Green Infrastructure Strategy

BASELINE INVENTORY REPORT

City of Saskatoon

FOREWORD

Saskatoon is a beautiful city, well-known for its scenic river valley and an abundance of natural beauty. We have sprawling parks throughout all of our neighbourhoods, sports fields where friends and families gather, and an urban forest that it highly valued by citizens.

Green spaces in Saskatoon help bring people together, increase quality of life, save infrastructure expenditures, and allows us to have a better balance in our relationship with our natural environment.

Our natural habitat and ecosystems are vital for our community and they cannot be taken for granted. A comprehensive strategy allows the City of Saskatoon to grow more sustainably, to improve access to green spaces, to both mitigate and adapt to a changing climate, and to ensure that our green spaces are able to thrive in the years and generations to come.

As Saskatoon continues to grow and change, it is important to ensure that our city can be sustainable and maintain a strong and biodiverse green infrastructure. Citizens and visitors alike have certainly come to view this natural beauty as one of the defining characteristics of our city.

Charlie Clark
Mayor

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Maintaining a healthy, sustainable city requires that we consider the ways in which we interact with our natural environment and manage our impacts appropriately.

Photo credit: 2017 Tourism Saskatoon/Greg Huszar Photography

GREEN INFRASTRUCTURE STRATEGY

Cities today are areas of high population density with relatively large environmental footprints. In the future, cities have opportunities to develop in ways that work with nature, meeting the needs of the community, and nurturing relationships between people and nature that increase eco-literacy and quality of life. Green Infrastructure is a term used to define both a network (systems) and an asset management approach to managing the City of Saskatoon's open spaces. Open spaces within an urban land use context provide environmental, social, cultural and economic benefits using natural ecological systems and green technologies. By weaving green infrastructure intentionally into the urban fabric, we can become better stewards of our urban ecosystems and provide essential municipal services in a way that respects nature, heritage and culture.

Many other cities in Canada are undertaking work similar to the Green Infrastructure Strategy. In fact, similar strategies are becoming a best practice as cities around the world strive to protect natural areas and conserve significant ecological areas. Green infrastructure has enabled other Canadian cities to respond strategically as urban development proceeds, allowing them to consider the importance of ecological networks, identify important links between natural areas, integrate natural areas into their urban structure and be deliberate about managing their ecological networks as part of a system.

Maintaining a healthy, sustainable city requires that we consider the ways in which we interact with our natural environment and manage our impacts appropriately. This is especially important as the city grows, as we replace old infrastructure and as we increase density in established areas.

The purpose of the Green Infrastructure Strategy (Strategy) is to develop an integrated approach to planning and maintaining a sustainable, biodiverse city, one in which natural areas and other green and open spaces are considered important infrastructure. This document sets out the Guiding Principles for the Strategy in Saskatoon and gathers together baseline data. This data will be used to evaluate the existing network, identify missing connections and areas of the city with an under dedication of green spaces, and opportunities to leverage green infrastructure approaches to urban development issues.

Overall, the Green Infrastructure Strategy will strive to ensure all residents have access to a network of high quality, multifunctional, seamlessly integrated green spaces. In order to achieve this, the Strategy will:

- Ensure protection of natural areas and other green and open spaces as important infrastructure and part of a valuable ecological system.
- Optimize the existing green network to make the most efficient use of existing natural assets and open spaces.
- Integrate storm water management, natural areas protection and land use planning, shifting development practices to achieve a new balance between ecological and human needs to achieve enhanced community sustainability and quality of life.
- Connect residents to nature and nurture an appreciation of natural assets.
- Conserve biodiversity through the identification and conservation of natural areas and by increasing their interconnections.
- Maintain ecologically and culturally important land and water systems.
- Assist in the sustainable use of natural resource land and economically important open space.
- Study, define and plan for lands suited for parks, corridors and green spaces.

POLICY STATEMENTS

To support a more integrated approach to planning and maintaining a sustainable, biodiverse city, the direction and principles of the Strategy will be incorporated into Saskatoon's Official Community Plan. Amendments to relevant sections of the document will

be proposed to reflect the wording being used in the Green Infrastructure Strategy and its Guiding Principles.

Key amendments could:

- Define and recognize the concept of natural assets,
- Define and recognize the concept of green infrastructure,
- Include management of natural areas and assets as a key strategy,
- Update wording to reference conservation, instead of preservation,
- Recognize the need to review significant development proposals in existing areas of the city for impacts on natural assets and areas,
- Recognize that natural areas could be integrated into the storm water management and active transportation systems, and
- Recognize Environmental Reserve as one of the tools that could be used to conserve natural areas.

GUIDING PRINCIPLES

The Guiding Principles outline what the Strategy strives to achieve. These principles will be used to analyze the existing Green Infrastructure Network (Network) and to help develop strategic actions to achieve the desired Network. These principles are important for the Network as a whole; certain principles may be of greater priority for specific sites. Application of the principles will be prioritized and balanced based on site characteristics and intended land use.

Climate Change Adaptation & Mitigation

Our contributions to climate change are mitigated and our ability to adapt to local change is enhanced.

The Strategy strives to reduce the City's impact on the environment through policies and standards that guide development in and around significant natural areas, our urban forest and green spaces. Conserving sensitive ecosystems and increasing urban biodiversity and connectivity will support community resilience to climate change. When redevelopment occurs in built up areas, new green infrastructure will be considered.

Ecological Integrity

Biodiversity and connectivity of the urban green network is conserved and supported.

The ecological health of green spaces will be maintained and monitored. Policy will guide appropriate land use based on site characteristics and development needs. Development standards and maintenance guidelines will protect diversity, incorporate traditional knowledge and strengthen ecological connections, supporting the integrity of the Network as a whole and enhancing quality of life for residents.

Education & Awareness

Educational opportunities incorporate ecological, cultural and traditional knowledge. The community is aware of appropriate uses of green spaces.

Saskatoon residents value natural areas and seek to understand the ecology of their local urban environment. Offering additional information about the importance of local conservation, biodiversity, connectivity and traditional knowledge, will build community ownership and encourage appropriate use. The Strategy will identify significant sites using traditional knowledge and community consultation.

Equitable & Accountable

Green infrastructure is distributed throughout the city to provide access to all residents.

The Strategy strives to provide all residents, regardless of income, housing type and location, with access to the Network within walking distance.

High Quality

Green spaces are evaluated and used for their best purposes, taking into consideration the types of infrastructure and amenities they have, the value of the functions they provide and community needs. Best purposes are determined through a review and consultation process.

The City's green spaces serve a variety of purposes, including diverse ecosystems, natural water storage and conveyance, passive and active recreation and cultural experiences. The Strategy will provide for robust asset management to ensure that development of green spaces is purposeful. Standards will be developed to ensure that site specific maintenance occurs. For example, irrigated areas within parks will be watered and mowed for active recreation needs, while natural areas, such as swales, will be conserved in their natural state and maintained to keep invasive species at bay.

Integrated & Multifunctional

Green spaces are integrated into the city fabric to form a network that serves multiple uses and needs.

A network of green spaces will seamlessly integrate into the City's urban fabric. This network will protect sensitive ecosystems from adjacent land uses and provide access for residents in a sensitive and appropriate manner. The connections from natural area to buffer area to built environment will be strategically planned and executed to ensure connections are gradual and natural. Sites that make up the network will provide multiple functions, varying from important ecological functions, to storm water servicing, to a variety of recreational, traditional and cultural purposes.

Public Safety

The green network is safe, accessible and inclusive for all.

The green spaces that make up the network will be designed to ensure public safety during appropriate use, taking into consideration site-specific uses. Different types of sites will have different standards. Policy will promote network safety and accessibility for all residents regardless of age and ability.

Recognizable & Unique Places

A range of green space types and functions reflect heritage, traditional land uses and community identity and needs.

The green spaces that make up the network include sites with unique characteristics and components, such as historical features, traditional uses and important ecological services. Development and maintenance standards will be developed to conserve these heritage and ecological components.

The green network will provide space for all residents to enjoy, whether for physical exercise, traditional or ceremonial uses, family outings, community gatherings or solitude in natural settings.

Photo credit: Tourism Saskatoon 2009

Sustainable

The green network responds to operational requirements, flood resiliency, community capacity and environmental and local needs.

The City strives to create a network of green spaces that is responsive to operational requirements and environmental needs, while balancing financial, environmental, cultural and social long-term sustainability. The network will help to address enhanced flood resiliency by protecting natural wetlands and swale complexes, where they exist in their natural state prior to development.

Wellness: Physical & Mental

The green network meets community needs, recognizing that access to green space is strongly related to residents' physical, spiritual and mental wellbeing.

The green network will provide space for all residents to enjoy, whether for physical exercise, traditional or ceremonial uses, family outings, community gatherings or solitude in natural settings. Likewise, we are stewards of the land and are responsible for protecting the earth's wellbeing.

GREEN INFRASTRUCTURE BASELINE INVENTORY

Purpose: To provide a framework for organizing and characterizing the diverse aspects of green infrastructure based on five themes:

Governance • Land Allocation • Green Network
Storm Water Services • Heritage and Culture

The first phase in developing the Strategy is to establish a baseline for current green infrastructure. This includes identifying existing conditions within the five themes: Governance, Land Allocation, Green Network, Storm Water Services and Heritage and Culture.

Gathering information about the City's existing green spaces establishes our baseline Green Infrastructure Network and allows us to identify areas that need to be strengthened in relation to the Guiding Principles. Once we understand the current situation, we can create goals, set targets and put together an action plan for achieving the desired Green Infrastructure Network.

The City of Saskatoon will not be able to achieve green infrastructure goals in isolation. The involvement and effort of the broader community will be needed, including other levels of government, schools, community groups, developers and individuals. The following activities helped initiate community involvement and inform the findings contained in this report.

- A workshop was held in December 2017 to review the preliminary baseline inventory. Workshop participants represented a diverse set of community groups and organizations, with mandates linked to ecology, culture, land development, heritage and health care. Their feedback has been used to refine the inventory, identify additional gaps and generate the key findings presented in this document. In general, participants expressed cautious optimism that green infrastructure is becoming a higher priority for the City and that a consistent framework could be developed.
- On February 8, 2018, a presentation at the Native Prairie Restoration/Reclamation Workshop was made to introduce the Green Infrastructure Strategy to a wider audience of potential community champions. The presentation was well received and garnered additional comments.

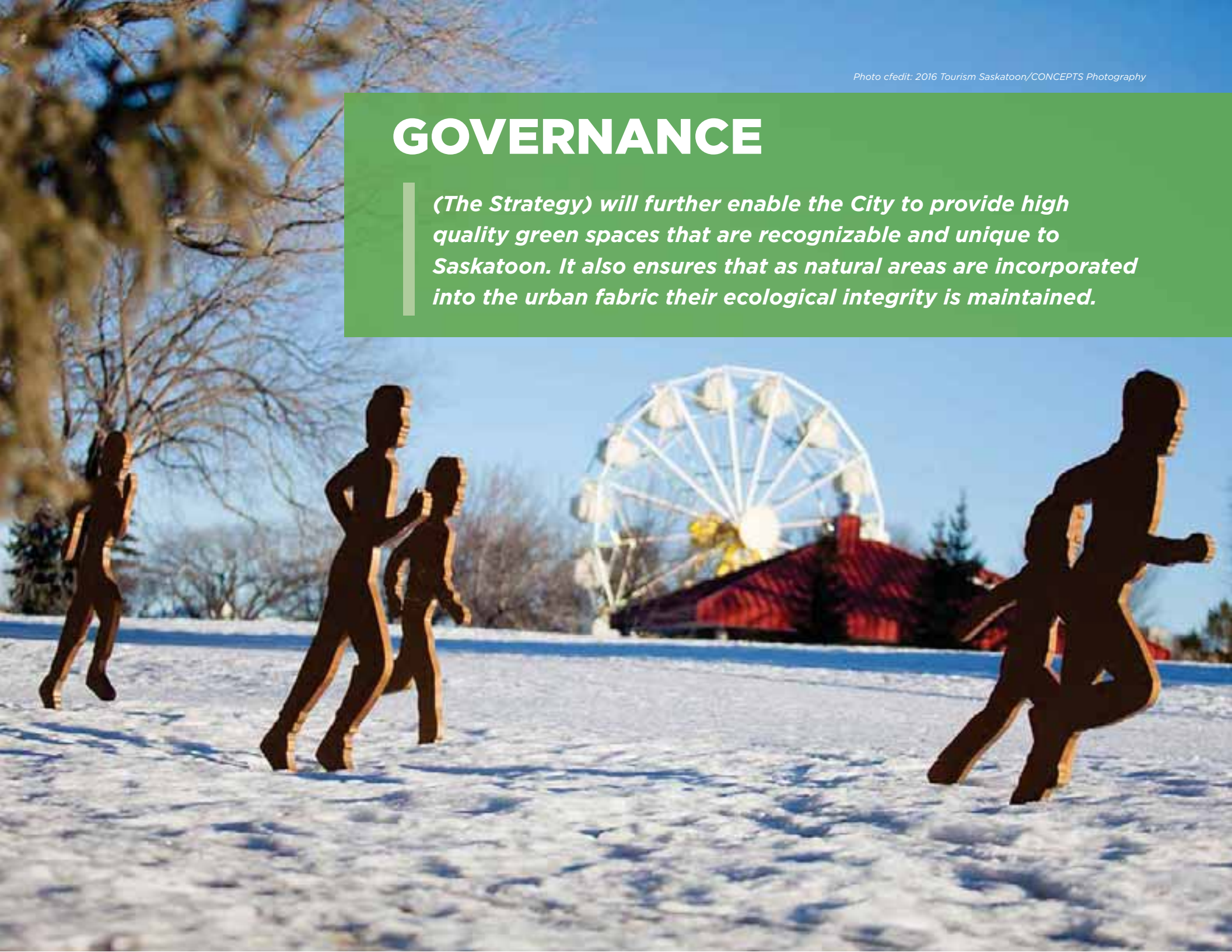


Photo cfedit: 2016 Tourism Saskatoon/CONCEPTS Photography

GOVERNANCE

(The Strategy) will further enable the City to provide high quality green spaces that are recognizable and unique to Saskatoon. It also ensures that as natural areas are incorporated into the urban fabric their ecological integrity is maintained.

GOVERNANCE

Purpose: To identify the policies and initiatives that influence or are impacted by the Green Infrastructure Strategy.

This theme describes the regulatory and legislative context of green infrastructure. It is the policies and strategic plans that guide or impact our green spaces. We have also included best practice research from other municipalities as well as concurrent and related initiatives in progress that need to align with the Strategy.

KEY FINDINGS

Organizational Framework

Workshop participants suggest the City needs to give more prominence to green infrastructure and approaches that increase biodiversity. The Strategy provides an opportunity to review the City's organizational framework to ensure mandates, tools and processes align with community values and best practices.

The City has many initiatives underway that are related to the Strategy, such as the Landscape Design and Development Standards. Currently, green infrastructure-related projects are spread across the corporation and not always coordinated. The Strategy is an important means of pulling these concurrent initiatives together and ensuring their success. Centralized data management will be an important tool to increase the success of the Strategy and each of the concurrent initiatives.

Regulatory Tools

The City currently lacks a standard process for identifying and conserving natural features during development as well as comprehensive management plans for natural areas not managed by the Meewasin Valley Authority (Meewasin). Work is currently underway to address some of these gaps, such as the Landscape Design and Development Standards. Existing regulatory tools are not always enforceable, compatible with one another or reflective of industry best practices. Using the City's regulatory tools, the Strategy will strive to ensure the ecological integrity of significant natural areas is conserved and enhanced wherever possible, and that these areas are integrated seamlessly into the urban fabric. The coordination of regulatory tools will also help streamline data management and reporting related to green infrastructure.

The Strategy will enable the City to use regulatory tools to incorporate natural areas into the urban structure as development occurs, so that significant ecological areas are conserved as part of natural systems. As the Strategy develops, the City's regulatory tools will be sorted and categorized in such a way as to make it clear which are governance tools to be enforced via bylaws and policies, and which are desirable guidelines for development through incentives. This will ensure a comprehensive approach to management of green spaces as part of a network rather than approaching each site as an isolated parcel.

Concurrent initiatives underway (and proposed) will enhance the existing regulatory tools, promoting best practices and ensuring that significant natural areas are not negatively impacted during urban development.

Through the coordination of regulatory tools, the Strategy will ensure that conservation and nature are balanced in the development process. This will further enable the City to provide high quality green spaces that are recognizable and unique to Saskatoon. It also ensures that as natural areas are incorporated into the urban fabric their ecological integrity is maintained.

Centralized Data Management

There are numerous sets of data in the corporation. The different data sets can have inconsistent and conflicting information, which can cause confusion or create more work for project teams who need to use the data.

Defining Service Levels of Non-Park Green Spaces

Service Levels for non-Municipal Reserve open spaces (utility parcels, corridors, buffers, roadway greens) are not clearly defined leading to inconsistent expectations for the maintenance of these spaces. Some of these spaces are developed to park-like conditions, even receiving a park name, but receive operating funds associated with a more basic level of development. This leads to misconceptions between the level of service provided and the level of service expected. A review of service levels for Parks Division is underway and will begin to address these issues.

POLICIES & PLANS

Purpose: To summarize existing civic and external policies and plans related to the Green Infrastructure Strategy.

Three levels of government have policies and plans in place that relate to the development of green spaces in the City, development in areas with significant natural areas, and maintenance and conservation of natural areas. The following list identifies federal, provincial and municipal policies and plans, along with a brief description. The Meewasin Valley Authority's policies and plans are also listed, since Meewasin plays a significant role in guiding local development, conservation and maintenance of natural areas.

External Policies & Plans

FEDERAL

Canada Water Act

An Act to provide for the management of the water resources of Canada, including research and the planning and implementation of programs relating to the conservation, development and utilization of water resources.

Canadian Environmental Protection Act

An Act respecting pollution prevention and the protection of the environment and human health in order to contribute to sustainable development.

PROVINCIAL

Meewasin Valley Authority Act

An Act respecting the establishment of the Meewasin Valley Authority.

The Conservation Easements Act

An Act respecting Conservation Easements, which may be granted for any of the following purposes:

- the protection, enhancement or restoration of natural ecosystems, wildlife habitat or habitat of rare, threatened or endangered species
- the retention of significant botanical, zoological, geological, morphological, historical, archaeological or paleontological features respecting land
- the conservation of soil, air and water quality.

Duty to Consult – Treaty 6

The provincial government's First Nation and Métis Consultation Policy Framework (CPF) sets out the government's commitment to fulfilling its legal duty to consult and accommodate First Nation and Métis communities in advance of decisions or actions that have the potential to adversely impact the exercise of Treaty and Aboriginal rights (such as the right to hunt, fish and trap for food) and traditional uses of land and resources (such as gathering plants for food and medicinal purposes, carrying out ceremonial and spiritual observances) on unoccupied Crown land and other land to which a community has a right of access for these purposes.

The Ecological Reserves Act

Protects unique natural ecosystems and landscape features through the designation of Crown land as ecological reserves.

GOVERNANCE

The Environmental Assessment Act
Provides a practical means to ensure that development proceeds with adequate environmental safeguards and in a manner broadly understood by and acceptable to the public through the integrated assessment of environmental impact.

The Environmental Management and Protection Act, 2010
Protects the air, land and water resources of the province through regulating and controlling potentially harmful activities and substances.

The Management and Reduction of Greenhouses Gases Act*
An Act respecting the management and reduction of greenhouse gases and adaptation to Climate Change. The Act will establish a provincial greenhouse gas emissions target and promote investments in low-carbon technologies.

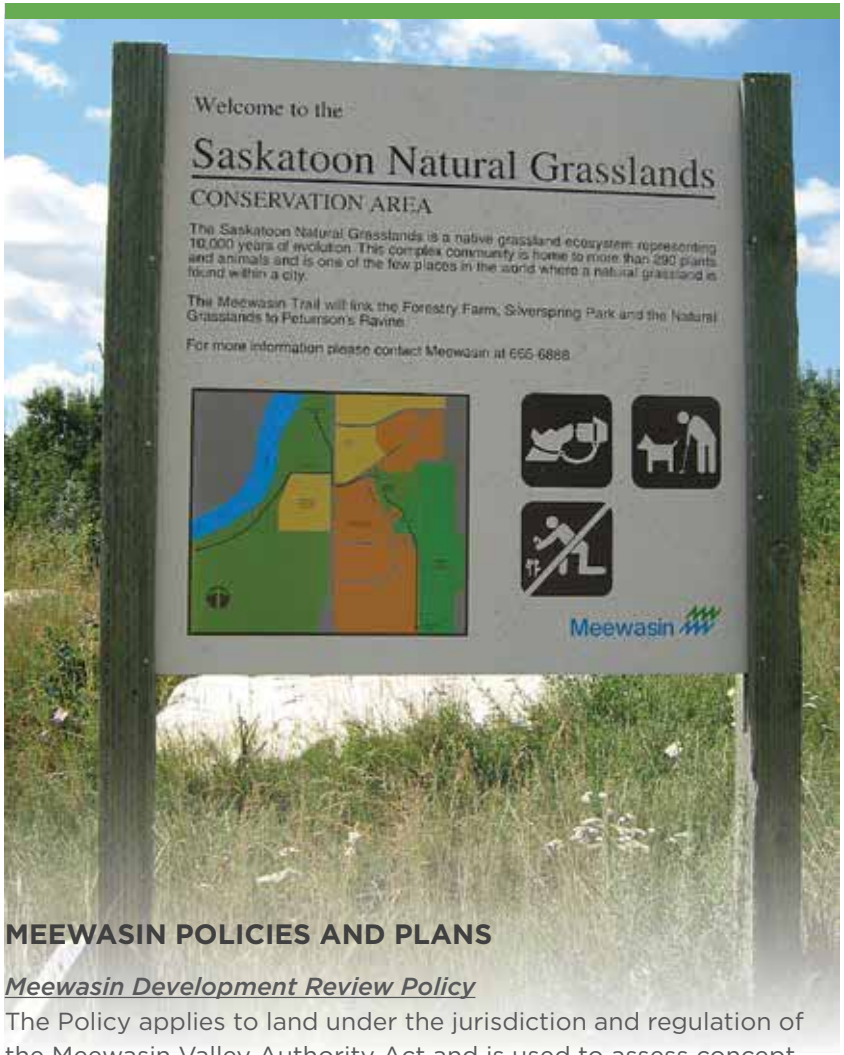
** Passed but not yet proclaimed*

Planning and Development Act
An Act enabling municipalities with respect to economic and community development.

The Statements of Provincial Interest Regulations
The purpose is to identify provincial interests to guide provincial and municipal planning decisions in the development of safe and secure communities; to align provincial and municipal planning objectives to facilitate orderly development that is beneficial to communities; and to guide the development of economically, environmentally, socially and culturally sustainable communities.

The Water Appeal Board Act
Establishes the Water Appeal Board and enables the board to hear appeals regarding water, sewage and drainage issues.

The Weed Control Act
Sets out Provincial policy to identify and manage prohibited, noxious and nuisance weeds and outlines the requirements for the appointment of weed inspectors and their duties.



MEEWASIN POLICIES AND PLANS

Meewasin Development Review Policy
The Policy applies to land under the jurisdiction and regulation of the Meewasin Valley Authority Act and is used to assess concept plans on public land and improvements proposed on land and in the river channel within the Meewasin Valley using five fundamental principles –Valley's resources are accessible to everyone; conserve natural and heritage resources; recreation and development balanced with conservation; diverse activities for a varied and changing demographic; and public participation in decision making.

Meewasin Land Policy
The intent is to provide a criteria-based framework for evaluating whether or not land should be part of the Meewasin Valley and/or accepted as a conservation easement. It is not intended to prescribe specific land to be unilaterally incorporated into the Meewasin Valley but, rather, to identify the types of land that Meewasin should seek, consider or accept for inclusion in the Meewasin Valley, based on its mandate. In this way Meewasin can pursue its interests based on policy should compelling rationale and/or opportunities emerge to add land to the jurisdiction or to pursue a conservation easement. These opportunities may come through a request from a landowner or participating party; a municipal boundary alteration; the dedication of municipal, public or environmental reserves; the offering of land for sale; or other mechanisms.

The Meewasin Valley Project (The Moriyama Plan)
The Meewasin Valley Project is the foundational document for Meewasin and guides Meewasin's planning activities to this day. Developed by architect Raymond Moriyama in 1979, it is a 100-year conceptual plan developed concurrently with the legislative formation of the Meewasin Valley Authority.

Meewasin Valley-wide Resource Management Plan
The 2017-2027 Meewasin Valley-wide Resource Management Plan was developed to identify conservation targets and threats to these targets within the Meewasin Valley. As part of the planning process, a detailed series of conservation actions were developed to mitigate threats and enhance the viability of conservation targets. The four conservation targets are the South Saskatchewan River Valley, native prairie and wooded areas, wetlands and various swales in the Saskatoon region. The greatest threats identified for these targets were invasive species, urbanization, agricultural conversion and loss of natural processes (i.e. grazing and fire).

MUNICIPAL POLICIES, BYLAWS & PLANS

Accessibility Action Plan
Key recommendations of the Accessibility Action Plan are to:

- adopt the Facility Accessible Design Standards and the enhanced service level guidelines for accessibility
- adopt the priority zones identified when prioritizing accessibility improvements
- focus efforts on infrastructure, snow removal program and public transit

ayisīnowak A Communications Guide
The goal of the guide is to increase understanding, respect and awareness of Aboriginal culture to facilitate improved relationship building.

This Guide is intended to provide City staff and other users with a basic outline of Aboriginal protocol and governance systems in order to facilitate improved relationship building either as co-workers, through business opportunities or through inclusion in specific projects.

Boulevard Gardening
Guidelines to encourage residents to garden on the boulevards adjacent to their homes.

Civic Heritage Policy (C10-020)
To support and facilitate the conservation, management and interpretation of heritage resources in a planned, selective and cost-feasible manner for the benefit of current and future generations of Saskatoon citizens and visitors.

GOVERNANCE

Community, Allotment and Vacant Lot Gardens

- Community volunteers may form non-profit collectives in order to garden on City-owned property, such as parks.
- Allotment Gardens are garden plots operated by the City of Saskatoon and rented out to individuals to support food security.
- Non-profit community organizations with a significant mandate in food security can apply to use vacant City-owned property to grow food.

Culture Plan

A strategic document that guides the City's policy and decision making as it identifies priorities to harmonize cultural endeavours, strengthen cultural development and support the arts.

Energy and Greenhouse Gas Management Plan (2009)

A framework for managing greenhouse gas emissions and reducing energy consumption. It is being revised into a new Mitigation Business Plan.

Environmental Policy (C02-036)

States intentions and objectives in relation to the desired overall performance of the City of Saskatoon in community sustainability.

Low Impact Development Design Guide for Saskatoon

This guide will provide property owners and developers with a selection of low impact development techniques. These methods can be used to reduce runoff volume, improve runoff water quality and delay peak runoff flows from entering the storm water system during high flow times.

Official Community Plan (OCP) (Bylaw 8769)

Established in accordance with the provisions of *The Planning and Development Act, 2007*, as amended, the OCP provides the policy framework to define, direct and evaluate development in Saskatoon, ensuring that development takes place in an orderly and rational manner, balancing the environmental, social and economic needs of the community.

Park Development Guidelines

Guidelines used in conjunction with the Landscape Design and Development Standards (in development) to help guide future City of Saskatoon Park and Open Space development.

Parks and Recreation Levy

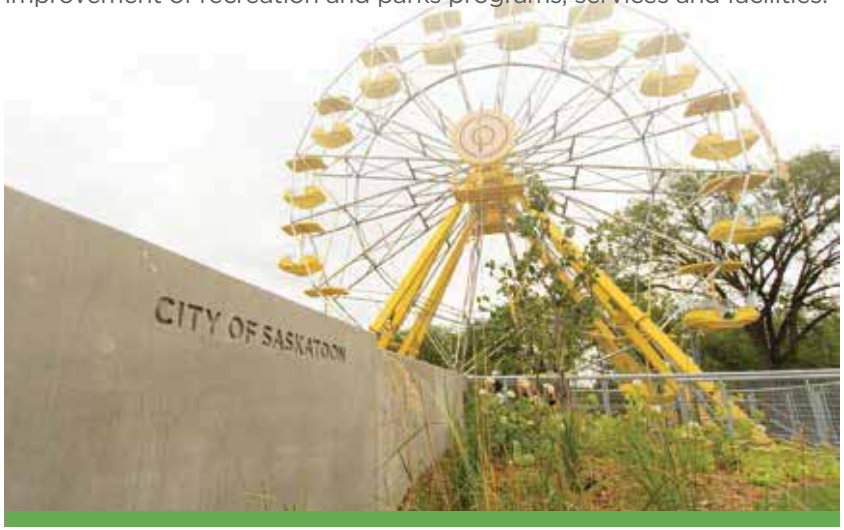
A levy to accelerate the development of parks and recreation facilities without impairing the City's financial position and to obtain a direct financial contribution from the beneficiaries of parks and recreation facilities in approximate relation to the benefits received (as measured by geographic proximity to facilities).

Public Art

The purpose of the Public Art Policy is to create safe public places that encourage authentic intercultural dialogue and interaction and to include public art in designated civic capital projects where it has the greatest benefit.

Recreation & Parks Master Plan

The plan is intended to guide future decision-making. It provides an overall framework for the development, delivery and continuous improvement of recreation and parks programs, services and facilities.



Recreational Use of Storm Water Retention Ponds Policy
The policy provides the public and civic administration with information about services, programs and criteria for recreational use of all ponds, including storm water retention ponds; increases the public's overall awareness and understanding of recreational uses of storm water retention ponds; ensures all ponds, including storm water retention ponds, are used in a manner with the least amount of risk.

Saskatoon Greenhouse Gas Emissions Inventory (2014)
Completed at the end of 2016 in compliance with the City of Saskatoon's commitment under the Global Covenant of Mayors for Climate & Energy (previously, Compact of Mayors). It provides a representation of Saskatoon's total emissions as well as emissions by sector. It will support the exploration and development of emissions abatement strategies in the community, as well as efficiencies within civic operations.

Storm Water Management Utility Bylaw
The bylaw:

- regulates the collection, transmission, treatment and disposal of storm water
- regulates direct and indirect discharges into any part of the storm sewer system
- prevents damage to or misuse of any part of the storm sewer system
- protects human health and safety and the environment
- establishes and sets terms and guidelines for the City of Saskatoon Storm Water Management Utility
- sets charges for all properties benefiting from the City's storm water sewer system

Storm Water Management Business Plan & Funding Strategy
Saskatoon's Storm Water Utility funds storm water management and flood protection services, including ongoing operations and maintenance of assets with an estimated replacement value of $3.4 billion. The Storm Water Utility's Business Plan describes its goals and objectives, operating environment, key actions and responsibilities and funding strategy.

Strategic Plan 2013-2023
The City of Saskatoon Strategic Plan outlines seven strategic goals. Each goal has 10-Year Strategies and 4-Year Priorities that represent the "how-to" component of operationalizing the vision. Implementation strategies are developed through the annual Corporate Business Plan and Budget process, and the City monitors performance in bringing Saskatoon's collective community vision to life.

Wetland Policy
The Wetland Policy implements the Official Community Plan Bylaw No. 8769 concerning wetlands conservation and management. It also provides guidance to landowners, developers and civic staff on achieving responsible integration of wetlands in the urban environment.

CONCURRENT INITIATIVES

Purpose: To identify projects in progress that are related to the Green Infrastructure Strategy.

Active Transportation Plan

In June 2016, City Council approved Saskatoon's first Active Transportation Plan. This plan will help provide more choices for moving around the city by addressing infrastructure needs for cycling, walking and other modes of active transportation. City Administration is currently developing a five-year action plan (2017-21) to guide implementation.

Bird Strike Policy

In December 2016, City Council requested that building guidelines to mitigate bird strikes on glass buildings be investigated. Best practice research from other jurisdictions is underway. Options available for consideration include public education, leadership in designing and retrofitting municipal facilities, bird-friendly building guidelines for the wider-community and partnerships with community organizations.

Civic Service Reviews

Within the City, inter-division groups work together to create positive change in the organization through increased communication, efficiency and innovation. Reviews use a 5 step process, including Current State, Defining Success, Future State, Action Plans and Evaluation.

Climate Adaptation Strategy

Saskatoon is preparing to face impacts (and mitigate risks) to key infrastructure and assets that may be brought on by extreme weather scenarios as a result of climate change.

Corporate Asset Management Strategy
The City is using grant funding from the federal government through the Climate and Asset Management Network to create an asset management policy, strategy and governance structure. The process requires a cross-departmental project team, which includes an Engineering Manager, Finance Support Manager and Environmental Accounting Manager.

Design and Development Standards Manual
Provides design and development standards for all aspects of infrastructure, including storm water drainage.

Enterprise Resource Planning (ERP)
An Enterprise Resource Planning (ERP) initiative will set the foundation for technology innovation and business transformation to support the City's continued growth. This significant investment in people, process and technology will improve access to critical data required for efficient and effective decision making.

High Performance Civic Building Policy
A sustainability policy (including minimum requirements) for the construction of new buildings or major renovations. Potential requirements include LEED certification levels, energy intensity targets, commissioning, recycling, pollution prevention, social impacts, etc. Consultation on policy content is underway.

Landscape Development & Design Standards (LDDS)
The LDDS will provide environmentally and economically sustainable landscape design standards for new parks, open spaces and upgrades to existing parks. It will also set out a well-defined approval process for those involved in park and open space development. The LDDS will enhance our ability to provide resilient parks and open spaces that are operationally sustainable, environmentally responsible and require less frequent capital replacement. This is a key document for the Parks Division and is in accord with many of the initiatives anticipated in the Green Infrastructure Strategy proposal, including the use of more native plant material and strategic irrigation designs to conserve water resources.

Long Term Capital Development and Expansion Plan: Water, Sanitary Sewer and Storm Sewer Servicing
The plan will provide an overview of water distribution, sanitary sewer and storm sewer trunk infrastructure required to support a population of 500,000 and 1,000,000 people in Saskatoon and the surrounding region. It is assumed that approximately 500,000 people can be contained within the current city limits, while the boundaries for 1,000,000 extend beyond these limits into regional sector growth. The systems shown in this report were designed using as much gravity flow as possible and generally follow the topography. The plan for the storm sewer trunk system includes large pipe trunks, open drainage ditches and retention ponds. Due to the large area of remaining developable land within city limits, the study area was split into six sectors. Four of the sectors are greenfield development areas. Storm water management for other pocket infills is largely around onsite storage to ensure that post-development flows do not exceed pre-development flows.

Natural Areas Standards
Natural Areas Standards will guide how natural areas are integrated into new developments, determine how development adjacent to natural areas occurs and provide criteria for their management.

Natural Capital Asset Valuation (NCA)
The City is currently inventorying and valuing Saskatoon's natural assets. The NCA valuation will attach a financial value to the benefits of green infrastructure. It will be applied to all green infrastructure, including trees, pathways, wetlands, riverside areas, ecologically significant areas, grassy areas and others. The process will help the City:

- manage maintenance of green infrastructure
- engage in life-cycle planning
- identify risks and funding requirements for green spaces
- identify green infrastructure options as alternatives to built infrastructure
- strategize future development
- recognize a triple bottom line approach to municipal planning and operations.

Neighbourhood Concept Plans (NCP)

Neighbourhood Concept Plans (NCPs) are neighbourhood-level land use plans that guide the development of new neighbourhoods in Saskatoon. An NCP outlines the land uses, densities, transportation network, parks system, and community facilities intended for a neighbourhood as it grows. This can include detailed studies of an area's topography, natural areas and heritage resources, provision of water and sewer services, traffic studies, population projections, proposed transit routes, active transportation networks and much more.

Neighbourhood Level Infill Development Strategy (NLIDS)

The NLIDS is one component of a Comprehensive Plan for infill development within a built up area of the city. The Infill Strategy addresses small scale infill opportunities on individual residential lots, with a scope directed at an assessment of established neighbourhoods within Saskatoon, defined as neighbourhoods located inside Circle Drive, as well as Sutherland and Montgomery Place.

Pathway to Canada

The City is participating on the Local Government Advisory Group for the Pathway to Canada Project. The project seeks to establish a coordinated network of parks and conservation areas throughout Canada that will serve as the cornerstone for biodiversity conservation for generations to come. Pathway to Canada Target 1 is to produce guidance towards establishing a connected network of protected areas and other effective conservation measures to protect and conserve at least 17% of Canada's land and fresh water by 2020.

Plan for Growth

In April 2016, Saskatoon City Council adopted 'in principle' the Growth Plan to Half a Million. This directional document is made up of several themes that, when pieced together, form a new growth model for Saskatoon. These themes include Corridor Growth, Transit, Core Area Bridges, Employment Areas, Active Transportation and Financing Growth. The City is currently developing plans to start implementing the direction provided in the Growth Plan to Half a Million, starting with a re-envisioned transit system based around Bus Rapid Transit (BRT) and infill at strategic locations in the city including downtown, the university endowment lands and along major transportation corridors.

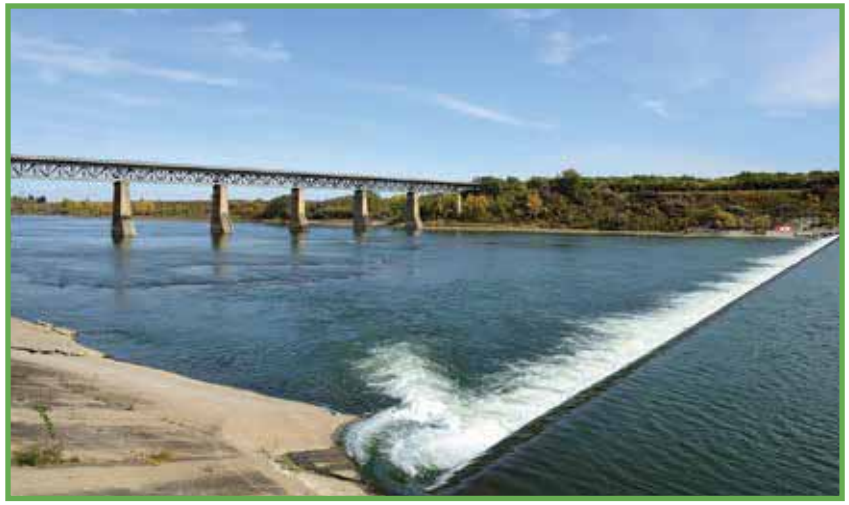
Saskatoon North Partnership for Growth (P4G) Regional Plan

The P4G is a collaborative partnership that includes political and administrative representation from the City of Saskatoon, Rural Municipality of Corman Park, City of Martensville, Town of Osler and the City of Warman, with the Saskatoon Regional Economic Development Authority in an advisory role. The P4G Regional Plan has established a coordinated approach to matters affecting the physical, social and economic development of the P4G region as a whole, such as land use, transportation, utilities, services and finances. The Regional Plan has established greater certainty and protection for environmental and cultural heritage assets in the region that are considered important from a sustainability and climate adaptation perspective. Once approved by the Province,

the P4G Regional Plan will become the P4G Official Community Plan, replacing the current Corman Park-Saskatoon Planning District Official Community Plan.

Sector Plans

Sector Plans provide a broad framework for future urban development. They include the location and size of future neighbourhoods, employment areas, parks and significant natural areas. City services are planned, new neighbourhood concept plans are developed, land use designations and rezoning applications are evaluated and amendments to the City boundary are based on the framework provided by Sector Plans.



Weir Power Project

Saskatoon Light & Power is committed to developing and implementing new ways of generating power that provide benefits to customers, the environment and the community. A new hydropower system proposed at the existing Saskatoon Weir will generate 5.5–6.1 megawatts of clean power, with an estimated 21,120 tonne reduction in greenhouse gas emissions. Saskatoon Light & Power is exploring the feasibility of developing a hydropower station at the weir in partnership with the Saskatoon Tribal Council.

Photo credit: Tourism Saskatoon/ CONCEPTS Photography

Winter City Strategy

The Winter City Strategy is an intentional effort by the City and community stakeholders to celebrate what makes Saskatoon unique as a four-season community, even in the coldest months of the year. The goals of the strategy are to improve broader community accessibility, inclusion, activity and energy, leading to greater economic vitality (particularly within service, accommodation and retail sectors) as the opportunities of winter are realized and the challenges mitigated.

RESEARCH

Purpose: To provide a summary of what other Canadian cities are doing to protect natural areas, conserve and increase biodiversity and strategize about green infrastructure.

Background for the Baseline Inventory included research into what other Canadian cities are doing with regard to green infrastructure. A summary of this research follows.

Calgary "Our BiodiverCity"(2015)

Our BiodiverCity: Calgary's 10-Year Biodiversity Strategic Plan aims to provide a framework for City staff to foster more resilient, biologically diverse open space and neighbourhoods that support positive outcomes for Calgarians, visitors, wildlife and plant communities. The plan builds on the City of Calgary Biodiversity Report 2014. Our BiodiverCity introduces biodiversity by aligning it with nature, discusses pressures on biodiversity and outlines Calgary's current responses to those pressures.

Source: http://www.calgary.ca/_layouts/cocis/DirectDownload.aspx?target=http%3a%2f%2fwww.calgary.ca%2fCSPS%2fParks%2fDocuments%2fPlanning-and-Operations%2fBiodiverCity-strategic-plan.pdf&noredirect=1&sf=1

City of Calgary Natural Area Management Plan (1994)

The plan establishes an overall policy direction for the protection, management, public use and enjoyment, acquisition and stewardship of Calgary's natural heritage. Management of natural areas changes the way some of Calgary's park sites look as well as how they can be used. For example, maintenance methods like mowing and weed control will be different for natural habitat areas than for ornamental parks. As well, people and their pets may be restricted to certain parts of natural environment areas in order to protect the plants and animals native to the site.

There are a number of benefits to protecting natural areas. These include environmental benefits such as erosion control, economic benefits such as the reduction of flood damage by setting aside low lying river lands as park space and social benefits such as recreation, relaxation and fostering greater understanding of the importance of the natural world to our wellbeing.

The Natural Area Management plan is governed by the following policies:

- Representative and viable habitat types will be protected and maintained as an integral part of the parks and open space system.
- Designated natural park lands will be managed in manner which, by intent, will maintain the natural character and integrity of these sites.
- Informed public, corporate and community participation, stewardship and partnerships for the acquisition, management, research and protection of appropriate natural environments are encouraged and welcomed.
- Year-round enjoyment and use by all Calgarians will be encouraged with appropriate sensitivity to environmental impact and safety. Where recreational use and the long-term survival of significant habitats conflict, protection of the resource will take precedence.
- The City will work with adjacent municipalities to cooperatively protect contiguous natural habitat.
- Natural areas will be acquired by a number of methods including; developer dedication as Environmental Reserve, donations, land exchange or outright purchase.

Source: http://www.calgary.ca/CSPS/Parks/Documents/Planning-and-Operations/Natural-Areas-and-Wetlands/natural-area-management-plan.pdf?noredirect=1

Edmonton "Breathe" (2017)

BREATHE is a transformative Green Network Strategy designed to ensure each neighbourhood in Edmonton will be supported by an accessible network of open space as the city grows. BREATHE builds on the Urban Parks Management Plan and the Natural Connections Strategic Plan and aligns with the goals identified in the City's strategic planning documents (The Ways).

Source: https://www.edmonton.ca/city_government/initiatives_innovation/breathe.aspx

Halifax Green Network Plan (Draft)

The Halifax Green Network Plan (HGNP) defines an interconnected open space system, highlights ecosystem functions and benefits and outlines strategies to manage open space. Specifically, the HGNP will propose land management and community design directions to maintain ecologically and culturally important land and aquatic systems, assist in the sustainable use of natural resource land and economically important open space, and study, define and plan for lands suited for parks, corridors and green spaces.

Source: https://www.halifax.ca/about-halifax/regional-community-planning/community-plans/halifax-green-network-plan

Markham Natural Heritage Interface Guidelines (Draft)

The City of Markham's Official Community Plan 2014 (not yet in force) provides the framework for sustainable development and protection of the Greenway System through comprehensive urban design policies that direct the physical layout and design of new communities and the public realm. The purpose of the document is to provide guidance on the design of urban built form and infrastructure that interface with the City's Greenway System.

Source: https://www.markham.ca/wps/wcm/connect/markhampublic/a0c31b79-7f8f-444f-9057-64f2535af3d7/City+of+Markham+Draft+Natural+Heritage+Interface+Guidelines+March+2015.pdf?MOD=AJPERES&CACHEID=a0c31b79-7f8f-444f-9057-64f2535af3d7

Ottawa Greenspace Master Plan (2006)

The purpose of the Greenspace Master Plan: Strategies for Ottawa's Urban Greenspaces is to express Ottawa City Council's vision for green space in the urban area and set policies for how this vision can be pursued. The focal point is an Urban Greenspace Network, 'a continuum of natural lands and open space and leisure lands that in time could connect every home in Ottawa to a larger network of green space. Much of this network currently exists but many key linkages and features are yet to be secured.

Source: https://ottawa.ca/en/city-hall/planning-and-development/official-plan-and-master-plans/greenspace-master-plan

Red Deer Neighbourhood Planning and Design Standards (2013)

To accommodate its growing population and economy, Red Deer is looking to the future and considering how it can build neighbourhoods that reflect the character and values of the City. This includes building the community and culture, while creating a sense of belonging for current and future residents.

Source: http://www.reddeer.ca/media/reddeerca/business-in-red-deer/planning-and-development-of-property/planning/Neighbourhood-Planning--Design-Standards-combined-June-2015.pdf

Surrey "Biodiversity Conservation Strategy" (2014)

Surrey's Biodiversity Conservation Strategy (BCS) recognizes biodiversity as a key foundation of a healthy, livable and sustainable community. The goal of the BCS is to preserve Surrey's biodiversity over the long term. As part of this process, stakeholders and the public assisted the City and consulting staff to identify important places, values and challenges for biodiversity. This information was used to help evaluate the current state of biodiversity, prioritize options for conservation and develop appropriate management strategies and policies.

Source: http://www.surrey.ca/city-services/11565.aspx

Sustainable Montreal 2016-2020

Sustainable Montréal 2016-2020 recognizes the collective work accomplished during the last decade to make Montréal a sustainable city. It presents the challenges and priorities on which the city must concentrate efforts to move along the path toward sustainability. The plan offers 20 actions to be completed by Montréal organizations by 2020, including many by the municipal administration. The purpose is to mobilize the community to work together to build a sustainable city.

Source: http://ville.montreal.qc.ca/portal/page?_pageid=7137,78111572&_dad=portal&_schema=PORTAL

Vancouver "Rainwater Management/Green Infrastructure Strategy" (2016)

Vancouver's City-wide Integrated Rainwater Management Plan recommends how and why green infrastructure tools should be implemented throughout the city in order to protect and improve the city's environment, its biodiversity and urban livability; while helping adapt to local impacts of climate change. Plans include:

- Regulate rainwater on private property
- Capture and treat rainwater on streets
- Enhance rainwater management in green spaces
- Establish a resource and funding strategy

Source: http://council.vancouver.ca/20160419/documents/rr2presentation.pdf

Vancouver View Protection Guidelines

In 1989, the City of Vancouver approved the View Protection Guidelines containing 26 protected view corridors. The policy protects the view of the north shore mountains, the downtown skyline and False Creek from a number of public view points along the south shore of False Creek, arterial roadways and the Granville and Cambie bridges. Since then, a number of new buildings have been added to the downtown skyline. The protected view corridors help determine the site location and design of buildings, resulting in the retention of panoramic and narrow views downtown.

Source: http://vancouver.ca/home-property-development/protecting-vancouvers-views.aspx

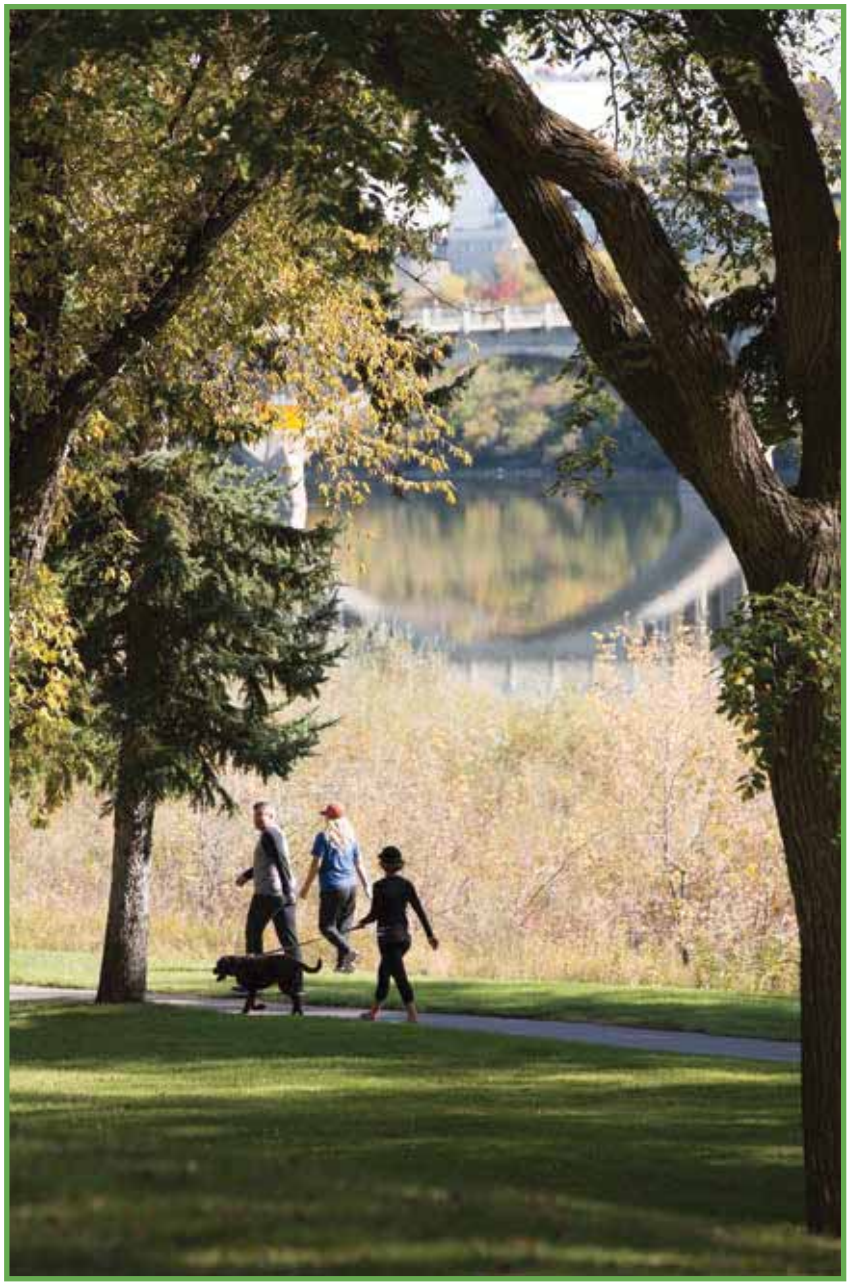
LAND ALLOCATION

> ***"Getting more people outdoors to interpret nature and connect with the natural environment has benefits for individuals and communities. For this reason, the inclusion of natural areas in existing and future parks remains a priority."***
>
> *Source: City of Saskatoon Recreation and Parks Master Plan, 2015*

LAND ALLOCATION

Purpose: To quantify the various types of green spaces and identify current official designations.

This theme looks at the amount of green space we have and how it is distributed across the city. Here, we describe how land is classified and what its dedicated purposes are.



KEY FINDINGS

Natural, Walkable and Connected

At the Green Infrastructure Baseline Inventory workshop, participants identified that natural, walkable and connected are important qualities of our open spaces. This is supported by the City of Saskatoon Recreation and Parks Master Plan, 2015 which notes that *"The provision of passive, naturalized spaces within urban environments is a trend in public service provision. Getting more people outdoors to interpret nature and connect with the natural environment has benefits for individuals and communities. For this reason, the inclusion of natural areas in existing and future parks remains a priority."*

Open Space Designations and Classifications

Saskatoon's current open space designations and categories prioritize active recreation and human use; they lack recognition of ecological and cultural services. This is creating challenges with protecting natural assets and defining appropriate uses. In Donna Birkmaier Park, for example active recreation and disk golf, disrupts waterfowl nesting in the grassland area around the wetland, impairing its function as habitat.

Identifying and Protecting Natural Assets

Natural assets are ecological resources such as land, air, water, flora and fauna, typical to the Canadian prairie and Saskatoon region. The City has poorly defined processes for evaluating green spaces undergoing redevelopment, such as Gordon Howe Bowl

and Diefenbaker Park, where removal of trees and vegetation is proposed to accommodate new amenities and programming. There are no set criteria for assessing the value of natural assets and, similarly, no criteria for compensating for their loss. The current process is ad hoc and inconsistent from project to project. Many open spaces in Saskatoon have natural assets, such as remnant aspen bluffs or wetlands, that are not distinguished from the overall land designation.

Open Space per Capita

Saskatoon rates low in open space per capita when compared to similar Canadian cities. This is due, in part, to the fact that the amount of open space reported in our city is limited to land officially designated "park or special use areas." It excludes a significant portion of the river bank, utility corridors and parcels that serve as parks and other types of green spaces. By reviewing our open space classifications, we have an opportunity to align with what others are doing and to incorporate best practices into how we designate, use and budget for all of our open spaces.

Distribution

Open space is distributed and categorized inconsistently across the city, which can lead to inconsistent levels of service, budgeting and land use expectations. The Sanatorium site, maintained by the Parks Division as a natural area, is zoned to allow for residential development as are many areas along the riverbank, such as the area adjacent to the Broadway Bridge.

The Recreation and Parks Master Plan notes, *"In larger western Canadian municipalities, land purchase is commonplace to supplement city-wide park land requirements as the traditional 10% allocation is only sufficient for neighbourhood park amenities, especially considering increasing densities for residential development."* This highlights that natural areas kept for biodiversity, ecological services and habitat can't reasonably come out of the 10% Municipal Reserve allocation; other solutions are needed.

Boundaries

Natural areas do not align with regional, city or parcel boundaries. As a result communications and policy alignment issues can exist when attempting to coordinate across jurisdictional boundaries to conserve natural areas and their connections throughout the region.

Targets

We currently have no green infrastructure or biodiversity targets; setting targets is a tool for informed decision-making. Setting and monitoring targets can help direct and prioritize work, show progress over time and lead to deliberate actions and rational budgeting. The adoption of a biodiversity or biophilic city action plan, similar to those adopted by other cities, would help set Strategy targets.

> ***"Biophilic cities are cities of abundant nature in close proximity to large numbers of urbanites. Biophilic cities value residents' innate connection and access to nature through abundant opportunities to be outside and to enjoy the multisensory aspects of nature by protecting and promoting nature within the city."***
>
> *Source: http://biophiliccities.org/*

> ***"Biodiverse cities understand that a diverse natural world is the foundation of human existence, as it is necessary for both survival and quality of life."***
>
> *Source: http://cbc.iclei.org/*

Environmental Reserve

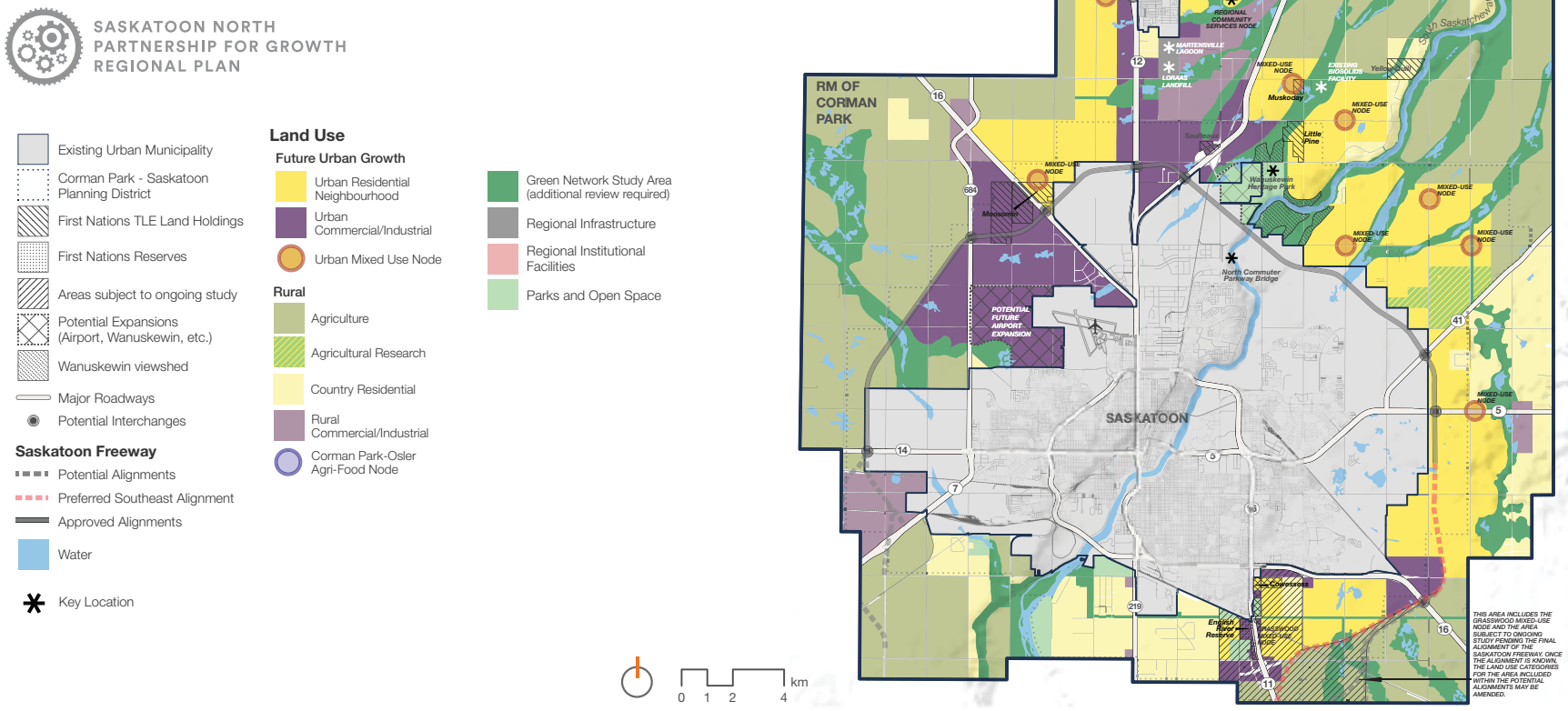
Through the Planning and Development Act, 2007 an approving authority (i.e. a City or Rural Municipality) can require the dedication of ecologically sensitive lands as Environmental Reserve (ER). ER is intended to be used to conserve natural areas. It is a tool that has not yet been used by the City of Saskatoon.

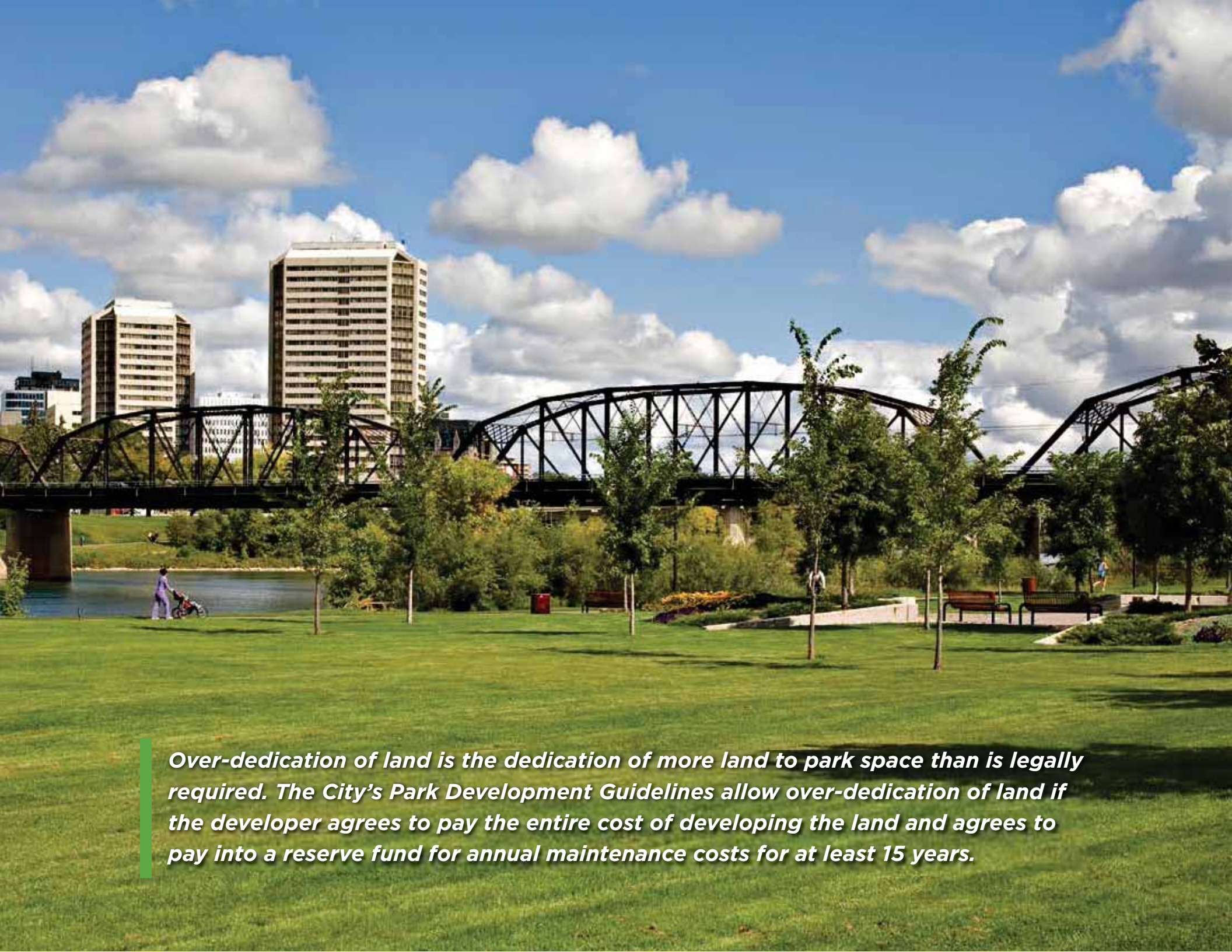
REGIONAL CONTEXT

Purpose: To illustrate the connections between Saskatoon, adjacent areas in the surrounding region and the ecological context of the City.

The Saskatoon North Partnership for Growth (P4G) Regional Plan Implementation Strategy currently identifies the Green Network Refinement Study to begin in 2019. In the meantime, the P4G partners are exploring reviewing certain components of this project, particularly as they relate to drainage, to occur in conjunction with some of the additional detailed planning work that is expected to occur prior to 2019.

Saskatoon North Partnership for Growth Regional Land Use Map

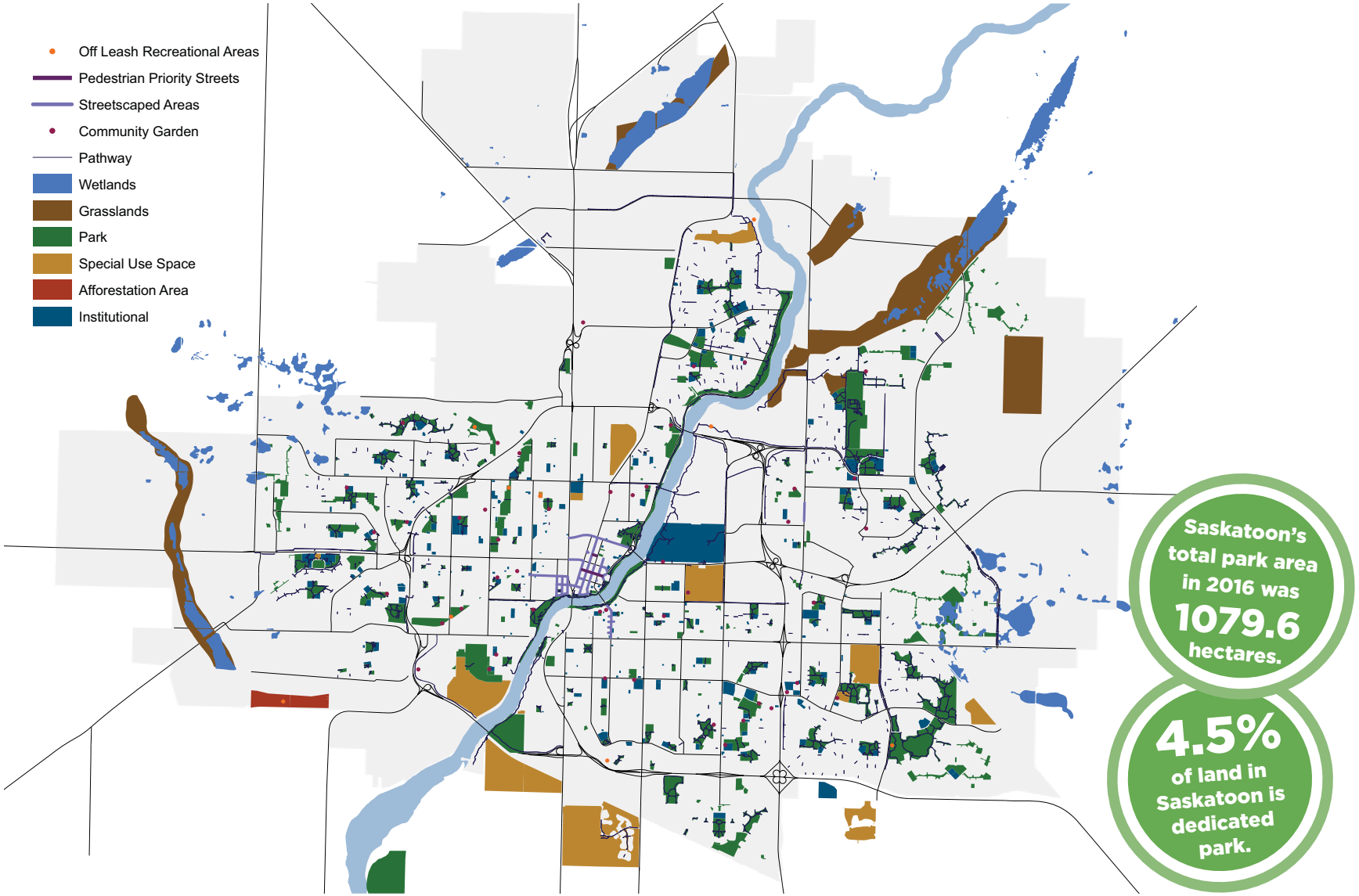




Over-dedication of land is the dedication of more land to park space than is legally required. The City's Park Development Guidelines allow over-dedication of land if the developer agrees to pay the entire cost of developing the land and agrees to pay into a reserve fund for annual maintenance costs for at least 15 years.

DEDICATED OPEN SPACE

Purpose: To show open spaces officially designated for public use.



COMMUNITY GARDEN

Plots of land available for community food production, including:

Community gardens – Plots of land where community volunteers form a non-profit collective to produce food, flowers, native and ornamental plants, edible berries and food perennials. The garden collective takes initiative and responsibility for organizing, maintaining and managing the garden area. Participation is widely accessible to a diverse range of people, builds skills and supports positive community development.

Allotment gardens – A series of garden plots operated by the City of Saskatoon and rented out to individuals. Often, they are offered for the purpose of food production and may be developed to support food security. Allotment garden parcels are cultivated individually, and there is no requirement to contribute to a larger group (donating surplus produce, building community, forming partnerships, etc.).

Vacant lot gardening – Non-profit community organizations with a significant food security mandate can apply to use vacant City-owned property for growing food.

INSTITUTIONAL

Publicly accessible sites used for research and educational purposes.

ENVIRONMENTAL RESERVE (ER)

A parcel of land provided without compensation, as required under *The Planning and Development Act, 2007*, that may be used as a public park or for any other use that the Minister may, by regulation, specify. If it is not used for those purposes, the environmental reserve must be managed to maintain the site in its natural state.

Fact *There is currently no designated ER within Saskatoon city limits.*

MUNICIPAL RESERVE (MR)

A parcel of land provided without compensation, as required under *The Planning and Development Act, 2007*, to be used primarily for public recreation. The land may also be used for other purposes described within the Act and any additional uses that may be specified in the Official Community Plan.

Fact *Up to 10% of residential neighbourhood areas can be dedicated as MR.*

OFF-LEASH RECREATIONAL AREAS

Dog parks are naturalized spaces where dogs with a valid license are permitted to be off-leash while under the control of their owner.

PARK

City-owned open spaces typically used for active and passive recreation.

PATHWAY

Infrastructure provided for active transportation such as walking and biking.

PEDESTRIAN PRIORITY STREET

Streets where jaywalking is permitted.

SPECIAL USE AREA

Areas such as cemeteries, golf courses and dog parks.

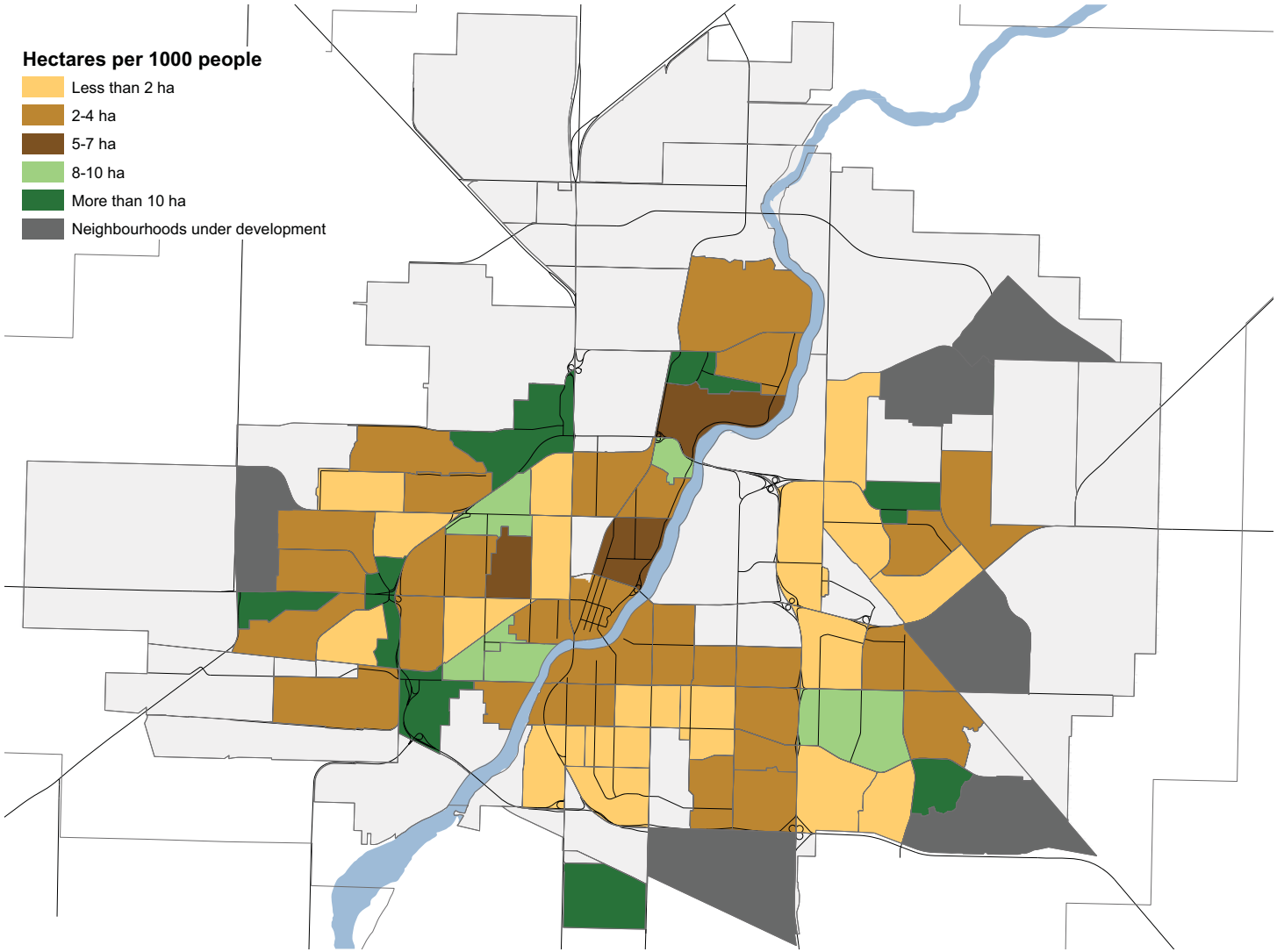
STREETSCAPED AREA

Streets with enhanced level of amenities.

PROVISION OF PARK SPACE

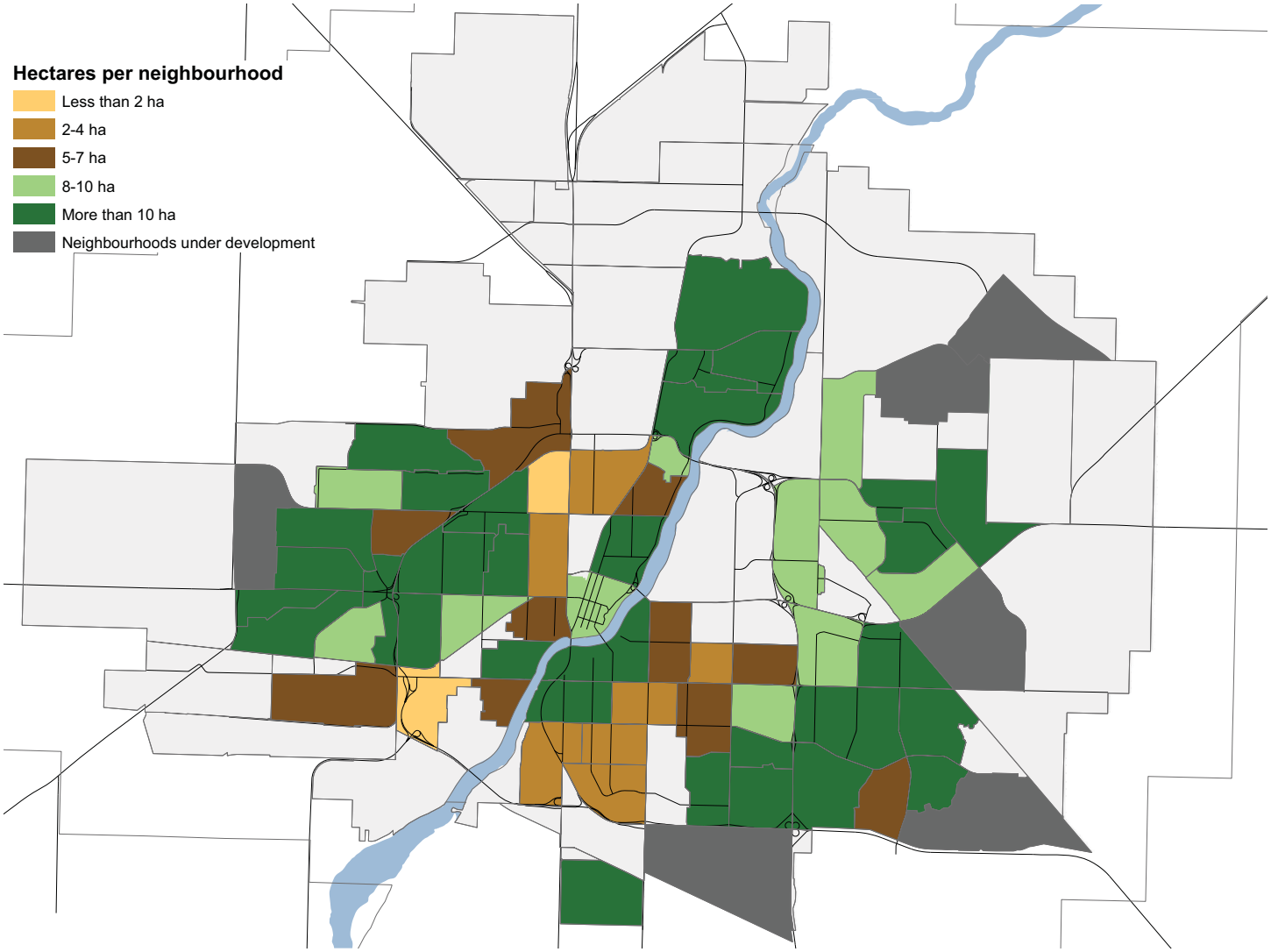
Purpose: To understand how park space in the city is distributed.

The map below shows the area of park space per 1000 people in each neighbourhood.



PROVISION OF PARK SPACE

The map below shows the area of park space per neighbourhood.



PROVISION OF PARK SPACE

The map below illustrates a 400 metre or 5 minute walking distance to park space within Saskatoon. The City's current policy is 700 metres.

Walking Catchment

GREEN NETWORK

As the City continues to expand, future growth will increasingly encroach on natural areas, furthering loss of value and risking increased fragmentation.

GREEN NETWORK

Purpose: To categorize the various types and qualities of green spaces and identify their protections, if any.

This theme is about the qualities and characteristics of our green network, from grasslands and wetlands to boulevards and buffers. Here, we also document the types and levels of protections, if any, and capture stresses on our green spaces, such as invasive species, flooding, urban infrastructure and human activity.

KEY FINDINGS

Connectivity and Fragmentation

Current planning is connecting green spaces within new neighbourhoods better than ever before. Improving connections between neighbourhoods and established areas, as well as to the region and the city's fringes will further increase connectivity.

Connectivity is the degree that movement between open spaces is facilitated or impeded. Connectivity can be measured by the physical continuity of open space and, ecologically, by how well species are distributed throughout an area. Fragmentation is the isolation and limitation of movement between open spaces. Fragmentation can have detrimental effects on biodiversity and species richness by reducing the amount of suitable habitat available. Smaller habitat patches support smaller populations, are more susceptible to invasive species and have greater management costs.

Assessment of Natural Area

Natural area assessments need to be informed by breadth of knowledge in order to adequately protect natural areas and produce high quality green spaces. Broadening the criteria for natural area screening creates an opportunity to gain knowledge from community partners and develop a comprehensive assessment strategy to make informed decisions.

Contractors/developers submit Environmental Assessments to the City and conduct natural area screening, but the process for review and vetting could be enhanced. Assessments are often limited to a particular season and by physical boundaries. Assessments that are fully inclusive and above the minimum provincial standard will better protect the ecological integrity of these areas.

Site Specific Protection and Management

The City has no comprehensive way to evaluate and assess the value of natural features so that proper protection and management can occur. There are many benefits to proper management, such as GHG sequestration, improved water quality and reduced risk of flooding. Looking forward, there is an opportunity to expand these regulatory tools to account for site-specific sensitivities, such as light, noise and subsurface soil composition and layering. With this information, the City would be able to more accurately identify appropriate levels of disturbance and how best they can be mitigated. Proactive measures such as this are key to maintaining a resilient ecology.

By continuing work on Natural Capital Asset Valuation, more knowledge about the value of these assets will become available, making the green network a tangible entity that can be considered in the same way we consider other assets. By adding site-specific regulatory tools, such as the North East Swale Development Guidelines, the integrity of the green network is better protected, saving time and possibly money.

Monitoring and Measuring Stresses

Not all stresses on green spaces are monitored and documented. It is more difficult to measure and report on the impacts of undocumented stresses on our green infrastructure. The undocumented stressors include the locations of common dumping sites, the spread of tree diseases, the impact of sound and light on natural areas and the impact of urban infrastructure – street lights, utility substations.

As the City continues to expand, future growth will increasingly encroach on natural areas, furthering loss of value and risking increased fragmentation. Growth beyond Meewasin jurisdiction leaves natural areas outside their authority vulnerable. By identifying the risks and challenges and comparing them to the desired state of the green infrastructure, a path towards useful, integrated green spaces will become clear.

While extensive research and consultation has been done to understand stresses on the green network, work still needs to be done to recognize the full impacts and potential loss of value to natural areas. Work is needed to conceptualize cumulative impacts and the effect of multiple stressors in order to address data gaps. Accomplishing this will require considerable forethought, based on the Strategy's guiding principles and baseline inventory.

Undocumented Natural Assets and Park Features

Irrigated park areas, skating rinks, bookable/rentable facilities wildlife crossings, remnant aspen stands and areas where rare species, species at risk, and indicator species of ecological health have not yet been inventoried or mapped. These have been identified as gaps in the inventory because they might have important ecological and community considerations.

Historical Records

We have access to historical records, such as aerial photographs, which can help us determine what changes have already occurred and potentially understand current issues, such as flood-prone areas.

Development Near Trees

Large trees provide great benefits to the community, including carbon sequestration, shelter, shade, air quality, heritage and water vapour. Yet, because of their significant energy reserves, it can take 5–7 years before large trees deteriorate from damage caused by nearby development. The City's Trees on City Property policy only protects publicly managed trees within the Urban Forestry inventory. It does not cover trees on private property or within natural areas and is only enforceable when damage from development is immediately evident.

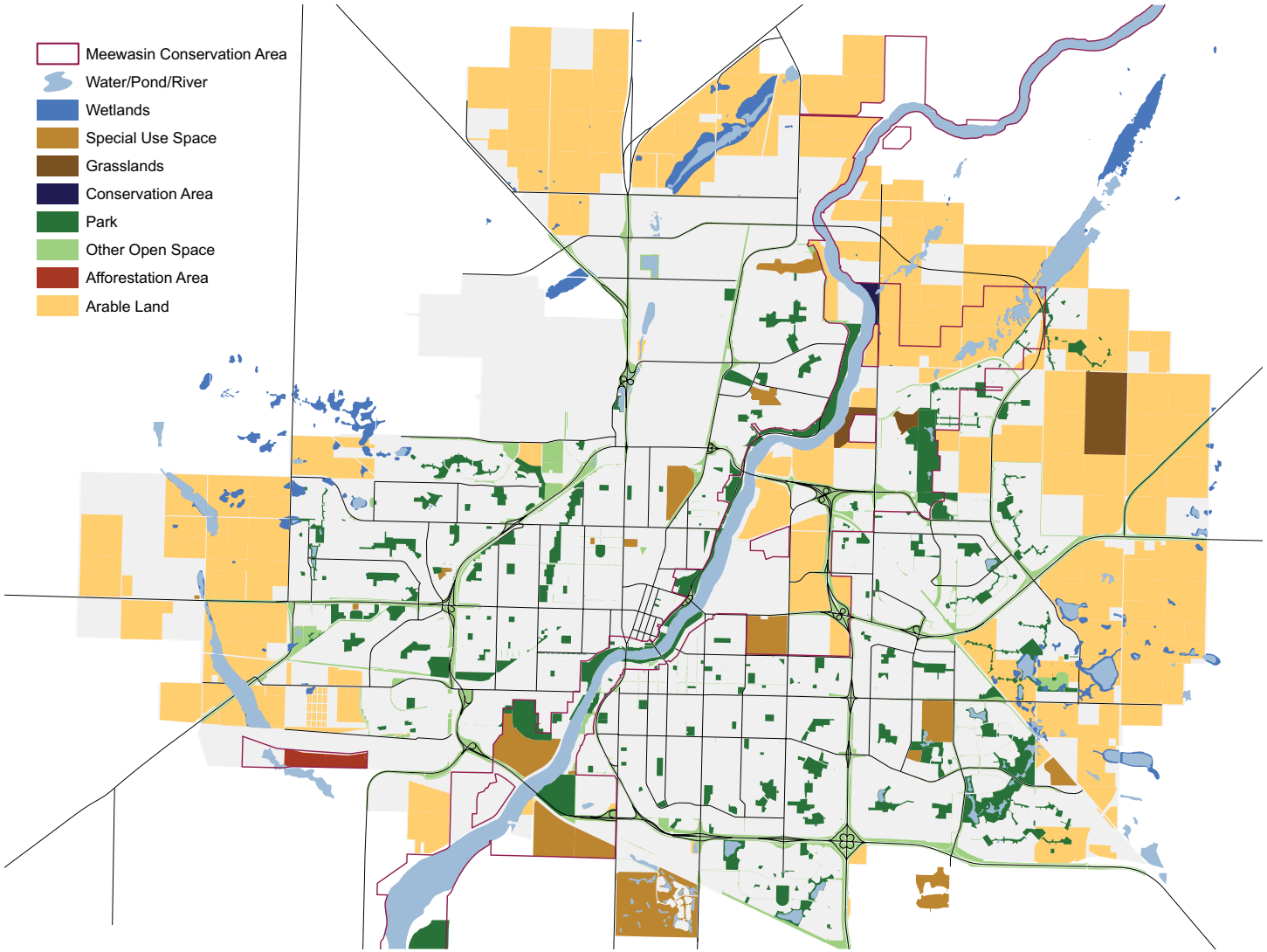
Urban Infrastructure

Urban infrastructure can support the green network and biodiversity. Utility corridors, utility easements and green bridges all have potential to support connectivity and can include natural features.

Saskatoon, 1927

ECOLOGY

Purpose: To categorize the various types of natural areas in Saskatoon.



ARABLE LAND
Lands currently used for agricultural purposes.

AFFORESTATION AREA
Areas where a forest was established where there was no previous tree cover.

Fact *The Richard St Barbe Baker Afforestation Area is named after the English forester, humanitarian and environmentalist. Baker studied at the University of Saskatchewan and received an honorary Doctor of Law from the University. He traveled and worked around the world spreading the message about the essential role of trees in regulating the earth's atmosphere. Richard St Barbe Baker is buried in Woodlawn Cemetery.*

Source: "The Man of the Trees" by Camilla Allen, Landscapes Paysages, Winter 2017, vol. 19_no. 4.

GRASSLAND
Areas dominated by native grasses.

Fact *Native grasslands support rare species of plants and birds and eco-system functions and provide important connectivity to wide-ranging mammals and migrating birds. There are less than 20% grasslands left in Saskatchewan.*

Source: Meewasin Valley-Wide Resource Management Plan

OTHER OPEN SPACE
Variety of green spaces along road rights-of-way, such as buffers, berms and centre medians.

PARK
City-owned open spaces typically used for active and passive recreation.

SPECIAL USE AREA
Open spaces such as cemeteries, golf courses and campgrounds.

SWALE
Post-glacial channel scars (swales) are a mixture of native prairie and wetland that have resulted from the scouring of glacial drainage. Post-glacial channel scars are defined by the deposition of glacial till resulting in rocky ridges and a high water table producing wet depressions in the landscape.

Source: Meewasin Valley-Wide Resource Management Plan

WATER/POND/RIVER
Permanent water bodies, including riparian areas.

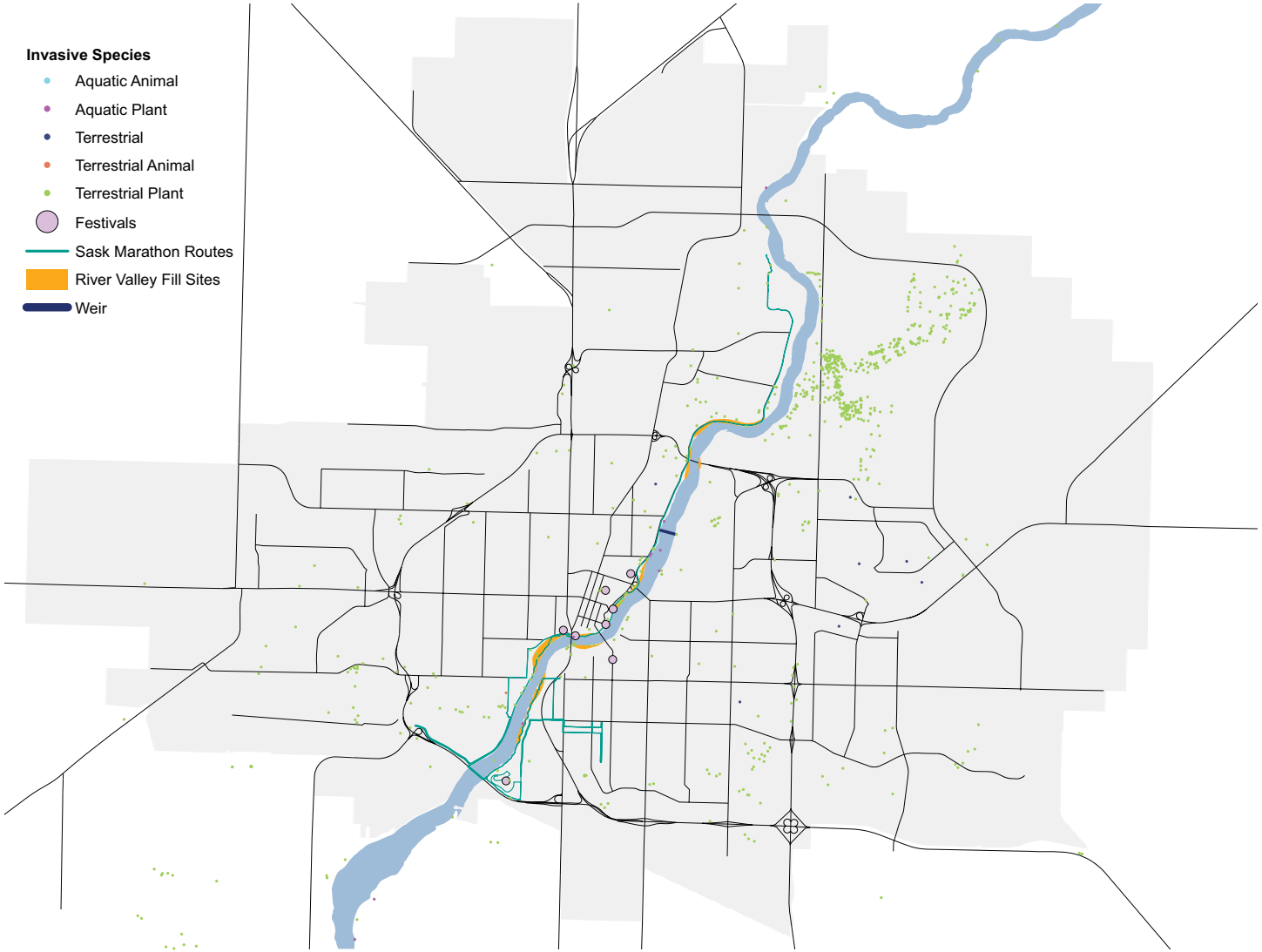
WETLAND
Lands having water at, near or above the land surface or land that is saturated with water long enough to promote wetland or aquatic processes as indicated by poorly drained soils, aquatic vegetation and biological activity adapted to a wet environment.

Fact *Wetlands in Saskatchewan are lost at a rate of 11.3 ha/day.*

Source: Ducks Unlimited Canada

STRESSES

Purpose: To identify stresses on our natural environment and green spaces.



BIRD WINDOW STRIKES

Bird collisions with windows and other reflective or transparent surfaces (e.g. glass balconies) are a leading cause of bird deaths, especially during spring and fall migration.

Source: https://birdsafe.ca/

Photo credit: Living Sky Wildlife Rehabilitation Centre

DAMAGE TO TREES FROM NEARBY DEVELOPMENT/CONSTRUCTION

Damage can be immediately evident, but it can also take 5–7 years before large trees deteriorate from damage caused by nearby development, because large trees have significant energy reserves. Examples of damage includes severed roots, compacted soil in the root zone, spilt chemicals in the root zone, stripped bark and broken large branches.

DROUGHT

A prolonged period of below-average precipitation. Drought can be a strain on vegetation that inhibits growth.

FESTIVALS

Large human gatherings put pressure on green space land cover. The festivals shown on the map attract 4,500 – 75,000 participants each and require civic services and permits.

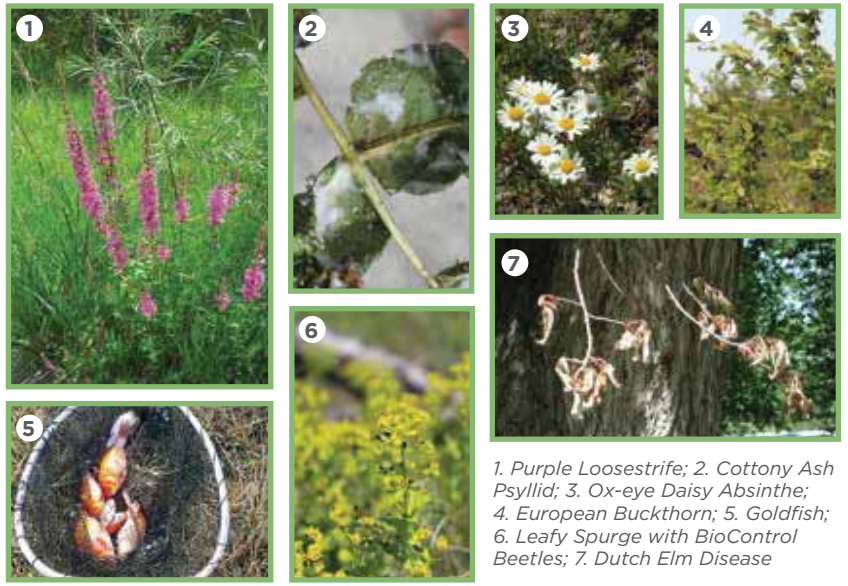
Photo credit: Tourism Saskatoon/ CONCEPTS Photography & Design

FLOODING

Overland storm water runoff during spring thaw and rain events that exceeds storm sewer and/or infiltration capacity.

INVASIVE SPECIES

Invasive species are not native to a specific location. Instead, they are accidentally or intentionally introduced, have a tendency to spread and may cause damage to the environment, economy or human health. Invasive species can include plants, animals, insects, invertebrates, fungi, bacteria and diseases.



1. Purple Loosestrife; 2. Cottony Ash Psyllid; 3. Ox-eye Daisy Absinthe; 4. European Buckthorn; 5. Goldfish; 6. Leafy Spurge with BioControl Beetles; 7. Dutch Elm Disease

Significant Invasive Species in the Region

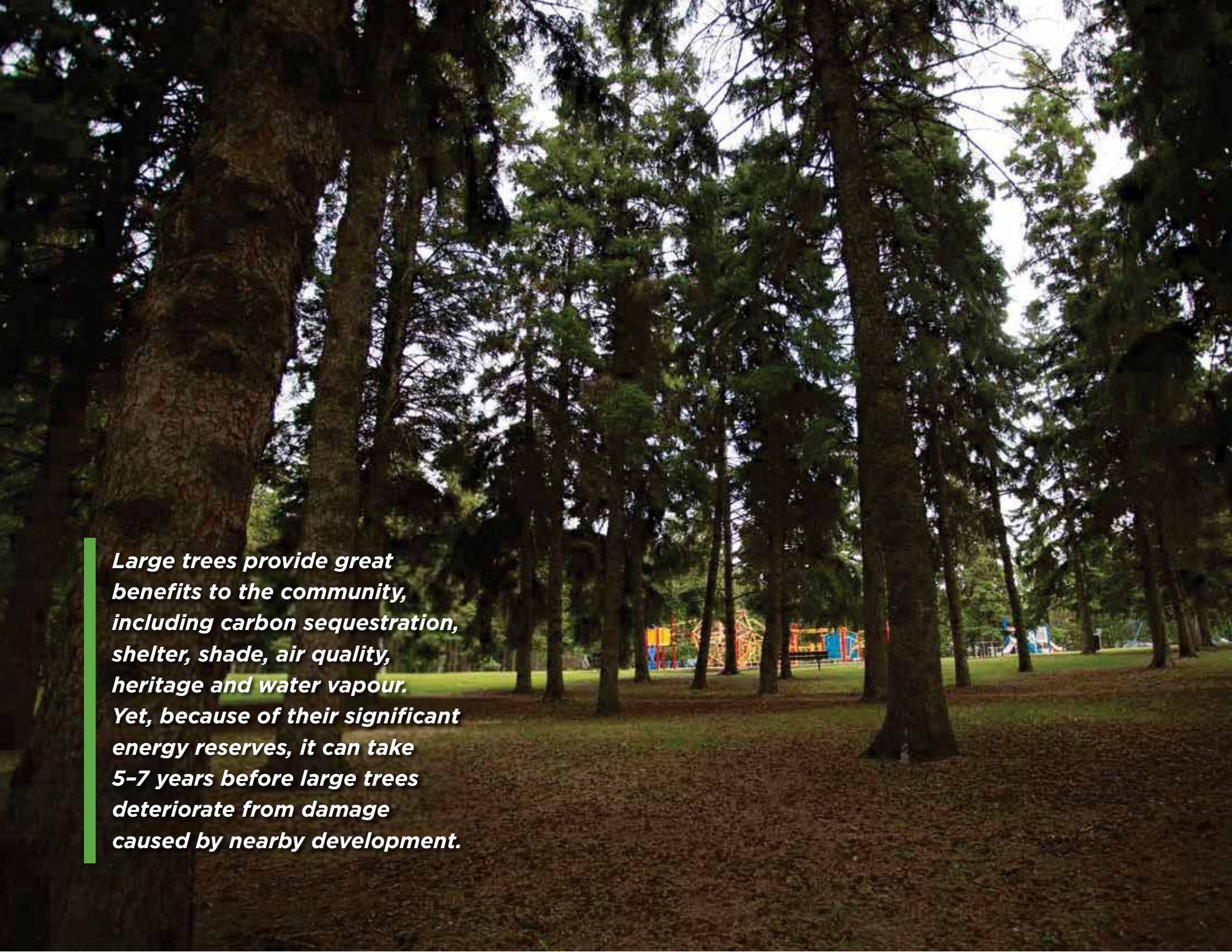
Wild Boar • European Buckthorn • Dutch Elm Disease
Purple Loosestrife • Leafy Spurge with BioControl Beetles
Scentless Chamomile • Common Tansy • Ox-eye Daisy Absinthe
Smooth Brome • Wild Parsnip • Crested Wheatgrass
Cottony Ash Psyllid • Koi • Goldfish

NEW AND EMERGING INVASIVE SPECIES

Threats found outside the region but spreading toward the region.

Zebra Mussels • Quagga Mussels • Prussian Carp
Emerald Ash Borer • Diffuse Knapweed • Russian Knapweed
Flowering Rush • Downy Brome

Stresses continued on page 39 >



Large trees provide great benefits to the community, including carbon sequestration, shelter, shade, air quality, heritage and water vapour. Yet, because of their significant energy reserves, it can take 5–7 years before large trees deteriorate from damage caused by nearby development.

RIVERBANK SLUMPING SITES
The combination of topography, stratigraphy and ground water conditions can lead to slope failure, causing landslides along the South Saskatchewan River bank. Slope failures are a public safety risk and can damage infrastructure and property.

RIVER VALLEY FILL SITES
Areas within the river valley and along the riverbank that have been filled with non-native materials. The unknown and variable nature of the fill materials means there is potential for discovering contamination in the form of inert waste, municipal waste and impacted soil.

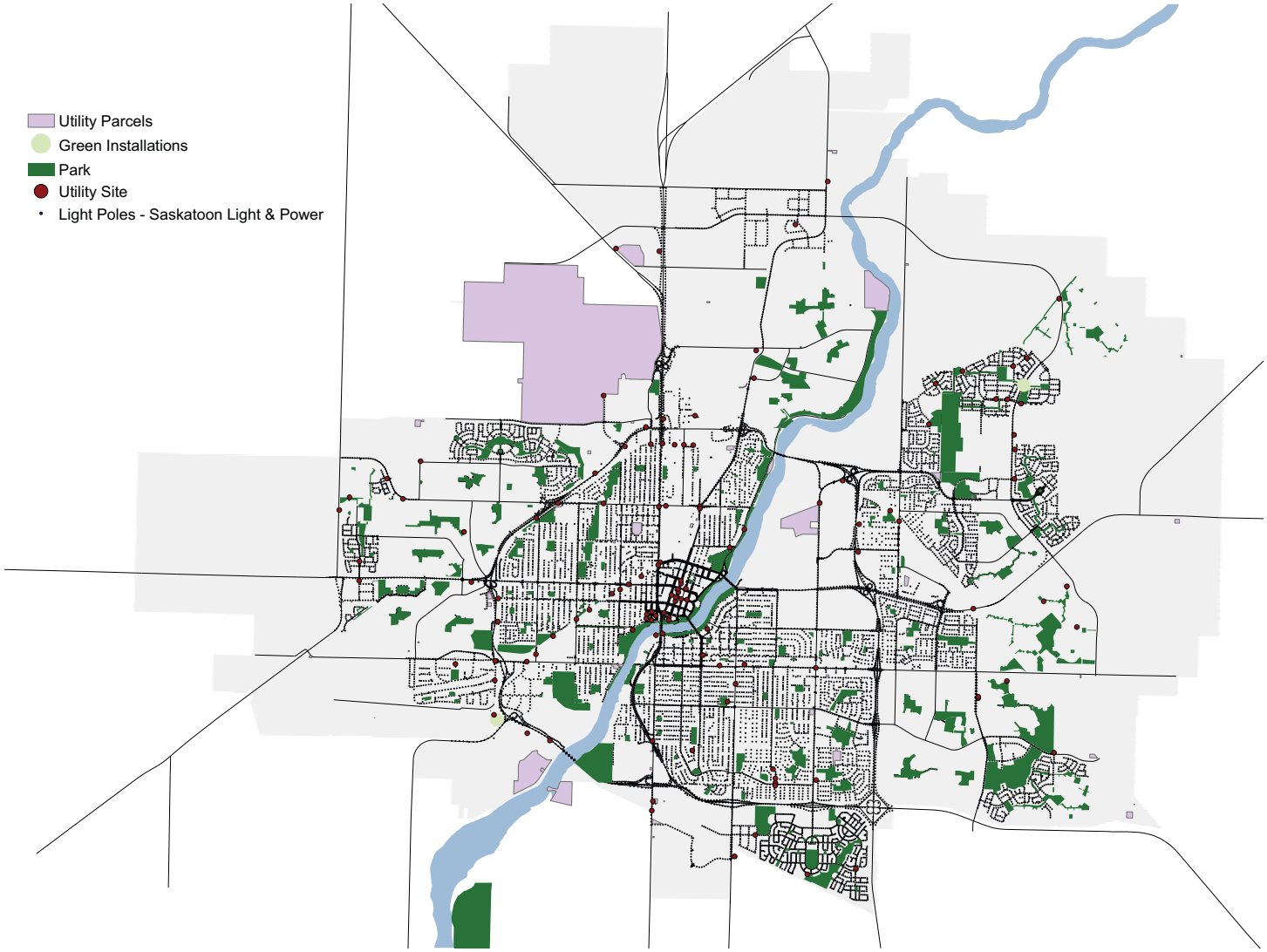
SOIL IMPACTED SITES
Sites that have potential environmental impacts as a result of onsite or offsite activities. Common activities that may lead to soil or ground water contamination include the storage, handling and distribution of hazardous materials and wastes as well as certain industrial activities. Contaminants can persist in the environment even as site uses change over time. Environmental site assessments can and are conducted to screen for potential risks. Environmentally impacted sites are administered according to the *Saskatchewan Environmental Management and Protection Act* and its Environmental Code Regulations.

URBAN GROWTH
Urban expansion that is encroaching on natural areas.

WILDFIRE
Unplanned fires.

URBAN INFRASTRUCTURE IN PUBLIC OPEN SPACE

Purpose: To show the locations of utility infrastructure installed in public open space.



GREEN BRIDGE
A structure with park-like features located above a roadway that allows pedestrians, cyclists or wildlife to cross without interacting with vehicles or the road.

STREET LIGHT NETWORK
Publicly managed roadway and park lighting that allows for the safer movement of vehicles and pedestrians at night, reduces night time accidents, enhances a sense of personal security and encourages night time use of lit areas.

UTILITY PARCELS
A parcel of land that contains a utility.

UTILITY SITE
City-owned site categorized as utility (cell tower, red light camera, etc.).

1. Evergreen Green Bridge; 2. Substation 20 (Avenue C) owned by Saskatoon Light & Power; 3. Elaine Hnatyshyn Park, Evergreen.

# of street light fixtures in the City

21,059*

*as of January 1, 2016

21.5%
are full cut off.

HPS Full Cut-off: 3,600
LED Full Cut-off: 1,800

Full cut-off street lights do not emit light above the horizon and light is not dispersed above a 90-degree horizontal plane from the base of the fixture.

STORM WATER SERVICING

"By sustaining naturalized water processes within urban environments, we can reduce the impact of the built environment on our water resources."

Source: https://theconversation.com/stormwater-innovations-mean-cities-dont-just-flush-rainwater-down-the-drain-40129

STORM WATER SERVICING

Purpose: To identify the storm water services that green spaces provide.

This theme describes both the City's grey and green storm water infrastructure as well as the opportunities to manage storm water in innovative ways to support the green network.

KEY FINDINGS

Use of Raw and Grey Water

Raw water is water that originates from the river, ground or rain, whereas storm water has traveled on the ground and has come into contact with unknown surfaces. Grey water is household waste water that could be reused without purification. Current regulations limit the use of raw and grey water (e.g. for landscape irrigation), but there are many options for using these water types that would reduce the demand on potable water without comprising human health and safety.

The City is exploring the use of raw and grey water within the current regulatory framework. By lessening dependency on potable water, water treatment costs could be reduced, resulting in savings for residents and the City. Innovative process development, new technologies and meaningful leadership could be applied to create an approach to treat, monitor and store raw water, so its use can reach full potential. Strategic water reuse could reduce the amount of water drawn from the river for potable water as well as the amount of waste water being returned for treatment prior to discharge back to the river.

Wetlands Policy

The Wetlands Policy has not protected wetlands to the extent that was desired. Incorporating natural features into a project's site design and layout can minimize its overall impact. Working with the layout of the land creates an opportunity to introduce one-of-a-kind features using natural topography to reduce runoff, erosion and maintain natural processes.

Considerations that limit innovative natural site design include conflicting standards and insufficient communication between work groups during planning and development stages.

The development review process is a concurrent initiative which creates an opportunity to make planning, design and layout decisions that take advantage of natural assets and overcome site limitations.

Integrated Storm Water Management (Design, Inspection, Enforcement)

Storm water is often released into the natural environment without pollution management. That's a problem, since as water runs over urban surfaces, it picks up bacteria, heavy metals, nutrients and particulates. By using green infrastructure, we can imitate nature to solve urban problems. Swales and overland drainage structures filter and improve the quality of water entering the river. When comparing the life cycle of green infrastructure to hard infrastructure, in many cases green infrastructure can be more cost-effective for managing storm water because long term replacement, maintenance and repair costs are significantly reduced.

Current policy requires developers to manage storm water on site (with the exception of Downtown through the "cut the red tape" initiative); in addition, the 2017 development standards update now requires post flow to match pre flow conditions. To ensure the success of City policies, standards and guidelines, there needs to be logistical support and financial motivation for developers, as well as sufficient enforcement measures. Due to a previous lack of enforcement, multiple challenges have come up, such as sump pump discharges causing damage to parks and residential properties, high waste water treatment costs due to storm water entering the sanitary system, high storm water management charges and stress on underground infrastructure and natural processes. By not addressing these issues, we risk over-building infrastructure, decreasing flood protection and increasing cost impacts for repairs and time resources.
Workshop participants expressed interested in using living systems to increase permeability and reduce runoff on sites, but without a level playing field for contractors, developers and property owners, it is not economically feasible for them to do so. An integrated approach to storm water management could support developers and enable them to customize storm water technology to each site.

Innovative Site Design through Low Impact Development (Encourage, Enforce, Prioritize)

Low Impact Development (LID) Guidelines were written as a first step towards encouraging resilient site design. LID guidelines incorporate current, innovative design solutions that mimic naturalized water balances to restore processes often lost in a built up urban environment. Guidelines, unlike standards, are not mandatory or enforceable, and so have little clout.

There is an opportunity for the City to play a more active role in encouraging innovative site design and integrated storm water management though the use of the LID guidelines. To do this, prioritizing low impact development is critical. Benefits of such an initiative include empowering the administration to lead by example, improving internal coordination, facilitating shared learning alongside the community and building resilient storm water management for everyday and extreme events.

As with any new technology, there is still much to learn about the actual mechanisms and impacts of implementing LID in a cost-effective way. Pilot projects, partnerships and relationships with the community provide potential learning opportunities.

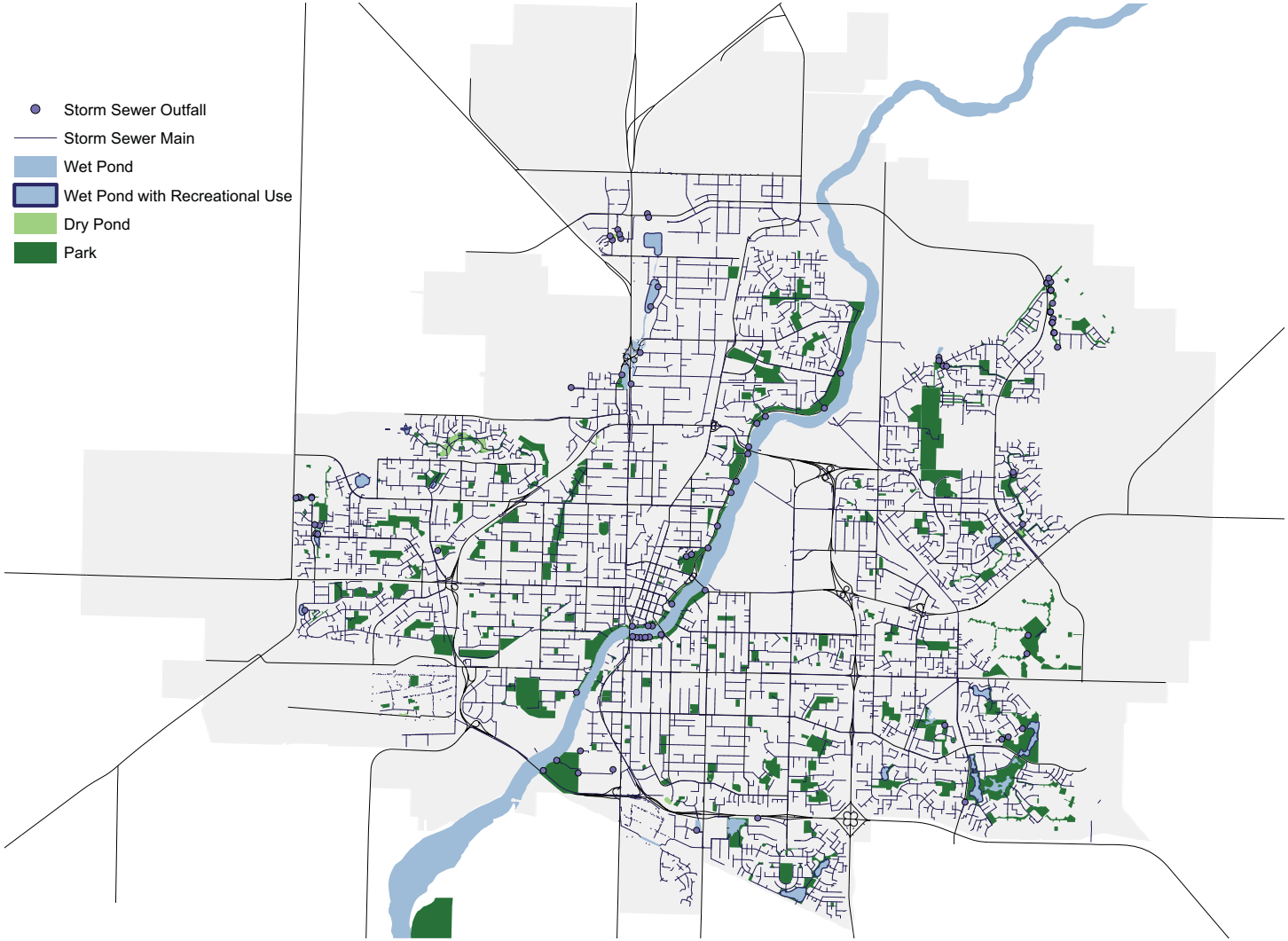
Low Impact Development Inventory and Evaluation

Low Impact Development (LID) installations are not inventoried or mapped. Many of the LID installations are pilot projects or the result of adopting new technologies and innovations and is implemented on an ad hoc basis by numerous work groups. Without post-construction evaluations and a central way to share experience and knowledge of the many innovative techniques, our understanding of what is possible is not optimal. As well, the impact, if any, of infiltration into ground water and other quality monitoring is not documented.

STORM WATER

Purpose: To show the infrastructure currently in place to manage storm water, particularly peak flow, and to define components of the storm water network and its relationship to the City's green spaces.

Storm water runoff includes rainwater and snowmelt that flows across the land and enters a network of storm water infrastructure in Saskatoon, including pipes, culverts, ditches, outfalls, manholes, catch basins, wet ponds, wetlands, dry ponds and drainage swales.



DRY PONDS

Storm water detention ponds that drain completely between storms. Dry ponds control peak flows of runoff, help improve water quality and lessen the effects of erosion.

Fact *The Design Storm defines the amount of rainfall runoff a pond is designed to hold. Most ponds hold the 1-in-100-year storm, which is modelled using a storm recorded on June 24, 1983, in which 96.5 mm of rain fell over 7 hours.*

STORM SEWER MAIN

Main sewers are collectors for numerous lateral and branch sewers from an area of several hundred acres or a specific neighbourhood or housing development. They convey the storm water to larger trunk sewer lines.

STORM SEWER OUTFALL

Point where a pipe discharges to the river or other body of water.

WATER QUALITY AT OUTFALLS

Weekly and monthly water quality testing of outfalls discharging storm water into the South Saskatchewan River are done by Saskatoon Water. Water quality results are reported to the Water Security Agency.

An initiative is underway in partnership with the University of Saskatchewan to better characterize storm water and evaluate monitoring needs.

WET PONDS

Storm water retention ponds that provide both retention and treatment of storm water runoff. A wet pond has a permanent pool of water.

Fact *Many of the City's storm water ponds are used for recreational purposes. All users of the ponds do so at their own risk. Activities such as skating, broomball and hockey are permitted during the winter; non-motorized boating (i.e. paddle boats, canoes) is permitted during the summer.*

GREY STORM WATER NETWORK

An engineered system of pipes, drains, ditches and detention ponds designed to manage storm water.

Storm Sewer Main Network

Lateral & Branch – Lateral and branch sewers are the upper ends of the municipal sewer system. Laterals dead-end at their upstream end with branch sewers collecting the storm water from several lateral sewer lines. The minimum size for a storm lateral is 300 mm diameter.

Main – Main sewers are collectors for numerous lateral and branch sewers from an area of several hundred acres or a specific neighbourhood or housing development. They convey the storm water to larger trunk sewer lines.

Trunk – Trunk sewers are the main arteries of the collection system. They collect and convey the storm water from numerous main sewer lines. The minimum size of a storm trunk is 1,350 mm diameter.

Culvert – A pipe which connects channels through an obstacle, such as a road, that blocks the channel. Culverts are often corrugated steel, but may also be concrete or other material.

Storm Water continued on page 48 >

GREEN STORM WATER NETWORK

An approach to storm water management that protects, restores or mimics the natural water cycle using vegetation, soil and other elements.

Bioswale

Bioswales are landscape elements designed to concentrate or remove silt and pollution from surface runoff water. A swaled drainage course has gently sloped sides (less than 6%) and is filled with vegetation, compost and/or riprap.

Ditch

A narrow channel dug in the ground, typically used for drainage alongside a road or the edge of a field.

Drainage Swale

A graded, vegetated, shallow, open channel built to move storm water. Swales are a low cost, low maintenance option for removing sediments, nutrients and pollutants; they can replace storm sewer pipes in some instances.

Wetlands

Natural – Naturally occurring wetland.

Naturalized – Wetland that has been altered and replanted with naturally occurring wetland vegetation.

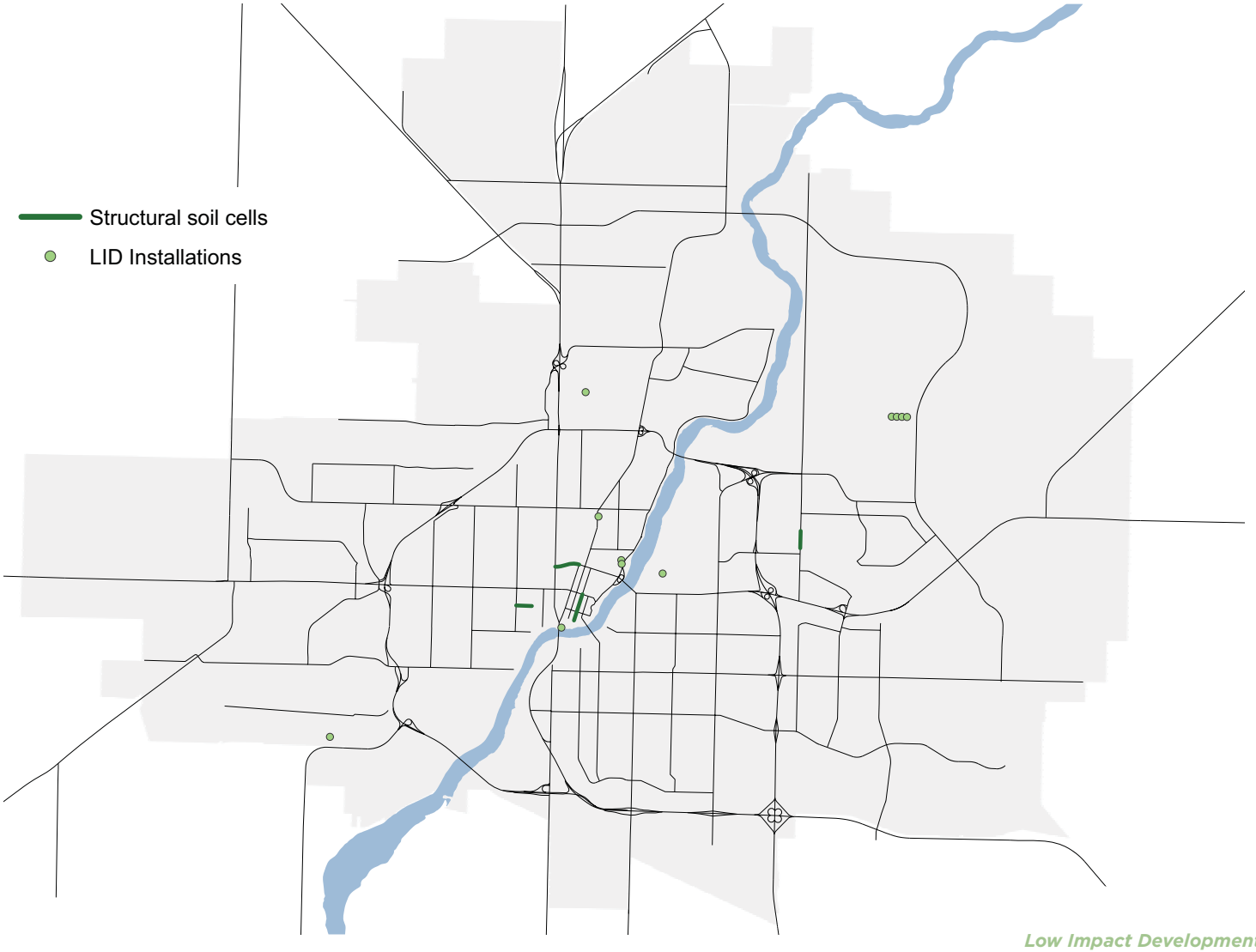
Constructed – A constructed and/or modified water body that fluctuates with water drainage but holds water at all times. Constructed wetlands are designed to mimic some or all of the functions of naturally occurring wetlands, including filtering pollutants from storm water runoff and providing habitat with associated buffers/riparian areas.

Bioswale

Drainage Swale

LOW IMPACT DEVELOPMENT

Purpose: To categorize land planning and engineering design approaches to managing storm water runoff and to identify locations and types of Low Impact Development (LID) installations in the city.



Low Impact Development continued on page 50 >

BIOSWALE

Bioswales are landscape elements designed to concentrate or remove silt and pollution from surface runoff water. A swaled drainage course has gently sloped sides (less than 6%) and is filled with vegetation, compost and/or riprap.

GREEN ROOF

A green roof or living roof is a building roof that is partially or completely covered with vegetation and a growing medium to capture storm water. It may also include additional layers, such as a root barrier, drainage and irrigation systems.

RAIN GARDEN

A rain garden is a planted depression that allows absorption of rainwater runoff from impervious urban areas, such as roofs, driveways, walkways, parking lots and compacted lawns.

RAINWATER STORAGE TANK

Rainwater collected from building roofs is stored in large tanks.

Fact *Rain from the roof at Access Transit is stored in three 38,000 litre tanks. Rainwater is pumped from the tanks to wash buses, flush toilets and irrigate the landscaping; 50% of water used to wash buses is from harvested rainwater (500,000 L/year).*

STRUCTURAL SOIL CELLS

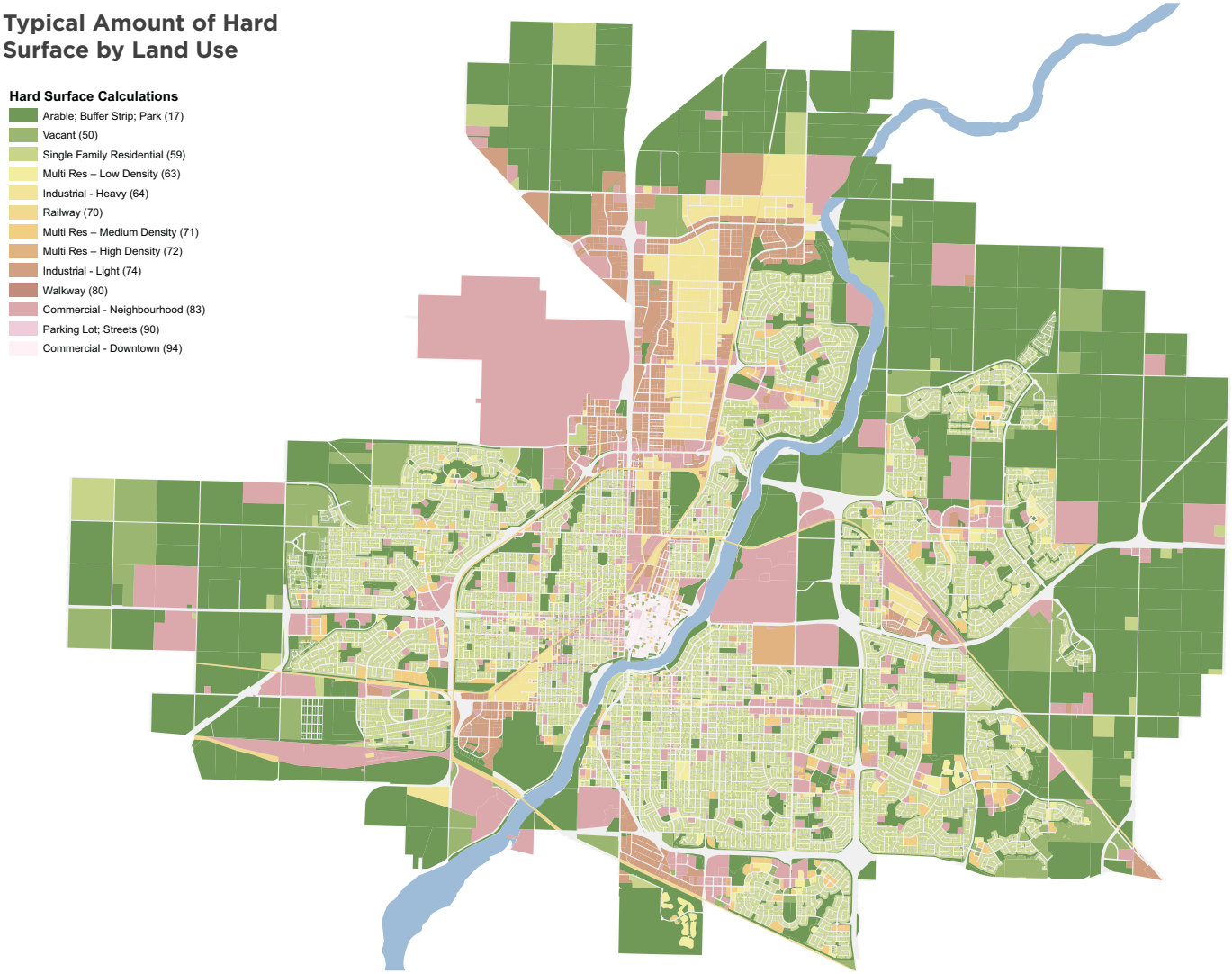
A modular suspended pavement system that uses soil volumes to support large tree growth and provide powerful on-site storm water management through absorption, evapotranspiration and interception.

PERMEABILITY

Purpose: To show the degree to which rain water is able to soak into the ground based on land use and soil types.

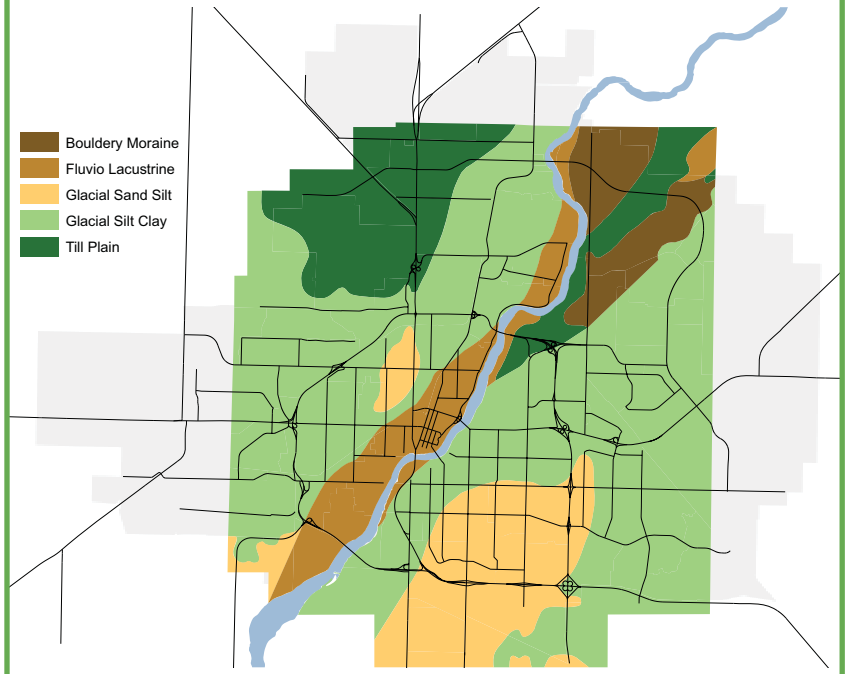
Areas with a high percentage of hard surface tend to absorb less rainfall and produce more runoff into the storm water system.

Typical Amount of Hard Surface by Land Use



SOIL TYPES

Soil types with higher infiltration rates can absorb greater volumes of rainfall and reduce runoff into the storm water system.



SOIL TYPE INFILTRATION RATES

Infiltration is the process by which water penetrates into soil from the surface. The infiltration rate is the time it takes for soil to absorb a certain volume of water in a rainfall.

SOIL TYPE	Infiltration Rate
Bouldery Moraine	Very High
Fluvio Lacustrine	High
Till Plain	Medium
Glacial Sand Silt	Low
Glacial Silt Clay	Very Low

IMPERVIOUS

Surface material that prevents water from passing through or penetrating to sub-soils.

PERMEABILITY

The ability of a fluid to flow through a porous medium.

PERVIOUS

Surface material that allows water to pass through to sub-soils.


CITY OF

HERITAGE & CULTURE

The role we play as stewards of the environment includes protection of historical and cultural resources, which in turn protects our unique sense of place and identity.

HERITAGE & CULTURE

Purpose: To reflect our relationships with green spaces, history and community identity.

This theme describes our relationship with green spaces, our shared stewardship and community identity. Here we identify significant and landmark sites.

KEY FINDINGS

Heritage Properties

Heritage implies stewardship and responsibility for history as it passes from generation to generation. Heritage properties can be made up of buildings, monuments and sites with historical value. Many sites with historical value do not have any built structure associated with their value. These sites could be areas where historical events occurred, lands used for traditional purposes or lands where historical artifacts have been found. Heritage resources are protected through the Heritage Registry, but the registry focuses on built structures more than open spaces and intangible cultural resources. Updating the Heritage Registry could provide better protections for all historical resources.

The Civic Heritage Policy includes "Natural Heritage" as a Heritage Resource to be identified and conserved, but it is an under-represented and perhaps forgotten aspect of our heritage. Natural habitats and landforms are the heritage passed down to us by glaciation and 10,000-plus years of weathering, plant and animal succession and human habitation. Typical prairie landforms (the NE Swale or even a prairie slough with surrounding grasses and aspen bluffs) are unique and characteristic. Preserving them preserves an aspect of our identity.

The role we play as stewards of the environment includes protection of historical and cultural resources, which in turn protects our unique sense of place and identity. In doing so, we avoid repeating historical mistakes when it comes to land use. We also develop opportunities for education and awareness of other cultures and lifestyles and enhance the quality of life of city residents. Protecting our heritage resources provides residents with links to the historical occupants of the area and establishes Saskatoon's unique identity.

Wanuskewin Heritage Park

Wanuskewin is one of eight Canadian sites nominated for UNESCO World Heritage Site designation in 2018. If selected, it would become the first UNESCO site in Saskatchewan. One of the key selection criteria is appropriate visual and sound buffers. In order for Wanuskewin to be selected, the City needs to ensure that views from the park are protected and that the site is protected from impacts of adjacent development through buffers.

Fact *The Wanuskewin area contains some of the most exciting archaeological finds in North America, many of which pre-date the pyramids of Egypt. To date, 19 Pre-Contact archaeological dig sites have been identified on the terraces and point bars in the Opimihaw Creek valley bottom or coulee depressions along the valley wall of the South Saskatchewan River. The result is a remarkable complete and intact record of cultural development in the region. The theme of Wanuskewin Heritage Park is one of interpretation – exploring and explaining the meaning of Plains cultures to gain a better understanding of ourselves, Saskatchewan's Indigenous peoples and our common heritage.*

In 1979, world-renowned architect Raymond Moriyama was commissioned by the City of Saskatoon to develop a 100-year Master Plan for the Meewasin Valley Authority. Moriyama visited Wanuskewin at this time and incorporated the property and its rich history into the plan. In the early 1980s, Dr. Ernie Walker, Department of Anthropology and Archaeology at the University of Saskatchewan, further identified the area as an archaeological marvel and began the process of developing Wanuskewin as a means to protect it.

"Our story began with a dream and desire to tell the story of the land and its first people and to share this collective narrative that is part of a larger national identity."

Source: https://wanuskewin.com/our-story/

In partnership with the Meewasin Valley Authority and the City of Saskatoon, Wanuskewin Heritage Park became a Provincial Heritage Property in 1983. In 1987, Her Royal Highness Queen Elizabeth II declared it a National Historic Site and in 1992 the Interpretive Centre and trails were opened to the public.

Source: https://wanuskewin.com

Archaeological Resources

Wanuskewin is not the only archaeological site in Saskatoon. The 1983 Saskatoon Perimeter Archaeological Survey by Dr. Walker describes known archaeological resources in the area surrounding the City's boundary at that time.

Identified Archaeological Sites

Wanuskewin • Gowen sites • Factoria
Moose Jaw Trail • Rocky Island

Source: 1983 Saskatoon Perimeter Archaeological Survey by Dr. Walker

Fact *The Gowen Sites are ancient sites dating back 6000 years to the Hypsithermal period and were discovered at two locations at the landfill, the first site in 1977 and the second site in 1980. The sites were investigated by Dr. Ernie Walker, then a graduate student from the Department of Anthropology and Archeology at the University of Saskatchewan. The findings changed archeological thinking which believed that the region was uninhabited during that period. Bone fragments, organic material and a bison processing area were discovered. The sites are named after the heavy-equipment operator, Charles Gowen, who unearthed the sites while at work.*

Source: http://thestarphoenix.com/opinion/columnists/history-matters-grader-operator-unearths-two-ancient-sites-in-saskatoon-landfill

Fact *Woolly Mammoth remains have been found in two locations near Saskatoon. Mammoth remains tell of an environment in Saskatchewan of tundra at the edges of ice fields during the glacial period.*

Source: http://toronto.citynews.ca/2015/12/22/pointed-discovery-woolly-mammoth-tusk-found-east-of-saskatoon/

Cultural Identity

The locations of historical facts, events, routes and sites and intangible cultural heritage have not been compiled in a comprehensive way.

Saskatoon has a long history of multiculturalism which brings with it historical facts and sites associated with different cultural groups and events, which speak to our community identity.

Meaningful places identified by workshop participants:

- Avalon Dog Park
- Batoche Trail (Moose Woods, Batoche, River Heritage Trail)
- Crocus Prairie
- Diefenbaker Park
- Factoria
- Gabriel Dumont Park
- Heritage Park
- Holiday Park
- Kernen Prairie
- Marr Residence and Garden
- Meewasin Trails
- Moose Jaw Trail
- Mr. Haultain's Ashes Site
- Northeast Swale
- Peggy McKercher Conservation Area
- Peturrson's ravine
- Preston Avenue South Archaeological Resources
- Riddell Paleontological Site
- Richard St Barbe Baker Afforestation Area and Dog Park
- Rocky Island Point and Beach
- Saskatoon Natural Grasslands
- SS Medicine Hat Site
- Wanuskewin Heritage Park (overall site and specifically medicine wheel site)
- Woodlawn Cemetery (overall and significant grave sites)
- Woolly Mammoth Discovery Site (gravel pits)

Traditional Indigenous Sites

More extensive engagement with First Nations and Métis groups to document significant sites and to consider requirements for traditional uses is needed. The City has committed to responding to the Truth and Reconciliation Calls to Action by working with the community to enhancing understandings of the past and moving forward to a brighter future. This commitment can be honoured further through the identification and protection of traditional, ceremonial and spiritual sites. Developing new policy and land use designations for sites identified as having traditional significance is achievable by partnering with those who have the needed expertise.

Interpretive Sites

Not all unique or identifiable sites and landscape features are interpreted. Interpretive features are used to develop awareness and appreciation of the elements they interpret.

> ***The most visible reminder of Factoria's existence today is the large stone at the end of Adilman Drive; today I can walk my parents' golden retriever along the pristine Meewasin trail that runs right past it, but I can't stop and read a plaque or historical marker that explains what that big stone is.***
>
> *Source: https://www.ominocity.com/2015/10/08/exploring-the-ruins-of-the-magical-failed-city-of-factoria/ by Trevor Pritchard*

Views, Vistas and Viewsheds

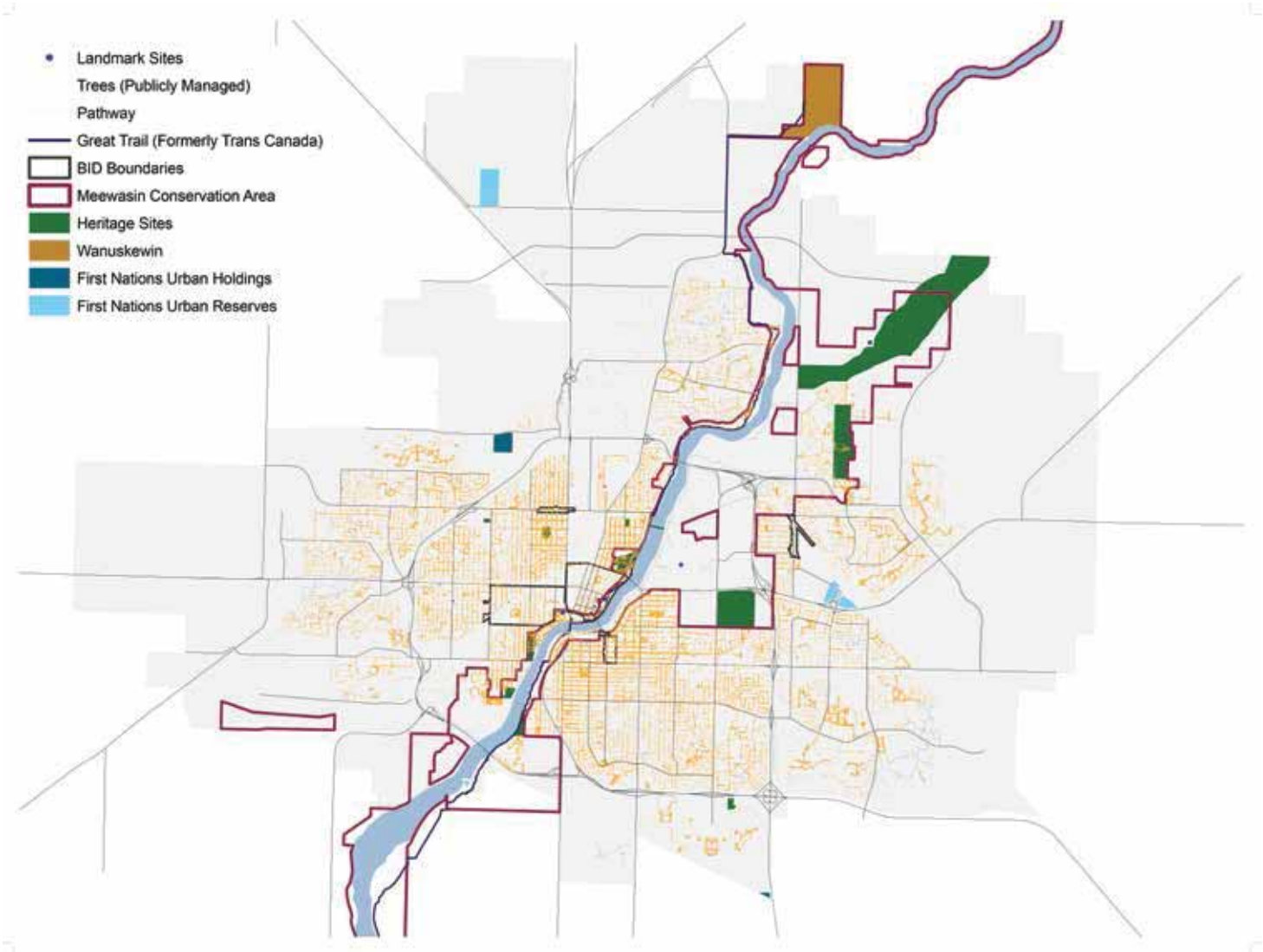
Key views, vistas and viewsheds are not protected by policy. Viewshed protection policies are used to buffer significant natural areas and maintain access to important sites and features for public view.

Protecting our heritage resources provides residents with links to the historical occupants of the area and establishes Saskatoon's unique identity.

Fred Mitchell Memorial Gardens

NATURAL AND CULTURAL SIGNIFICANT SITES

Purpose: To describe natural and cultural significant sites by type and level of protection.



THE GREAT TRAIL

Formerly known as the Trans Canada Trail, a network of multi-use trails linking Canada and Canadians.

Source: https://thegreattrail.ca/
Photo credit: Peter Christianson


The Great Trail

HERITAGE SITE (GREEN SPACE)

A site included in the official listing of green spaces on the City's Heritage Registry and identified as having significant heritage value or interest:


Bowerman Residence


Forestry Farm Park

Ashworth Holmes Park
Bowerman Residence
City Gardeners Site
City Greenhouses
Saskatoon Forestry Farm Park & Zoo
Kinsmen Park
Fred Mitchell Memorial Gardens
Kiwanis Memorial Park
Moose Jaw Trail
Next of Kin Memorial Avenue
Northeast Swale
Patterson Garden Arboretum
Nutana Cemetery (Pioneer Cemetery)
Victoria Park • Weir

Fact *The Meewasin Northeast Swale is one of the largest pieces of unbroken prairie, riparian, forest, wetland in the Saskatoon region and contains patches of rare fescue.*

Source: https://meewasin.com/visitors/meewasin-swale/


Moose Jaw Trail

INTERPRETIVE FEATURES

Elements that communicate the value or significance of a site or landmark.

LANDMARKS

Prominent and identifiable open spaces in the city. These include:
Broadway District
Cameco Meewasin Skating Rink
Downtown District
Farmers' Market
Meewasin Valley Trail
Saskatoon Forestry Farm Park & Zoo
River Landing
Nutrien Playland at Kinsmen Park
Riversdale District
South Saskatchewan River
Sutherland District
33rd Street District
University of Saskatchewan
Wanuskewin Heritage Park


River Landing


University of Saskatchewan

MEEWASIN CONSERVATION AREA

The portion of the South Saskatchewan River Valley conserved by the Meewasin Valley Authority through development controls, education programs and restoration work.

Fact *Meewasin jurisdiction has lost 29% of habitat over the past 15 years.*

Source: Meewasin Valley-Wide Resource Management Plan
Photo credit: Stephen Kent

SUTHERLAND MIGRATORY BIRD SANCTUARY

Fact *The Sutherland Migratory Bird Sanctuary (MBS) was established in 1924 and is now part of the western half of the Saskatoon Forestry Farm Park & Zoo. Two artificial ponds are maintained for a variety of native and exotic birds and waterfowl. The northeast portion of the MBS is now part the Evergreen neighbourhood, while the eastern portion is Agriculture and Agri-Food Canada land.*

URBAN FOREST

Publicly managed trees.

Fact *The Plains Cottonwood (Populus deltoids) in the 200 Block of 8th Street East is one of the largest trees in the city. It measures over 1.5 meters (5 feet) in diameter at 1.3 meters (4.5 feet) above ground level.*

Source: Saskatoon Tree Tour, SOS Elm Coalition (soselms.org)

URBAN RESERVE

Land purchased by a First Nation under the terms of the Treaty Land Entitlement Framework Agreement and designated Reserve by the Federal Government. Once designation occurs, jurisdiction passes from the municipality to the First Nation.

URBAN LAND HOLDINGS

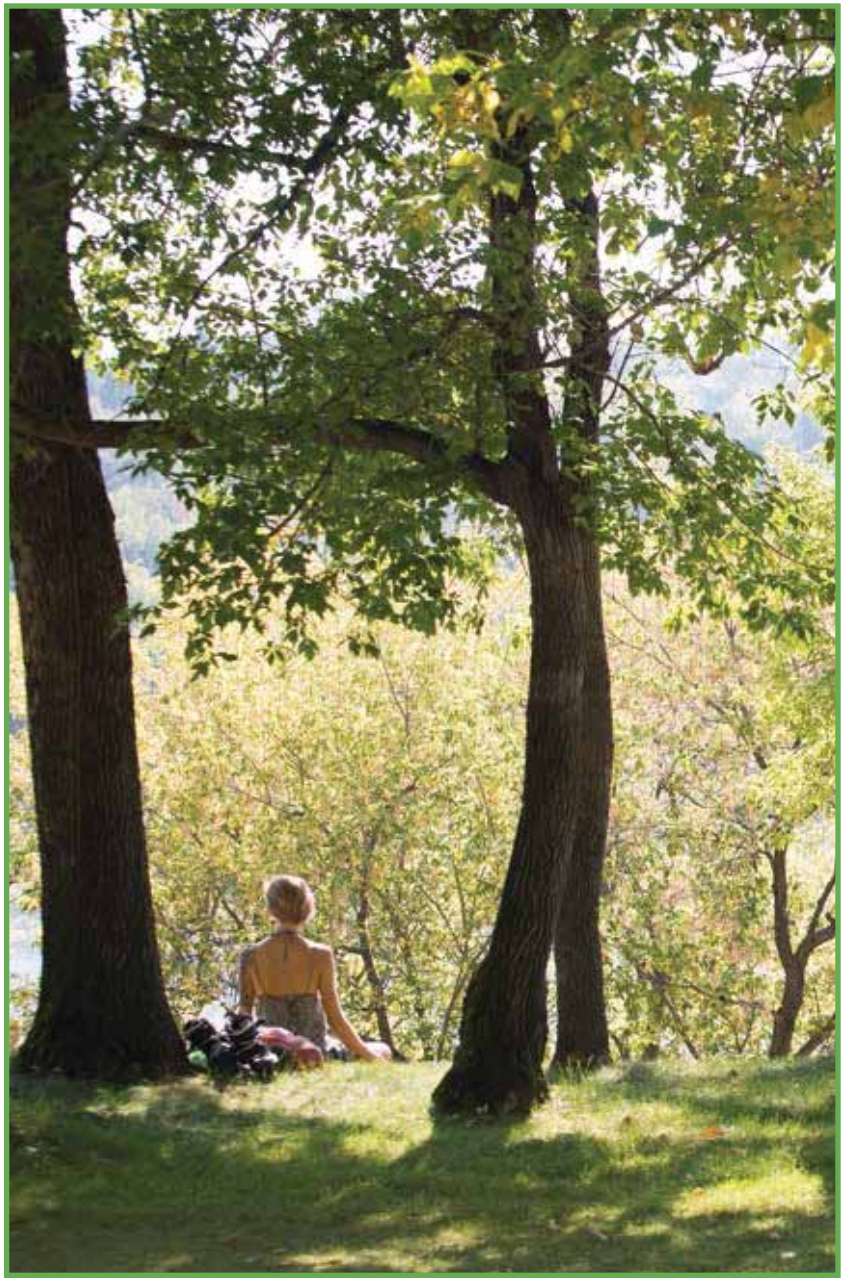
Land purchased by a First Nation under the terms of the Treaty Land Entitlement Framework Agreement but not yet designated Reserve status by the Federal Government. Jurisdiction remains with the municipality until the First Nation initiates the designation process and it is approved by the Federal Government.

VIEWS AND VISTAS

Notable and attractive scenery. A vista is a long or distant view.

VIEWSHED

A viewshed is the geographical area visible from a location. It includes all surrounding points in line-of-sight with that location and excludes points beyond the horizon or obstructed by terrain and other features (e.g., buildings, trees).



POSSIBILITIES

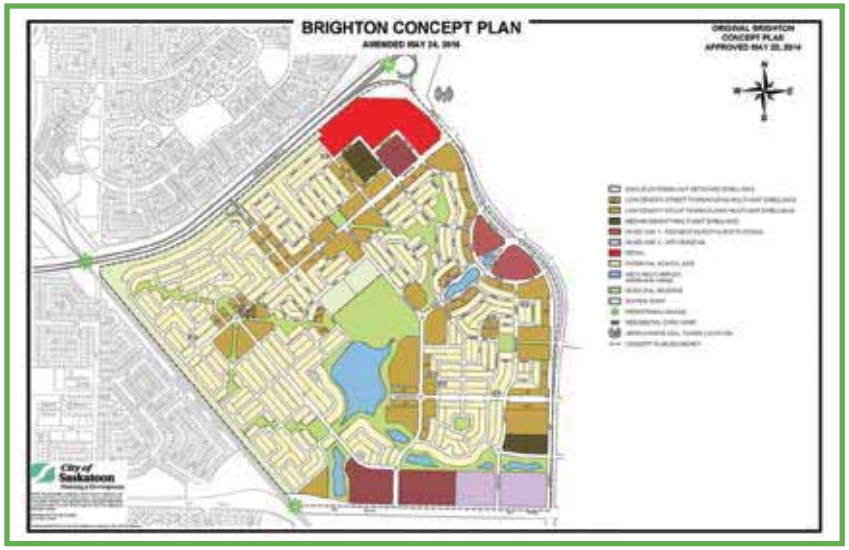
> ***...partnerships could provide additional support in the protection and conservation of natural areas, add to the knowledge base contained in this document and assist with documenting and monitoring natural and green spaces.***

POSSIBILITIES

Through our research into other municipalities, we have begun to explore creative options, innovative ideas and inspiring initiatives that could be adapted to Saskatoon. This section highlights a few examples.

BRIGHTON NEIGHBOURHOOD, SASKATOON

The City is beginning to incorporate natural features into new development areas at Saskatoon's perimeter. For example, the developer of the Brighton neighbourhood has incorporated a wetland demonstration project into the design plan to demonstrate the applicability of broad wetland policy guiding principles in a real neighbourhood/sector planning process. The project provides an opportunity for the evaluation and interpretation of the draft policy for conserving wetlands in an urban context.



ENVIRONMENTAL RESERVE SETBACKS

Saskatoon could explore the possibility of a minimum standard for Environmental Reserve setbacks to protect natural areas, based on the following example from the City of Calgary:

- A standard fixed-width setback of six metres of Environmental Reserve from any water body is a generally accepted practice in The City of Calgary.
- Determination of ER setbacks based upon best management practices and guidelines specifically for water quality protection will have a cumulative benefit of reducing pollutant loading into water bodies.
- Riparian buffers (protected through ER setbacks or other appropriate mechanisms) can help reduce imperviousness, sediment loading in streams and contribute to overall water quality improvements.
- Appropriate setbacks would also have a positive effect on The City's obligations to meeting Alberta Environment's Total Loading requirements for water quality. Appropriate ER setbacks to meet pollution prevention requirements may have incidental benefits that could include more options to protect important riparian habitat, provide for habitat connections and stream bank stabilization.

Source: City of Calgary, Community Services and Utilities & Environmental Protection Report to the SPC on Utilities and Environment, UE2007-15, April 25, 2007

NATIVE SPECIES PLANTINGS

Native plants are used in many innovative projects, such as this roadway centre median in Elk River, Minnesota, because they can stabilize and improve soils better than non-native species. They can also lower management costs.

NATURAL AREAS MANAGEMENT PRACTICES

Meewasin is a leader in conservation and natural area management and has highly developed local knowledge. It is a potential resource for bringing innovative management techniques to green spaces across the city.

> ***"Habitat loss and invasive species are two of the greatest threats to these insect-eating grassland birds. Meewasin's Resource Management Program uses innovative techniques to improve the quality of grassland habitat by reducing noxious weeds, invasive grass species and dense shrub cover through integrated techniques including prescribed burning, targeted conservation grazing (last newsletter introduced the 270 sheep that were about to enter the Meewasin Northeast Swale) and conservation mowing. Ecological monitoring initiatives including grassland bird breeding surveys, grassland health assessments and BioBlitz's are used to measure the effectiveness and success of our conservation activities."***
>
> *Source: Meewasin Explorer November - December 2017 Volume 24 - Number 6*

NATURAL ENVIRONMENT PARK DESIGNATIONS

Nose Hill Natural Environment Park lies in the northwest part of Calgary, surrounded by 12 residential communities. The park was created in 1980 and covers over 11 square kilometres. Nose Hill Park has numerous hiking trails and dedicated off-leash areas.

Nose Hill

Take the opportunity to hike on the hill, but slow down to appreciate the Rough Fescue grassland that you are passing through. Nose Hill Park contains one of the most significant examples of this grassland ecosystem left on the Canadian prairies. From the plateau, there are vistas including the Rocky Mountains, Bow River Valley and the vast plains to the east. Apart from the native grasses, one of the dominant species in the park is the Trembling Aspen. Large mammals such as deer and coyotes can be seen roaming the grasslands and coulees. The park is home to porcupines, northern pocket gophers, Richardson's ground squirrels and several species of mice and voles. These smaller mammals are the main prey for the northern harriers and Swainson's hawks, which are often seen in the skies above the park.

Nose Hill and Broadcast Hill, which lies on the other side of the Bow River Valley, are the two remaining examples of the high plains which once covered this area. Ancient rivers, successive glaciers and their run-off have eroded the landscape producing the surrounding valleys and lowlands, leaving the two hills towering over the area. The park contains significant archaeological sites, including stone circles. These were formed by using stones to hold down the edges of tipis and are called "tipi rings".

Source: http://www.calgary.ca/CSPS/Parks/Pages/Locations/NW-parks/Nose-Hill-Park.aspx

NATURAL FEATURES INTEGRATED INTO DEVELOPMENT

Edmonton's Starling neighbourhood contains important ecological resources and natural connections with broad regional significance. Horseshoe Creek runs through the centre of the area, providing both hydrological and terrestrial connections. The Neighbourhood Structure Plan recognizes that these connections are inherent to maintaining the greater ecological network. The objectives of the Neighbourhood Structure Plan include:

- Maintaining significant existing natural vegetation that protects a system of core biodiversity areas, so these areas can continue to support populations of plants, animals and associated ecological processes

- Maintaining and expanding the Horseshoe Creek corridors for wildlife movement to the extent possible
- Maintaining connectivity for the movement of key species through significant habitat areas (i.e. linkages)
- Incorporate elements of native species throughout the proposed development to facilitate movement
- Establishing ecologically friendly connections between natural and developed areas that enhance the characteristics of both
- Incorporating native landscape elements into parks, road rights of way and storm water management facilities
- Restoring and enhancing natural areas disturbed by previous agricultural activities.

Edmonton park space

The northern portion of Starling has been developed using Low Impact Development features that mimic nature. The neighbourhood is designed to incorporate deeper topsoil and a variety of other techniques, such as wetlands, rain gardens and bioswales, to absorb runoff. Development is expected to continue over the next 10 years.

Sources: https://www.edmonton.ca/residential_neighbourhoods/plans_in_effect/Starling_NSP_Consolidation.pdf

https://www.starlingatbiglake.com/

OPEN SPACE CLASSIFICATIONS

Edmonton's open space classifications are being updated with the recent launch of its Breathe Strategy. The Natural Areas classification (to be reclassified as Ecological Parks) is intended to conserve sustainable elements of natural heritage. Natural Areas Parks are acquired as Environmental Reserve, often in addition to Municipal Reserve for Parks. The land can be proactively purchased using Natural Area Reserve or tax levy funds, or acquired through land or cash donations, the Local Improvement Bylaw or as Municipal Reserve. Breathe also proposes investigating a land acquisition fund tied to population to ensure open space provision grows as the city grows.

Additionally, Edmonton's Breathe Strategy includes open space classifications that recognize the diverse range of green space types, such as Roadway Greens, Main Streets and Utility corridors.

PARTNERSHIPS

We have identified potential partnership opportunities with the Meewasin Valley Authority, University of Saskatchewan, Wanuskewin Heritage Park, First Nations and Métis and other Indigenous organizations such as the Saskatchewan Indigenous Cultural Centre, the RM of Corman Park and other regional partners and local community groups. These partnerships could provide additional support in the protection and conservation of natural areas, add to the knowledge base contained in this document and assist with documenting and monitoring natural and green spaces. The formation of partnerships will help to promote community

PLANTED RIGHTS-OF-WAY

Vancouver has a Green Street Volunteer Program that allows residents to contribute to their community as street gardeners. Volunteers can garden on traffic calming spaces (i.e. traffic circles) and boulevards using the City Boulevard Gardening Guidelines and recommended plant list. Street gardening helps to personalize neighbourhoods and foster a sense of community pride and ownership.

Source: http://vancouver.ca/home-property-development/beautifying-your-boulevard-and-street.aspx

UNDERGROUND RESERVOIRS

Underground reservoirs can be used to facilitate passive irrigation as well as water collection, treatment and storage. In Edmonton, for example, structural soil cells (modular suspended pavement system) were used in a park reconstruction project to repurpose excess rainwater. The structural soil cells were installed in a continuous trench along the centre of a parking lot. Water runoff drains into the parking lot through permeable surfacing. It is then filtered and stored within the structural soil cells, which are filled with washed rock. Once the water has filtered through the matrix, it reaches a perforated pipe tied into the storm sewer, which transfers it to the storm water lake. The detention system functions as a passive recreation facility for a small lake, collecting water and providing irrigation to surrounding sports fields.

Other applications include subbase replacement, tree protection, bioswales, green/blue roofs, hybrid solutions, permeable pavers, athletic fields and water harvesting.

Source: https://www.greenblue.com/na/underground-stormwater-storage-with-structural-support-cells/

VANCOUVER: VIEW PROTECTION GUIDELINES

The City of Vancouver protects spectacular ocean and mountain views while promoting density in the downtown area. The protected view corridors help determine the site location and design of buildings, resulting in the retention of panoramic and narrow views downtown. The backdrop of the mountains behind Vancouver's skyline signifies the city's connection to nature and aligns with its goals around sustainability.

City of Saskatoon

Prepared by

Planning & Development,
Community Services Department

and

Environmental & Corporate Initiatives,
Corporate Performance Department

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