
Green Infrastructure Strategy - Update

Recommendation

That the report of the Acting General Manager, Corporate Performance Department, dated December 5, 2017, be received as information.

Topic and Purpose

The purpose of this report is to provide City Council an update on the progress of the Green Infrastructure Strategy.

Report Highlights

1. Ten key principles have been drafted to guide the development of the Green Infrastructure Strategy. These principles focus on a future desired state for use of green spaces in Saskatoon.
2. The Green Infrastructure Baseline is a map-based inventory of the green spaces in Saskatoon. The baseline is intended to document the current status of green spaces in the City.
3. Engagement in Phase I of the Green Infrastructure Strategy will consist of meetings with key technical experts in the community who may be able to contribute information to the baseline.

Strategic Goals

This report supports the Strategic Goal of Sustainable Growth by developing a new approach to land use that considers natural areas, surface water management, and other urban activities in an integrated fashion. The goal of Environmental Leadership is supported by ensuring that climate change mitigation and adaptation are considered during land use planning, by promoting biodiversity, by improving access to ecological systems and spaces, and by improving the quality and reducing the quantity of storm water run-off that is going to the river. The goal of Asset and Financial Sustainability is supported by exploring options to reduce gaps in the funding required to rehabilitate and maintain our infrastructure.

Background

During 2017 Preliminary Business Plan and Budget Deliberations held on November 30 and December 1, 2016, City Council approved an amended scope of work for Capital Project #2390 – Green Infrastructure Strategy (Strategy) as outlined in the Natural Areas Strategy and Green Stormwater Management report. The purpose of the Strategy is to develop an integrated approach to planning for and maintaining a sustainable, biodiverse city by considering natural and supporting areas as important infrastructure.

The Standing Policy Committee on Environment, Utilities & Corporate Services, at its meeting held on March 13, 2017, considered the Development of the Swale - Response to Northeast Swale Watchers' 12 Points report; and resolved, in part:

- “3. That the Administration bring together stakeholders in regards to the Northeast Swale (Swale) to continue the discussion about protection of the Swale. Stakeholders should include, but are not limited to, the City of Saskatoon, University of Saskatchewan, Meewasin Valley Authority, Saskatoon Environmental Advisory Committee, Municipal Heritage Advisory Committee and the Swale Watchers. Stakeholders’ composition does not need to come back to Committee, but suggested starting points for initial discussion include integrated project management, long-term planning, financial implications, community engagement and communications. This process should be underway by the fall of 2017 with a report coming back to the Standing Policy Committee on Environment, Utilities and Corporate Services before 2018 budget deliberations.”

The Standing Policy Committee on Environment, Utilities & Corporate Services, at its meeting held on March 13, 2017, received the Meewasin Valley-wide Resource Management Plan for information. The Strategy will investigate a similar approach to management of other green spaces that are outside of the Meewasin Valley Authority’s (Meewasin) jurisdiction.

The Standing Policy Committee on Environment, Utilities & Corporate Services, at its meeting held on May 8, 2017, considered the Green Infrastructure Strategy report which described the expected outcomes of the Strategy and the project’s alignment with the priorities of the City of Saskatoon.

Report

Guiding Principles

The development of a systems-based approach to green spaces in Saskatoon will require a substantial shift in policy and procedures linked to the way we currently approach development of natural areas and adjacent lands. A set of ten guiding principles has been drafted to document what the Strategy is broadly intended to achieve. A description of the draft principles for the Strategy can be found in Attachment 1.

Green Infrastructure Baseline

The Green Infrastructure Baseline (Baseline) is an inventory of the green spaces in Saskatoon, the policies that apply to these spaces, the functions they support, and current land uses. The intent of the Baseline is to take a detailed look at how green spaces are used within city limits and to identify any gaps in policy or information that should be addressed to support the success of the Strategy.

An outline of the current version of the Baseline can be found in Attachment 2, Green Infrastructure Baseline.

Engagement

Engagement for Phase I of the Strategy will include meetings with key technical experts in the community. These groups are likely to have access to information that is relevant to the Strategy, and they will, therefore, be invited to review the Baseline and contribute to its completion. They will also be asked to review the guiding principles for the Strategy and comment on how these principles can/should be implemented.

In response to the resolution on March 13, 2017, by the Standing Policy Committee on Environment, Utilities and Corporate Services, at least two working groups are being formed. One will work to develop responses to the specific issues creating pressures on the Northeast Swale as a result of development in surrounding areas as identified by the Swale Watchers. A related initiative will focus on research opportunities that accelerate the development of knowledge about natural areas and systems in partnership with the University of Saskatchewan.

The members of these groups have been identified as having important technical expertise for the Green Infrastructure Strategy. There is an opportunity to invite the members of these groups, along with other specialists within the community, to become a special advisory group for the Green Infrastructure Strategy. The experience gained from development around the Northeast Swale can be used to formulate standards for development around natural areas in general, and to develop guidelines for maintenance in and around natural areas.

Public and/or Stakeholder Involvement

Meewasin is a member of the project team that is working on the Strategy. A workshop with key technical experts in the community is currently being scheduled for December. Project staff are also in the process of reaching out to First Nations and Metis groups to discuss opportunities to bring Indigenous knowledge and values into the Strategy.

Broader engagement with the general public is planned for Phase 2 of the Strategy.

Communication Plan

The Communication Plan for Phase 1 of the Green Infrastructure Strategy has focused primarily on developing materials (a series of poster boards – current drafts shown in Attachment 3, Green Infrastructure Strategy Poster Board) for meetings with the technical experts in the community. A detailed Communications Plan will be implemented during Phase 2 of the project to ensure the general public and other stakeholders are informed about the project and are made aware of the engagement opportunities.

Financial Implications

Funding for Phase 1 of the Strategy is available in Capital Project #2390 – Green Infrastructure Strategy and Capital Project #2263 – Watershed Initiatives. Administration intends to leverage funds in Capital Project #2390 by applying to the Federation of Canadian Municipalities (FCM) for financial support to create development standards and maintenance guidelines for natural areas.

Funding for Phase 2 of the Strategy is currently being developed and a report requesting reallocation of existing capital funds is being prepared for the first quarter of 2018.

Other Considerations/Implications

There are no policy, environmental, privacy or CPTED implications or considerations.

Due Date for Follow-up and/or Project Completion

Phase 1 of the Strategy is expected to be completed by the first quarter of 2018. A full report on the outcomes of Phase 1 and next steps will be delivered to the Standing Policy Committee on Environment, Utilities, and Corporate Services by the second quarter of 2018.

Public Notice

Public Notice pursuant to Section 3 of Policy No. C01-021, Public Notice Policy, is not required.

Attachments

1. Guiding Principles (Draft)
2. Green Infrastructure Baseline
3. Green Infrastructure Strategy Poster Board

Report Approval

Written by: Twyla Yobb, Watershed Protection Manager, Environmental & Corporate Initiatives
Reviewed by: Tyson McShane, Senior Planner, Long Range Planning
Lesley Anderson, Director of Planning & Development
Brenda Wallace, Director of Environmental & Corporate Initiatives
Approved by: Jeff Jorgenson, Acting General Manager, Corporate Performance Department

Guiding Principles (Draft)

These Guiding Principles outline what the Green Infrastructure Strategy is broadly intended to achieve. They will be used to analyse the performance of existing Green Spaces and inform the future desired state for Green Infrastructure.

Ecological Integrity

- Ecological quality, biodiversity, and connectivity of the network is conserved and enhanced.

Equitable & Accountable

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

High Quality

- Green spaces are used for their highest and best purpose considering the condition of their infrastructure and amenities, and the value of the functions they provide.

Climate Change Adaptation & Mitigation

- Reducing our impact on the environment to minimize climate change and adapting to changes already occurring.

Wellness – Physical & Mental

- The amount of green space meets community needs and recognizes that access to green space is strongly related to residents' physical and mental wellbeing.

Integrated & Multifunctional

- Green spaces are integrated into a network that serves multiple uses and needs.

Education & Awareness

- The community is aware of educational opportunities and appropriate uses of green space.

Recognizable & Unique Places

- There is a range of green space types and functions, reflecting community identity and needs.

Public Safety

- The ecological network is safe, accessible, and inclusive for all.

Resilience – Financial & Environmental

- Responds to operational requirements, flood resilience, community capacity, and environmental and local needs.

GREEN INFRASTRUCTURE BASELINE

The proposed framework for classifying green spaces consists of four themes: Governance ● Land Allocation ● Green Network ● Infrastructure/Serviceing

1 GOVERNANCE

This theme includes an introduction to the Green Infrastructure Strategy and the policies and initiatives that influence or are impacted by it.

Introduction

Purpose: To provide an introduction to the Strategy including the:

- Project purpose;
- Guiding principles;
- Proposed overarching policy statement; and
- Time line for the first phases of the project.

Policy

Purpose: To provide an overview of current civic policies that guide and support the development of green spaces.

Data Available: Saskatoon civic policies
Best practice research of other municipalities
Concurrent and related initiatives

Gaps Identified: Centralized data management
Comprehensive approach to management of green spaces

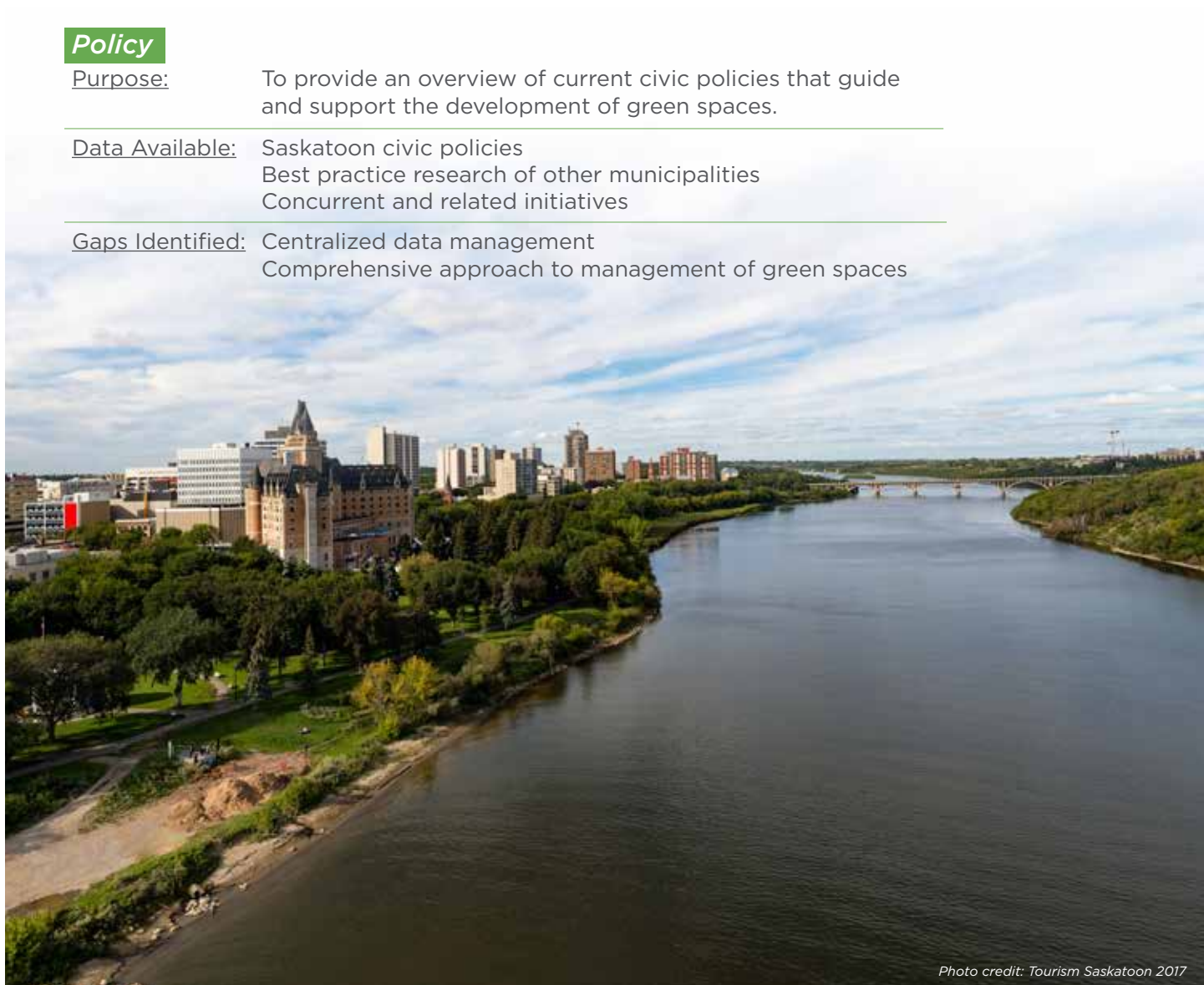


Photo credit: Tourism Saskatoon 2017

2 LAND ALLOCATION

This theme quantifies the various types of green spaces and identifies their current official designations.

Regional Context

Purpose: To illustrate the municipal and ecological context of the City.

Data Available: Future urban growth
Rural land uses
Green Network study area
Regional infrastructure
Regional institutional facilities
Parks and open space
Freeways, major roadways, potential interchanges
Water
Existing urban municipality
Corman Park - Saskatoon planning district
First Nation TLE land holdings
First Nation reserves
Areas subject to ongoing study
Potential expansions

Time Line: The regional project team is targeting 2019 for work on the regional Green Network.

Dedicated Public Open Space

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

Data Available: Pedestrian priority streets
Streetscaped areas
Community gardens
Off-leash Recreational Areas
Pathways
Grasslands
Wetlands
Parks
Special use spaces (includes cemeteries, golf courses)
Afforestation areas
Institutional (includes schools and universities)

Gaps Identified: Environmental Reserve designation
Skating rinks
Bookable/rentable facilities

Provision of Park Space

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

Data Available: Hectares per 1000 people
Hectares per neighborhood
Walking catchment

Gaps Identified: In progress



3 GREEN NETWORK

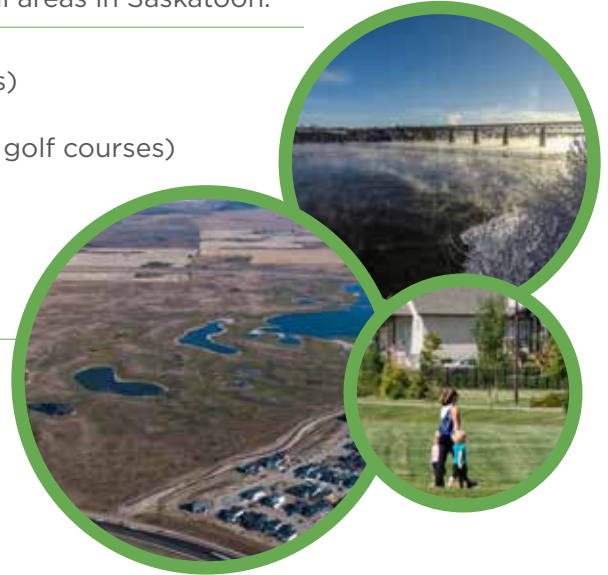
This theme categorizes the various types and qualities of green spaces and identifies their protections, if any.

Ecology

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

Data Available: Meewasin Conservation Area
Water/pond/river (includes riparian areas)
Wetlands
Special use spaces (includes cemeteries, golf courses)
Grasslands
Parks
Other open spaces
Afforestation areas
Arable land

Gaps Identified: Irrigated park areas
Rare species
Remnant aspen stands
Species at risk
Swale boundaries
Wildlife crossings



Natural and Cultural Significant Sites

Purpose: To identify sites by type and level of protection.

Data Available: Great Trail (formerly TransCanada)
Meewasin Conservation Area
Heritage sites
Urban forest (publicly managed trees)
Landmarks
First Nations urban holdings
First Nations urban reserves

Gaps Identified: Historical swale boundaries
First Nations significant sites
Interpretive sites
Views and vistas
Viewsheds
Unregistered historic sites



Ecological Stressors & Risks

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

Data Available: River Valley fill sites
Soil Impacted sites
Festival sites
Surface flooding
Riverbank slumping
Invasive species - plants
Invasive species - animals

Gaps Identified: Common dumping sites
Tree diseases
Full cut-off street light locations
Soundscapes



4 INFRASTRUCTURE/ SERVICING

This theme identifies the servicing that green spaces provide.

Topic: Storm Water

Purpose: To identify the storm water network in relation to the city's green spaces.

Data Available: Wet ponds
Dry ponds
Wetlands
Recreational use
Conveyance channels/swales
Storm outfalls

Gaps Identified: In progress



Topic: Low Impact Development (LID)

Purpose: To identify locations and types of LID installations in the city.

Data Available: LID guidelines document
LID installations (includes green roofs, bioswales, etc.)
Structural soil cells

Gaps Identified: In progress

Topic: Permeability

Purpose: To identify the degree to which rain water is able to soak into the earth based on land use types.

Data Available: Typical equivalent runoff unit (ERU) by land use
Infiltration report of city soil types (draft)

Gaps Identified: In progress

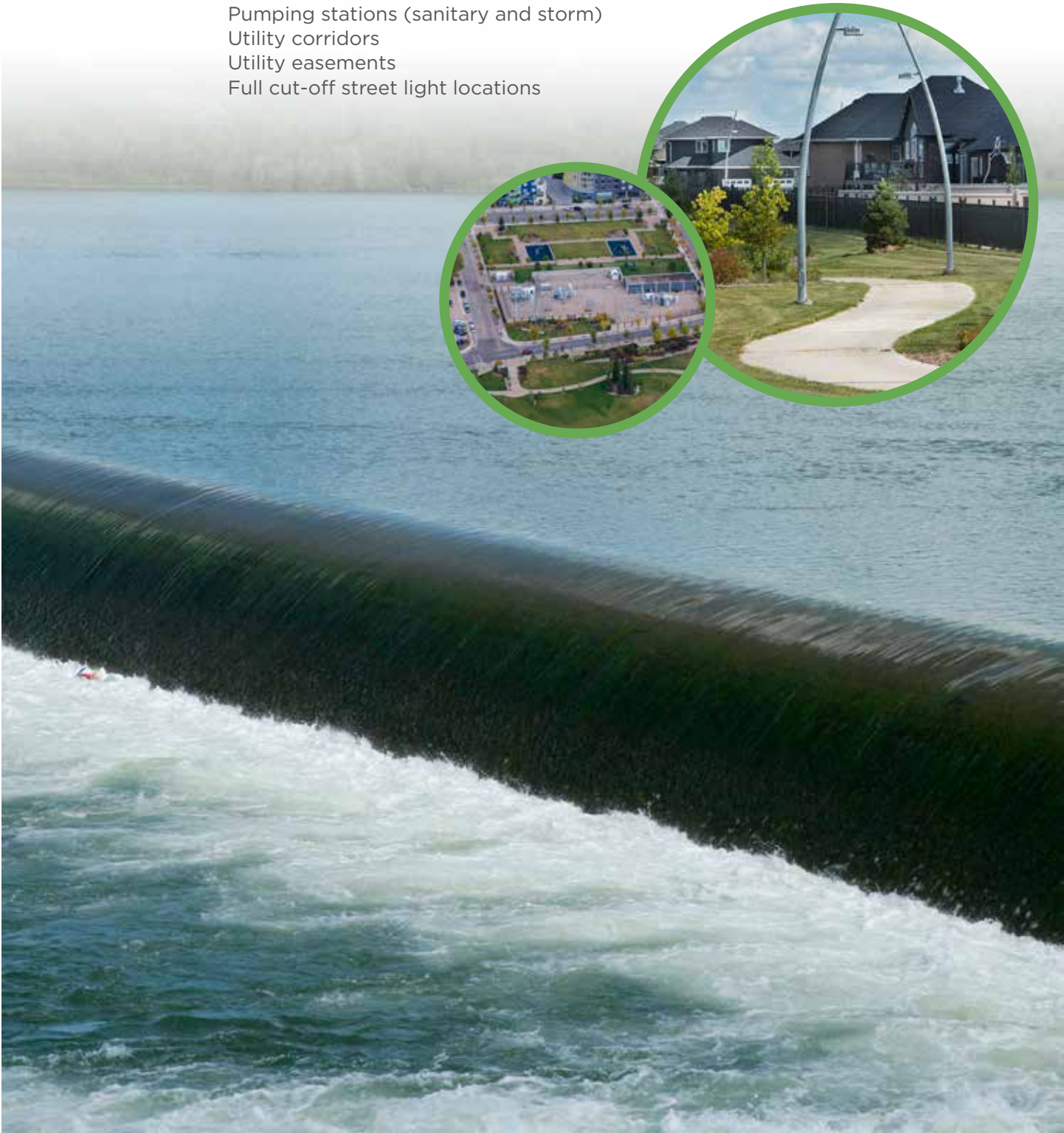


Topic: Urban Infrastructure in Public Open Space

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

Data Available: Utility parcels
Utility sites (cell towers, red light cameras, etc)
Street light network

Gaps Identified: Utility substations
Pumping stations (sanitary and storm)
Utility corridors
Utility easements
Full cut-off street light locations



Introduction

GREEN INFRASTRUCTURE STRATEGY

This board provides an introduction to the Green Infrastructure Strategy (GIS) including the purpose, overarching policy statement and timeline for the project.

PURPOSE

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

The purpose of the GIS is to develop an integrated approach to planning for and maintaining a sustainable, biodiverse city by considering natural and supporting areas as important infrastructure in our urban environment.

The GIS will:

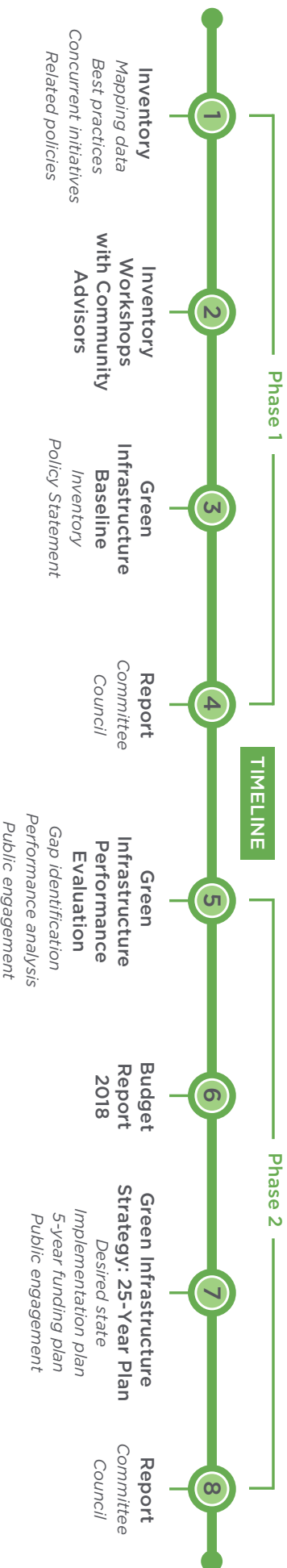
- Ensure protection of natural and supportive areas as both important infrastructure and part of a valuable ecological system.

- Optimize the existing green network to make the best and most efficient use of the city's existing natural assets.
- Integrate storm water management, natural areas protection and land use planning by balancing ecological and human needs.
- Connect residents to nature and nurture an appreciation for natural assets.
- Conserve biodiversity in ecologically sensitive areas through the identification and conservation of natural areas and by increasing their interconnections.
- Maintain ecologically and culturally important land and aquatic 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 greenspaces.

POLICY STATEMENT

An overarching policy statement that captures the intent of, and provides a framework for, the GIS will be incorporated into Saskatoon's Official Community Plan with the intent to guide future urban development in a way that ensures ecologically sensitive areas are integrated into the urban matrix in such a way that preserves existing ecology and biodiversity. This statement could look something like this:

The City of Saskatoon supports a sustainable and biodiverse city by integrating natural assets, storm water management, recreational activity and active transportation into a connected, multifunctional, ecological network.



GREEN INFRASTRUCTURE STRATEGY

This board continues the introduction to the Green Infrastructure Strategy (GIS) and details the guiding principles for the project.

GUIDING PRINCIPLES

The Guiding Principles outline what the GIS will strive to achieve. They will be used to analyse the performance of the existing Green Infrastructure Network and help develop strategic directions in Phase 2.

Ecological Integrity

Ecological quality, biodiversity and connectivity of the network is conserved and enhanced.

Equitable & Accountable

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

High Quality

Green spaces are used for their highest and best purpose considering the condition of their infrastructure and amenities, and the value of the functions they provide.

Climate Change Adaptation & Mitigation

Reducing our impact on the environment to minimize climate change and adapting to changes already occurring.

Wellness – Physical & Mental

The amount of green space meets community needs and recognizes that access to green space is strongly related to residents' physical and mental wellbeing.

Integrated & Multifunctional

Green spaces are integrated into a network that serves multiple uses and needs.

Education & Awareness

The community is aware of educational opportunities and appropriate uses of green spaces.

Recognizable & Unique Places

There is a range of green space types and functions, reflecting heritage, community identity and needs.

Public Safety

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

Resilience - Financial & Environmental

Responds to operational requirements, flood resiliency, community capacity, and environmental and local needs.

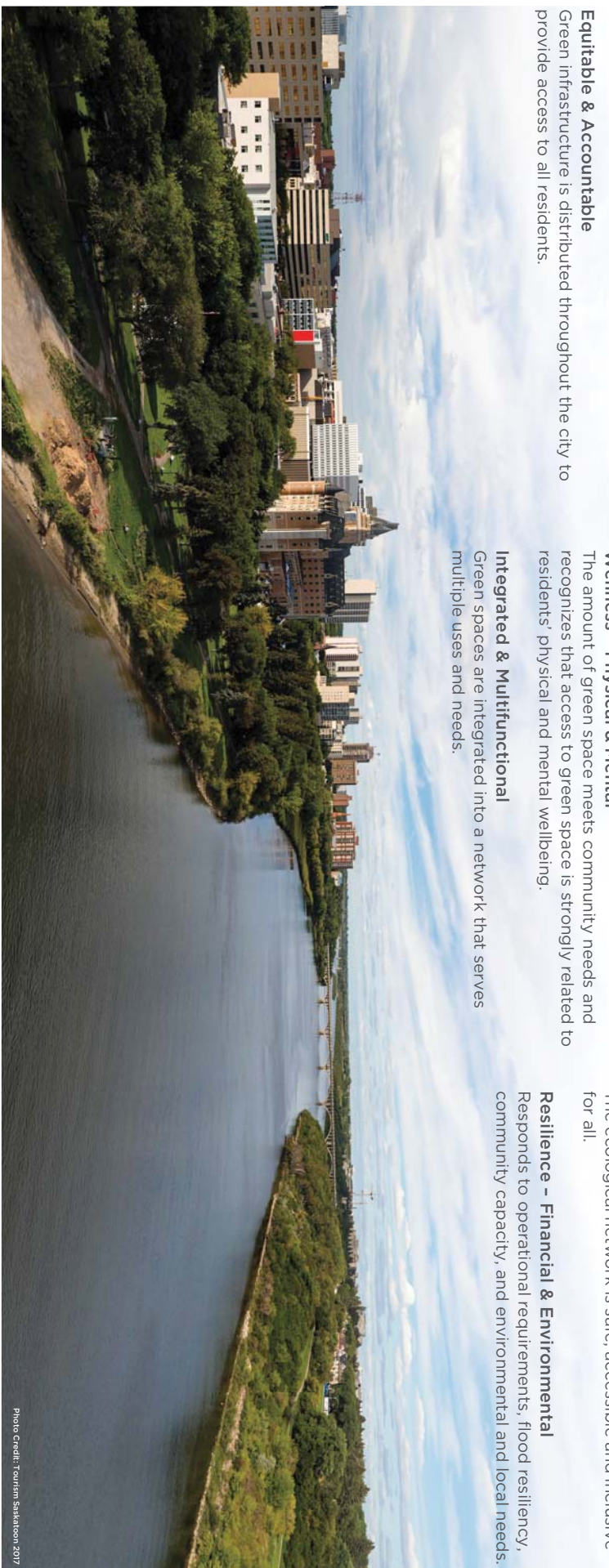


Photo Credit: Tourism Saskatoon 2017

POLICIES & PLANS

This board summarizes civic and external policies and plans in place that are related to the Green Infrastructure Strategy.

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. A conservation easement may be granted for any of the following purposes:

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

The Ecological Reserves Act

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

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.

* Assessed but not implemented

Planning and Development Act

The purpose of the Planning and Development Act is to enable municipalities with respect to economic and community development.

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

An Act respecting Prohibited, Noxious and Nuisance Weeds. 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

Meewasin Valley-wide Resource Management Plan

The 2017-2027 Meewasin Valley-wide Resource Management Plan was developed to identify the conservation targets and the threats to these targets within the Meewasin Valley. As part of the planning process, a detailed series of conservation actions were developed to mitigate these threats and to enhance the viability of the conservation targets. The four conservation targets identified were the South Saskatchewan River Valley, native prairie and wooded areas, wetlands, and the 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).

Photo Credit: Tourism Saskatoon 2008



CIVIC POLICIES & PLANS

Accessibility Action Plan

The 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 our infrastructure, the snow removal program and public transit.

Boulevard Gardening

These guidelines encourage residents to garden on the boulevards adjacent to their homes.

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 for growing food.

Culture Plan

The Culture Plan is 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.

Continued on next board >

POLICIES & PLANS

This board continues summarizing civic policies and plans in place that are related to the Green Infrastructure Strategy.

CIVIC POLICIES & PLANS (Continued)

Energy and Greenhouse Gas Management Plan (2009)

This plan provides a framework to manage greenhouse gas emissions and reduce energy consumption. It is being revised into a new Mitigation Business Plan.

Environmental Policy (CO2-036)

The Environment Policy states the intentions and objectives in relation to the desired overall performance of the City of Saskatoon towards community sustainability.

Official Community Plan (OCP)

The OCP has been 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 the city of 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

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

Parks and Recreation Levy

The purpose of this levy is 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 the facilities).

Recreation & Parks Master Plan

The Recreation & Parks Master 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 purpose of the Recreational Use of Storm Water Retention Ponds Policy is to:

- Provide the public and civic administration with information about services, programs and a list of criteria for recreational uses of all ponds including storm water retention ponds;
- Increase the public's overall awareness and understanding of recreational uses of storm water retention ponds;
- Ensure all ponds including the storm water retention ponds are used in a manner with the least amount of risk.

Saskatoon Greenhouse Gas Emissions Inventory (2014)

The 2014 Greenhouse Gas Emissions Inventory was 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). The inventory supports federal and international reporting standards and 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.

Standard Construction Specifications

The Standard Construction Specifications contains the City of Saskatoon Parks Division's construction specifications and detail drawings for particular sections of work constructed on publicly owned park or park-related lands including, but not limited to, parks, buffers, boulevards and medians.

Storm Water Management Utility Bylaw

The purposes of this Bylaw are:

- to regulate the collection, transmission, treatment and disposal of storm water;
- to regulate direct and indirect discharges into any part of the storm sewer system;
- to prevent damage to or misuse of any part of the storm sewer system;
- to protect human health and safety and the environment;
- to establish and set terms and guidelines for The City of Saskatoon Storm Water Management Utility; and
- to set charges for all properties benefiting from The City of Saskatoon 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; these represent the "how-to" component of operationalizing the vision. Implementation strategies will be developed through the annual Corporate Business Plan and Budget process, and the City will continue to monitor performance as we bring Saskatoon's collective community vision to life.

Wetland Policy

The purpose of the Wetland Policy is to implement the Official Community Plan Bylaw No. 8769 concerning wetlands conservation and management, as well as to provide guidance to landowners, developers and civic staff on achieving responsible integration of wetlands into the urban environment.



2013/10/15 10:00 AM COURTESY: P. HARRIS

CONCURRENT INITIATIVES

This board summarizes projects that are in progress 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.

BUILDING POLICY

A sustainability policy for the construction of new buildings or major renovations, which will include minimum requirements. Potential requirements include LEED certification levels, energy intensity targets, commissioning, recycling, pollution prevention, social impacts, etc. Consultation on the content of the policy is underway.

CLIMATE ADAPTATION STRATEGY

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

CORPORATE ASSET MANAGEMENT STRATEGY

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

LANDSCAPE DEVELOPMENT & DESIGN STANDARDS (LDDS)

The LDDS will provide environmental and economically sustainable landscape design standards for new parks, open space, 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 space that are operationally sustainable, environmentally responsible, and require less frequent capital replacement.

LOW IMPACT DEVELOPMENT DESIGN GUIDE FOR SASKATOON

This guide will provide property owners and developers with a selection of low impact development techniques that will work in Saskatoon's climate. 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.

NATURAL AREAS STANDARDS

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

NATURAL CAPITAL ASSET VALUATION (NCA)

The City is currently undergoing a process of inventorying and valuing Saskatoon's natural assets. The NCA valuation will provide a financial value to the benefits that green infrastructure provides to the community. It will be applied to all green infrastructure such as trees, pathways, wetlands, riverside areas, ecologically significant areas, grassy areas and others. The process will help the City to:

- 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; and,
- recognize a triple bottom line approach to municipal planning and operations.

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)

The P4G is a collaborative which includes political and administrative representation from the following partnering municipalities: 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 will establish a coordinated approach to matters related to the physical, social, and economic circumstances of the Saskatoon region that may affect the development of the region as a whole, such as land use, transportation, utilities, services and finances. It will also establish greater certainty and protection for important environmental and cultural heritage assets in the region that are important to consider from a sustainability and climate adaptation perspective.

THE 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 place that is inviting, vibrant and prosperous, even in the coldest months of the year. The goals for a Winter City Strategy are to improve broader community accessibility, inclusion, activity and energy, and lead to greater economic vitality (particularly within service, accommodation and retail sectors) as the opportunities of winter are realized and the challenges mitigated.

RESEARCH

This board provides a summary of what other Canadian cities are doing to protect natural areas and preserve/increase biodiversity.

CALGARY “OUR BIODIVERSE CITY” – *Our BiodiverCity*

- Calgary's 10-year biodiversity strategic plan - is based on principles for the protection, development and management of Calgary parks and ecosystems in support of biodiversity. Our BiodiverCity 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.

This 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 these pressures. This document culminates in a strategic plan, developed for those who will implement the plan and hold the City accountable.

EDMONTON “BREATHE” – *BREATHE* is a transformative

Green Network Strategy to make sure that 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*).

HALIFAX GREEN NETWORK PLAN (DRAFT)

The *Halifax Green Network Plan (HGNP)* (draft) will define an interconnected open space system, highlight ecosystem functions and benefits, and outline 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
- Study, define and plan for lands suited for parks, corridors and green spaces

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 to direct the physical layout and design of new communities and the public realm.

The purpose of the *Natural Heritage Interface Guidelines* (draft) is to provide guidance on the design of urban built form and infrastructure which interface with the City's Greenway System.

OTTAWA GREENSPACE MASTER PLAN (2006)

The purpose of the *GreenSpace Master Plan - Strategies for Ottawa's Urban Greenspaces* is to express Council's vision for green space in the urban area and set policies for how this vision can be pursued over the next three years and beyond.

An Urban Greenspace Network is the focal point of Council's greenspace vision. Building on the land inventory, the Urban Greenspace Network is 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 that spans the urban area. Much of this network now exists but many key linkages and features are yet to be secured.

Several ongoing initiatives will potentially help build the Urban Greenspace Network and add to the city's greenspace lands. These include an evaluation of all natural areas remaining in the urban area (completed in 2006) that will serve as a basis for a strategy to secure the priority sites through acquisition and other means. Also, a shortfall in large sports fields has been identified through past studies and a strategy has been developed to create more sites through partnerships.

SURREY “BIODIVERSITY CONSERVATION

STRATEGY” (2014) – *Surrey's Biodiversity Conservation Strategy (BCS)* recognizes biodiversity as a key foundation of a healthy, livable and sustainable community. Preserving nature (including plants, wildlife, and ecological values and functions) provides many benefits: clean air and water, improved health and livability, reduced infrastructure, and aesthetic and recreational value.

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.

SUSTAINABLE MONTREAL 2016-2020 – *Sustainable Montréal 2016-2020* is the third community sustainable development plan.

This plan 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, together, 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, as well as major land development projects and new collaborative spaces. The purpose is to mobilize the community, more than ever before, in order to work together to build a sustainable city.

VANCOUVER “RAINWATER MANAGEMENT/

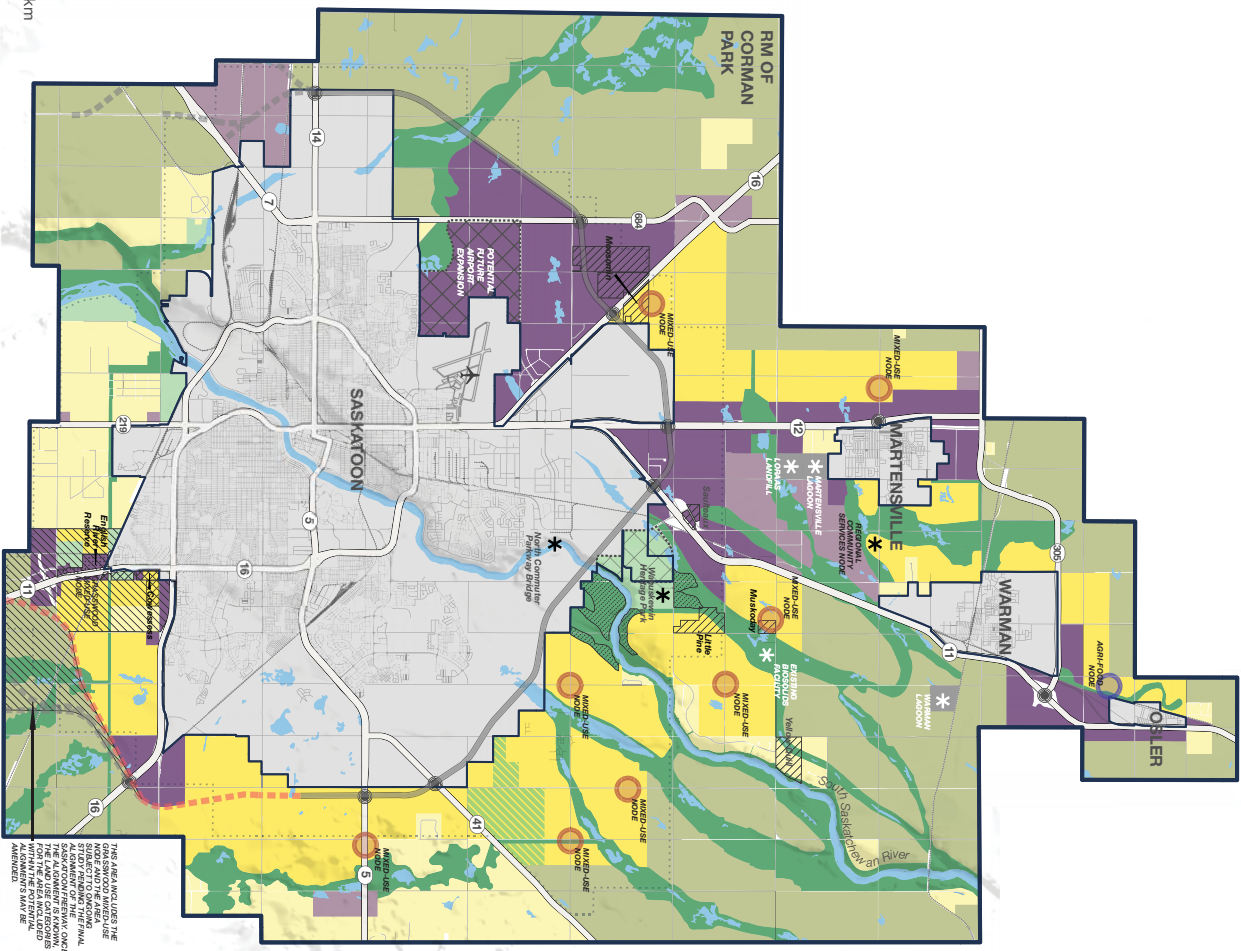
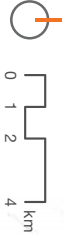
GREEN INFRASTRUCTURE STRATEGY” (2016)
Vancouver's City-wide Integrated Rainwater Management Plan recommends how and why green infrastructure tools should be implemented throughout the city in order to protect and improve the city's environment, its biodiversity, and urban livability; while helping adapt 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

REGIONAL CONTEXT

This board illustrates the connections between Saskatoon and adjacent areas in the surrounding region.

SASKATOON NORTH PARTNERSHIP FOR GROWTH REGIONAL LAND USE MAP



THIS IS NOT A FINAL LAND USE PLAN. THE DRAFTED LAND USE PLAN IS SUBJECT TO CHANGE AS A RESULT OF THE FINAL SASKATOON NORTH PARTNERSHIP FOR GROWTH REGIONAL PLAN. THE LAND USE CATEGORIES WITHIN THE REGIONAL PLAN ARE SUBJECT TO CHANGE.

DEDICATED OPEN SPACE

This board shows open spaces designated for public use.



SPECIAL USE AREA
Includes areas such as cemeteries, golf courses and dog parks.



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

Photo credit: Tourism Saskatchewan 2017



PATHWAY
Infrastructure provided for active transportation such as walking and biking.

Photo credit: Tourism Saskatchewan 2019



COMMUNITY GARDEN
Plots of land available for community food production.



STREETSCAPED AREA
Streets with enhanced level of amenities.

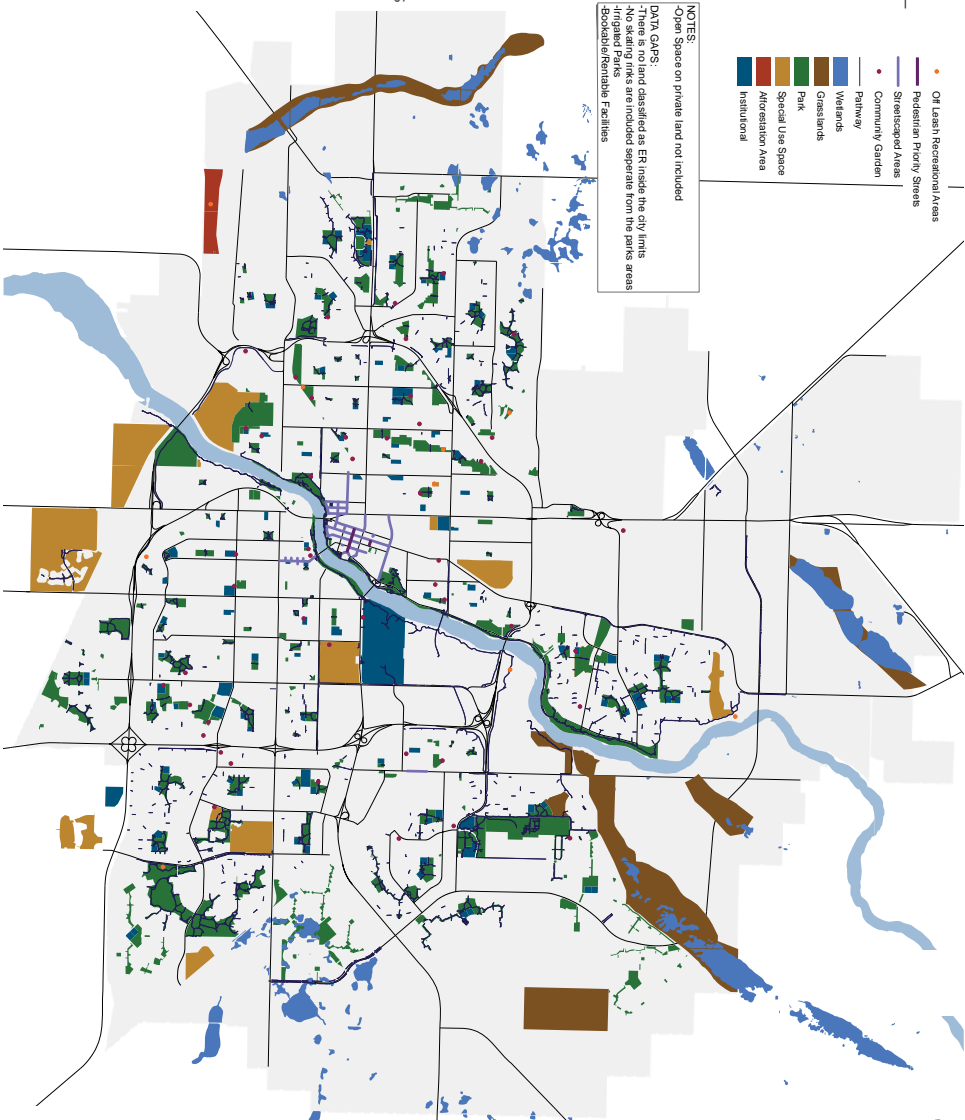


PEDESTRIAN PRIORITY STREET
Streets where jaywalking is permitted.



INSTITUTIONAL
Publicly accessible sites for research and educational purposes.

Photo credit: Tourism Saskatchewan



NOTES:
-Open Space on private land not included
DATA GAPS:
-There is no land classified as ER inside the city limits
-No skating rinks are included separate from the parks areas
-Designated Parks
-Designated Facilities

- Oil Lease Recreational Areas
- Pedestrian Priority Streets
- Streetscaped Areas
- Community Garden
- Pathway
- Wetlands
- Grasslands
- Park
- Special Use Space
- Agricultural Area Institutional

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, but; if it is not used for those purposes, the environmental reserve must be managed to maintain the site in its natural state.

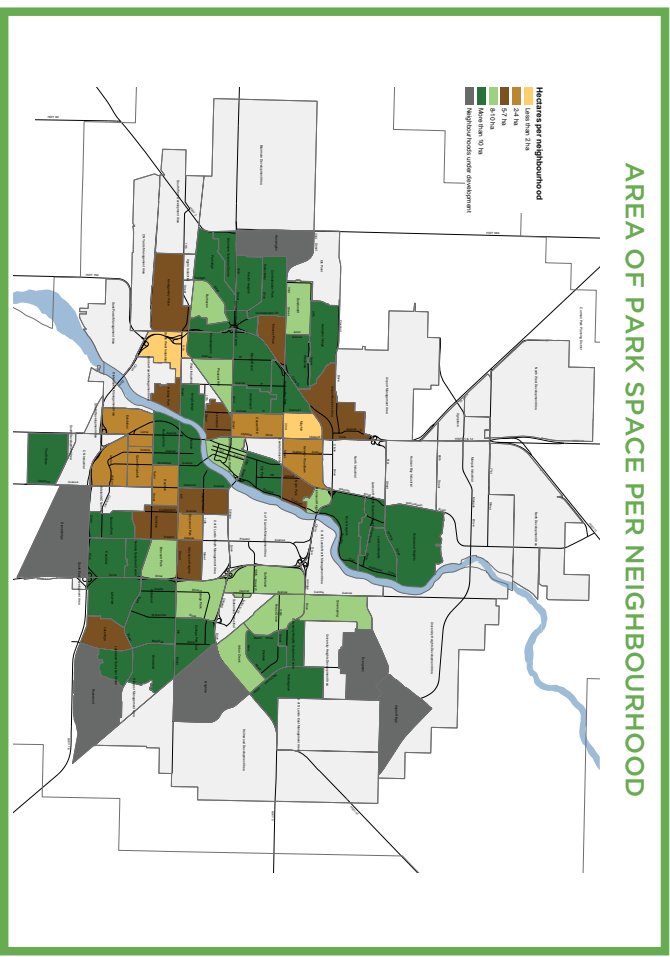
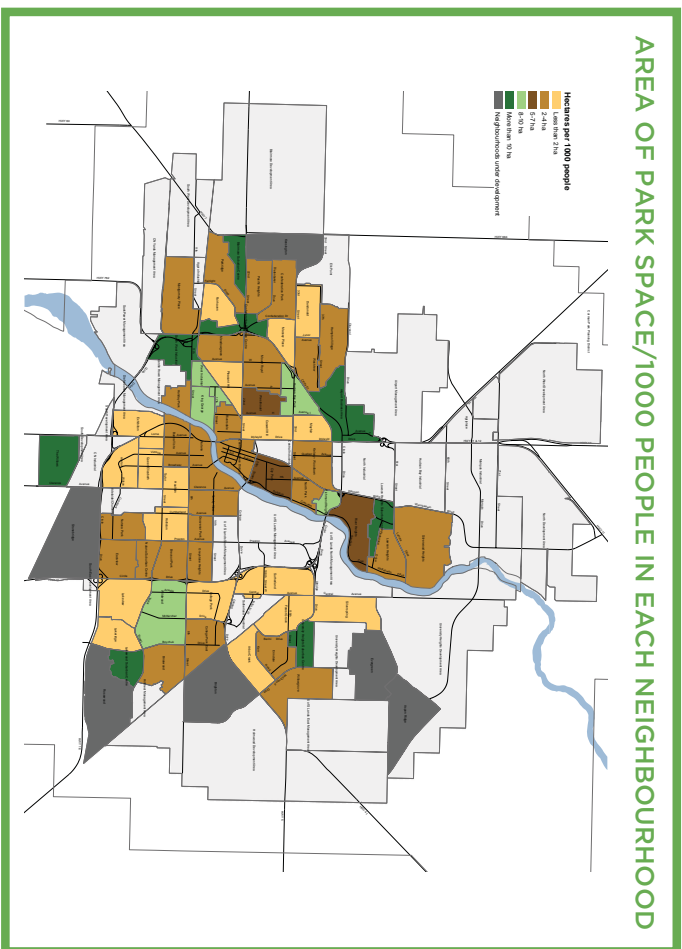
Fact There is currently no designated ER within Saskatchewan city limits.

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 10% of residential neighbourhood areas are dedicated as MR.

PROVISION OF PARK SPACE

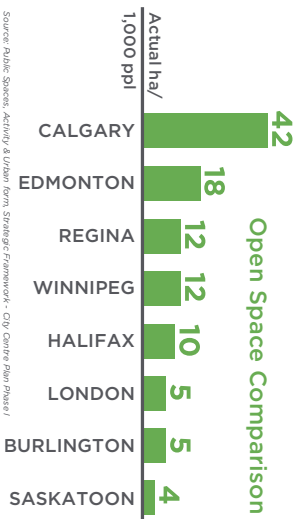
This board shows how park space in the city is distributed.



SASKATOON TOTAL PARK AREA, 2016
1079.6 ha



4.5% of land in Saskatoon is dedicated park.



Fact Over-dedication of land is the dedication of more land into park space than is legally required. This City's Park Development Guidelines allow over-dedication of land under the following circumstances:

- a) the developer agrees to pay the entire cost of developing over-dedicated lands; and
- b) the developer agrees to pay into a reserve fund for the annual maintenance costs of the over-dedicated land for a period of at least 15 years.

Source: Public Spaces, Activity & Urban Form, Strategic Framework - City Centre Plan Phase 1

ECOLOGY

This board categorizes the various types of natural areas in Saskatoon.



MEEWASIN CONSERVATION AREA Boundary of Meewasin Valley Authority's jurisdiction

Fact Meewasin jurisdiction has lost 29% of habitat over the past 15 years.
Source: Meewasin Valley-wide Resource Management Plan

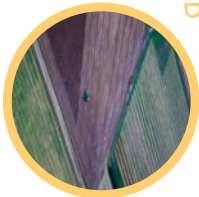
GRASSLAND Areas dominated by native grasses.

Fact Native Grasslands support rare species of plants and birds and ecosystem 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



ARABLE LAND Lands currently used for agricultural purposes.



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

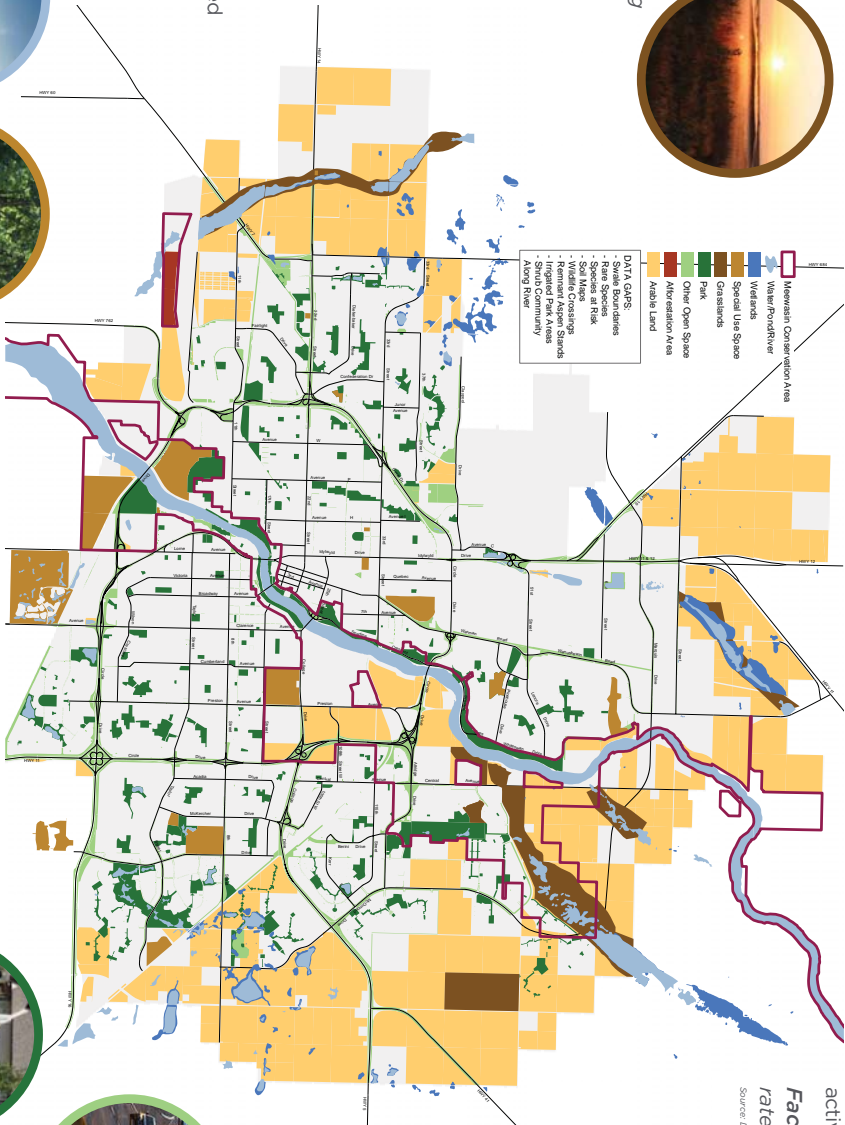


WATER/POND/RIVER Permanent water bodies.



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

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



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 various kinds of biological activity that are adapted to a wet environment.

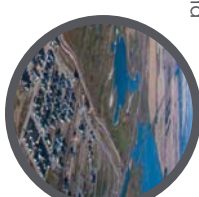
Fact Wetlands in Saskatchewan are lost at a rate of 11.3 ha/day.

Source: Ducks Unlimited Canada



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 2017-2027



OTHER OPEN SPACE

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



NATURAL & CULTURAL SIGNIFICANT SITES

This board shows natural and cultural significant sites by type and level of protection.

MEEWASIN CONSERVATION AREA (MCA) A portion of the South Saskatchewan River Valley which is conserved by the Meewasin Valley Authority through development controls, education programs and restoration work.

GREAT TRAIL Formerly known as the Trans Canada Trail, a network of recreational trails intended to connect across Canada.

URBAN FOREST Publicly managed trees.

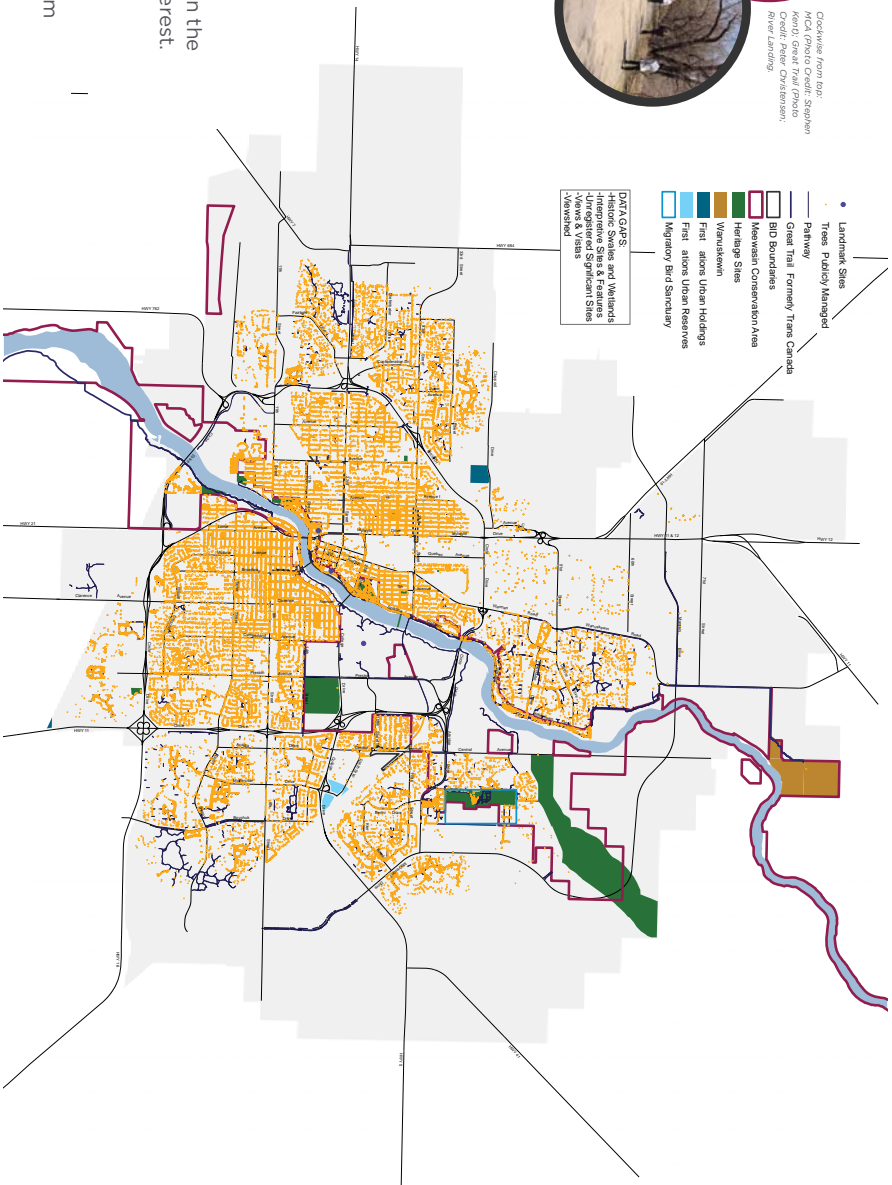
LANDMARKS Prominent and identifiable open spaces in the city. These include:

- Broadway District • Carneco Meewasin Skating Rink
- Downtown District • Farmer's Market • Meewasin Valley Trail
- Saskatoon Forestry Farm Park & Zoo • River Landing
- PotashCorp Playland at Kinsmen Park • Riversdale District
- South Saskatchewan River • Sutherland District • 33rd Street District
- University of Saskatchewan • Wanuskewin Heritage Park

HERITAGE SITE (GREEN SPACE) An official listing of green space that is on the City's Heritage Registry and identified as having significant heritage value or interest.

- Ashworth Holmes Park • Bowerman House • 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
- Pioneer Nutana Cemetary • Victoria Park • Weir

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



Fact The Sutherland Migratory Bird Sanctuary was established in 1924 and is now part of the western half of the Saskatoon Forestry Farm Park & Zoo, where 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 and the eastern portion is AgCanada land.

URBAN LAND HOLDINGS Land that has been purchased by a First Nation under the terms of the Treaty Land Entitlement Framework Agreement but has not yet been 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.

NATURAL & CULTURAL SIGNIFICANT SITES

This board continues the category descriptions for natural and cultural significant sites.



◀ **VIEWS** Notable and attractive scenery.

VISTA A long or distant view. *(Main photo)*

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

◀ **INTERPRETIVE FEATURES** Elements that communicate the value or significance of a site, landmark or other attributes.



Photo: David S. Johnson / Shutterstock

STRESSES

This board shows stresses on our natural environment and greenspaces.

Invasive species are not native to a specific location; 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.

SIGNIFICANT INVASIVE SPECIES IN THE REGION

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

NEW AND EMERGING INVASIVE SPECIES*

Zebra Mussels • Quagga Mussels • Prussian Carp
Emerald Ash Borer • Diffuse Knapweed • Russian Knapweed
Flowering Rush • Downy Brome
* Threats found outside the region but spreading toward the region.

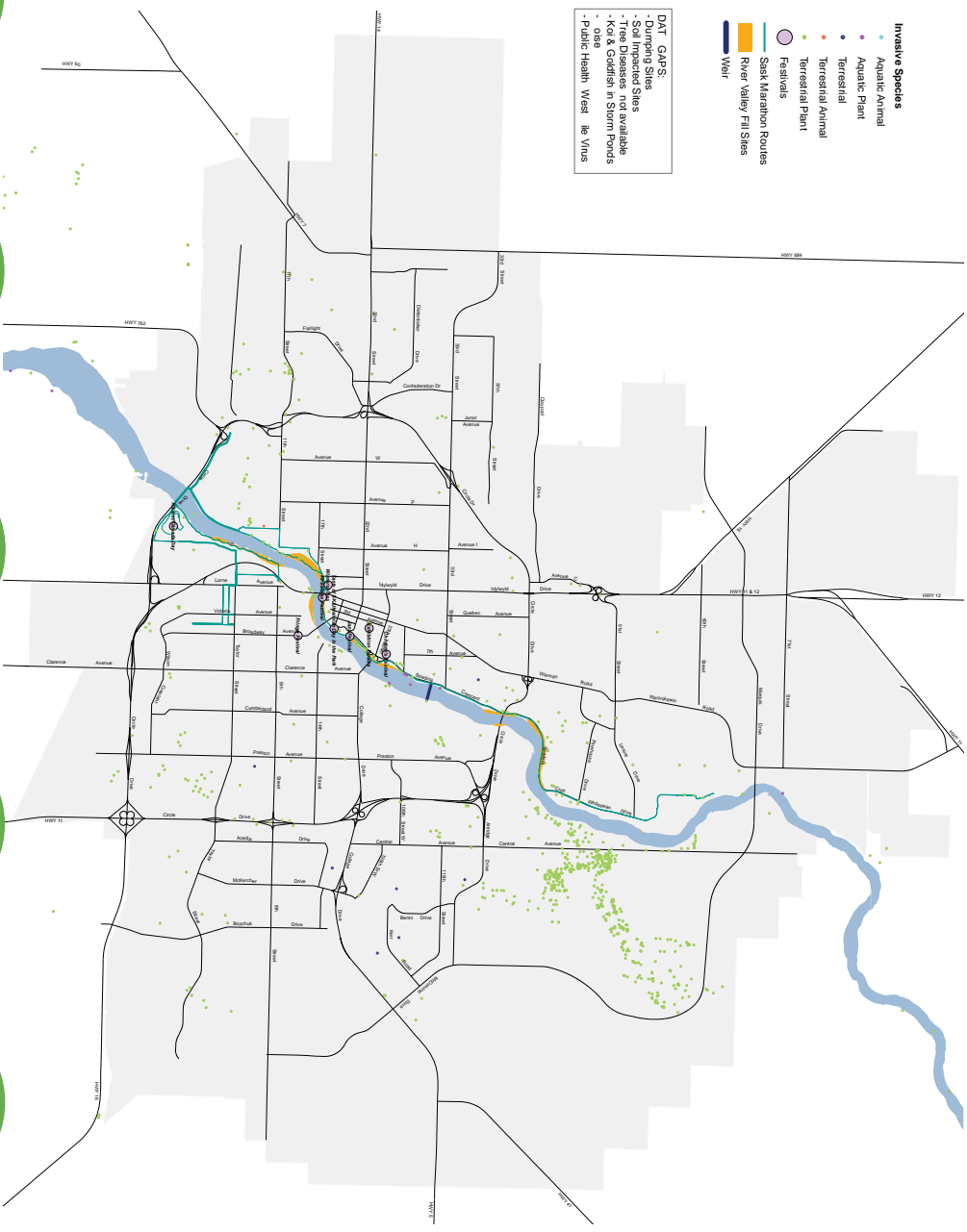
OTHER STRESSES

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

Wildfire: Unplanned fires.

Festivals: Large human gatherings put pressure on green space land cover.

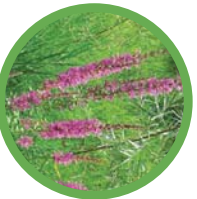
Urban Growth: Urban expansion is encroaching on natural areas.



European Buckthorn



Dutch Elm Disease



Purple Loosestrife



Leaky Spurge with BioControl Beetles



Wildfire



Cottony Ash Psyllid



Goldfish

STORM WATER

This board shows the infrastructure currently in place to manage storm water in Saskatoon.

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.



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, whether during the summer or winter, do so at their own risk. Activities such as skating, broomball and hockey are permitted during the winter and non-motorized boating (i.e. paddle boats and canoes) is permitted during the summer.

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.

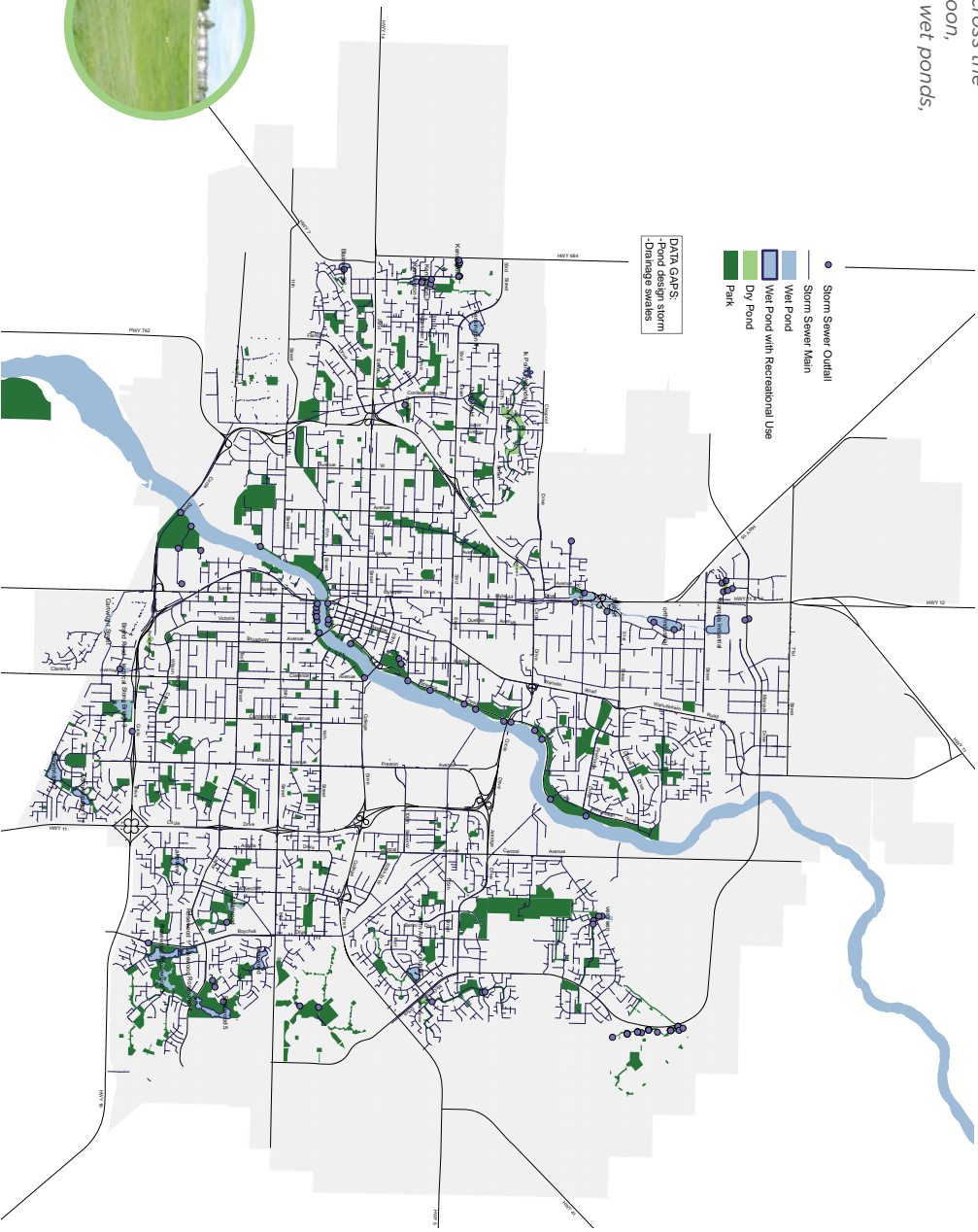
Fact The Design Storm defines the amount of rainfall runoff a pond is designed to hold. Most ponds hold the one in 100 year storm, which is modelled using a storm recorded on June 24, 1983 in which 96.5 mm of rain fell over 7 hours.



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



STORM SEWER MAIN
Main sewers are collectors for numerous lateral and branch sewers from an area of several hundred acres or a specific neighborhood or housing development. They convey the wastewater to larger trunk sewer lines.



STORM WATER

This board defines components of the storm water network.

GREY INFRASTRUCTURE NETWORK

System of pipes, drains, ditches and detention ponds engineered by people to manage storm water.

Storm Sewer Main Network

Lateral & Branch

Lateral & branch sewers are the upper ends of the municipal sewer system. Laterals dead-end at their upstream end with branch sewers collecting the wastewater 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 neighborhood or housing development. They convey the wastewater to larger trunk sewer lines.

Trunk

Trunk sewers serve as the main arteries of the collection system. They collect and convey the wastewater from numerous main sewer lines. The minimum size to be considered a storm trunk is 1350 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.

GREEN INFRASTRUCTURE NETWORK

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

Drainage Swale

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

Swales

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.



Bioswale

Bioswales are landscape elements designed to concentrate or remove silt and pollution out of surface runoff water. They consist of a swaled drainage course with gently sloped sides (less than 6%) and filled with vegetation, compost and/or riprap.

Wetlands

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 various kinds of biological activity which are adapted to a wet environment.



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.



Naturalized wetland

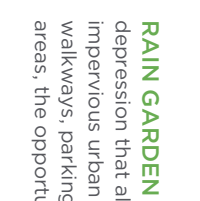
LOW IMPACT DEVELOPMENT

This board categorizes land planning and engineering design approaches to manage storm water runoff.

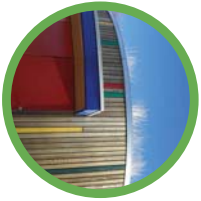


RAINWATER STORAGE TANK Rainwater collected from the roof is stored in these tanks.

Fact Rain from the roof at Access Transit is stored in three 38,000 L 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).



RAIN GARDEN A rain garden is a planted depression that allows rainwater runoff from impervious urban areas, like roofs, driveways, walkways, parking lots, and compacted lawn areas, the opportunity to be absorbed.



GREEN ROOF A green roof or living roof is a roof of a building 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 and drainage and irrigation systems.

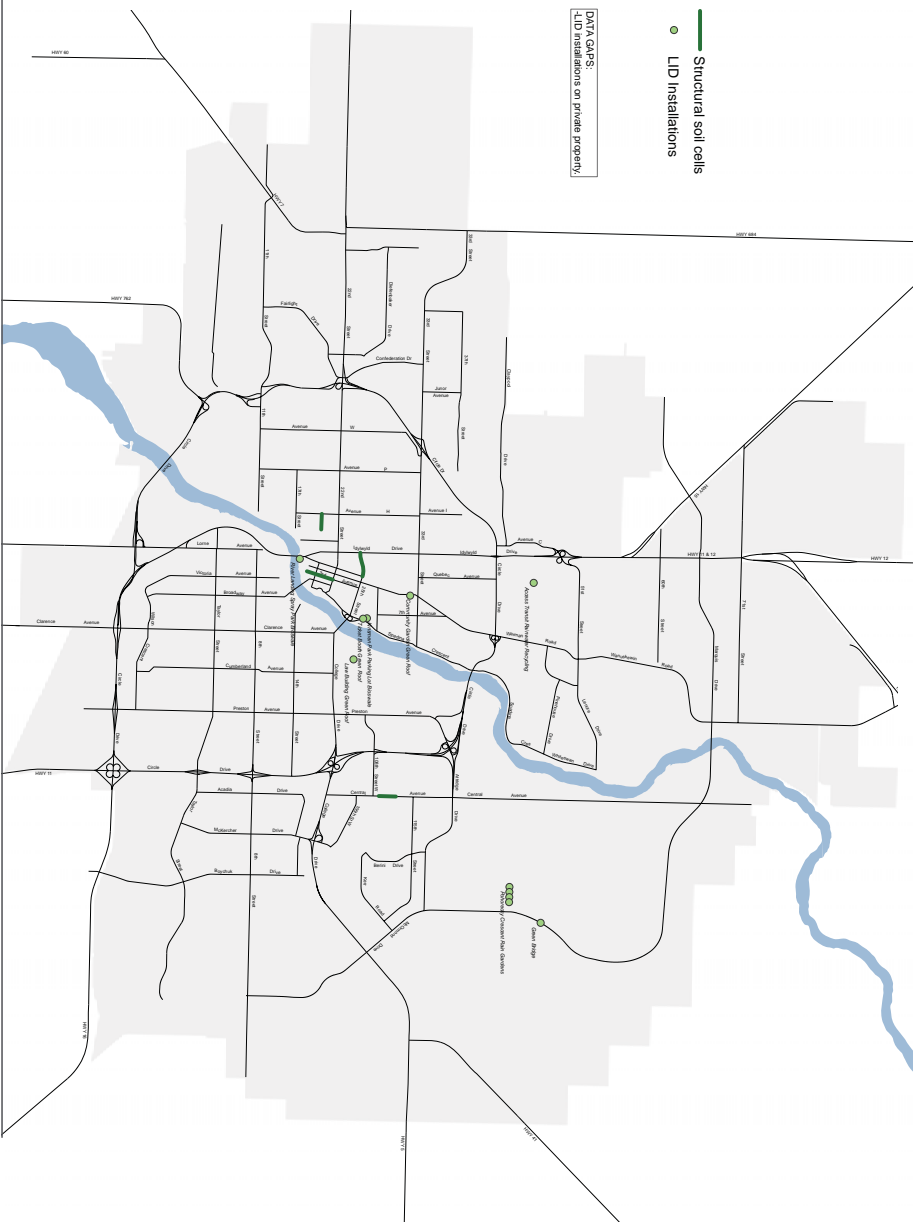
GREEN BRIDGE A structure located above a roadway, with park-like features, that allow pedestrians, cyclists or wildlife to cross without interacting with vehicles or the road.



BIOSWALE Bioswales are landscape elements designed to concentrate or remove silt and pollution out of surface runoff water. They consist of a swaled drainage course with gently sloped sides (less than 6%) and filled with vegetation, compost and/or riprap.

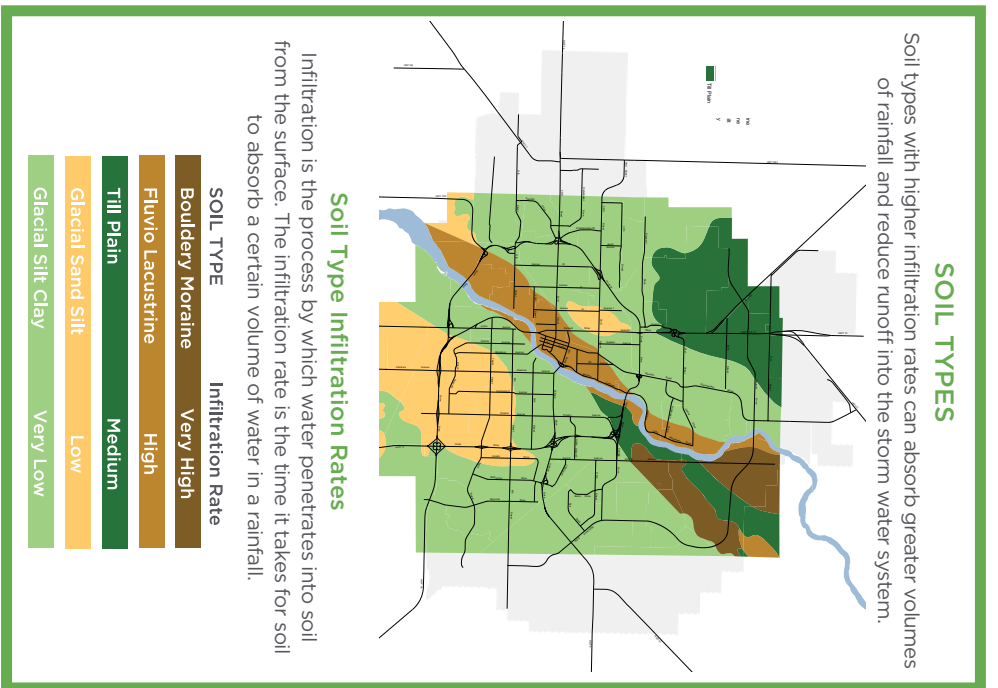


STRUCTURED SOIL CELLS Structured soil cells are a modular suspended pavement system that uses soil volumes to support large tree growth and provide powerful on-site storm water management through absorption, evapotranspiration and interception.



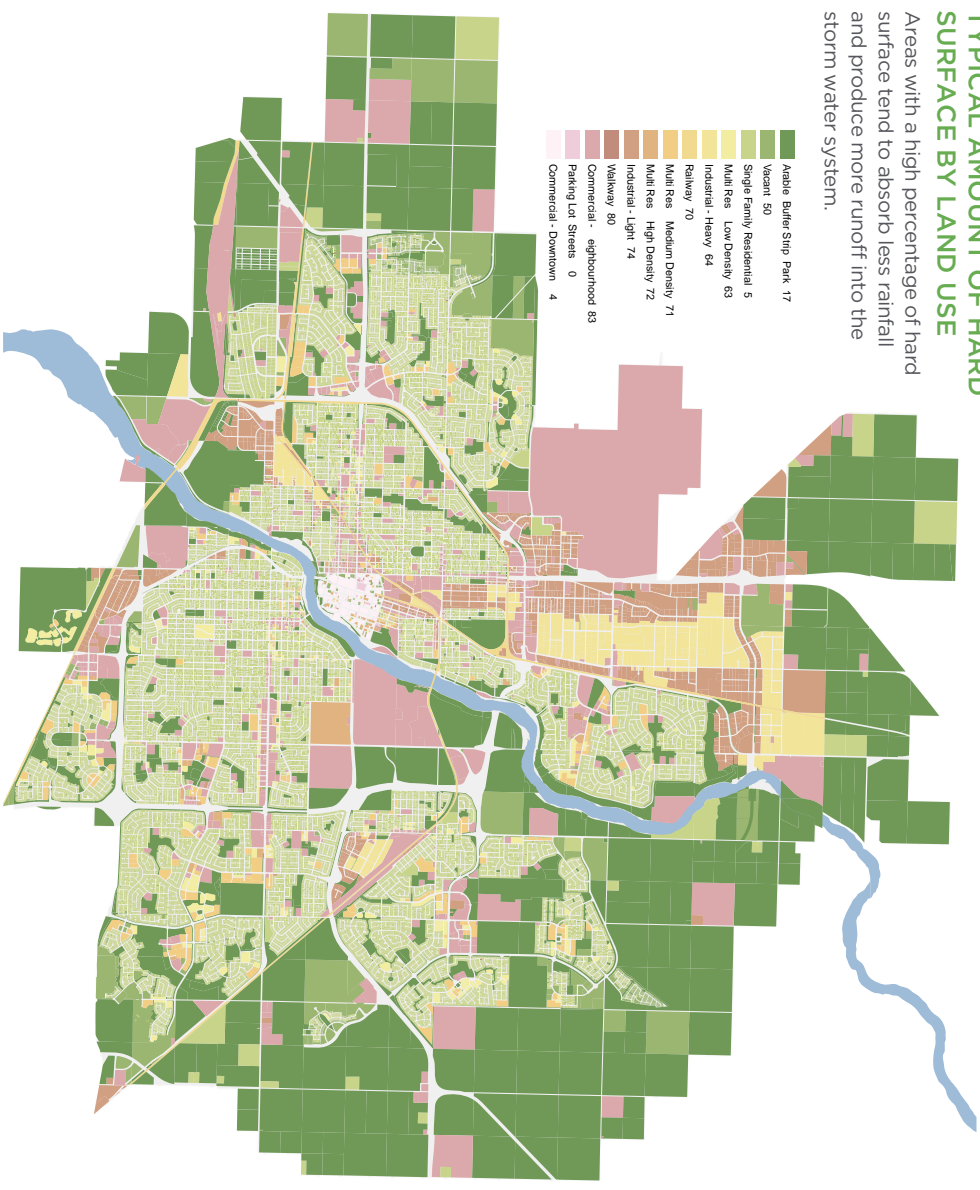
PERMEABILITY

This board shows the degree to which rain water is able to soak into the earth based on land use and soil types.



TYPICAL AMOUNT OF HARD SURFACE BY LAND USE

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



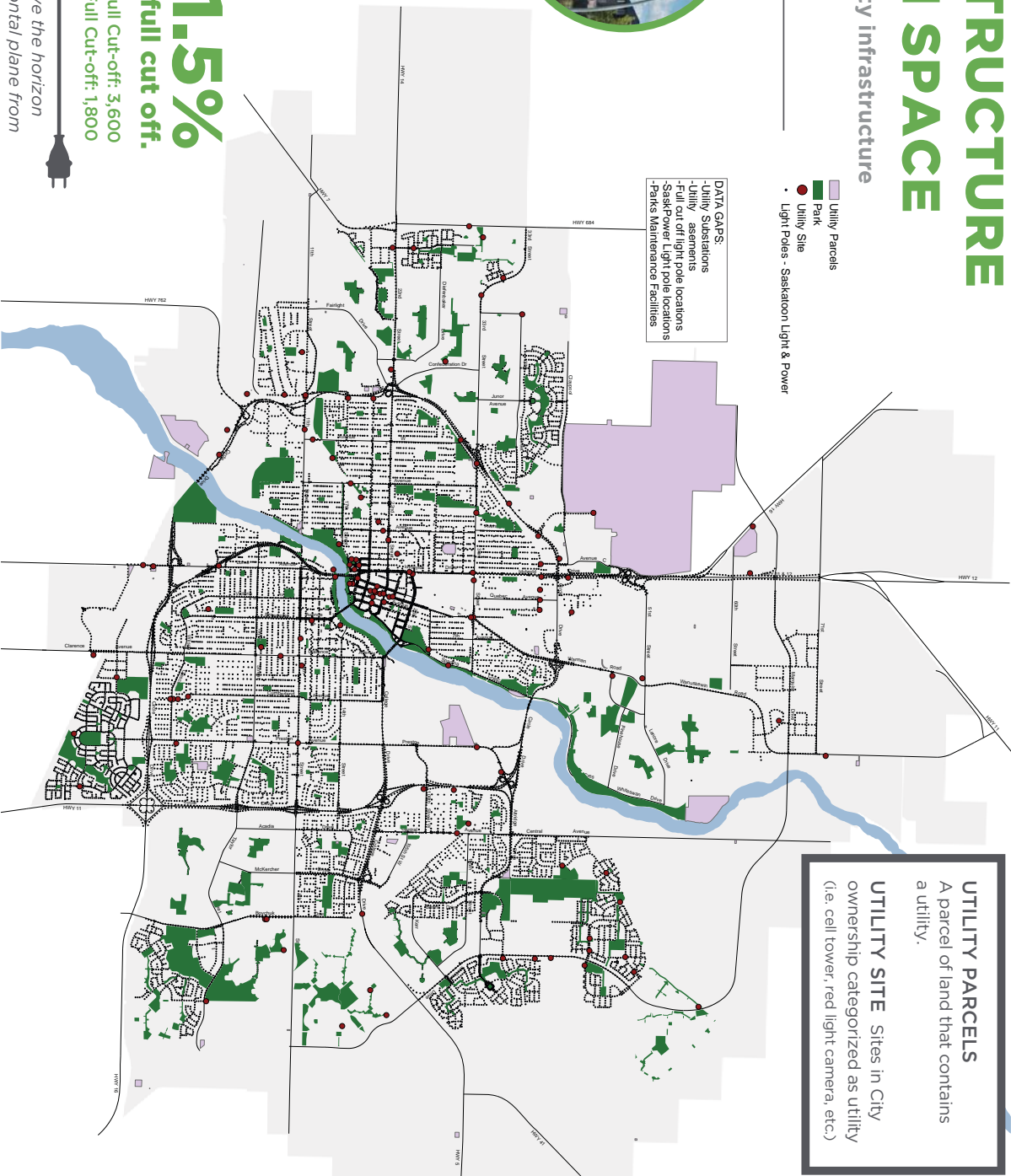
IMPERVIOUS Surface material that prevents water from passing through or penetrating to the sub-soils.

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

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

URBAN INFRASTRUCTURE IN PUBLIC OPEN SPACE

This board shows the locations of utility infrastructure installed in public open space.



UTILITY PARCELS
A parcel of land that contains a utility.

UTILITY SITE Sites in City ownership categorized as utility (i.e. cell tower, red light camera, etc.)

of street light fixtures in the City
21,059*

21.5% are full cut off.
HPS Full Cut-off: 3,600
LED Full Cut-off: 1,800

Fact 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.

