Appendix 2

Administrative Summary of the Small Swale Natural Area Management Plan and Conceptual Master Plan

INTRODUCTION

The City of Saskatoon's Green Infrastructure Strategy includes a goal to protect, restore, and manage significant natural areas in Saskatoon, including the Small Swale. However, there are significant challenges to conserving this site including incompatible current land uses, a lack of a dedicated funding source and service level, and impacts from current and future nearby developments.

In 2023, WSP Canada, Inc., was contracted by the City of Saskatoon (the City) to complete a Natural Area Management Plan and Conceptual Master Plan (the Plans) for the Small Swale. The Plans outline the steps needed to conserve the ecological and cultural elements of the Small Swale and provide a connection to nature for current and future generations. The Plans are intended to guide the conservation of the Small Swale but are not a directive. They are to be viewed as living documents and should be updated as new information becomes available, at least once every ten years.

The Plans are informed by, and build upon, previous guidance prepared for the Northeast Swale, including the Northeast Swale Development Guidelines (2012), the Northeast Swale Resource Management Plan (2013), and the Meewasin Northeast Swale Master Plan (2015). The Small Swale has a similar ecological and development context to the Northeast Swale, so this existing guidance related to resource management, design considerations, and buffers is highly applicable. The Plans were informed by additional guiding documents and data sources including the Green Infrastructure Strategy (2020), the Meewasin Valley-wide Resource Management Plan (2017), and the University Heights 3 Natural Area Screening Report (2021).

The creation of the Plans is one step of many needed to protect, restore, and manage the Small Swale. Additional work is needed to establish a service level for the site, implement ecological restoration and site enhancements, and complete ongoing resource management. Site risks to be addressed include the Central Avenue Snow Storage Facility, remediation of areas south of McOrmond Drive, and consideration of the role of the Small Swale in supporting storm water management for the future University Heights No. 3 Neighbourhood. Completion of this work will be subject to funding, including capital funding to implement site enhancements and restoration, and operating funding to maintain a dedicated service level.

About the Small Swale

The Small Swale is a major ecosystem complex composed of mainly wetland and grassland habitats. It is similar ecologically to the Northeast Swale and contains several wetlands with a diversity of species and wetland permanency classes. While the ecological extent of the Small Swale extends outside City limits, the scope covered by the Small Swale Plans considers only the area currently within City limits.

Vision Statement for the Small Swale

A vibrant mosaic of native grasslands and wetlands.

A home and corridor for wildlife, where nature and history are celebrated.

LEGISLATIVE CONTEXT

The Small Swale is subject to the policies and regulations of the City of Saskatoon (City). The highest-order planning documents for the City include the Official Community Plan No. 9700 (OCP; City of Saskatoon 2020a), and the accompanying Zoning Bylaw No. 8770 (City of Saskatoon, 2023a). The site is a major wetland complex and as such is protected by the Wetland Policy (C09-041).

A portion of the Small Swale is within the Meewasin Conservation Zone. Approval is required from the Authority on any improvement valued over $25,000 in accordance with the Meewasin Valley Authority Act (Government of Saskatchewan, 1979). Meewasin's Northeast Policy, which was endorsed by City Council in 2015, contains a recommendation to include the portion of the Small Swale within City limits as public land part of the Meewasin Valley.

ECOLOGICAL CONTEXT

Land cover

The Small Swale is a post-glacial channel scar and part of the prairie pothole region. It contains 6.6 hectares (ha) of Native Dominated Grasslands, 21.8 ha of Native Dominated Tame Grasslands, 6.4 ha of Tame Grassland, and 25.1 ha of wetlands. The wetlands have various classifications and are in varying degrees of health. The largest, a Class V wetland, is bisected by McOrmond Drive.

Flora

The site includes pockets of native grassland species and introduced species such as smooth brome and Kentucky bluegrass. Rangeland health assessments completed in 2019 indicate that "unhealthy" grassland areas still contained an abundance of native forbs such as blue lettuce, many-flowered aster, and prairie sage.

Six flora SOMC are confirmed or highly likely to be on site ranging from S1 to S3 in sensitivity ratings. These were: Crawe's sedge, crowfoot violet, few-flowered aster,

plains rough fescue, three-lobed beggarticks, and Western red lily. Crowfoot violet and plains rough fescue are also species of restoration interest.

There are many citizen science records of additional flora in the area that require confirmation.

Fauna

Seven fauna SOMC are confirmed on site with northern leopard frog also identified as a species of conservation interest. Five culturally significant species have also been recorded.

Culturally significant species

Species that may be of interest to Indigenous communities were considered, but it was determined that additional engagement is needed prior to preparing detailed content or recommendations. Any content prepared in future must be respectful of any sensitivities with respect to the role and location of important species.

Noxious or nuisance weeds

At least eleven noxious and nuisance weed species have been documented on site including leafy spurge, purple loosestrife, scentless chamomile, and common tansy.

Wildlife movement

Wildlife passage through the site is mostly unrestricted based on the habitat present and lack of development. However, major barriers such as McOrmond Drive and South Grid Road likely inhibit wildlife movement across the Small Swale. Additionally, upcoming planned developments in the area will likely reduce wildlife movement in future.

HUMAN CONTEXT

History

Métis, First Nations, and early settlers to the area later named Saskatoon used the Moose Woods-Batoche Trail, which extends into the Small Swale, as a route of travel from Moose Jaw, SK.

Historically, the greater swale network has shown evidence of attempted limestone quarrying from boulders that were deposited through glacial movement (MVA, 2013). In more recent years, past uses of the site are mostly related to agricultural uses, such as grazing and cultivated cropland. An inactive gravel pit is in the northern sections of the Project Study Area outside the site, which has caused historical disturbance to natural habitat.

Heritage and Cultural Significance

The Small Swale is known to be historically significant, with a strong possibility of holding cultural significance. The entire area studied has a high Heritage Sensitivity.

The Riddell Paleontological Site is an archaeological site in the southern portion of the Small Swale. It is recommended to be preserved and considered as a future candidate for designation as Provincial Heritage Property. A paleontological Heritage Resources Impact Assessment (pHRIA) completed in 2021 recommends that the site be protected from future development, which include forming a buffer and preparation of a paleontological impact mitigation plan where development is unavoidable.

Ownership and Easements

The site and much of the surrounding lands are owned by the City of Saskatoon. A portion of the site falls under the jurisdiction of Meewasin Valley Authority.

The closest privately owned lands are located directly across from South Grid Road (north of Peggy McKercher Conservation Area), the Saskatoon Wildlife Federation to the east (across from Central Avenue), and a private property between Agra Road and Central Avenue. The entirety of the site falls within the City of Saskatoon limits.

Two easement holders are present and include the following:

- SaskTel holds a Right-Of-Way (ROW) oriented north-to-south to accommodate a buried 36-meter-wide cable.
- SaskPower holds an overhead power line south of McOrmond Drive that travels north-to-south. While there is currently no registered agreement, SaskPower has recommended a 5-meter-wide ROW be used for planning purposes.

Current Uses

The area north of McOrmond Drive is largely undisturbed and is not currently programmed or actively being used for recreational or other purposes.

Apart from the Riddell Paleontological Site, a large portion of the area south of McOrmond Drive is disturbed or actively being used for agricultural purposes.

Current land uses include agriculture, materials handling, transportation corridor, Central Avenue Snow Storage Facility, storm water management, informal recreational use, hunting, and illegal dumping.

User Groups

There are currently no formal user groups utilizing the area. The site is currently unprogrammed; however, residents informally visit the site for activities like birdwatching, cycling, hiking, biking, and dog walking.

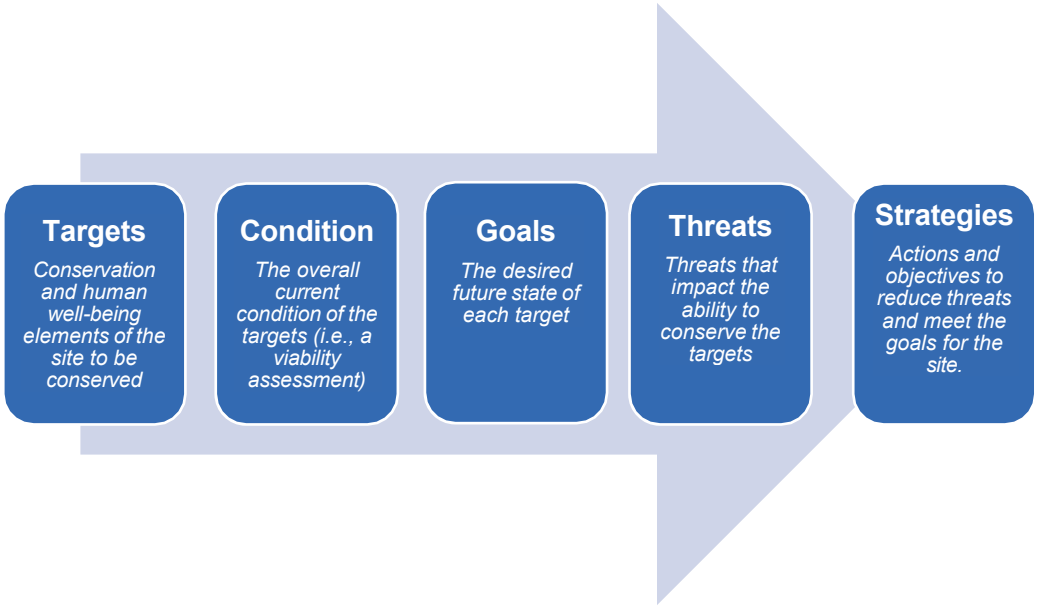
Unsanctioned Uses

Unsanctioned uses of the site have been reported, including illegal hunting, illegal fires, illegal dumping, illegal vehicular use, and unsanctioned trail formation.

CONSERVATION PLAN

Methodology

The Open Standards for the Practice of Conservation (2020) (Conservation Standards) was used to prepare the Small Swale Plans. Using this approach, the Small Swale Plans identify the targets, condition, goals, threats, and strategies for the site, as shown below.



Targets, Condition, and Goals

Targets are the elements of the Small Swale that are intended to be conserved. The final list of targets, their current condition, and goals for each target are included in the table below.

Target	Description	Current Condition	Goals
Prairie	The prairie ecosystems at the Small Swale hold considerable importance by providing ecosystem services. As one of the world's most endangered ecosystems, the native grasslands are a crucial part of the conservation of the site. Prairie sub-targets were identified and include fescue prairie, mixedgrass prairie, modified grasslands, and SOMC.	Fair *(Rating based on the spatial extent of the prairie, the extent of area managed to replicate natural disturbance regimes, and condition of vegetation including SOMC)*	By 2035: • total hectares of native dominant grassland, native dominant tame grassland, and tame grassland have increased from a recorded baseline; • prairie areas undergo regular 'natural' disturbance regimes; • overall site vegetation community, structure, diversity, and cover is considered healthy; • undesirable species (e.g., weeds) are managed; • SOMC and Culturally Significant Species are abundant and diverse; and

			• native flora and fauna species are abundant and diverse.
Wetlands	Wetlands play a significant role in biodiversity, water filtration, and flood control. Wetlands at the Small Swale are home to many species including northern leopard frog.	Good *(Rating based on the extent of wetlands, water quality, function of catchment areas, and native fauna abundance and diversity.)*	By 2035: • the spatial extent of wetlands is maintained from a recorded baseline and chosen pre-development status; • hydrological inputs are maintained, and wetlands are considered 'functioning' (when the Minnesota Routine Assessment Method (MnRAM) is applied); • water quality is appropriate for restoration/maintenance/enhancement end target or parallels reference community used; • SOMC and Culturally Significant Species are abundant and diverse; and • native flora and fauna species are abundant and diverse.
Ecological Connectivity	Connectivity is the level of ease with which species can travel between habitat patches. Connectivity includes both intra-connectivity (connections within the Small Swale) and inter-connectivity (connections between the Small Swale and other natural areas).	Poor *(Rating based on the existence of strategies that are implemented to mitigate connectivity barriers).*	By 2035: • connectivity is maintained/enhanced, and wildlife move freely throughout the site; and • connectivity corridors with other retained natural areas located in the Meewasin Valley that are in relative proximity to the site have been considered, established, and are functioning.
Historical and Cultural Connection		Not assessed	By 2035: • historically and culturally significant features are identified and protected; and • historical and cultural programs are developed and implemented.
Education and Connection to Nature	Education and connection to nature help to create a relationship to the land and encourage users to take care of the site. This can be achieved through activities like guided tours, interpretive signage, citizen science, and	Not assessed	By 2035: • educational programs are identified and implemented; and • infrastructure and programs allow for a connection to the landscape.

	partnerships with local groups.		

Threats

Various threats were identified that may impact the ability to conserve the targets. The threats, and the degree to which they may be impacting each target, is shown in the table below.

Threat	Example of Threat	Risk to Conservation Target			Threat Summary
		Forest	Wetlands	Ecological Connectivity	
Introduction of Invasive & Undesirable Species	Introduction of noxious weeds, pests and diseases, or invasive wildlife	Very high	Very high	n/a	Very high
Incompatible external land use	Existing and future transportation routes, future land use changes	High	High	High	High
Incompatible human use	Existing snow storage and materials storage facility, illegal uses such as dumping and hunting, irresponsible recreational uses	Very high	Very high	Very high	Very high
Suppression of natural disturbance regimes	Suppression of fire, grazing, and flooding	High	High	Very high	High
Fragmentation and barriers	Fences, walls, high-risk wildlife movement barriers, future development, loss of connectivity between site and other natural areas	Medium	Medium	High	Medium
Water management	Negative alterations to water bodies and hydrological systems	Very high	Very high	Very high	Very high
Frequency and severity of storms	Flooding, wildfires, snowstorms, and hail	Very high	Very high	Very high	Very high
Increasing average temperatures and drought	Heat stress to people, plants, and wildlife	Very high	Very high	Very high	Very high

Changes to precipitation	Drought stress to people, plants, and wildlife	Very high	Very high	Very high	Very high
Summary Target Ratings		**Very high**	**Very high**	**Very high**	**Very high**

Conservation Strategies

To reduce the threats and achieve the goals for each target, the following management strategies are recommended:

1. ***Baseline data collection and data management:*** Ongoing biophysical data collection and analysis (e.g., targeted baseline and monitoring) in an appropriate timeframe to support and confirm the successful execution of the conservation tools developed to restore/reclaim/enhance aspects of the site. Development of a data management system to collect, store and share data.
2. ***Policy, enforcement, and urban planning:*** Establish protection of the site through existing planning tools acquisition of additional lands; existing and future policy; ongoing governance and enforcement.
3. ***Buffering of adjacent lands****:* Reduce threats of invasive species and improve degraded lands through enhancement and improvement initiatives.
4. ***Enhancements and improvements:*** Reduce threats of invasive species and improve degraded lands through enhancement and improvement initiatives.
5. ***Invasive and undesirable species management:*** Control of invasive and undesirable species pursuant to applicable provincial legislation, regulations, policies, guidelines and bylaws.
6. ***Natural disturbance regime management*****:** Develop and implement natural disturbance regime management to promote healthy vegetation communities which normally would be subject to natural disturbances.
7. ***SOMC management:*** Protection of identified habitat and sensitive locations for known (current and future) SOMC within the site based on baseline/monitoring analysis, and present and future standards.
8. ***Historically and culturally significant species and features management:*** Historically and culturally significant species and features identified, protected, enhanced and celebrated.
9. ***Water management:*** Management of all hydrological features within the site.
10. ***Ecological connectivity management:*** Management of intra and inter-connectivity.
11. ***Human use programming*****:** Planning for responsible human use of the site.

Detailed recommendations regarding the implementation of these strategies are included in the Plans, and should be referenced prior to conservation work occurring.

HUMAN USE PLAN

The Human Use Plan provides recommendations for appropriate programming of the Small Swale while considering environmental sensitivities. Considerations include restrictions on use, the infrastructure required to support the recommended uses, and opportunities for community stewardship. These recommendations are intended to guide future site improvements.

Programming and Management Zones

Three management zones are proposed for the site, which will inform programming, management, and placement of appropriate site uses. The table below provides a summary of each zone.

Management Zone	Spatial Extent	Proposed Programming	Design considerations
Ecological Core	Existing vegetation communities and waterbodies of high ecological or historical value; and known habitats of SOMC.	Limited low-impact passive recreation	• Protect and buffer this zone from other land uses. • Utilize barriers such as fences, gates, and barricades to limit access. • Enhance zone through planting or restoration activities. • Limit additional infrastructure and locate it at appropriate offsets from sensitive species. • Support educational opportunities to highlight importance of the natural assets.
Passive Programmable Zone	Existing communities of fair or degraded landscapes.	Low-impact passive recreation	• Enhance zone through planting or restoration activities. • Limit infrastructure located at appropriate offsets from sensitive species. • Locate higher-impact infrastructure within existing degraded areas. • Support educational opportunities to highlight importance of the natural assets.

Stormwater Management Zone	Existing and proposed areas of stormwater management.	Stormwater management	• Stormwater to be managed to not cause harm to the site or adjacent lands. • Future and existing stormwater systems should be designed to actively restore and improve the surrounding area. • Naturalization and biodiversity to be considered in all designs.

A map showing the proposed spatial extent of each management zone is provided below.

LEGEND:

- SITE BOUNDARY
- EXISTING CONTOUR (0.5M INTERVAL)
- EXISTING EASEMENT/ROW
- MANAGEMENT ZONE 1: ECOLOGICAL CORE ZONE
- MANAGEMENT ZONE 2: PASSIVE PROGRAMMABLE ZONE
- MANAGEMENT ZONE 3: STORMWATER MANAGEMENT ZONE

0 30 60 90 120 150 180 210m
SCALE 1:4500

CONSULTANT:

wsp

CLIENT:

City of Saskatoon

PROJECT TITLE:

NATURAL AREA MANAGEMENT PLAN FOR THE
SMALL SWALE
SASKATOON, SASKATCHEWAN

DRAWING TITLE:

PROPOSED MANAGEMENT ZONES

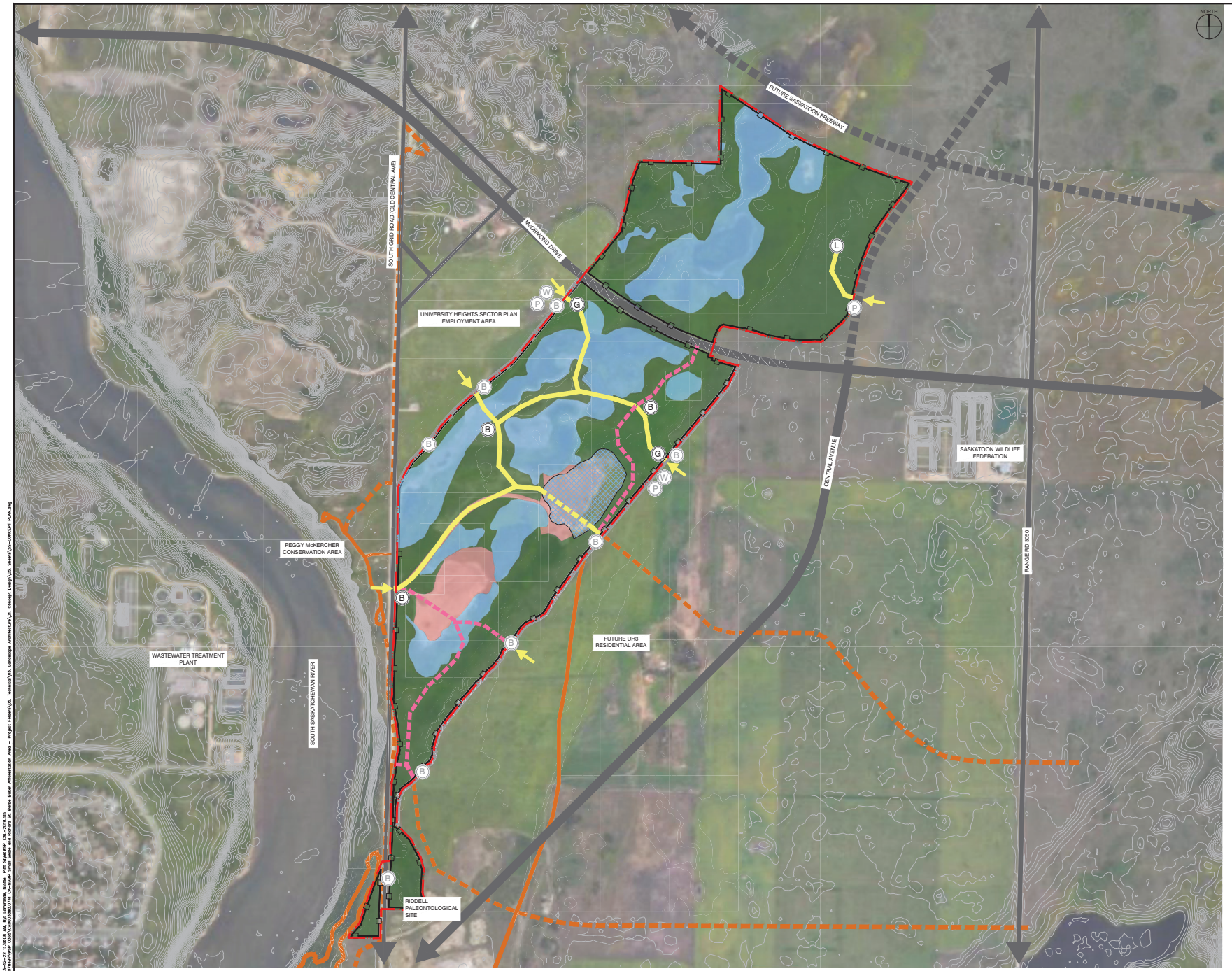
Permitted Uses and Restrictions

To support the Human Well-Being Targets, the following uses are recommended to be permitted and encouraged. Note that active recreation is not recommended at the Small Swale, due to environmental sensitivities. Certain restrictions on these activities are also proposed to reduce or remove impacts to ecological communities.

Permitted Use	Description	Restrictions on Activity
Passive Recreation	Low impact activities such as walking/hiking, birdwatching, geocaching and photography.	Visitors must remain on trails. Use of site is recommended to be from dawn to dusk to avoid unwanted uses of the site.
Education	Group tours (e.g., school groups) or self-guided.	Same restrictions as “Passive recreation.”
Harvesting	Harvesting of culturally Harvesting of culturally significant plants by designated professionals or individuals.	Parameters to be developed through further engagement. Considerations may include specific areas or plants which can be harvested, and seasonal periods of harvesting.
Citizen Science	Public assists in collecting data to accelerate scientific research.	Same restrictions as “Passive recreation.”

Proposed Site Enhancements

Improvements to the Small Swale are proposed that align with the conservation targets and management zones. Detailed recommendations to implement each improvement are included in the Conceptual Master Plan. A visual representation of the improvements is included below.



LEGEND:

- SITE BOUNDARY
- EXISTING CONTOUR (0.5M INTERVAL)
- EXISTING ROAD
- PROPOSED ROAD (BY OTHERS)
- PRIMARY TRAIL (P2)
- SECONDARY TRAIL (P2)
- ABOVE-GRADE BOARDWALK (P2)
- EXISTING EXTERNAL TRAIL
- PROPOSED EXTERNAL TRAIL (BY OTHERS)
- PERIMETER FENCING (P1)
- RECLAMATION AREA (P2)
- UPLAND RESTORATION AREA (P1)
- RIPARIAN RESTORATION AREA (P1)
- NATURALIZED STORMWATER POND (P2)
- SITE ACCESS (P2)
- GATHERING AREA (P2)
- BENCH (P2)
- LOOKOUT (P2)

BY OTHERS - OUTSIDE OF SITE

- GREENWAY
- PARKING AREA
- WASHROOM FACILITIES
- BENCH

NOTES:

- PLAN IS CONCEPTUAL ONLY AND NOT FOR CONSTRUCTION.
- P1 REFERS TO PHASE 1 OF PROPOSED IMPLEMENTATION.
- P2 REFERS TO PHASE 2 OF PROPOSED IMPLEMENTATION.

0 30 60 90 120 150 180 210m

SCALE 1:4500

CONSULTANT:

wsp

CLIENT:

City of Saskatoon

PROJECT TITLE:

SMALL SWALE

SASKATOON, SASKATCHEWAN

DRAWING TITLE:

CONCEPTUAL PLAN

A summary of the proposed improvements outlined in the visual is provided below.

Improvement	Description	Description and Examples
Buffering	Provide a buffer between the site and incompatible land uses.	• Design and implement a Greenway similar to the Northeast Swale Greenway • Where lighting is needed, use dark-sky compliant lighting • Consider seating nodes, naturalized planting pockets, waste bins, and accessible pathways to direct foot traffic
Human Use	Support the passive recreational uses of the site while conserving the natural assets.	While considering ecological sensitivities, enhancements could be designed for: • Controlled site access • Circulation route and seating notes • Destinations and gathering areas • Communications programming • Site furniture and materials
Historical and cultural improvements	Connect users to the historical and cultural significance of the site.	• Fence the Riddell Paleontological site with wildlife-friendly fencing. • Incorporate educational signage • Consider culturally significant plants in restoration improvements, subject to engagement with Indigenous communities.
Restoration and reclamation improvements	Work to return the land to a state of ecological function and native biodiversity through reclamation and restoration improvements	• The Plans define a continuum of restoration activities and ecological restoration principles that should be considered, criteria to prioritize high priority locations, and best practices for restoration. • It is noted that reclamation and restoration will be particularly important at the current snow storage area, pending relocation of the current land use.
Ecological Connectivity Improvements	To enhance connectivity for wildlife and ecosystem processes within the site, and between the Small Swale and other natural areas.	• Baseline data collection needed prior to implementing actions.
SOMC Improvements	Support habitat for species of management concern.	• Habitat supports such as songbird houses, waterfowl nest boxes, and bat houses could be considered.

Storm water management	Establish targets to ensure that future development will not compromise wetland function.	• Rehabilitation of the Snow Storage Facility is a top priority of the Small Swale Plan. As the core of the site is a large wetland complex, stormwater management planning needs to be well thought out. Any changes to wetland catchments can alter the wetland hydroperiod and cause irreversible damage. Therefore, proactive planning is a key to ensure that wetland function is preserved post development.

Site Enhancement Implementation

Before implementing the Plans, detailed design and cost estimates for the proposed enhancements will be required. During this stage, the design may be subject to further review by the City, including the Crime Prevention Through Environmental Design (CPTED) committee. Review by other approving bodies or jurisdictions including Meewasin's Conservation Advisory Committee, utility companies, and nearby jurisdictions (e.g., the Rural Municipality of Corman Park) may also be required. In some cases, additional engagement, particularly with existing site user groups, is recommended to validate the desired placement and design of enhancements.

The Conceptual Master Plan outlines the recommended approach to implement site enhancements, including applicable standards, recommendations and risk mitigation measures during construction, establishment and maintenance, integrated pest management, and monitoring. The Plan should be referenced for specific recommendations during the detailed design stage.