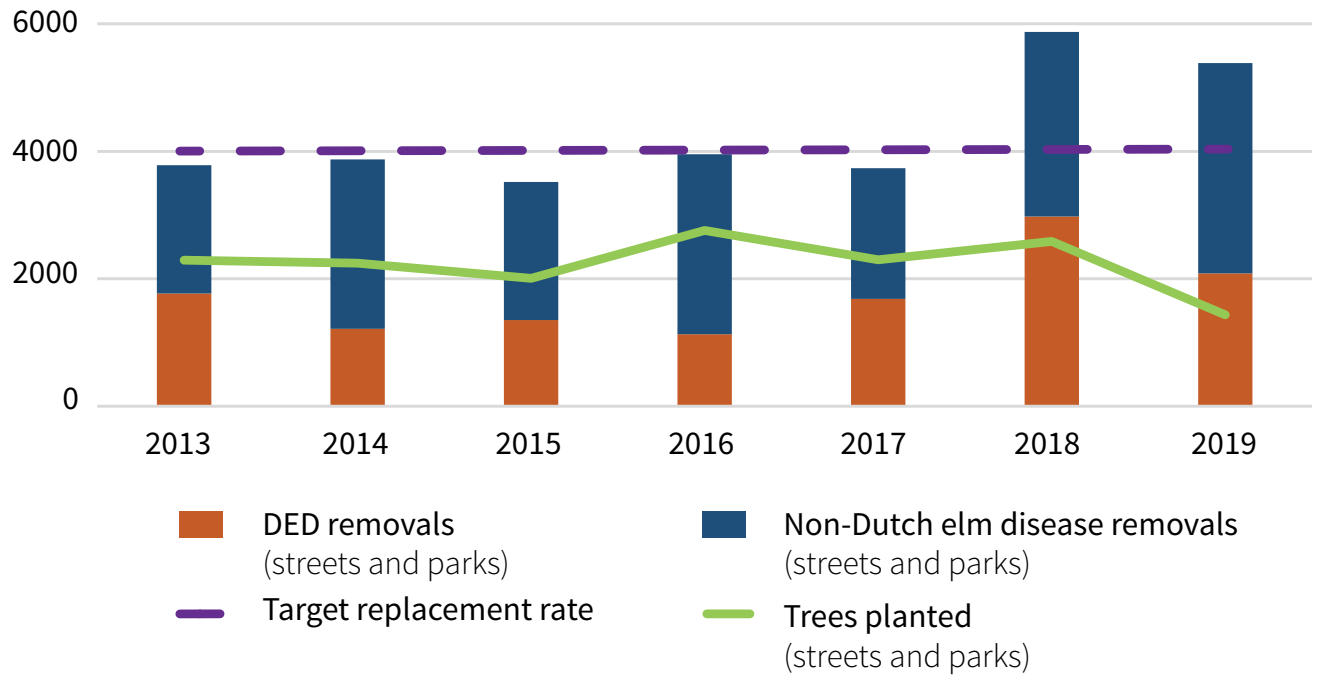


Figure 25 - Annual rates of removal and replacement for public trees in City streets and parks

Baseline

Ash and elm make up 58% of the City's public tree inventory

Service target

No more than 10% of any species and 20% of any genus in the public inventory

Public tree diversity

The public tree inventory is dominated by ash, at 33 percent, and elm at 25 percent of the overall tree inventory (Figure 26). **A diversity target of no more than 10 percent of any single species and 20 percent of any genus in the City's tree inventory is recommended.** Diversification should focus on species that are performing well based on current inventory data and that are recommended for use in Table 5. In addition, new species and types of trees that are hardy and have tolerance to salt should be prioritized for trials.

Winnipeg's tree inventory has low tree species diversity because of climate limitations - the City plants trees that have a plant hardiness of Zone 3 and can grow successfully in prairie climates. Presently, seven genera (e.g., maple, ash, oak etc.) make up 91 percent of the City's public tree inventory, with elm and ash making up more than 50 percent (Figure 26). Some Winnipeg neighbourhoods are planted with a higher diversity of trees than others. To measure species diversity, the Shannon-Weiner Diversity index calculation was applied to a 10 hectare grid city-wide. The index calculates an 'H' value based on the abundance and richness of species in each grid. Figure 27 illustrates the H values across Winnipeg for all inventoried trees in streets and parks; the higher the value, the higher the diversity. In general, the highest diversity of trees are in areas adjacent to Winnipeg's rivers. Some hot spots have as many as 21 different types of tree genus but most areas have much less.

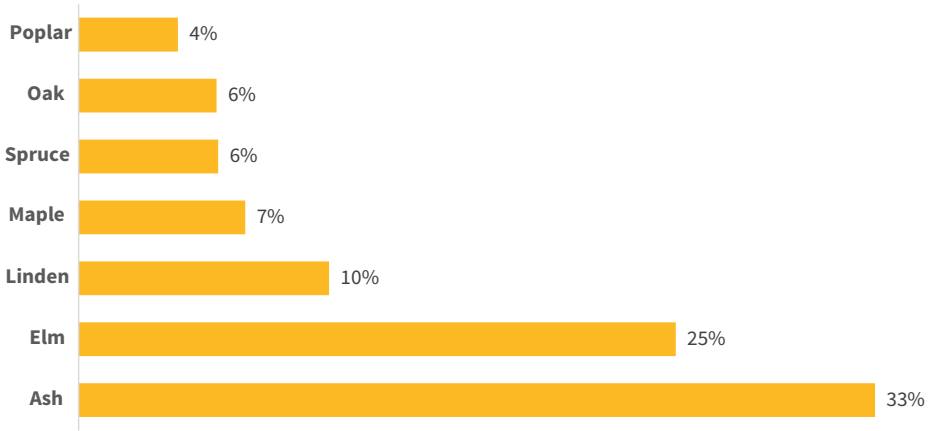


Figure 26 - The dominant genera in Winnipeg's public tree inventory (2020)

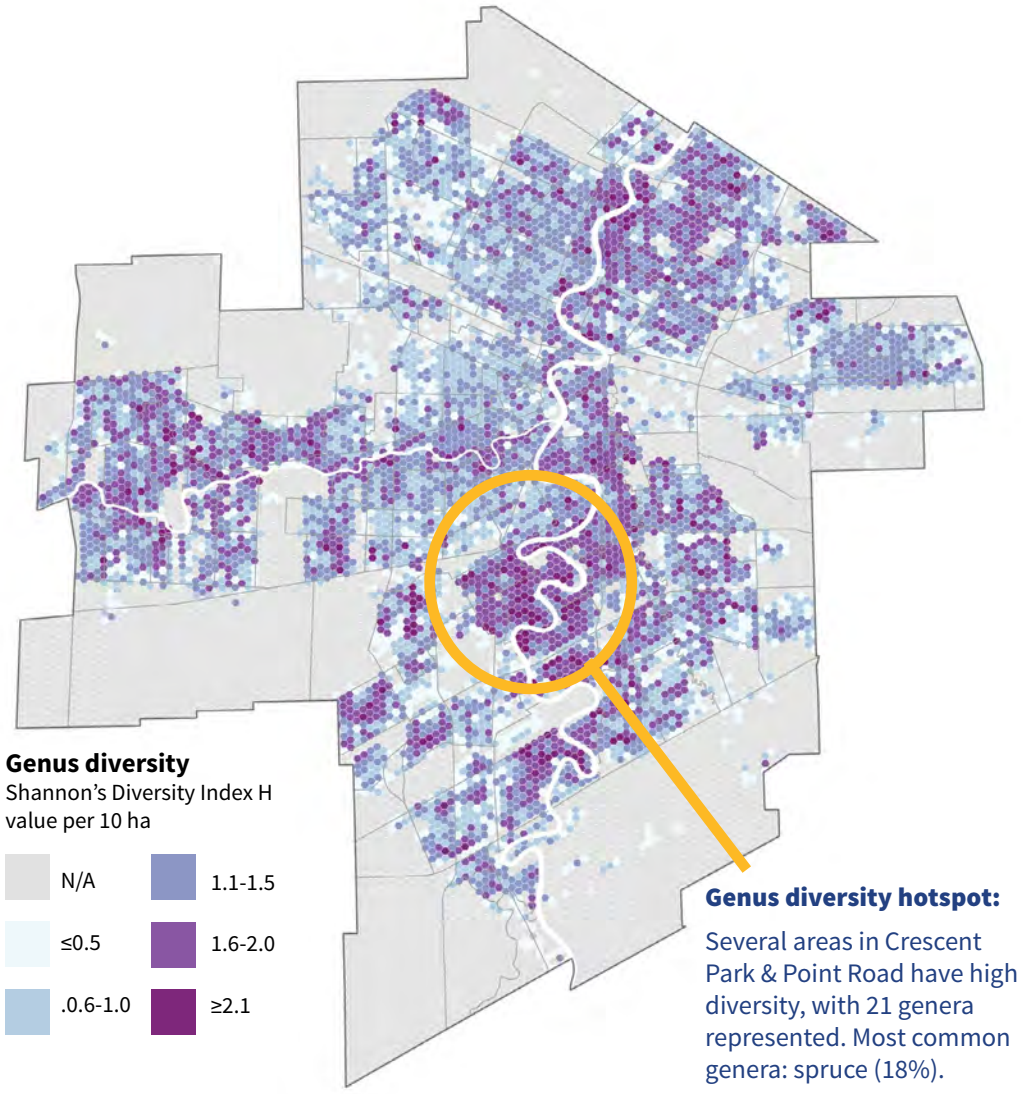


Figure 27 - Shannon's diversity index mapped by 10-hectare area by genus with neighbourhood boundaries. The higher the H value, the higher the diversity of public trees.

Table 5. The most abundant species in Winnipeg's tree inventory, their annual growth and mortality, and a recommendation regarding their ongoing use (based on removals between 2013 and 2020 inventory updates) ***Site suitability criteria influence usage***

Species (n>50)	Average annual diameter growth (cm dbh)	Annual removal rate (percent of species population)	2020 population	2020 species %	Use recommendation
Amur maple ***(Acer ginnala)***	0.8	1%	2126	0.7%	**Use often**
Manitoba maple ***(Acer negundo)***	1.1	1%	14687	4.9%	**Use often**
Silver maple ***(Acer saccharinum)***	1.4	1%	3368	1.1%	**Use often**
Sugar maple ***(Acer saccharum)***	No data (n<10)	0%	159	0.1%	Try more
Ohio buckeye ***(Aesculus glabra)***	No data (n<10)	0%	811	0.3%	Try more
Paper birch ***(Betula papyrifera)***	0.8	2%	1404	0.5%	Use sometimes
Hackberry ***(Celtis occidentalis)***	1.1	1%	1401	0.5%	**Use often**
Hawthorn ***(Crataegus spp.)***	No data (n<10)	1%	230	0.1%	Try more
Russian olive ***(Elaeagnus angustifolia)***	1.2	3%	928	0.3%	Less preferred
Manchurian ash ***(Fraxinus mandshurica)***	0.9	1%	4030	1.3%	No (EAB)
Black ash ***(Fraxinus nigra)***	0.8	2%	8774	2.9%	No (EAB)
Green ash ***(Fraxinus pennsylvanica)***	1.0	1%	85489	28.6%	No (EAB)
Tamarack ***(Larix laricina)***	1.0	4%	227	0.1%	Less preferred
Crabapple ***(Malus spp.)***	0.9	1%	4464	1.5%	**Use often***
White spruce ***(Picea glauca)***	0.8	1%	7419	2.5%	**Use often***
Blue spruce ***(Picea pungens)***	0.9	1%	9823	3.3%	**Use often***
Scots pine ***(Pinus sylverstris)***	0.8	1%	1092	0.4%	**Use often***
White poplar ***(Populus alba)***	1.5	2%	209	0.1%	Less preferred
Poplar ***(Populus spp.)***	1.5	2%	7623	2.5%	Less preferred
Trembling aspen ***(Populus tremuloides)***	0.9	1%	4249	1.4%	**Use often***
Amur cherry ***(Prunus maackii)***	1.4	3%	856	0.3%	Less preferred
Schubert chokecherry ***(Prunus virginiana var Shubert)***	0.8	23%	3852	1.3%	No (black knot)
Chokecherry ***(Prunus virginiana var Virginiana)***	No data (n<10)	1%	284	0.1%	No (black knot)
Bur oak ***(Quercus macrocarpa)***	0.6	0%	17148	5.7%	**Use often**
White willow ***(Salix alba)***	1.6	2%	2575	0.9%	Less preferred
Laurel willow ***(Salix pentandra)***	1.4	5%	554	0.2%	Less preferred
Mountain ash ***(Sorbus spp.)***	0.8	4%	471	0.2%	Less preferred
Japanese tree lilac ***(Syringa reticulata)***	0.6	1%	2353	0.8%	**Use often**
Cedar ***(Thuja occidentalis)***	1.1	1%	1060	0.4%	**Use often***
Linden ***(Tilia spp.)***	1.2	1%	26018	8.7%	**Use often**
American elm ***(Ulmus americana)***	0.8	3%	52405	17.5%	Less preferred
Japanese elm ***(Ulmus davidiana var japonica)***	1.6	0%	1788	0.6%	**Use often**
Siberian elm ***(Ulmus pumila)***	0.9	2%	18912	6.3%	Less preferred

Baseline

1.4% annual average loss of public trees

Service target

No more than 1.5% annual loss of public trees

Public tree loss

The City's annual tree removal records for inventoried trees show that tree loss rates have fluctuated between one and two percent over the last seven years (Figure 28). Tree loss over the last eight years has averaged 1.4 percent but was above average in 2018 and 2019. Maintaining a low average tree loss rate is important for maximizing the life expectancy of trees. A target of no more than 1.5 percent of trees lost in any year is recommended for inventoried public trees.

With a relatively stable loss rate of 1.5 percent, the mean life expectancy of Winnipeg's trees would be about 66 years, and the population half life would be 46 years (time at which half of the trees planted in any given year would be dead).

Of the trees removed annually, approximately 40 percent are elms. Other species commonly removed include green ash and bur oak, which are also common species in the tree inventory. Some species are removed at high rates relative to their population, and these include poplar, chokecherry, willow, and mountain ash. Some locations that are hot spots for dead trees in the current inventory are shown in Figure 29 (dead tree counts do not include elms that are removed proactively when disease is detected). The data summarized in Figure 29 only represents dead trees present in the inventory at a snapshot in time. More dead trees were mapped in parks; however, that may be because dead trees in streets are priortized for removal more rapidly than trees in parks.

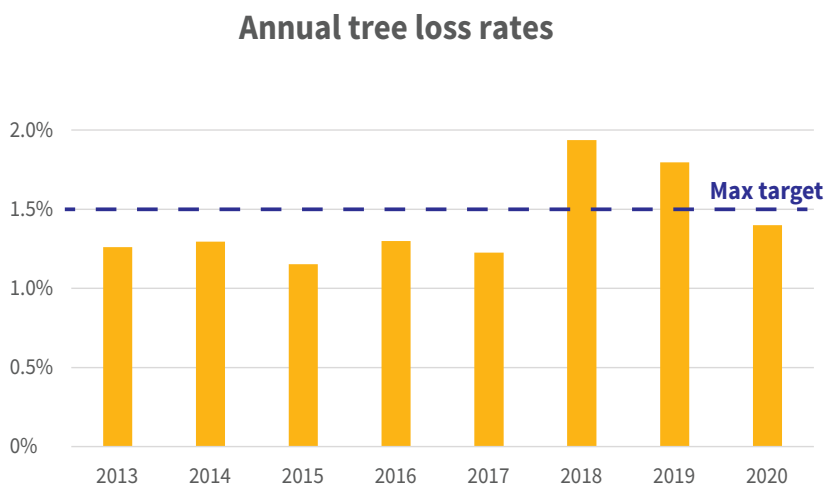


Figure 28 - Annual tree loss rate of public trees over the last eight years in relation to maximum target

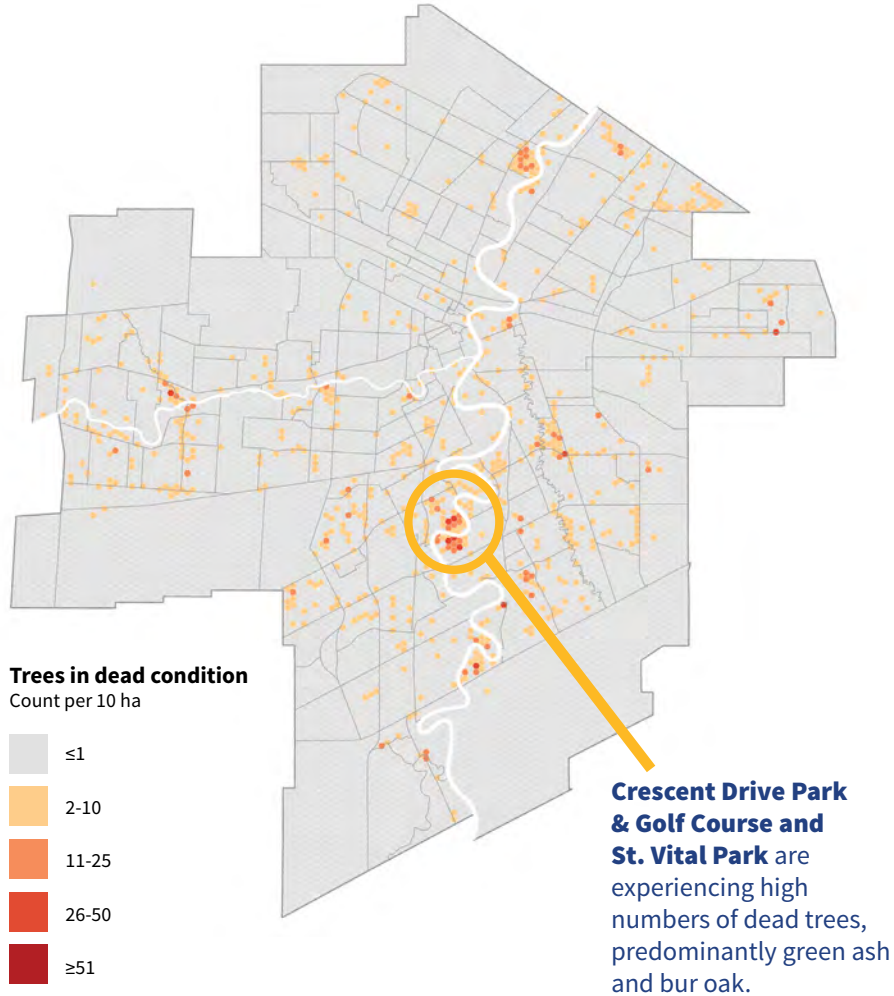


Figure 29 - Count of dead trees in the inventory per ten hectare area

Baseline

Average American elm loss per year from 2016-2020 was 3.3%

Service target

No more than 2% annual loss of city-wide American elm

City-wide elm loss

As of 2020 the city-wide inventory of elms captures 215,000 American elm trees on public and private land. The population has been declining gradually since Dutch elm disease was detected in the 1970s. Since 2016, the inventoried elm population has dropped from 237,000 to 215,000 American elms on public and private land (Figure 30).

Over the five years, the average rate of American elm population loss was 3.3 percent. However, in 2019 and 2020, the loss rate averaged almost four percent mainly due to continuing impacts of drought. In 2019, over 9,000 American elms were marked for removal, the highest number since the early 1990s. The historic average annual number of trees marked for removal due to Dutch elm disease was approximately 6,000. **A target of no more than two percent of city-wide American elms lost to disease annually is recommended.**

Figure 31 shows the distribution of American elms threatened by Dutch elm disease in Winnipeg's elm inventory (public and private land). The older areas of the city centre, riverbanks and pockets of the north and east are particularly vulnerable to canopy loss over time due to the concentration of elms.

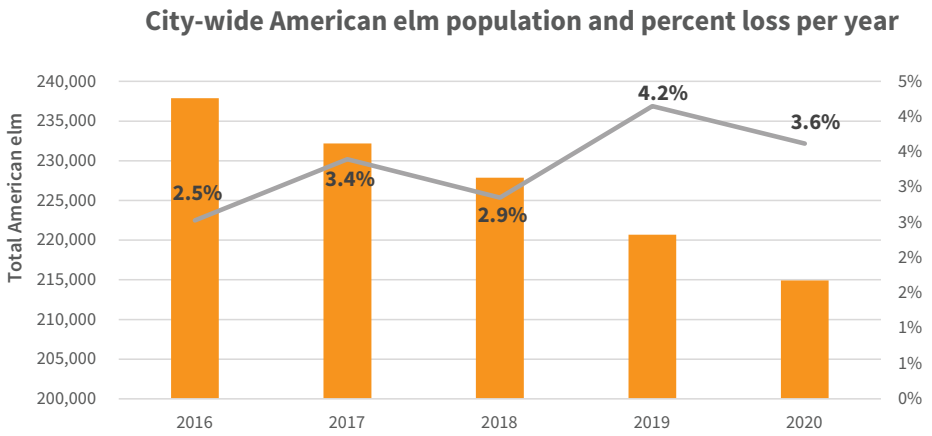


Figure 30 - American elm population decline and percent annual loss from 2016 to 2020 (public and private)

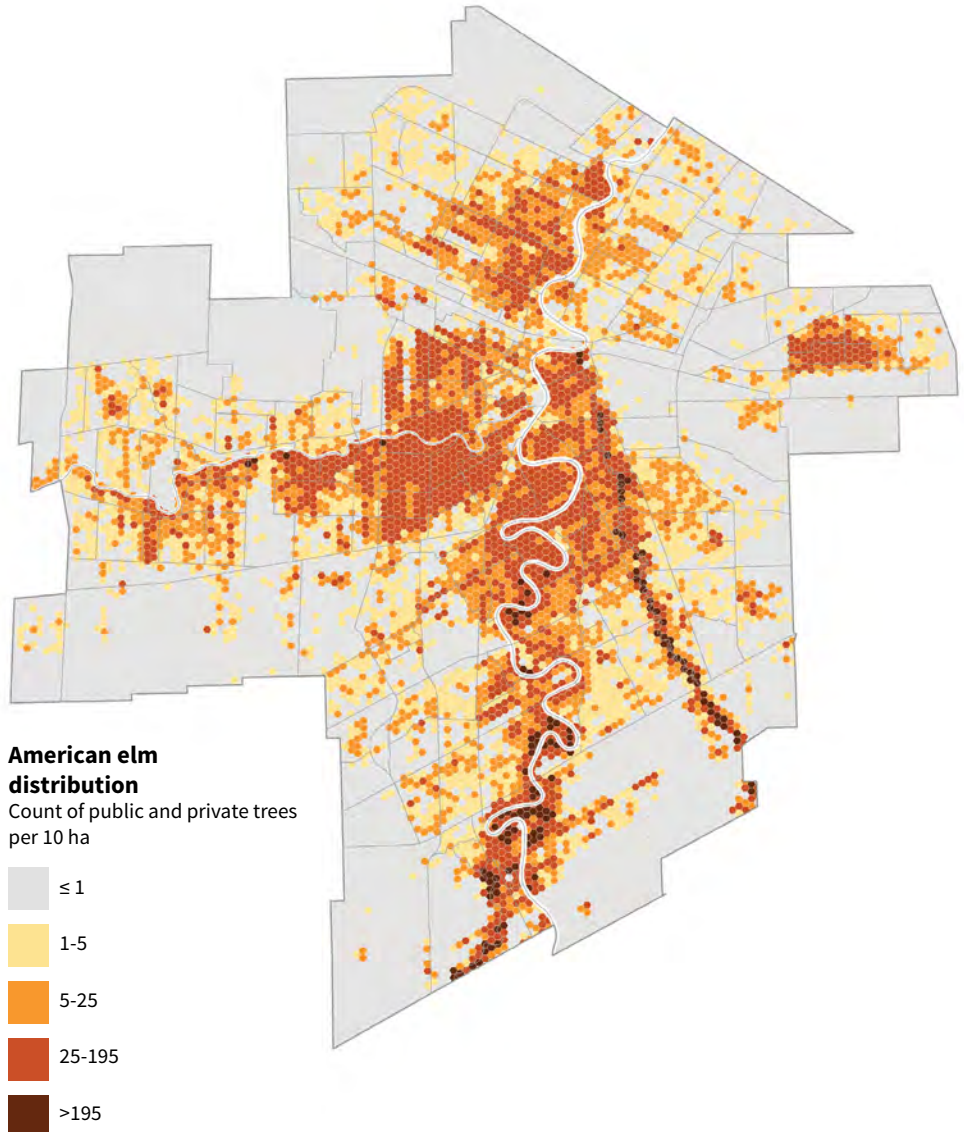


Figure 31 - Count of American elm trees inventoried on public and private land per ten hectare area throughout Winnipeg

Four scenarios were explored (Figure 32) to project future trends for American elm loss city-wide due to Dutch elm disease or hazard:

1. **Scenario 1 "no Dutch elm disease management"** assumes the City stops managing Dutch elm disease resulting in an 18 percent estimated annual loss rate by year five.
1. **Scenario 2 "high mortality**" assumes the high loss rates experienced in 2019 and 2020 continue at a rate of four percent.
2. **Scenario 2 "gradual improvement"** assumes that the loss rate will be reduced gradually to no more than two percent by 2040.
3. **Scenario 4 "best-case"** assumes that management practices will be implemented in 2022 to limit the loss rate at two percent immediately.

If management were to stop now as in Scenario 1 with an 18 percent annual loss rate, nearly all American elm will be lost by 2065 (52 remaining). If the four percent annual loss rate continues per Scenario 2, more than 180,000 trees would be lost by 2065 (85 percent loss in 43 years) compared with approximately 140,000 trees (66 percent loss in 43 years) in Scenario 3. The best-case Scenario 4 would see a loss of approximately 130,000 trees (60 percent loss in 43 years). Scenarios 1 through 4 are estimates and may vary over time.

American elms store approximately 34 percent of the carbon in the city's urban forest. Delaying the loss of these elms will also delay the loss of a significant quantity of ecosystem services (Table 6). Stabilizing the elm loss rate at two percent, whether now or over the term of this plan's implementation, will significantly extend the average life expectancy of mature elms in Winnipeg.

Table 6. Summary of values provided by American elm in the public tree inventory compared with city-wide American elm. City-wide values are from the 2019 i-Tree Eco analysis from the State of the Urban Forest Discussion Paper.

Value	Public tree inventory	City-wide (public & private)
Count of American elm	52,384	303,583
Carbon storage (tonnes)	37,995	172,932
Carbon sequestration (tonnes p. year)	433	2,816
Compensatory value ($ CAD)	$247 million	$1.1 billion
Avoided runoff (m3 per year)	60,578	377,496

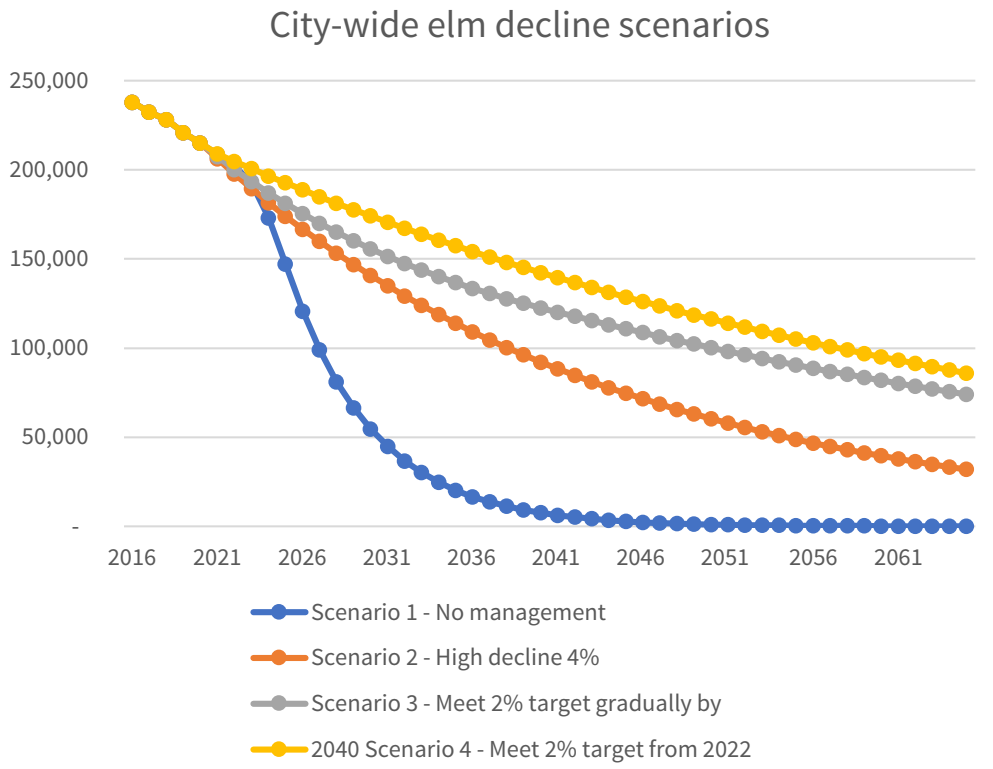


Figure 32 - Public American elm decline scenarios over the next 43 years

Baseline

City trees are currently on a 31-year pruning cycle

Service target

Prune street trees on a seven-year cycle and park trees on a 12-year cycle

Public tree pruning cycles

The City tracks the percentage of public trees pruned annually and the pruning cycle (how frequently every tree is, on average, inspected and pruned if needed). Figure 33 shows the actual percent of trees pruned and the corresponding length of the cycle for 2013 to 2019. The percentage of trees pruned per year has been declining and the pruning cycle has lengthened as more resources have been allocated to Dutch elm disease management, priority tree removals, and emergency response. Pruning cycle is used as a standard performance indicator for effective urban forest management in the industry.

To improve overall tree health and condition and reduce vulnerability to storm damage, **a target to prune street trees on a seven-year cycle is recommended**. For **park trees, a 12-year cycle** is recommended because park trees have fewer conflicts with infrastructure, generally grow in better conditions, and the City has limited resources to prune trees annually. These targets correspond to pruning at least 14 percent of the street tree population annually (seven-year cycle) and at least eight percent of the park tree population annually (12-year cycle).

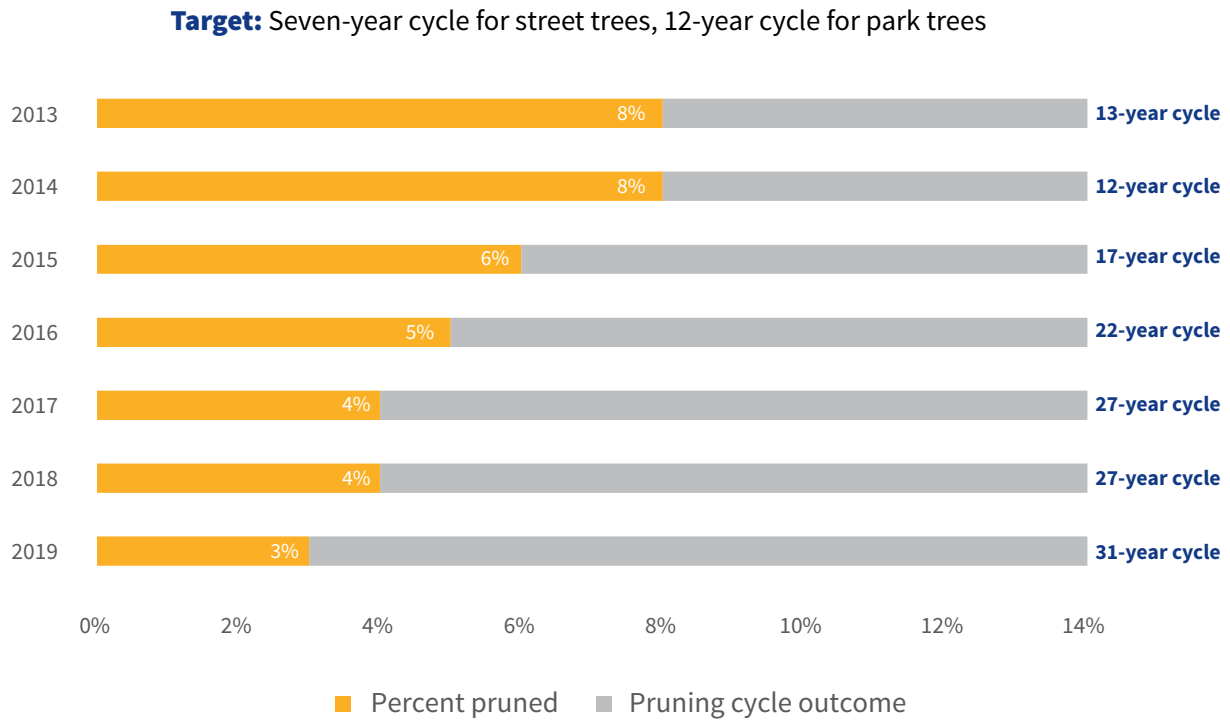


Figure 33 - Actual percent of trees pruned per year and corresponding length of the pruning cycle for 2013 - 2019

Baseline

Customer satisfaction with levels of service averages less than 50%

Service target

At least 50% customer satisfaction rate across all services

Customer satisfaction with levels of service

Based on survey results, satisfaction with current urban forestry levels of service averages less than 50 percent (Figure 34). Respondents were generally neutral or satisfied with emerald ash borer and Dutch elm disease management, tree removal, and pruning. Respondents were dissatisfied with public education, preserving and protecting trees with development, and tree planting. To improve customer satisfaction, **a target to have all levels of service achieving 50 percent or greater satisfaction (neutral, satisfied, or very satisfied responses) is recommended.**

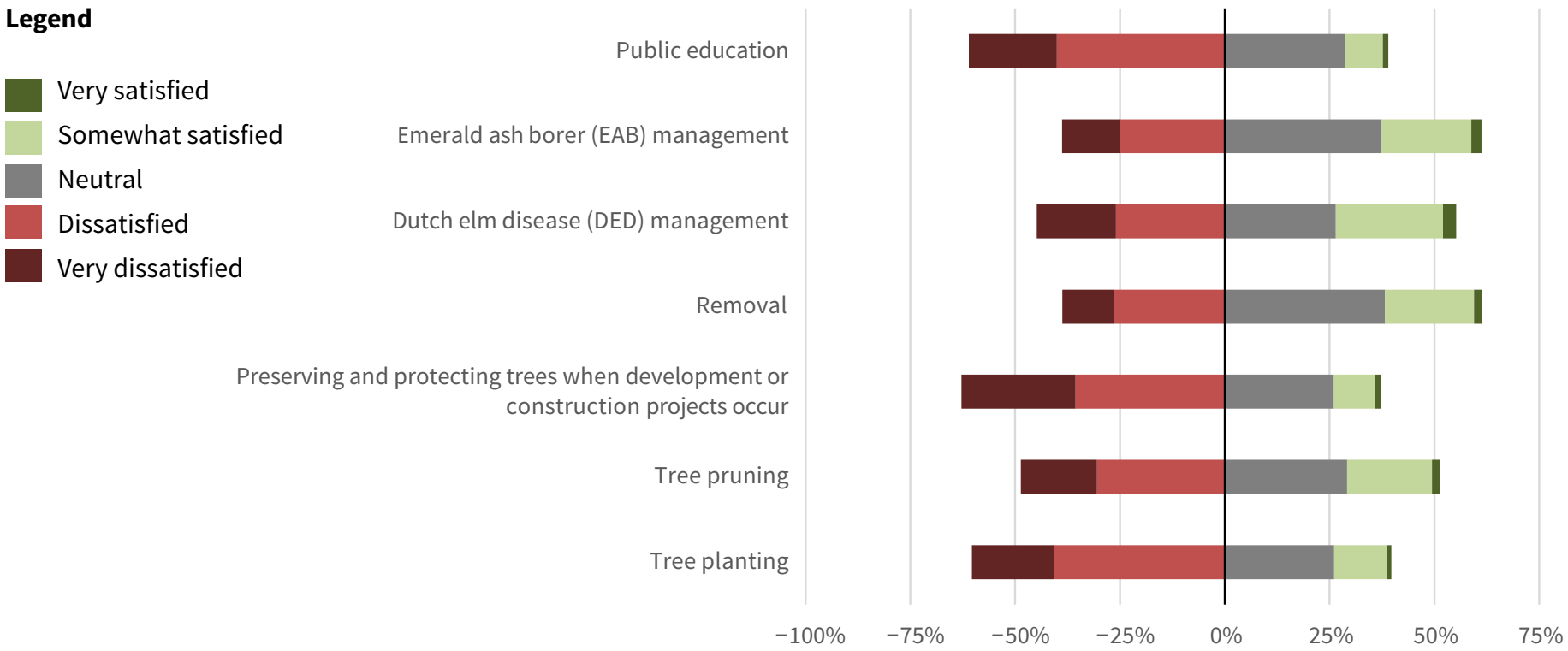


Figure 34 - Satisfaction with urban forestry levels of service reported by survey respondents in 2020 (excludes unsure responses)

Summary of baselines and targets

Table 7 summarizes the baselines and targets defined for Winnipeg's urban forest. These baselines and targets have been established so that progress on implementing the Strategy can be assessed and monitored over time. Section 5 outlines the actions needed to achieve these targets, and describes the associated financial and resource implications.

Table 7. Summary of baselines and targets

Baseline	Target	Measurement frequency and method
Canopy cover city-wide 17% canopy cover in 2018	24% canopy cover by 2065 (or maintain at 17% if EAB establishes)	5 years - LiDAR
Tree planting city-wide 12% of potential planting sites vacant in 2020	No more than 5% of potential planting sites vacant by 2065	5 years - inventory of vacant sites
Public tree replacement Less than 1 tree replaced for every 3 trees in 2020	1:1 tree replacement annually	Annual - tree removal and planting records
Public tree diversity Ash and elm make up 58% of the tree inventory in 2020	No more than 10% of any species and 20% of any genus in the public inventory by 2065	5 years - tree inventory
Public tree losses 1.4% of public trees lost in 2020	No more than 1.5% annual loss of public trees	Annual - tree removal records
City-wide elm loss American elm loss averaged 3.3% from 2016 to 2020	No more than 2% annual loss of city-wide American elm	Annual - DED surveillance and American elm removal records
Public tree pruning cycles 31-year pruning cycle in 2019	Prune street trees on a seven-year cycle and park trees on a 12-year cycle	Annual - pruning records
Customer satisfaction with levels of service Less than 50% satisfaction on average in 2020	At least 50% customer satisfaction rate across all services	5 years - resident survey

5. Urban forest policy recommendations

There are five management goals with associated policies and actions to guide the Strategy, outlined in section 5.
The five goals are:

PLAN

Accountably to achieve an equitable distribution of connected tree and forest assets that will improve the health of people and communities

PLANT

Strategically to grow a robust and sustainable urban forest that will maximize benefits for human health and ecological function

MANAGE

Adaptively to improve tree health and public safety, respond to challenges and opportunities, and achieve planned levels of service

PROTECT

Prudently to sustain Winnipeg's urban forest canopy where it will maximize benefits for human health and ecological function

PARTNER

Purposefully to foster reconciliation and stewardship that will build capacity to achieve goals and respond to challenges



PLAN ACCOUNTABLY

LEGEND

Implementation timeline

- **Short:** 1 to 4 years
- **Medium:** 5 to 10 years
- **Long:** 11 to 20 years

Financial impact

$: within existing resources/costed in other City strategy
$$: <$100,000
$$$: $100,000 to $500,000
$$$$: >$500,000

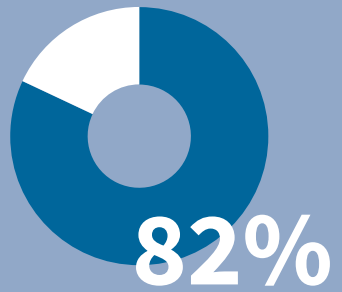
Action plan	Implementation timeline	Financial impacts
Policy 1. Establish and achieve levels of service to meet demonstrated community need		
Action 1A. Adopt service targets for public trees in streets and parks, including city-wide and land use canopy cover and planting density, with corresponding targets for new and replacement planting rates, maintenance cycles, and protection.	Short	$
Action 1B. Commit to an biennial reporting strategy to communicate progress to Standing Policy Committee on closing gaps in service targets and Urban Forest Strategy implementation.	Short	$$$
Action 1C. Develop a customer service framework that prioritizes socially equitable service delivery with consideration of the Complete Communities 2.0 Reinvestment Areas and the Poverty Reduction Strategy.	Medium	$$
Policy 2. Create a City tree policy to guide tree planting, preservation, protection, removal, and maintenance decisions to align with industry standards, best practices, and other City policies		
Action 2A. Review and consolidate existing policy and guideline documents related to trees into a single City tree policy.	Short	$$
Action 2B. Improve consistency in the terminology used in City documents and when communicating with the public, e.g., define boulevard and median consistently.	Short	$$
Policy 3. Include trees as natural assets and their value in the corporate asset management plan		
Action 3A. Assign urban forest asset classes to the corporate asset management plan as street trees, park trees, natural forest areas, and tree planting sites.	Short	$
Action 3B. Estimate the full cost of managing each urban forest asset class over its lifecycle and adjust operational budgets annually as new assets are added to the system, e.g., lifecycle costs including watering, pruning, inspections, and removal.	Short	$
Action 3C. Determine methods for assigning values to urban forest asset classes.	Short	$

Goal

Plan accountably to achieve an equitable distribution of connected tree and forest assets that will improve the health of people and communities

Key target

24% canopy cover city-wide by 2065



82%

Survey respondents wanted canopy cover target set to increase canopy

PLAN ACCOUNTABLY

LEGEND

Implementation timeline

- **Short:** 1 to 4 years
- **Medium:** 5 to 10 years
- **Long:** 11 to 20 years

Financial impact

$: within existing resources/costed in other City strategy
$$: <$100,000
$$$: $100,000 to $500,000
$$$$: >$500,000

Action plan	Implementation timeline	Financial impacts
Policy 4. Collaborate across City departments to deliver co-benefits through integrated policy and project approaches		
Action 4A. Explore opportunities to consistently integrate trees and soil volume into projects to meet stormwater management objectives.	Short	$
Action 4B. Explore opportunities to improve upon and incentivize tree planting and/or protection or inclusion of green infrastructure on private property or in new development, e.g.,stormwater utility tax credits, development incentives, grant programs, or rebates.	Medium	$$
Action 4C. Explore opportunities for service review or special program development in urban forestry to contribute to poverty reduction per the Poverty Reduction Strategy and city well-being as indicated by Winnipeg's PEG Community Indicator system.	Medium	$$
Action 4D. Formalize the involvement of the Urban Forestry Branch in the City's transportation project steering committee to: **i.** Ensure that trees are an integral part of streetscapes, and active transportation infrastructure (on street and off), **ii.** Explore opportunities to use streetscape design and renewal projects to improve planting site quality, and **iii.** Ensure that planting locations and sites are designed to mitigate potential conflicts or leverage opportunities for mutual benefit.	Short	$
Action 4E. Continue to collaborate with the Water and Waste Department on utilizing urban tree waste in the City's soil fabrication, composting, and bio-soil initiatives.	Short	$
Action 4F. Estblish greenhouse gas emissions targets related to urban forest management operations in accordance with the Winnipeg Climate Action Plan.	Medium	$
Policy 5. Manage the urban forest adaptively		
Action 5A. Measure progress regularly by: **i.** Capturing tree canopy using LiDAR every five years **ii.** Maintaining the tree inventory and the inventory of vacant sites **iii.** Continuing to track tree removals and tree planting **iv.** Continuing DED surveillance and elm removal recording **v.** Continuing to track annual pruning **vi.** Surveying resident satisfaction with customer service levels annually	Short	$$$
Action 5B. Review Urban Forest Strategy Action Plan every four years and update recommendations as needed to improve progress towards service targets.	Short	$$$

PLANT STRATEGICALLY

LEGEND

Implementation timeline

- **Short:** 1 to 4 years
- **Medium:** 5 to 10 years
- **Long:** 11 to 20 years

Financial impact

$: within existing resources/costed in other City strategy
$$: <$100,000
$$$: $100,000 to $500,000
$$$$: >$500,000

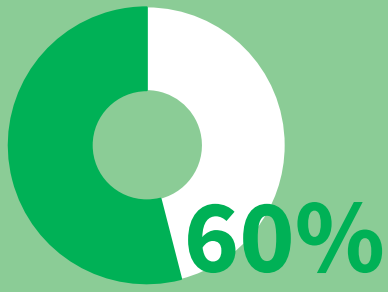
Action plan	Implementation timeline	Financial impacts
Policy 6. Increase new and replacement tree planting in streets and parks to achieve canopy cover targets and promote carbon sinks		
Action 6A. Replace each tree removed from boulevards and parks at 1:1 annually.	Short	$$$$
Action 6B. Plant 760,000 new trees, in addition to replacement trees, on public and private land by 2065 (this is expected to align with community volunteer tree planting programs.	Short	$$$$
Action 6C. Explore opportunities to expand on the current commemorative tree donation program to incentivize the replacement of trees on boulevards and/or on the 10 feet of public land adjacent to privately-owned properties.	Short	$
Policy 7. Prioritize urban tree planting where it is most needed		
Action 7A. Develop a 10-year park and boulevard planting strategy to: **i.** Phase planting in priority areas such as areas of higher poverty, business improvement zones, urban heat hot spots, locations with low City-owned tree density, and in consideration of Complete Communities 2.0 Policy 6.1, **ii.** Create a cool streets network through neighbourhoods, to schools and institutions, between transit hubs, and in alignment with existing and future active transportation routes, and **iii.** Guide planting of treed buffers between subdivisions and regional road networks and highways.	Short	$$
Action 7B. Develop a downtown area and regional streets planting strategy to increase tree canopy and formalize planting selections in these areas.	Short	$$
Action 7C. Create park tree planting specifications, density targets, and guidelines by park classification for inclusion in a new City tree policy and in Development Agreement Parameters.	Short	$$
Action 7D. Explore and enable urban agriculture projects for orchards on City parks or properties in equitable locations and with maintenance partnership agreement in place to support sustainable healthy food systems.	Short	$

Goal

Plant strategically to grow a robust and sustainable urban forest that will maximize benefits for human health and ecological function

Key targets

- No more than 5% of potential planting sites vacant by 2065
- 1:1 tree replacement annually
- No more than 10% of any species and 20% of any genus in the public inventory by 2065



Survey respondents dissatisfied with planting

PLANT STRATEGICALLY

LEGEND

Implementation timeline

- **Short:** 1 to 4 years
- **Medium:** 5 to 10 years
- **Long:** 11 to 20 years

Financial impact

$: within existing resources/costed in other City strategy
$$: <$100,000
$$$: $100,000 to $500,000
$$$$: >$500,000

Action plan	Implementation timeline	Financial impacts
Policy 8. Increase the diversity of urban tree species in the City's public tree population and develop plans to proactively replace aging or dying elm and ash		
Action 8A. Establish tree diversity standards at no more than 10% of any one species and 20% of any genus in the street and park tree inventory.	Short	$
Action 8B. Develop successional planting plans for neighbourhoods with high proportions of ash and elm trees.	Short	$$
Action 8C. Develop a nursery management plan to grow difficult to source tree species at the civic nursery.	Short	$$
Action 8D. Explore opportunities to create growing contracts with nurseries to improve the procurement of desired species and stock quality in order to meet the reforestation demands within the city.	Short	$
Action 8E. When eligible, apply for Federal funding for tree planting and nursery development through the Disaster Mitigation and Adaptation fund, the 2 Billion Trees Program or other funds that become available.	Short	$
Action 8F. Establish trials for planting species with various traits favoured for future climate suitability, disease resistance and salt tolerance, prioritizing large canopy areas as an adaptation measure to sustain the character of mature trees in Winnipeg, and to maximize opportunities to sequester carbon.	Medium	$$$
Action 8G. Update the Acceptable Tree Species for Boulevard Planting as needed to add new species expected to perform well under changing climate and remove species that are not performing well.	Short	$
Policy 9. Maximize the health and life expectancy of newly planted public trees on City streets and in parks		
Action 9A. Update and consolidate the Tree Planting and Maintenance Specification document and the Tree Planting Details and Specifications Downtown Area and Regional Streets document to create a City tree planting standard, with particular consideration for the following: **i.** Consolidating the two documents, with standards specific to downtown and regional streets, **ii.** Establish new minimum soil volume requirements: **1.** *Small trees; 8 cubic metres of soil, 6 cubic metres if shared* **2.** *Medium trees; 20 cubic metres of soil, 15 cubic metres if shared* **3.** *Large trees; 35 cubic metres of soil, 30 cubic metres if shared, and* **iii.** Enable the City Forester to approve reduced soil volumes in short-term landscapes where trees may be managed on a short-lived rotation (less than 25 years).	Short	$

PLANT STRATEGICALLY

LEGEND

Implementation timeline

- **Short:** 1 to 4 years
- **Medium:** 5 to 10 years
- **Long:** 11 to 20 years

Financial impact

$: within existing resources/costed in other City strategy
$$: <$100,000
$$$: $100,000 to $500,000
$$$$: >$500,000

Action plan	Implementation timeline	Financial impacts
Policy 10. Maximize the quantity and quality of trees planted with development		
Action 10A. Update the Zoning By-law (200/2006) and related policy to: **i.** Explore alignment with Infill Design Guidelines document which contains spatial requirements for private infill planting, **ii.** Simplify information included in the Zoning By-law and instead refer to a technical document that contains detail for tree requirements, **iii.** Require trees on private land to be spaced at least 6 m away from any existing or proposed City-owned tree, **iv.** In addition to requiring one tree for every 10 metres of frontage, establish a planting or retention target of 30 trees per hectare to contribute to achieving 24% city-wide canopy cover at maturity and explore cash-in-lieu where tree density cannot be accommodated, **v.** Require surface parking to incorporate landscape buffers and one tree per six stalls, **vi.** When trees are retained, reduce the credits by half for each size class, **vii.** Require, when possible, consolidated permeable areas in preferred locations (e.g., frontage or rear yard) to support tree planting on private land, **viii.** Specify soil quality, depth, and volume requirements on newly developed boulevards and private property to support healthy trees, **ix.** When trees are present onsite or on neighbouring property, require tree surveys and arborist reports to accurately locate trees and recommend retention, protection, and removals of any trees impacted by development prior to building permit approval, **x.** Consider enforcement program to ensure trees for new developments are planted in accordance with zoning requirements and plan approvals, and **xi.** Require bonding for tree protection, planting and landscaping.	Short	$$
Action 10B. Update the Downtown Zoning By-law (100/2004) and related policy to: **i.** Simplify information included in the Downtown Zoning By-law and instead refer to a technical document that contains detail for tree requirements, **ii.** Require trees on private land to be spaced at least 6 m away from any existing or proposed City-owned tree, **iii.** Establish a planting or retention target of 18 trees per hectare that are sufficient to achieve 15% canopy cover at maturity in the Downtown area and explore cash-in-lieu where tree density cannot be accommodated, **iv.** Require minimum soil volumes per tree: **1.** *Small trees 8 cubic metres of soil, 6 cubic metres if shared* **2.** *Medium trees 20 cubic metres of soil, 15 cubic metres if shared* **3.** *Large trees 35 cubic metres of soil, 30 cubic metres if shared,*	Short	$$

LEGEND

Implementation timeline

- **Short:** 1 to 4 years
- **Medium:** 5 to 10 years
- **Long:** 11 to 20 years

Financial impact

$: within existing resources/costed in other City strategy
$$: <$100,000
$$$: $100,000 to $500,000
$$$$: >$500,000

Action plan	Implementation timeline	Financial impacts
v. When trees are present onsite or on neighbouring property, require tree surveys and arborist reports to accurately locate trees and recommend retention, protection, and removals of any trees impacted by development, **vi.** Require bonding for tree protection, planting, and landscaping, and **vii.** Consider enforcement program to ensure trees for new development are planted in accordance with the Downtown Zoning By-law and plan approvals.	Short	$$
Action 10C. Update the Development Agreement Parameters and associated standards to: **i.** Ensure that tree planting, soil volume and quality requirements including soil specifications for boulevards and parks, are consistent with existing and updated City policies and standards related to trees and new City tree policy, **ii.** Require minimum boulevard planting strip widths to support street trees and in consideration of services within the right-of-way, **iii.** Include park tree planting requirements based on achieving tree planting densities specified by parks classification, and **iv.** Require a minimum planting in new neighbourhoods at 30 trees per hectare to contribute to achieving 24% city-wide canopy cover at maturity, with that minimum to be met separately on private land uses, in streets and in parks whenever possible.	Short	$$
Policy 11. Provide incentives to encourage private land tree planting		
Action 11A. Continue to collaborate with community partners who subsidize tree planting on private land and provide education extension services to increase resident uptake, including exploring options to both fund trees and increase participation of residents, landlords, rental agencies, and community organizations in high poverty areas. Work with landlords, rental agencies and community organizations to look at the needs of rental income properties.	Short	$
Action 11B. Develop a recommended species list to provide information to residents about species growing requirements, pest and disease risk, climate hardiness, and salt tolerance.	Short	$
Policy 12. Expand and enhance naturalized forest and riverbank areas		
Action 12A. Develop a natural areas management plan that includes a restoration planting strategy to guide the planting of native trees and enhancement of forest structure in urban parks, boulevards, and riverbanks.	Short	$
Action 12B. Continue to propagate plants in the native plant nursery to maintain local biodiversity in natural area plantings.	Short	$
Action 12C. Explore opportunities to work with the Province of Manitoba and other stakeholders to source climate adapted seeds and seedlings for natural areas.	Medium	$
Action 12D. Where eligible, apply for Federal funding for native tree propagation and restoration through the Disaster Mitigation and Adaptation fund, 2 Billion Trees Program or other funds that become available.	Short	$
Action 12E. Restore degraded riverbanks or other restoration areas in accordance with the natural areas management plan.	Medium	$

MANAGE ADAPTIVELY

LEGEND

Implementation timeline

- **Short:** 1 to 4 years
- **Medium:** 5 to 10 years
- **Long:** 11 to 20 years

Financial impact

$: within existing resources/costed in other City strategy
$$: <$100,000
$$$: $100,000 to $500,000
$$$$: >$500,000

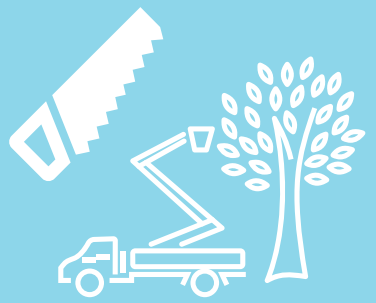
Action plan	Implementation timeline	Financial impacts
Policy 13. Maintain and regularly update an inventory of urban forest assets		
Action 13A. Work with the Corporate Support Services to identify appropriate software to update the tree inventory to a cloud-based system hosted on City GIS.	Short	$
Action 13B. Create or procure a work management system to work with the City's tree inventory system.	Short	$$$
Action 13C. Update and maintain an inventory of vacant planting locations.	Short	$$
Action 13D. Map urban tree canopy to establish a baseline canopy extent.	Short	$$
Action 13E. Explore options to monitor tree health using remote sensing or other emerging technologies.	Medium	$$
Action 13F. Document a process for managing and updating the tree inventory as crews complete the pruning cycle.	Short	$
Action 13G. Add virtual tree tags to Commemorative Trees.	Short	$
Policy 14. Follow a best practices program for tree care and tree risk management for City-owned trees		
Action 14A. Inspect City-owned trees on a regular cycle based on their location or condition. **i.** Update the current block pruning program to target a seven-year cycle for street trees and 12-year cycle for park trees and prioritize areas with a higher proportion of trees in poor condition. **ii.** When an area comes up for inspection with the pruning cycle, conduct windshield surveys to both identify 'Priority 1' trees requiring immediate attention, as well as to define the scope of pruning work for the cycle. **iii.** Include a 'Monitor Risk' action in the tree inventory to flag trees requiring annual risk assessment.	Short	$$$$
Action 14B. Continue enhanced maintenance of street and park trees in Downtown area.	Short	$
Action 14C. Continue current on-demand practices for responding to service requests for pruning or risk assessment.	Short	$

Goal

Manage adaptively to improve tree health and public safety, respond to challenges and opportunities, and achieve planned levels of service

Key targets

- Prune street trees on a 7-year cycle and park trees on a 12-year cycle
- No more than 1.5% annual loss of public trees
- No more than 2% annual loss of city-wide American elm



31 year pruning cycle in 2019

LEGEND

Implementation timeline

- **Short:** 1 to 4 years
- **Medium:** 5 to 10 years
- **Long:** 11 to 20 years

Financial impact

$: within existing resources/costed in other City strategy
$$: <$100,000
$$$: $100,000 to $500,000
$$$$: >$500,000

Action plan	Implementation timeline	Financial impacts
Action 14D. Document risk assessment and response in records tied to the tree inventory.	Short	$
Action 14E. Consider establishing tree risk assessor qualifications for staff responding to service requests for on-demand risk inspection and proactive risk assessment.	Short	$$
Action 14F. Document a formal storm response plan.	Short	$
Action 14G. Consider extending the watering and maintenance program for newly planted trees from two years to five years after planting.	Short	$$
Policy 15. Rapidly remove dead, diseased, and dangerous trees		
Action 15A. Implement a prioritized rapid removal program for Dutch elm disease by removing priority brood trees by August 30th annually.	Short	$$$$
Action 15B. Complete all tree removals for Dutch elm disease infected trees by April each year.	Short	$$$$
Action 15C. Create and implement an invasive forest pest response plan for ash trees, including: **i.** an emerald ash borer response plan for parks and natural areas to define procedures for trail/park closures, **ii.** tree removals and debris management thresholds to mitigate public safety risk, and **iii.** wildfire risk once emerald ash borer has been detected in an area.	Short	$
Action 15D. Update the Neighbourhood Livability By-law to enable the City to require owners to remove dead trees, dying trees, or trees infested with emerald ash borer including penalties for violations.	Medium	$$
Action 15E. Explore opportunities for community partnerships or subsidies to overcome potential inequities when requiring residents to removed dead, diseased or dangerous trees.	Medium	$$
Action 15F. Continue to explore wood utilization options such as directing waste wood to the Water and Waste department to manage the volumes of wood waste anticipated in the next 10 years.	Short	$
Policy 16. Minimize the use and impact of common practices in winter road management that harm City-owned trees		
Action 16A. Continue to explore alternatives to road salts, such as beet juice and calcium chloride.	Short	$
Action 16B. Consider mitigating salt impacts in planting areas; in particular, give consideration to: **i.** Flushing planting areas and trees with water in the spring prior to bud break, and **ii.** Integrate installation of larger soil volumes and drainage with road and sidewalk construction and upgrades to enable flushing of soil and greater dilution of salt concentrations.	Short	$$$

MANAGE ADAPTIVELY

LEGEND

Implementation timeline

- **Short:** 1 to 4 years
- **Medium:** 5 to 10 years
- **Long:** 11 to 20 years

Financial impact

$: within existing resources/costed in other City strategy
$$: <$100,000
$$$: $100,000 to $500,000
$$$$: >$500,000

Action plan	Implementation timeline	Financial impacts
Policy 17. Strengthen communication and information sharing between departments and other agencies external to the City		
Action 17A. Ensure tree inventory data is available internally across departments.	Short	$
Action 17B. Add tree issues categories to the 311 dropdown menu for view/find and apply/register/report on the City website.	Short	$
Action 17C. Create an online map interface on the City's GIS platform to publicly communicate planned tree removals and plantings.	Medium	$
Action 17D. Establish a working group with Manitoba Hydro to streamline processes for pruning or removing trees within 10 feet of utility wires and within Hydro easements, and to establish standards for pruning elms in the City at risk of Dutch elm disease.	Short	$
Policy 18. Monitor natural area forest cover and prioritize invasive species removal where overstory canopy losses are expected		
Action 18A. Inventory the extent of buckthorn and other invasive species with the potential to invade and replace forests following ash or elm removal.	Short	$$$
Action 18B. Obtain data on understory regeneration and seed bank composition in ash and elm dominated natural areas to identify areas needing replanting.	Short	$$
Action 18C. Develop a natural areas management plan that identifies high risk canopy areas as well as appropriate treatment options, and also includes recommendations for restoration post-disturbance, if applicable.	Short	$

PROTECT PRUDENTLY

LEGEND

Implementation timeline

- **Short:** 1 to 4 years
- **Medium:** 5 to 10 years
- **Long:** 11 to 20 years

Financial impact

$: within existing resources/costed in other City strategy
$$: <$100,000
$$$: $100,000 to $500,000
$$$$: >$500,000

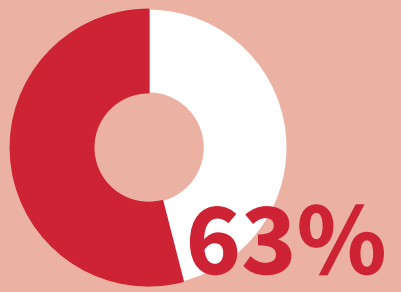
Action plan	Implementation timeline	Financial impacts
Policy 19. Increase protections for trees and soil on private land		
Action 19A. Pursue revisions to the City of Winnipeg Charter to enable the City to regulate tree preservation and protection on private property under a new tree bylaw.	Short	$
Action 19B. Consider creating a tree bylaw that: **i.** Regulates removal, protection, and replacement of trees that are retained or planted as a condition of a building permit or a legal agreement related to development, servicing, zoning, or subdivision, **ii.** Regulates removal, protection, and replacement of trees in existing natural areas (quality grade C or above) identified in the Natural Areas Inventory and regulated areas of the Waterway By-law (5888/92), and **iii.** Enables enforcement and fines for damage to trees protected under the bylaw.	Short	$$
Action 19C. Update the Tree Removal Guidelines to Tree Preservation Guidelines and: **i.** Consolidate these Guidelines with other policies in a new City Tree Policy, and **ii.** Establish City-owned replacement tree planting securities to $2,000 per tree (up to a maximum total per project) to deter forfeiture of planting obligations on development sites.	Short	$$
Action 19D. Monitor tree canopy loss on private property over time using urban tree canopy mapping to detect changes at the lot scale and consider whether future updates to the tree bylaw should broaden tree protection to all private land.	Medium	$$
Action 19E. Create a Development Arborist position to support and administer the regulatory components for trees in the zoning bylaws and receive referrals on all tree issues related to development.	Short	$$$
Action 19F. Explore opportunities to advance tree protection earlier in the development process and formalize a referral stage with Land Development or a new Development Arborist position.	Short	$
Action 19G. Create technical documents that detail tree requirements in support of the Zoning By-law (200/2006) and Downtown Zoning By-law (100/2004) to include requirements for arborist reporting and protection standards and bonds to be held for retained trees during development.	Short	$$

Goal

Protect prudently to sustain Winnipeg's urban forest canopy where it will maximize the benefits for human health and ecological function

Key targets

- No more than 1.5% annual loss of public trees
- No more than 2% annual loss of city-wide American elm



Survey respondents dissatisfied with tree protection during development/construction

LEGEND

Implementation timeline

- **Short:** 1 to 4 years
- **Medium:** 5 to 10 years
- **Long:** 11 to 20 years

Financial impact

$: within existing resources/costed in other City strategy
$$: <$100,000
$$$: $100,000 to $500,000
$$$$: >$500,000

Action plan		Financial impacts
Action 19H. Consider enabling density bonuses and up-zoning to provide incentives for the retention of existing natural areas (quality grade C or above) identified in the Natural Areas Inventory or restoration of areas that would contribute towards developing a city-wide green infrastructure network.	Medium	$
Action 19I. Explore options to regulate or provide incentives to retain native soils for use on development sites, or to protect native soil areas on lands that will become parks or tree planting areas.	Medium	$
Policy 20. Increase protections for the City-owned trees		
Action 20A. Review the Park By-law, Streets By-law, Neighbourhood Livability By-law and Municipal By-law Enforcement Act Enabling By-law to: **i.** Prohibit damage to and unauthorized removal of all trees on City property under the authority of the City Forester, **ii.** Add fine provisions and amounts for damage to or removal of City-owned trees.	Short	$$
Action 20B. Advance tree protection earlier in the design process for municipal projects and to formalize processes for referring projects to Urban Forestry for review and recommendations.	Short	$$$
Action 20C. Update tree protection specifications for inclusion in City construction specifications to include tree preservation and protection measures, requiring project arborists for supervising works around trees, and hold backs.	Short	$
Action 20D. Move Tree Protection during Construction from the Tree Planting Details & Specifications Downtown Area and Regional Streets into a new City Tree Policy module and require security bonds per tree to be held for the duration of construction projects (amounts based on a minimum per tree and/or tree valuation, whichever is greater).	Short	$$
Action 20E. Consider expanding on Tree Protection during Construction in the City Tree Policy to include a section for the protection of ecologically significant lands on City property.	Short	$$
Action 20F. Consider identifying historical City-owned tree resources, such as the Broadway elms, to nominate for inclusion in the List of Historical Buildings and Resources and protection under the Historical Resources By-law (55/2014).	Medium	$$

PROTECT PRUDENTLY

LEGEND

Implementation timeline

- **Short:** 1 to 4 years
- **Medium:** 5 to 10 years
- **Long:** 11 to 20 years

Financial impact

$: within existing resources/costed in other City strategy
$$: <$100,000
$$$: $100,000 to $500,000
$$$$: >$500,000

Policy 21. Create a connected and protected green infrastructure network of public trees, parks, and natural area forests		
Action 21A. Building on the Ecologically Significant Natural Lands Strategy, identify a city-wide green infrastructure network of significant habitats and corridors and prioritize for protection and restoration through the development planning process.	Short	$
Action 21B. Update the Ecologically Significant Natural Lands Strategy (ESNL) and provide policy direction identifying how and when natural areas are to be preserved to: **i.** Explore the possibility of identifying forest patches in ecologically significant natural lands for protection and integration into the design of new communities at the secondary planning stage, prior to dedication of parkland, and **ii.** Enable the evaluation and designation of ESNL on all City lands prior to disposition or destruction of natural features.	Short	$
Action 21C. Focus protection and preservation of continuous forest patches with a canopy greater than 0.5 ha in area, in accordance with the Winnipeg Parks Strategy.	Short	$
Action 21D. Proactively acquire parks in rural and agricultural areas to preserve natural areas, in accordance with Winnipeg's Parks Strategy and Complete Communities. **i.** As these spaces are acquired, ensure that Indigenous peoples have access to this space for land-based education programs, including cultural teachings, food, and ceremonies.	Long	$
Action 21E. Explore opportunities to incentivize private landowners to protect and restore ecologically significant lands.	Medium	$
Action 21F. Create a conservation fund with the objective of acquiring natural areas and forested land.	Long	$

PARTNER PURPOSEFULLY

LEGEND

Implementation timeline

- **Short:** 1 to 4 years
- **Medium:** 5 to 10 years
- **Long:** 11 to 20 years

Financial impact

- **$:** within existing resources/costed in other City strategy
- **$$:** <$100,000
- **$$$:** $100,000 to $500,000
- **$$$$:** >$500,000

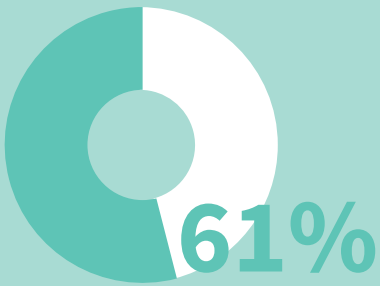
Action plan	Implementation timeline	Financial impacts
Policy 22. Establish mutually-respectful partnerships with First Nations, Métis, and Inuit governments, organizations, and individuals		
Action 22A. Identify and establish partnerships with Indigenous communities and learn how to engage with Indigenous peoples.	Short	$
Action 22B. Work together with local Indigenous communities to incorporate Indigenous perspectives into plant species selection and climate adaptation approaches for Winnipeg's urban forest and natural areas.	Short	$
Policy 23. Empower residents to participate in urban forest management.		
Action 23A. Explore the potential to create a Citizen Forester program in collaboration with a community partner to train volunteers to: **i.** Prune newly planted trees in years three and five, **ii.** Participate in watering trees, **iii.** Participate as citizen scientists and collect data to inform urban forest management, and **iv.** Become community tree stewards who can be called on to train new volunteers and provide presentations and education to community members interested in participating in stewardship programs.	Medium	$$
Action 23B. Enable smaller caliper trees to be planted on City property by residents or community groups under agreement with approved contractors when approved by the City Forester.	Short	$
Action 23C. Explore grant or tax incentive program opportunities to support people to maintain large trees on their own properties.	Long	$$
Action 23D. Provide canopy cover and other urban forest data on a public map viewer dashboard and make data available on the Open Data system.	Medium	$
Action 23E. Explore the development of an Adopt-a-Tree-Block program where residents of a street could come together to monitor and enhance young tree care and watering in streets or parks, and to share information about planting and tree care on their own properties.	Medium	$$

Goal

Partner constructively to foster reconciliation and stewardship that will build capacity to achieve goals and respond to challenges

Key targets

At least 50% customer satisfaction rate across all services



Survey respondents dissatisfied with public education

PARTNER PURPOSEFULLY

LEGEND

Implementation timeline

- **Short:** 1 to 4 years
- **Medium:** 5 to 10 years
- **Long:** 11 to 20 years

Financial impact

$: within existing resources/costed in other City strategy
$$: <$100,000
$$$: $100,000 to $500,000
$$$$: >$500,000

Action plan	Implementation timeline	Financial impacts
Policy 24. Raise the profile of urban forestry city-wide		
Action 24A. Promote the Tree Donation Program to encourage more participation from businesses and individuals to contribute to reforestation and/or new plantings.	Short	$
Action 24B. Develop and implement a communications and stewardship plan that explores opportunities to share key messages about implementing the Urban Forest Strategy, engage community members in stewardship, and provide educational opportunities in collaboration with partners.	Short	$$$
Action 24C. Develop a community volunteer tree planting program with required associated resources.	Short	$$$
Action 24D. Pursue 'Tree City' status through the Tree Cities of the World program and consider certification with the Sustainable Forest Institute (program anticipated in 2023) to recognize Winnipeg's commitment to caring for its urban forest.	Short	$$$
Action 24E. Explore opportunities to collaborate with partners in the arts and business improvement zones to develop an urban arboretum/art projects that uses trees and signage to tell stories of the urban forest and ensure Indigenous voices and histories are heard.	Medium	$$
Action 24F. Explore opportunities to partner with Manitoba Hydro to share information with the public about tree removals, pruning, and replanting taking place due to their maintenance activities.	Short	$
Policy 25. Work with partners to implement the Urban Forest Strategy		
Action 25A. Continue to work with the Western Nursery Growers group on planting trials in various prairie regions to test hardiness and suitability of different tree species and new cultivars.	Short	$
Action 25B. Continue to collaborate with non-government agencies and community organizations that can support the City's implementation of the Urban Forest Strategy and coordinate stewardship activities and grants to support community tree planting.	Short	$$
Action 25C. Continue to work with local universities to study the urban forest, Dutch elm disease, emerald ash borer, and the effectiveness of management practices to support adaptive management.	Short	$
Action 25D. Continue to support and promote Trees Winnipeg's ReLeaf program and related initiatives.	Short	$
Action 25E. Continue to maintain regular contact and collaborate with the Province of Manitoba and the Canadian Food Inspection Agency on the management of current and emerging pest and disease threats.	Short	$
Action 25F. Continue to participate in regional networks such as the Prairies Region Canadian Urban Forest Network, the Manitoba Urban Forest Council, the Manitoba Nursery and Landscape Association, and the International Society of Arboriculture Prairie Chapter.	Short	$
Action 25G. Explore opportunities to partner with government and the development and construction sectors to implement stewardship programs that would support the preservation and restoration of native woodland areas.	Medium	$
Action 25H. Explore opportunities to partner with school and institutional land managers to adopt canopy cover targets and implement the Urban Forest Strategy on their own lands.	Long	$$



6. Measuring progress

This Strategy has been developed at a time when Winnipeg's urban forest faces unprecedented threats from invasive pests and disease and climate change. The actions recommended in this strategy are focused on increasing the Winnipeg's capacity to respond to these threats and increasing the resilience of the tree population to sustain Winnipeg's urban forest legacy.

There is significant uncertainty surrounding the extent and rate of change in tree canopy that climate hazards, Dutch elm disease and emerald ash borer will cause. The Strategy integrates an adpative management approach by recommending that progress towards meeting service targets be monitored at regular intervals, and that the actions proposed in this plan be reviewed every four years.

While responsibility for implementing this plan lies primarily with the City, realizing the vision for an abundant, healthy, diverse, and resilient urban forest that contributes to the health and wellbeing of all people and communities will require the support and participation of all partners and residents.

Table 8. Monitoring plan

Target	Measurement Frequency and method
24% canopy cover by 2065 (or maintain at 17% if EAB establishes)	5 years - LiDAR
No more than 5% of potential planting sites vacant by 2065	5 years - inventory of vacant sites
1:1 tree replacement (one tree replaced for every tree removed)	Annual - tree removal and planting records
No more than 10% of any species and 20% of any genus in the public inventory by 2065	5 years - tree inventory
No more than 1.5% annual loss of public trees	Annual - tree removal records
No more than 2% annual loss of city-wide American elm	Annual - DED surveillance and American elm removal records
Prune street trees on a seven-year cycle and park trees on a 12-year cycle	Annual - pruning records
As least 50% customer satisfaction rate across all services	5 years - resident survey

Endnotes

1 Konijnendijk van den Bosch, C., Ricard, R., Kenny, A., Randrup, T. B. (2006). *Defining urban forestry-A comparative perspective of North Americana and Europe*. Urban Forestry & Urban Greening. 4:3-4

2 CIty of Winnipeg. (2021) *State of the Urban Forest*. 39p. https://engage.winnipeg.ca/10550/widgets/67282/documents/56609

3 Golder Associates. (2015). *Winnipeg's 2011 Community Greenhouse Gas Inventory and Forecast.* https://www.winnipegvitalsigns.org/wp-content/uploads/Golder-and-Assoc-GHG-Report.pdf

4 Manitoba Government. (n.d.). *Species and Ecosystem at Risk*. https://gov.mb.ca/fish-wildlife/wildlife/ecosystems/index.html

5 Casati, B., Yagouti, A., Chaumont, D. (2013). *Regional climate projections of extreme heat events in nine pilot Canadian communities for public health planning*. Journal of Applied Meteorology and Climatology, 52(12), 2669-2698.

6 Prairie Climate Centre. (2019). *Heat Waves and Health – A special report on climate change in Canada*. https://climateatlas.ca/heat-health-report.pdf

7 Ziter, C., Pedersen, E., Kucharik, C., Turner, M. (2019). *Scale-dependent interactions between tree canopy cover and impervious surfaces reduce daytime urban heat during summer*. Proceedings of the National Academy of Sciences, 2019; 201817561 DOI: 10.1073/pnas.1817561116

8 Hansen, M., Jones, R., Tocchini, K., (2017). *Shinrin-Yoku (Forest Bathing) and Nature Therapy: A State-of-the-Art Review*. doi: 10.3390/ijerph14080851

9 Williams, F. (2016). *This is your brain on nature.* https://www.nationalgeographic.com/magazine/2016/01/call-to-wild/

10 City of Winnipeg. (2021). *Winnipeggers love parks: Pandemic push leads to spike in visits*. https://winnipeg.ca/ourstories/2021/210318-2.stm

11 Heerwagen, J.H., & Orians, G.H. (2002). *The ecological world of children*. In: Kahn, P.H.J., and S.R. Kellert (eds.), Children and Nature: Psychological, Sociocultural, and Evolutionary Investigations. MIT Press, Cambridge MA, pp. 29-64.

12 Andrachuk et al. (2014). *Forest and nature school in Canada: A head, heart, hands approach to outdoor learning.* Retrieved from: https://childnature.ca/wp-content/uploads/2017/10/FSC-Guide-1.pdf

13 Wolf, K. L., Lam, S. T., McKeen, J. K., Richardson, G., Van den Bosch, M., & Bardekjian, A. C. (2020). *Urban trees and human health: A scoping review.* International Journal of Environmental Research and Public Health, 17(12), 4371. https://doi.org/10.3390/ijerph17124371

14 Moore, R. (1986). *The Power of Nature Orientations of Girls and Boys Toward Biotic and Abiotic Play Settings on a Reconstructed Schoolyard*. Children's Environments Quarterly 6, 1:3-6.

15 Kaiser Family Foundation (KFF). (2020). *Generation M2: Media in the Lives of 8- to 18-Year-Olds*. https://www.kff.org/other/report/generation-m2-media-in-the-lives-of-8-to-18-year-olds/

16 Ho, H.C., Knudby, A., Chi, G., Aminipouri, M., Yuk-Fo Lai, D. (2018). *Spatiotemporal analysis of regional socio-economic vulnerability change associated with heat risks in Canada*. Applied Geography. Vol. 95. https://doi.org/10.1016/j.apgeog.2018.04.015

17 Prairie Climate Centre. (2019). *Heat Waves and Health – A special report on climate change in Canada*. https://climateatlas.ca/heat-health-report.pdf

18

19 Dick, L. (1996). *Parks Canada. Manitoba History: The Greening of the West: Horticulture on the Canadian Prairies, 1870-1930*. http://www.mhs.mb.ca/docs/mb_history/31/prairiehorticulture.shtml

20 Food and Agriculture Organization of the United Nations. (2016). *Benefits of urban trees*. http://www.fao.org/resources/infographics/infographics-details/en/c/411348/

21 Wolf, K.L. (2005). *Business District Streetscapes, Trees and Consumer Response*. Journal of Forestry 103, 8:396-400.

22 University of Washington. (2018). *Green Cities: Good Health*. http://depts.washington.edu/hhwb/

23 Prairie Climate Centre. (2019). *Heat Waves and Health – A special report on climate change in Canada.* https://climateatlas.ca/heat-health-report.pdf

24 Mitchell, R., & Popham, F. (2008). *Effect of Exposure to Natural Environment on Health Inequalities: An Observational Population Study.* The Lancet 372: 1655-1660.

25 Omid, K., Gozdyra, P., Misic, B., Moola, F., Palmer, L., Paus, T., Berman, M. (2015). *Neighbourhood greenspace and health in a large urban center.* https://www.nature.com/articles/srep11610

26 Thomas, L. (2014). *Exploring Connections Between Trees and Human Health. United States Department of Agriculture and United States Forest Service*. https://www.fs.fed.us/pnw/sciencef/scifi158.pdf

27 Provincial Health Services Authority [PHSA] (2018). *Healthy Built Environment Linkages Toolkit: making the links between design, planning and health, Version 2.0.* Retrieved from: http://www.bccdc.ca/pop-public-health/Documents/HBE_linkages_toolkit_2018.pdf

28 Provincial Health Services Authority [PHSA] (2018). *Healthy Built Environment Linkages Toolkit: making the links between design, planning and health, Version 2.0.* Retrieved from: http://www.bccdc.ca/pop-public-health/Documents/HBE_linkages_toolkit_2018.pdf

29 City of Winnipeg. (2021). *Population of Winnipeg*. https://winnipeg.ca/cao/pdfs/population.pdf

30 Goldsborough, G. (2006). *Manitoba History: Greening the Treeless Plain*. Manitoba Historical Society Newsletter Number 53,.

31 Macdonald, C. (1995). *A City at Leisure: an Illustrated History of Parks and Recreation Services in Winnipeg 1893-1993.* https://www.winnipegarchitecture.ca/wp-content/uploads/2014/09/A-City-at-Leisure.pdf

32 Rosen, M. (2015). *A Brief Historical Perspective of Urban Forests in Canada*. http://treecanada.ca/wp-content/uploads/2017/10/Article-2-EN-2015-Historical-Perspective-Urban-Forests.pdf

33 Croal, P., Geol, P., Stirby's, P. (2021). *National Healing Forest project launched across Canada*. Tree Canada. https://treecanada.ca/blog/national-healing-forest-project-launched-across-canada/

34 Hildebrandt, S. (2020). *Healing Forest receives new name - Phase Two of the forest design plan continue this summer.* Winnipeg Free Press. https://www.winnipegfreepress.com/our-communities/times/Healing-Forest-receives-new-name-571834561.html

35 Hansen, M. C., Potapov, P. V., Moore, R., Hancher, M., Turubanova, S.A., Tyukavina, A., Thau, D., Stehman, S.V., Goetz, S.J., Loveland, T.R., Kommareddy, A., Egorov, A., Chini, L., Justice, C.O., Townshend, J.R.G. (2013). *High-Resolution Global Maps of 21st-Century Forest Cover Change*. Science 342 (15 November): 850–53. Data available on-line from: http://earthenginepartners.appspot.com/science-2013-global-forest.

Appendix A - Discussion Paper (Download Separately)

Appendix B - Bylaw Comparisons (Download Separately)

Appendix C - Phase 1 and Phase 2 Engagement Summary (Attached)

City of Winnipeg
510 Main Street
Winnipeg, Manitoba - R3B 1B9

winnipeg.ca/urbanforest

WINNIPEG URBAN FOREST STRATEGY

Phase 1 Public Engagement Summary

February 2021

Background

The Winnipeg Urban Forest Strategy will provide a 20-year vision for our city's tree canopy and develop policy, recommendations, and strategic actions to help protect, preserve, and grow the canopy well into the future. The City of Winnipeg's (City) capacity to maintain the urban forest is challenged as resources struggle to keep pace with demand for disease management, urban development, tree removals, maintenance, and replanting. The Winnipeg Urban Forest Strategy project is an opportunity to establish a long-term vision for Winnipeg's urban forest that responds to current and future challenges.

Engagement

Phase 1 of public engagement aimed to develop a community-supported, long-term urban forest vision that captures the community's perspectives on the city's identity, culture, and aspirations while identifying opportunities to preserve and protect, grow, and enhance the urban forest. Residents were invited to provide input through a survey, mapping tool, discussion forum, webinar presentation, self-guided walking tour, and virtual tour. In-person guided walking tours were planned but were cancelled due to COVID-19 and provincial public health orders. Stakeholder organizations were also invited to provide input at an online stakeholder workshop and through a stakeholder conversation guide. Details on engagement opportunities are outlined in Table 1.

The input collected through Phase 1 will be used to help create the draft strategy. In Phase 2 of public engagement expected to begin in spring 2021, we will gather feedback on the draft strategy.

Promotion

Public engagement opportunities were promoted using the following methods:

- City of Winnipeg website – launched October 8, 2020
- News release – October 8, 2020
- Facebook posts with over 29,900 followers - October 8 to 31, 2020
- Twitter posts with over 99,900 followers - October 8 to 31, 2020
- Email to 109 identified urban forest stakeholders – October 9, 2020
- Online advertisement – October 9 to 31, 2020
- Newspaper advertisements in the Harold, Lance, Sou'Wester, Metro, and Times – October 14, 2020
- City of Winnipeg public engagement newsletter with over 2,500 recipients – October 15 and 29, 2020
- Media coverage in Global News, CJOB, and CHVN – October 15 to 18, 2020

Table 1: Public and Stakeholder Engagement Opportunities

Date	Activity	Details
October 8 – November 1, 2020	Web page	Over 4,300 unique visitors
October 8 – November 1, 2020	Survey	1,753 respondents
October 8 – November 1, 2020	Mapping tool	96 submissions
October 8 – November 1, 2020	Tree mail	16 emails
October 8 – November 1, 2020	Discussion forum	9 posts
October 8 – November 8, 2020	Self-guided walking tours and virtual tours	25 participants
October 8 – November 8, 2020	Stakeholder conversation guide	5 submissions
October 22, 2020	Presentation #1 (online)	35 attendees
October 23, 2020	Presentation #2 (online)	37 attendees
December 3, 2020	Stakeholder workshop (online)	40 attendees

WINNIPEG URBAN FOREST STRATEGY

Phase 1 Public Engagement Summary

February 2021

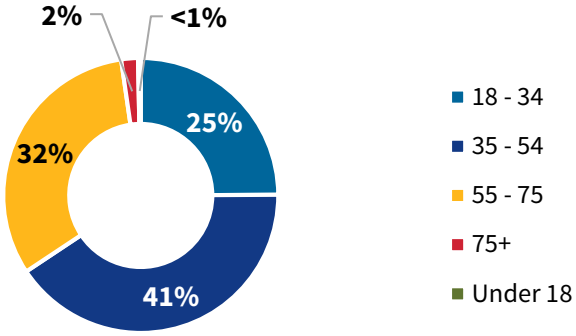
Who We Heard From

Over 4,300 unique visitors engaged with the project webpage and we heard from 1,753 survey respondents. We had 72 participants in the online presentations and 40 in the online stakeholder workshop.

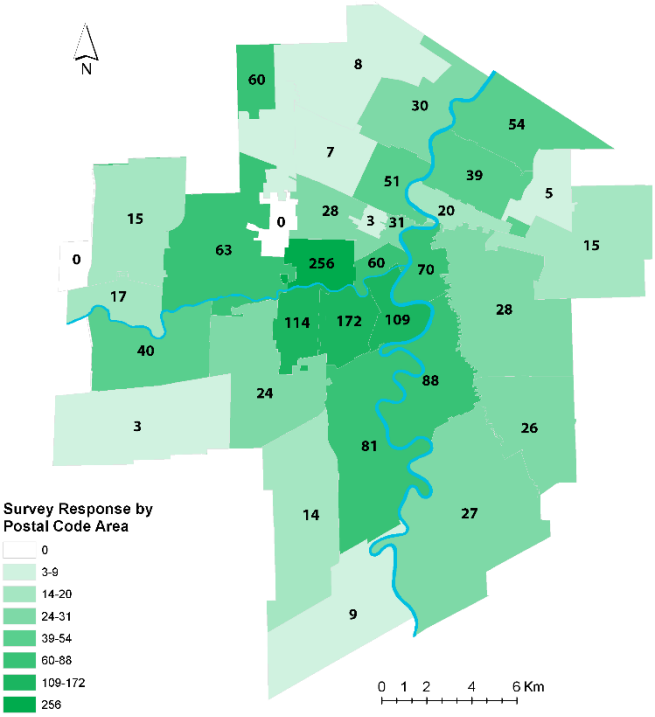
Survey Respondents

- 41% of survey respondents were between 35-54 years of age, compared to 27% in Winnipeg
- 80% of survey respondents owned their own home, compared to 66% in Winnipeg
- Middle aged homeowners are over represented in the survey data
- Facebook (31%), word of mouth (23%), and in the news (14%) were the top three ways respondents heard about the project

Survey Respondent Age



Map of Survey Respondents' Place of Residence by Postal Code



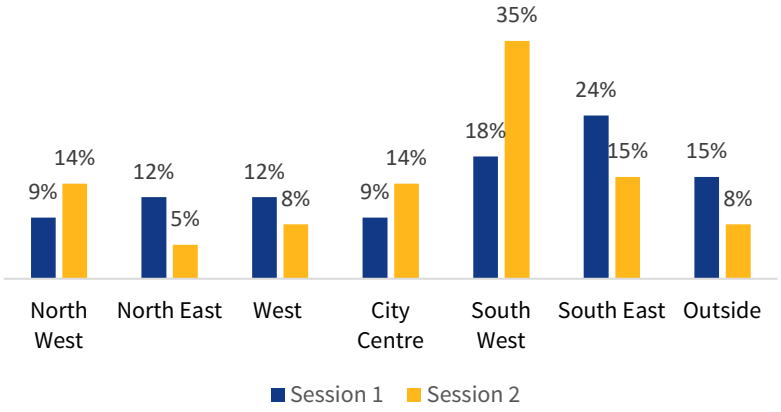
Total survey responses with a postal code record: 1514 of 1753 survey responses

Presentation & workshop attendees

Each presentation had attendees from across Winnipeg. A live poll question found the most common area of residence was South East in Session 1 and in South West in Session 2.

Participants in the stakeholder workshop represented residents' associations, tree committees, universities, nurseries, consulting companies, community groups, tree care services, trails associations, provincial government, landscape architects, city planners, and community members (see the complete list in Appendix G).

Presentation Attendees' Place of Residence



To learn more about the Winnipeg Urban Forest Strategy, please visit winnipeg.ca/urbanforest

What We Heard

Key findings from the community engagement are grouped into two sections: first, the vision for the urban forest; and, second, each of five key urban forest management themes that the eventual strategy will explore (**planning**, **planting**, **management**, **protection**, and **stewardship)**. Each section presents highlights from Phase 1 engagement and ends with a summary table outlining what we heard and how it will be considered during the development of the draft Urban Forest Strategy. Detailed results and additional information can be found in the appendices.

Section 1: Vision for the Urban Forest

Vision for 2040

When asked about a vision for Winnipeg's urban forest by 2040, survey respondents stated that they would like to see more tree canopy overall (286 comments), including large and healthy trees (712 comments), across the city. Respondents also want to see more trees planted, particularly on residential streets (512 comments). Respondents shared visions of planting diverse tree species, including more native species (220 comments). This sentiment was also shared in the forum where participants noted biodiversity as an important vision for the future of Winnipeg's urban forest.

In the mapping tool, participants identified locations in Winnipeg that they value primarily because of their beautiful mature trees, their large, forested areas, and/or that provided a variety of ecosystem services.

"Lots of mature trees in neighbourhoods and parks."

"Have a greater diversity of trees, Boulevard trees that are pruned regularly, new trees planted with care and taken care of, and have a bigger increase of tree canopy overall."

-Survey participants

"Additionally, biodiversity needs to be improved. Although our elm forest is beautiful, the monoculture urban forest has proven to have detrimental impacts. Diversifying our canopies would have a huge amount of benefits in the long run." – Forum participant

Photos and Quotes from Mapping Tool Participants



"It is my favourite natural area in Winnipeg. A place of beauty, nature, wildlife and serenity close to my home. I am rejuvenated when I go through Bois des Esprits."



"We value these trees for protection from winter winds and for shade. Neighbouring areas have fewer trees; people walk on this road for its beauty!"



"I like the variety of native trees and wildflowers, and the fact that the forest along the creek still feels relatively wild, and messy in a good kind of way."

Community values

- Benefits of the urban forest that mattered the most for survey respondents included: habitat for native plants and animals (98% of respondents ranked it as somewhat important or very important); air purification (97%); natural experiences (96%); and shading and cooling (95%).
- The most common reasons for visiting tree locations identified in the mapping exercise are recreation/restoration (84%), to appreciate the landscape (82%), and to experience quietness/solitude (71%).
- Using the mapping tool, respondents identified valued forested areas and often noted their benefits to mental health (33 comments) and physical health (40 comments).

The common themes and wording about Winnipeg's urban forest will be used to prepare the draft vision for Winnipeg's urban forest.



"It is invaluable for getting kids familiar with nature, it provides healthy green space for outside exercise and activities, for healthier community."
- **Mapping Tool Participant**

Section 2: Plan

Work under the ***plan*** theme will seek to develop a canopy cover target and metrics to track changes in Winnipeg's urban forest, and to integrate trees and natural assets into asset management.

Canopy cover target

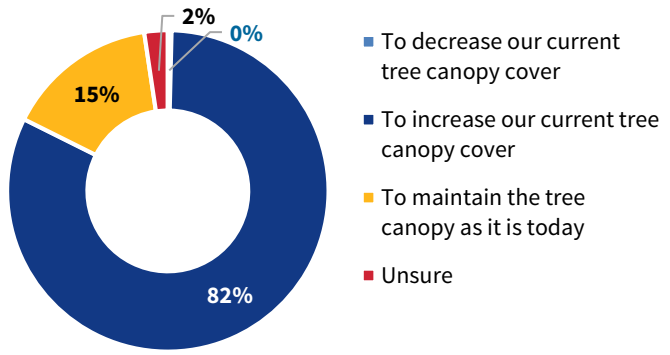
Over 80% of survey participants agree the City should set a tree canopy cover target to increase Winnipeg's current tree canopy cover.

Stakeholders in the workshop noted differences in the distribution of new trees planted across neighbourhoods and point to socio-economic factors playing a role in canopy distribution. More specifically, stakeholders observed that the reliance on community organizations to carry out tree planting is contributing to the uneven distribution of trees biased towards neighbourhoods where such organizations are active.

Integration with asset management

Stakeholders would like the City budget to reflect the value of trees and the services they provide. They are particularly interested in the integration of trees into the City's asset management system to account for benefits and costs of the urban forest.

Survey respondent preferences for Winnipeg's canopy cover target



"Whatever the tree canopy target is, it should be evenly distributed across all neighbourhoods, not 100% in some and next to 0% in others." – Survey respondent

"The *City budget should value the trees and the services they provide*." – Stakeholders at the workshop

"Use natural asset valuation to communicate value of trees and natural assets to strengthen argument for increased investment" – Stakeholders at the workshop

Summary Table 1 – Key themes from public engagement about planning

What we Heard	How it was considered
Canopy cover target: • Survey respondents would like to see the City set a tree canopy cover target to increase our current canopy cover. • Stakeholders and survey respondents highlighted the importance of distributing canopy cover across neighbourhoods	The City will explore scenarios using relevant data and metrics to propose a realistic and achievable City-wide canopy cover target that aims to increase canopy cover. The Strategy will also review canopy cover distribution across the city and make recommendations to increase it in neighbourhoods which have less canopy.
Asset management: The City should reflect the value of trees by developing an asset management system that accounts for the benefits and costs of the urban forest.	The Strategy will explore options and make recommendations for the integration of trees into the City's asset management system.

Section 3: Management

The ***management*** theme is focused on services such as pruning, watering, tree removals, integrated pest management, and storm response.

Tree removals

Using the mapping tool, participants identified several locations where they would like to see urban forest improvements. A common theme is the need for more timely removal of dead or dying and diseased trees, as well as replacement following removals (13 comments).

Pruning

Survey respondents would like to see improvements to tree pruning, with 46% either dissatisfied or very dissatisfied with current pruning. Stakeholders in particular noted the importance of a best-practice pruning cycle to reduce the amount of damage sustained by trees in weather events such as the 2019 storm. However, some survey respondents noted concerns about the feasibility of reaching a best practice pruning cycle given how far from it current practices are and pointed out that the City would need to ensure sufficient budget is provided to enable that significant shift (284 comments).

Climate change

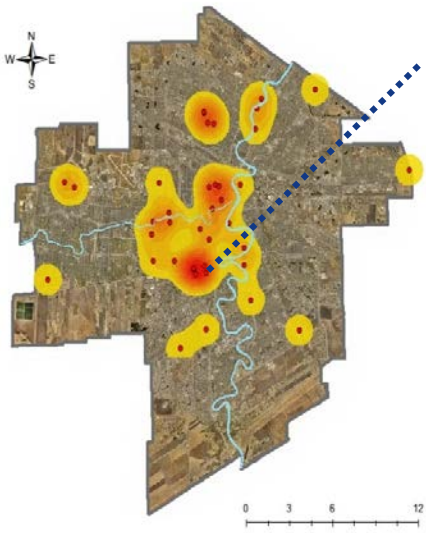
Climate change was mentioned by stakeholders as an important consideration. Budget and programs to respond to storms and increased watering needs were some of the climate impacts which stakeholders would like to see planned for.

Pests & diseases: DED and EAB management

Dutch elm disease (DED) management was identified as a top concern by stakeholders and in the survey, where respondents noted DED as a common reason for tree removal in their neighborhood (406 comments). Stakeholders noted that, although the City is managing DED, they have observed more trees becoming affected yearly and worry that the City may lose control over the disease in some neighbourhoods. They also noted that the misunderstanding of pest and diseases management issues by the public was leading to problematic practices which are putting additional strains on the City's management programs.

Participants also expressed concerns about emerald ash borer (EAB). However, 20% of survey respondents indicated being unsure about their satisfaction with the City's management of EAB. This finding aligns with comments from

Areas of Improvement identified using Mapping Tool



"This park/recreation center is in total disrepair, flanked by dead trees on the west boulevard that have been dead for over a year. One is totally de-barked. The pocket park has trees that don't regularly see pruning and may be unsafe for kids. More trees could be planted."
– **Mapping Tool Participant**

"Tree pruning and removal of diseased trees has not had an adequate budget to keep pace with requirements. I don't think the public has enough understanding of the value of trees. Our city council has neglected to provide appropriate budgets for an urban forest management strategy. Hopefully, this strategy document will help with budgeting." – Survey respondent

"Watering must be responsive to needs of plant and environmental conditions, beyond a pre-established schedule, especially with changing climatic conditions."
– Stakeholder conversation guide excerpt

"EAB sounds very devastating - I hope the City can go ahead with its EAB prevention activities to preserve our ash trees for as long as possible." – Walking tour participant

"The ash trees on my street made the street. Now that half of the tress were recently removed, the street is almost unrecognizable to me. The beauty and appeal of the street has been greatly reduced." – Mapping tool participant

stakeholders, who thought the City needed to better inform citizens about the pest, its impacts, and management of it.

Increase in urban forest funding

A large number of survey respondents would like the City to allocate more funding towards tree planting and maintenance (323 comments). Some respondents also expressed a willingness to pay additional taxes for improved urban forest management (20 comments). Participants in the stakeholder conversation guide, forum and stakeholder workshop also identified the lack of budget as a serious threat. Stakeholders in the workshop noted that they would like to see a yearly budget that accommodates adequate tree removal, replanting, and mitigation.

> ***"I strongly want our City Council to prioritize the forestry department when they decide city budgets. I personally would be ok with an increase in property taxes going to improve tree planting and maintenance."*** – Survey respondent

Summary Table 2 - Key themes from public engagement about urban forest management

What we Heard	How it was considered
Tree removals: Participants would like to see more timely removal of dead, dying, and diseased trees. The replacement of trees removed is top of mind for most.	The Strategy will recommend improvements to the City's practices and consider replacement plantings in setting a canopy cover target for Winnipeg's urban forest.
Pruning: Tree pruning was identified as needing improvement to align with best practices and improve tree outcomes. However, participants noted that this may require significant budget increases.	The Strategy will evaluate how City practices compare to best practice levels of service and make recommendations on how to move towards best practices, including identifying resourcing requirements.
Climate change: Community members are concerned about the impacts of climate change on their urban forest and noted the need for revised watering practices particularly in order to establish young trees.	The Strategy will include data about the expected impacts of climate change on Winnipeg's urban forest. It will recommend changes to management strategies.
DED and EAB management: Concerns were expressed widely about managing the spread of DED and EAB in Winnipeg's elm and ash species.	The Strategy will review City practices for pests and diseases management and issue recommendations to improve DED and EAB management programs.
Budget: A common theme expressed across engagement tools was the desire for the City to spend more funds on tree planting and maintenance.	The Strategy will review the current urban forestry budget and ensure that the budget implications of its recommendations are clearly communicated and discussed.

Section 4: Planting

The ***planting*** theme focuses on tree planting on public land, including on-street and in-park trees, as well as natural forest restoration.

Overall, 57% of survey respondents are dissatisfied with the level of service for tree planting in Winnipeg.

Street planting preferences

Respondents were asked to identify a photo that most resembled their street and which they would like their street to resemble (examples at right) Almost half of respondents' current streets are most like Photo E, with regularly spaced large trees. This aligns with the demographic information collected from the survey, which showed strong representation from mature neighbourhoods.

Overall, respondents prefer streets with spaced, large trees (photo E; 53% of respondents). The second preferred character is mixed spacing and species, large sized trees (photo F; 38%). The only respondents who preferred the same type of street as their current street were those living on streets with regularly spaced, large trees (photo E) or mixed spacing and species with large sized trees (photo F). No respondents preferred few or no trees (photo A), or small trees (photo B).

Street Characters



A. Few or no trees



B. Regularly spaced small trees



C. Regularly spaced, medium-sized trees



D. Mixed spacing and species, medium-sized trees

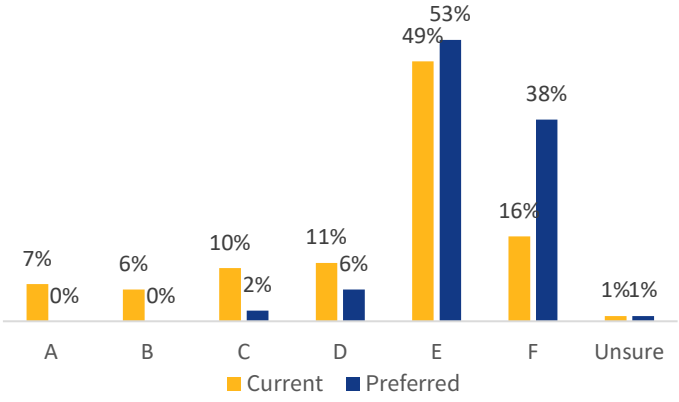


E. Regularly spaced, large trees



F. Mixed species and spacing, large-sized trees

Current and Preferred Street Character



Benefits of street trees

When selecting trees they would like to see planted on streets, survey respondents prioritized benefits like shade, carbon storage, and rainwater interception (73% ranked it in their top three) followed by bird and pollinator attraction (72% ranked it in their top three), and tree species diversity (71% ranked it in their top three). Participants rated pest and disease resistance as consistently important.

Priority planting locations

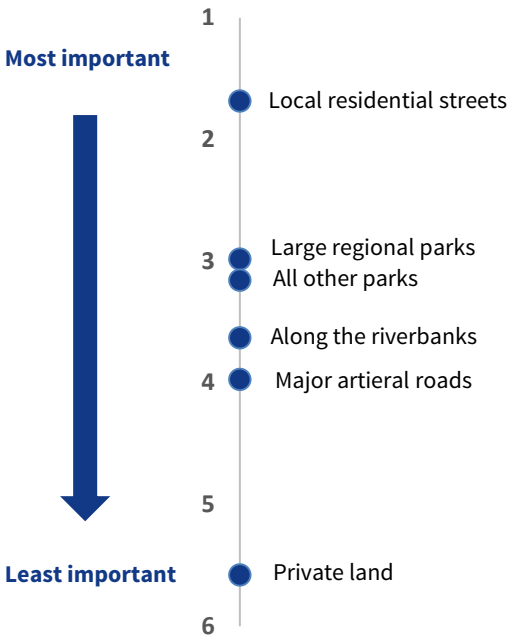
On a scale of 1 to 6, survey respondents ranked local residential streets as the most important location to plant trees (1.7), ranking major arterial roads as a lesser priority (4.0). In parks, respondents prioritized planting in large regional parks (3.0) and all other parks (3.2) similarly, while placing a lower priority on planting along riverbanks (3.6). Replacing removed trees is of great importance, especially to the many who observe a lack of tree replacement on streets.

Diversity of species

The importance of planting a higher diversity of tree species was a consistent theme across all engagement tools; respondents would like to see a more diverse urban forest, with many citing challenges in pests and disease management as a key reason for diversifying (108 comments).

Stakeholders also highlighted the importance of considering climate change impacts in the selection of tree species to plant around the city, and raised the importance of outreach with local nurseries to ensure that desired species would be available for planting in the region.

Priority Planting Locations



"The ash trees removed due to the emerald ash borers have not been replaced, leaving Wavell and Montgomery almost devoid of boulevard trees. We would appreciate the canopy being replaced, especially as it will take some time for the trees to mature and start providing shade." – Survey respondent

"Much more trees in new developments better maintained old trees/new added trees in mature neighborhood diversification of tree species planted on the residential streets." – Survey respondent

Summary Table 3 - Key themes from public engagement for the urban forest planting

What We Heard	How It Was Considered
Street trees: Respondents prefer streets with regularly spaced, large trees which reflects the most common appearance of streets as regularly spaced with large trees.	The Strategy will consider this preference in developing the vision statement as well as when making recommendations for public tree planting.
Tree species: • The City should choose trees that maximize benefits, have tall canopies, attract birds and pollinators, and are diverse. • A key highlighted theme is the overall need to diversify the urban forest.	The diversification of trees species will be an important component of the recommendations for growing Winnipeg's urban forest.
Planting location priorities: • The City should focus on residential street tree planting as its highest priority. • In parks, planting should occur both in regional and other City parks.	The Strategy will account for people's priorities for tree planting in its recommendations.

Section 5: Preservation

The ***preservation*** theme focuses on regulating the protection, removal, and replacement of City trees with development and construction, as well as regulating new private trees planted with development and new boulevard trees planted under development agreements.

Tree loss impacts

Winnipeg has experienced significant tree loss within its urban forest as a result of pests and diseases and was identified as a major concern for Winnipeggers:

- Over 84% of survey respondents reported having been impacted by tree loss at a personal level.
- 70% of respondents rated the impact of tree loss on themselves as severe to very severe.

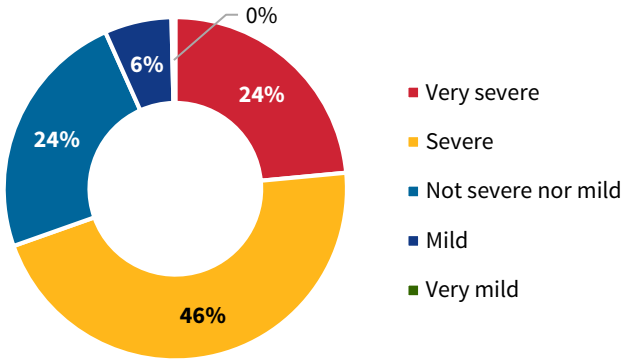
The most cited reason for tree loss was DED (406 comments). Many respondents who experienced tree loss cited significant impacts from tree removals because of the loss of their beautification and cooling benefits (739 comments).

Regulating tree protection

Several survey respondents indicated a desire for more protection of private trees, with 57% of respondents indicating being dissatisfied with the level of service for the preservation and protection of trees when development or construction projects occur. More specifically, survey results indicate:

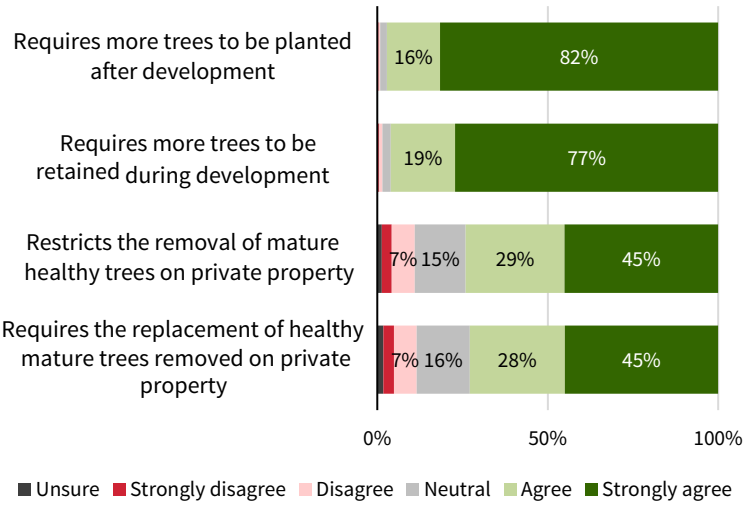
- There is strong support for measures to ensure the protection and replacement of trees as part of land development:
  - 82% of respondents strongly support a policy that requires more trees to be planted after development
  - Over 77% strongly support a policy that requires more trees to be retained during development
- There is support for protection and replacement measures of healthy mature trees on private property:
  - 74% support a policy to restrict the removal of healthy mature trees on private property
  - 73% support a policy to require the replacement of healthy mature trees on private property

Severity of the impact of tree loss



> ***"The loss of trees has very much negatively impacted our streets' aesthetics and exposure to weather. HUGE difference in my house and yard environment compared to when we were enveloped with mature trees."***
>
> – Survey respondent

The City should implement a tree policy that:



Support for the protection and replacement of healthy mature trees on private property drew higher levels of disagreement than measures for development. Stakeholders also indicated an interest in greater tree protection particularly during development, and in preventing the loss of planting space as a result of infill development. The development of a Greenspace Strategy to better protect valuable natural areas was also proposed.

> ***"It is costing us a lot of money every year to remove dead trees and plant new ones on our property. Then I see contractors cutting healthy trees down to build monster houses in our area. That really makes me mad! If people want to live in an area like ours that has a lot of trees, then don't cut them down!"***
>
> – Survey respondent

Summary Table 4 - Key themes from public engagement about tree preservation

What We Heard	How It Was Considered
Impact of tree loss: Tree loss is a significant concern for Winnipeggers. The most common reason in which survey respondents have been impacted by tree loss is DED.	The Strategy will seek to reflect the impact of the loss on Winnipeggers and recommendations will be made for comprehensive invasive pest management and reduction in loss rates due to DED.
Tree protection on private land: There is a common desire to establish better protection measures for private trees. More specifically: • There is strong support for urban forest policies that require more trees to be planted after development and require more trees to be retained during development • There is support (but less unanimity) for a policy that restricts the removal of mature healthy trees on private property and requires the replacement of healthy mature trees removed on private property.	The Strategy will explore options to improve the protection of private trees on private land, including recommendations for a tree protection by-law.

Section 6: Stewardship

The ***stewardship*** theme focuses on fostering and supporting volunteer capacity, creating stewardship and education opportunities in partnership with non-profit organizations, and promoting urban forest outreach and education through various communication channels.

Stewardship Activities

Winnipeggers are active participants in a variety of urban forest stewardship activities.

- Over 91% of survey respondents have participated in a stewardship activity.
- Stakeholders noted significant community participation in planting projects and tree watering programs through neighbourhood associations, Trees Winnipeg, Friends of Peanut Park, and various tree committees.

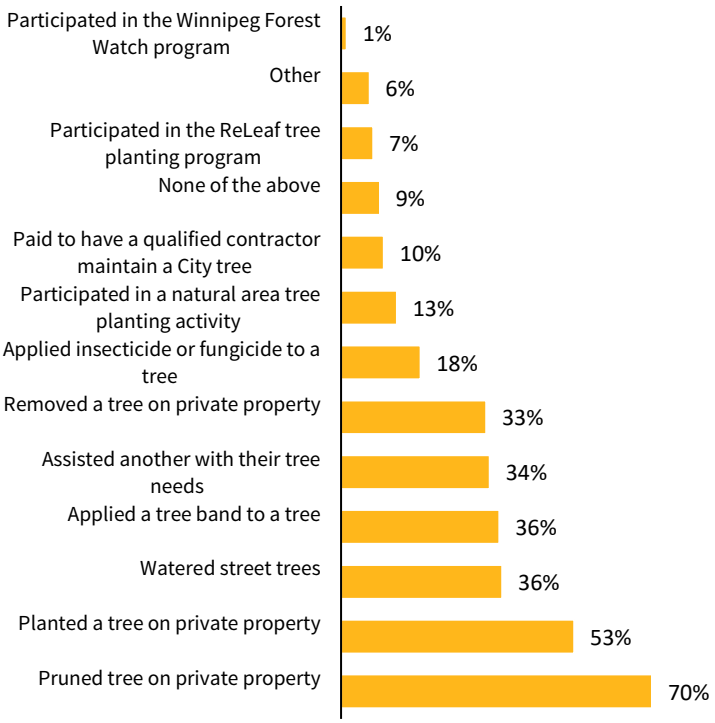
The most common activities respondents reported being involved in included pruning a tree on private property (70%), planting a tree on private property (53%), watering street trees (36%), and applying a tree band to a tree (36%). Several survey respondents and stakeholders noted that the Mayor's Million Tree Challenge was a good stewardship initiative, although many noted it may be challenging to attain given tree removal rates and lack of budget allocated to it.

Survey respondents were particularly interested in seeing the City encourage citizen tree care through watering, planting, and education. Stakeholders highlighted the importance of engaging the community more broadly and equitably. They suggested that the City considers developing partnerships with organizations such as school districts to involve youth.

Urban forest education

More than half (57%) of survey respondents currently feel dissatisfied with the level of public education provided by the City. They highlighted an interest in educational materials about how to choose the right tree for their property (57%) and what trees are suitable for Winnipeg (52%).

Winnipeggers have…



> ***"I am not a property owner, but I would love to participate in a City-run program that allows people who are not property owners to help plant city-run gardens and treed areas."*** – Survey respondent

> ***"I literally spent hundreds of dollars to water these new trees. I was billed for sewer and water for my good intentions when no sewer was involved..."***
>
> ***"My suggestion is to offer people a small credit on their water bill if they plant new trees!"***
>
> -resident comment

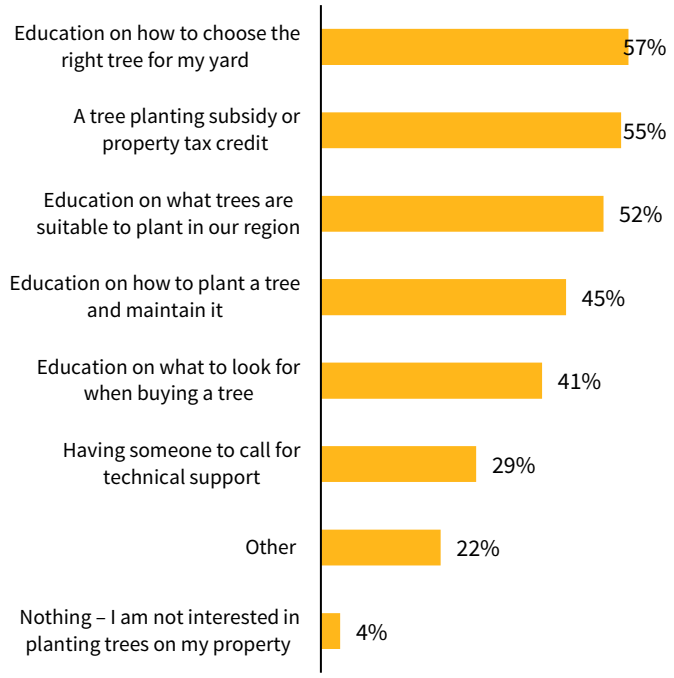
Incentives for private tree planting

Survey respondents would like the City to create incentives for community members to plant trees (such as a tax credit or water bill credit) and also to provide technical support. A little more than half of respondents would feel encouraged to plant a tree if there was a tree planting subsidy or property tax credit provided (55%). Equity needs to be at the heart of incentive programs so as to address potential barriers to tree planting, from the cost of the tree to the cost associated with watering that tree.

Balancing stewardship with City management

The stakeholders highlighted the importance of clearly defining the role of external stakeholders and the City's Urban Forestry branch in the management of the urban forest. While not-for-profit organizations and resident groups noted they want to see the City support and celebrate citizen stewardship, they noted urban forest management needed to be funded appropriately to avoid relying on the community to bridge gaps in funding and programming/maintenance. They also suggested the City consider hiring a dedicated staff to engage with volunteers and coordinate both volunteer opportunities and programs with external organizations.

What would encourage you to plant a tree(s) on your property?



Summary Table 5 - Key themes from public engagement about urban forest stewardship

What We Heard	How It Was Considered
More support for community stewardship: Participants would like the City to take more leadership for the coordination of stewardship activities and groups. • Stakeholder groups would like the City to consider a dedicated staff position to coordinate stewardship efforts and liaise with external stakeholder organizations. • Equity should be at the centre of the City's approach. New collaboration opportunities should be sought after, for example engaging with youth through schools.	The Strategy will acknowledge the importance of community stewardship in the management of the urban forest to date. It will issue recommendations to continue to foster and better support stewardship activities in the community moving forward.
More public education: Winnipeggers would like more education on choosing the right tree to plant on their properties.	The Strategy will acknowledge the community's interest and seek out opportunities to provide those resources to the community.
Supporting tree planting on private property: A key highlighted theme is an opportunity for creating incentives for community members to plant trees (i.e. tax credit, technical support). Incentive programs need to consider	Incentive programs for tree planting and maintenance will be investigated.

equity and address barriers for tree planting, particularly in lower income neighbourhoods.	
Defining the role of stakeholders: Clearly defining the role of stakeholder groups in the management of the urban forest is critical to avoid relying on the community to bridge management gaps.	The Strategy will celebrate the contribution of community members and organizations for the stewardship of the urban forest. It will explore collaboration models to be considered in the implementation of the Strategy.

Next Steps

The findings from this first phase of community engagement will be considered along with findings about the current state of Winnipeg's urban forest to inform the drafting of the Urban Forest Strategy. Phase 2 public engagement is expected to occur in the spring of 2021 to gather feedback on the draft Urban Forest Strategy.

Appendices

Appendix A – Survey Results

Appendix B – Mapping Results

Appendix C – Walking Tours

Appendix D – Public Presentations

Appendix E – Forum

Appendix F – Tree Mail

Appendix G – Stakeholder Workshop

Appendix H – Conversation Guides

Appendix F – Promotional Material, Presentation Boards, & Survey Screen

WINNIPEG URBAN FOREST STRATEGY

Phase 2 Public Engagement Summary

January 2023

Background

The Winnipeg Urban Forest Strategy will provide a 20-year vision for the City's urban forest. It identifies policy recommendations and strategic actions to help protect, preserve, and grow the canopy well into the future. The Strategy was rooted in an engagement process that invited input from stakeholders and community members through two engagement phases.

Engagement

In fall 2020, Winnipeggers were asked about their long-term vision for the city's urban forest and their satisfaction with its current and future urban forest management priorities. What we heard during this phase of engagement helped our project team create the draft Winnipeg Urban Forest Strategy, including the vision and strategic directions that will set the stage for future urban forest management in Winnipeg.

In spring 2022, Phase 2 engagement informed the public of the draft strategy and solicited input on targets and priorities for implementation. Winnipeggers were invited to provide feedback through a survey, a comments tool, and two online open houses. Stakeholder organizations were also invited to an online stakeholder workshop. Trees Please Coalition, Trees Riverview, and Winnipeg Regional Health Authority provided written responses to the draft outside this formal process. Details of Phase 2 engagement are outlined in Table 1.

Input collected during Phase 2 will be used to finalize the draft strategy for Council's consideration.

Promotion

Public engagement opportunities were promoted using the following methods:

- News release – May 23, 2022
- Email sent to 335 subscribers – May 23, 2022
- Media coverage in the Winnipeg Free Press, Winnipeg Sun, CTV, and CBC – May 24 - 29, 2022.
- Online advertisement – May 25, 2022
- Newspaper advertisement in Winnipeg Free Press Community Review and La Liberté – May 25, 2022
- Public engagement newsletter to 3,300+ subscribers - June 2 & 16, 2022
- Facebook posts to more than 33,000 followers – June 10 & 16, 2022
- Twitter posts to more than 113,000 followers – June 10 & June 22, 2022

Table 1 - Public and Stakeholder Engagement Opportunities

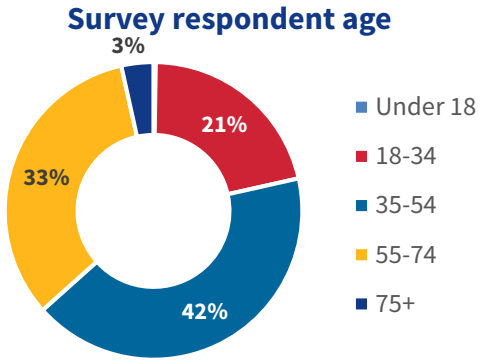
Date	Activity	Details
May 23 – June 22, 2022	Webpage	1,667 unique visitors
May 23 – June 22, 2022	Survey	838 respondents
June 14, 2022	Online open house #1 (presentation and Q&A)	19 participants
June 15, 2022	Online open house #2 (presentation and Q&A)	20 participants
June 15, 2022	Online Stakeholder Workshop	21 participants

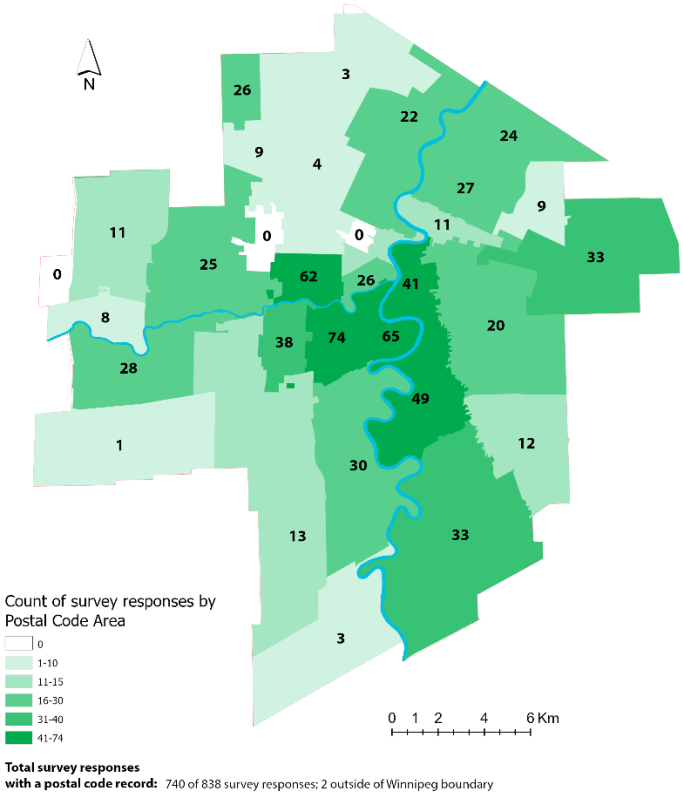
Who we heard from

Over 1,600 unique visitors engaged with the project webpage, and we heard from 838 survey respondents. We had 42 participants at online open houses and 21 in the online stakeholder workshop.

Survey respondent demographics

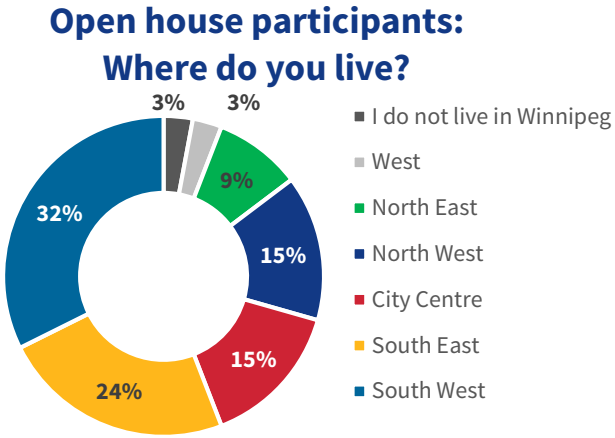
- 42% of respondents are aged 35-54
- A large proportion of respondents reside in central areas of Winnipeg (see postal code map)
- 81% of respondents own their own home
- Most participants heard about the survey through Twitter (43%), in the news (33%), Facebook (32%), and the public engagement newsletter email (32%)





Open house & stakeholder workshop attendees

- 65% of open house attendees did not participate in any Phase 1 engagement activities
- 21 stakeholders represented 17 organizations at the workshop
- 53% of stakeholder workshop attendees participated in Phase 1 of engagement



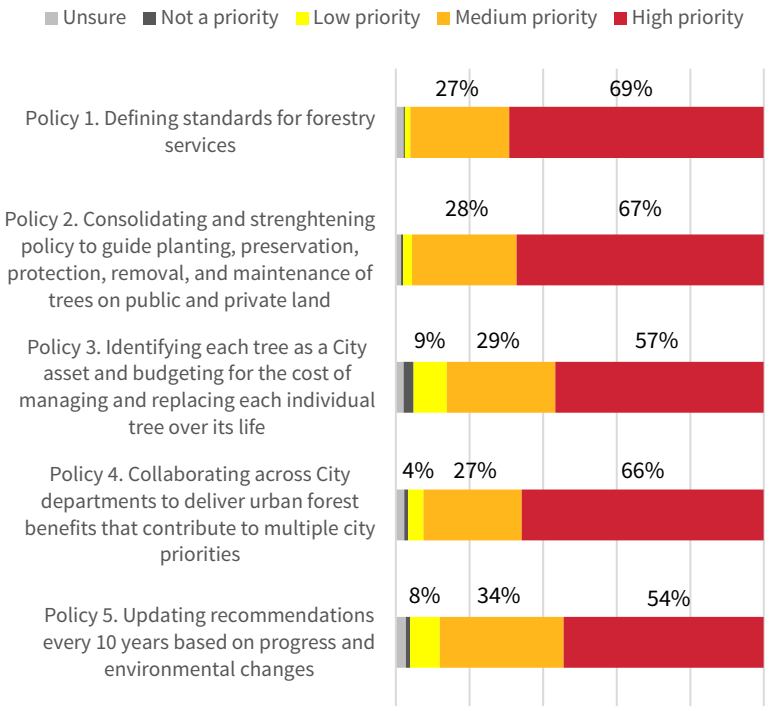
What we heard

The purpose of the second phase of engagement was to inform community members about the draft Winnipeg Urban Forest Strategy and hear their thoughts on proposed policies and targets. Public input was collected through an online survey and two open houses that included a presentation and a question-and-answer period. Stakeholders were engaged through an online workshop.

Key findings from community engagement are organized under the five urban forest management goals outlined in the draft strategy: **planning**, **planting**, **managing**, **protecting**, and **partnering**. Each section presents key highlights from Phase 2 engagement and ends with a summary table outlining what we heard and how it will be considered in the final draft strategy. Detailed results and additional information can be found in the appendices.

Section 1: Plan

Plan aims to equitably distribute connected tree and forest assets to improve the health of people and their communities. Five policies associated with this goal were presented in the draft strategy.



Prioritizing policies

When asked to prioritize policies related to long-term planning of the urban forest, most survey respondents (54% to 69%) ranked ***Plan*** policies similarly high.

Workshop participants prioritized Policy 2, Policy 3, and Policy 4. They highlighted the importance of advocating for changes to the Winnipeg Charter under Policy 2 because it drives many private tree protection actions. Stakeholders also generally wanted the City to prioritize short-term actions that would more quickly achieve results.

Gaps and implementation challenges

Workshop participants identified gaps and challenges in implementing Goal 1 – Plan policies. They were mainly concerned with a lack of funding, competing priorities between trees and city infrastructure, and the need to prioritize shorter-term actions to avoid losing them in the details of the strategy. Some stakeholders also thought the strategy did not adequately stress the urgency of investing in and prioritizing the urban forest and requested that the vision statement more strongly and communicates the urgency. There were concerns that the canopy cover target was not high enough and that there should be a better explanation why the overall target was chosen. Some stakeholders noted interim canopy cover targets would be useful to ensure actions are prioritized based on their importance to achieve targets and ease of implementation.

Summary Table 2 – Key themes from public engagement about planning

What we Heard	How it was considered
Survey respondents considered all five policies under this area to be a priority. Some stakeholders highlighted Policy 2, focusing on changing the Winnipeg Charter to enable private tree protection.	Implementing Policy 2, action 2B as it relates to the City of Winnipeg Charter was changed from a long- to medium-term priority.
The Strategy must highlight short-term actions that will have the most significant impact on achieving urban forest targets.	A summary of short-term actions was integrated into a fact sheet to highlight recommendations with the most significant impacts on Winnipeg's urban forest.
The strategy must more clearly emphasize the urgency of investing in Winnipeg's urban forest and the negative impact that maintaining the status quo would have on canopy cover over the coming decades.	Information about the potential canopy cover outcomes (Figure 21) was integrated into the executive summary to highlight the impacts of inaction on Winnipeg's future canopy cover.
A more robust vision is required to emphasize the essential nature of the urban forest to the health and well-being of all Winnipeggers.	The strategy's vision was updated to highlight the essential nature of the urban forest for the health and well-being of Winnipeggers.
Increase the canopy cover target to 24% by 2040 (instead of 24% by 2065) and provide more detailed information about the implications of the current target for tree planting and resource investments.	The draft strategy now provides a more detailed breakdown of the rate of tree planting and budget investments required to achieve the target. It better explains the relationship between tree planting and canopy cover growth over time to relate planting rates to changes in canopy cover.
Emphasize the Urban Forest Program Sustainability section and its findings about resourcing.	More specific references to those findings have been added to the executive summary.
Develop a financial plan with specific dollar values associated with actions.	A breakdown of costs related to each action has been added to the Winnipeg Urban Forest Strategy.

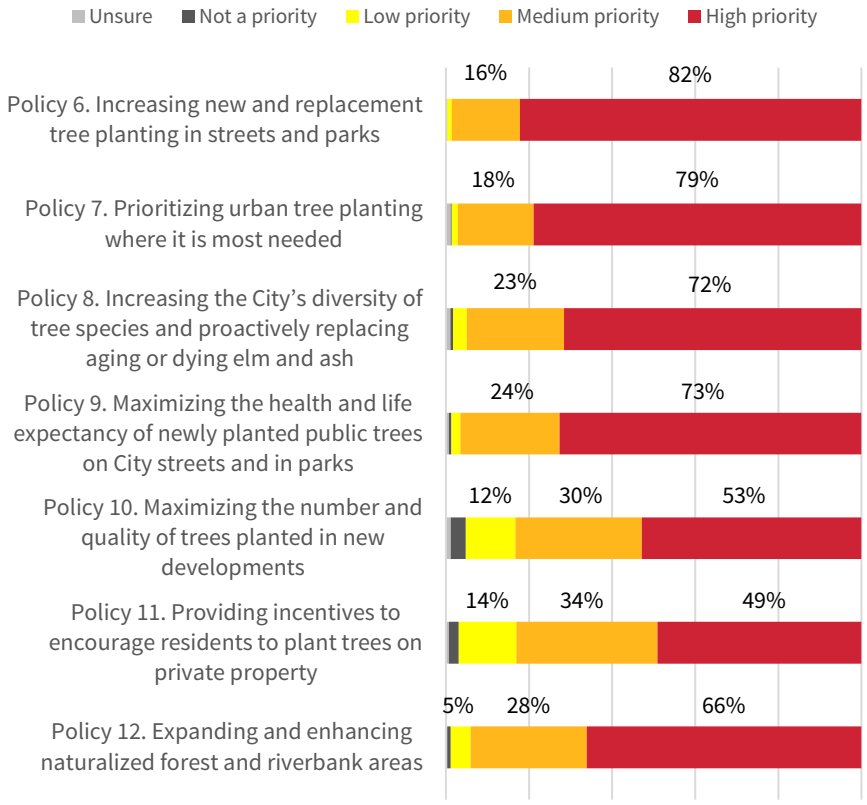
Section 2: Planting

Plant aims to strategically grow a robust and sustainable urban forest that will maximize benefits for human health and ecological function. Seven policies were presented in the draft strategy.

Prioritizing policies

When asked to prioritize policies relative to tree planting, most survey respondents ranked Policies 6, 7, 8, 9, 10, and 12 as high priorities, with the highest being Policy 6 (82%) and Policy 7 (79%). Participants in the workshop prioritized Policy 6, Policy 9, and Policy 12.

The lowest priority policy for survey respondents was Policy 11 (just 49% ranked it as a high priority).



Gaps and implementation challenges

During the workshop and open house, participants expressed concern about the 1:1 tree replacement target being inadequate to fill the backlog of planting sites and keep pace with potential losses. For tree planting on private land, stakeholders wanted to improve opportunities for renters interested in private tree planting who experience limitations from their property's owner/landlord. For tree planting on public land, stakeholders wanted to make the size of tree stock planted by the City more flexible, such as decreasing the size of stock to decrease costs and increase successful stock establishment.

Summary Table 3 - Key themes from public engagement for the urban forest planting

What we Heard	How it was considered
Survey respondents and workshop participants would most like to prioritize: • Increasing new and replacement tree planting in streets and parks (Policy 6) • Planting urban trees where they are most needed (Policy 7) Maximizing the health and life expectancy of newly planted public trees (Policy 9) • Expanding and enhancing naturalized forest and riverbank areas (Policy 12)	Actions 6A, 6B, 7A, 7C, 7D, and 9A were identified for short-term initiation.
Workshop participants were concerned that the 1:1 replacement target was insufficient to plant the backlog of vacant sites and compensate for the annual rate of tree loss on public land and wanted to increase the replacement ratio to 2:1.	The strategy was updated to clarify that the 1:1 target means every tree removed should be replaced going forward (i.e., no net loss of existing trees). That additional targets exist to plant out currently vacant sites (i.e., a net gain of trees) on public land. The fact sheet also communicates how the 1:1 replacement target and the planting site vacancy target work together to drive no net loss of existing trees and to fill the backlog of potential planting sites on public land. The strategy also now highlights the number of new trees that will need to be planted to achieve the proposed canopy cover target and replace the trees removed.

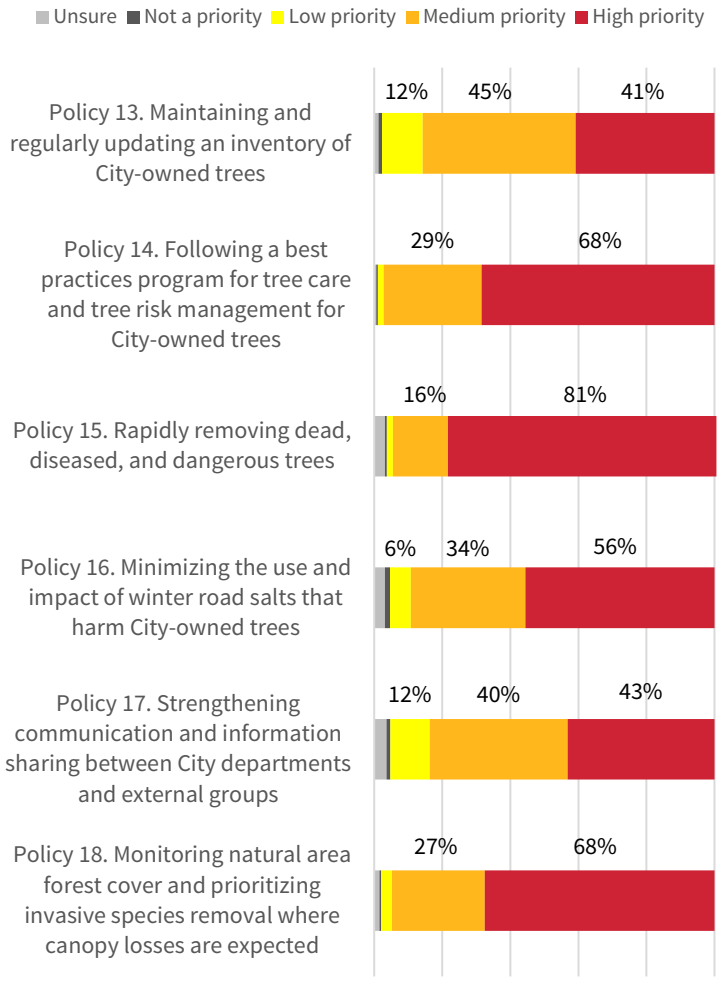
Section 3: Management

Manage aims to adapt tree management processes to improve tree health and public safety, respond to challenges and opportunities, and achieve planned service levels. Six associated policies were presented in the draft strategy.

Prioritizing policies

When asked to prioritize policies related to managing the urban forest, survey respondents prioritized Policy 15 (81% ranked it as a high priority) more highly than other policies. Policy 14 and Policy 18 were also relatively highly prioritized (68% ranked both policies as a high priority). In the workshop, stakeholders also identified Policy 15 as a top priority but also emphasized the importance of Policy 14 for pruning particularly, Policy 16 to reduce impacts from road salts, and Policy 18, particularly for the removal of buckthorn along the Seine River.

The lowest priority policies were Policy 13 (41% ranked it as a high priority and Policy 17 (43% ranked it as a high priority).



Gaps and implementation challenges

During the workshop, stakeholders identified gaps in policies and actions addressing developer practices that harm trees, suggesting more robust arborist report standards and more rewards and penalties for trees removed for development. Some participants mentioned observing damage to City trees from mowing and suggested that the City raise awareness of the issue and reallocate efforts from mowing to tree maintenance. Stakeholders also identified the lack of watering as a concern and emphasized the importance of young tree pruning. One stakeholder highlighted a preference for investing in the maintenance and protection of trees already in the landscape before investing in new trees.

Summary Table 4 - Key themes from public engagement about urban forest management

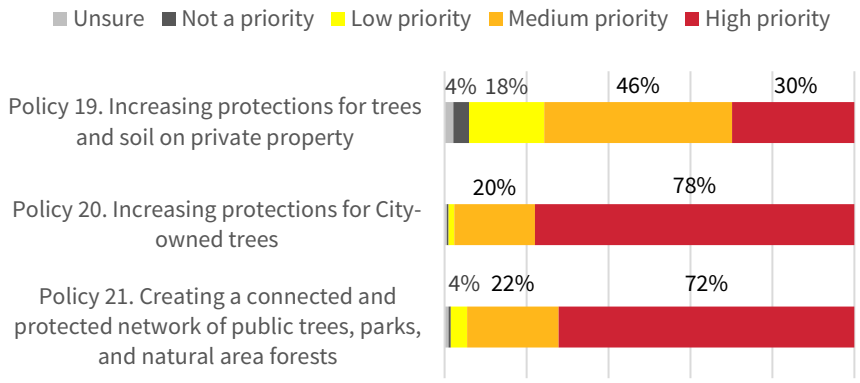
What we Heard	How it was considered
Survey respondents and workshop participants would most like to prioritize: • Rapidly removing dead, diseased, and dangerous trees (Policy 15) • Following a best practices program for tree care and risk management (Policy 14) • Monitoring natural area forest cover and prioritizing invasive species removal (Policy 18) • Minimizing the use and impact of winter road salts that harm City-owned trees (Policy 16)	Policies were all identified for short-term implementation.
Reduce tree harm caused by City activities such as mowing and infrastructure installation/renewal, and improve the education, resources, and enforcement that accompany private development.	Actions under policies 19 and 20 provide better approaches to protect trees during development and city-owned trees. Actions 19E/F/G were identified for short-term implementation.

Section 4: Protect

Protect aims to sustain Winnipeg's urban tree canopy, where it will maximize benefits for human health and ecological function. Three associated policies were presented in the draft strategy.

Prioritizing policies

When asked to prioritize policies related to tree protection, more respondents prioritized Policy 20 (78% ranked it as a high priority), followed by Policy 21 (72% ranked it as a high priority). During the workshop, stakeholders identified Policies 19 and 21 as top priorities for implementation.



The lowest prioritized policy was Policy 19 (only 30% of survey respondents identified it as a high priority).

Gaps and implementation challenges

During the workshop, stakeholders identified challenges with the impact of infill development projects on the tree canopy, including a lack of developer regulations and a need for more contractor accountability. They suggested that the Urban Forestry Branch should provide more detailed guidance to the Planning department on how to follow up on the implementation of arborist recommendations to avoid damage to trees. A key priority for many stakeholders and a recurring question from open house attendees related to a tree protection bylaw for private properties.

Summary Table 5 – Key themes from public engagement about urban forest protection

What we Heard	How it was considered
Survey respondents and stakeholders would most like to prioritize: • Increasing protections for City-owned trees (Policy 20) • Creating a connected and protected network of public trees, parks, and natural area forests (Policy 21) Stakeholders also prioritized: • Increasing protection of trees and soil on private property (Policy 19)	Actions under Policy 20 were already prioritized for shorter-term implementation. Actions under Policy 19 are dependent on implementation of Policy 2. Actions in Policy 21 are influenced by the approved Winnipeg Parks Strategy. Actions 21A/B were identified for short-term initiation to align with the Winnipeg Parks Strategy.
Improved guidance is required, and arborist recommendations for tree protection should be enforced.	Many of the actions set under Policy 19 are expected to contribute to resolving those issues.
The City should create an arborist position in the Planning Department to administer tree-related permit requirements.	Action 19D already recommends the creation of a development arborist position for that purpose.
Adopt a private tree protection bylaw with arborist reporting requirements and bonding for tree planting.	Action 19A already recommends that the City considers creating a private tree bylaw. The City's ability to do so depends on the province allowing it under the Winnipeg Charter.

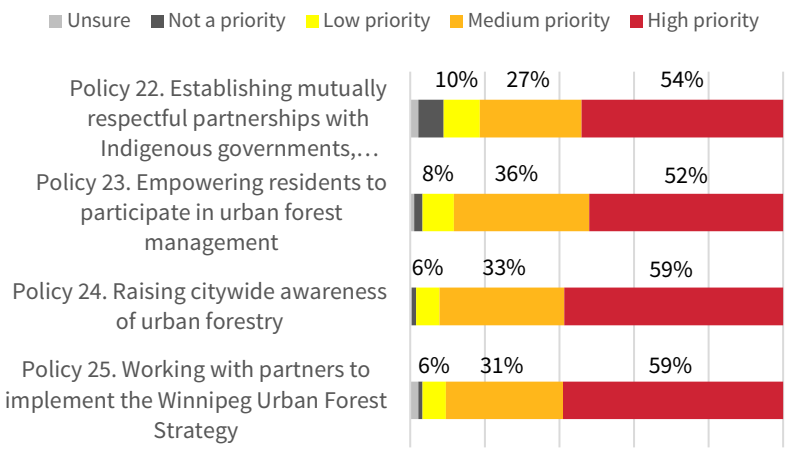
Section 5: Partner

Partner goal aims to build operational capacity and adaptability through reconciliation and stewardship. Four associated policies were presented in the draft strategy.

Prioritizing policies

When asked to prioritize policies related to partnering for urban forest management, respondents ranked all partnership policies similarly.

Stakeholder discussion during the workshop reflected all policies as a high priority, with a particular emphasis on Policy 23 and an interest in a citizen forester program to engage residents.



Gaps and implementation challenges

During the workshop, stakeholders suggested partnering with neighbourhood organizations to reach individuals and encourage their participation in urban forest stewardship. Stakeholders also suggested using existing organizations and networks to plant more trees. Open house attendees raised questions about incorporating Indigenous partnerships and perspectives into the strategy. Stakeholders noted the underrepresentation of participants from low canopy cover areas of the city. They highlighted the importance of working to create more interest and engagement in urban forestry in those areas.

Summary Table 6 - Key themes from public engagement about urban forest management

What we Heard	How it was considered
Survey respondents would most like to prioritize: • Establishing mutually respectful partnerships with Indigenous governments (Policy 22) • Empowering residents to participate in urban forest management (Policy 23) • Raising citywide awareness of urban forestry (Policy 24) • Working with partners to implement the strategy (Policy 25)	Actions under policy 22 are already identified for short-term implementation. Actions 23A, 23C, and all actions under Policy 24 and 25 will be changed to short-term implementation.
Update action 23A for a citizen forester program to also involve engagement with: • Individual homeowners for tree planting on city boulevards • Neighbourhood organizations	Action 23A was updated to include a reference to a citizen forester program engaging homeowners and neighbourhood groups.
Add an action to enable homeowners paying for the cost of planting a boulevard tree to plant it themselves according to city guidelines and with rapid approval from the City.	The City has a mechanism in place for homeowners to plant trees under an agreement with the City utilizing approved contractors in accordance with legal and risk management requirements.
Update action 23C to provide financial rebates to homeowners paying for the approved pruning of their boulevard tree.	The City explored this idea; however, it will not be pursuing financial rebates because it would divert resources away from reaching the pruning cycle target in the Winnipeg Urban Forest Strategy.

Next Steps

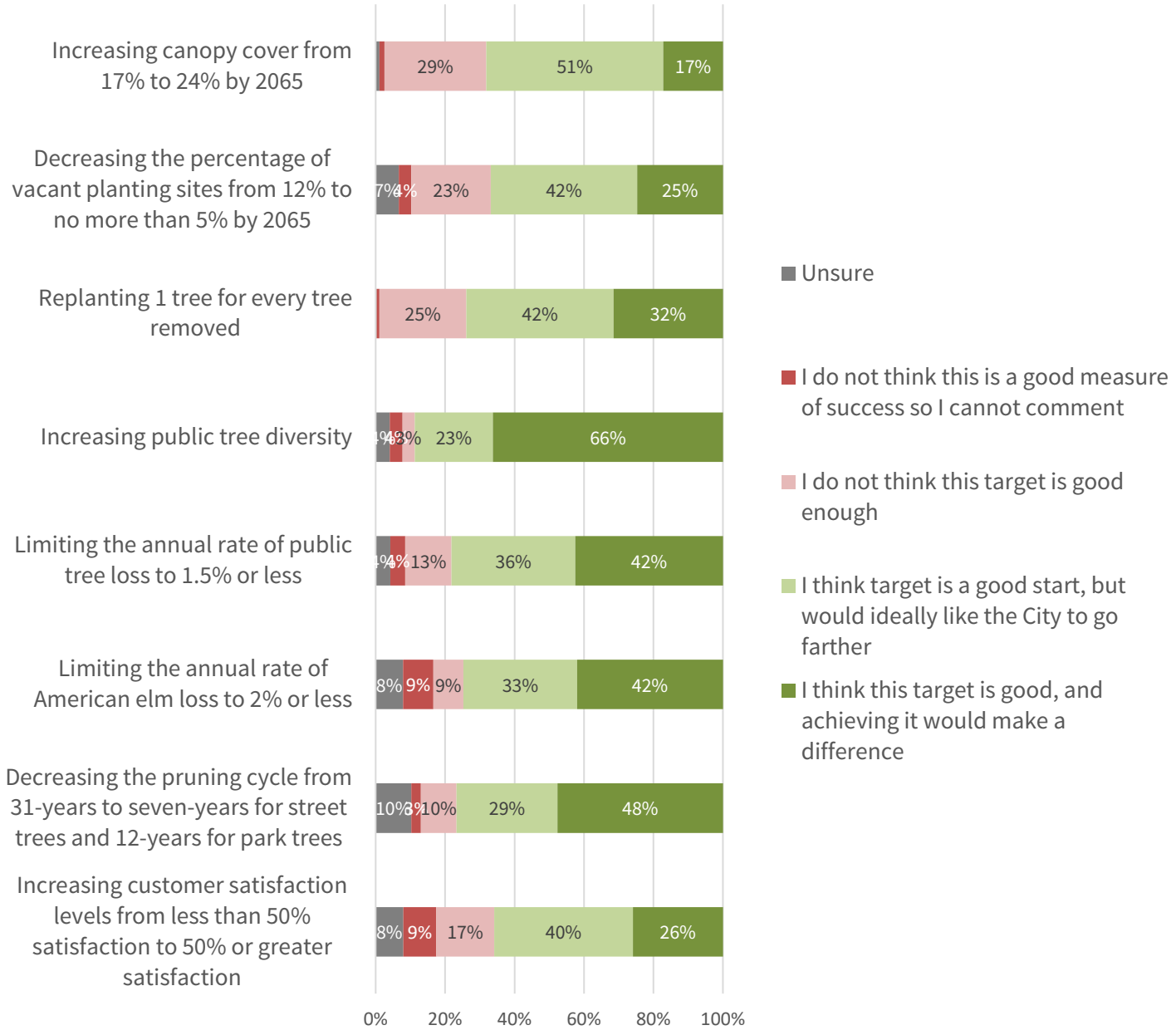
The findings from Phase 2 will be considered along with considerations for the availability of resources, alignment with other City projects, and staffing capacity as the project team finalizes the draft strategy. The revised draft strategy is expected to be presented to Council for its consideration in November 2022. Implementation of the Strategy is subject to Council approval.

Appendices

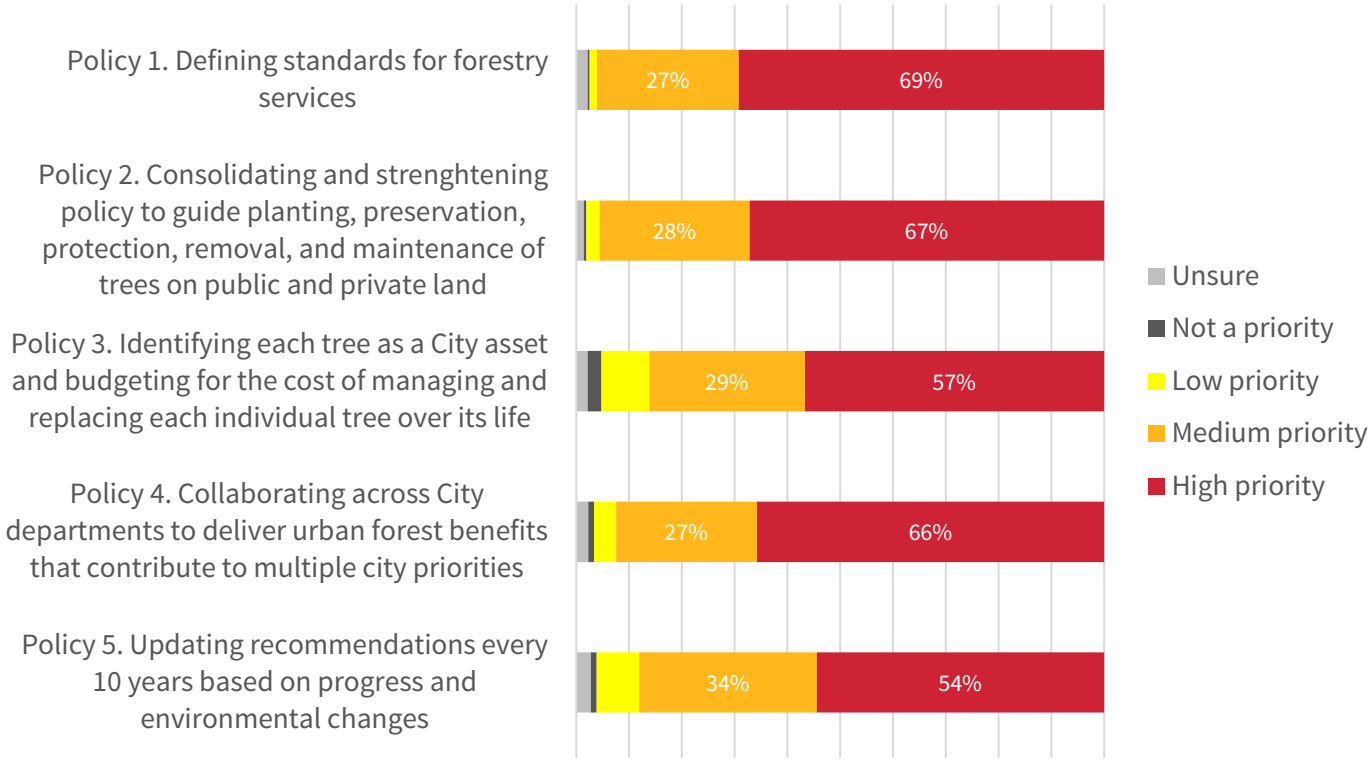
Appendix A – Survey results
Appendix B – Polls from open houses & workshop
Appendix C – Stakeholder workshop mural boards
Appendix D – Open Houses Q&A

Appendix A – Survey Results

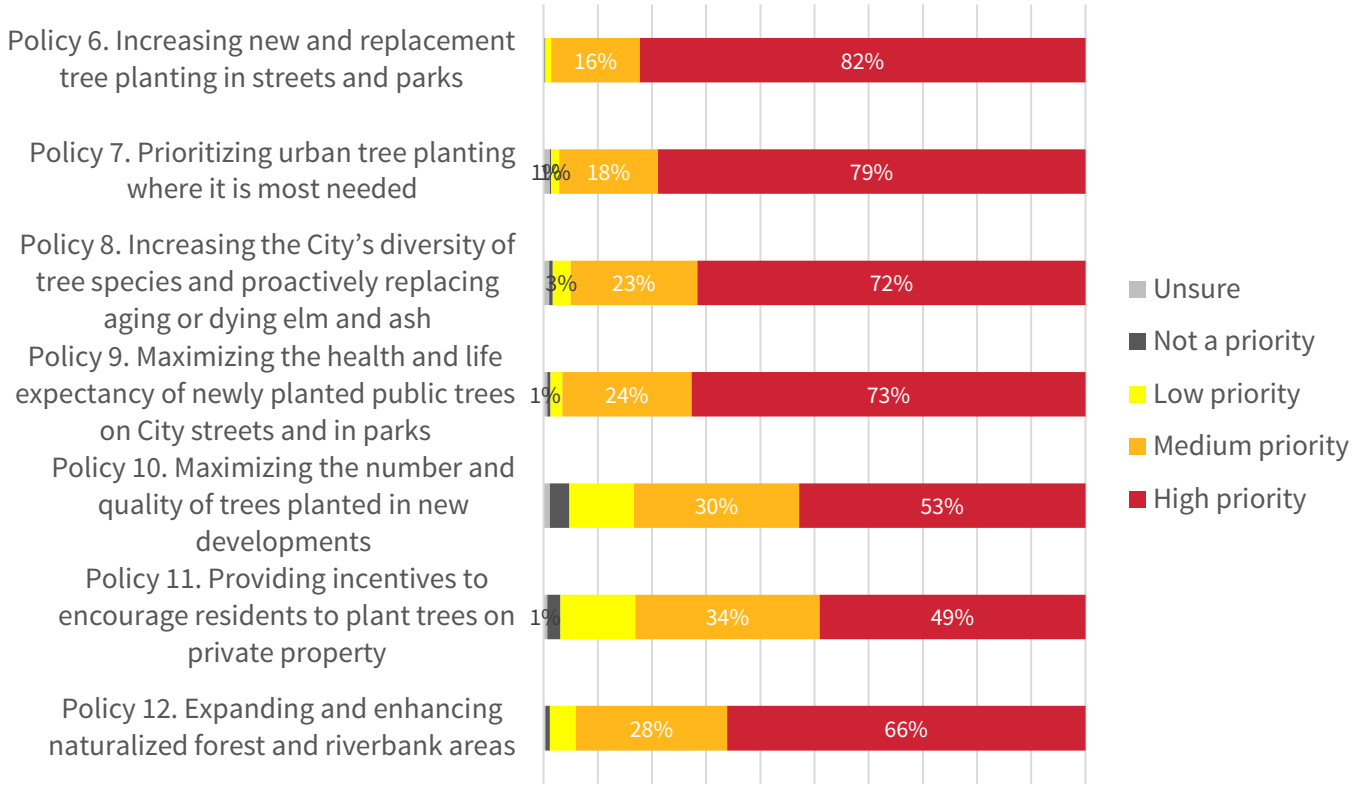
Please indicate how you feel about each target



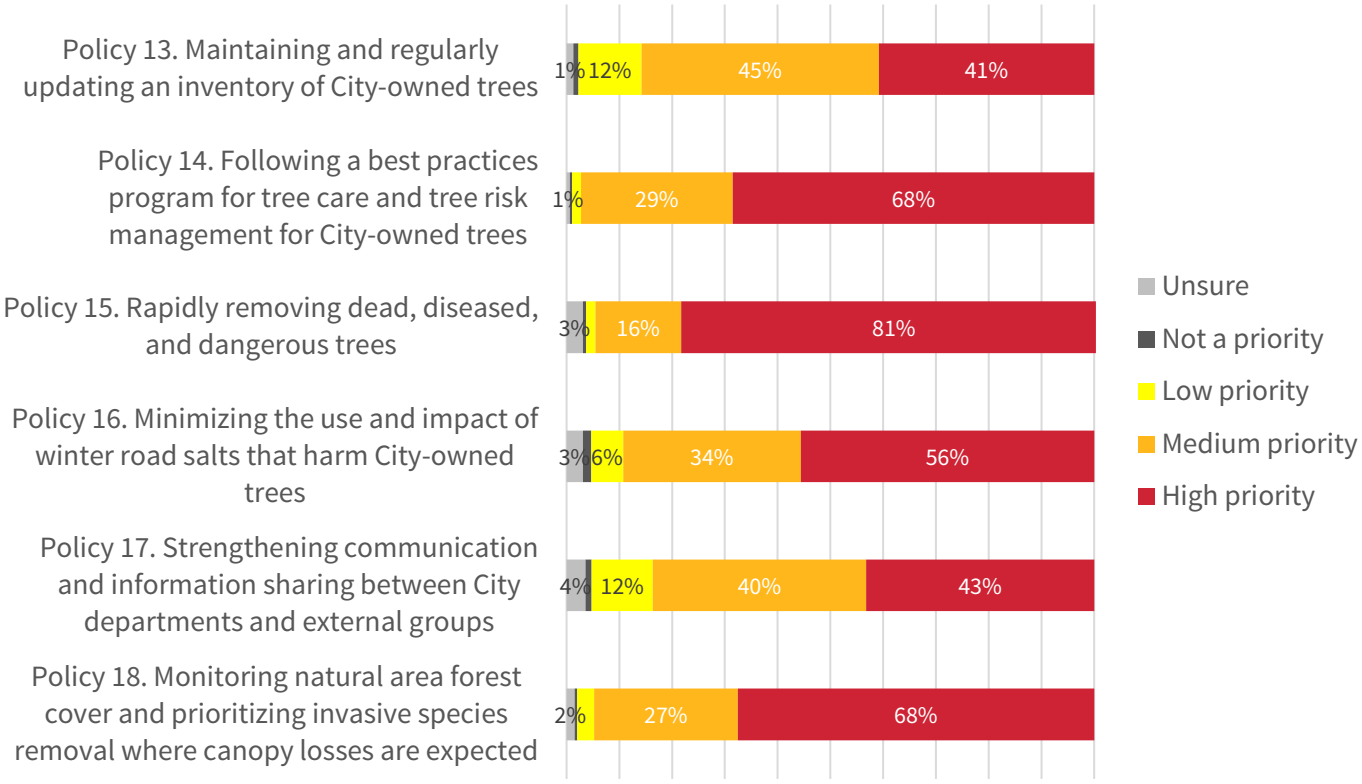
Please indicate how you would prioritize each of the following when thinking about setting policies for long-term planning



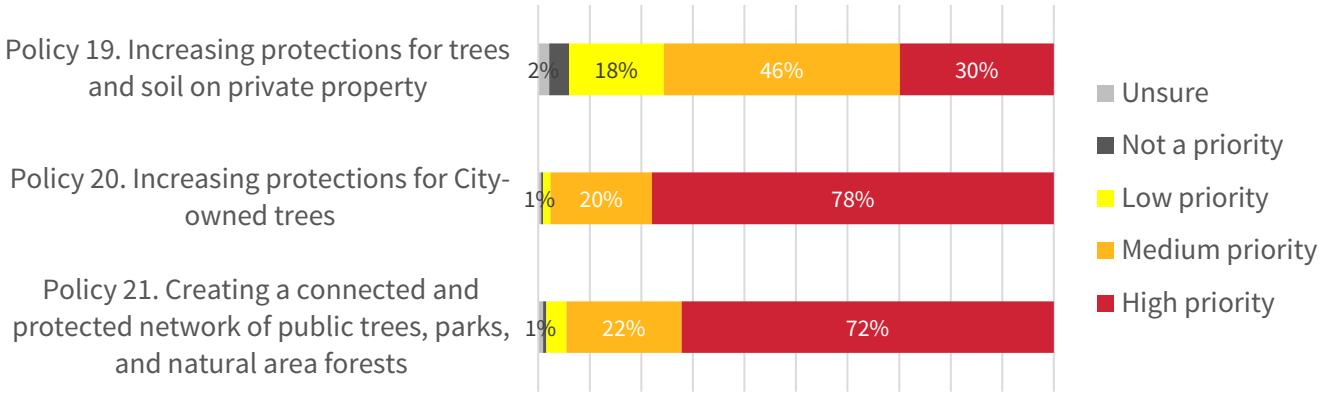
Please indicate how you would prioritize each of the following when thinking about setting policies to guide planting



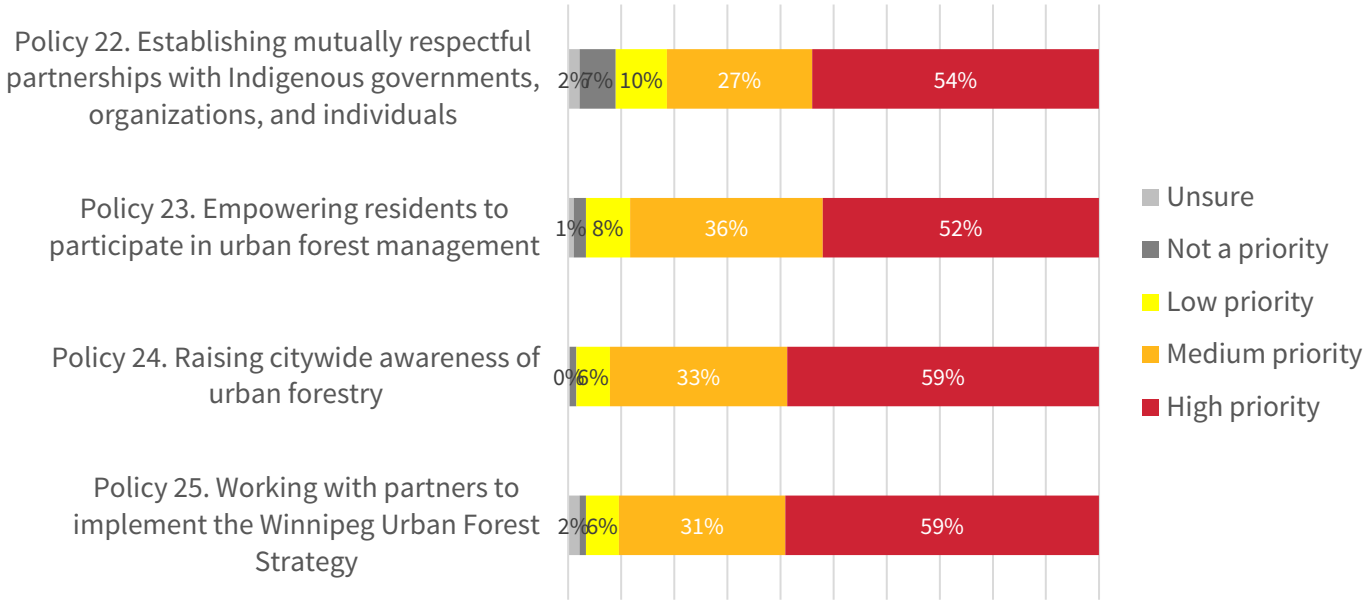
Please indicate how you would prioritize each of the following when thinking about setting policies to guide management



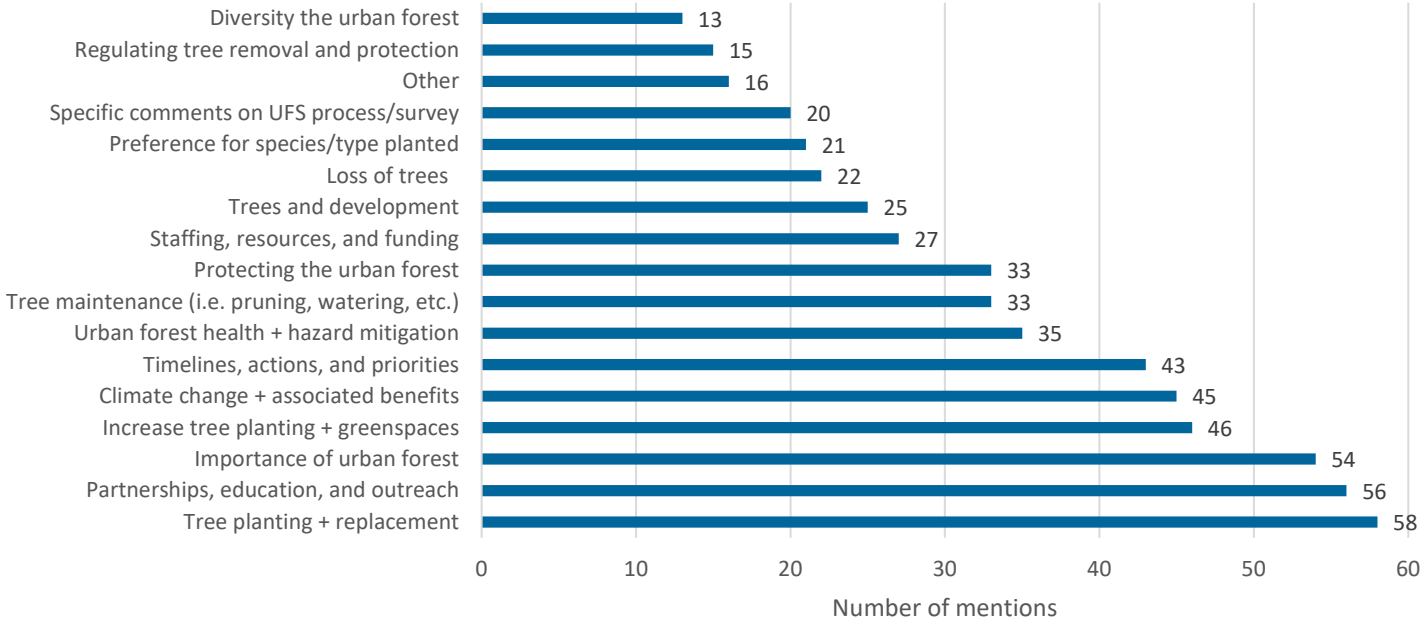
Please indicate how you would prioritize each of the following when thinking about setting policies to guide tree and natural stand protection



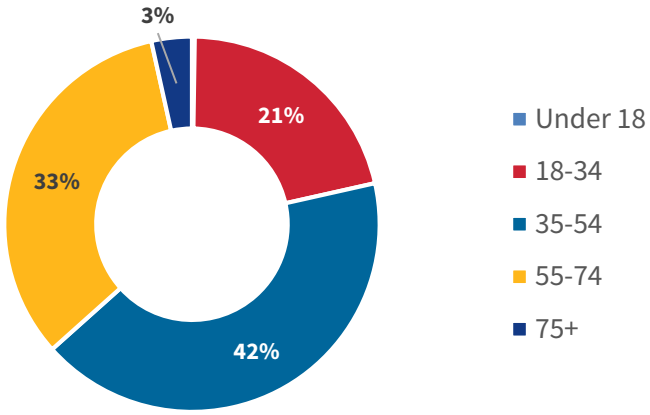
Please indicate how you would prioritize each of the following when thinking about setting policies to guide future partnerships



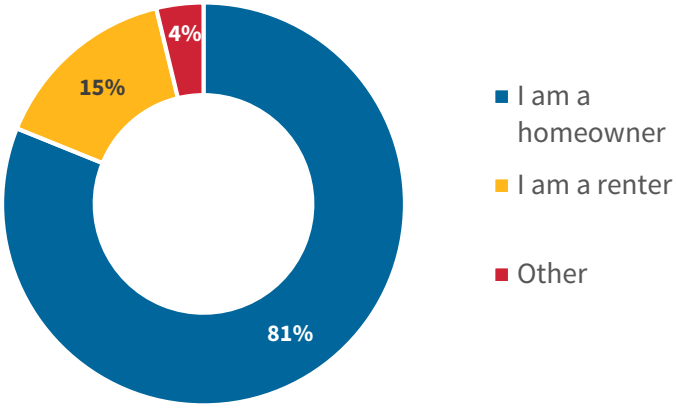
Is there anything else you would like to say about the draft Winnipeg Urban Forest Strategy and its implementation?



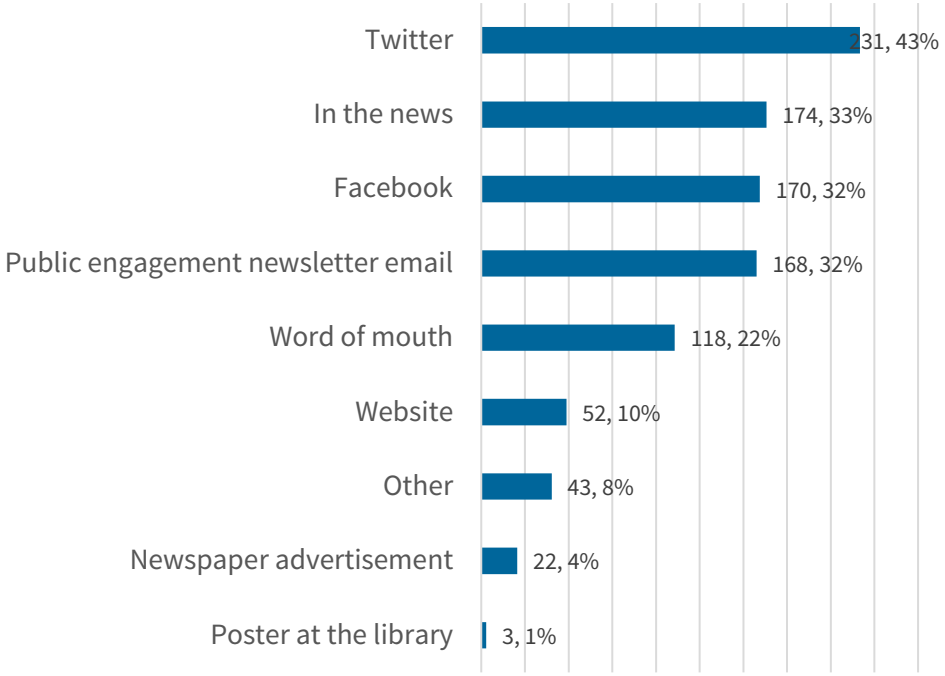
What is your age?



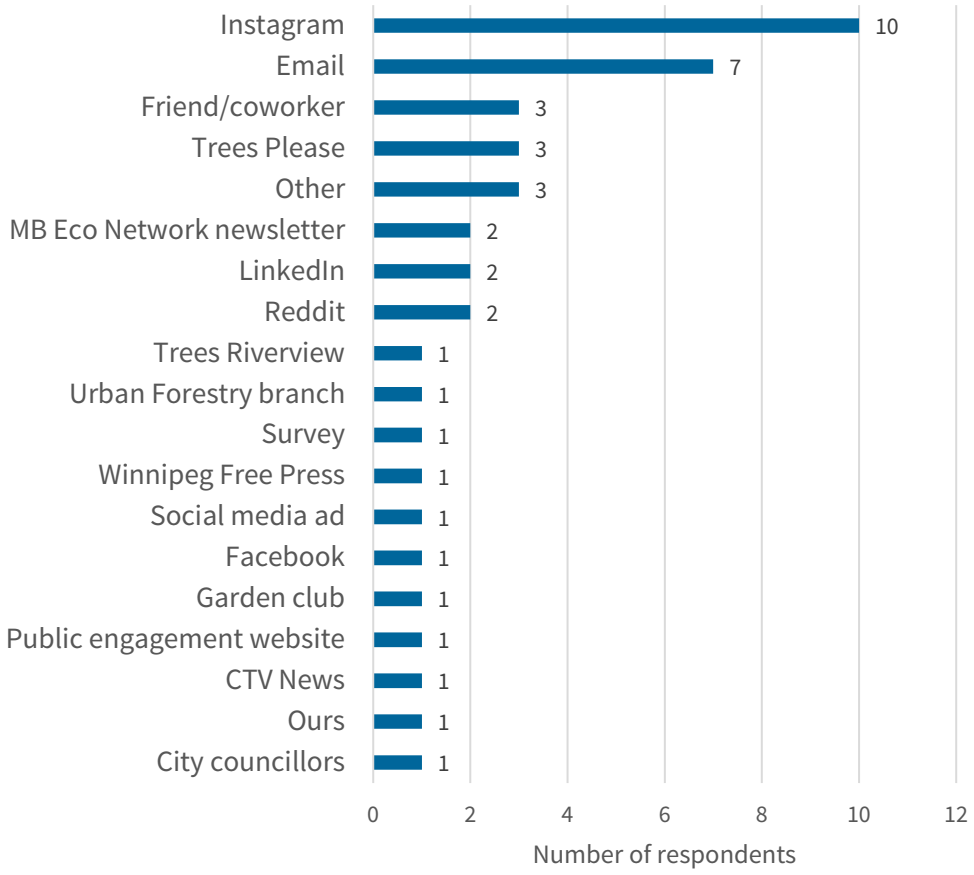
Are you a homeowner or do you rent?



How did you hear about this project?



Other responses included:



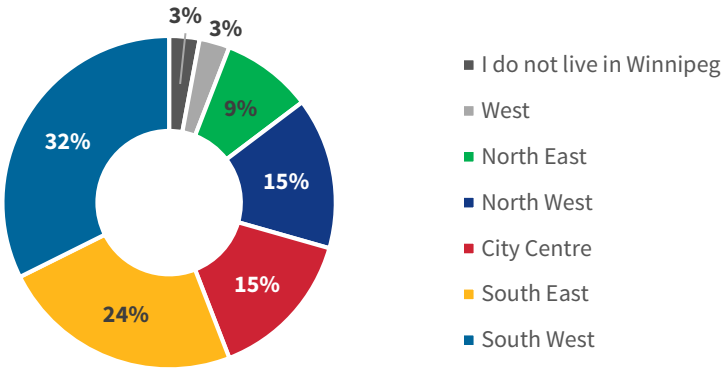
Appendix B – Polls from open houses & workshop

Open houses

Where do you live?

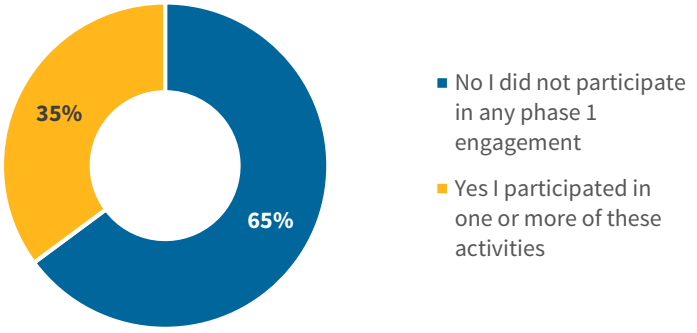
The most common answer is in the South West. The least common answers are West* and not residing in Winnipeg.

** Note: The 'west' option was accidentally excluded from the poll in open-house #1 and may therefore be under-represented in the result reported here.*



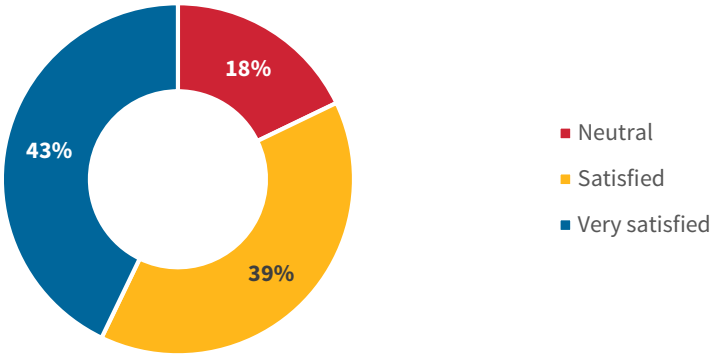
Did you participate in phase 1 engagement in the fall of 2020?

Most attendees did not participate in phase 1 engagement (65%).



How satisfied are you with tonight's open house?

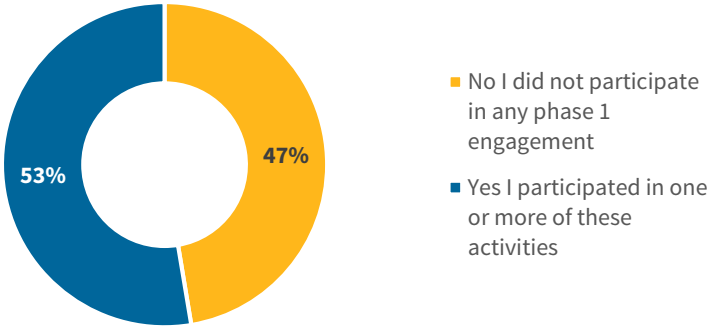
43% of respondents were very satisfied with the open house, followed by 39% satisfied.



Workshop

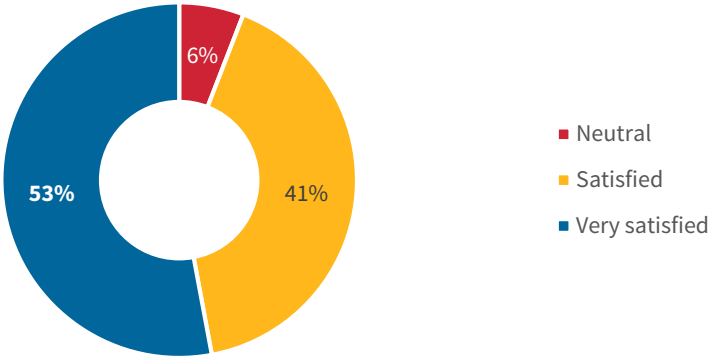
Did you participate in phase 1 engagement in the fall of 2020?

Just over half (53%) participated in one or more activities during Phase 1 of engagement.



How satisfied are you with tonight's event?

53% of attendees were very satisfied with the event, followed by 41% satisfied.



Appendix C – Stakeholder Workshop Mural Board Results

Names of organizations that workshop participants listed:

Brook McIlroy
Canadian Parks and Wilderness Society - Manitoba Chapter
Glenwood Neighborhood Association
Jeffries Nurseries Ltd.
KGS Groups
Manitoba Conservation and Climate
Manitoba Master Gardener Association
McGowan Russell Group
Provencher Blvd. BIZ
Province of Manitoba
Scatliff+Miller+Murray Inc.
Sustainability in Action Facility (Biosystems Engineering)
T&T Tree Service Ltd.
Trees Please Winnipeg
Trees Riverview
Trees Winnipeg
University of Manitoba
Urban Forestry/DED Operations, City of Winnipeg
West Broadway Community Organization

Warmup comments

Tree protection on private land!
Making it easier for residents associations and communities to help out more
Empower residents to participate
More trees need to be planted
Stacey's group noted the absence of people from neighbourhoods without canopy cover

Goal #1 - PLAN

Are there gaps or implementation challenges to consider?

No shortage of policies and actions! The strategy covers extensive ground -
Too much to implement - how do we emphasize the most important items for council to be aware of and implement?
Strategy seems complicated + target is longer than plan implementation
What would a canopy target look like over a 20-year timeline
Action 1C - Socially equitable delivery is great to see!
Connect strategy with zoning! Examples of greenspace development being impacted by zoning requirements. Can we require people implementing zoning to review the strategy? Connection between two documents would be empowering!
Boulevards trees + private trees adjacent to roadways - trees don't seem to win when there are competing priorities (e.g., utilities, sidewalks)

On many projects, unless a landscape architect fights for tree they get removed - how can we ensure that forestry advises on development plans?
Current issue with staffing capacity; allocating some of those tasks to forestry technicians to review plans at the moment
Council + voters - technical language; didn't speak to overall vision
Imagine what Winnipeg could be - all brought into vision
Action items - consider proposed impact of action item = larger financial impact and timeline
How to we prioritize actions?
More ambitious targets
Make bolder leaps in a shorter timeframe
Emphasize sense of urgency
Trees became recognized more and more
Inadequate funding
Key plan - very important and where is funding
Operating to infrastructure budget
Secure funding from other levels of government
Recognize UF as asset = funding sources
i-Tree useful tool to relay to Council
Bringing more from background report into the UFS
Would like to see the list of must do drop dead actions at the top of the strategy - clear priority of the list of things that are essential
Wildwood - active community planting. Wildlife are eating young trees. Are there strategies on how to manage wildlife to prevent browse damage? Too many deer.
Targets 2065 - would like to know what we are trying to achieve in 5, 10 years - it's too far out to ensure that actions are taken in the near term
Too easy to push it back
1:1 sounds okay but if you tell the city they can budget 1:1 then it won't work - backlog plus
Want to make sure it's clear that 1:1 is not the only budgeted planting commitment

What are the top priorities or actions for implementation?

Action 2B Winnipeg charter is a top priority; policy 19 = top priority but needs to be enabled under 2B
Increase canopy cover by retaining trees! Do other provinces allow for fines if removals take place on private land? Would be helpful
Policy analysis #1 gap given most canopy occurs on private land means action 2B and all related points should be prioritized
Council-adopted targets + levels of service would help, along with a consolidated policy for tree criteria
Prioritize things already happening - meeting levels of service that are reported on regularly + brings accountability with regular updates
Other priorities will require more work to do the tracking
How will the strategy update actions over time? Conditions will change over the next 20 years
Collaborating with City departments - West Broadway tree loss - de-icer by public works
Implementation - any provision to protect those trees?
Could alleviate - make info easier to locate
Trees planted on Balmoral
Housing plan process similar - many departments involved
Insuring message is clear - tree work won't interfere with other City priorities
Impression when talking to City Councillors

Tree bylaw is collaborative work
Identifying trees as city assets
Collaborate across departments
Need to spell out that tree bylaw would apply to trees on private land - and potentially any tree
Winnipeg puts boards on trees for tree protection - would like to see dripline protected
Arborists make plans with recommendations for tree protection - then the developers just do what they choose. Needs more follow up to actually ensure tree protection plans are followed through on
Recommendation that the arborist reports be done before the project is approved - Development Arborist
More outreach is needed to private landowners and industry in order to get them on board to increase canopy cover
Or even to maintain 17%!
Need to get people on-side to help advocate to get tree protection guidelines/bylaws in place

Goal #2 - PLANT

Are there gaps or implementation challenges to consider?

Education: drive awareness + encourage involvement at all levels from gov to community
Inform people on importance of collaboration
Underground structure review - consultants would like feedback from City about tree considerations - one place to access all of the tree information!
Community, consultants, architect, etc.
Make it a workable, simple approach that encourage people to use the system
New infill residents often remove mature trees before realizing it was a part of why they liked the area + moved in - more education needed
How can you have 1:1 replacement and catch up with the 1.5% loss?
Unclear when reviewing the report: doesn't come across clearly that all trees will be replaced
It is a 1:1 replacement of trees but not a 1:1 replacement of canopy (new trees will be smaller!)
In addition to 1:1 replacement, will need to plant >750,000 new tree plantings to achieve the target
Tree replacement - new tree isn't the same as a mature tree
Suggested wording update: "1:1 replacement to match the 1.5% loss"
Is replacement in the same area? Clarify the objective to replace in the same community!
Be bolder in 1:1 ratio - won't meet the replacement desired
Clarify the replacement ratio vs. vacancy planting
Survivorship isn't 100%
Equitable planting opportunities - tree planting on public/private spaces
Example: North End baldspots - high poverty
92-93% West Broadway Residents are renters
Residents would like to see more trees planted
Communicating with landlords/owners - provisions/grants available?
Elementary school - tree growing and planting; City policy - planting on vacant land
Risk in thinking with wins and losses; start
Marion Street and Archibald example of vacant land for planting
Partnerships are critical - group partnerships for planting
Example - friends of peanut park
Schools - Million Trees (15 schools)
Broaden flexibility on the size of trees planted (smaller to larger stock) - cheaper, easier to establish
Has there been consideration of a >1:1 replacement ratio - especially for development

Planning tools - green plan (example from Germany). Required along side the development plan that homeowner has to plant per m2
Smaller stock catches up
Bare root trees - testing planting in parks
Education - trees don't harm, not nuicance
In streets, snow drift is a challenge for smaller stock being planted
Some trials with smaller stock are being undertaken in parks

What are the top priorities or actions for implementation?

Priority #1 = policy 6 - required to achieve much of the other actions! Also the most expensive
Policy 12 - solid idea! University class worked to identify areas ripe for reforestation. Included Sturgeon creek in west Winnipeg
Many riverbeds offer good soil moisture and less human disturbance - seems like a good priority for native trees to be successful and to increase canopy cover
Planting is a long-term project. Needs private tree regulations to support planting too! Carrots and sticks
Maximize health and life expectancy of trees
Establishing partnerships
Collaborating across departments
Replacement has been lacking - years behind in terms of replacement
Fundraising partnership goal to replant the boulevard - hoping that the City will partner

Goal #2 – MANAGE

Are there gaps or implementation challenges to consider?

Bunns creek park fallen tree issues have been resolved quickly where kids played, but some stands have lots of dead trees, but no one has removed them even if marked as yellow dot
Grand bur oak trees in surroundings may be damaged by spreading disease
Take care of the trees that we have!
Developer practices that harm trees are an issue - many small developers that don't know how to protect a tree!
Arborist reports should specify WHAT needs to be done to protect trees being retained AND follow-up on measures being implemented
Could the City certify arborists + report standards to ensure quality and follow-up?
Tree protection specifications have been created by City and being added to City specs guide
Include a mix of rewards and fines for developers that don't follow requirements
Tree inventory - Is this a snapshot to update?
Pruning cycle - suprised to see the cycle increase so fast
City staff damaging bark of tree when mowing grass = tree mortality
Solution? Education + shift in priority
Raising awareness of leaving spaces unmaintained
more awareness around the importance of naturalized spaces that aren't manicured grass might also help with that
Portable guard?
Why is the pruning cycle longer for park trees?
Young tree pruning cycle critical - emphasize
Street trees tend to require more frequent maintenance, dieback

Shift in how we manage and maintain urban nature - reallocate efforts from mowing to tree maintenance
Larger scale - how we grade, prepare soil, landscape - being mindful of passive irrigation, soil, biodiversity. More ecological aesthetics
Try to get people to naturalize their lawns and boulevards - also improves tree health
Many trees lost due to lack of watering - does the City monitor them? Contractors not following through on their obligations to maintain trees
Understory - do we put too much energy in mowing the lawn rather than letting it grow
Cost savings, moisture conservation
Purchase parking lots downtown and reforest

What are the top priorities or actions for implementation?

Policy 18 buckthorn is a priority for removal for Save our seine
Tree pruning
Minimize the use and impact of maintenance practices that harm trees
Clarify in UFS perhaps, this is an average cycle; ideal to visit for young trees more
Young tree pruning - prevent defects that are a fatal flaw down the road
Encouraging property owners to be caring for trees on boulevards
Programs to enable property owners to participate - adopt a tree example to prevent young tree mortality
Bylaws are top priority - won't reach 24% without those bylaws in place and enforcement!
Beyond 59 - was a huge oak forest cleared and nothing was done in terms of development. Why was it able to be cleared? 3-4 acres of pristine oak forest.
Interdepartmental collaboration - roads, sewers etc. so that the City isn't damaging its own trees
St Mary's interchange example - thousands of trees lost. 15 acres of trees

Goal #4 - PROTECT

Are there gaps or implementation challenges to consider?

Infill variance process used for pressure to keep pervious surfaces - programs with development + planning to increase permeable ground would benefit trees + rivers
Lack of tree regulations: Developers are cutting trees before applying for permits
Infill projects: doubling building footprints = less room for trees
Difficult to get committment for tree protection action + recommendations from arborists
Issues: excessive roots pruning, stockpiling on critical root zone, etc.
Stormwater: less soil moisture + more flash runoff into rivers - need new codes + regulations to address
Could forestry provide enough guidance for planning to better implement tree measures?
City + private trees - 8 mature trees killed from operator
= need for education on training of excavators
https://www.ccscheme.org.uk/
Change the culture around protecting trees, on both public and private land
More beyond bylaw for training of contractors = accountability
Work on both; establish the culture that protecting trees is important, regardless of where they are
Bylaw for tree protection
Clearcutting on private land.....
Definitely work on changes to the City charter, but meanwhile look for workarounds; like the Considerate Constructor scheme, for example
Stronger language on climate change and connection to sustainable development goals

Wish that there were people from other City departments in this workshop to hear these issues
Can this type of workshop be done with staff, Council?
Increase budgeting for treatments to maintain those mature elms and ash - lengthen life expectancy of more large trees
1 year warranty period inadequate for new trees - longer warranty period, especially for retained trees

What are the top priorities or actions for implementation?

Policy 21 - reference to green infrastructure, ecologically significant areas + proactive park areas
21d is key for tree protection in natural areas
21.f. Like the idea of a conservation fund. Priority to get funding for all those actions - this might be a good solution!
Make it easy for people to do the right thing!
Partnership priority is collaborating with departments etc. and community groups. Adding equity language to some actions like 25b make sure actions don't make equity gaps larger action 23c 25d etc
Private tree bylaw
Convincing the city to do what they need to do to change the Charter - to enable tree bylaw
Root protection - boards inadequate
Developers ignoring setbacks and construction is extending to sidewalk - trees in front of new developments are dying
Both developers and City - all types of infrastructure construction
Development can do well - soil cells and passive irrigation, stormwater interception. People will get excited about it. Selkirk model.
Development needs requirements with ramifications for not following through
Education regarding improved unit sales/interest with green developments
Create incentives for greening new areas with point system - requirement and incentive.
Incentives for retention to make sure they do it properly - saving trees better than trying to replace them for many reasons
Consider impact timeframe - whether proof of life 5 years later would ensure better outcomes

Goal #5 - PARTNER

Are there gaps or implementation challenges to consider?

Harness people who care about their trees + reward it!
Tree pruning - people want to help as a homeowner: could residents get $50 to prune a tree to help free up city resources?
Less exciting to participate if you can't do things yourself and have to pay out of pocket
Can plant a tree at Costco for $100 but boulevard tree costs $800 - hard for people to comprehend!
Glenwood neighbourhood association occupied with infill, but lots of interest from residents to assist with planting
Neighbourhood associations + residents could greatly help with planting and/or watering
Could save the city time and money!
Grant to help homeowners pay for their tree maintenance alongside education would be helpful!
People want to help collectively as a neighbourhood organization, but also individually. In the 'partner' area, we need to harnes this
"Tree stewards"!
Elementary school - tree growing and planting; City policy - planting on vacant land

Marion Street and Archibald example of vacant land for planting
Risk in thinking with wins and losses; start
Using existing networks
Community centres - good place to establish a starting point
Partnerships are critical - group partnerships for planting
Example: Wolseley - Tree Coalition to form an across - Winnipeg coalition
Schools - Million Trees (15 schools)
Green team for watering - option for expanding
Equipment for groups to borrow - lending library
Example - watering trees
Bring the exciting vision to the forefront of the plan that the public will get excited about - succession plan, cool streets, clearly tell Council the price they pay if they don't act
People don't understand the urgency if EAB establishes - elm loss has been slower, and people expect it to be the same
Stronger vision statement - clear alarm rung about what we stand to lose if we don't take these actions now
Should be citizens rather than customers - we're all part of our urban environment
If people don't know that they need to contribute to then 24% then they will never meet that
Partnership for Provancher Blvd - fundraising plus seeking City partnership
Hotline for residents to call in for issues about trees

What are the top priorities or actions for implementation?

23.a City forester to work with individual residents would be helpful!
Outreach strategy
Policy + set of guidelines
The city is great to work with when a partnership is established; hard to establish a partnership.
Need buy in - need to have a plan to raise awareness
Need to bring in partners for funding and other capacity - pursuing private funding
We need people represented from un-treed parts of the City
That's where the Million Trees Challenge wants to see focus

Appendix D – Open-houses Q&A session

Session 1

- Will there be bylaws to govern tree destruction during infill Projects. With real enforcement and sanctions for developers
- There have been many, many trees planted recently, and from my unscientific eye, at least 40% have died. Seemingly from lack of maintenance. It is sad to see. Is there a plan to properly water and maintain young, newly planted trees? - In Wolseley south of Pollar (?) park, also north along the bike lane
- Fantastic to see tree people. Is there a Councillor currently writing bylaw or sponsoring? Who can we get in touch with?
- I applaud the hard work done on this report, but the targets need more urgency and shorter timeline like 20 yrs not 40
- 1:1 replacement is woefully inadequate. Timeline is too long.
- There is a recent Stats Canada Green Space report that said Winnipeg is experiencing the second highest loss of green space in Canada, and they noted the loss of trees in Winnipeg is a huge part of this loss. How does this square with some of the findings in your report? It sounds like Winnipeg has more tree cover than Edmonton, for example but according to Stats Canada that's not true.
- Is the 25% cover to be achieved in 2065 apply to both city and publicly owned area or is it just city owned? Why does it take 43 years to get there?
- And don't we need to vastly increase our tree cover in order to be resilient in the face of Climate Change?
- Other cities have much tighter timeframes associated with their urban canopy targets - why is it taking forty years to increase our tree canopy by 7%?
- When I call the city about tree replacement, they seem to think trees are being replaced. We have lost hundreds of mature trees in Wolseley, and there have only been a handful of new plantings. Many have died. This is really sad, and certainly doesn't bode well for urban forests in the future.
- In new housing development areas, the is limited space in the construction of housing for tree development. Why is there no consideration in the planning stage? Occupancy verses green space.
- Could we have a tree hotline or special 311 line for reporting trees in need of water or other help?
- we had 3 new boulevard trees planted to replace the 10 lost. 2 of those trees lived. I was happy to see the city actually came by and watered the new plantings, but it was done from a truck with a big gush of water that didn't penetrate well. will you consider the use of the water bags attached to the base of the tree to ensure effective watering?
- Is it possible to involve local residents to help with tree maintenance?
- Can you produce a short, plain language report with infographics for the general public?
- Is there consideration for a cost share of new trees planted on private property? If I was to plant new trees on my property, is there consideration that I could pay a 50:50 (property owner: city) on pruning and tree care on a set cycle through private contracting through tenders?
- Will you also have a financial plan go to council to make sure there is money to do this?
- Does the annual mortality forecasts account for EAB?
- I have seen many cities require planting of trees, shrubs and bushes around commercial buildings and parking areas. It looks great, and significantly cools the areas. We don't seem to have any of these requirements and have acres of asphalt with no growth and trees. Shouldn't this be part of our plan?
- The fact we're losing big old trees, and seem to be poorly planting new trees, the 1:1 replacement is totally inadequate in terms of tree canopy growth. As well, it's the older (sometimes lower-income) areas losing big trees, and suburban growth getting new little trees and it skews the City-wide figures.

- I just joined so I may have missed this. In some of our forested areas, there are still a lot of downed trees from the storm of 2020. When will these be removed?
- Why can the city still take money from developers instead of insisting on 13% green space and trees in new developments?
- Please post address where we can post our concerns about tree planting such as not watering or sitting unplanted for weeks.
- Along the Assiniboine riverbank, in front of Cornish Library @ Armstrong's point there is a cluster of trees planted. Do I have the City to thank for that? I would say our riverbanks e.g. Forks Riverwalk, needs more trees planted to succession plan.
- I am concerned that CofW parks workers are careless using their weed whackers around trees. They cut into the bark at ground level with the weedwackers (line trimmers). Would it be possible to discontinue trimming within 12" of the tree base?
- replanting doesn't equal 1-1replacement - what about the backlog of 14500 trees identified in the report?
- Is there consideration for having bylaws to govern mature trees on private properties? Other cities have this.
- Too many of the items in the DRAFT Strategy talk about "explore" or "consider", when it needs to be IMPLEMENT.
- In the planning, how does the plan ensure there is growers to provide the required trees and engaging them longer term? Right now the city relies on what's available and doesn't necessarily plan based on future planning but contractor/designer "ideas" at the time. Are there tendering projects to ensure long term supply?
- Not including the EAB impacts again means the Strategy is too little, too slow - action to increase number and variety of trees will be good even if EAB doesn't arrive. So, the proposed planting scenario is even more inadequate. it all means Forestry needs more money.
- Where can we offer feedback to be most effective? Thanks for your work and recommendations to the city!
- When a yellow notice goes up for an infill can it include what trees the developer must retain so the public can monitor this? A project on Jubilee was supposed to save 4 Trees but the developer polled them all down. There seems to be no consequence or recourse for the public ….
- Is any branch of the City involved in trying to get federal funds to establish a national urban park within Winnipeg?
- Municipal nursery!!
- There was mention in the presentation about working with other city departments on the urban forest strategy. Has there been any movement on working with Public Works on changing how they're de-icing the roads? This has been cited as a reason to not replace trees on bigger streets like Sherbrook and Broadway. Apparently, the current de-icer kills young trees. Any information on this would be welcome.
- Yes...the City used to have its own nursery - as did the Province, I think
- Yes to municipal nursery!!!
- Please keep up the good work we are passionate about our trees!

Session 2

- Regarding the 1-1 replanting target. I am so glad to hear that there are plans for improving the standard of care for young trees. But what exactly is the plan to address the 14,500 public tree replacement backlog? I do understand that not every one of those now-vacant sites are still suitable, but there must still be thousands of sites. Is there a separate planting program proposed to eliminate this backlog?
- Live in West End, very concerned about tree loss in neighbourhoods; disportionately effected. Things identified in opportunities and challenges speak directly, climate change, equity. I don't see anything specific or vaguelly that ID's

that in terms of all of the policy statements that were articulated. Where do I find in the plan? Where does the issue of equity be addressed in plan?

- Question on taking down trees; wasting financial resources and money on taking down trees. 20 trees removed and in 30 days; most could have been taken down in one day. Can you address finances of how it is working?
- I lived in Saskatoon for many years, and they have a strong emphasis on elm pruning bans on private land and elm wood storage bans. I am not aware of a similar program in Winnipeg, and I did not see that in this planning document. Was this intentional? Did I miss it? If it was left out of the plan, how come? Thank you!
- I have to leave but appreciate all efforts to preserve and increase tree cover. I've been impacted by the city changing its zoning so as to allow commercial/condo development and thereby destroy old growth healthy trees in the process. Will the city move towards compelling corporations to design densification projects AROUND trees rather than killing these relatives? I would support a moratorium on destroying any healthy trees, all further development respects their lives as we do our own.
- Amelia mentioned that the tree cover canopy goal of 24% by 2065 was ambitious. Do you think a 40-year goal is ambitious? Other cities have far more ambitious targets. eg. Vancouver is 30% by 2050, and Montreal is 25% by 2025.
- Biodiversity - not much in plan, talked about 2007 report on Naturalized Area; lack of info on trees that bring most biodiverstiy, how many insects or birds. Will this be remedied in the revised plan?
- So resources that would serve other needs in our constituency will not be met because our city councillor is forced to subsidize replacement.
- Will the plan be revised to include more current info regarding other cities targets? The current references give a distorted view of our goals vis-à-vis other cities.
- And there need to be mechanisms and consequences to not following through on planting requirements in new construction.
- Is there a timeline for a tree by-law to be passed? I estimate that over a 1000 tree have been cut in the Corydon Osborne areas ove the past 12 years and they can never be replaced.
- I appreciate the city's intention to incorporate indigenous perspectives and reconciliation in this document. What could that look like? What actions would the city do to meaningfully engage in this?
- As a follow up, have any Indigenous partners commented on the strategy to date?
- To the bylaw, I think developers are laughing because they can get away with alot. Jubilee property, multiplex, don't know all details but city said they would plant or retain trees, but they were all bulldozede down. No teeth to any of this - we are the fools. Devil is in the details - high level report. Tree bylaw is huge. Was there any mention for any incentives for private property? I think most of our trees are located on private property - is that correct?
- Trees Winnipeg ReLeaf program was designed to be accessible to low-income citizens without private vehicles.