

## Integrating Natural Assets Into Municipal Asset Management

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[Webinar Recording](#)

Incorporating a Natural Asset Inventory into municipal asset management helps municipalities recognize and protect the essential services that natural systems provide, while reducing long-term costs and strengthening overall service reliability.

In this webinar, Patrick Wong, Senior Natural Heritage Planner at City of Markham shared the findings and recommendations of Markham's Natural Assets Inventory and Evaluation Study. The session will highlight key components of the natural asset inventory—including asset valuation, condition, and levels of service—and provide an overview of how these assets contribute to municipal climate resilience and municipal service delivery.

### Presenters

- Patrick Wong | Senior Natural Heritage Planner | City of Markham

### Presentation Overview

- Under O.Reg 588/17, Ontario municipalities are required to include "non-core" assets, such as green infrastructure and natural assets (e.g., woodlands, meadows, wetlands), in their asset management plans. This compliance is critical because:
  - Most provincial and federal infrastructure funding now requires a compliant asset management plan.
- Asset risk assessment: Part of the asset management workflow is to complete a risk assessment. This is to help understand if there are there any critical assets and to support prioritization for maintenance and lifecycle needs for an asset.
- While most of the City's assets are currently deemed "good" or "very good" condition, some city-owned assets in urban areas face "very high" risks from invasive species, encroachment, and overuse.
- Markham's new framework establishes a baseline by identifying activities that may be part of a department's business plan, but were not previously formally documented in the context of an asset management plan, along with who performs them, and how much time and money are invested.
- Markham's natural heritage system covers approximately one-third of its land base, though actual woodland (8%) and wetland (3%) cover remains relatively low.
- The City developed a GIS-based database (Natural Asset Inventory) to track assets by condition, risk, and ecosystem services valuation.
- To communicate the importance of natural assets to both the public and decision-makers, the study utilized two primary valuation methods: replacement value and ecosystem services valuation.
  - Total Replacement Value: The cost to replace the function of these assets was estimated at just under \$170 million.
    - Methodology: Used Toronto and Region Conservation Authority (TRCA) restoration costs.

- Unit Cost: Approximately \$150,000 per hectare.
  - Ecosystem Services Valuation: This calculates the annual economic benefit provided by the assets to the community.
    - Total Annual Value (City-Owned): 62 million.
    - Total Annual Value (All Ownerships in Markham): ~\$120 million.
    - Services Included: Carbon sequestration, recreation, water filtration, and temperature regulation.
- The City currently invests approximately \$900,000 annually in natural asset management through various departments. The framework categorizes these activities into three streams:
  - Acquisition and Expansion: Primarily occurring through the development approval and subdivision process.
  - Maintenance: Conducted by operations, parks, and forestry groups (e.g., monitoring, mowing meadows, trail inspections, and hazard tree management).
  - Rehabilitation: Forest and wetland restoration projects.
- When drafting of the RFP, the City considered exploring increased carbon sequestration as a result of management. However, based on the information available this was not possible.
  - Instead, the study considered the actual impacts of climate change on city assets (i.e., what is the overall impact of climate change?), and if there is a negative impact to natural assets, what can the city do to mitigate those risks?

## Resources

- [City of Markham 2025 Asset Management Plan](#)
- [City of Markham Natural Heritage Inventory and Assessment Study](#)
- [City of Markham Staff Report – Phase 1 Report: Natural Heritage Inventory and Assessment Study](#)
- [O. Reg. 588/17: ASSET MANAGEMENT PLANNING FOR MUNICIPAL INFRASTRUCTURE](#)
- [City of Markham Natural Asset Inventory](#)

## Contact Information

Please reach out to us at any time with questions, input, or for additional information.

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