



Report to: Development Services Committee

Meeting Date: May 21, 2024

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<b>SUBJECT:</b>	Natural Heritage Management Study
<b>PREPARED BY:</b>	Patrick Wong, MCIP, RPP, Senior Planner, Natural Heritage, ext.6922
<b>REVIEWED BY:</b>	Mark Head, MCIP, RPP, Manager, Natural Heritage, ext. 2005

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**RECOMMENDATION:**

1. That the report dated May 21, 2024 entitled “Natural Heritage Management Study” be received;
2. That the Natural Areas Management Guidebook and the Invasive Plant Species Management Plan, attached as Appendix A and B, be endorsed to serve as a guiding framework for the stewardship and improvement of natural areas owned by the City of Markham;
3. That the findings of the Natural Heritage Management Study be used to inform updates to the City’s Asset Management Plan and Official Plan; and
4. That Staff be authorized and directed to do all things necessary to give effect to this resolution.

**PURPOSE:**

The purpose of this report is to seek Council’s endorsement of the Natural Heritage Management Study (the ‘Study’) which includes the Natural Areas Management Guidebook and the Invasive Plant Species Management Plan. The Study serves as a guiding implementation framework for the stewardship and improvement of natural areas owned by the City of Markham.

**BACKGROUND:**

The City of Markham has a wealth of natural assets which contribute to the quality of life of our community. Areas such as Milne Dam, Toogood Pond and Pomona Mills Park are community landmarks and enjoyed by residents across the City. One-fifth of the City, or 4,100 hectares, is covered by natural vegetation or water and is largely protected in the City’s Greenway System. Of this total, the City owns and manages approximately 1,000 hectares of natural assets which is double the amount of parkland owned by the City.

The City initiated a two phase study in 2021 addressing natural heritage planning and management needs. In May 2021, Council received a [staff report](#) on the Natural Heritage Inventory and Assessment Study (NHAS) which updated the City’s natural heritage mapping and described trends in health and quality of the City’s natural areas. Threats were identified including the increasing presence of invasive species and human-caused disturbances such as private encroachment onto public lands, dumping of waste and fill,

and removal of native vegetation. The phase one NHIAS study recommended that a Natural Heritage Management Study be prepared in phase two to provide direction on the management of ecological threats and issues affecting Markham's natural areas.

The City of Markham invests staff time and effort into the management of natural areas particularly in the restoration of natural ecosystems. However, procedures for natural area management are undocumented and current management activities lack the benefit of having more structured guidance to improve the management of natural areas. The Study addresses this need and provides a city-wide implementation framework for the stewardship and improvement of natural areas. It outlines actions that can be taken by the City to protect and improve the condition of our natural areas, and how the City should prioritize its resources to realize the greatest environmental benefits across the landscape.

The Study does not provide specific management recommendations on a site-by-site basis. More detailed assessments may be required to address unique habitats or complex issues related to specific natural heritage areas.

## **DISCUSSION:**

The Study completed detailed field investigations to provide a baseline health assessment for all City-owned natural areas. This information was used to create the asset registry for the Natural Assets Study. Of the approximately 1,000 hectares of natural areas owned by the City, 750 hectares were surveyed as part of the NHIAS in 2020 and the remaining 250 hectares were surveyed as part of this Study. The work was completed by project biologists with experience in the *Ecological Land Classification System for Southern Ontario* which provides a standard approach to identifying and classifying natural ecosystems.

Noteworthy observations are listed below:

- The City has a concentration of young Black Walnut-dominated forest ecosystems along the valley systems. This is considered a provincially rare type of ecosystem.
- Of the 530 plant species have been recorded in City-owned natural areas 61.6% are native, 3 plants are species-at-risk; 10 are provincially rare species; and 62 are regionally rare species.
- Wildlife species recorded include 75 species of birds, 8 species of amphibians, and 4 species of reptiles.
- Natural areas in the southwestern part of the City tend to have greater proportion of invasive species and more intensive disturbances, particularly Norway Maple.
- Significant increase in two invasive species throughout the City: Dog-strangling vine and Common Buckthorn.
- Dieback of Trembling Aspen at several locations that should be monitored.

## **The Markham Natural Areas Management Guidebook provides best management practices for the maintenance and stewardship of natural areas**

The Natural Areas Management Guidebook (attached as Appendix A) is intended as a tool to guide how the City can proactively monitor, maintain and enhance our natural

areas. Natural areas are subject to many threats including urbanization, climate change and recreational use which can reduce the health and condition of natural areas without mitigation or management. Currently, procedures for natural area management are undocumented and heavily dependent on staff experience and judgement. As the City becomes responsible for increasing amounts of natural areas with unique and/or complex habitat types, the Natural Areas Management Guidebook will support the continuing care and long-term sustainability of the natural areas using science-based best management practices. The Natural Areas Management Guidebook is intended to be a 'living' document and should be continually updated regularly as new information and resources become available.

#### Assessment of Threats and Stressors

The Natural Areas Management Guidebook describes the primary threats and stressors to city-owned natural areas and focuses on the potential impacts to user safety, ecological function and recreation use. Recommendations to mitigate and monitor specific threats are provided.

#### Review of Existing Management Practices

The City of Markham already invests time and effort into the management of natural areas particularly on the restoration of natural ecosystems. Current management activities are delivering good value for service to the City and are addressing direction that Markham's natural areas be protected, restored and enhanced.

Recent highlights include:

- Planting an average of 15,000 native trees and shrubs in natural areas every year. Major sites planted by the City, 10,000 Trees and Friends of the Rouge Watershed over the past three years include Campbell Park, Milne Dam Conservation Park, Robinson Creek, Pomona Mills Park, Hillmount Park, Tomlinson Park, Cedar Grove Park and Simonston Park.
- Invasive species management (Phragmites) at Milne Dam Conservation Park and Swan Lake Park
- Wetland creation at Hillmount Park by Toronto Region Conservation Authority
- Aquatic habitat enhancements in the Rouge watershed by Ontario Streams
- Meadow maintenance at German Mills Meadow and Pomona Mills Park

However, based on study findings, the current basic level of service is not adequate to ensure Markham's natural areas are managed to their full potential based on an understanding of key threats and pressures on the system. There are opportunities to improve the management of natural areas which are provided in this section of the Guidebook. The management practices in this Study provide recommended guidance for natural asset planning which are organized into the following topics: Land Use & Natural Heritage Planning; Ecosystem Management & Restoration; Wildlife; Watercourses & Aquatic Habitat; Invasive Species; Public Infrastructure Maintenance; and Public Use. For each topic, the current practices undertaken by the City are summarized and a list of recommended management practices are provided.

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**Invasive Plant Species Management Plan provides direction on how to address the negative effects of invasive plant species on city-owned natural areas**

Invasive species are a significant cause of decline in the health of natural areas. They outcompete native plants, alter habitat for native wildlife and disrupt natural processes such as pollination, water quality and nutrient cycling. In addition to environmental concerns, some invasive species also pose a risk to human health and reduce recreational enjoyment. In Markham, approximately one-third or 300 hectares of city-owned natural areas have been observed with a high degree of invasive species.

**Current Efforts to Manage Invasive Plant Species**

Currently, the City manages several invasive species that pose a direct risk to human health and safety. Over the last ten years, the City has retained the Toronto Region Conservation Authority (TRCA) to control Giant Hogweed with a particular focus on the concentrated Giant Hogweed population in Thornhill. Mechanical removal of other potentially harmful plants such as Wild Parsnip, Cow Parsnip and Poison Ivy have also been undertaken in proximity to active parkland facilities and trails.

The management of other invasive species that do not pose a risk to human health has been more opportunistic, dependent on staff resources and the degree of impact if left unaddressed. Where there are engaged community volunteers, the City has provided technical advice and tools to support efforts to manage invasive plants. Stewardship by local community groups has proven to be a cost-effective method that has been successfully carried out at the Grandview Woodlot (Buckthorn removed) and Pomona Mills Park (Phragmites removed), however these sites represent less than 0.5% of all city-owned natural areas. The City has also retained contractors to perform one-off management projects of Phragmites at Milne Park and Swan Lake Park to compliment the ongoing reforestation and naturalization projects that are taking place.

**Invasive Plant Management Tools and Approaches**

It is recommended that the City consider four methods to reduce the spread and impact of invasive species.

**1. Prevention of new invasive plants**

The prevention of new invasive plant introductions can be a cost-effective method to manage invasive species. This aims to identify newly introduced plants and to eradicate them before they can become established and can spread to other natural areas. The City participates on York Region's Invasive Species Working Group to be informed of high-risk invasive species appearing at a regional scale, but this approach would require greater attention be placed on identifying and responding to new invasive plants appearing at a local scale in our natural areas.

**2. Removal or control of invasive plants**

A strategic approach to removal efforts will need to be undertaken by the City. It is recognized that invasive plants are already well-established throughout the Greater

Toronto Area and the complete eradication of invasive plants is not a feasible or realistic goal. However, a prioritization approach can be undertaken to evaluate management efforts with consideration towards: the type of invasive species, the level of potential harm to natural areas, the sensitivity of the natural area, technical feasibility, access routes, and coordination with other ongoing construction or naturalization projects.

Invasive species will continue to exist on the landscape and typically require multiple years of management to fully control or remove. City staff will prioritize sites where an engaged group of volunteers are able to continue stewardship for several years.

Following the removal of invasive species, the City will also need to re-establish native vegetation. This may happen naturally or may require seeding and planting.

3. Review of Existing Procedures

Existing municipal practices and procedures can be reviewed and updated for opportunities to support the control of invasive plant species. It is recommended that the following municipal practices be reviewed: street/park tree planting program; clean equipment protocols; maintenance practices for roads and right-of-ways; and construction practices adjacent to natural areas.

4. Education and Outreach

Invasive species can be introduced accidentally through the dumping of yard waste or through the spread of garden plants into city-owned natural areas. Raising public awareness can help to reduce the accidental spread of invasive species, attract volunteers for environmental stewardship, and promote community pride in natural areas. A number of non-profit groups already run outreach programs to raise awareness of invasive plants among the public. The City can play a role in supporting these efforts to reach more Markham residents and businesses.

## **Implementation and Next Steps**

As outlined in this report, the City owns approximately 1,000 hectares of natural areas. The Natural Heritage Management Study provides a comprehensive set of recommended management practices and actions the City can undertake over time to improve the ecological condition and function of the City's natural areas to realize their environmental benefits more fully. A summarized list of the recommended best practices is provided in Appendix C.

As part of the initial implementation, Staff will be utilizing the findings of the Study to inform updates to the City's Asset Management Plan to incorporate City-owned natural areas as natural assets within the City's asset management planning framework and to the Official Plan through the City of Markham Official Plan Review. Staff have also identified priority actions in Appendix D that can be implemented in the short term with existing resources and funding sources.

Following Council endorsement of this report, staff will be undertaking further analysis of other recommended management practices in the Study to identify resourcing gaps and bring back recommendations to Development Services Committee to implement options for enhanced natural areas management.

**FINANCIAL CONSIDERATIONS**

The Study was funded through an approved 2022 capital budget account. Council endorsement of this staff report does not have any financial implications. Implementation of the short-term actions in Appendix D can be addressed with existing resources.

**HUMAN RESOURCES CONSIDERATIONS**

Not applicable.

**ALIGNMENT WITH STRATEGIC PRIORITIES:**

Management and stewardship of natural heritage resources is aligned with the 'Safe, Sustainable and Complete Communities' strategic priority.

**BUSINESS UNITS CONSULTED AND AFFECTED:**

Staff from the Operations – Parks and Environmental Services Departments were involved in the preparation of this Study and staff report.

**RECOMMENDED BY:**

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Director, Planning & Urban Design

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**ATTACHMENTS:**

Appendix A: Natural Areas Management Guidebook  
Appendix B: Invasive Plant Species Management Plan  
Appendix C: Summary of Management Recommendations  
Appendix D: Priority Short Term Actions