



# **Integrating Natural Assets Into Markham's Asset Management Plan**

Development Services Committee

May 21, 2024



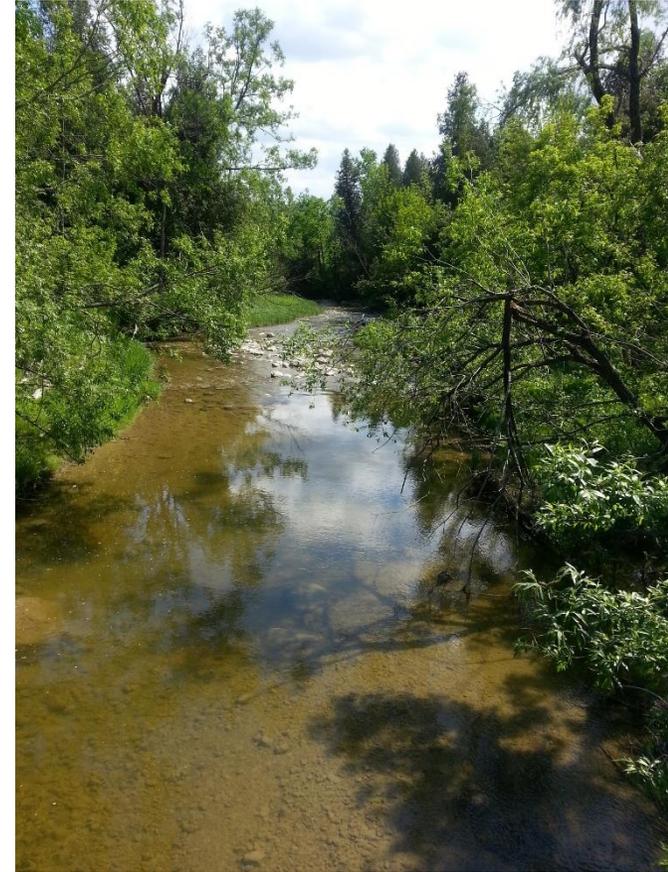
# Purpose

1. Provide an overview of the findings of the Natural Assets Study
2. Seek Council endorsement of the Study and describe how the information will be incorporated into future updates to the City's Asset Management Plan



# Background

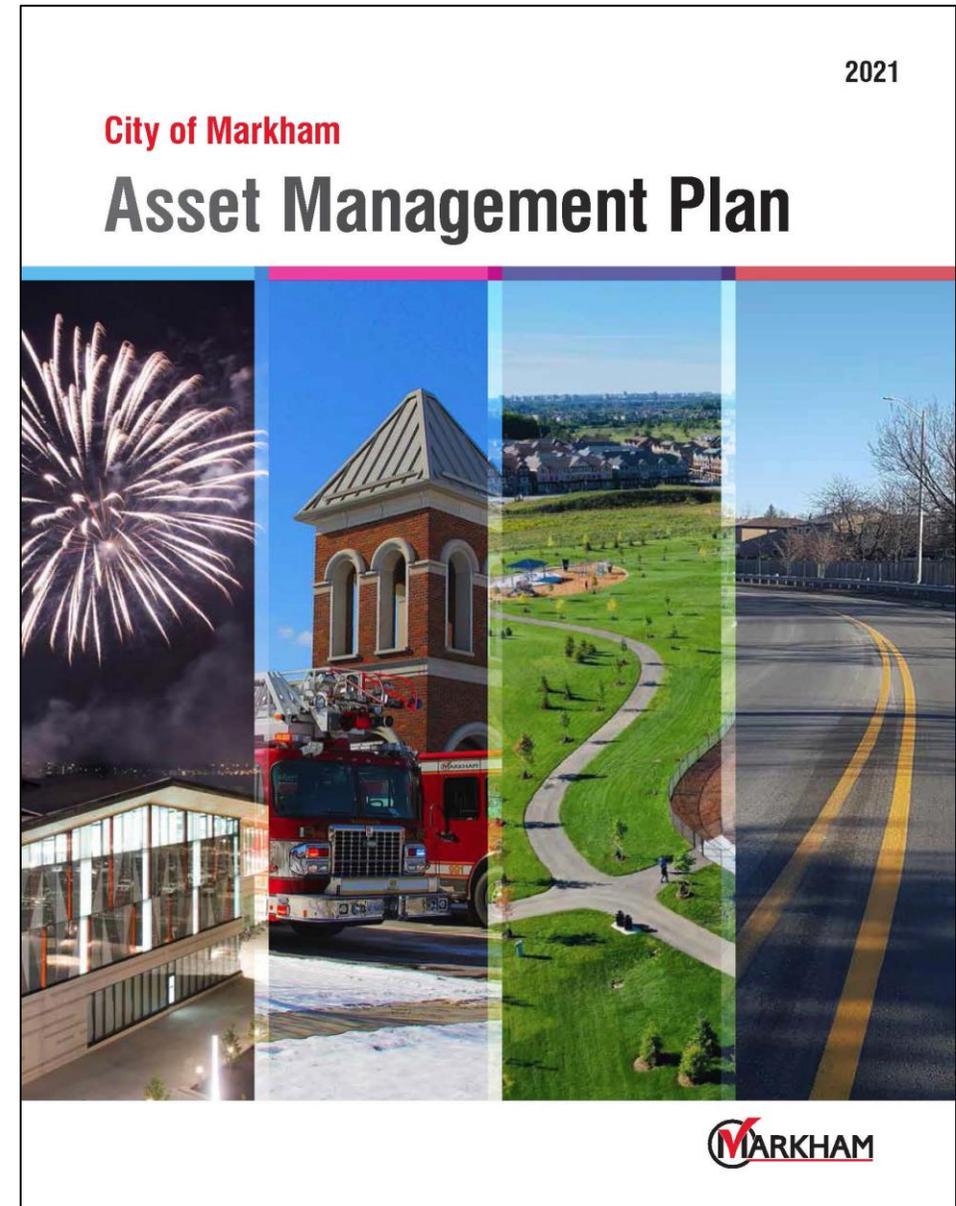
*The City has a wealth of natural assets ...*





# Project Objectives

1. Meet provincial regulatory requirements for asset management planning
2. Support the long-term protection, stewardship and maintenance of city owned natural assets





Presentation to Development Services  
Committee

# City of Markham Natural Assets Inventory & Evaluation

---

MAY 21, 2024



# What are Markham's Natural Assets?



MILNE DAM PARK,  
CITY OF MARKHAM



GERMAN MILLS PARK,  
CITY OF MARKHAM



ROBINSON CREEK NORTH,  
CITY OF MARKHAM

Natural asset	City-wide (hectares)	City-owned (hectares)
Woodlands	1,707	552
Meadows	1,499	226
Wetlands	633	114
Waterbodies	196	93
Other (hedgerows, open bluffs)	73	2
<b>TOTALS</b>	<b>4,108</b>	<b>987</b>

- 24% of natural assets are City-owned
- 75% are in the Greenway System

# Why bring natural assets into an asset management framework?

## REGULATORY REQUIREMENT

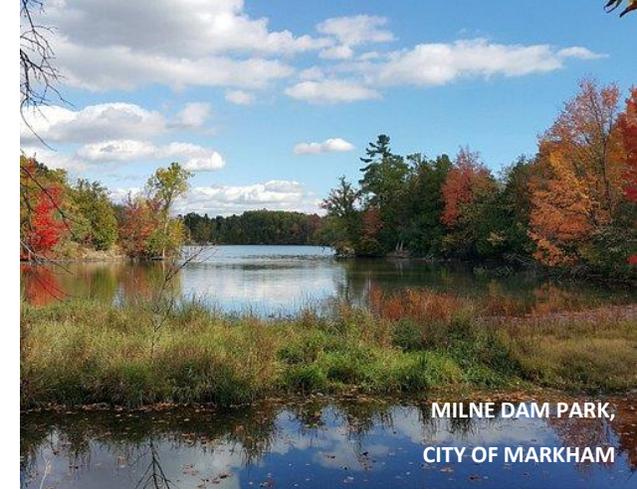
- Ontario Regulation 588/17

## ACCOUNTING FOR WHAT YOU HAVE

- Natural Assets are already providing/supporting a wide range of services to the community

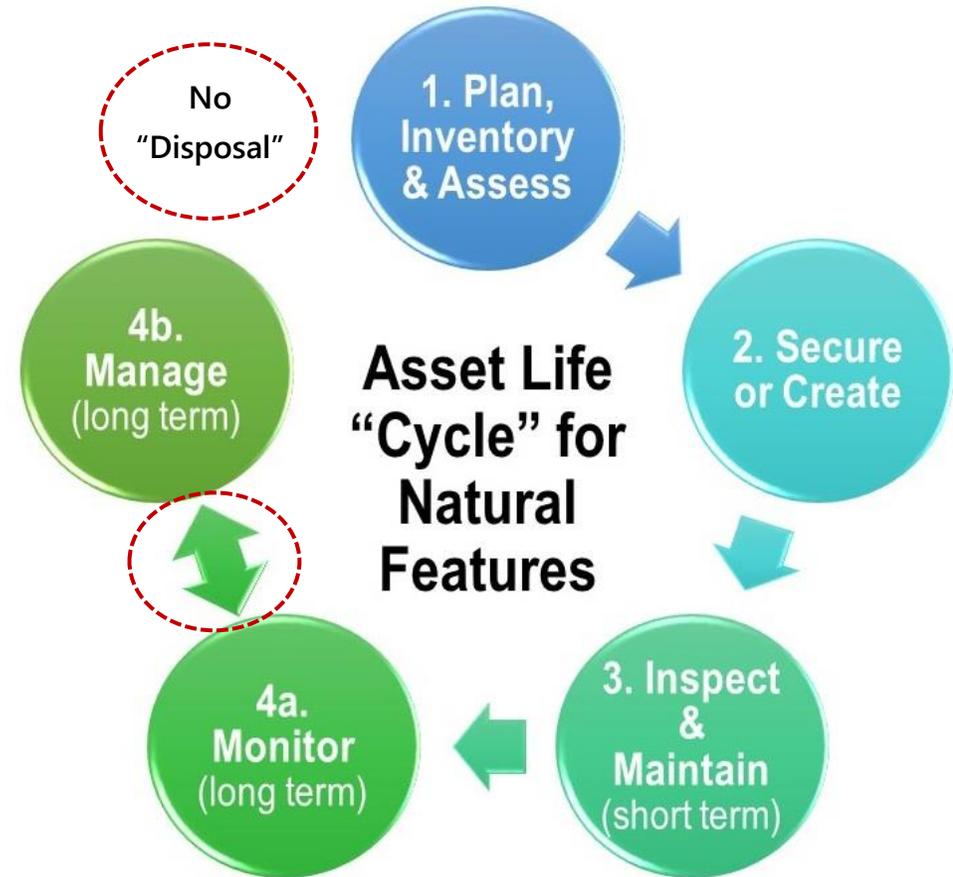
## MAKING THE MOST OF THE INVESTMENT

- Understanding the value of the city's current investment, and how the investment is already helping and could be enhanced to help address growth and climate change challenges



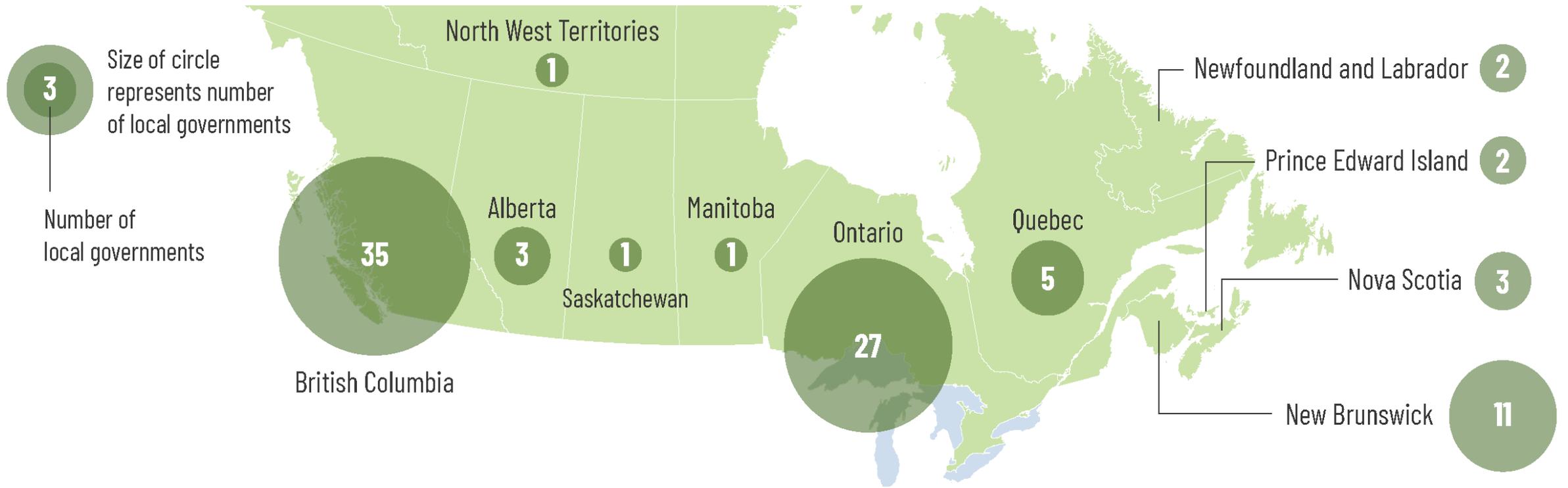


Source: City of Markham Asset Management Plan 2021



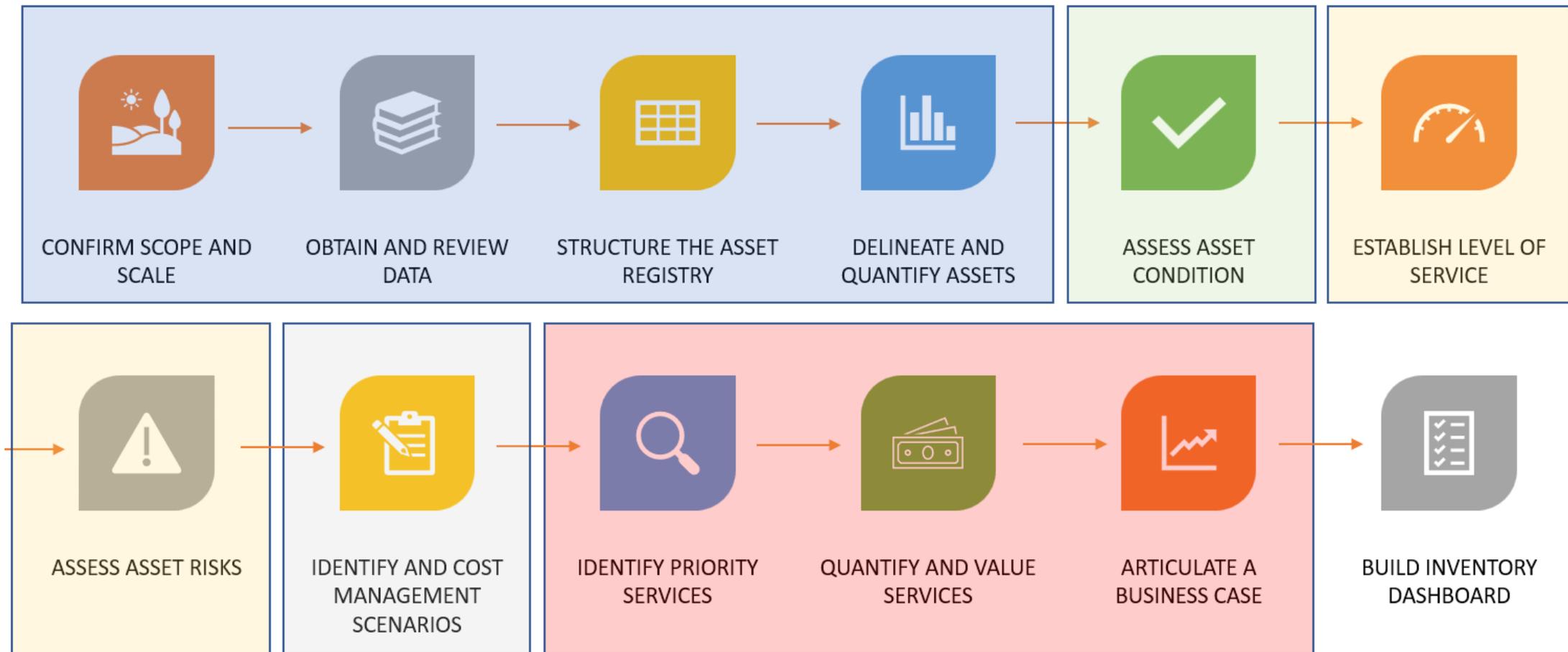
Source: Credit Valley Conservation 2020

“Traditional” asset lifecycle vs. natural asset lifecycle  
 (from an asset management perspective)



Source: Getting Nature on the Balance Sheet, Eyquem *et al.*, 2022

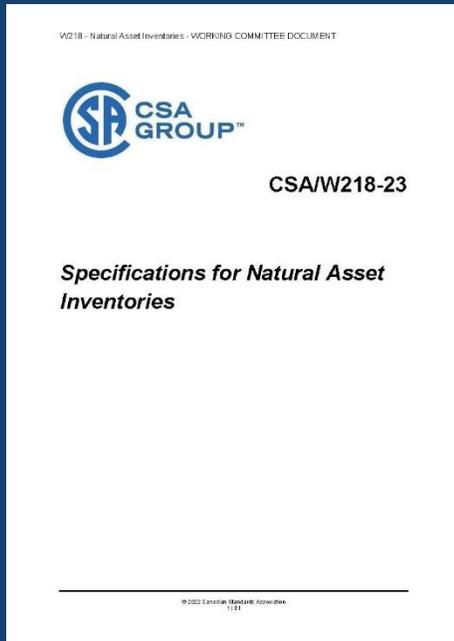
## Others accounting for natural assets across Canada (including York Region and the Town of Aurora)



**January 2023 – April 2024: Engagement with an internal Technical Advisory Committee throughout and with external partners at key points**

# What we did in Markham: Natural Asset Inventory and Evaluation Project Process

# Approach for Markham's First Natural Asset Project



## INVENTORY

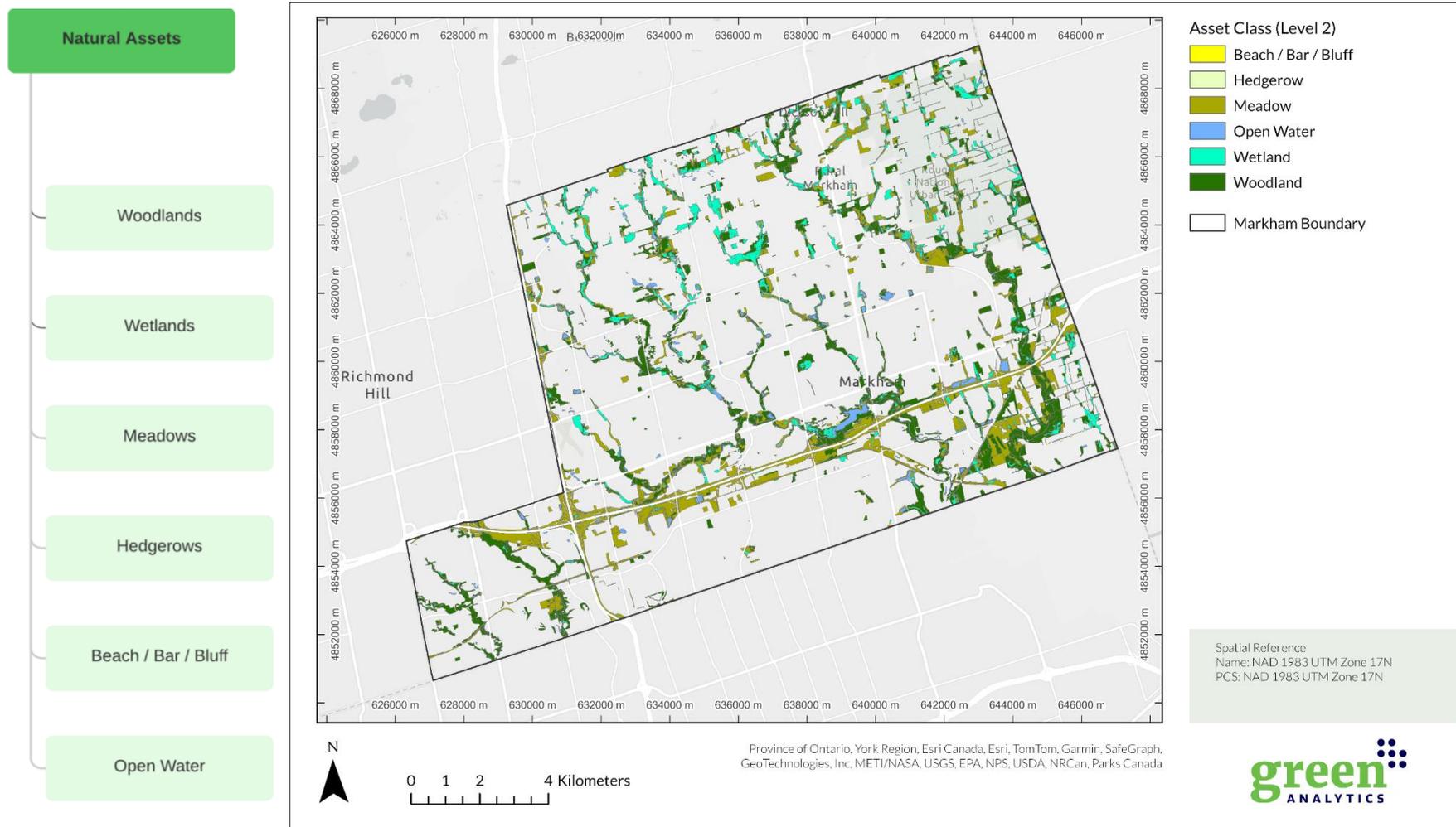
- Aligned with current standard for natural asset inventories  
**CSA/W218-23 Specifications for Natural Asset Inventories, 2023**

## RISK ASSESSMENT

- Framework aligned with City's asset management approach
- Completed with input from key City staff in various divisions
- Included a Climate Change Risk Assessment

## LEVELS OF SERVICE

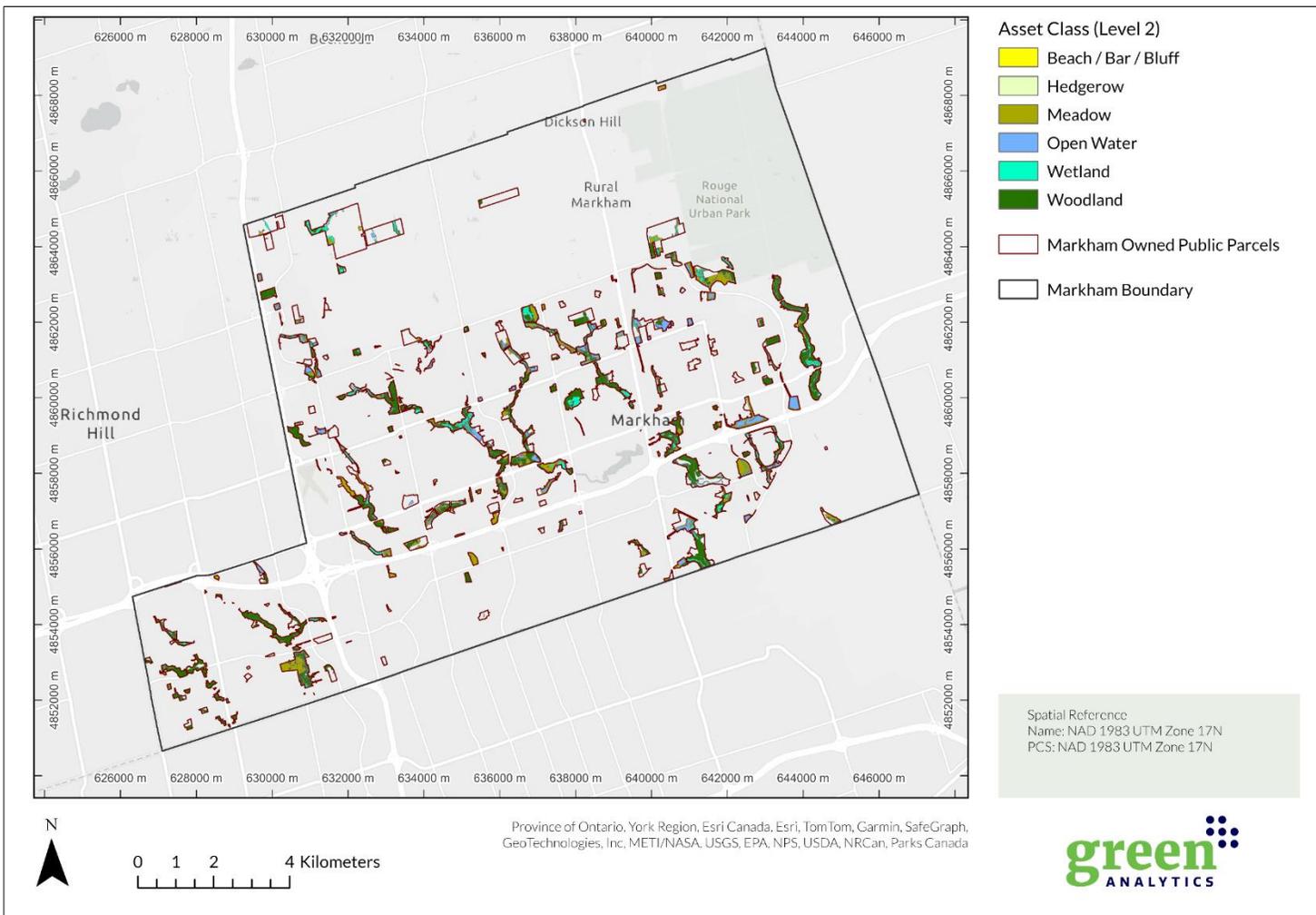
- Aligned with the City's Corporate Asset Management planning approach including the **Institute of Public Works and Engineering Australasia (IPWEA) Levels of Service Framework**
- **Levels of Service for Natural Assets: A Guidebook for Local Governments, 2022** (Natural Assets Initiative)



Provides readily accessible data and mapping on all natural assets in Markham:

- type
- location
- condition
- risks
- value

# Key Deliverable 1: Natural Asset Registry and Mapping

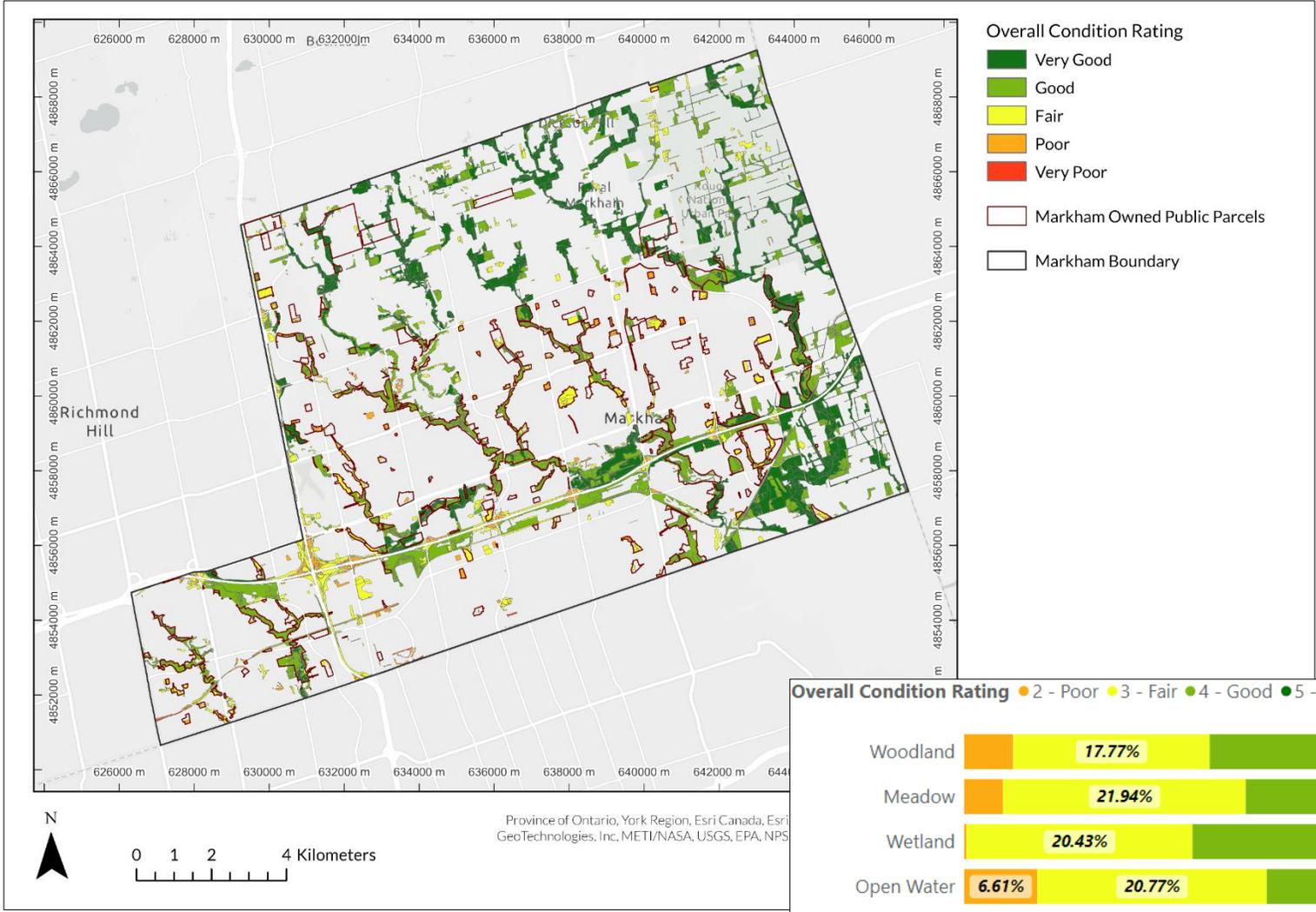


## Focus on City-owned Natural Assets

in Markham	Estimate for City-owned Assets
Woodlands	\$97 M
Wetlands	\$45 M
Meadows	\$28 M
<b>TOTAL</b>	<b>\$170 M</b>

Note: Replacement costs for waterbodies were not calculated

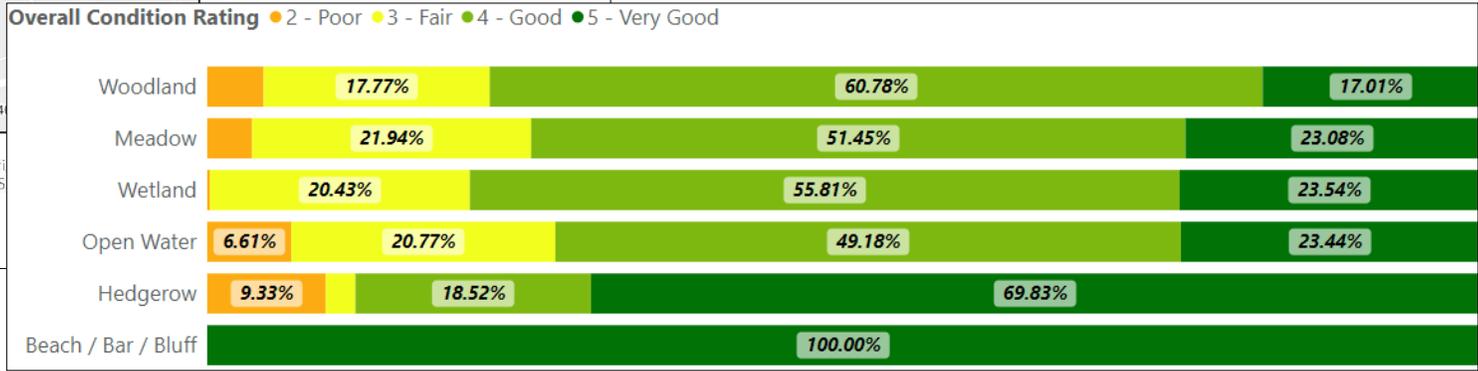
## Key Deliverable 2: Replacement costs for City-owned assets



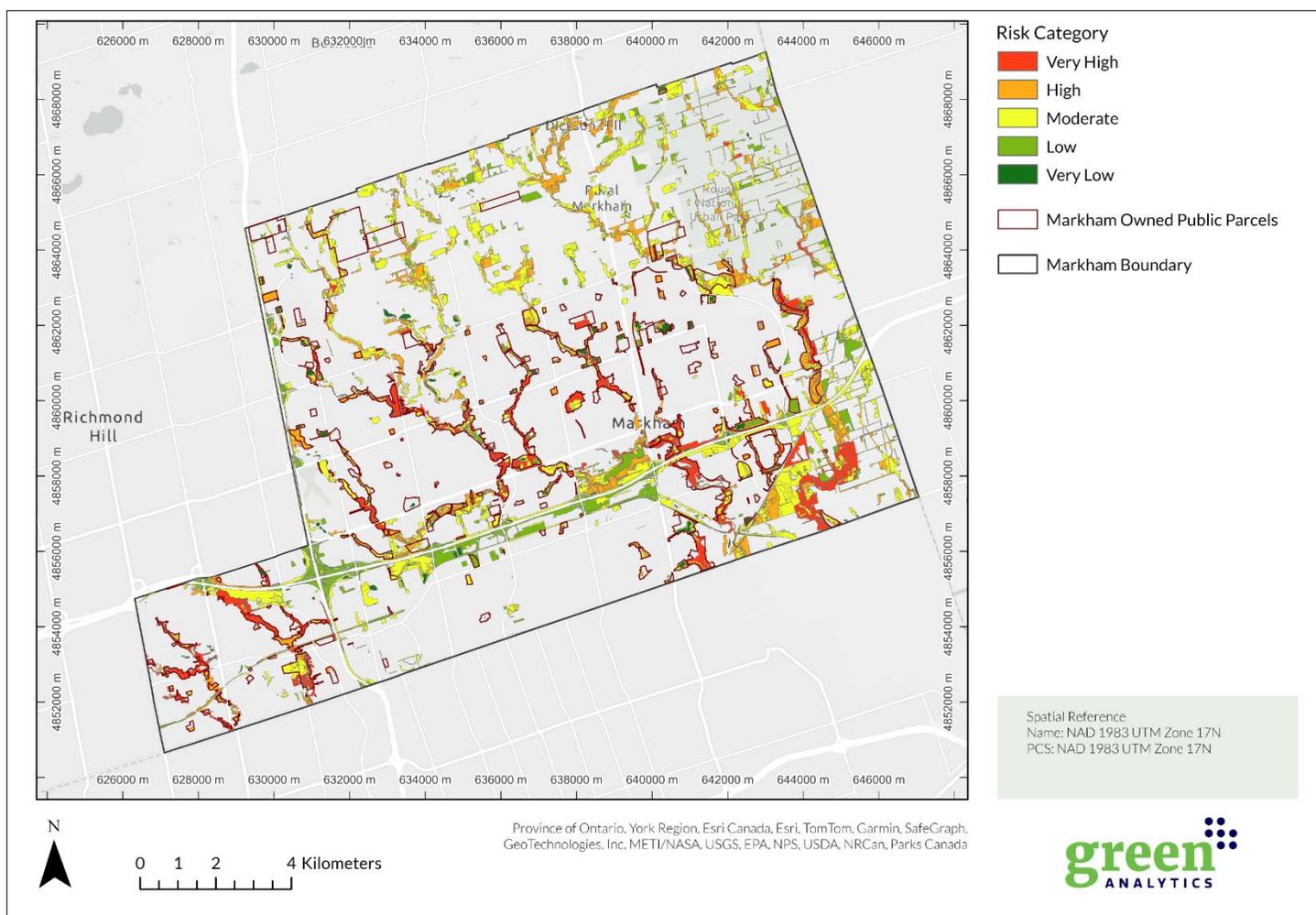
### Preliminary assessments of City-owned natural assets:

- 77% in “good” or “very good” condition
- 23% in “fair” or “poor” condition

Note assets in “fair/poor” condition are likely undercounted; further updates and refinements are required from ongoing work.



# Key Deliverable 3: Preliminary Condition Assessment of City-owned assets



## TOP 6 RISKS

1. Invasive plants
2. Runoff to aquatic assets
3. Tree pests and diseases
4. Overuse (within public natural areas)
5. Extreme wind
6. Drought

More than 50% of the City-owned natural assets fall into the high or very high-risk categories.

## Key Deliverable 4: Risks to Markham's Natural Assets



# How can the top risks to Markham's natural assets be managed?

TOP RISK	EXAMPLES OF MANAGEMENT ACTIONS
<b>Invasive plants</b>	<ul style="list-style-type: none"> <li>• Develop an Invasive Species Management Plan</li> <li>• Targeted control in priority areas</li> </ul>
<b>Runoff to aquatic assets</b>	<ul style="list-style-type: none"> <li>• Control sources of contaminated runoff</li> <li>• Protect of headwater areas</li> <li>• Naturalize buffer strips along all waterbodies</li> </ul>
<b>Tree pests and diseases</b>	<ul style="list-style-type: none"> <li>• Develop an Urban Forest Management Plan</li> <li>• Keep woodlands in good condition, including species and structural diversity</li> </ul>
<b>Overuse (within public natural areas)</b>	<ul style="list-style-type: none"> <li>• Educate visitors</li> <li>• Increase availability of public natural areas</li> </ul>
<b>Extreme wind</b>	<ul style="list-style-type: none"> <li>• Keep woodlands in good condition, including species and structural diversity</li> </ul>
<b>Drought</b>	<ul style="list-style-type: none"> <li>• Water and mulch newly restored areas</li> <li>• Use locally sourced plants and seeds, including species with tolerances to heat and drought</li> </ul>

# Key Deliverable 5: Identification and Costing of Current Management Activities for Markham's Natural Assets

## Lifecycle Management Category:

### 1. ACQUIRE / EXPAND

- Land Securement
- Land Acquisition

## Lifecycle Management Category:

### 2. MAINTAIN

- Natural Areas Monitoring
- Stewardship Activities
- Invasive Plant Management
- Meadow Management
- Basic Natural Areas Management
- High Risk Tree Management

## Lifecycle Management Category:

### 3. REHABILITATE

- Forest Restoration
- Wetland/Riparian Restoration

**Approximately  
\$0.9 million per year in  
total staff and capital  
costs are being  
invested in Markham's  
~1,000 hectares of  
natural assets**

# Key Deliverable 6: Ecosystem Services Valuation

Annual  
Ecosystem  
Service Value

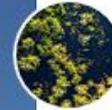
All assets @  
\$114 - \$120 Million  
City-owned assets @  
\$60 – \$62 Million



Recreation  
\$2.9 M / Year



Carbon Sequestration  
\$1.2 – 5 M/ Year



Air Quality Regulation  
\$2.7 M / Year



Regulation of Extreme Heat Events  
\$17 - \$20 M / Year



Habitat Preservation  
\$25 M / Year



Contribution to Crop Productivity  
\$1 M / Year



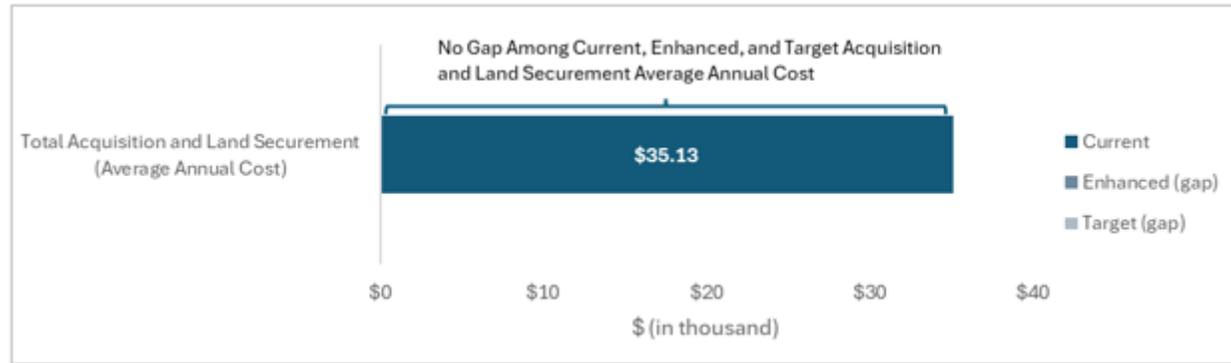
Aesthetic Appreciation  
\$59 M / Year



Stormwater Regulation  
\$4.8 M / Year

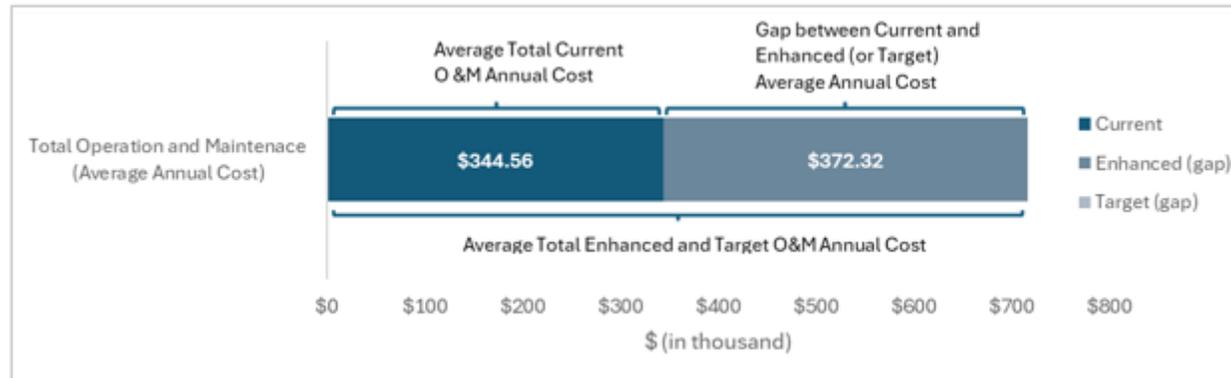
# Task 5: Management Scenarios

## Preliminary analysis

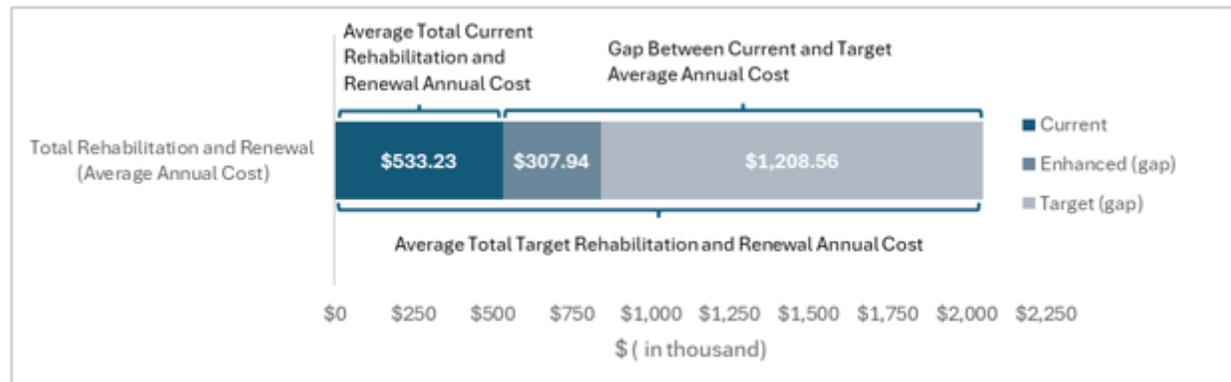


Acquisition /  
Expansion

\* A total of \$250,000 is allocated annually to the “Environmental Land Acquisition Fund” for acquisition of Greenway System lands. Actual spending on acquisition varies depending on acquisition opportunities.



Maintenance



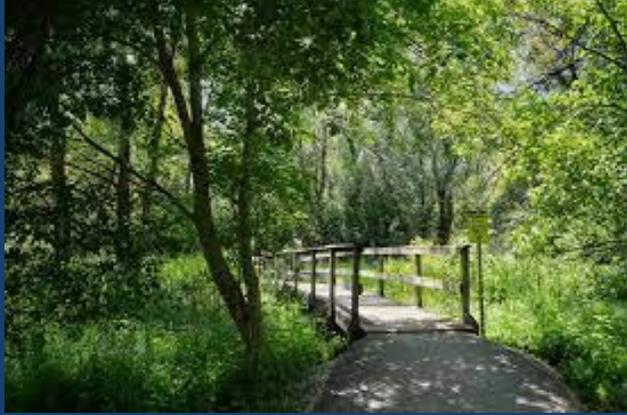
Rehabilitation /  
Renewal

Recap:

Why bring natural assets into an asset management framework?

- To help the City formally recognize the services and value provided by their natural assets.
- To use a framework aligned with other municipal assets to help track and guide acquisition, maintenance, monitoring and renewal activities.
- To inform the City's financial strategy and to help determine an appropriate level of investment in these assets.





# Making the Business Case for Natural Assets

Some numbers to think about ...

- Replacement cost of City-owned natural assets: ~\$170 M
- Current annual investment in managing these assets is about \$1 M (about 0.5% of their replacement cost)
- The value of services provided by the City-owned natural assets is conservatively estimated at about \$60 M per year

**Investing \$1 million in maintenance of natural assets to help ensure the annual ecosystem service benefits (valued at 60 times that) are maintained is an excellent investment.**

## MARKHAM'S NATURAL ASSETS AND CLIMATE CHANGE GUIDE



Prepared for



Prepared by



May 2024

# Concluding Remarks

## Thank-you for your time

## Questions or comments?