Item 8.7

Section I – Items for Board of Directors Action

TO: Chair and Members of the Board of Directors
Meeting #8/20, Friday, November 20, 2020

FROM: Anil Wijesooriya, Director, Restoration and Infrastructure

RE: **TRCA INVASIVE SPECIES MANAGEMENT STRATEGY**

KEY ISSUE

Approval of the Invasive Species Management Strategy that will provide a framework for the implementation of invasive species monitoring, management, and awareness throughout the jurisdiction.

RECOMMENDATION

WHEREAS much of TRCA's jurisdiction contains highly altered landscapes and urban areas with a high prevalence of invasive flora and fauna;

AND WHEREAS invasive species management and awareness is an important consideration for ecological and socio-economic reasons;

THEREFORE, LET BE IT RESOLVED THAT the Board of Directors approve the TRCA Invasive Species Management Strategy as the foundation for the development of invasive species plans and implementation on TRCA owned and managed properties;

AND FURTHER THAT the TRCA Invasive Species Strategy be used to further discussions with municipal partners to improve greenspace management.

BACKGROUND

The TRCA Invasive Species Management Strategy (the "Strategy") defines invasive alien species (IAS) as the non-native terrestrial and aquatic flora and fauna species and pathogens whose introduction and spread can pose significantly greater harm to the environment, economy and society compared to any potential benefit they might provide.

Globally IAS have increased by 40% since 1980 and show no signs of slowing. An analysis of TRCA data (2009-20018) for ravines within the City of Toronto indicate that IAS are present in 75% of the surveyed area and are dominant in 37% of the area. The proliferation of IAS is increasingly a threat to local ecosystem function. They are one of the biggest drivers of biodiversity loss; in Canada, about 24% of listed Species at Risk (e.g. American chestnut, eastern pond mussel and American ginseng) are threatened due to IAS. Climate change is exacerbating the problem by reducing the resilience of natural areas to invasions and favouring conditions that promote IAS spread.

IAS also cause billions of dollars' worth of damage globally each year. In Canada, the annual cost of IAS is broadly estimated to be as much as $20 billion to the forest sector, $7 billion for aquatic invasive species in the Great Lakes, and $2.2 billion for invasive plants alone in the agricultural sector. In Ontario, the direct cost of IAS control and management in natural areas by municipalities and conservation authorities is estimated as $50.8 million annually and does not include the indirect cost associated with habitat degradation, costs of restoration, loss of recreational values etc. One local example of this is cost of ash tree treatment and removal due

to the IAS emerald ash borer. Photographs of some of the IAS in TRCA jurisdiction can be seen in ***Attachment 2***.

The social impacts of IAS are diverse and often complex. There are direct and indirect impacts such as damage to private properties and infrastructure, loss of recreational and aesthetic value of natural areas, loss of traditional medicinal plants, clogging of water bodies preventing navigation access and angling, nuisance to landowners, as well as serious health risks presented by species such as giant hogweed and wild parsnip. IAS management also brings up uncertainties and controversies about social values, achievability, efficiency, and ethical implications. This includes debate over use of chemical and biological control techniques, as well as large scale removal practices that may involve a wide range of human interests and values.

Human activities are responsible for the introduction of IAS, as such urban areas are considered hotspots for IAS. Ornamental horticulture, dispersal pathways such as roads and trails, pet/plant release, altered disturbance regimes, microclimatic conditions, soils and hydrology are some of the reasons for IAS presence and spread.

The success of IAS often is attributed to their common characteristics of high dispersal ability, rapid reproduction and growth, and ability to adapt to and survive under a wide range of environmental conditions. When IAS are introduced to a new ecosystem, the ecosystem may not have the natural predators and competitors present in its native environment that would normally control their population. IAS can create novel interactions with available biotic and abiotic elements of the ecosystem thereby altering habitats and affecting various ecosystem functions and services. This is especially pronounced in areas that are more disturbed. Aquatic ecosystems, particularly Lake Ontario, may experience greater impacts due to IAS because their effects are magnified along the food web. This has the potential to be aggravated by climate change as warmer waters may increase habitat availability for IAS. Further, IAS are especially challenging to manage in aquatic ecosystems due to a lack of effective management tools (e.g. Canada does not have a pesticide approved for use over water).

One of the key aspects of IAS management at TRCA is associated with it being one of the largest landowners in the GTA. TRCA has been managing IAS for many years to protect and enhance ecological features and functions, to protect human health, and to engage and educate the public. These initiatives include monitoring and controlling IAS, restoring invasive-dominated communities on TRCA properties, managing IAS at fee-for-service projects for our municipal partners and promoting public awareness. Highlights of TRCA's IAS work include:

- Representation on the Ontario Invasive Plant Council (OIPC)
- Participation in the development of OIPC's *Grow Me Instead* guides
- Development of *A quick reference guide to Invasive Species* (in partnership with CVC)
- Delivery of the Investigating Invasive Species education program
- Informational signage at TRCA Conservation Areas and Parks
- Community-based IAS management (e.g. garlic mustard pulls, common burdock removal events, Ravine Team IAS plant removals)
- Asian Carp response and surveillance (in partnership with MNRF and DFO)
- Sea lamprey monitoring and control program (contract partnership with DFO)
- Terrestrial monitoring program which identifies invasive plants in surveys
- Tommy Thompson Park Phragmites management, which has seen a 90% reduction in phragmites infestation at the Cell One wetland (see ***Attachment 3***).
- IAS control at The Meadoway to achieve native meadow restoration

- Emerald Ash Borer Hazard Tree Management Program
- Humber Bay Butterfly Habitat invasives species control (agreement with City of Toronto)
- David Dunlap Observatory Woodlot Restoration targeting buckthorn and garlic mustard (agreement with Richmond Hill)
- Giant Hogweed Control (agreement with Markham)

TRCA also undertakes studies and research, in many cases in partnership with academic institutions, to help improve our understanding of the impacts of invasive species and how to effectively manage them. Examples of this work include dog-strangling vine field and lab experiments to inform ecological restoration in partnership with the University of Toronto; and development of a framework to prioritize invasive species and management areas in partnership with the University of Toronto (currently in progress).

Additionally, IAS removal is recommended through the planning and development and Environmental Assessment process, furthermore The Living City Policies contain policies that recommend a natural approach to the landscaping adjacent to natural heritage systems with native, non-invasive and locally appropriate species.

RATIONALE
The Strategy provides the foundation to achieve more effective and coordinated IAS management with the goal to protect and, where possible, enhance terrestrial and aquatic ecosystem function and services on TRCA-owned lands and other public lands to ensure ecosystem health and community well-being. The Strategy also has regard for IAS recommendations on private lands as part of the planning and development process. The Strategy highlights four main objectives:

1. Prevention, early detection, and rapid response
2. Eradication, containment, and control
3. Protection of high priority areas
4. Coordination, knowledge transfer and building awareness

Each of the objectives is associated with specific actions and associated success criteria that are important to achieve to the goal.

The Strategy recognizes that the decisions and actions to manage IAS are extremely complex, especially in highly altered and continually disturbed ecosystems, such as urban ecosystems in the Toronto and region. In such systems, IAS are often widespread and persistent, and may be providing necessary ecological services such as erosion control and thermal mitigation. In these cases, IAS management may not be a feasible undertaking or may require many years of dedicated efforts to be successful.

Relationship to Building the Living City, the TRCA 2013-2022 Strategic Plan
This report supports the following strategies set forth in the TRCA 2013-2022 Strategic Plan:
Strategy 2 – Manage our regional water resources for current and future generations
Strategy 3 – Rethink greenspace to maximize its value
Strategy 5 – Foster sustainable citizenship
Strategy 8 – Gather and share the best sustainability knowledge

FINANCIAL DETAILS
Invasive species projects may form a component of restoration projects, public engagement programs and research projects funded through various municipal levies and/or special grant and foundation funding.

The identification of additional funding will increase TRCA's ability to effectively manage IAS on our properties and leverage the considerable community interest in participating in IAS monitoring or control activities.

DETAILS OF WORK TO BE DONE
The development of the Strategy was a collaborative effort from several business units. Similarly, implementation of the Strategy will also require contributions from several business units across all divisions at TRCA. For example the completion of the prioritization study led by Ecosystem and Climate Science will directly inform on-the-ground control efforts; the Restoration and Resource Management team will lead IAS implementation planning and control by both staff and volunteers; the Terrestrial Inventories and Monitoring team and the Aquatic Monitoring and Management team will continue IAS data collection; the Education and Training team along with the Parks and Culture team will continue with education programming to improve public awareness; and the Communications, Marketing and Events team will support delivery of communications and programming.

The Strategy provides a framework for IAS implementation and includes a task list to ensure that TRCA will achieve the goal and objectives. Some of the actions are already underway, including the development of two specific IAS initiatives: TRCA's Gypsy Moth Strategic Approach and Invasive Species Management Plan for TRCA's conservation parks in Peel Region. The Gypsy Moth Strategic Approach will focus on public and staff education, and when warranted strategic management for TRCA parks with high public use when a severe infestation is forecasted. Invasive Species Management Plans for TRCA's conservation parks in Peel Region will focus on management of invasive plants in public use areas and adjacent to trails as a continuous program in order to help address the spread of IAS.

An important component of the Strategy is fostering the collaboration and coordination of IAS management and awareness with TRCA's municipal partners and other stakeholders to facilitate consistent IAS management across TRCA jurisdiction. TRCA is already a strong partner in various municipal initiatives including the City of Toronto Ravine Strategy, as well as the Biodiversity Strategy, both of which include strong IAS components. TRCA also participates in Forest Working Groups for Peel, York and Durham where IAS is a regular feature of discussions. Parks Canada has also expressed an interest in IAS awareness and management in Rouge National Urban Park and TRCA is well positioned to partner with Parks Canada on IAS initiatives. Staff will continue to collaborate with our partners to achieve effective IAS management and awareness.

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Attachments: 3

Attachment 1: TRCA Invasive Species Management Strategy
Attachment 2: Photographic Examples of IAS in TRCA jurisdiction
Attachment 3: Tommy Thompson Park Cell One Wetland Phragmites Management 2018-2020