



# Toronto and Region Conservation Authority

## Board of Directors Meeting Agenda

#8/20

November 20, 2020

9:30 A.M.

The meeting will be conducted via a video conference  
Members of the public may view the livestream at the following link:

<https://video.isilive.ca/trca/live.html>

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3. **MINUTES OF THE SPECIAL MEETING OF THE BOARD OF DIRECTORS, HELD ON NOVEMBER 13, 2020**  
Meeting Minutes
4. **DISCLOSURE OF PECUNIARY INTEREST AND THE GENERAL NATURE THEREOF**
5. **DELEGATIONS**
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10.	<b>MATERIAL FROM EXECUTIVE COMMITTEE MEETING #7/20, HELD ON NOVEMBER 6, 2020</b> <a href="#">Meeting Minutes</a>	
10.1.	<b>SECTION I – ITEMS FOR BOARD OF DIRECTORS ACTION</b>	
10.1.1.	<b>GREENLANDS ACQUISITION PROJECT FOR 2016-2020 (7476 KIPLING AVENUE)</b> Flood Plain and Conservation Component, Humber River Watershed Portside Developments (Kipling) Inc. (CFN 61641). Acquisition of property and conservation easement located at 7476 Kipling Avenue, in the City of Vaughan, Regional Municipality of York, under the “Greenlands Acquisition Project for 2016-2020,” Flood Plain and Conservation Component, Humber River watershed.  (Executive Committee RES.#B71/20) PDF Page 2/7	

**10.1.2. GREENLANDS ACQUISITION PROJECT FOR 2016-2020 (10390 PINE VALLEY DRIVE)**

Flood Plain and Conservation Component, Humber River Watershed Country Wide Homes (Pine Valley Estates) Inc. (CFN 63436). Acquisition of property located west of Pine Valley Drive and south of Teston Road, municipally known as 10390 Pine Valley Drive, in the City of Vaughan, Regional Municipality of York, under the "Greenlands Acquisition Project for 2016-2020," Flood Plain and Conservation Component, Humber River watershed.

*(Executive Committee RES.#B72/20)*  
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**10.1.3. REQUEST FOR PERMANENT EASEMENT (1613935 ONTARIO INC.)**

Request for Permanent Easement Required for Stormwater Infrastructure Town of Ajax, Regional Municipality of Durham, Duffins Creek Watershed (CFN 63820). Receipt of a request from 1613935 Ontario Inc., for a permanent easement required for stormwater infrastructure, located south of Taunton Road W. and west of Ravenscroft Road, in the Town of Ajax, Regional Municipality of Durham, Duffins Creek watershed.

*(Executive Committee RES.#B73/20)*  
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**10.1.4. REQUEST FOR PERMANENT EASEMENT (CITY OF TORONTO)**

Request for a Permanent Easement required for replacement of Tobermory Culvert. City of Toronto, Humber River Watershed (CFN 63842). Receipt of a request from the City of Toronto for a permanent easement to support replacement of the Tobermory Culvert as part of the Finch West Light Rail Transit (FWLRT) Project, in Derrydowns Park, west of Tobermory Drive, South of Finch Avenue West, City of Toronto, Humber River Watershed.

*(Executive Committee RES.#B74/20)*  
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**10.2. SECTION II - ITEMS FOR EXECUTIVE ACTION**

**10.2.1. REQUEST FOR PROPOSAL FOR VENDORS OF RECORD FOR THE SUPPLY AND DELIVERY OF BULK PROPANE AND RELATED SERVICES**

Award of Request for Proposal (RFP) No. 10033496 for establishment of a Vendors of Record (VOR) arrangement for the Supply and Delivery of Bulk Propane and Related Services.

*(Executive Committee RES.#B75/20)*  
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**10.3. SECTION III - ITEMS FOR THE INFORMATION OF THE BOARD**

**10.3.1. 2021 GENERAL AND CAPITAL LEVY UPDATE**

An update on TRCA's preliminary 2021 General and Capital levies.

*(Executive Committee RES.#B76/20)*

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**10.3.2. Q3 2020 MEDIA SUMMARY**

Information report regarding Toronto and Region Conservation Authority's (TRCA) corporate media communication activities during the third quarter of 2020 (July – September).

*(Executive Committee RES.#B77/20)*

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**10.4. SECTION IV - ONTARIO REGULATION 166/06, AS AMENDED**

Receipt of Ontario Regulation 166/06, as amended, for applications 10.1-10.6, which were approved or received at the Executive Committee Meeting #7/20, held on November 6, 2020

*(Executive Committee RES.#B78/20 and RES.#B79/20)*

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**10.5. EXECUTIVE COMMITTEE #7/20 CLOSED SESSION ITEMS**

*(Executive Committee RES.#B80/20)*

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(November 6, 2020 Closed Session Minutes will be circulated to Board Members separately)

**10.5.1. WW TORONTO HOLDINGS L.P. (COB WET N WILD TORONTO)**

*(Executive Committee RES.#B80/20)*

(November 6, 2020 Closed Session Minutes will be circulated to Board Members separately)

**11. CLOSED SESSION**

**12. NEW BUSINESS**

NEXT REGULARLY SCHEDULED MEETING OF THE BOARD OF DIRECTORS  
#9/20, TO BE HELD ON JANUARY 29, 2020 AT 9:30 A.M. VIA VIDEOCONFERENCE

John MacKenzie, Chief Executive Officer

/am



### Section I – Items for the Board of Directors Approval

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

**FROM:** Natalie Blake, Chief Human Resources Officer

**RE:** **DIVERSITY AND INCLUSION UPDATE**

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#### KEY ISSUE

Update on the status of Toronto and Region Conservation Authority's (TRCA) Diversity and Inclusion (D&I) environmental scan and measures TRCA is undertaking to further substantiate our commitment to Diversity and Inclusion.

#### RECOMMENDATION

**THAT this report on the status of TRCA's Diversity and Inclusion review be received;**

**THAT TRCA's actions towards achieving its Diversity and Inclusion Strategy be endorsed;**

**THAT the Indian Line Campground be renamed Claireville Campground, effective Spring 2021;**

**AND FURTHER THAT TRCA staff be directed to undertake all associated work, including discussions with Emergency Management Services and municipal partners along with the preparation of updated website and marketing materials, related to implementing the name change.**

#### BACKGROUND

At Board of Directors Meeting #5/20, held on June 26, 2020, Resolution #RES.#A113/20 was approved as follows:

*WHEREAS Toronto and Region Conservation Authority's (TRCA) jurisdiction is comprised of close to five million people living in nine watersheds that span six upper tier and 15 lower tier municipalities, representing diverse communities;*

*AND WHEREAS, approximately 50 per cent of the population within TRCA's jurisdiction identifies themselves as a member of a visible minority group, which is more than three times the national average and more than double the Ontario average;*

*AND WHEREAS, racism, sexism and other forms of unequal treatment are pervasive and systemic issues;*

*AND WHEREAS at Meeting #4/18 held on May 25, 2018, TRCA's Board of Directors endorsed the Inclusion Charter of York Region as part of TRCA's commitment to diversity and inclusion, and as a framework for ensuring programs, services, facilities and workplaces are inclusive of all people;*

*AND WHEREAS TRCA provides a range of programs and services that aim to support improved equity and inclusion through employment, training and engagement for all*

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*residents of TRCA's watersheds, including sustainable neighbourhood action programs, community learning programs, inclusive onboarding resources for employers, bridge training, newcomer youth employment supports and multi-cultural outreach activities; AND WHEREAS, TRCA is committed to addressing diversity, inclusion and discrimination through the updates and implementation of its Diversity Strategy, Code of Conduct, Workplace Violence, Harassment and Discrimination Prevention corporate policies;*

*THEREFORE, LET IT BE RESOLVED THAT TRCA's Board of Directors and Senior Leadership Team continue their efforts to bring forward new and updated policies and practices that affirm their commitment to proactive diversity and inclusion practices;*

*AND FURTHER THAT TRCA staff consult with partner municipalities on their existing programs and policies, and report back on the status of relevant TRCA policies and on any other measures that TRCA can take with its partners to substantiate this commitment to diversity and inclusion.*

### **Indian Line Campground Renaming**

In summer 2020, TRCA received an email from a concerned citizen requesting that Indian Line Campground be renamed Claireville Campground noting that the word Indian as a reference to our First Nations people is a misnomer that is considered pejorative in Canada. TRCA staff and the Senior Leadership Team had already been considering renaming the campground for this same reason. Renaming this site to Claireville Campground will tie the greater collection of Claireville Conservation Area, Claireville Reservoir and Claireville Dam together and promote recognition of the former community of Claireville that was once located in this general area.

### **RATIONALE**

Further to the June 26, 2020 Board of Directors motion reaffirming the Board and TRCA's Senior Leadership Team commitment to proactive diversity and inclusion practices (D&I), the following reviews were undertaken by staff:

- Environmental scan of partner municipalities existing D&I programs and policies.
- Current state analysis of existing TRCA D&I programs, policies and practices
- Diversity and inclusion assessment to support the development of TRCA's *People-First Diversity and Inclusion Strategy*.

### **Environmental Scan**

TRCA's Human Resources team, through York Region's Municipal Diversity and Inclusion Work Group (MDIG), conducted an environmental scan of our municipal partners to identify programs, policies, practices, and actions being implemented in support of diversity and inclusion.

Information gathered suggests that members of the MDIG were at various maturity levels with respect to the implementation of D&I practices and actions, some were in the emergent phase while others were either in the integrated or strategic phase. TRCA, currently is on the cusp of the integrated phase, and strives to be at the strategic maturity phase which includes:

- Having an overarching D&I strategy in place.
- Ensuring D&I is a strategic objective that is ingrained in organizational culture (structures, systems, processes, programs, policies, and behaviors).
- Ensuring D&I efforts in the organization are intentional and leveraged to generate business value internally and externally.

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- Establishing a shared commitment with leaders and employees to creating a culture of inclusion and respect for diversity.

A number of partner organizations led diversity and inclusion through the development of a strategy that recognized D&I is a fluid journey, rather than a static policy. In some instances, diversity and inclusion started as a policy or singular document, however, they evolved into a robust strategy that is viewed as a guide that is continuously improved upon to ensure organizational and societal relevance and high value impact to the organization.

The majority of our partners had or planned to embark in an educational awareness campaign for employees through training. Some of the topics identified were unconscious bias, anti-black racism, microaggression, ally-ship, anti-oppression and social justice. A number of organizations included or intended to include D&I modules as mandatory onboarding training for all new hires.

Additionally, a number of partners within the municipal sector had task forces/advisory committees in place in support of progressing diversity and inclusion, where many were moving to establish task forces/advisory committees on anti-black racism and racial equity reviews.

Finally, identified as part of the environment scan was MDIG members emerging interest in Employee Resources Groups (ERG's), which are voluntary employee led groups, typically formed based on shared demographics (e.g. racial identify, gender identity etc.), life stage (generation Y, boomer etc.) or function (marketing, education etc.). ERG's are used to help employees build their internal network of support and are typically used as a voice for feedback and recommendations to the organization from underrepresented groups.

### **Current State Analysis – In-progress Programs and Practices**

TRCA is actively engaged in diversity and inclusion practices from many of our diverse lines of business, both from an internal staff perspective and an external stakeholder, partner and customer point of view. Some of the current practices include:

#### **Internal Programs and Practices:**

- **TRCA Core Values**

At the core of TRCA are our values. While all of our core values weave in a component of inclusivity and diversity, it is our core value of RESPECT that is foundational in our commitment to be *equitable, fair and respectful while recognizing individual contributions and diversity*. Our core values drive many areas of TRCA programs, policies and practices including our Performance Development Program, our Code of Conduct, recruitment and selection practices, our brand and communications. It is through our commitment to living our core values that TRCA employees demonstrate respect in our work and interactions.

- **Unconscious Bias in Recruitment**

Mandatory Manager Fundamentals Training was launched in August 2020. One of the curriculum topics included in Manager Fundamentals is recruitment and selection which specifically outlines how to recognize and mitigate unconscious bias in the recruitment and selection process.

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- **Workplace Violence, Harassment and Discrimination**

TRCA rolled out a new *Workplace Violence, Harassment and Discrimination Prevention* (WVHDP) policy in May 2020 that emphasizes the importance of being respectful and sensitive to all people and provides a mechanism for employees to come forward to address any issue that they are aware of and/or experience.

Mandatory online training curriculum has been developed on Workplace Violence, Harassment and Discrimination Prevention. All existing TRCA employees and future new hires will be required to successfully complete the WVHDP training.

- **Learning & Development Curriculum**

All learning and development content created through Human Resources or purchased by Human Resources contemplates and incorporates diversity and inclusion practices. Training is required to be representative of all TRCA staff, uses gender neutral language and diverse images as a standard.

- **Code of Conduct (COC)**

As part of the larger TRCA policy initiative, TRCA has embarked on the development of a renewed *Code of Conduct* that has been created as a living document within an inclusive framework. The new COC outlines TRCA and employee's commitment to actively fostering a positive work environment that embraces inclusion and diversity in all areas of our organization. This includes espousing diversity and inclusion from the services we provide, to the way we recruit, and to how we procure goods and services. The COC outlines TRCA employee's responsibility to treat colleagues, our partners, customers and members of the public inclusively and with dignity and respect, in alignment with TRCA's core values.

- **Recruitment, Selection and Onboarding**

The Human Resources team is in the process of finalizing a *Recruitment, Selection and Onboarding* policy that will help provide guidelines and direction to all TRCA staff regarding our equitable and inclusive hiring practices, and to ensure TRCA is in compliance with all relevant employment legislation. The relevant legislation includes *Employment Standards Act* (ESA), Ontario's *Human Rights Code* (OHRC), Ontario's *Occupational Health and Safety Act* (OHSA) and *Accessibility for Ontarians with Disabilities Act* (AODA).

A formal/structured hiring procedure has been established that requires the use of objective candidate evaluation tools and methods. Here are a few examples:

- All job postings include a statement regarding TRCA's commitment to promote diverse perspectives and inclusiveness and are in compliance with the AODA.
- Equitable resume screening practices are utilized by ensuring that screening criteria is related to the key qualifications of the position, as outlined in the job description and job posting.
- All interviews/candidate assessments that are conducted at TRCA have pre-defined questions based on the requirements of the job, as outlined in the job description and job posting and are scored for objectivity.
- All candidates are asked the same questions if they are being interviewed for the same position within the same job competition.
- All interviews consist of 2-3 panel members to ensure consensus is reached regarding the merit of each candidate and to help mitigate the risk of

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- unconscious bias.
  - All panel members are required to take written notes based on candidate responses and reflect on those notes to discuss each candidate's suitability for the position.
  - All hiring decisions are discussed with Human Resources prior to moving forward with reference checks or a verbal offer. Human Resources works with hiring supervisors to ensure objective criteria was used and that equitable hiring decisions are made.
  - All written offers are created by Human Resources to ensure compliance with legislation and salary and total compensation is administered as per TRCA policies.
- **Employee Engagement Roadmap**  
TRCA embarked on a significant journey in April 2020 with the launch of our Employee Engagement Survey led through a third-party platform to ensure anonymity and confidentiality. This initiative's primary goal is to provide all employees with an inclusive platform to share their opinions, feedback and perspectives that TRCA can action.
  - **Human Rights and Diversity in the Workplace – Diversities Strategies Policy**  
TRCA currently has a Human Rights and Diversity in the Workplace – Diversities Strategies Policy in place that has guided the organization thus far on diversity and inclusion for employment and promotional opportunities. This will be replaced by the revised Recruitment, Selection and Onboarding Policy as well as the People-first Diversity and Inclusion Strategy described later in this report.
  - **Accessibility for People with Disabilities (AODA) Plan and Policy**  
The AODA plan and policy provides a foundation for TRCA's commitment to adhering to legislated AODA practices and processes in all lines of TRCA's business.

### External Programs and Practices:

- **Municipal Diversity and Inclusion Group (MDIG)**  
The Regional Municipality of York established the Municipal Diversity and Inclusion Group (MDIG) comprised of several municipalities, not for profits and school boards within York Region. The platform provides a forum for local municipalities and key mainstream organizations, like TRCA, to engage in collaborative planning, discuss common needs, and identify possible tools and best practices related to accessibility, diversity and inclusion. TRCA has been an active member of MDIG and has and will continue to champion diversity and inclusion awareness aligned with MDIG work and our partners.

One key action of the MDIG was the development and implementation of the *Inclusion Charter* for York Region for member organizations to endorse. TRCA signed our Inclusion Charter on May 25, 2018 reinforcing our commitment to promote inclusion and diversity in the growing and diverse community that resides within our watersheds. As well, our commitment helps to ensure our organization is inclusive and attracts and retains the best talent, promotes innovation, and provides an excellence customer experience.

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- **Indigenous Engagement Approach for Programs and Projects**

TRCA's Indigenous engagement approach for our programs and projects includes a core vision of a positive, respectful relationship with nations, confederacies and councils that have established or asserted rights that may be positively impacted by TRCA projects, through a process of trust building and mutually respectful engagement.

- **Indigenous Community Work**

TRCA has been working with communities in the Williams Treaty (Curve Lake, Hiawatha and Scugog First Nations) regarding data and idea collection to inform the design of an Indigenous space in Morningside Park– TD funded Morningside Legacy Project. Future working sessions with the groups are being set-up to continue to develop ideas to be used in design. Implementation is planned for fall 2021.

In addition, TRCA has been working with Indigenous communities on initiatives related to the promotion and celebration of the Humber River's designation as a Canadian Heritage River in 1999. Initiatives include:

- Humber by Canoe, an annual canoeing event that takes place within the Humber, engages Indigenous communities each year. The event provides a forum for Indigenous ceremony, storytelling and an opportunity for Indigenous communities to highlight their traditions and programs to event attendees.
- In 2019 TRCA, along with partners and watershed communities celebrated the 20th anniversary of the Humber River as a Canadian Heritage River. Indigenous communities were engaged in various aspects of the 20th anniversary celebrations such as, the launch event at McMichael Canadian Art Collection, legacy projects (i.e., Bolton Camp Discovery Garden and CHRS Digital Story Map). The Mississaugas of the Credit were also instrumental in the collaborative efforts to originally have the Humber River designated as a Canadian Heritage River.
- In addition, TRCA works with Indigenous Communities as part of major projects we are advancing for our government partners including but not limited to projects on the Toronto Waterfront.

- **Black Creek Pioneer Village (BCPV)**

At BCPV, staff teach history from multiple perspectives. One of the guiding principles behind all of BCPV's programming is that there is no *one* history but rather that history is comprised of several stories told from and understood by several points of view. To this end, staff incorporate information about real people who lived locally in the 19<sup>th</sup> century into our exhibits and programs for students, families, and individuals.

- TRCA staff actively work to grow the number and diversity of "real people stories". Currently included is information about Indigenous individuals, Black Canadians, women, immigrants, and refugees across the majority of programs delivered.
- TRCA's unique three-way partnership with York University (including Anishinaabe scholar and historian Dr. Alan Corbiere) and Jumblies Theatre (project led by Haudenosaunee artist, Ange Loft) is entering its third year. This multi-year collaboration will result in a permanent exhibit at BCPV, original historical scholarship, and a weaving of Indigenous perspectives, content, and voices through BCPV's existing interpretation of the Toronto Region in the 19<sup>th</sup> century.

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- In 2018 Indigenous artist, Ange Loft, and scholar, Victoria Freeman through Jumblies Theatres, ran several workshops for the public and staff on the history of Indigenous peoples in the Toronto region.

- **Access to TRCA Public Properties**

TRCA recognizes and promotes the full participation of all residents in educational, cultural and recreational programs and services, as per TRCA's Admittance Policy. Through a variety of offerings, TRCA's public-use facilities engage diverse user groups, including persons with disabilities, financially challenged individuals and groups, children and Active Transportation users.

TRCA continually strives to promote inclusion and access for all and has a number of programs that TRCA has implemented to help alleviate barriers to participation and encourage greater access to nature-based cultural and recreational experiences.

- **Education and Training**

TRCA's education and training programs and activities aim to be equitable and inclusive, from both a curricular and accessibility perspective. The following is a short summary of TRCA Education and Training activities that support diversity, inclusion and equitable access to education and training programs.

- **PAIE** (Professional Access into Employment) provides employment and training supports for internationally-trained environmental professionals focused on improving employment outcomes for new Canadians. Since 2006, over 400 professionals have gained employment through the PAIE program, with over 80% of participants in 2019 gaining employment in their field of expertise.
- **Newcomer Youth Green Economy Project** supports newcomer youth interested in careers in the environmental sector by providing access to field trips, experiential learning opportunities, and job skills training.
- **Multicultural Connections Program (MCP)** provides experiences for new Canadians to be introduced to, and experience, natural environments. Language and economic barriers can limit the participation of newcomers in nature-based events and outings. To help overcome these barriers, the MCP program engages newcomers through in-class environmental educational programs at English language learning centres, as well as through field trips and participation at cultural/faith events.
- **Environmental Leaders of Tomorrow** program provides subsidized multi-day integrated natural science and conservation learning experiences for schools from target communities in TRCA watersheds hosted at TRCA overnight field centres.
- **Partners in Project Green** recently established a pathway for improving diversity on the Executive Management Committee (EMC) that oversees Partners in Project Green operational management. This was done by establishing an Advisor Member position on the EMC for a participant or alumnus from TRCA's PAIE or Newcomer Youth Green Economy Project.

- **Communications, Marketing and Events**

TRCA's Communications, Marketing and Events team is actively building a communication strategy that recognizes that takes into consideration the diverse populations we serve. To this end, the Communications, Marketing and Events team are putting in place practices to:

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- Communicate in a multilingual format to reach a broader portion of the constituents we serve.
  - Recognize and focus efforts to themed days / months such as PRIDE.
  - Adapting communications to be reach a broader segment of populations regardless of income, language, gender etc. and ensure language used in communications is inclusive, meets AODA standards and is gender neutral.
- **Facilities Management**  
TRCA takes into consideration accessibility standards, inclusivity, diversity and AODA requirements both in relation to existing TRCA facilities with accessibility elements like prayer rooms, automatic entry doors, accessible ramps etc., and our other measures within new builds.

Included in AODA are requirements for visual impairments, TRCA undertakes to ensure interior spaces are well illuminated and colour-contrast is provided between floor surface and walls that helps people with low vision to read signs and delineate the space making it easier to navigate through the facility. TRCA's new head office build is adhering to LEED and Well certification standards and will include inclusivity standards like universal washrooms, automatic doors, biophilic design standards, etc.

### **Diversity and Inclusion Assessment:**

TRCA conducted a diversity and inclusion assessment, which will be utilized to support the development of our *People-First Diversity and Inclusion Strategy*. The assessment aims to derive key opportunities by evaluating diversity & inclusion data. The assessment provides TRCA with a picture of the current state of D&I at TRCA and where the organization should focus our efforts.

The assessment evaluation is based on a number of categories and factors including strategy and organization, organizational culture, and elements of the life cycle (recruitment and selection, performance, growth and exits). The assessment also derives a priority matrix which identifies areas that TRCA should continue to leverage (success areas) and areas of opportunities for the organization. Information gleaned from the priority matrix will be used to support action planning as part of the TRCA's *People-First Diversity and Inclusion Strategy*.

### **Relationship to Building the Living City, the TRCA 2013-2022 Strategic Plan**

This report supports the following set forth in the TRCA 2013-2022 Strategic Plan:

**Strategy 5 – Foster sustainable citizenship**

**Strategy 6 – Tell the story of the Toronto region**

**Strategy 11 – Invest in our staff**

### **NEXT STEPS**

Based on the evaluation of information gathered from the D&I environmental scan, current state analysis and D&I assessment, the following actions have been identified as next steps in our pursuit of our journey to actively foster a positive work environment that embraces inclusion and diversity in all areas within TRCA.

### **TRCA Diversity and Inclusion Strategy**

TRCA is currently in the process of completing TRCA's *People-First Diversity and Inclusion Strategy* that is aligned to MDIG and is based on the framework of diversity and inclusion being a continuum. The continuum is an ongoing journey of unlearning some behaviours and perceptions and learning the key principles and practices that support diversity and inclusion.



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The D&I strategy is a mechanism through which we can challenge the way we think, and the way things are done and implement new learnings, practices and programs to further our pursuit in enhancing our diversity and inclusivity across the organization. The D&I strategy will pull together all the existing D&I practices and actions that TRCA has successfully embarked on, will incorporate the opportunities identified through TRCA's diversity and inclusion assessment and environmental scan. The *People-First Diversity and Inclusion Strategy* will be scaled, purposeful, and actionable, and will be the guiding light during TRCA's D&I journey.

### **Municipal Diversity and Inclusion Group**

As an active member of the Municipal Diversity and Inclusion Group (MDIG), TRCA is committed to advancing the objectives of MDIG including:

- 2021 – Internal Education and Awareness Campaign; External Campaign public Consultations.
- 2022 – External Education and Awareness Campaign.
- Diversity Calendar and Inclusive Language Guide working groups.

### **Indian Line Campground Renaming**

TRCA staff will review the requirements associated with the Indian Line Campground renaming and undertake the necessary actions for the name change, which are expected to cost approximately \$10k. Work associated with the name change will include discussion with municipal partners including Emergency Management Services and utilities to ensure a seamless transition. In carrying out this endeavour, TRCA staff will establish a communication plan to ensure consistent branding and marketing related to the name change.

**Report prepared by: Natalie Blake, extension 5374**

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**Date: October 30, 2020**

### Section I – Items for the Board of Directors Action

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

**FROM:** Darryl Gray, Director, Education and Training

**RE:** **SUSTAINABLE NEIGHBOURHOOD ACTION PROGRAM (SNAP) –  
STRATEGIC DIRECTIONS**

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#### KEY ISSUE

Strategic directions for the Sustainable Neighbourhood Action Program (SNAP) and endorsement of the neighbourhood selection process for identifying future SNAP neighbourhood projects.

#### RECOMMENDATION

**WHEREAS** Toronto and Region Conservation Authority (TRCA) has delivered the nationally recognized Sustainable Neighbourhood Action Program (SNAP) in partnership with nine local and regional municipalities and community collaborators since 2009;

**WHEREAS** SNAP supports municipal policy and program directions which are adopting a neighbourhood based approach and delivers on multiple municipal and TRCA priorities including local climate action, green infrastructure revitalization and strengthened community resilience;

**THEREFORE, LET IT BE RESOLVED THAT** the report outlining strategic directions for SNAP be received;

**AND FURTHER THAT** TRCA's Board of Directors endorse the neighbourhood selection process as the framework for identifying future SNAP neighbourhood projects.

#### BACKGROUND

SNAP is a neighbourhood model for sustainable urban renewal and climate action and was developed to help municipalities overcome the challenges of retrofitting and renewing older neighbourhoods. SNAP's collaborative approach aligns municipal priorities with local needs and interests to improve efficiencies, draw strong community support and build trusted implementation partnerships for initiatives in public and private realms. Working with local stakeholders, SNAP neighbourhood projects address a broad range of sustainability objectives by advancing strategies for:

- Home retrofits (*e.g. tree planting, local flood protection, rainwater harvesting*);
- Infrastructure renewal (*e.g. integration of environmental and social outcomes into parks, stormwater management facilities, roads*);
- Multi-unit residential, commercial and institutional revitalization (*e.g. sustainable landscaping, urban agriculture, building retrofits*); and
- Community resilience and leadership capacity (*e.g. neighbour connections, skills building, emergency preparedness*).

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SNAP has been developed through three strategic phases:

1. Piloting neighbourhood action planning model projects (2009-2012).
2. Implementation, rigorous monitoring and lessons (2012-2016 and ongoing).
3. Testing scaling strategies, streamlining, growing the network (2016-2020).

Key SNAP accomplishments were reported to the Board of Directors in April 2020.

At Board of Directors Meeting #3/20, held on April 24, 2020, Resolution #A34/20 was approved in part as follows:

*...AND FURTHER THAT staff be directed to report back to the Board of Directors before year end on the next phase of the SNAP Program and proposed opportunities to expand the program to inform municipal budgeting discussions.*

The purpose of this report is to outline strategic directions to guide the next phase of work. These directions are consistent with emerging trends in municipal policy and practice and respond to municipal and TRCA priorities and community interest.

### **Emerging Municipal Policy and Practice Supports Neighbourhood Approach**

There is growing recognition of the benefits of the neighbourhood approach and neighbourhood-based service delivery, as indicated in recent municipal policy documents and project partnerships:

- Federation of Canadian Municipalities (FCM) granted TRCA and nine interested municipalities a Transition 2050 grant under the Municipal Climate Innovation Program, for the purposes of applying, refining and mainstreaming TRCA's neighbourhood and business zone models as effective strategies for the low carbon transition;
- Peel Community Climate Partnership (PCCP) workplans identify SNAP as an implementation mechanism for low carbon communities, flood resiliency and green infrastructure/heat stress;
- City of Brampton's 2040 Vision includes a specific Vision and recommended actions for revitalizing "Neighbourhoods", and the City has launched a "Nurturing Neighbourhoods" Program in partnership with TRCA, CVC and the Region of Peel;
- William Osler Hospital, Peel Public Health and the former Central West Local Health Integration Network launched the Healthy Communities Initiative, identifying SNAP as a pilot for revitalizing the built environment for health outcomes, including diabetes and cardio-vascular diseases;
- City of Toronto's Transform TO strategy identifies mobilization of low carbon communities as a key strategy and Toronto's First Resilience Strategy identifies People and Neighbourhoods as a focus area, including neighbourhood resilience pilots as a priority action area;
- Region of York's Community and Health Services Department is taking a place-based approach to the development of Community Safety and Well-being Plans, including pilot locations within South-Central Richmond Hill and South-Central Markham;
- Municipal Energy Plans (e.g. Vaughan, Markham, Caledon, Brampton) cite SNAP as an implementation mechanism; and
- FCM recognized TRCA and its nine participating municipalities for SNAP as part of its 2020 Sustainable Communities Awards, under the Visionary Award category, noting its effectiveness at delivering environmental projects with long term social and economic impact.

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Municipalities and TRCA are embracing a number of trends and best practices while addressing strategic corporate priorities. SNAP's collaborative, integrative approach has already been operationalizing some of these ideas, and therefore is well-positioned to support a number of program objectives. These emerging trends and priorities include:

- Retrofitting green infrastructure for climate resilience and sustainability;
- Integrated asset management, planning and implementation;
- Providing community and public realm benefits in association with infrastructure projects;
- Delivering co-benefits as part of climate action; and
- Implementing strategies for social mobilization and local capacity building to address climate action and prepare for extreme weather.

### **Growing Community Interest in SNAP**

A number of local community leaders, particularly from the City of Toronto, have approached TRCA requesting SNAPs in their neighbourhoods. Many have led successful environmental and climate action initiatives but need help to deepen their engagement and tackle bigger projects. These leaders believe SNAP's collaborative, multi-objective approach and TRCA's associated expertise could help fill this gap. TRCA staff recognize this interest as an opportunity to expand the impact of SNAP by collaborating with these local leaders, but also respect the need to follow a transparent criteria and process to identify future SNAP neighbourhoods.

### **Strategic Directions for SNAP**

The next phase of SNAP will focus on institutionalizing the neighbourhood program and scaling its impact. "Institutionalizing" refers to actions that can be taken to further integrate the program within ongoing operations of TRCA and its municipal partners, in order to improve efficiencies and effectiveness in program delivery. "Scaling its impact" refers to strategies that will enable TRCA to expand the network of SNAP neighbourhoods and increase the implementation activity.

Five strategies have been identified to guide the next phase of work:

1. **Transparent neighbourhood selection process to identify future SNAPs** – The neighbourhood selection process provides a transparent method for identifying future SNAP neighbourhoods that align with municipal and TRCA priorities for urban renewal and climate action, and wherever possible, with areas of local community interest. This process formalizes and is consistent with SNAP's original strategic neighbourhood selection approach, which ensured municipalities had local program interests that enabled them to participate and which leveraged planned implementation projects to achieve greater impacts.

The neighbourhood selection process follows three steps, each involving input and participation by multiple municipal and TRCA departments:

- 1) **Neighbourhood Screening** – mapping at the municipal scale to identify "areas of interest", based on alignment of multiple municipal and TRCA priorities for urban renewal, watershed management and climate action.
- 2) **Candidate Neighbourhood Selection** – review and discussion of each of the "areas of interest" by municipal and TRCA staff to understand the issues, timing, opportunities, feasibility and the potential benefits of an integrated, collaborative approach, as the basis for recommending a future SNAP neighbourhood(s).

- 3) Neighbourhood Project Confirmation and Boundary Refinement – consultation with local community leaders and senior program directors to confirm their support and desired role in the project, as well as potential considerations for study area boundaries, approach, funding, roles and final commitments by all key stakeholders (e.g. municipal and TRCA departments who may be financially contributing or pursuing joint funding applications, community organizations, major landowners or other agencies as may be involved in the specific neighbourhood project management team).

This neighbourhood selection process was piloted in the City of Vaughan, with input from the Region of York, as the basis for identifying the Thornhill SNAP as the first SNAP in Vaughan. In Peel Region, the process was piloted in the City of Brampton, as the basis for identifying Bramalea, as Brampton's third SNAP neighbourhood. The process was also piloted in the City of Toronto, in cooperation with Toronto Transportation and Toronto Water's green streets mapping analysis and Toronto's multi-departmental neighbourhood resilience pilot working group, with Rexdale being identified as the next SNAP neighbourhood in Toronto.

The neighbourhood screening process has revealed exciting opportunities for collaboration and led to early identification of project enhancements which could be incorporated into workplanning, budgets and grant applications. It has enabled existing capital project budgets to be leveraged as matching funds for new grant applications and has allowed departments advance notice to better align their annual work programs to take advantage of synergies. It has expedited the neighbourhood action planning process which can build on the data collected as part of the screening. Furthermore, this tool has served as a reference when reviewing potential capacity to support community leaders who are expressing interest in local neighbourhoods.

2. **Piloting a TRCA-community partnership model** - With the emergence of capable community groups interested in SNAP, TRCA has identified the potential to support more SNAPs by partnering with these groups, where they have the necessary capacity to play critical roles. These arrangements would allow TRCA to limit its contribution to niche roles where we can add the most value, while applying our successful sustainable neighbourhood action planning process. TRCA's success at SNAP is largely related to strategies inherent in its neighbourhood model and the niche roles it plays as a partnership-broker who can forge collaboration among non-traditional partners, an integrated planner who can facilitate the identification of inspiring projects and a backbone organization who continues to support neighbourhood partners from planning through implementation. In most SNAP neighbourhood projects, TRCA has played a significant role in leading the community engagement and various aspects of implementation. However, our ability to take on new SNAP neighbourhoods has been limited to staff capacity. In these community-driven SNAPs, the expectation would be that the community group will lead much of the community engagement, which is the most time-consuming, yet fundamental, aspect of success. Depending on the resulting action plan, TRCA may identify potential projects it can support further in implementation.

In the past year, TRCA has been approached by three different community leaders in Toronto, interested in having a SNAP. These include: Markland Wood, The Beach and

## Item 8.2

The Pocket. With the objective of piloting a TRCA-community partnership model for leading a SNAP, the following selection criteria were identified and applied:

- Evidence of community leadership capacity
- Evidence of broad neighbourhood support for the project
- Small, manageably sized neighbourhood area
- Simple-medium complexity of neighbourhood issues
- Presence of neighbourhood priorities of the municipality and TRCA, as informed by the Neighbourhood Screening and Selection Process.

Based on these criteria The Pocket was identified as the best candidate for this pilot. The Pocket is located near Danforth and Greenwood area with links to the Don Watershed and Lake Ontario waterfront.

TRCA is regularly approached by municipalities, conservation authorities and community organizations beyond our jurisdiction, who are seeking advice on how they can apply SNAP. Demonstrating the transferability of SNAP to other regions can be beneficial in appealing to provincial or national government programs and attracting the private sector to a larger network of SNAP markets. It will continue to be our preference and priority to serve municipalities within our own jurisdiction, and opportunities that arise beyond our jurisdiction will be considered case by case, strictly on a fee for service basis and where benefits will accrue to TRCA.

3. **Partnerships to increase implementation activity** – Each SNAP neighbourhood action plan generates numerous project opportunities, however the rate of implementation is often limited to available TRCA and municipal staff capacity to advise or support local project leaders or to directly lead and fundraise for the projects themselves. There are opportunities to align implementation partnerships to facilitate more implementation activity.

Internally at TRCA, many departments have contributed to successful SNAP implementation initiatives, and there may be further opportunity to align internal resources for greater impact (e.g. planting programs or green infrastructure revitalization on properties secured through SNAP, community engagement in environmental learning, testing of innovative sustainable technologies in SNAP neighbourhoods etc.). The neighbourhood screening process is one tool that will assist in identifying multi-departmental interests in an area and aligning workplans and budgets.

Non-traditional, external players are increasingly playing a vital role in delivering these social innovation initiatives, by bringing unique expertise, providing valuable local connections and filling gaps that cannot or need not be filled by government in a timely fashion. These players include: registered and non-registered community organizations, local volunteers, social enterprise or philanthropic private sector businesses offering in-kind services. Working within TRCA's Procurement Policy to ensure transparency and fairness, TRCA needs to continue to find ways to facilitate such partnership agreements and associated remuneration or honoraria, as may be necessary.

4. **Criteria to guide neighbourhood investment horizon** - SNAP neighbourhood projects began with the intention of a 3-5 year commitment to launch initial projects and TRCA's ongoing involvement in the pilot neighbourhoods has considered a number of factors, in consultation with municipal staff and other members of the project management team.

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The long term commitment of SNAP has been a noted factor of its success. It has become clear that longer term horizons (5-8 years) are often needed to fully realize significant project objectives, such as infrastructure that is planned on longer cycles, or to enable partners the time to take action once relationships have been established. In consultation with project management teams, the following criteria will be used to guide TRCA's decision regarding when to leave a neighbourhood and direct attention elsewhere:

- Once reasonable progress toward achievement of action plan targets has been initiated; or, until
- Strategic catalyst projects are launched; or
- Capacity has been built in local groups to lead continued action; or
- Opportunity for important demonstration of innovative solutions is complete; or
- Necessary municipal partner support ceases to exist.

5. **Formalize funding model with regional and local municipalities** – The current SNAP funding model consists of regional and local municipal contributions and grants from a variety of public and private sources. While this is a reasonable model, TRCA and its Regional and local municipal partners will need to build support for growth if there is a genuine interest in expanding the SNAP.

There may be opportunities to identify cost sharing arrangements across several benefitting municipal departments. At present, regional capital contributions come from water revenue, and this funding is used by TRCA to leverage other special grants that support the broader objectives which SNAP delivers. The neighbourhood screening and selection process is proving to be an effective tool at aligning SNAP with future planned infrastructure renewal projects and identifying synergies among these and other program interests. This longer-term outlook may enable budget planning across multiple departments, particularly for local municipalities where, to date, it appears local municipal contributions to SNAP are often dependent on grant funding. In addition to benefitting water management programs, infrastructure renewal project synergies and other municipal sources, there may be opportunities to explore multi-year investments from senior governments or private sources through partnerships with groups, such as CivicAction.

### **Relationship to Building the Living City, the TRCA 2013-2022 Strategic Plan**

This report supports the following strategy set forth in the TRCA 2013-2022 Strategic Plan:

**Strategy 4 – Create complete communities that integrate nature and the built environment**

### **FINANCIAL DETAILS**

SNAP operates on a full costing and recovery basis. Its core funding is derived from municipal capital support from the regions of Peel and York, and the City of Toronto. TRCA is also in discussion with Durham Region municipalities in our jurisdiction and will provide a report back to the Board on future opportunities for SNAPS in Durham Region. By leveraging these municipal budgets, SNAP has attracted additional public and private funding of over \$3 million dollars over the past 10 years and has helped establish cost sharing arrangements with other partners. This Program has supported neighbourhood-scale efforts toward achieving TRCA's watershed objectives and strategic goals shared with our municipal partners, such as community resiliency, ecosystem restoration and healthy communities. SNAP's power is that it addresses multiple municipal objectives and supports many core objectives of conservation authorities.

TRCA is exploring with its municipal partners, and others, funding approaches to support the growth and long-term financial sustainability of this program to ensure even greater impact. The SNAP funding model is expected to continue to consist of a combination of sources but needs to be less grant dependent for covering core staff complement. Regional and local municipal contributions will remain at the heart of this funding model, reflective of the municipal benefits derived from SNAP projects. This municipal funding is critical in leveraging other funding sources, which may come from senior levels of government, private sector and other grants. SNAP projects address many priorities of provincial and federal governments, including climate action, aging infrastructure renewal, aging population, community health, safety and well-being, among others, some of which are subjects of new federal funding streams. Progressive companies are increasingly considering Environmental, Social and Governance (ESG) factors when assessing financial investments. SNAP action plans could play a valuable role in identifying synergies between local businesses and their communities and will continue to expand markets for green technologies. Grants will continue to support work that is advancing emerging issues and trends,

As noted in Strategy 5 of this report, there are opportunities to explore a variety of funding mechanisms within municipalities. Recognizing the trend toward integrated project delivery, which SNAP exemplifies, there may also be a need for traditional silo-based funding models to evolve to keep pace.

### **DETAILS OF WORK TO BE DONE**

The following SNAP projects are underway or planned for 2021:

#### Planning and Advisory Services

- Finalize Thornhill SNAP Action Plan, Vaughan
- Finalize Bramalea SNAP Action Plan, in Brampton
- Develop Rexdale SNAP and Neighbourhood Resilience Model, Toronto
- Develop The Pocket SNAP Action Plan, Toronto, piloting a TRCA-community group partnership model.

#### Sustainable Neighbourhood Implementation and Facilitation

- Bramalea SNAP Tower Revitalization Project
- Burnhamthorpe SNAP Tower Revitalization Project
- West Bolton SNAP Green Home Makeover demonstration, DePave and Heritage Hills Parkette revitalization plantings celebration, Jaffray's Creek erosion remediation and Caven Church community amenity space implementation and Trail programming
- Thornhill SNAP residential retrofit program

#### Knowledge Sharing

- Complete Transition 2050 Project Report and recommendations for refining and mainstreaming the neighbourhood and business zone models as strategies for low carbon mobilization, including discussion of funding models

#### Scaling and Future SNAPs

- Apply Neighbourhood Screening Processes in Mississauga in 2021 with the goal of identifying a program of future SNAPs
- Explore the application of a neighbourhood screening process in Markham and Richmond Hill, including potential alignment of priorities with York Region Community



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and Health Services Division's place-based Community Safety and Well-being Planning pilot areas.

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**Date: October 9, 2020**

### 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:** Michael Tolensky, Chief Financial and Operating Officer

**RE:** **MEETING SCHEDULE 2021 - 2022**

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#### KEY ISSUE

Approval of Toronto and Region Conservation Authority's (TRCA) 2021 - 2022 Board of Directors and Executive Committee meeting schedule.

#### RECOMMENDATION

**WHEREAS**, according to TRCA's Board of Directors and Executive Committee Terms of Reference, no meetings are held during the months of July, August, and December;

**AND WHEREAS** approval of all major developments and infrastructure permits within the TRCA's regulatory jurisdiction for July, August and December 2020 was previously delegated to the Director, Development and Engineering Services and the approval of all time sensitive procurements and agreements was delegated to the Chief Executive Officer (Res.#A184/19);

**THEREFORE**, LET IT BE RESOLVED THAT the 2021-2022 Meeting Schedule, as outlined in Attachment 1, be approved;

**THAT** the approval of all major development and infrastructure permits within TRCA's regulatory jurisdiction for the months of December 2020 and July, August and December 2021 be delegated to the Director, Development and Engineering Services or their designate;

**THAT** the approval of all time sensitive procurements and agreements for the months of December 2020 and July, August and December 2021 be delegated to the Chief Executive Officer or their designate;

**THAT** TRCA staff provide a report to the Executive Committee at the January and September 2021 and January 2022 meetings to summarize permits that were approved under this delegation of authority;

**THAT** TRCA staff provide an information report to the Board of Directors at the January and September 2021 and January 2022 meetings to summarize procurements that were signed under this delegation of authority;

**THAT** TRCA staff be directed to bring a revised meeting schedule to the future meeting of the Board should potential conflicts which threaten Board of Directors or Executive Committee quorum be identified in the future, following the final approval of the Federation of Canadian Municipalities 2021 schedule;

**AND FURTHER THAT** the schedule be distributed to TRCA's watershed municipalities and the Minister of the Environment, Conservation and Parks.

### BACKGROUND AND RATIONALE

Given that the majority of Board Members also sit on municipal councils, boards or/and committees, which usually meet on days other than Friday, the recommended schedule accommodates TRCA Board meetings on Fridays. Staff has made every effort to avoid conflicts with the Federation of Canadian Municipalities' (FCM) Annual Conference, scheduled to be held either on June 3-6 or June 10-13 and Board of Directors meetings scheduled to take place March 9-12 and September 14-17. November 2021 FCM meeting has not been scheduled at the time of writing this report. Statutory holidays and school March break were also considered in selecting the proposed meeting days, while still aiming to maintain a schedule which meets TRCA's functional needs. Further, an effort was made to avoid scheduling meetings on a Friday, following meetings of the Regional Council and City of Toronto Council meetings.

In accordance with TRCA's Board of Directors and Executive Committee Terms of Reference and in line with the practice in many municipalities of a summer Council hiatus to better accommodate planned summer vacations and the December holiday season, no Board of Directors and Executive Committee meetings are being scheduled for the months of July, August and December. Historically meetings during these months were associated with quorum concerns and less voluminous agendas.

At Authority Meeting #2/16, held on April 1, 2016, Resolution #A28/16 was approved in part as follows:

*WHEREAS Toronto and Region Conservation Authority (TRCA) administers Ontario Regulation 166/06, as amended, "Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation" under Section 28(1) of the Conservation Authorities Act;*

*AND WHEREAS the Conservation Authorities Act and Ontario Regulation 166/06, as amended, enables TRCA to approve permits with or without conditions; [...]*

*THEREFORE, LET IT BE RESOLVED THAT the Standard Permit Conditions as outlined in this staff report be endorsed and applied to all future permits approved by TRCA pursuant to Ontario Regulation 166/06, as amended; [...]*

*THAT staff be directed to prepare additional Application-Specific Permit Conditions to be considered on individual permit applications before the Executive Committee, as may be required from time to time at the discretion of staff, in consultation with TRCA's legal counsel, depending on the unique circumstances of the individual application;*

Given that the busy summer construction season results in a high volume of permit approval requests and there is a small possibility of permits required in December, staff request an exception to Resolution #A28/16 to allow for the approval of all "major" development and infrastructure permits within the TRCA's regulatory jurisdiction for the months of December 2020 and July, August and December 2021 to be delegated to the Director, Development and Engineering Services or their delegate. Staff will continue to work with proponents of "major" permit applications to ensure their timely approval upon satisfaction that the applications meet the five tests of O. Reg. 166/06. Staff propose to provide a report to the Executive Committee at the January 2021, September 2021 and January 2022 meetings to summarize permits that were approved under this delegation of authority. Furthermore, TRCA staff will circulate any permits subject to this delegation of authority to the Board Members representing the area subject to the

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permit at least a week ahead of the approval date, which will enable Board Members to voice any concerns that may have in relation to the proposed permit.

Similarly, it is recommended that the approval of all time sensitive procurements and agreements for the months of December 2020 and July, August and December 2021 be delegated to the Chief Executive Officer or their designate. Where it is expected that the contract may be awarded during the above-mentioned months, staff propose to provide information reports to the November 2020, June 2021 and November 2021 Board of Directors meetings, summarizing all information available at that time and recommending the course of action. Furthermore, staff will report to the Board of Directors at the January 2021, September 2021 and January 2022 meetings to summarize procurements and agreements that were approved under this delegation of authority.

Should another item require Board of Directors approval in the above-mentioned months, subsection C.2(4) of the Board of Directors Administrative By-law permits the Chair to call special meetings if necessary, as follows:

**C.2(4)** *The Chair may, at their pleasure or at the request of a Board Member, call a special meeting of the Board of Directors on seven days' notice, in writing, or as is necessary. The Chair shall not refuse the calling of a special meeting with majority support. The notice shall state the business of the special meeting and only that business shall be considered at that special meeting. The agenda for special meetings of the Board of Directors shall be prepared as the Chair may direct.*

At Authority Annual Meeting #1/02, held on January 25, 2002, Resolution #A6/02 was approved in part as follows:

*THAT the dates of future Annual Meetings be changed to accommodate the budget meeting schedule for our member municipalities, such that the Annual Meeting held following a municipal election be in January while the Annual Meetings in the interim two years between elections be moved to February;*

In accordance with Resolution #A6/02, the 2021 annual Board of Directors meeting is proposed to be held on Friday, February 26, 2021.

Due to the current outbreak of novel coronavirus (COVID-19), because no TRCA facility can accommodate meetings while ensuring proper social distancing measures, it is currently expected that meetings will be held virtually pursuant to section C.12 of the TRCA's Board of Directors Administrative By-Law. If the outbreak is resolved or TRCA is able to identify a safe method of conducting in-person meetings, while following all health unit recommendations, meetings will resume at TRCA's Head Office at 101 Exchange Avenue. All meetings will be held at 9:30 a.m.

Board Members are requested to enter all board meetings in their calendars upon receipt of the annual schedule. Board Members are further requested to schedule to be in attendance at all meetings, from the start of the meeting until at least 1:30 p.m. to ensure quorum is maintained and continuity of TRCA operations is preserved.

### **Relationship to Building the Living City, the TRCA 2013-2022 Strategic Plan**

This report supports the following strategy set forth in the TRCA 2013-2022 Strategic Plan:

#### **Strategy 7 – Build partnerships and new business models**

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Date: October 30, 2020

Attachment: 1

Attachment 1: 2021-2022 Meeting Schedule

TORONTO AND REGION CONSERVATION AUTHORITY 2021-2022 SCHEDULE OF MEETINGS  
BOARD OF DIRECTORS AND EXECUTIVE COMMITTEE

January '21							February '21							March '21							April '21									
Su	M	Tu	W	Th	F	Sa	Su	M	Tu	W	Th	F	Sa	Su	M	Tu	W	Th	F	Sa	Su	M	Tu	W	Th	F	Sa			
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17	18	19	20	21		22	21	22	23	24	25	26 BoD	27	21	22	23	24	25	26 BoD	27	18	19	20	21	22			23	24	
24	25	26	27	28	29 BoD	30	28							28	29	30	31				25	26	27	28	29	30 BoD				
31																														

May '21							June '21							July '21							August '21									
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30	31																													

September '21							October '21							November '21							December '21								
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January '22							February '22																					
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30	31																											

BoD = Board of Directors  
EXEC = Executive Committee

Statutory Holidays

March Break (for information, as scheduled by the Ministry of Education; not a holiday)

Tentative Festive Closure

All meetings will be held at TRCA's Head Office at 101 Exchange Ave.,  
Vaughan at 9:30 a.m., unless otherwise noted on the agenda.

TRCA meeting schedule also available online on TRCA's Board Meetings page.

### 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:** Michael Tolensky, Chief Financial and Operating Officer

**RE:** **THE MEADOWAY PROJECT – PHASE 1 UPDATE AND TENDER FOR  
CONSTRUCTION OF HIGHLAND CREEK TRAIL**

---

#### KEY ISSUE

Update to the Board of Directors regarding Phase 1 of The Meadoway Project and request for delegated authority to the Chief Executive Officer to award any required general contractor services for construction of the Highland Creek trail.

#### RECOMMENDATION

**WHEREAS** no meetings of the Executive Committee and Board of Directors are scheduled for December 2020;

**AND WHEREAS** Resolution #A184/19, adopted at the October 25, 2019 Board of Directors meeting previously delegated the approval of all time sensitive procurements for the December 2020 period to the Chief Executive Officer or his designate;

**AND WHEREAS** the Weston Family Foundation, as the primary funder of The Meadoway project has advised Toronto and Region Conservation Authority (TRCA) to proceed with the tender of the Highland Creek trail construction and has committed to funding this deliverable, should the tender results be deemed acceptable;

**THEREFORE, LET IT BE RESOLVED THAT** the 2020 update for Phase 1 of The Meadoway Project be received;

**THAT**, subject to the approval of funding from the Weston Family Foundation, the Chief Executive Officer be delegated authority to award any contracts plus an appropriate contingency, required to move forward with the construction of the Highland Creek trail, if staff is unable to report to the Board of Directors as per TRCA Procurement Policy due to timing constraints;

**THAT** should TRCA staff be unable to negotiate a contract with the successful Proponent, staff be authorized to enter into and conclude contract negotiations with other Proponents that submitted quotations, beginning with the next lowest bid meeting TRCA specifications;

**THAT** authorized TRCA officials be directed to take whatever action may be required to implement the contract, including the obtaining of necessary approvals and the signing and execution of any documents;

**THAT** staff report back on the contract award to the Board of Directors meeting;

**AND FURTHER THAT** updates be brought back to the Board of Directors on an annual basis as implementation of the project proceeds.

### BACKGROUND

Led by TRCA, in partnership with Toronto and Region Conservation Foundation, City of Toronto, Hydro One, and the Weston Family Foundation, The Meadoway Project will transform 16 kilometres of hydro corridor in Scarborough into one of the largest urban linear greenspaces in Canada.

On April 11, 2018, Mayor John Tory along with the Directors of the Weston Family Foundation, and representatives from TRCA and Toronto and Region Conservation Foundation jointly announced the launch of The Meadoway at a ceremony in Scarborough. As part of this announcement, the Weston Family Foundation pledged up to \$25 million in support of the project, with a firm commitment of \$10 million available immediately to support Phase 1 of the project. The City of Toronto committed \$6.3 million to realize the shared vision for The Meadoway by supporting the multi-use trail infrastructure, and to support the City's ongoing operations and maintenance activities in the hydro corridor.

At Authority Meeting #7/18, held on September 28, 2018, an update on The Meadoway and recommendation to advance implementation of key priorities was approved per Resolution #A143/18, in part, as follows:

*WHEREAS The W. Garfield Weston Foundation has made a \$10 million of the \$25 million pledge available immediately to TRCA to implement Phase 1 of the project; ...*

*THEREFORE LET IT BE RESOLVED THAT with appropriate Board Authority approvals including purchasing approvals, authorized TRCA and LCF officials be directed to take all necessary actions regarding retaining consulting services, the hiring of contract staff including project managers, and the signing and execution of any service agreements within the limit of the confirmed approved funding agreement for Phase 1; ...*

*THAT updates be brought back to the Authority on an annual basis as implementation of the project proceeds.*

A budget spanning from 2018-2020 was prepared to support the following key objectives in Phase 1:

- *Education and Community Learning* - Undertaking of engagement and education programs that facilitate opportunities for the community to help implement The Meadoway and utilize this new connection between downtown Toronto and Rouge National Urban Park;
- *Public Relations and Communications* - Undertaking of communications and public relations programs that will effectively position The Meadoway as a world class opportunity for greenspace revitalization;
- *Meadow Revitalization* - Completion of an additional 40 ha of meadow habitat and the continued monitoring and maintenance of 80 ha of habitat in the Meadoway; and
- *Active Transportation and Connections* - Completion of the necessary technical analysis, planning, permitting, and design to provide for a connected 16 km active transportation network across The Meadoway along with beginning implementation for incomplete sections of the trail.

At Board of Directors meeting #10/19 a status report was brought forward, and a presentation was made on The Meadoway project. With 2020 being the end of the Phase 1 funding, TRCA is



## Item 8.4

preparing to wrap up their deliverables and has begun discussions with the Weston Family Foundation on Phase 2.

One of the key deliverables of Phase 1 was the planning and design of the multi-use trail which will run the full 16 km of The Meadoway. The conceptual alignments for the multi-use trail were evaluated through a Municipal Engineers Class Environmental Assessment (Schedule C), which received approval by the Ministry of Environment, Conservation and Parks (MECP) in January of 2020. In support of the project's active transportation and connections objective, implementation of one of the exiting trail gaps at Highland Creek (Section 5) was included in the Phase 1 budget and deliverables (see Attachment 1). It was always known by both the Weston Family Foundation and TRCA that this work would extend beyond 2020 given the timelines for the Environmental Assessment, detailed design and Hydro One Network approvals. The Highland Creek trail gap spans 1.8 km between Ellesmere Road and Orton Park Road to the west and Neilson Road to the east. It includes a bridge crossing over the Highland Creek and a boardwalk over a wetland on the east side of the river. It also will connect with the Upper Highland Pan Am Path which is currently under construction and when complete will allow users to travel south to the Lake Ontario waterfront.

The Weston Family Foundation has approved the carry forward of \$3.8M into 2021 to support the implementation of the Highland Creek trail connection. In order to continue progress on this deliverable, staff are looking to finalize the tender award by the end of 2020 so work can begin immediately in 2021.

In addition to the carry forward of the funding for the Highland Creek trail connection, the Weston Family Foundation has approved in principle \$1.348M in bridge funding for 2021 to allow for meadow restoration and to continue general project management while TRCA continues to seek leverage funding. Education, engagement and communications efforts will be scaled back and suspended during this transition. Terms of the agreement for the bridge funding are currently being discussed.

### **RATIONALE**

This Report serves as an update to The Meadoway 2020 Phase 1 works and is organized by each of the four major objective areas outlined above. Additional details are included on the active transportation objective pertaining to the Highland Creek trail construction.

### **Education and Community Learning**

#### *Education*

TRCA is leading education and community learning initiatives for The Meadoway. In The Meadoway's three-phase, curriculum-linked schools program, students grow native plants in their classrooms, take part in an in-school interactive learning experience, and take class field trips to The Meadoway to support restoration and stewardship activities.

In 2020, given the COVID-19 global pandemic, The Meadoway Schools Program has pivoted to provide a curriculum linked e-learning resource for teachers to engage their students through online platforms like Google Classroom. Teachers throughout The Meadoway corridor have also been sent grow kits so that they can grow native plants that will be transplanted into local backyards and balconies.

Details about The Meadoway Schools Program from January 1, 2020 to November 1, 2020 are provided below:

- 82 classes from 14 schools participated in The Meadoway Schools Program.

## Item 8.4

- 68 grow kits were delivered and used by participating teachers.
- 1777 students participated in The Meadoway Schools Program, including 476 students who participated in face-to-face school presentations prior to March 13, 2020.
- Development of a virtual presentation for English as a Second Language (ESL) and Language Instruction for Newcomers to Canada (LINC) students using Zoom with 169 participants.

### *Community Learning*

TRCAs Community Learning team hosts a variety of public events throughout The Meadoway including nature hikes, citizen science programs and other interpretive events throughout the year. Public talks about The Meadoway are regularly delivered to a variety of audiences. Group visits to The Meadoway to see the project in action are also coordinated. Given the COVID-19 global pandemic, Community Learning initiatives related to The Meadoway have pivoted to become virtual. This includes hosting virtual webinars, producing pre-recorded videos, leading Facebook Live sessions, and engaging with the public through interactive content via Instagram.

Details about Community Learning initiatives from January 1, 2020 to November 1, 2020 in The Meadoway are provided below:

- The Meadoway's first winter snowshoe event was hosted on February 22, 2020.
- 296 participants were engaged through face-to-face post-secondary talks and online webinars targeting a variety of audiences.
- Six educational live and pre-recorded videos were produced and posted with over 5000 views on Facebook.
- Educational and interactive content was shared through TRCA's #AtHomeWithNature Instagram Stories.

### **Public Relations and Communications**

With the new addition of a Meadoway Manager of Communications, a comprehensive 2020 communications strategy was delivered and approved by the end of 2019. Highlights between January 1, 2020 and November 1, 2020 include:

- With the substantial shift to digital content in mid-March due to COVID-19, the communications strategy was amended to reflect the increase in online engagement.
- The "model home" concept targeting Section 4 or the Scarborough Centre Butterfly Trail (SCBT) was launched. *Visit a completed section of The Meadoway and see what's to come* – is the concept behind the term "the model home". Updated signage and trail painting with The Meadoway logo and colour palette are now complete.
- Social media: a daily commitment to content, brand awareness, education, stakeholder relations and storytelling. Digital content has substantially increased since mid-March with the introduction of a weekly TRCA Facebook live, Instagram engagement, new blog called *The Warbler*, and a What's Happening NOW feature on the website.
- Public relations agency for a pop-up event and social media campaign. Background information was collected but due to COVID-19 a decision was made to pause the work and reassess in December 2020.
- Creating regular quality content for the subscriber list (core audience), from newsletters to exclusive content to announcements.

## Item 8.4

A complete audit of the website was executed in 2020. The Meadoway website went through a series of changes during the first half of the year with the addition of new content such as the completed visualization toolkit, a new blog, updated menu buttons and more.

- Substantial reorganization of the home page to maximize renderings and videos from the visualization toolkit.
- New menu buttons added to allow for a better user experience with additional content such as updated restoration information.
- The Meadoway Schools Program page was reworked, and a photo gallery was added to the community engagement page.
- FAQ's, maps, content and images were all updated.
- A new Meadoway blog called The Warbler was launched in March and is updated every two weeks with new content. This includes guest bloggers which assists with stakeholder relations and brand awareness.
- A public access map was added to help users find access points to phase one – SCBT.

The Meadoway social media channels are now running at full capacity. With COVID-19, a major shift to online content/engagement began in mid-March.

- Analytics show dramatic increase in engagement and followers from February to June.
- Subscriber list content is generated several times a month including newsletters, storytelling, and announcements.
- The Meadoway began TRCA Facebook Lives and Instagram weekly polls/questions at the end of March.
- An editorial calendar is created each month for social media with strategic storytelling tailored to each of The Meadoway's three channels.
- A considerable effort is spent on photo management and the curation and organizing of images.

After a comprehensive, year-long process, the Visualization Toolkit (VTK) was launched in February 2020. TRCA, Perkins+Will and Future Landscapes Design won a national award of excellence from the Canadian Society of Landscape Design for the VTK.

- A comprehensive communication strategy was designed to launch the VTK.
- Front-page story on blogTO.
- New QR codes on The Meadoway signs that link directly to the VTK.
- The content is also being used in staff presentations to stakeholders, partner organizations and in public webinars.

### **Meadow Revitalization**

Meadow restoration and adaptive management continues to occur across The Meadoway. As meadow restoration can take up to five years, from seed to full establishment, each section of The Meadoway requires different restoration techniques and processes based on the progress and timing of the meadow. Due to COVID-19, all restoration staff adhered to the policies and regulations including social distancing while working in the field. The following has been completed between January 1, 2020 and November 1, 2020 (see attachment 1 for reference to the location of each project section):

### *Section 1.1-1.3*

- Meadow seed mix areas delineated with flagging.
- Cleared woody debris from meadow footprint and fence line.
- Garbage removal from meadow footprint and fence lines.
- Informational signage revised to reflect project status.
- Spring blanket spray herbicide treatments prior to seeding native meadow species, suppressing non-native species.
- Multiple buffer mowing and trimming around meadow footprint and fence line.
- Continuous Invasive species management of Dog-strangling Vine, Canada Thistle, Garlic Mustard, Manitoba Maple and other non-native woody species.
- Meadow footprint (12ha) seeded with updated native species mixes (resilient, grass, wet meadow, butterfly, and short meadow mixes).
- Implemented pilot studies and monitoring plots to assess native seeding in alternative seasons as well as cover crop densities and types (oats vs. millet).
- Soil samples collected for glyphosate degradation analysis.
- Annual terrestrial monitoring of flora plots, bird and butterfly transects (Spring, Summer and Fall observations).

### *Section 1.4 and 2*

- Meadow seed mix areas delineated with flagging.
- Cleared woody debris from meadow footprint and fence line.
- Garbage removal from meadow footprint and fence lines.
- Informational signage revised to reflect project status.
- Four rounds of site preparation (mow, till, seed with cover crop, harrow) on 21ha in preparation for fall seeding.
- Multiple buffer mowing and trimming around meadow footprint and fence line.
- Continuous Invasive species management of Dog-strangling Vine.
- Organic herbicide pilot study plots installed and monitored effectiveness complete.
- Meadow footprint (21ha) seeded with updated native species mixes in Fall (resilient, grass, wet meadow, butterfly, and short meadow mixes).

### *Section 4*

- Garbage removal from meadow footprint and fence lines.
- Spring Maintenance mow on specific areas.
- Multiple buffer mowing and trimming around meadow footprint and fence line.
- Informational signage updated and repaired as needed.
- Adaptive management for invasive species of Dog-strangling Vine, Canada Thistle, Manitoba Maple, Black Locust and other non-native woody species.
- Native species overseeding in past invasive species locations.
- UoT Infiltration study by graduate student.
- Meadow species diversity enhancement trials (mowing, light tilling, overseeding in parts of section 4).
- Annual terrestrial monitoring of flora plots, bird and butterfly transects (Spring, Summer and Fall observations).
- QR code stickers applied to meadow restoration signs.

### *Section 7*

- Garbage removal from meadow footprint and fence lines.
- Spring/Fall Maintenance mow on specific areas.
- Adaptive management for invasive species of Dog-strangling Vine, Canada Thistle, Manitoba Maple, Black Locust and other non-native woody species.
- Invasive species management of Dog-strangling Vine, Canada Thistle, Garlic Mustard Manitoba Maple, Spotted Knapweed, Black Locust and other non-native woody species.
- Native species overseeding in past invasive species locations.
- Multiple buffer mowing and trimming around meadow footprint and fence line
- UoT Infiltration study by graduate student.
- Annual terrestrial monitoring of flora plots, bird and butterfly transects (Spring, Summer and Fall observations).
- Informational signage revised to reflect project status.
- Meadow footprint seeded with updated native species mix (butterfly mix) in Spring (Section 7.2).

### *Monitoring*

First round of bird transects were completed in Sections 1, 4, and 7 of The Meadoway. Meadow birds were monitored twice during the field season with the first visit occurring between May 15th and May 30th, and the second visit between May 30th and June 15th, with at least 10 days between visits. Counts were conducted between 05:00 and 10:00 hours and at approximately the same time of day on subsequent visits from year to year. Counts were only conducted in good weather conditions (no rain, light winds). All birds seen or heard within a 100 m radius circle and during a 10-minute time period were recorded.

### *Research*

There are a variety of investigative projects underway in The Meadoway, including bee monitoring and a partnership with the University of Toronto to examine the hydraulic improvement brought on by meadow restoration. The goal of the hydraulic research is to track and predict the performance of The Meadoway's flood control capacity under various climate scenarios and better understand the soil characteristics in the hydro corridor in both the restored meadow and the turfgrass. The physical, chemical and biological parameters of the soil will be examined in the lab with the results due in late fall.

### **Active Transportation and Connections**

After receiving Ministry of the Environment, Conservation and Parks approval in January 2020 for the Municipal Class Environmental Assessment, the Project has moved into the detailed design phase.

The following technical items have been advanced during January 1, 2020 to November 1, 2020 in support of active transportation and connections:

- Complete detailed design package for Phase 1 of Section 5 – Highland Creek;
- Complete authorization packages for Hydro One networks to allow for the licensing of Section 5 to the City of Toronto and facilitate implementation;
- Request for Tender for implementation of Phase 1 of Section 5 – Highland Creek prepared and ready for release;
- Stage 2 archaeology investigation workplan complete and work to be undertaken in November in support of Section 5 – Highland Creek;

## Item 8.4

- Electromagnetic frequency field study consultant retained and work to commence in mid-November for Section 5 – Highland Creek, in support of the City of Toronto’s Prudent Avoidance Strategy for public realm near or within hydro corridors;
- Completion of 60% level of design for Section 3 – Givendale (Phase 1) – 100% will be completed by the end of the year;
- Submission of Section 3 – Givendale (Phase 1) 60% package for Hydro One Inc. technical review and approval – 100% will be completed by the end of the year; and
- Development of 60% level of design for Section 6 – Morningside (Phase 1) – 100% will be completed by the end of the year.

### *Construction of Highland Creek Trail – Section 5*

Construction of the Highland Creek trail was included as a deliverable in Phase 1. With the timelines for planning, design and permits it was always known that this deliverable would be extended beyond the 2018-2020 Phase 1 timeline. With detailed design now wrapping up and approvals from Hydro One Networks being imminent, TRCA is now prepared to proceed with the release of the tender. The scope of work for the tender will include, but is not necessarily limited to, the supply of all labour, material, supervision and equipment necessary to implement the Highland Creek trail as per the detailed design drawing set prepared by Dillon Consulting Ltd. The detailed design for the Project consists of but is not necessarily limited to the following general components:

- Site clearing, grubbing, removal and off-site haulage and disposal of approximately 25-30 trees;
- Installation of perimeter safety fence, construction signage, erosion and sediment controls and tree protection as required for approximately 1.8 km of trail;
- Installation, maintenance and removal of temporary access roads, storage and staging areas;
- Site grading, cut/fill, haulage and off-site disposal of surplus excavated material;
- Installation and removal of a temporary bridge for crossing of the Highland Creek to facilitate installation of the permanent bridge and trail construction including temporary lighting and navigation signage if required;
- Design/build of one 36.6 metre span, 6-metre-wide permanent bridge crossing over the Highland Creek including foundations and concrete abutments;
- Design/build of a 62 linear metre boardwalk on helical piles through a section of a Provincially Significant Wetland feature;
- Geotechnical investigations for armourstone retaining walls to facilitate design including global stability analysis;
- Installation of mechanically stabilized earth (MSE) walls
- Design/build for grounding system for installation of trail amenities within the existing Hydro corridor;
- Installation of granular base and asphalt paving of 1.1 km of trail including resting nodes, signage and line painting; and
- Site restoration including; fine grading, topsoil, seeding and plantings as required.

A Request for Pre-Qualification (RFPQ) for general contractors was publicly advertised on the public procurement website [www.biddingo.com](http://www.biddingo.com) on July 23rd, 2020 and closed on August 6<sup>th</sup>, 2020. Pending approvals from Hydro One Networks on the detailed design package sent to them for comment/approval on April 28, 2020, TRCA is targeting release of the tender to all pre-qualified contractors in mid-November with results available in early December.

### **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 3 – Rethink greenspace to maximize its value**

**Strategy 4 – Create complete communities that integrate nature and the built environment**

**Strategy 5 – Foster sustainable citizenship**

**Strategy 12 – Facilitate a region-wide approach to sustainability**

### **FINANCIAL DETAILS**

Based on deliverable refinements, a revised budget of \$38.175M for 2018 – 2025 has been estimated for the overall project. \$10M was secured from the Weston Family Foundation for Phase 1, with an additional \$15M pledged which was contingent on TRCA raising matching funding making the gap in funding currently \$13.175M. Because leverage funding has not been secured to date, the Weston Family Foundation is not in a position to release the \$15M pledged. However, in order to allow for continued progress on the project, they have approved in principal \$1.348M in bridge funding for 2021 to continue to advance meadow restoration and overall project management/coordination. Education, engagement and communications efforts will be suspended or scaled back during this transition. In addition to this, \$3.8M for the Highland Creek Trail connection and \$584,540 of consolidated unspent funds will be carried over into 2021 from the Phase 1 budget. This bring the total budget supported by the Weston Family Foundation for 2021 to \$5,732,580. Terms for an agreement for the new funding of \$1.348M in 2021 is currently being discussed. It is understood that this will be considered part of the \$15M pledge.

Funds for The Meadoway project are being tracked in account series: 260-01.

### **DETAILS OF WORK TO BE DONE**

TRCA will continue to work with the City of Toronto to seek opportunities for provincial and federal investment in The Meadoway in order to potentially release the \$15M pledged by the Weston Family Foundation. Also, a text to donate campaign has been initiated. The following is an overview of key deliverables for 2021 which have been approved by the Weston Family Foundation, based on the Phase 1 carry over of funds and the additional bridge funding:

- Construction of the Highland Creek trail connection (1.8 km). This includes a bridge over the Highland Creek and a boardwalk over the wetland on the east side of the ravine;
- Restoration management (based on current stage of revitalization) of 104.69 ha of meadow habitat;
- 20.76 ha new meadow established;
- Ongoing stakeholder management and addressing public inquiries;
- Preparation of funding requests to all levels of government; and
- General communications including updates to website (as needed); bi-monthly (or around key events) newsletter release via subscriber list (total six per year); and social media – one post to all platforms per week; one Instagram story per month (total 12).

**Report prepared by: Lisa Turnbull, extension 5645 and Corey Wells, extension 5233**

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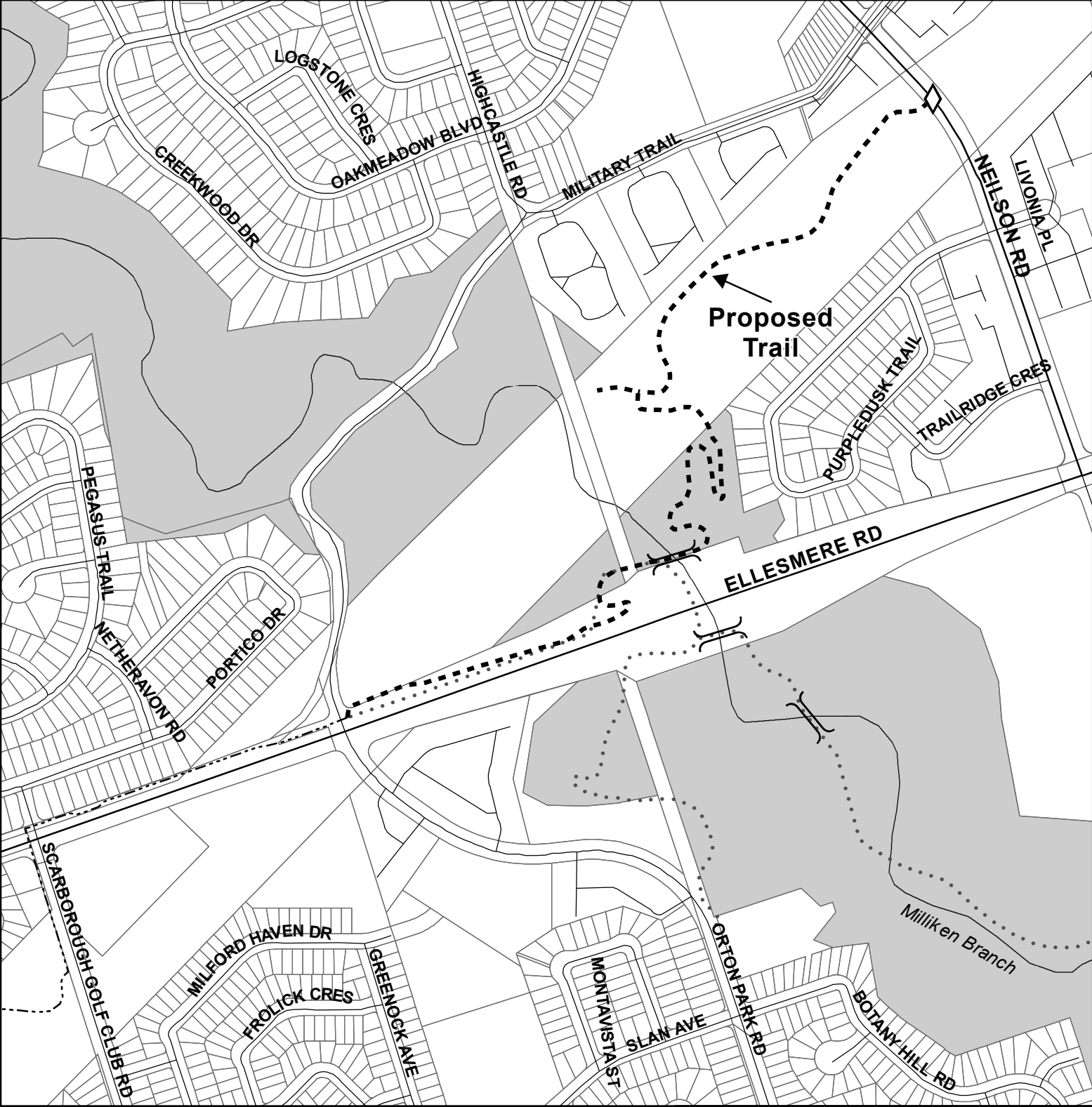
**For Information contact: Lisa Turnbull, extension 5645**


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**Date: October 29, 2020**


**Attachments: 1**

Attachment 1: The Meadoway - Highland Creek Trail







Pedestrian Crossing




Proposed Meadowway Multi-use Trail




Upper Highland Creek Pan Am Path




Existing Meadowway Multi-Use Trail




Parcel Owner




Watercourse




TRCA Property



Toronto and Region  
**Conservation**  
Authority



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YORK DURHAM  
PEEL TORONTO  
Lake Ontario  
**SITE**  
Key Map



### 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:** Michael Tolensky, Chief Financial and Operating Officer

**RE:** **MID-HUMBER GAP MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT**  
Request for Delegated Authority

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#### KEY ISSUE

Update on the status of the Mid-Humber Gap Project and request for delegated authority to the Chief Executive Officer to award any required contract services to support the advancement of the Municipal Class Environmental Assessment process.

#### RECOMMENDATION

**WHEREAS** no meetings of the Executive Committee and Board of Directors are scheduled for December 2020;

**AND WHEREAS** Resolution #A184/19, adopted at the October 25, 2019 Board of Directors meeting previously delegated the approval of all time sensitive procurements for the December 2020 time period to the Chief Executive Officer or his designate;

**AND WHEREAS** The City of Toronto funded TRCA to undertake a Feasibility Study in 2019 to address the Mid-Humber Gap which determined that a Municipal Class Environmental Assessment, Schedule B was required to further advance the project;

**AND WHEREAS** The City of Toronto has requested that a Letter Agreement be prepared to allow for the transfer of funds to TRCA to lead the Municipal Class Environmental Assessment as a fee for service project;

**THEREFORE, LET IT BE RESOLVED THAT** the update on the Mid-Humber Gap Project be received;

**THAT**, subject to the execution of the Letter Agreement with the City of Toronto, the Chief Executive Officer be delegated authority to award any contracts plus an appropriate contingency, required to move forward with the Mid-Humber Gap Municipal Class Environmental Assessment, if staff is unable to report to the Board of Directors as per TRCA Procurement Policy due to timing constraints;

**THAT** should TRCA staff be unable to negotiate a contract with the successful Proponent, staff be authorized to enter into and conclude contract negotiations with other Proponents that submitted quotations, beginning with the next lowest bid meeting TRCA specifications;

**THAT** authorized TRCA officials be directed to take whatever action may be required to implement the contract, including the obtaining of necessary approvals and the signing and execution of any documents;

**AND THAT** staff report back on the contract award to the future Board of Directors

meeting.

### BACKGROUND

The Mid-Humber Gap Project was one of 26 multi-use trail projects identified in the *Bikeway Trails Plan* adopted by Toronto City Council in 2012. The project is defined as a 1.4 km gap in the Humber Recreational Trail (HRT) near Weston Road and Lawrence Ave West, in the City of Toronto. This gap constitutes a significant barrier to a continuous trail system from Toronto's north-west boundary to Lake Ontario and is a discontinuity in the 80 km Pan Am Path, which extends from Brampton to Pickering. The Mid-Humber Gap is also identified in TRCA's Trail Strategy for the Greater Toronto Region as a key missing link in the regional trail network.

The Mid-Humber Gap Project study area (Attachment 1) is located between two completed sections of the Humber River Recreational Trail just south of Mallaby Park and west of St. Phillips Road and the southern entrance to Crawford-Jones Memorial Park off Cardell Avenue.

In 2013, the City contacted TRCA to request assistance in planning and implementing a trail connection project to close the gap, via a multi-staged approach.

#### Stage 1 – Trail Construction and Improvement Work (Completed 2013)

In 2013, the City and TRCA completed Stage 1 of the Mid-Humber Gap Project. During Stage 1, a 600-metre trail was constructed to connect Mallaby Park to the HRT system and a pre-existing dirt trail was formalized into a 3.5-meter-wide paved multi-use pathway.

Deliverables:

- Construction of a 600-metre trail connecting Mallaby Park to Cruickshank Park
- Preparation of preliminary trail alignment concepts for Stage 2 – Feasibility Study

#### Stage 2 – Feasibility Study (Completed 2019)

In 2019, the City and TRCA completed Stage 2 of the Mid-Humber Gap project. During Stage 2, a Feasibility Study was undertaken to evaluate conceptual trail alignment options to close the remaining gap in the HRT between Mallaby Park and Crawford-Jones Memorial Park. The Mid-Humber Gap project schedule is aligned with the City's 2019 *Cycling Network Plan Update* (Update to the 2016 *Cycling Network 10-Year Plan*). The 2019 Plan acknowledges that the Stage 2 - Feasibility Study was underway at the time of publishing and anticipated that the scoping of the Municipal Class Environmental Assessment (MCEA) could occur in 2020.

The Feasibility Study mirrored a formal MCEA process and provided rationale for pursuing a full MCEA Schedule B planning process. The Feasibility Study evaluated conceptual trail alignments and recommended two trail alignments that would be suitable to move forward in the MCEA process. Evaluation criteria included: cost, ecological impacts, constructability, future maintenance, environmental impacts, user experience, land ownership and impacts to private property and slope stabilization needs.

Trail alignment constraints include a steep slope and private property on the east bank of the river, and a privately owned golf course on the west bank. These constraints increase the complexity of the project, and likely require the construction of bridges, boardwalk structures, and securement of property. The Feasibility Study confirmed the rough order of magnitude costs for each trail alignment reviewed. Implementation costs are expected to be in the range of \$3.5 and \$9.5 million which subsequently makes this project subject to the MCEA Schedule B process.

## Item 8.5

The work undertaken as part of the Feasibility Study was informed by limited available baseline data and site topography. Information gaps were identified and recommended to be addressed in Stage 3 of the work. Most notably, a subsurface investigation was deemed required to inform the placement and design of any proposed water crossings. Complete ecological, geotechnical, water resources and geomorphologic assessments were also recommended to inform and refine the proposed trail alignment concepts.

The work on the Mid Humber Gap advances the Loop Trail concept that is being advanced by the City of Toronto, Evergreen and TRCA. The loop trail is an 81 kilometre off road multi-use route connecting the waterfront in the south, the Don Valley in the east, the Finch corridor in the North and the Humber Valley in the west.

### **RATIONALE**

The City of Toronto has requested that the TRCA proceed with advancing the MCEA Schedule B as Stage 3 of the overall project work. A Letter Agreement between the City of Toronto and TRCA that details the required scope of work for the undertaking has been drafted and is currently under review by the City of Toronto, Transportation Services division.

TRCA and the City of Toronto will be co-proponents for the MCEA. TRCA will be engaged as a consultant in the form of Project Management Lead to support the City in the undertaking. Under this model TRCA will procure any third-party technical expertise required to support the MCEA process. The RFP for these services is currently in development with release targeted for early December 2020. The scope of work for the RFP will build off the analysis already undertaken in the Feasibility Study and have specific emphasis on the geotechnical and geomorphological studies required to refine and evaluate the alternative trail alignments.

With the assistance of the procured consultant, at a high level, TRCA will deliver the following to the City of Toronto:

- Completion of the MCEA Schedule B process. The preferred alternative trail alignment will be brought to 30% design with rough order of magnitude costs for implementation made available.
- Completion of all public and stakeholder consultation requirements as per the MCEA Schedule B process. A minimum of two (2) Public Information Centers (PIC) and two (2) Community Liaison Meetings (CLC) will be undertaken in collaboration with the City of Toronto with a provision for a third CLC and PIC should there be a need.
- A project file to be made available to all interested parties throughout the process and finalized upon study completion.

### **Relationship to Building the Living City, the TRCA 2013-2022 Strategic Plan**

This report supports the following strategy set forth in the TRCA 2013-2022 Strategic Plan:  
**Strategy 3 – Rethink greenspace to maximize its value**

### **FINANCIAL DETAILS**

Undertaking the MCEA for the Mid-Humber Gap will be a fee for service project undertaken through a Letter of Agreement with the City of Toronto, Transportation Services division under the Master Service Agreement. TRCA has prepared a budget to encompass the necessary work, which is currently under review by the City of Toronto. Funds will be tracked in account 186-42.

### **DETAILS OF WORK TO BE DONE**

- Execution of the Letter Agreement between TRCA and the City of Toronto to facilitate the transfer of funds to undertake the MCEA (November 2020).
- Release and award of the RFP for external technical support services needed to support the MCEA process (December 2020).
- Formal initiation of the MCEA process in January 2021 with the estimated completion of the study in November 2021.
- Stage 4 (Implementation) of the project will be discussed with the City of Toronto when TRCA is nearing completion of the MCEA.

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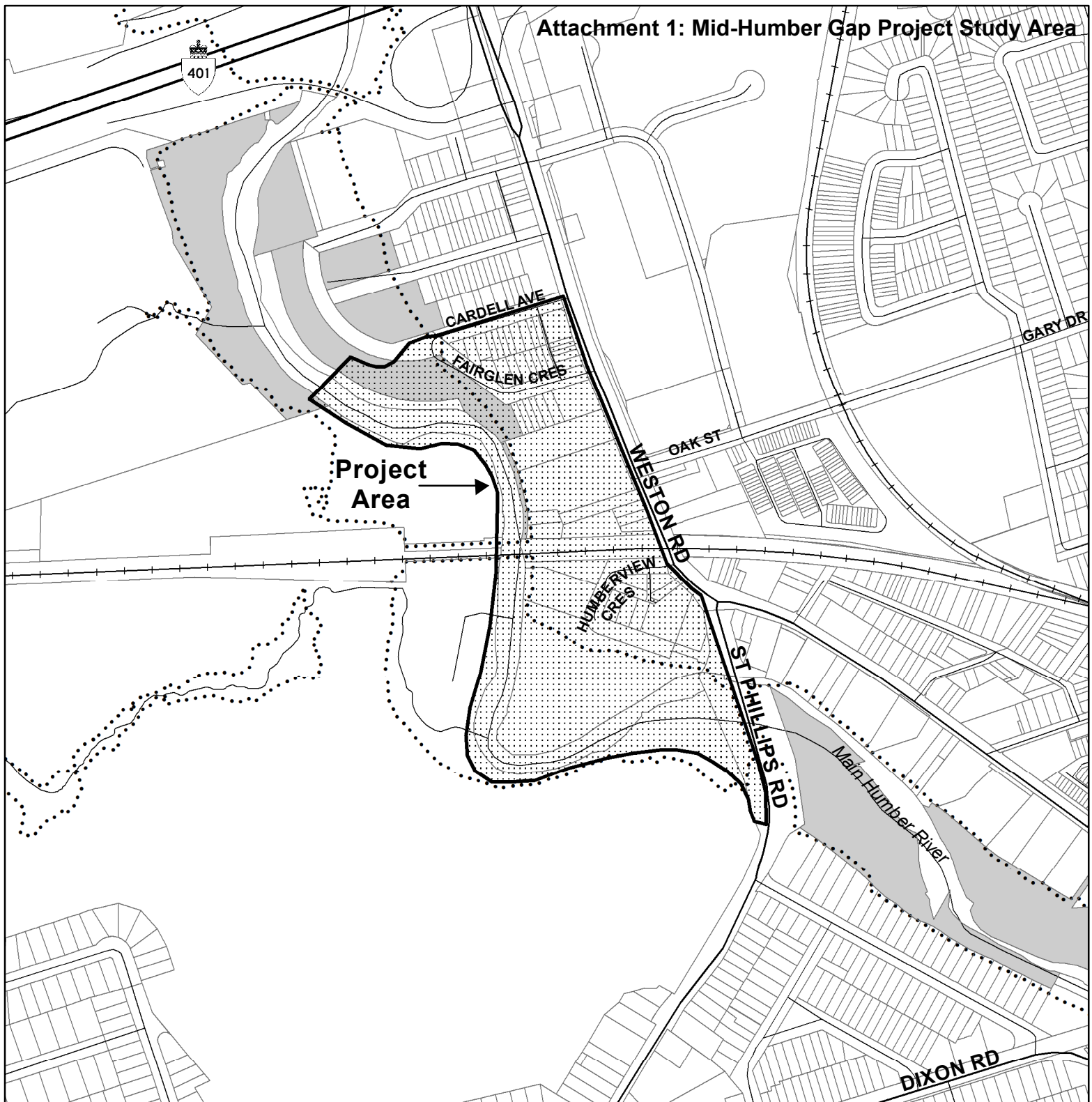
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




**Date:** November 4, 2020

**Attachments:** 1

Attachment 1: Mid-Humber Gap Project Study Area

# Attachment 1: Mid-Humber Gap Project Study Area

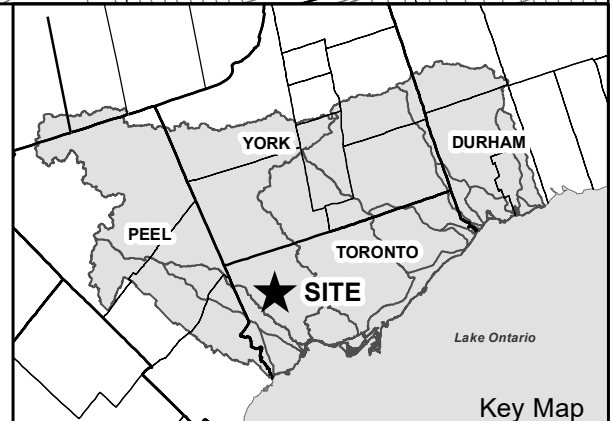


-  Project Area
-  Railway
-  Watercourse
-  Floodline
-  TRCA Property
-  Parcel Assessment

 **Toronto and Region  
Conservation  
Authority**



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Key Map

### Section I – Items for the Board of Directors Action

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

**FROM:** Sameer Dhalla, Director, Development and Engineering Services

**RE:** **NATIONAL DISASTER MITIGATION PROGRAM – 2020 UPDATE**  
Summary of projects completed with National Disaster Mitigation Program funding support

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#### KEY ISSUE

Update and summary of projects completed since 2016 utilizing National Disaster Mitigation Program funding support.

#### RECOMMENDATION

**IT IS RECOMMENDED THAT this report be received;**

**THAT Toronto and Region Conservation Authority (TRCA) staff, in partnership with TRCA's municipal partners, be directed to continue to pursue National Disaster Mitigation Program funding to accelerate risk mitigation projects through the recently announced 6<sup>th</sup> intake of the program;**

**AND FURTHER THAT TRCA staff request financial support for special projects from TRCA's partner municipalities.**

#### BACKGROUND

In 2016, TRCA's Board of Directors approved a 5-year plan to enhance TRCA's flood risk management program with funding from the National Disaster Mitigation Program (NDMP).

At Authority Meeting #6/16, held on July 22, 2016, Resolution #A109/16 was approved, in part, as follows:

*AND FURTHER THAT staff report back to the Authority in 2018 and 2020 to provide a summary of the work that has been completed with funding from the NDMP.*

The NDMP was established by the federal government in 2015 with the intent of allocating \$200 Million across Canada over five years towards initiatives aimed at reducing the impacts of natural disasters, specifically flooding. Eligible projects were those that fell under one of four NDMP funding streams, namely:

- (1) Risk Assessment
- (2) Flood Mapping
- (3) Flood Mitigation Planning
- (4) Investments in non-structural and small-scale structural mitigation projects

#### RATIONALE

As the holders of delegated responsibility for flood management at a watershed scale, conservation authorities have been ideally-positioned project partners in this endeavor. TRCA has successfully received nearly \$3.8 Million in federal matching funds through the program. As a funding program that complemented TRCA's flood risk management mandate, the NDMP has

been an opportunity to fill funding gaps to address outstanding needs and has acted as a catalyst to accelerate investments in flood risk reduction activities. Highlights of the accomplishments under each stream of the NDMP are outlined below, and **Attachment 1** includes a full list of the NDMP projects from Intakes 1-5, which have all been completed. In many cases, outputs and processes developed specifically for one project have found myriad uses in other flood risk reduction activities, including further NDMP projects.

### (1) Risk Assessment

- The **Flood Risk Assessment and Ranking** study updated TRCA's database of flood vulnerable roads and structures, developed an updated methodology for quantifying riverine flood risk, and provided a renewed ranking of risk across TRCA's 41 Flood Vulnerable Clusters. The lessons learned and updated depth-damage functions were also shared with other Conservation Authorities to enhance the state of practice for flood risk assessment. The geospatial products developed through this project were also utilized to develop mapping to assist in emergency response for actual flood events, such as the Lake Ontario high water levels and 2019 Bolton Ice Jam flood event.
- Building on the concepts used in the riverine flood risk assessment process and modifying it to suite the unique characteristics of Toronto Islands, the **Toronto Islands Flood Characterization and Risk Assessment project** in partnership with the City of Toronto provided an improved understanding of flood scenarios and community and infrastructure vulnerabilities and risks following the 2017 high lake level event. It also provided direction on future flood mitigation investments which will be further fleshed out through an environmental assessment, as well as information utilized to install proactive resilience measures in 2018, 2019, and 2020.

### (2) Flood Mapping

- The **comprehensive updating of TRCA's flood plain mapping**, underpinned by state-of-the-art hydrology and hydraulic models, is a key accomplishment under the NDMP program. As outlined in the September 25, 2020 Summary of Recent Updates to TRCA Flood Mapping Program report (Resolution #A126/20), nearly all of TRCA's mapping is now less than 5 years old. Through the NDMP, over 400 flood plain map-sheets were developed in the Humber River, Mimico Creek, Don River, Highland Creek, Rouge River, Duffins Creek and Carruthers Creek watersheds. Updated hydrology modelling was also completed for the Petticoat Creek watershed.
- Furthermore, two-dimensional (2D) models were created in areas with complex flow regimes or where an enhanced understanding of risk was required. In many cases, the 2D modelling studies laid the foundation for further flood mitigation planning, as identified in the following section. 2D models were completed for the following areas:
  - Rockcliffe Special Policy Area in Toronto
  - Pickering and Ajax Special Policy Areas in Pickering and Ajax (Durham Region)
  - Spring Creek (Avondale) area in Brampton (Peel Region)
  - Unionville Special Policy Area in Markham (York Region)

### (3) Flood Mitigation Planning

- Recognizing that flood risk reduction efforts can involve existing flood protection infrastructure, the **Stouffville and Claireville Dam Feasibility Studies** assessed the viability of implementing risk reduction alternatives identified in recent dam safety reviews.
- Building on the analyses conducted as part of the earlier 2D modelling NDMP project in the area, the **Pickering and Ajax Dyke Restoration Conservation Ontario Class**

**Environmental Assessment (EA)** was completed. The EA identified a preferred alternative for the rehabilitation of the Pickering and Ajax Dykes to enable them to meet current engineering standards and factors of safety while maintaining the existing level of flood protection.

- The **Black Creek at Rockcliffe Flood Remediation and Transportation Feasibility Study** re-examined the performance of flood remediation solutions originally recommended in 2014, using a new MIKE FLOOD 2D hydraulic model, which explicitly considers the influence of the Lavender Creek tributary, as well as the updated watershed flows from the 2018 “Humber River Hydrology Update Addendum”. The Feasibility Study also comprehensively assessed traffic impacts (using Synchro and SimTraffic Models) and included site investigations (Boreholes and Sub-Surface Engineering). The Feasibility study identified an improved flood remediation solution which significantly reduces the number of properties in the floodplain under all storm events.
- Through the **Downtown Brampton Flood Protection Environmental Assessment**, The City of Brampton and TRCA considered alternative ways to protect downtown Brampton from future flood events and unlock potential for revitalization. The EA has been completed and identified a preferred alternative for providing flood protection for the downtown area while considering urban design and land use opportunities for the City of Brampton.

#### (4) Investments in non-structural and small-scale structural mitigation projects

- Considering the short-duration, high-intensity storms recently experienced in TRCA’s jurisdiction, the **G. Ross Lord Dam Safety Risk Assessment & Flood Operations** study analyzed the effects of modified dam operations rules in relation to the overall risks associated with the presence of this important piece of flood infrastructure.
- Five new real-time gauges were added to **TRCA’s network of real-time rain and stream gauges**. The real-time hydrometric network, together with the tools that collect and display this information, are a critical component of TRCA’s Flood Forecasting and Warning program.
- Recognizing that the characteristics of TRCA watersheds and the nature of the weather systems that impact them make it difficult to predict flooding, TRCA has been working to develop a **Next-generation Flood Forecasting and Warning Decision Support System (DSS)** using Delft-FEWSsting, the Delft Flood Early Warning System (FEWS) was selected as the platform on which to build TRCA’s next generation DSS. The completed pilot provides aggregation and spatial averaging of weather and radar forecasts for all of TRCA’s jurisdiction, as well as a customized adaptor that allows for FEWS to run hydrologic models in SWMM, which is one of the programs that is used by TRCA for floodplain mapping purposes.
- The **Flood Emergency Plan – Site Specific Flood Risk Packages** project utilized information from the Flood Risk Assessment and Ranking study, allowing TRCA to work together with municipal partners to jointly develop a set of impact tables and possible response actions, together with simplified mapping that could be utilized by first responders. Depending on the municipality, the SSFRPs do not necessarily represent formal response plans, but rather represent “site-specific risk information packages” meant to complement existing municipal emergency plans or risk-specific plans for flooding.
- Over the course of a 10-month period within the **Flood Risk Public Awareness and Education Program** span, Flood Risk Management staff hosted or attended events with an attendance of over 2,400 people combined, and created campaigns that reached



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50,000 people digitally, and 1,949 people by mail. From these, 3,100 people accessed the flood risk specific webpages to learn more about their risk, and there were over 200 meaningful in-person conversations with residents and business owners living in TRCA's flood vulnerable clusters. Furthermore, the number of new public signups to receive flood forecasting and warning messages between January and March 2020 (the most active period of the campaign) was more than four times the average of new self-subscriptions in a given quarter.

In summary, the dedicated funding provided through the National Disaster Mitigation Program has been the most significant impetus for flood risk reduction within TRCA's jurisdiction since the 1970s. This funding has supported a myriad of projects, from risk assessments to emergency planning documents, from state-of-the art flood modelling and mapping to improvements to real-time gauges and flood forecasting tools, from large-scale community flood remediation studies with municipal partners to flood communication and outreach programs. As an early adopter of this program, TRCA has also provided guidance and leadership to other conservation authorities pursuing similar studies and to federal working groups that were developed in parallel to the program. The tireless efforts of staff to secure funding and deliver on project commitments over the past 5 years has meant that TRCA is already at the forefront of many of the objectives later identified in the Ontario Flooding Strategy. Matching funds are a critical component to achieving TRCA and municipal partners flood risk reduction objectives.

With the recently announced sixth intake of the NDMP, TRCA staff will pursue federal funding to leverage anticipated budget allocations for floodplain mapping extensions for the Humber and Rouge Rivers in York Region, an updated hydrology study for Etobicoke Creek in Peel, and updating coastal floodplain mapping along the Lake Ontario shoreline in Toronto. Staff will work with the Strategic Business Planning and Performance, and Community and Government Relations teams to identify opportunities for additional projects that are currently unfunded. Furthermore, TRCA will work towards securing other funding streams, such as the Disaster Mitigation and Adaptation Fund, to facilitate the construction of projects that have been planned through NDMP studies.

### **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 4 – Create complete communities that integrate nature and the built environment**

**Strategy 10 – Accelerate innovation**

### **FINANCIAL DETAILS**

Funding and account codes for each completed NDMP project are listed in ***Attachment 1***.

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**Date: October 8, 2020**

**Attachments: 1**

Attachment 1: National Disaster Mitigation Program (NDMP) Project Summary

Attachment 1: National Disaster Mitigation Program (NDMP) Project Summary

	Project Name	Start Date	End Date	Account Code	TRCA/Partner Funding	Federal Program Funding	Project Outcomes / Outline
	NDMP INTAKE #1						
1	A4 Flood Vulnerable Database	Oct-16	Complete - Sep-18	10709	\$195,000.00	\$195,000.00	<i>This project generated an updated geospatial database of exposure information, which was layered with riverine flood hazard information and the latest flood vulnerability functions in order to quantify flood risk at a granular level. This allowed for a data-driven risk ranking of TRCA's 41 Flood Vulnerable Clusters in the Flood Risk Assessment and Ranking study. The quantified damage estimates were used to inform Return on Investment calculations for flood remediation projects, and the geospatial mapping products that were developed were used to aid municipal response to flood emergencies. This project also enabled the purchase of LiDAR data that has been leveraged for subsequent floodplain modelling and mapping activities.</i>
2	2 Dimensional Modeling of High Risk - Flood Vulnerable Areas	Oct-16	Complete - Mar-18	10708	\$110,000.00	\$110,000.00	<i>This project developed advanced 2-dimensional flood modelling within two high-risk complex flow areas: Rockcliffe Special Policy Area in Toronto and Pickering/Ajax special Policy Area in Durham Region. This information was used to update regulations, to advance flood remediation plans, and to enhance emergency preparedness.</i>
	NDMP INTAKE #3						
3	A31 2 Dimensional Modeling Studies of High Risk Flood Areas	Oct-17	Complete - Mar-19	10758	\$60,000.00	\$60,000.00	<i>This project provided accurate and reliable modelling updates incorporating recent LiDAR topographic data. The revised flood plain information was provided to TRCA's municipal partners for the purpose of land use and emergency management planning.</i>

Attachment 1: National Disaster Mitigation Program (NDMP) Project Summary

	Project Name	Start Date	End Date	Account Code	TRCA/Partner Funding	Federal Program Funding	Project Outcomes / Outline
4	A30 2017 Stouffville and Claireville Dam Feasibility Studies	Oct-17	Complete - Sep-19	10710	\$140,000.00	\$140,000.00	<i>This project assessed the viability of implementing the recommendations from the recently completed Dam Safety Reviews for the Claireville and Stouffville Dams located in the City of Brampton, and Town of Whichurch-Stouffville respectively.</i>
5	A27 2017 Floodplain Mapping Updates	Oct-17	Complete Sep-19	10756	\$156,750.00	\$156,750.00	<i>This project included updating approximately 65 floodplain maps for the Humber River Watershed within the City of Toronto and City of Vaughan, as well as the update of approximately 16 floodplain map sheets within the Carruthers Creek Watershed within the Town of Ajax.</i>
6	A28 2017 Mimico Creek Hydrology Update	Oct-17	Complete Mar-19	10755	\$30,000.00	\$30,000.00	<i>This project entailed a comprehensive hydrology update for the Mimico Creek watershed. Mimico Creek has an urbanized watershed located within the Cities of Mississauga and Brampton in the Regional Municipality of Peel and the City of Toronto.</i>
7	A29 2017 Real-Time Gauge Improvement Program	Oct-17	Complete Mar-19	10757	\$60,000.00	\$60,000.00	<i>This project expanded the coverage of TRCA's network of rain and stream gauges through the provision of four additional gauges, as well as redundancy equipment to increase the resilience of the current system. The real-time gauging network provides enhanced situational awareness during flood event which benefits emergency response.</i>
	NDMP INTAKE #4						
8	A47 - Flood Risk Community Outreach Program	Jul-18	Complete - Mar-20	10754	\$130,000.00	\$130,000.00	<i>This project enabled targeted flood risk communications initiatives, together with municipal partners, to support flood emergency preparedness. Priority neighbourhoods were based on the results from TRCA's Intake 1 Flood Risk Assessment and Ranking study.</i>

Attachment 1: National Disaster Mitigation Program (NDMP) Project Summary

	Project Name	Start Date	End Date	Account Code	TRCA/Partner Funding	Federal Program Funding	Project Outcomes / Outline
9	A45 - Don River Watershed Floodplain Mapping Update	Oct-18	Complete - Mar-20	10737	\$130,500.00	\$130,500.00	<i>This project enabled a comprehensive floodplain mapping update of approximately 80 floodplain map sheets within the municipalities of the City of Vaughan, Town of Richmond Hill, City of Markham and City of Toronto.</i>
10	A48 - G. Ross Lord Dam Safety Risk Assessment & Flood Operations	Oct-18	Complete - Mar-20	10757	\$125,000.00	\$125,000.00	<i>The risk assessment allowed TRCA to quantify the impacts of modifying the dam operations relative to overall risk. This project helped provide stakeholders with a better understanding of the dam's risk levels.</i>
11	A49 - Highland Creek Hydrology & Floodplain Mapping	Jul-18	Complete - Mar-20	10753	\$124,000.00	\$124,000.00	<i>This project entailed a comprehensive hydrology model and floodplain mapping update for the Highland Creek watershed within the City of Toronto. The project provided a new hydrology model for the Highland Creek, as well as the update of approximately 30 floodplain map sheets.</i>
12	Mimico Creek Floodplain Mapping Update	Oct-18	Complete - Mar-20	10739	\$31,000.00	\$31,000.00	<i>This project entailed a comprehensive floodplain mapping update of approximately 20 floodplain map sheets within the municipalities of the Cities of Brampton, Mississauga, and Toronto.</i>
13	A51 - Rouge River Watershed Floodplain Mapping	Oct-18	Complete - Mar-20	10738	\$167,000.00	\$167,000.00	<i>This project entailed a comprehensive floodplain mapping update of approximately 103 floodplain map sheets within the municipalities of the City of Toronto, Town of Richmond Hill, City of Markham, City of Pickering and the Town of Whitchurch-Stouffville.</i>

Attachment 1: National Disaster Mitigation Program (NDMP) Project Summary

	Project Name	Start Date	End Date	Account Code	TRCA/Partner Funding	Federal Program Funding	Project Outcomes / Outline
14	Downtown Brampton Flood Protection EA (Brampton Riverwalk - <b>Partnership with City of Brampton</b> )	Oct-18	Complete - Mar-20	*Funded by City of Brampton	\$1,500,000.00	\$1,500,000.00	<i>In partnership with the City of Brampton, the purpose of this endeavour was to identify a sustainable preferred alternative to eliminate the risk of flooding to Downtown Brampton from the Etobicoke Creek, up to the Regulatory Event (Regional Storm - Hurricane Hazel), while taking into consideration the natural, social, cultural and built environment, and complementing Brampton's Urban Design and Land Use Study Objectives.</i>
15	Toronto Island Flood Characterization and Risk Assessment ( <b>Partnership with City of Toronto Parks</b> )	Oct-18	Complete – Jun-19	*Funded by City of Toronto	\$150,000.00	\$150,000.00	<i>The focus of TRCA's previous risk assessment applications was on riverine flooding, and did not include the Toronto Islands. This flood characterization and risk assessment project helped facilitate an understanding of lake-based flood hazards, community and infrastructure vulnerabilities, potential impacts and risk to residents and municipal assets, which in has been used to inform further structural and non-structural flood mitigation investments. This project was used to inform proactive mitigation and response work in anticipation of high water levels.</i>
	NDMP INTAKE #5						
16	Duffins Creek Watershed Floodplain Mapping Update	Apr-19	Complete – Sep-20	10770	\$110,000.00	\$110,000.00	<i>This project entailed an update of approximately 73 floodplain maps for the Duffins Creek watershed within the City of Pickering and Towns of Ajax and Uxbridge in Durham Region, and the City of Markham, and Town of Whitchurch-Stouffville in the Region of York, using new topographic information based on LiDAR, as well as the results from the 2012 Duffins Creek Hydrology Update.</i>

Attachment 1: National Disaster Mitigation Program (NDMP) Project Summary

	Project Name	Start Date	End Date	Account Code	TRCA/Partner Funding	Federal Program Funding	Project Outcomes / Outline
17	Next Generation Flood Forecasting and Warning System Development	Apr-19	Complete – Mar-20	10774	\$75,000.00	\$75,000.00	<i>This project piloted the development of a next-generation flood forecasting and warning decision support system using Delft-FEWS, which will lay the groundwork for site specific flow forecasting at critical areas, as well as enhanced, real time now-casting.</i>
18	Petticoat Creek Watershed Hydrology Update	Apr-19	Complete – Mar-20	10771	\$40,000.00	\$40,000.00	<i>This project entailed a comprehensive hydrology update of the Petticoat Creek watershed within the City of Pickering in Durham Region. The previous hydrology update was completed in 2005 and was developed using the best available information of the time.</i>
19	Pickering Ajax Dyke Rehabilitation Environment Assessment	Apr-19	Complete – Aug-20	10769	\$250,000.00	\$250,000.00	<i>In April 2018, TRCA completed a study of the flood control infrastructure located within the Pickering and Ajax SPAs within the City of Pickering and Town of Ajax in Durham Region. The study included a number of technical assessments intended to characterize the conditions of the flood control dykes. This project furthered flood protection work through the completion of an Environmental Assessment which identified a preferred dyke restoration plan, balancing flood mitigation requirements with impacts to the environment, social needs, and cost.</i>
20	Flood Emergency Management Plan for the TRCA	Apr-19	Complete – Mar-20	10773	\$50,000.00	\$50,000.00	<i>Building on the Intake 1 flood risk assessment, this project involved the development of comprehensive site-specific flood risk packages to facilitate emergency response actions within select flood vulnerable areas located within the Toronto and Region Conservation Authority jurisdiction. This project also included enhancements to TRCA monitoring sites.</i>

Attachment 1: National Disaster Mitigation Program (NDMP) Project Summary

	Project Name	Start Date	End Date	Account Code	TRCA/Partner Funding	Federal Program Funding	Project Outcomes / Outline
21	Black Creek at Rockcliffe Special Policy Area Flood Remediation and Transportation Feasibility Study	Apr-19	Complete – Mar-20	10772	\$200,000.00	\$200,000.00	<i>The Rockcliffe Special Policy Area was ranked as having the highest riverine flood risk among TRCA's Flood Vulnerable Clusters. Many of the properties in the area have experienced surface and basement flooding during severe storms, due to riverine flooding and/or overloading of the local sewer systems. TRCA and the City of Toronto have been coordinating efforts to reduce flooding risks in the Rockcliffe area, completing two separate EA studies that examined options to reduce riverine and sewer system related flooding, respectively, in 2014. This study involved the development of flood remediation options that focused on maximizing functional flood protection to the properties at the highest risk of riverine flooding, while assessing transportation, utility, and geomorphic considerations.</i>

### 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**

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#### 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 (2009-2018) 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



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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

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- [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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**Date: October 9, 2020**

**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



## TRCA Invasive Species Management Strategy 2020-2025

November 2020

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## INTRODUCTION

### What Are Invasive Species?

The term “invasive” species has been used in different ways and often interchangeably with “alien”, “non-native”, “exotic”, and “introduced” in the literature (Richardson et al. 2000, Woods and Moriarty 2001, Blackburn et al. 2011, Carruthers et al. 2011). There are multiple frameworks available in literature that facilitates these terminologies and associated definitions. One of the widely adopted invasion framework is provided by Richardson et al. (2000) that views invasion as a series of barriers that a species navigates to establish itself so as to become naturalized or expand to become invasive (Emerton and Howard 2008, Blackburn et al. 2011). Thus, many official definitions distinguish the differences between these various terms and emphasize that “invasive” refers to the introduced or alien species that have the potential to cause significant changes to the ecosystems in which they are introduced.

The Global Invasive Species Programme and The World Conservation Union describes that the biological invasion occurs when a species enters a new environment, successfully establishes itself, changes the native species population and composition, and eventually disrupt the balance of plants and animal communities (Emerton and Howard 2008). Convention on Biological Diversity defines Invasive Alien Species (IAS) as species whose introduction and/or spread beyond their natural past or present distribution threatens biological diversity (Convention on Biological Diversity 2010). Government of Canada (2004) and Ontario Ministry of Natural Resources (2020) further elaborates that IAS are harmful non-native species, whose introduction or spread threatens the environment, economy, and/or society where their overall cost outweighs their beneficial aspect.

For the purposes of TRCA Invasive Species Management Strategy, IAS are defined 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 (Appendix 1 – *in progress*).

This Strategy also recognizes that not all non-native species are invasive, and that some native species can also show invasive characteristics. The latter are often perceived as less problematic and are attributed to the dynamic nature of ecosystems (DeLoach 1991, White et al. 1993). Box 1 provides a key difference between non-native and Invasive species. There is also an ongoing debate regarding what is considered native, including the reference time period used to make that judgement (Richardson et al. 2000, Guiasu 2016). More fulsome discussion on these debates are outside the scope of this Strategy and the reader are recommended to see Richardson et al. 2000 for more details.

#### **Non-Native versus Invasive Species**

**Non-native:** Any species whose presence in an ecosystem is due to intentional or accidental introduction as a result of human activity (synonyms: alien, exotic, non-indigenous).

**Invasive:** Any non-native species whose introduction and spread in an ecosystem can pose significantly greater harm to the environment, economy and society compared to any potential benefit they might provide

## Impacts of IAS

IAS can have variety of direct and indirect environmental and socio-economic impacts. This Strategy acknowledges that most of IAS impacts are intertwined and are not separate entities, nevertheless for the purpose of discussion they are classified below as the ecological, economic, and societal impacts.

### Ecological Impacts

IAS are considered a global threat to biodiversity and ecological stability (Simberloff 2000). A global assessment on biodiversity and ecosystem services identified that IAS is the fifth major driver for biodiversity loss globally (IPBES 2019). It highlighted that globally IAS has increased by 40% since 1980, mostly associated with increased trade and human population dynamics. It estimated that nearly one fifth of the Earth's surface is at risk from IAS impacting native species, ecosystem functions, and services that contribute human health and well-being. The rate of introduction of new IAS seems ever increasing with no signs of slowing, which may pose future threats to ecosystem and biodiversity (IPBES 2019). In Canada, about 24% of listed Species at Risk (e.g. American chestnut (*Castanea dentata*), eastern pondmussel (*Ligumia nasuta*) and American ginseng (*Panax quinquefolius*)) is estimated to be threatened with extinction due to IAS (Stronen 2002). In the Great Lakes there are about 160 IAS including sea lamprey (*Petromyzon marinus*) and zebra mussel (*Dreissena polymorpha*) that may have influenced the extinction of the native species such as deepwater cisco (*Coregonus johannae*) and native bivalve molluscs from some areas (Government of Canada 2004). Similar examples can be seen in urban areas where IAS such as emerald ash borer (*Agrilus planipennis*) and Asian long-horned beetle (*Anoplophora glabripennis*) have caused substantial damage to the various hardwood tree species (Government of Canada 2004).

In Toronto and region, there are anecdotal observations related to invasive species and wildlife impacts. For example, ovenbird (*Seiurus aurocapilla*), a ground-nesting forest bird, was observed in mature deciduous forest but disappeared when the understory became infested with dog-strangling vine (DSV) (*Vincetoxicum rossicum*). Similarly, historic populations of blue toadflax (*Nuttallanthus canadensis*), silverrod (*Solidago bicolor*) and the federally and provincially endangered bashful bulrush (*Trichophorum planifolium*) disappeared from sites when DSV infested the areas. When DSV infested a small milkweed (*Asclepias syriaca*) meadow, monarch butterfly (*Danaus plexippus*) that were previously recorded there were no longer found. Subsequently the DSV was managed, and milkweed and monarchs returned. Nevertheless, it is worth noting that anecdotally some urban-adapted species seem to benefit from some invasive plants. For example, American Robins (*Turdus migratorius*) readily eat the fruits from many exotic species, including European buckthorn (*Rhamnus cathartica*) and white mulberry (*Morus alba*) and in doing so assist in their spread.

### Economic Impacts

Several studies have highlighted economic impacts of biological invasions indicating billions of dollars' worth of environmental damage caused by invasive species (Pimentel et al. 2001, Born et al. 2005, Pimentel et al. 2005, Colautti et al. 2006, Olson 2006, Lovell et al. 2006).

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 (Environment Canada 2010). The cost of only 10 invasive species on fisheries, agriculture, and forestry is estimated to be \$187 million per year (Colautti et al. 2003).



In the Great Lakes it is estimated that the cumulative impact of zebra mussels (*Dreissena polymorpha*) ranges from \$3 billion to \$7.5 billion. The initial costs of zebra mussel control measures for Ontario Hydro alone were \$20 million, with an annual \$1 million in operating costs. In the prairies, a single invasive alien thistle species impacting a single crop, canola, is estimated to cost about \$320 million per year (Government of Canada 2004). Likewise, there are examples where intentionally introduced IAS creating massive economic costs such as kudzu vine (*Pueraria montana*), which was intentionally introduced into the southeastern United States to prevent soil erosion and has inadvertently caused millions of dollars of losses to timber productivity (Forseth and Innis 2004).

In Ontario, the direct cost of IAS control and management in natural areas by municipalities and conservation authorities are estimated to be \$50.8 million which does not include the indirect cost associated with habitat degradation, costs of restoration, loss of recreational values etc. (Vyn 2019)

### Social Impacts

The social impacts of IAS are diverse and often complex. There are direct and indirect adverse 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 such as allergies caused by giant hogweed (*Heracleum mantegazzianum*) and ragweed (*Ambrosia artemisiifolia*) (Cavin and Kull 2017). In addition, the IAS management often brings up societal uncertainties and controversies about social values, achievability, efficiency, social fairness, trade restrictions, and ethical implications (Crowley et al. 2017). This includes debate over use of chemical and biological control agents as well as large scale removal practices that may spark wide range of human interests and values.

For example, common reed or Phragmites (*Phragmites australis*) invaded the shoreline of Grenadier Pond in Toronto's High Park resulting in concerns from the local community regarding aesthetics about the pond being blocked from view. Subsequent efforts to manage Phragmites using pesticide application also resulted in concerns from the local community who oppose the use of pesticides. Boaters at Frenchman's Bay in Pickering have complained about Eurasian water-milfoil (*Myriophyllum spicatum*) where dense mats of the plant become tangled in boat propellers. A local community group approached the City requesting funding biocontrol (milfoil weevil *Euhrychiopsis lecontei*). The City agreed to partially fund the biocontrol program for 5 years but raised concerns about the cost and efficacy of the program over the long-term.

### Rationale for IAS Management

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 wide range of environmental conditions (CBD 2010). When IAS are introduced to a new ecosystem, it may not have the natural predators and competitors present in its native environment that would normally control their populations (CBD 2010, Government of Canada 2017). 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 (CBD 2010). As such, the overarching goal for IAS management is to prevent the undesirable impacts and ensure that the ecosystem function and services are resilient over long term.



## Managing IAS in an Urban Context

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, available management resources are often limited, and opportunities for successfully managing invasive species are often restricted.

Urban areas are considered hotspots for invasive species as they possess characteristics that make them susceptible to biological invasion (Gaertner et al. 2017). Potgieter et al. (2020) identifies five major reasons for this. First, urban areas are hubs for the introduction of IAS, both intentionally and accidentally, mostly associated with human activities. Second, the availability of widespread and persistent seed source, especially for those IAS used for ornamental horticulture, aquaculture and the pet trade, increases the likelihood of their establishment and persistence (Pyšek 1998, Kowarik et al. 2013). Third, the variety of dispersal pathways and vectors in cities facilitate their rapid spread, both within urban core and into surrounding natural and semi-natural ecosystems (Alston and Richardson 2006, McLean et al. 2017, Padayachee et al. 2017). Fourth, altered disturbance regimes, complex physical structures, and increased resource availability associated with concentrated human activities create opportunities for the establishment, reproduction and proliferation of many alien species (Cadotte et al. 2017). Fifth, the alteration of biotic conditions, microclimatic conditions, hydrology, and soils are important mediators of the patterns and processes of biological invasions in urban ecosystems (Klotz and Kühn 2010). Accounting and managing for all these aspects of urban invasion are important for successful IAS management and requires a strategic approach with strong commitment in terms of financial and management resources over long term.

Another dimension of IAS in an urban context include the recognition that in highly altered areas with persistent disturbances (e.g. fragmented remnant forest patch in a densely populated urban core), IAS may provide and sustain some key ecosystem functions and services, which otherwise might not have been present (Elmqvist et al. 2008). These include urban heat island effect mitigation, providing accessible greenspace and recreation opportunity, soil stability, flood attenuation, erosion protection, and habitat (or stepping-stones within a fragmented area) for urban adapted species. In these situations, IAS management should consider a range of options, including adapting and managing for an altered state rather than focusing solely on control of invasive species, which may result in unintended consequences such as slope failures, increased flood risk, removal of an urban food source, decreased recreation opportunities etc. In addition, these consequences may spark social issues such as public opposition to management actions, especially if there are diversity of stakeholders who have different perceptions of IAS.

This underscores the complexity involved in IAS management within an urban context, where management

### **Invasive Species in an Urban Context**

Urban areas often have IAS in their natural areas. The pervasiveness of these IAS may depend on multiple bio-physical and socio-economic factors including the extent of IAS management being undertaken. Given that the IAS impacts are largely negative, the management focus is on control and eradication of IAS. However, in highly altered areas with harsh bio-physical conditions, some of the established IAS may be the only source of desired ecosystem function and services (e.g. erosion control, thermal regulation). In such cases, the complexity involved in IAS management should be recognized and a wide range of management options should be considered including adapting to the altered state to avoid unintended consequences.

actions are expected to focus on achieving multiple objectives for both ecosystem health and human well-being. For effective invasive species management in urban landscapes, it is imperative to understand the costs and the benefits of various management actions and inactions. This requires a strategic invasive species management framework, which includes identification of priority areas and species of major significance for management (Lookingbill et al. 2014, Potgieter et al. 2018).

### Managing IAS in TRCA context

IAS management is an important component for TRCA operations for both environmental (e.g. greenspace management) and socio-economic (e.g. responding to human health risks) reasons. TRCA and its partner municipalities have repeatedly expressed a strong commitment to healthy ecosystems that provide multiple ecosystem functions and services that are critical for human health and well-being. TRCA's *The Living City Policies, 2014* (LCP) highlights TRCA's mission to work with our partners to ensure that The Living City® is built on a natural foundation of healthy rivers and shorelines, greenspace and biodiversity, and sustainable communities. It acknowledges that the loss of native biodiversity and the proliferation of invasive species are a growing threat to local ecosystem function and that both land use and climate change are expected to exacerbate these issues. Accordingly, the LCP contains policies to recommend a natural approach to the landscaping adjacent to natural heritage systems with native, non-invasive and locally appropriate species.

The TRCA Strategic Plan (2018) includes several strategies, for which successful IAS management is a necessity. This includes managing our water resources for current and future generation (Strategy 2), rethinking greenspace to maximize its value (Strategy 3), foster sustainable citizenship (Strategy 5) and gather and share the best sustainability knowledge (Strategy 8). To achieve these, TRCA recognizes the need to enhance its ability to identify new and existing threats from IAS to strategically protect, manage, enhance and restore ecosystem functions and services, and promote public awareness and stewardship.

One of the key aspects of IAS management at TRCA is associated with it being one of the largest landowners in the GTA. TRCA and its partners operate its land holdings to serve several different purposes, including provision of nature-based recreational activities. Recreational activities are excellent ways to engage general public with nature, however they can also increase the risk of IAS spread. For example, recreational angling can result in the unintentional introduction of IAS (including pathogens) within a waterbody through live baits etc. Likewise, in some cases the public intentionally release IAS in water bodies to dispose of unwanted pets (e.g. red-eared sliders (*Trachemys scripta elegans*), goldfish (*Carassius auratus*)) or plant invasive horticultural plant species into natural areas or through "guerrilla" gardening. Improving education and awareness are key methods to address these issues, which can also be complemented by the creation and enforcement of specific policies (e.g. no live bait areas).

In addition, to fulfill its mandate to connect people with nature, TRCA is responsible for planning and implementing recreational trails in its properties. Well-planned and designed formal trails provide the public with safe access to nature, while allowing for conservation of ecosystem function and services). However, formal and informal trails can also introduce new pathways and vectors for IAS spread. The TRCA Trail Strategy (2019) includes "steward" as a guiding principle, which identifies the need to carefully plan new trail alignments and support stewardship of our natural resources. It also includes a number of strategic objectives and initiatives that reference the importance of sound planning, implementation, monitoring and adaptive management to help ensure ecosystem functions and services are protected and restored.

There are other programs under TRCA's mandate that may increase the risk of IAS introduction and spread in new areas. These are mostly associated with increased soil disturbance during forest management activities, the inland fill program, erosion control programs and even ecological restoration. TRCA recognizes that land management and land care practices must acknowledge IAS as a primary consideration before initiating such projects or programs and take steps to mitigate and restore over the long term. Best management practices such as species specific BMPs and the *Clean Equipment Protocol* (OIPC 2016) (Appendix 2) should become standard internal practices.

Lastly, the Planning and Development and Environmental Assessment permitting processes regularly flag the need for IAS management. Nevertheless, the recommended course of actions and approaches vary by municipality, which often pose challenge for consistent IAS management. TRCA recognizes the need to foster collaboration and work in partnership with its municipal partners and other stakeholders to facilitate consistent IAS management across TRCA jurisdiction.

## Examples of IAS Initiatives

As of 2017, IAS in Canada account for at least 27% of all vascular plants, 181 insects, 24 birds, 26 mammals, 2 reptiles, 4 amphibians, 55 freshwater fish, several fungi and molluscs, and an unknown number of species that have not yet been detected (BioDivCanada 2017a). At a national scale, an Invasive Alien Species Strategy for Canada (IASSC) was developed and approved by federal, provincial and territorial governments in 2004. It focuses on minimizing the risk of IAS to the environment, economy and society through a hierarchical approach that prioritizes prevention, early detection, rapid response and management (Environment Canada 2004). Subsequently the federal government committed \$85 million over five years (2005–2010) to initiate the implementation of the IASSC including formation of the Invasive Alien Species Partnership Program (IASPP). About 141 projects targeting 277 IAS have been funded by IASPP between 2005 and 2010. Most of the projects focused on increasing stakeholder engagement, increasing IAS understanding and awareness to minimize the IAS risk, expanding species inventories and monitoring to detect the presence of new IAS infestations and the development of management activities to reduce the impact of established IAS (Environment Canada 2010). Since then, the federal government has continued to identify IAS as a shared priority with provincial and territorial governments and a Federal-Provincial-Territorial IAS Task Force was formed in 2015 (BioDivCanada 2017b). Furthermore, the 2020 Biodiversity goals and targets for Canada include the target: "By 2020, pathways of invasive alien species introductions are identified, and risk-based intervention or management plans are in place for priority pathways and species." (Government of Canada 2017, BioDivCanada 2017a).

Nationally, the Invasive Species Centre (ISC) is a non-profit organization dedicated to the prevention and spread of high-risk IAS in Canada by connecting stakeholders with knowledge and technology. They work with experts and stakeholders to identify priorities and gaps in knowledge, tools and resources. Programs under the ISC include Forest Invasives Canada and Asian Carp Canada.

At the provincial scale, the *Ontario Invasive Species Strategic Plan* (2012) (OMNR 2012) provides direction on how Ontario will meet the goals outlined in the federal IAS strategy. In 2015, Ontario passed the *Ontario Invasive Species Act* (2015), which sets out regulations to prevent and control the spread of invasive species. Species regulated under the act pose a risk to Ontario's natural environment. Based on the biological characteristics, risk of harm to the natural environment, ability to disperse, and social and economic impacts,

the overall IAS risk was assessed to identify two classes of IAS to be regulated under the act: prohibited and restricted. Both classes include IAS that are illegal to import, deposit, release, breed/grow, buy, sell, lease or trade with some exceptions. In addition, it is also illegal to possess, and transport prohibited species (OMNRF 2020).

The Ontario Invasive Plant Council (OIPC) is a chapter of the Canadian Council on Invasive Species and the primary provincial coordinating body for invasive plant management in Ontario. This non-profit organization provides citizens and organizations with practical tools and information to mobilize and engage communities and agencies to undertake prevention and management activities. Programs under the OIPC include the Ontario Phragmites Working Group (OPWG) and the *Grow Me Instead* guide.

The Ontario Invading Species Awareness Program (ISAP) is a program of the Ontario Federation of Anglers and Hunters (OFAH) in partnership with the MNRF. Its objectives are to generate education and awareness of Ontario's aquatic and terrestrial IAS, address key pathways contributing to introduction and/or spread, and facilitate monitoring and early detection initiatives for IAS across Ontario. The ISAP also operates a toll-free hotline where the public can speak with an invasive species expert and report sightings.

EDDMapS (Early Detection and Distribution Mapping System) is a web-based mapping system for documenting IAS distribution developed by the Center for Invasive Species and Ecosystem Health at the University of Georgia. The system allows participants to submit their observations or view results through interactive queries into the EDDMapS database. All information is reviewed to ensure accuracy and, once verified, is made freely available. EDDMapS Ontario is a program specific to the province that was developed through support from the ISC, OFAH and MNRF.

At the municipal scale, there are multiple IAS management initiatives that support local policies, plans, programs, and projects. These include development of IAS management strategies (BiodivCanada 2017a), best management practices guidelines (OIPC), and targeted IAS control for various operational reasons such as habitat management, restoration projects, maintenance of recreational uses (for complete list see OIPC 2012). In addition, there are policies on IAS management in municipal Official Plans as well as TRCA's the LCP (TRCA 2014) to allow for a functioning ecosystem and communities across the region. Several of TRCA's partner municipalities either have invasive species strategies or consider invasive species management through the implementation of forestry, parks and other community programs and initiatives. For example, the City of Toronto's Biodiversity Strategy and Ravine Strategy both have regard for invasive species management.

TRCA has been actively managing invasive species 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, controlling, and treating invasive species, restoring invasive-dominated habitat on TRCA properties, and promoting public awareness. Some examples of this work include participation in the development of the Ontario Invasive Plant Council's *Grow Me Instead* guides (OIPC 2020), community-based IAS management (e.g. garlic mustard pull events), Asian long-horned beetle surveillance, sea lamprey control, buckthorn, dog-strangling vine and Phragmites management at select sites, and emerald ash borer hazard tree management (TRCA 2012).

## GUIDING PRINCIPLES, GOAL, AND OBJECTIVES

### Guiding Principles

TRCA strives to protect and enhance ecosystem health and community well-being through various plans, programs, projects, and initiatives. This includes undertaking various initiatives and actions that is focused on invasive species management, especially if it is strategic and effective in achieving TRCA goals and objectives related to ecosystem function and services. The TRCA ISM Strategy has established the following five guiding principles to inform TRCA actions that relate to invasive species management directly or indirectly.

1. TRCA will strive to ensure that its **actions do not exacerbate the spread** of invasive species while balancing the other objectives of TRCA and its municipal partners.
2. TRCA staff will **stay up to date on science and best practices** related to invasive species management.
3. TRCA will **continuously test, evaluate, and refine** our ecosystem management practices adapting to changing conditions and incorporating updated information.
4. TRCA will **recognize that in human dominated areas invasive species may provide ecosystem functions** and services that are important for community well-being that otherwise would not be present and will account for these in decision-making.
5. TRCA will **recognize that partnerships, collaboration and cooperation** with municipalities, other Conservation Authorities, stakeholders, and other organizations are crucial for successful and strategic invasive species management.

### Goal and Objectives

The TRCA ISM Strategy provides a systematic, consistent, and coordinated framework that outlines TRCA's goal and four objectives for managing IAS and provides guidance on appropriate actions at both local and regional scales.

#### **Goal**

TRCA's goal for IAS management is 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.

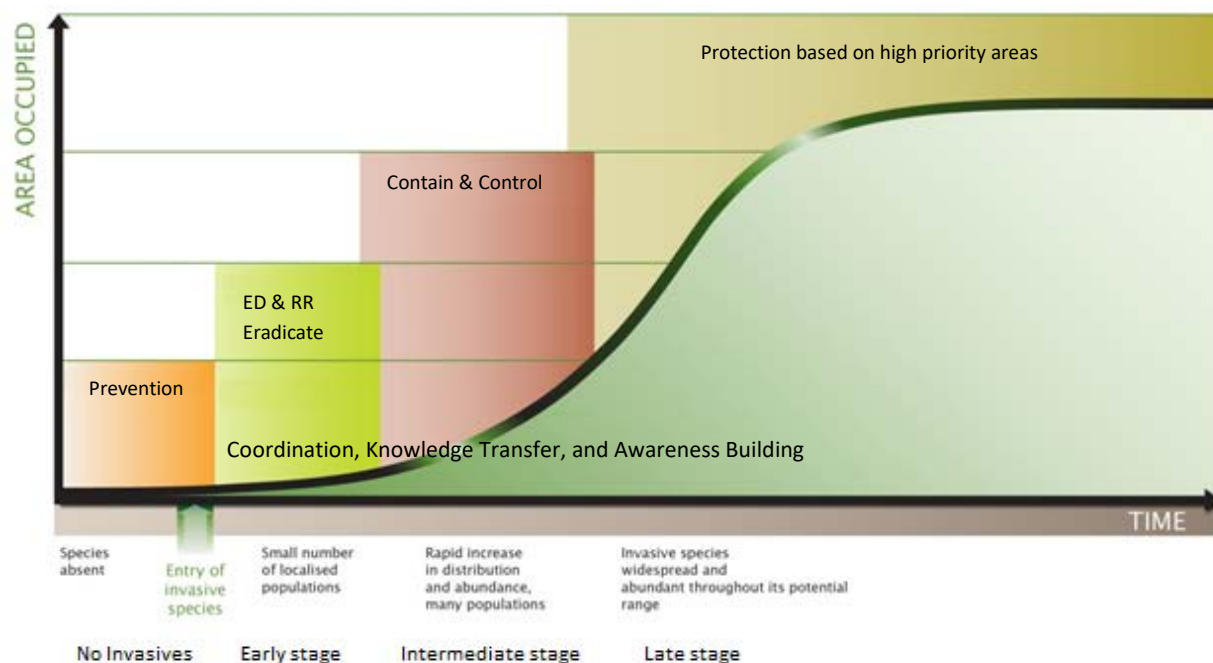
#### **Objectives**

The four objectives outlined below provide a comprehensive approach to achieving TRCAs goal. The actions outlined in section three are organized around each of these 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**

The goal and objectives align well with the general invasion curve and framework for invasive species management illustrated in Figure 1. The figure summarizes the various stages of invasion and the appropriate and realistic objectives for management within the context of the time and effort required.

In early phases of invasion, when there is no or low coverage of invasive species the objective might be to prevent or eradicate problematic species, respectively. As time progresses, areal coverage of the invasive species may be larger and the objective may be to protect strategic assets such as areas important for ecosystem function or service, rather than complete eradication. The TRCA ISM Strategy recognizes this context-dependency and acknowledges that the target objective for invasive management may, and often should, differ to increase the prospects of success. In addition, the importance of coordination, collaboration, and partnerships with various stakeholders at multiple scales in all stages of invasive species management is underscored throughout the TRCA ISM Strategy.



*Figure 1: General invasion curve showing different objectives for management actions corresponding to the invasion stages and area occupied (spread) of invasive species. These include (i) Prevention, early detection and rapid response (ED & RR), (ii) Eradicate, contain, control, (iii) Protection of high priority areas, and (iv) Coordination, knowledge transfer, and awareness building (Adapted from: Harris et al., 2018)*

Throughout the various stages of invasion curve, a multitude of management actions are needed to achieve the objectives identified above. However, to ensure success there are certain pre-requisites for each project to consider, such as adequate funding and commitment of funds for the entire duration required for successful control. Appendix 1 provides a broad self-assessment framework that highlights some of the major parameters to consider before undertaking ISM projects to ensure success.

## OBJECTIVES, ACTIONS, AND SUCCESS CRITERIA

The TRCA ISM Strategy highlights four objectives and 10 actions that are important to realize the overall goal. Each action contains specific recommended tasks that are necessary to achieve them. Given that most of these tasks apply to multiple actions, they are summarized in Section 4, Table 1.

To facilitate effective implementation and tracking, high-level success criteria are also provided for each objective. This ensures that ultimate outcome can be measured to evaluate the successful implementation of the strategy.

### Objective 1: Prevention, Early Detection and Rapid Response

*Action 1:* Promote and undertake strategic monitoring and use other external data sources to identify threats and risks to ecosystem function from emerging IAS in the jurisdiction or new infestation of established *high priority invasive species* (Appendix 2) in natural areas across TRCA's jurisdiction. Regularly review monitoring data to assess changes in invasive species extent/density over time.

*Action 2:* Promote and undertake activities to prevent introduction of all new *high priority invasive species* in natural areas across TRCA's jurisdiction, as appropriate.

*Action 3:* Initiate rapid response activities in areas where early detection of a *high priority invasive species* is confirmed.

#### **Success Criteria**

- a. Establishment of monitoring sites and monitoring plan for emerging *high priority invasive species* in key natural areas across TRCA's jurisdiction.
- b. Data collection on new (previously absent) *high priority invasive species* in natural areas across TRCA's jurisdiction.
- c. Prevention of identified *high priority invasive species* from being established in natural areas owned and/or managed by TRCA.

### Objective 2: Eradication, Containment, and Control

*Action 4:* Use remote sensing, citizen science and where necessary strategic monitoring to identify threats and risks to ecosystem function from established *high priority invasive species* in natural areas owned and/or managed by TRCA.

*Action 5:* Undertake strategic and targeted management of established *high priority invasive species* with other agencies and partners to eradicate, contain, and/or control in natural areas owned and/or managed by TRCA, as appropriate.

#### **Success Criteria**

- a. Establishment of monitoring sites and monitoring plan for established *high priority invasive species* in key natural areas owned and/or managed by TRCA.
- b. Data collection on established *high priority invasive species* in natural areas owned and/or managed by TRCA.
- c. Decrease in IAS richness and extent within the properties owned and/or managed by TRCA.



## Objective 3: Protection of High Priority Areas

*Action 6:* Undertake systematic monitoring to identify threats and risks to ecosystem function from *high priority invasive species* in *high priority areas* for ISM.

*Action 7:* Undertake actions to prevent introduction of all new and established *high priority invasive species* in *high priority areas*.

### **Success Criteria**

- a. Establishment of monitoring sites and monitoring plans for all *high priority invasive species* in all *high priority areas*.
- b. Data collection on all *high priority invasive species* in all *high priority areas*.
- c. Decrease in invasive species richness and extent in *high priority areas*.
- d. Maintain or increase in the number of hectares of *high priority areas* managed annually by TRCA.

## Objective 4: Coordination, Knowledge Transfer and Awareness Building

*Action 8:* Facilitate collaboration among partners in coordinating ISM efforts.

*Action 9:* Contribute to the development of best management practices (see Appendix) through partnerships with local and international researchers, regulators, and practitioners.

*Action 10:* Engage and educate community members and other partners in stewardship activities that prevent the introduction and spread of invasive species and protect ecological functions and services.

*Action 11:* Achieve comprehensive internal awareness of invasive species implications for ecosystems and the availability of best management practices.

### **Success Criteria**

- a. Development of comprehensive data on ISM projects and locations in natural areas across TRCA jurisdiction including *high priority areas*.
- b. Increased communication, engagement, and coordination among partners (municipalities, provincial and federal governments, researchers, community groups) including increased awareness of respective projects and work plans, research partnerships and sharing of resources.
- c. Attendance and presentations at conferences and other forums (e.g. webinars).
- d. Membership and leadership roles when applicable in invasive species organizations (e.g. OIPC).
- e. Community participation in invasive species education programs and stewardship activities and follow up monitoring for effectiveness.
- f. Increased number of TRCA projects that incorporate invasive species considerations.
- g. Completion of ISM training for all TRCA staff involved in ecosystem management or any fieldwork.



## TASK LIST FOR SUCCESSFUL IMPLEMENTATION OF ISM STRATEGY

Table 1 below identified specific tasks required to achieve the four objectives and 10 actions of the TRCA ISM Strategy. Completing these tasks will involve working collaboratively with TRCA partners to identify needs and achieve multiple benefits. Timelines will vary in length and some have already been initiated as indicated. Priority of tasks has not included but will come about as partnerships, partner objectives and projects arise.

**Table 1. Task list aligned with the 10 actions identified in the TRCA ISM Strategy**

Required Tasks (not in the order of priority)	Description	Linked to the 10 Actions	Status
1. Form a working group of internal staff and external partners for ISM.	To facilitate a coordinated approach to ISM including monitoring efforts and sharing data	All	Ongoing
2. Identify emerging and established high priority invasive species list.	To direct the strategic monitoring and ISM	All	Ongoing  Estimated completion - December 2020
3. Establish study design, plan, and tools for monitoring new and established high priority invasive species.	To facilitate a systematic monitoring of invasive species.	All	TBD
4. Develop a coordinated early detection and rapid response framework.	To help ensure new high priority species are identified and effectively addressed.	A1, A2, A3	TBD
5. Identify high priority areas for ISM.	To direct strategic protection of high priority areas from invasive species	A5, A6	Ongoing  Estimated completion - December 2020
6. Develop site and/or species-specific management plans (Invasive Species Management Plans ISMPs)	To direct on the ground control and public awareness and stewardship efforts	A1, A3, A5, A10	Ongoing
7. Establish experimental sites for active ISM by TRCA.	To monitor and evaluate management effectiveness and aid adaptive management.	A3, A4	Ongoing

8. Develop database of TRCA managed invasive project and locations.	To communicate, coordinate, and monitor the effectiveness of the management actions.	A7	Ongoing  TRCA Iceberg Database
9. Stay up to date on BMPs and contribute to BMP updates locally and globally.	To ensure TRCA is using the most effective approaches / techniques to manage invasive species.	A4, A6, A7, A8	Ongoing
10. Develop applied research partnerships with leading academic partners.	To address gaps in knowledge and inform best management practices.	A6, A7	Ongoing
11. Identify and secure additional and long-term funding from other sources.	To help ensure the sustainability and effectiveness of the TRCA invasive species program.	A5, A6	Ongoing
12. Develop engagement, outreach, communication, and education programs and tools (e.g. website, citizen science monitoring tools)	To engage public, community groups, and other stakeholders on the issue of invasive species and actions they can take to help.	A7, A8	Ongoing
13. Develop and deploy an invasive species online training module for all staff and field staff.	To ensure TRCA staff are up to date in ISM in all TRCA work and implement best practices in daily activities.	A8	TBD
14. Attain and/or maintain membership on the board of relevant organizations.	To help ensure coordination across TRCA jurisdiction and beyond.	A5, A6	Complete
15. Attend and present at influential conferences.	To stay up-to-date on the ISM and knowledge exchange.	A6	Ongoing
16. Develop a set of recommended policy statements for The Living City Polices and internal guidance.	To facilitate incorporation of ISM in all of TRCA operations.	A6, A8	TBD

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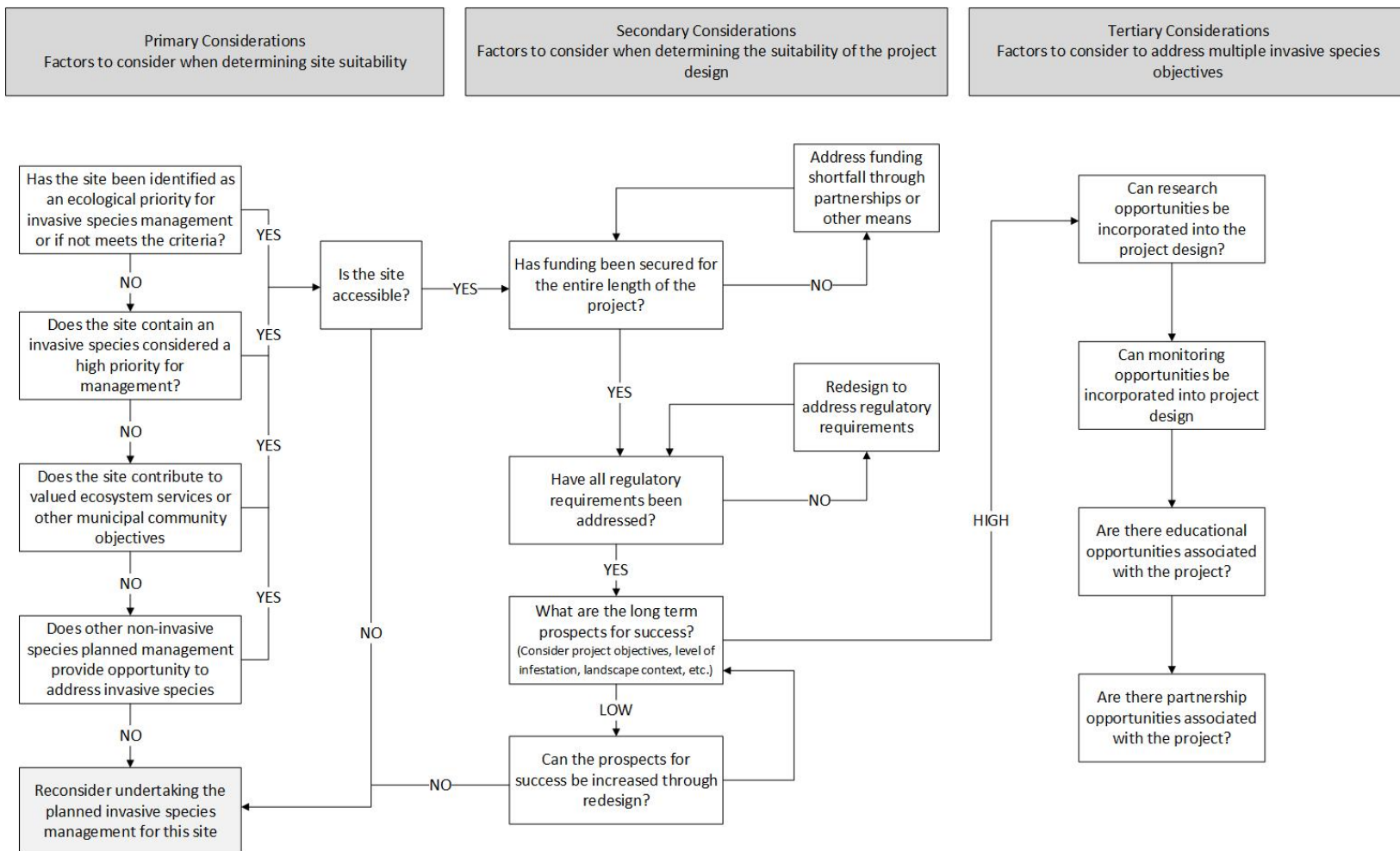
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## APPENDIX 1: DECISION SUPPORT FLOWCHART FOR SUCCESSFUL IAS MANAGEMENT

On the ground management of invasive species is led by Restoration and Infrastructure and Development and Engineering Services (for aquatic fauna), however other divisions may also undertake site-specific or program-specific initiatives including Parks and Culture, and Education and Training. In addition, the invasive species management may be recommended or initiated through other organizational needs such as through development and infrastructure planning and permitting processes or special projects or watershed planning processes. The following decision support flowchart provides a high-level guidance and considerations for initiating and sustaining site level invasive management.



## APPENDIX 2: BEST MANAGEMENT PRACTICES, TECHNICAL BULLETINS & MANAGEMENT PLANS

This Appendix is a living document and will be updated regularly as new content becomes available.

### **General**

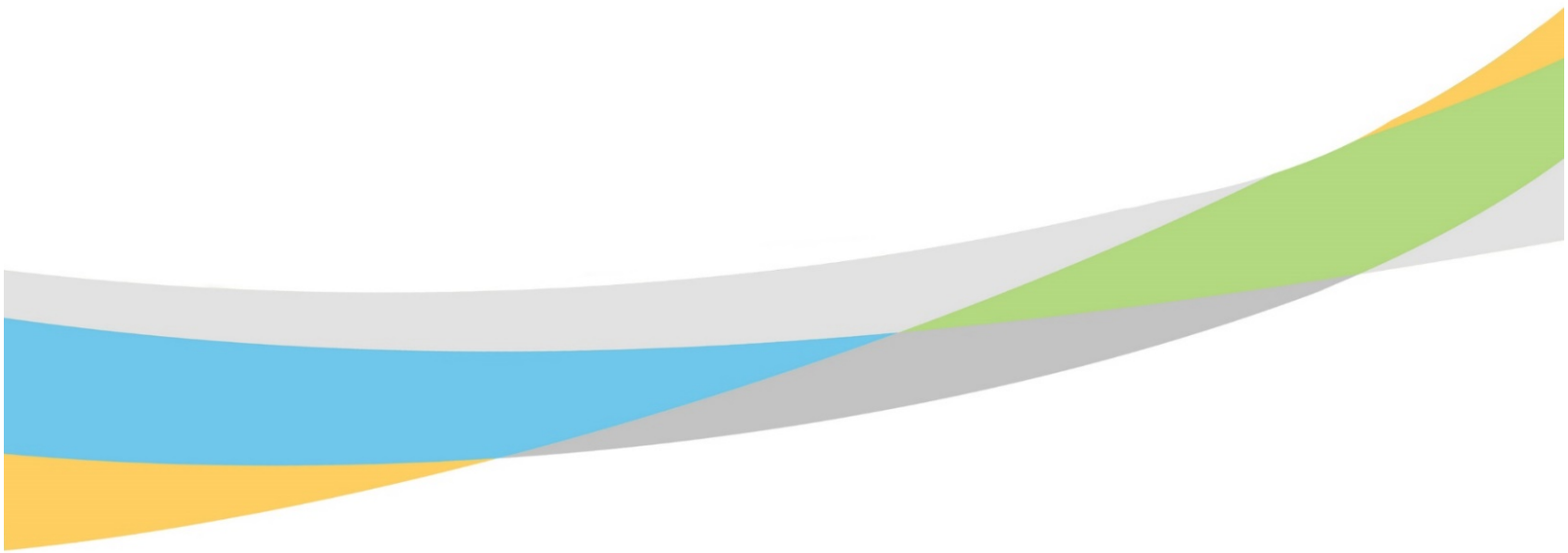
- a) [Clean Equipment Protocol](#), OIPC 2016
- b) [Grow Me Instead guide](#) (3<sup>rd</sup> edition), OIPC 2020

### **Invasive Flora**

- c) [Autumn Olive](#), OIPC 2018
- d) [Black Locust](#), OIPC 2016 & [Technical Bulletin](#), OIPC 2017
- e) [Buckthorn](#), OIPC 2012 & [Technical Bulletin](#), OIPC 2017
- f) [Dog-strangling Vine](#), OIPC 2012 & [Technical Bulletin](#), OIPC 2017
- g) [European Black Alder](#), OIPC 2014 & [Technical Bulletin](#), OIPC 2017
- h) [European Water Chestnut](#), OMNRF 2020
- i) [Garlic Mustard](#), OIPC 2012 & [Technical Bulletin](#), OIPC 2017
- j) [Giant Hogweed](#), OIPC 2012 & [Technical Bulletin](#), OIPC 2017
- k) [Himalayan Balsam](#), Metro Vancouver 2019
- l) [Invasive Honeysuckles](#), OIPC 214 & [Technical Bulletin](#), OIPC 2017
- m) [Invasive Phragmites](#), OMNR 2011 & [Technical Bulletin](#), OIPC 2017 & [Drowning & Spading Techniques](#), OPWG
- n) [Japanese Knotweed](#), OIPC 2012 & [Technical Bulletin](#), OIPC 2017
- o) [Multiflora Rose](#), OIPC 2018
- p) [Purple Loosestrife](#), OIPC 2016 & [Technical Bulletin](#), OIPC 2017
- q) [Reed Canary Grass](#), OIPC 2012 & [Technical Bulletin](#), OIPC 2017
- r) [Scots Pine](#), OIPC 2017
- s) [Spotted Knapweed](#), OIPC 2017
- t) [Water Solider](#), OMNRF 2020
- u) [White Sweet Clover](#), OIPC 2013 & [Technical Bulletin](#), OIPC 2017
- v) [Wild Parsnip](#), OIPC 2014 & [Technical Bulletin](#), OIPC 2017

### **Invasive Fauna**

- w) [Hemlock Woolly Adelgid](#), Natural Resources Canada 2018



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## Photographic Examples of Invasive Alien Species in TRCA jurisdiction



Figure 1. *Phragmites* infestation at TTP, Cell One (2017)



Figure 2. *Phragmites* monitoring plot at TTP, Cell One, showing density of *phragmites* (2018)





*Figure 3. Garlic mustard infestation at East Duffins Headwaters*



*Figure 4. Emerald Ash Borer adult*





*Figure 5. Dog-strangling vine along a TRCA trail*



*Figure 6. Dog-strangling vine infesting plantation at Claremont Conservation Area*





*Figure 7. Giant Hogweed infestation*



*Figure 8. Wild parsnip growing at a TRCA property*





*Figure 9. Round goby, captured during TRCA fisheries monitoring*



*Figure 10. Sea lamprey, captured during control activities*





*Figure 11. Japanese knotweed infestation at TTP*



*Figure 12. Gypsy moth adults and egg masses (image courtesy of Town of Oakville)*



TTP Phragmites Management at Cell 1 Wetland, 2018-2020



0 12.5 25 50 m

Vegetation: ■ Invasive ■ Native



### Section III – Items for the Information of the Board

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

**FROM:** Natalie Blake, Chief Human Resources Officer

**RE:** **SUCCESSION DEVELOPMENT PROGRAM (SDP)**

---

#### KEY ISSUE

Update on the development of Toronto and Region Conservation Authority's (TRCA) Succession Development Program (SDP).

#### RECOMMENDATION

**IT IS RECOMMENDED THAT this report on the development of TRCA's Succession Development Program be received.**

#### BACKGROUND

As part of the Five-Year Update to the Building The Living City 2013-2022 Strategic Plan, Strategy 11, *Invest in our Staff*, TRCA identified the creation of a succession plan as a project accomplishment for 2022.

At the Board of Directors Meeting #9/19, held on October 25, 2019, TRCA staff delivered a presentation on *TRCA Strategies to Achieve Strategic Plan Priorities*. The presentation provided an update on the Strategic Plan Priority 11, *Invest in Our Staff* and notably identified several strategic initiatives underway and forthcoming that supported TRCA's modernization efforts and achievement of TRCA's strategic priorities. One key initiative identified as a priority for talent management was succession planning.

As TRCA staff built momentum in the modernization of its human resources practices, developing critical talent management policies, programs and practices, the Senior Leadership Team in conjunction with human resources, turned its efforts to the creation of a value-driven Succession Development Program (SDP).

Across organizations succession planning has been rated as the least effective or second least effective area of human resources for five years in a row (McLean & Company HR Trends Report, 2014-2018). Organizations often focus on levels of top management without evaluating which critical roles add the most value to the organization, they build programs that are stand alone and not interlinked with other human resources talent management programs, and are often perceived to lack fairness in the identification of participants which can cause significant disengagement amongst employees.

With succession planning being a TRCA Strategic Plan priority, TRCA Human Resources took an integrated, evidence based, and inclusive approach to the development of our value-driven succession development program that is based on best practice research.

Key successes that will be driven out of the implementation of integrated succession development program, include:

- Increased organizational capability and capacity – through the availability of a high performing and qualified talent pipeline prepared to support critical roles.
- Proactively addressing talent scarcity within the labour market.

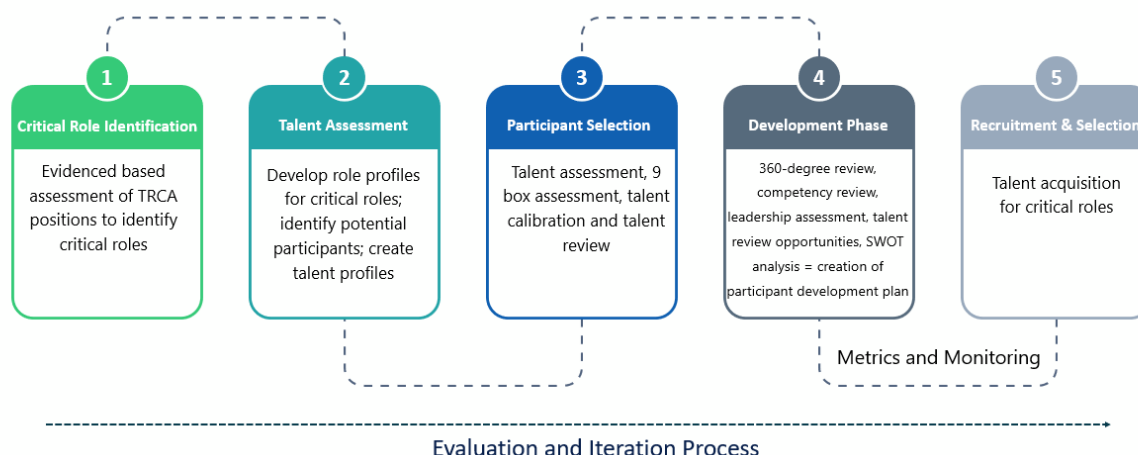


- Increased retention of institutional knowledge – providing the ability to retain, develop and grow internal TRCA intellectual capital (the succession process provides a mechanism for the transfer of vital intellectual capital).
- Increased business continuity – limited disruption when unexpected turnover occurs within critical TRCA roles; supports contingency planning.
- Improved employee engagement – succession program provides a visible investment in TRCA staff which positively impacts engagement.
- Increased employee retention through expanded career development opportunities.
- Reduced talent acquisition costs because of increased retention of top talent.

### RATIONALE

The foundation of TRCA's SDP is based on a process that focuses on the identification, assessment, development, and placement of the right talent in critical roles to ensure business continuity and continued high performance of TRCA. The program has an established continuous review cycle designed to monitor, evaluate, and calibrate the program to ensure the program is meeting TRCA's organizational needs.

**Figure 1 - Succession Development Program and Process**



### Program and Process Overview

1

#### *Critical Role Identification:*

- Clearly define critical roles established to ground decisions and evaluation.
- Determine evaluation methods for the assessment of critical roles.
- Senior Leadership Team assessment of critical roles using a standardized rating tool.
- Senior Leadership Team calibration exercise of identified critical roles.
- Finalize TRCA critical roles for first phase of succession planning.
- Develop role profiles for each of the critical positions. Role profiles to contain information on the skills, competencies, and other minimum requirements for the critical role.

2

#### *Talent Assessment:*

- Establish the process and criteria used for SPD employee identification.
- Establish process and methodology for employee talent assessment:
  - **Performance evaluations** – review of performance reviews.
  - **Talent Assessment** – assessment of role profile against individual employee talent profiles.
  - **9 box assessment** – a recognized gold standard assessment in the field of

## Item 9.1

Human Resources that provides an objective assessment of talent and assesses employees based on their performance and potential.

- **Talent calibration** – involves a comprehensive review and comparison of individual assessment results against peers
- **Talent review** – participants are identified; developmental and growth opportunities are assessed
- Create individual talent profiles for each potential participant to support the assessment process.

3

### *Participation Selection:*

- Complete talent assessment per the talent assessment methodology (as outlined above).
- Define participant readiness.
- Conduct talent calibration and talent review meetings with the Senior Leadership Team
- Identify program participants.

4

### *Development Phase:*

- The first stage of participant development is focused participant insight gathering:
  - 360-degree assessment.
  - Leadership assessment.
  - Competency review.
  - Use of role and talent profiles and any talent assessment results to identify gaps for development.
- Utilize the insight information, the participant will complete a SWOT analysis to identify strengths, weaknesses, opportunities and threats.
- With the SWOT information in hand, the participant, supported by their Divisional Director or Senior Manager, and Human Resources, will establish a development plan with clear objectives, required training, assigned projects, timelines and measures of success.
- Participants will complete required leadership training and any identified functional training.
- Participants will complete job shadow of critical role.
- Regular check-in with Divisional Director and/or Senior Manager and Human Resources for ongoing evaluation.
- Divisional Director and or Senior Manager will provide ongoing mentoring during the development phase.

5

### *Talent Acquisition:*

- Determine how critical roles will be filled where a vacancy presents itself:
  - To ensure a fair and transparent process and alignment with TRCA policies, critical role vacancies will be filled permanently via a formal recruitment process.

### Progress to Date

Prior to the commencement of the development of TRCA's SDP, TRCA's Senior Leadership Team and Human Resources were first required to build our core talent management policies, programs and practices that would be required to enable the succession program. To accomplish this, TRCA staff implemented a number of talent management programs, including a renewed integrated and interactive Performance Development Program (PDP), introduction of career and development planning connected to the performance development program, development of a robust competency framework both tied to TRCA's core values and critical leadership and senior leadership competency requirements, and introduction of a Learning and Development Program (LDP) that provides all TRCA management with a strong foundation in critical people management concepts and principles.

TRCA's Senior Leadership Team created a robust Project Charter, establishing a clear roadmap for the development of our SDP. Through the development of the Project Charter, a clear definition of succession, scope and project direction was established. Also, defined roles were ascertained for transparency and accountability through the evolution of the program. Furthermore, a steering committee was established to support the program and ongoing assessments and evaluations. Risks and mitigation strategies were assessed, and program goals and metrics were created to establish a clear definition of success.

With the roadmap in place, TRCA staff undertook an inventory of our enabling Human Resources program and processes to inform program design and ensure alignment with critical talent management programs. With this information in hand, the program has been built to directly link to TRCA's other talent management programs and processes, including TRCA's PDP, Competency Framework (leadership, manager, and individual contributor), LDP and talent acquisition processes.

TRCA's Senior Leadership Team undertook an evidenced based approach to define and identify critical roles within the organization. To commence the process, the Senior Leadership Team affirmed the definition of what a "*critical role*" is, which is defined as a TRCA position that is crucial to achieving organizational objectives, drives business performance, and includes specialized and rare competencies. Critical roles, by definition, also needed to be high in strategic value, which refers to the importance of the role in keeping TRCA functioning and executing on our strategic plan and objectives. The position also needed to be high in rarity, meaning challenging to find and develop the competencies in the position.

Based on the factors outlined above, the Senior Leadership Team endeavoured to identify and evaluate roles within their respective divisions through a comprehensive matrix, with evaluation based on six (6) criteria that tied back to the definition of a critical role. Following the evaluation, the matrix plotted each position as:

- **Critical:** A critical role is crucial to achieving TRCA objectives, drives business performance, and includes specialized and rare skills. Critical roles are high in strategic value and rarity.
- **Core:** A core role is related to operational excellence. It can be highly strategically valuable but easy to find or develop the skills or can be difficult to find or develop the skills but not crucial to TRCA's business strategy.
- **Supporting:** A supporting role is important in keeping the business functioning, however the strategic value is low, and it is easy to find or develop the competencies.

## Item 9.1

Following the assessment exercise, TRCA's Senior Leadership Team held calibration discussions to ensure the standardized rating-based process considered feedback and evidence to support outcomes. Following a few iterations of the evaluation process, the Senior Leadership Team was able to identify sixteen (16) critical roles within the organization.

Subsequent to the identification of TRCA's critical roles, TRCA staff commenced the development of role profiles for each critical position. The role profiles outline the skills competencies and other minimum requirements required for the position. The role profile will be used further in the SDP process to support talent assessment, participant identification and the development of participant development plans in the development phase of the program.

### **Relationship to Building the Living City, the TRCA 2013-2022 Strategic Plan**

This report supports the following set forth in the TRCA 2013-2022 Strategic Plan:

#### **Strategy 11 – Invest in our staff**

### **FINANCIAL DETAILS**

Work is underway to ensure that funds for training and learning and development within each division are coordinated and equitably distributed in a manner that supports the PDP, LDP, and SDP within existing operating budgets.

### **NEXT STEPS**

Following the completion of TRCA's 2020 PDP cycle in January 2021, the Senior Leadership Team will work with the Senior Management Team to identify talent via the SDP program pre-established criteria outlined in the programs Phase 2 – Talent Assessment. Upon completion of Phase 2, the Senior Leadership Team supported by Human Resources will work through Phase 3 – Participant Selection. Participants will then commence the Development Phase, with SDP growth and development occurring throughout the remainder of 2021.

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**Date: October 28, 2020**

**Attachments: 1**

Attachment 1: Succession Development Program - Critical Roles

## Item 9.1

### Attachment 1 - Succession Development Program - Critical Roles

Position*	Division	Definition
Chief Executive Officer	CEO's Office	Critical
Associate Director, Property and Risk Management	Corporate Services	Critical
Chief Financial and Operating Officer	Corporate Services	Critical
Chief Information Officer	Corporate Services	Critical
Associate Director, Development Planning and Permits	Development & Engineering Services	Critical
Associate Director, Engineering Services	Development & Engineering Services	Critical
Associate Director, Infrastructure Planning and Permits	Development & Engineering Services	Critical
Director, Development & Engineering Services	Development & Engineering Services	Critical
Senior Manager, Flood Infrastructure and Hydrometrics	Development & Engineering Services	Critical
Director, Education and Training	Education and Training	Critical
Chief Human Resources Officer	Human Resources	Critical
Director, Policy and Planning	Policy & Planning	Critical
Manager, Enforcement and Compliance	Policy & Planning	Critical
Associate Director, Construction Services	Restoration & Infrastructure	Critical
Associate Director, Engineering Projects	Restoration & Infrastructure	Critical
Director, Restoration & Infrastructure	Restoration & Infrastructure	Critical

*\*This list will be reviewed on an annual basis to account for new and changing roles.*

### Section III – Items for the Information of the Board

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

**FROM:** Sameer Dhalla, Director, Development and Engineering Services

**RE:** **2020 FLOOD INFRASTRUCTURE STATE OF REPAIR REPORT**

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#### KEY ISSUE

Report on the current state of repair of Toronto and Region Conservation Authority (TRCA) flood control infrastructure, including major deficiencies, and overview of dam safety regulatory guidelines, risk management approaches, and repair projects.

#### RECOMMENDATION

**IT IS RECOMMENDED THAT the 2020 TRCA Flood Infrastructure State of Repair Report be received.**

#### BACKGROUND

At Authority Meeting #4/13, held on May 24, 2013, Resolution #A87/13 was approved as follows:

*THAT the Toronto and Region Conservation Authority (TRCA) Flood Management Service Flood Infrastructure State of Repair Report be updated and reported to the Authority bi-annually.*

The last TRCA Flood Infrastructure State of Repair Report was presented at the Authority Meeting #9/16. This report was delayed to 2020 due to changes in the ranking of structure conditions and risk. These changes were made to align flood infrastructure condition assessments with TRCA's asset management plan criteria. This report further aligns with TRCA's 2017 Asset Management Policy terminology for structure condition assessment and consequence ratings.

The purpose of the report is to document the current state of repair of TRCA-owned flood infrastructure and to outline the major capital improvement projects that have been implemented or that are required in the future. Information on the process of identifying projects, funding sources, and the regulatory framework for dam safety in Ontario is also included in this report.

Strategy 2 of TRCA's *Building the Living City Strategic Plan 5-Year Update* outlines TRCA's objectives to mitigate known flood risks, which includes the operation, maintenance, and surveillance of flood infrastructure. Additionally, Conservation Authorities are mandated, under Section 21 of the *Conservation Authorities Act*, to ensure conservation, restoration, and responsible management of Ontario's water resources. Specifically, Section 21 empowers Conservation Authorities to:

- *erect works and structures and create reservoirs by the construction of dams or otherwise;*
- *control the flow of surface waters in order to prevent floods or pollution or to reduce the adverse effect thereof;*

## Item 9.2

As part of this mandate, TRCA develops and maintain programs to prevent loss of life and property damage from flooding hazards. Where appropriate, this includes structural flood mitigation alternatives. TRCA has constructed various flood control structures to reduce flood risk in Flood Vulnerable Clusters (FVCs). The majority of TRCA's flood infrastructure was built between the late 1950's and the early 1980's as part of the flood mitigation response to the Hurricane Hazel flood of 1954. TRCA has also inherited infrastructure that controls or retains water through various land acquisition programs and transactions. For the purpose of this report, flood infrastructure refers to TRCA owned dams, channel and dykes. A general location map of all TRCA flood infrastructure is provided in **Attachment 1**. **Attachment 4** contains photos of various structures and related projects for reference.

### Dams

TRCA's dam inventory consists of 12 dams, of which 5 were specifically built to provide flood protection. The other dams are historical mill, recreational, and industrial dams acquired through various TRCA land acquisition programs. TRCA's dams range in age between 45-85 years old and most require major capital improvements in order to meet current dam safety guidelines. A list of TRCA-owned dams is included in **Attachment 2**. Internationally, over the past several years, there have been numerous high-profile dam safety incidents that have resulted in loss of life, mass evacuation and population displacement, environmental damage and extensive property damage. The consequences of dam failures illustrated by these incidents underscores the importance of having a robust dam maintenance program at TRCA.

### Flood Control Channels

Flood control channels are designed to increase the amount of flow that can be conveyed through a watercourse reach. Flood control channels are created by replacing the natural watercourse with an engineered channel. Flood conveyance is increased by lining the channel with concrete or stone to reduce resistance to the flow of water. Flood control channels often straighten the watercourse to increase flow conveyance. Flood control channels are extremely damaging to the natural processes of a river and are only used as a last option for reducing flood risk. Because they do not retain water, flood control channels are a less-risky flood control structure type, because a failure of a channel does not cause an uncontrolled release of water, unlike a dam or dyke.

TRCA's flood control channels were built in communities with historic flood risk. These communities were built prior to the existence of TRCA's regulations on limiting development in the floodplain. TRCA owns 9 flood control channels totaling approximately 11.5km. Of this, 8.5km is of concrete trapezoidal design and the remaining channel types are a mixture of rip rap and gabion basket design. A list of TRCA's flood control channels is provided in **Attachment 2**.

### Flood Control Dykes

Dykes, sometimes also called berms, are defined as an embankment built to control or hold back water. Dykes are typically built parallel to a river to prevent water from entering developed areas. Like dams, dykes hold back water during periods of high flows, however dykes are not considered dams under definitions provided by various dam safety and regulatory agencies. Dykes are primarily earthen embankment structures, although one structure owned by TRCA was constructed as a masonry wall. Dykes, like dams, carry more risk than channels because a dyke failure during a flood would create a situation where there would be an uncontrolled release of water into the area protected by the dyke. TRCA owns 6 dykes totaling approximately 3.6km. A list of TRCA's dykes is provided in **Attachment 2**.

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TRCA's portfolio of dams, dykes, and channels are aging, and many have experienced deterioration that could affect their performance, safety, and stability. Engineering specifications have also evolved to become more conservative, which renders older structures unable to meet new regulations, guidelines, and best practices. The regulatory framework for managing dams is constantly shifting as knowledge of hazards and risks advances. TRCA, through studies and inspections, continues to track and document deficiencies at dams, dykes and channels to prioritize capital works. Deficiencies associated with each structure are listed in **Attachment 2**.

Over the last 15 years TRCA has made significant investments to remediate its inventory of flood protection structures in order to meet its objectives of protecting the public from flood impacts. TRCA is committed to continued improvements to the state of repair of all dams, and channel and dyke systems that it manages.

### **RATIONALE**

Flood infrastructure is designed to protect life and property, but also carries risk. The failure of structures designed to create storage and divert flood water can cause an uncontrolled release of water into developed areas. As an owner of dams, channels, and dykes, TRCA must strive to ensure these structures are managed safely.

The following sections of this report outline:

- a) the framework in which TRCA operates, maintains and inspects flood infrastructure
- b) the current condition and associated risk of TRCA flood infrastructure
- c) major studies and repairs from 2016 to 2020
- d) future work to ensure long-term safety and stability of existing flood infrastructure
- e) funding details and grant opportunities

### **Dam Safety in Ontario**

Dam safety in Ontario is regulated by the Ministry of Natural Resources and Forestry (MNRF) under the Lakes and Rivers Improvement Act (LRIA). They are responsible for developing the criteria that dams must meet and regulating dam owners in the safe operation and maintenance of dams. The Canadian Dam Association (CDA) is an advisory body comprised of voluntary dam safety experts supported by dam owners in Canada, including TRCA. The CDA provides technical and management guidance for dam owners using internationally recognized best practices. TRCA uses a combination of both MNRF and CDA guidelines for managing structures. This is because there are cases where one set of guidelines do not cover specific topics. For example, LRIA guidelines do not address emergency management of dams and therefore TRCA uses the CDA Emergency Management for Dam Safety Technical Bulletin.

### Lakes and Rivers Improvement Act

In 2011, the Ontario Ministry of Natural Resources and Forestry (MNRF) introduced the *Lakes and Rivers Improvement Act* Administrative Guide, Technical Bulletins and Best Management Practices Guide (LRIA). These documents are based on criteria developed by MNRF and the Canadian Dam Association (CDA), and provide guidelines for the safe design, construction, management, operation and repair of dams in Ontario. It is a resource for engineers, operators and owners to use when assessing the safety of a dam. The LRIA Guidelines are not legislated but define best management practices and therefore the minimum standard of safety for dam owners in Ontario.

A critical component of the LRIA is the Dam Safety Review (DSR). The DSR is an in-depth engineering study of a dam. Components of a DSR include geotechnical analysis of stability, a public safety review, hydro-technical analysis, structural inspection and other investigations.



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Based on the results of the DSR, the dam receives a Hazard Potential Classification (HPC). The HPC determines the risk to the public if a dam were to fail. Dams with higher risks are required to meet more stringent and conservative engineering standards. For example, a dam failure that is estimated to cause a loss of life greater than 11 persons would have an HPC of Very High. Dams with an HPC of Very High would have to meet the strictest guidelines for dam safety including safely passing the largest theoretical flood that can occur in southern Ontario (which, for reference, is larger than Hurricane Hazel). Note that safely passing a flood flow does not equate to storing the volume of that flood in a reservoir. Safely passing a flood means that the resulting flows can pass through the dam and reservoir without causing a dam failure. **Attachment 2** in this report includes HPC's for each dam TRCA owns. The criteria from the LRIA Classification and Inflow Design Flood Technical Bulletin for assessing HPC is also included for reference in **Attachment 2**, Table 4.

### Canadian Dam Association Dam Safety Guidelines

The CDA is a volunteer body of dam safety experts who create dam safety guidance documents using the best industry standards developed by various international organizations. CDA also develops training and workshop programs that offer hands on experience for dam professionals. Particularly important recommendations from CDA include the development of emergency management guidelines. These provide a framework for responding to dam failures. TRCA assisted in the development of the emergency management guidelines and was an early adopter of CDA's recommendations for developing emergency management protocols. All TRCA high risk dams have emergency response plans in place. Additionally, TRCA is in the process of developing emergency response plans for dams with lower risks.

### **TRCA Flood Infrastructure Management Program - Dams**

#### Dam Safety Management

TRCA's four largest dams are in urban areas. As such, a failure of one of these dams would have a significant impact on downstream communities. For example, the 2011 Dam Safety Review of G. Ross Lord Dam determined that a failure of the dam could place up to 3,000 persons at risk and cause up to approximately \$1.3 billion in property damage. Proper management and maintenance of these dams is critical for public safety.

TRCA has adopted LRIA and CDA guidelines into its dam safety program and is in the process of upgrading each structure to meet the criteria required, where possible.

#### Inspection Program

Each dam in TRCA's inventory is inspected monthly and annually. TRCA's two largest dams (Claireville Dam and G. Ross Lord Dam) also undergo daily inspections to further reduce the risk of safety or stability issues. The total number of inspections on TRCA dams is approximately 550 each year.

- Daily inspections are visual inspections to note the condition of the earthen embankment, control structures and site security.
- Monthly inspections are more detailed. Emergency generators are exercised, gate motors are tested, back-up systems tested, communications equipment checked, dam instrumentation is calibrated, and embankments are inspected.
- Annual inspections are very detailed assessments of each dam. Each component is thoroughly checked for correct operation:
  - earthen embankments are thoroughly inspected
  - gates are fully opened and closed
  - concrete spillways are inspected

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- gates are operated on emergency power
- tunnels and shafts are entered and inspected
- emergency generators serviced
- gates and motors are lubricated and serviced
- back-up gate operation systems tested

### Operation, Maintenance and Surveillance Manuals

Each dam owned by TRCA has an Operation, Maintenance and Surveillance (OMS) manual. The OMS manual is a stand-alone document that describes all the activities necessary to manage the dam. Sections of an OMS include:

- roles and responsibilities with contact information
- how to operate the dam gates
- operation of emergency generators
- preventative maintenance procedures
- communications
- dam storage and discharge data
- emergency procedures
- inspection criteria

Each OMS is reviewed and updated each year to ensure the document is current.

### Emergency Preparedness and Response Plans

TRCA uses CDA's Emergency Management for Dam Safety Technical Bulletin for guidance on drafting emergency response plans specific to each structure. There are two types of emergency management plans for dams. Emergency Preparedness Plans (EPP) are developed for external responding agencies that are responsible for public safety. In the event of a dam emergency, the responding agency can use the EPP to coordinate resources using the EPP's inundation maps. Inundation maps depict the expected flooded areas should a dam fail and can help first responders coordinate evacuations and road closures if required. Emergency Response Plans (ERP) are internal documents for TRCA use. Contact information for staff, roles and responsibilities, organizational flowcharts, equipment/aggregate supplier information, emergency dam repair documentation, and other critical information for managing dam emergencies are included in the ERP. TRCA maintains EPP's and ERP's for all High and Very High HPC dams.

### Studies, Repairs and Preventive Maintenance

Due to the complexity of dam construction and risk, TRCA undertakes numerous engineering studies to investigate the condition of the structures. Dam Safety Reviews (DSR's) are the most common study but other investigations can be required as well. It may be necessary to design a repair or to further investigate a deficiency. For example, a DSR at Stouffville Dam found that the dam may be at risk of failure during an earthquake, warranting either further study on seismic risk, or alternatively a costly stabilization project. A specialized study was initiated using the latest seismic risk investigations to confirm whether a costly repair was warranted. The study found that the risk of failure due to an earthquake was minimal and modifications to the dam were not required.

When inspections or studies find that repairs are required, TRCA retains qualified consultants and contractors to undertake the repair. Most common repairs include electrical upgrades at dams, dredging of flood control channels, and minor concrete repairs. Major deficiencies require extensive design, complex approvals and significant capital funds. TRCA is investigating

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opportunities to obtain adequate funding to undertake some of the major work required to make TRCA infrastructure fully compliant with current guidelines.

Preventative maintenance is a critical part of TRCA's management of dams. In 2019, TRCA assigned a field crew to specifically undertake preventative maintenance activities on flood infrastructure. Preventative maintenance on dams is primarily geared toward removing vegetation from embankments. Removing vegetation on a regular basis prevents large trees from establishing root systems that can damage the embankment. Trees on dams can also lead to seepage issues and impair an inspector's ability to see the condition of the embankment. Preventative maintenance activities on dams can also include minor concrete repairs, debris management at dam intakes, and painting of gate components.

### Public Safety Around Dams

Dams in Ontario are required to follow the Public Safety Around Dams (PSAD) Technical Bulletin from the LRIA. Statistically, it is far more likely to have serious injury or death around a dam due to falls or drowning than from a dam failure. The PSAD evaluates all the hazards around a dam and prescribes mitigation measures to ensure that all areas of the dam are safe. Mitigation primarily includes barriers (fencing, guardrails and safety booms) and warning signage. PSAD documents are reviewed annually to ensure all hazards are properly mitigated.

### Dam Decommissioning

There are technical difficulties in bringing older dams into compliance with modern design guidelines. Older flood control dams were constructed using the engineering principles of the period in which they were built and cannot meet newer requirements unless substantial modifications are made. Historic, legacy dams such as mill, and recreational dams were built without any proper engineering or construction techniques and may never be able to meet LRIA guidelines. In these cases, options are limited to decommissioning the dam or increased risk management and tolerance. TRCA has decommissioned several dams in the past. Most recently, Albion Hills Dam was decommissioned in 2017 because the structure was in poor condition and unrepairable. There are several other dams in TRCA's inventory that will need to be decommissioned or replaced because their poor condition puts them at risk of failing. These include:

- Secord Dam
- Osler Dam
- Glen Haffy Extension Upper Dam
- Glen Haffy Extension Lower Dam

Removing these structures reduces TRCA liability and long-term costs. Even small dam failures can cause large amounts of property and environmental damage. Additionally, removing dams restores the river's natural functions and improves habitat and water quality.

### Major Dam Safety Projects 2016-2020

There were numerous projects undertaken at TRCA dams since 2016. Projects are a combination of repairs and studies and are outlined below along with proposed dam safety projects through 2024. Projects from 2016 to 2020 are listed in Table 1.

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**Table 1** Major Dam Safety Projects 2016-2020

Structure	Year	Project	Project Cost
Claireville Dam	2020	Control Building Roof Repair <ul style="list-style-type: none"> <li>Replace roof on control building.</li> </ul>	\$30,000
Claireville Dam	2020	HVAC Repair <ul style="list-style-type: none"> <li>Decommission boiler and install electric heaters throughout control building.</li> </ul>	\$35,000
Stouffville Dam	2020	Concrete Repair and Emergency Spillway Repair Design Study <ul style="list-style-type: none"> <li>Design for concrete and emergency spillway repairs.</li> </ul>	\$90,000
G. Ross Lord Dam	2019	Hydrogeological Study <ul style="list-style-type: none"> <li>Study to examine the dam's drainage and pressure relief systems.</li> </ul>	\$85,000
Stouffville Dam	2018	Liquefaction Study <ul style="list-style-type: none"> <li>Study to determine earthquake risk to dam.</li> </ul>	\$63,000
Palgrave Dam	2018	Dam Safety Review <ul style="list-style-type: none"> <li>Engineering review of the dam.</li> </ul>	\$59,000
Milne Dam	2018	Deficiency Study <ul style="list-style-type: none"> <li>Investigate overtopping mitigation options.</li> <li>Investigate structural sliding deficiency.</li> <li>Confirm uplift resistance of spillway.</li> </ul>	\$84,000
Black Creek Dam	2018	Dam Safety Review <ul style="list-style-type: none"> <li>Engineering review of the dam.</li> </ul>	\$61,000
Black Creek Dam	2018	Reservoir Dredging <ul style="list-style-type: none"> <li>Remove sediment and debris from dam spillway intake and restore capacity of reservoir.</li> </ul>	\$1,760,000
Albion Hills Dam Decommissioning	2017-2018	Dam Decommissioning <ul style="list-style-type: none"> <li>Remove existing dam and construct bridge over restored creek.</li> </ul>	\$1,820,000

### TRCA's Flood Infrastructure Management Program – Flood Control Channels and Dykes

#### Annual Inspections

As part of TRCA's Flood Infrastructure Management Program, channels and dykes are inspected annually. TRCA staff walk the entire length of each structure each year. Flood control channel inspections ensure that the channels are free from sediment and large vegetation. Channel linings are inspected to ensure that they are not eroding. Concrete is checked to ensure that structures are not at risk of failing during large events. The dykes' earthen embankments are inspected to make sure the structures are not eroding, settling or failing. Culverts and flap gates are checked to make sure that flood water cannot surcharge to the dry side of the dykes. Information obtained during the inspection is used to direct preventative maintenance activities and, in the case of more serious deficiencies, design repairs for capital works projects. Dykes and channels are also inspected after flood events to confirm that they were not damaged.

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### Maintenance

TRCA's flood control channels and dykes require maintenance activities to ensure that the structures are functioning correctly. Channels require dredging of sediment and removal of vegetation to ensure the capacity is maximized for flood events. Dykes should remain free of trees and large brush to allow inspections of the earthen embankments. Large trees can also topple during large storms causing root systems to damage large sections of the dyke, possibly leading to failure. In the past, TRCA's flood control channels and dykes have received sporadic maintenance which has led to costly, large scale sediment and vegetation removal projects. In 2019, TRCA dedicated a full-time maintenance crew to conduct small-scale maintenance on the channels and dykes. By undertaking annual maintenance on these structures, the need for expensive large-scale projects is greatly reduced. Operations were suspended for several months in 2020 due to COVID-19, but the crew is now working full-time to continue maintaining these structures.

The following table outlines major channel and dyke projects undertaken since 2016 (Table 2).

**Table 2** Channel and Dyke Projects 2016-2020

Structure	Year	Project	Project Cost
Yonge York Mills Channel	2020	Concrete Channel Repair <ul style="list-style-type: none"> <li>Concrete panel repair and underpinning.</li> </ul>	\$65,000
Bolton Berm (Dyke)	2019	Bolton Berm Ice Jam Study <ul style="list-style-type: none"> <li>Engineering assessment of the 2019 Bolton ice jam.</li> </ul>	\$55,000
Bolton Berm (Dyke)	2019	Bolton Berm Major Maintenance Design Project <ul style="list-style-type: none"> <li>Final Design drawings for Bolton Berm upgrades including erosion protection and raising of crest.</li> </ul>	\$160,000
Scarlett Channel	2019	Scarlett Channel Erosion Project <ul style="list-style-type: none"> <li>Repair erosion damage at outfall to Humber River.</li> </ul>	\$200,000
Bolton Berm (Dyke)	2018-2019	Bolton Berm Drainage Upgrades <ul style="list-style-type: none"> <li>Flap gate installation and maintenance</li> </ul>	\$20,000
Pickering Dyke/Ajax Dyke	2018-2020	Pickering/Ajax Dyke Rehabilitation <ul style="list-style-type: none"> <li>Conservation Class Environmental Assessment</li> </ul>	\$450,000
Pickering Dyke/Ajax Dyke	2016	Pickering/Ajax 2D Modeling and Dyke Assessment Project <ul style="list-style-type: none"> <li>Flood assessment and structural investigation of dyke.</li> </ul>	\$75,000
Malton Channel	2016	Channel Major Maintenance Dredging Project <ul style="list-style-type: none"> <li>Removal of sediment and vegetation from channel</li> </ul>	\$500,000
Bolton Berm (Dyke)	2016	Bolton Berm Hydraulic Assessment and Remediation Study <ul style="list-style-type: none"> <li>Flood assessment of berm and structural investigation of dyke.</li> </ul>	\$102,000

### State of Repair - Dams

The CDA defines risk as “the consequence of an adverse event and the probability of such an event occurring”. Within a finite resource framework, it is not possible to completely eliminate the risks associated with dams. Using modern engineering analysis and techniques, however, it is possible to greatly reduce risk. When hazards are greater for a structure, the safety requirements are proportionately more rigorous to offset the increased risk. As the owners of flood protection infrastructure, TRCA has an obligation identify and undertake works to maintain these structures in a state of good repair. With limited funding available for flood infrastructure repairs, TRCA must rank the priority of capital works. This requires that TRCA understand how each structure is performing using engineering judgement alongside criteria provided by the CDA and the LRIA. Using inspection and engineering reports, each structure is ranked using a probability/consequence matrix. In order to understand the overall safety of a structure, performance during several scenarios must be considered. For example, a dam may be considered safe for smaller, more frequent flood events but may not be able to withstand an extreme flood. Therefore, several scenarios are considered when evaluating the state of repair. These include:

1. Normal Conditions. This scenario would include typical flood events that are frequent. Normal conditions would also consider typical loading or stressing of the structure, particularly embankment stability.
2. Extreme Flood Conditions. This scenario considers the ability of the dam to withstand extreme, less probable flood events. Dams that cannot safely pass extreme floods can overtop and fail.
3. Seismic Conditions. Seismic activity in Ontario is rare and is usually limited to small magnitude earthquakes. However, dam safety guidelines require high hazard dams to be able to withstand extreme earthquakes.

Evaluating dams using the criteria listed above helps prioritize capital works. Structures that do not meet guidelines for normal conditions would rank higher for repairs than a structure that is only at risk during extreme, low probability flood and seismic events. TRCA's objective is to make dams, channels and dykes safe for all possible events, however this will require long-term and large capital investments to achieve.

Evaluating dams for normal, extreme flood, and extreme earthquake scenarios requires that a score be given to each condition. The score corresponds to the dam's ability to withstand the normal and extreme events. For example, a dam may have a structure condition rated as very good for normal conditions. However, if the dam overtops during extreme floods, the structure condition for that scenario may rank as poor because the probability of failure is higher for this event. If the same dam meets the requirements for seismic events, the structure condition for that scenario would be rated as very good as the probability of failure would be low.

#### Normal Conditions Risk Ranking

Normal conditions risk ranking evaluates the risk of structures failing when conditions are within the expected range of events for a given year. Normal conditions would include periods with no precipitation and smaller, more probable flood scenarios.

For state of repair analysis for normal conditions, TRCA evaluates each structure and categorizes them in terms of "probability of failure" and "consequence rating". The probability of failure is based on the structure condition assessment and estimates the likelihood of a deficiency causing the structure to fail. Structure condition considers the overall condition of the structure based on DSR studies and inspection results. Structures are scored from one (1) to

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five (5). A structure with a score of one (1) is in very good condition with a low probability of failure. A structure with a score of five (5) has a very poor structure condition rating and therefore a very high likelihood of failure. Structure condition ratings are described in Table 1.

**Table 3 - Structure Condition Assessment/Probability of Failure Criteria**

Condition Rating Score	Condition	Structure Condition Assessment Definition	Probability of Failure
1	Very Good	Well maintained, good condition, new or recently rehabilitated.	Improbable
2	Good	Good condition, few elements exhibit deficiencies.	Not Likely
3	Fair	Some elements exhibit significant deficiencies. Asset requires attention.	Possible
4	Poor	A large portion of the structure exhibits significant deficiencies. Asset mostly below standard and approaching end of service life.	Likely
5	Very Poor	Widespread signs of deterioration. Service and safety are affected.	Very Probable

In addition to the condition rating score, TRCA also considers the consequence to public safety and property should the structure fail or perform below expectations. Known as the consequence score, the consequence score is determined by estimating property and risk to life during a failure. The score is estimated on a scale between one (1) and five (5). The higher the score, the higher amount of damage would be expected if the structure fails. See Table 2 for a description of consequence rating score criteria.

**Table 4 - Consequence Rating Score Criteria**

Consequence Rating Score	Consequence Rating Definition
1	Insignificant damage to property.
2	Minor/slight damage to property.
3	Limited damage to property.
4	Significant damage to property. Possible public safety risk.
5	Major risk to property and public safety.

The consequence rating score is multiplied by the condition rating score to determine an overall state of repair/risk ranking score. This score is then placed on a risk ranking matrix to determine the overall risk of the structure. Please see Table 3 for the risk ranking matrix. The results of the risk ranking matrix are included in **Attachment 3** for all TRCA flood infrastructure. Risk ranking is comprised of four (4) categories:

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- a) Low Risk (1-5, green shading)
- b) Moderate Risk (6-10, yellow shading)
- c) High Risk (11-15, orange shading)
- d) Extreme Risk (16-25, red shading)

This assists TRCA in understanding where to focus limited capital funds for repairs. Structures with a risk ranking in the High and Very High Category require priority attention to repair the deficiency.

It should be noted that there are limitations to determining risk. The complexity of forces acting on a structure is difficult to quantify and therefore determining the probability of failure is difficult. Experience, training and engineering judgment are used to assess the stability and performance of flood infrastructure. Regardless, the process for evaluating structures is somewhat subjective. With the limitations of current inspection techniques, it is not possible to say with certainty that a structure will or will not fail. Inspections can identify potential failure modes, but the complexity of the loads and stresses placed upon structures cannot be precisely measured and so there is a degree of unpredictability in evaluating them.

**Table 5 - Risk Ranking Score Matrix**

<b>CONDITION RATING/RISK OF FAILURE</b>	<b>CONSEQUENCE RATING</b>				
	<b>Insignificant damage to property.  1</b>	<b>Minor, slight damage to property.  2</b>	<b>Limited damage to property.  3</b>	<b>Significant damage to property. Possible public safety risk. 4</b>	<b>Major damage to property. Major risk to public safety. 5</b>
<b>Very poor condition. Very probable risk of failure. 5</b>	5	10	15	20	25
<b>Poor condition. Failure likely. 4</b>	4	8	12	16	20
<b>Fair condition. Possible failure. 3</b>	3	6	9	12	15
<b>Good condition. Failure not likely. 2</b>	2	4	6	8	10
<b>Very good. Improbable. 1</b>	1	2	3	4	5



### Extreme Conditions - Dams

Additional analysis may be required to evaluate risks for rare conditions such as extreme floods or earthquakes. Extreme floods may overtop dams causing failures. Earthquake events could cause structural failures in dams. To understand how a risk is affected by extreme events, the structure condition assessment score is increased. For example, a dam that is considered safe under normal conditions but may fail during an earthquake, the structure condition assessment score is increased to account for the inability of the dam to withstand ground movement during a seismic event. This increases the risk score of the structure. The consequence score remains the same because the same area is affected by a dam failure. Risk rankings for extreme conditions at dams is included in **Attachment 3**.

Dam safety guidelines consider extreme events in their criteria for determining safe structures; however, it is difficult for dam owners to meet all the guidelines because standards keep evolving. For example, a dam built in 1970 would meet the guidelines for that time period. As engineering knowledge progresses the standards change, and the dam built in 1970 would not meet standards in 2020. This creates difficulties for dam owners in that dams need to be constantly upgraded and modified to meet the most current safety guidelines. Often these repairs are very costly and difficult to implement. However, because the probability of these extreme events is so low, the priority to mitigate the risk is lower. Priority repairs are focused on deficiencies for normal conditions, however, TRCA is undertaking studies to implement repairs for extreme events as well. The risk ranking for TRCA dams for extreme/unlikely events is included in **Attachment 3**.

### **State of Repair – Dykes and Flood Control Channels**

TRCA undertakes annual inspections and engineering studies to determine the current state of repair for dykes and flood control channels. Dykes are assessed similarly to dams because during high flow events they impound water. Therefore, TRCA inspectors look for conditions that could cause the dyke to fail such as slumping, erosion, seepage, sinkholes, and other deficiencies. Flood control channels are inspected for blockages that reduce the capacity of the channel. Channel linings are also inspected for erosion that could lead to slope failure or damage to concrete panels. Channels and dykes are not assessed for performance during extreme events. For example, extreme floods can overtop channels, but the overall stability may not be affected. Additionally, seismic activity would have minimal impact to a channel's stability. Dykes typically are not assessed for seismic activity because the dyke is only under load during high flow events. The probability of a flood and a large earthquake occurring at the same time are very low.

**Attachment 3** lists the structure condition assessment score and the probability of failure for TRCA dykes and flood control channels.

### **FINANCIAL DETAILS**

Funding for the operation, maintenance, inspection and repair of TRCA flood infrastructure is from several sources, as outlined below.

### MNRF Section 39

MNRF Section 39 grant funding is provided to Conservation Authorities for natural hazard management. TRCA receives approximately \$165,000/year for operation and maintenance of flood infrastructure. This is matched by municipal levy.

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### Capital Levy

Municipal levy capital funding is provided for flood infrastructure maintenance repair works. Capital levy funding for 2020 was as follows:

**Table 6 - Municipal Capital Levy for Flood infrastructure**

<b>Durham Region</b>	\$22,000
<b>York Region</b>	\$71,000
<b>Region of Peel</b>	\$309,000
<b>City of Toronto</b>	\$267,000 (includes Floodworks Enhanced Capital)
<b>Total</b>	\$669,000

### Water and Erosion Control Infrastructure Funding

The Ministry of Natural Resources and Forestry supports conservation authorities to undertake maintenance activities throughout Ontario with the Water and Erosion Control Infrastructure Program (WECI). Under this program, repairs and studies undertaken on structures are eligible for 50% matching funds from the Province of Ontario. Projects are reviewed and prioritized by MNRF and only the highest ranked projects are awarded grants. TRCA applies for WECI funding every year for both repairs and studies. The WECI program has become a critical tool for funding capital improvement projects.

**Table 7- WECI Funding 2016-2021**

<b>WECI Funding received by TRCA 2016-2020</b>	
2016/2017	\$230,425
2017/2018	\$218,802
2018/2019	\$128,023
2019/2020	\$126,045
2020/2021	\$280,000
<b>Total</b>	<b>\$983,295</b>

### National Disaster Mitigation Program (NDMP)

The NDMP is focused on flood risk studies, flood plain mapping, non-structural or small-scale structural risk reduction measures, and not toward maintenance and upgrade projects for existing flood infrastructure. However, TRCA was successful in obtaining funding to optimize gate operations at G. Ross Lord Dam and to examine flood risk at Claireville Dam and Stouffville Dam. Total contribution to these projects from NDMP was approximately \$211,000. TRCA has been informed that there may be future intakes for infrastructure projects.

### Disaster Mitigation and Adaptation Fund (DMAF)

DMAF was created to fund large-scale infrastructure projects to implement projects that increase resiliency and reduce risk to the public. It is specifically geared towards risks associated with flooding, wildfires and droughts. TRCA intends to pursue DMAF funding to address the major deficiencies with TRCA's flood infrastructure. Because the program has a minimum investment of \$20,000,000, TRCA is bundling many flood infrastructure projects to meet this requirement. As a cost-sharing program, DMAF would still require matching funding contributions. Considering the significant capital costs of these projects, TRCA is initiating discussions for these future projects with funding partners.

### Investing in Canada Infrastructure Plan (ICIP)

This is a federal program designed to assist municipalities and public sector agencies implement projects to create long-term economic growth while increasing climate change resiliency. Upgrading aging flood infrastructure would fall under this requirement. The provincial government has announced that a new intake will be opening in 2020. TRCA will be seeking funding when applications become available.

TRCA maintains a list of priority projects to take advantage of funding opportunities. TRCA's list of priority flood infrastructure projects is available in **Attachment 5**. While TRCA is seeking funding from all levels of government and communicating the risk to the public posed by aging flood infrastructure, there is the possibility that only some (or none) of the projects will get the required funding. These projects present a significant liability for TRCA. To address the existing risks until deficiencies can be corrected, TRCA needs to continue improving surveillance, maintenance, risk prioritization and emergency management strategies to offset increasing deterioration of flood infrastructure. Early warning of dangerous or unstable conditions is an effective way of reducing risk to the public but should not replace the need to undertake improvements.

TRCA has made significant progress in upgrading the condition of its flood infrastructure over the past 15 years. Numerous projects have been undertaken to restore flood channels and increase dam safety, redundancy and reliability. Thorough Dam Safety Reviews and engineering studies have helped TRCA understand how the structures rank in terms of risk to the public and how to mitigate this risk. TRCA Flood Infrastructure staff will continue to receive regular training in dam surveillance and public safety, and to monitor for changes to dam safety guidelines and the evolution of best practices.

As outlined in the above report, TRCA's inventory of flood infrastructure is aging and, in some cases, has exceeded its expected functional life. There are many forces and natural stresses acting upon these structures that reduce their effectiveness in preventing flooding. TRCA is monitoring these structures and performing capital improvements as they become necessary. However, some mitigation projects are very large in scope and will require substantial funding. Many of these projects will take multiple years to complete because of the complex engineering, design and approval process required for flood infrastructure repairs. TRCA will pursue funding opportunities such as WEI and DMAF to offset costs for these large projects.

Flooding is a serious threat to the GTA. Weather is unpredictable and extreme events can happen at any time. Climate change science projects a future increase to extreme precipitation events in Canada. Extreme events combined with the dense urbanization of TRCA's watersheds increase the stresses placed upon TRCA's flood infrastructure. To respond to this threat, TRCA will continue ensure that flood infrastructure is performing at the highest level of protection possible. Rigorous monitoring, well designed repairs, and stable funding sources are all necessary to ensure that TRCA's dams, dykes and channels will continue to provide protection from future flood events.

### **Relationship to Building the Living City, the TRCA 2013-2022 Strategic Plan**

This report supports the following strategy set forth in the TRCA 2013-2022 Strategic Plan:  
**Strategy 2 – Manage our regional water resources for current and future generations**

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**Date: October 29, 2020**

**Attachments: 5**

Attachment 1 – General Location Map for TRCA Flood Infrastructure

Attachment 2 – TRCA's Flood Infrastructure List with Deficiencies

Attachment 3 – TRCA's Flood Infrastructure State of Repair

Attachment 4 – Photographs of Various TRCA Flood Infrastructure and Projects

Attachment 5 - Priority Project List for Addressing TRCA's Flood Infrastructure Deficiencies

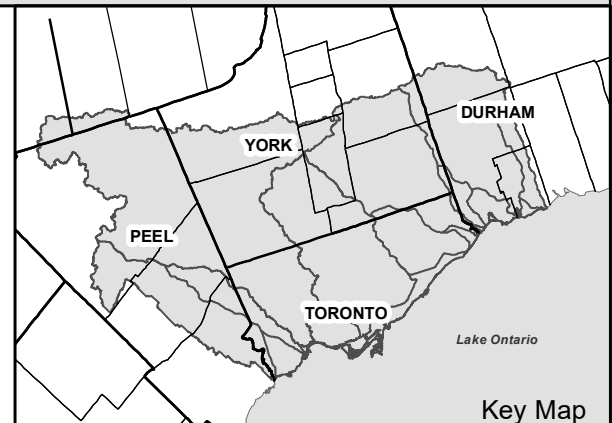


## Legend

- ▲ Dam
- Dyke
- ☼ Flood Control Channel
- - - Municipal Boundaries
- Watercourse
- Watersheds



0 10 20 km



Key Map

## Attachment 2: TRCA's Flood Infrastructure List with Deficiencies

Table 1

<b>Dams</b>						
<b>Dame Name</b>	<b>Dam Height (m)</b>	<b>Region/Municipality</b>	<b>Second Tier Municipality</b>	<b>Hazard Potential Classification*</b>	<b>Date Constructed</b>	<b>Known Deficiencies</b>
G. Ross Lord Dam	19.3	City of Toronto	N/A	Very High	1972	<ul style="list-style-type: none"> <li>• Dam Safety Review due in 2022</li> <li>• Dam foundation drainage system requires maintenance.</li> </ul>
Claireville Dam	15.0	City of Toronto/Peel Region	Brampton	Very High	1963	<ul style="list-style-type: none"> <li>• Spillway capacity is too small, and the dam is at risk of overtopping during extreme events</li> <li>• Right bank wing wall has settled and needs replacement</li> <li>• Gates and hoisting systems require major maintenance</li> <li>• Spillway stilling basin is too short for extreme events</li> </ul>
Stouffville Dam	7.6	York Region	Whitchurch-Stouffville	Very High	1969	<ul style="list-style-type: none"> <li>• Emergency spillway requires erosion protection</li> <li>• Earthen embankment does not meet factor of safety requirements</li> <li>• Concrete requires repairs</li> </ul>
Milne Dam	9.3	York Region	Markham	Very High	1969	<ul style="list-style-type: none"> <li>• Spillway capacity is too small, and the dam is at risk of overtopping during extreme events</li> <li>• Spillway does not meet loading requirements and is at risk of sliding during extreme events</li> <li>• Spillway stilling basin is too short for extreme events</li> </ul>
Palgrave Dam	4.3	Peel Region	Caledon	Very High	1860	<ul style="list-style-type: none"> <li>• Spillway capacity is too small, and the dam is at risk of overtopping during extreme events</li> <li>• Dam requires upgrades to the stop log lifting system</li> <li>• Earthen embankment does not meet factor of safety requirements</li> </ul>
Black Creek Dam	7.3	City of Toronto	N/A	Moderate	1959	<ul style="list-style-type: none"> <li>• Flow control structure is susceptible to debris blockages and requires reconfiguration</li> </ul>
Secord Dam	5.0	Durham Region	Uxbridge	Low	1930	<ul style="list-style-type: none"> <li>• Earthen embankment is in poor condition</li> <li>• Consider decommissioning dam</li> </ul>
Osler Dam	5.0	Durham Region	Uxbridge	Low (Assumed)	1937	<ul style="list-style-type: none"> <li>• Concrete flow control structure is failing</li> <li>• Consider decommissioning dam</li> </ul>
Glen Haffy Dam West	5.5	Peel Region	Caledon	Low (Assumed)	1950's	<ul style="list-style-type: none"> <li>• Requires Dam Safety Review</li> </ul>
Glen Haffy Dam East	5.5	Peel Region	Caledon	Low (Assumed)	1950's	<ul style="list-style-type: none"> <li>• Requires Dam Safety Review</li> </ul>
Glen Haffy Fly Fishing Upper Dam	5.0	Peel Region	Caledon	Low (Assumed)	1950's	<ul style="list-style-type: none"> <li>• Spillway pipe failing</li> <li>• Embankment unstable</li> <li>• Dam is at risk of failing</li> </ul>
Glen Haffy Fly Fishing Lower Dam	5.0	Peel Region	Caledon	Low (Assumed)	1950's	<ul style="list-style-type: none"> <li>• Embankment unstable</li> <li>• Dam is at risk of failing</li> </ul>

\*See Table 4 below for criteria used to determine Hazard Potential Classification for dams

## Attachment 2: TRCA's Flood Infrastructure List with Deficiencies

Table 2

Flood Control Channels					
Channel Name	Channel Length(m)	Region/Municipality	Second Tier Municipality	Date Constructed	Known Deficiencies
Yonge/York Mills Channel	1670m	City of Toronto	City of Toronto	1959	<ul style="list-style-type: none"> <li>• Gabion lining has deteriorated</li> <li>• Some concrete panels are cracked and settling</li> </ul>
Woodbridge Channel	1850m	York Region	City of Vaughan	1962	<ul style="list-style-type: none"> <li>• Two grade-control baffle chute structures are public safety issues and should be removed</li> </ul>
Stouffville Channel	370m	York Region	Whitchurch-Stouffville	1980	<ul style="list-style-type: none"> <li>• Gabion baskets are deteriorated and causing channel walls to fail</li> <li>• Sediment in channel requires removal. Cost for doing so is prohibitive</li> </ul>
Black Creek Channel	2370m	City of Toronto	City of Toronto	1969	<ul style="list-style-type: none"> <li>• Many concrete panels have cracked and settled</li> </ul>
Scarlett Channel	3600m	City of Toronto	City of Toronto	1959	<ul style="list-style-type: none"> <li>• Many concrete panels have cracked and settled</li> </ul>
Brampton Channel	570m	Peel Region	Brampton	1951	<ul style="list-style-type: none"> <li>• Channel outfall is a public safety hazard</li> </ul>
Sheppard Channel	350m	City of Toronto	City of Toronto	1960's	<ul style="list-style-type: none"> <li>• Many concrete panels have cracked and settled</li> <li>• Low flow channel is failing</li> </ul>
Malton Channel	650m	Peel Region	Mississauga	1969	<ul style="list-style-type: none"> <li>• Requires maintenance dredging and clearing</li> </ul>
Oak Ridges Channel	90m	York Region	Kig	1981	<ul style="list-style-type: none"> <li>• Requires maintenance dredging and clearing</li> </ul>

## Attachment 2: TRCA's Flood Infrastructure List with Deficiencies

Table 3

<b>Dykes</b>					
<b>Dyke Name</b>	<b>Dyke Length(m)</b>	<b>Region/Municipality</b>	<b>Second Tier Municipality</b>	<b>Date Constructed</b>	<b>Known Deficiencies</b>
Pickering Dyke	1250m	Durham Region	Pickering	1983	<ul style="list-style-type: none"> <li>• Dyke does not meet current engineering requirements for stability</li> </ul>
Ajax Dyke	350m	Durham Region	Ajax	1983	<ul style="list-style-type: none"> <li>• Dyke does not meet current engineering requirements for stability</li> </ul>
Bolton Berm	800m	Peel Region	Caledon	1983	<ul style="list-style-type: none"> <li>• Berm is too low in several areas to provide the design flood protection of the 500-year storm</li> <li>• Berm requires erosion protection</li> </ul>
Etobicoke Dyke	460m	Peel Region	Brampton	1969	None
West Don Flood Protection Landform	710m	City of Toronto	City of Toronto	2015	None
Tyndall Flood Wall	100m	Peel Region	Mississauga	1991	None

Table 4

<b>Hazard Potential Classification</b>				
<b>Hazard Potential</b>	<b>Life Safety</b>	<b>Property Losses</b>	<b>Environmental Losses</b>	<b>Cultural Losses</b>
<b>Low</b>	No Potential Loss of Life	Minimal damage to property with estimated losses not to exceed \$300,000.	Minimal loss of fish and/or wildlife habitat with high capability of natural restoration resulting in a very low likelihood of negatively affecting the status of the population.	Reversible damage to municipally designated cultural heritage sites under the Ontario Heritage Act.
<b>Moderate</b>	No Potential Loss of Life	<p>Moderate damage with estimated losses not to exceed \$3 million, to agricultural, forestry, mineral aggregate and mining, and petroleum resource operations, other dams or structures not for human habitation, infrastructure and services including local roads and railway lines.</p> <p>The inundation zone is typically undeveloped or predominantly rural or agricultural, or it is managed so that the land usage is for transient activities such as with day-use facilities.</p> <p>Minimal damage to residential, commercial, and industrial areas, or land identified as designated growth areas as shown in official plans.</p>	Moderate loss or deterioration of fish and/or wildlife habitat with moderate capability of natural restoration resulting in a low likelihood of negatively affecting the status of the population.	<p>Irreversible damage to municipal designated cultural heritage sites under the Ontario Heritage Act.</p> <p>Reversible damage to provincially designated cultural heritage sites under the Ontario Heritage Act or nationally recognized heritage sites.</p>



<b>High</b>	Potential Loss of Life of 1-10 persons	Appreciable damage with estimated losses not to exceed \$30 million, to agricultural, forestry, mineral aggregate and mining, and petroleum resource operations, other dams or residential, commercial, industrial areas, infrastructure and services, or land identified as designated growth areas as shown in official plans. Infrastructure and services includes regional roads, railway lines, or municipal water and wastewater treatment facilities and publicly-owned utilities.	Appreciable loss of fish and/ or wildlife habitat or significant deterioration of critical fish and/ or wildlife habitat with reasonable likelihood of being able to apply natural or assisted recovery activities to promote species recovery to viable population levels. Loss of a portion of the population of a species classified under the Ontario Endangered Species Act as Extirpated, Threatened or Endangered, or reversible damage to the habitat of that species.	Irreversible damage to provincially designated cultural heritage sites under the Ontario Heritage Act or damage to nationally recognized heritage sites.
<b>Very High</b>	Potential Loss of Life of 11 or more persons	Extensive damage, estimated losses in excess of \$30 million, to buildings, agricultural, forestry, mineral aggregate and mining, and petroleum resource operations, infrastructure and services. Typically includes destruction of, or extensive damage to, large residential, institutional, concentrated commercial and industrial areas and major infrastructure and services, or land identified as designated growth areas as shown in official plans. Infrastructure and services include highways, railway lines or municipal water and wastewater treatment facilities and publicly-owned utilities.	Extensive loss of fish and/ or wildlife habitat or significant deterioration of critical fish and/ or wildlife habitat with very little or no feasibility of being able to apply natural or assisted recovery activities to promote species recovery to viable population levels. Loss of a viable portion of the population of a species classified under the Ontario Endangered Species Act as Extirpated, Threatened or Endangered or irreversible damage to the habitat of that species.	

**Notes:**

1. Incremental losses are those losses resulting from dam failure above those which would occur under the same conditions (flood, earthquake or other event) with the dam in place but without failure of the dam.
2. Life safety. Refer to Technical Guide – River and Streams Systems: Flooding Hazard Limits, Ontario Ministry of Natural Resources, 2002, for definition of 2 x 2 rule. The 2 x 2 rule defines that people would be at risk if the product of the velocity and the depth exceeded 0.37 square metres per second or if velocity exceeds 1.7 metres per second or if depth of water exceeds 0.8 metres. For dam failures under flood conditions the potential for loss of life is assessed based on permanent dwellings (including habitable buildings and trailer parks) only. For dam failures under normal (sunny day) conditions the potential for loss of life is assessed based on both permanent dwellings (including habitable dwellings, trailer parks and seasonal campgrounds) and transient persons.
3. Property losses refer to all direct losses to third parties; they do not include losses to the owner, such as loss of the dam, or revenue. The dollar losses, where identified, are indexed to Statistics Canada values Year 2000.
4. An HPC must be developed under both flood and normal (sunny day) conditions.
5. Evaluation of the hazard potential is based on both present land use and on anticipated development as outlined in the pertinent official planning documents (e.g. Official Plan). In the absence of an approved Official Plan the HPC should be based on expected development within the foreseeable future. Under the Provincial Policy Statement,

‘designated growth areas’ means lands within settlement areas designated in an official plan for growth over the long-term planning horizon (specifies normal time horizon of up to 20 years), but which have not yet been fully developed. Designated growth areas include lands which are designated and available for residential growth in accordance with the policy, as well as lands required for employment and other uses (Italicized terms as defined in the PPS, 2005).

6. Where several dams are situated along the same watercourse, consideration must be given to the cascade effect of failures when classifying the structures, such that if failure of an upstream dam could contribute to failure of a downstream dam, then the HPC of the upstream dam must be the same as or greater than that of the downstream structure.
7. The HPC is determined by the highest potential consequences, whether life safety, property losses, environmental losses, or cultural-built heritage losses.

### Attachment 3: TRCA's Flood Infrastructure State of Repair

Table 1

<b>Dams</b>							
<b>Dame Name</b>	<b>Consequence Rating Score<sup>1</sup></b>	<b>Probability of Failure/Structure Condition – Normal Conditions<sup>2</sup></b>	<b>Risk Rating - Normal Condition<sup>3</sup></b>	<b>Probability of Failure – Extreme Flood Conditions<sup>4</sup></b>	<b>Risk Rating – Extreme Flood Conditions<sup>5</sup></b>	<b>Probability of Failure – Extreme Seismic Condition<sup>6</sup></b>	<b>Risk Rating – Extreme Seismic Condition<sup>7</sup></b>
G. Ross Lord Dam	5	1	5	2	10	1	5
Claireville Dam	5	1	5	3	15	2	10
Stouffville Dam	5	2	10	3	15	2	10
Milne Dam	5	2	10	4	20	2	10
Palgrave Dam	5	3	15	5	25	3	15
Black Creek Dam	2	1	2	1	2	1	2
Secord Dam	2	4	8	5	10	3	10
Osler Dam	2	5	10	5	10	5	10
Glen Haffy Dam West	1	2	3	3	3	3	3
Glen Haffy Dam East	1	2	3	3	3	3	3
Glen Haffy Fly Fishing Upper Dam	2	5	10	5	10	5	10
Glen Haffy Fly Fishing Lower Dam	2	5	10	5	10	5	10

1. Consequence Rating Score – expected damage should the dam fail based on risk to life, property and the environment. See Table 2 in the report.
2. Probability of Failure/Structure Condition Score – based the dam's ability to withstand typical floods and normal loading conditions. See Table 1 in the report.
3. Risk Rating – Normal Conditions. This is the Consequence Rating Score multiplied by the Probability of Failure/Structure Condition Score. See Table 3 in the report.
4. Probability of Failure – Extreme Flood Conditions. This is based on the dam's ability to safely pass extreme floods.
5. Risk Rating – Extreme Floods. This is the Consequence Rating Score multiplied by Probability of Failure score. See Table 3 in the report.
6. Probability of Failure – Extreme Seismic Condition. The is based on the dam's ability to withstand an extreme earthquake.
7. Risk Rating – Extreme Seismic Event. This is the Consequence Rating Score multiplied by the Probability of Failure score. See Table 3 in the report.

### Attachment 3: TRCA's Flood Infrastructure State of Repair

Table 2

<b>Flood Control Channels</b>			
<b>Channel Name</b>	<b>Consequence Rating Score<sup>1</sup></b>	<b>Probability of Failure/Structure Condition – Normal Conditions<sup>2</sup></b>	<b>Risk Rating - Normal Condition<sup>3</sup></b>
Yonge/York Mills Channel	4	1	4
Woodbridge Channel	3	1	3
Stouffville Channel	3	4	12
Black Creek Channel	4	1	4
Scarlett Channel	4	1	4
Brampton Channel	4	1	4
Sheppard Channel	3	2	6
Malton Channel	4	1	4
Oak Ridges Channel	4	1	4

1. Consequence Rating Score – expected damage should the channel fail based on risk to life, property and the environment. See Table 2 in the report.
2. Probability of Failure/Structure Condition Score – based the channel's ability to withstand typical floods and normal loading conditions. See Table 1 in the report.
3. Risk Rating – Normal Conditions. This is the Consequence Rating Score multiplied by the Probability of Failure/Structure Condition Score. See Table 3 in the report.

### Attachment 3: TRCA's Flood Infrastructure State of Repair

Table 3

<b>Dykes</b>			
<b>Dyke Name</b>	<b>Consequence Rating Score<sup>1</sup></b>	<b>Probability of Failure/Structure Condition – Normal Conditions<sup>2</sup></b>	<b>Risk Rating - Normal Condition<sup>3</sup></b>
Pickering Dyke	4	4	16
Ajax Dyke	4	4	16
Bolton Berm	4	2	8
Etobicoke Dyke	4	1	4
West Don Flood Protection Landform	5	1	5
Tyndall Flood Wall	3	1	3

1. Consequence Rating Score – expected damage should the dyke fail based on risk to life, property and the environment. See Table 2 in the report.
2. Probability of Failure/Structure Condition Score – based the dyke's ability to withstand typical floods and normal loading conditions. See Table 1 in the report.
3. Risk Rating – Normal Conditions. This is the Consequence Rating Score multiplied by the Probability of Failure/Structure Condition Score. See Table 3 in the report.

#### Attachment 4: Photographs of various TRCA flood infrastructure and projects



**Figure 1** G. Ross Lord Dam carries the highest potential risk of any TRCA dam based on risk to life and property.



**Figure 2** Claireville Dam was constructed in 1963 and requires major maintenance to meet current dam safety guidelines.



**Attachment 4: Photographs of various TRCA flood infrastructure and projects**



**Figure 3** Claireville Dam wing wall settlement investigation.



**Figure 4** Failed spillway pipe at Glen Haffy Fly Fishing Upper Dam



**Attachment 4: Photographs of various TRCA flood infrastructure and projects**



**Figure 5** Yonge/York Mills Channel concrete repair in 2020.



**Figure 6** Bolton Berm 2016 geotechnical investigation.



#### Attachment 4: Photographs of various TRCA flood infrastructure and projects



**Figure 7** Stouffville Dam undergoing earthquake liquefaction investigation.



**Figure 8** TRCA remote-controlled slope mower cutting the G. Ross Lord Dam embankment. This equipment allows very steep slopes to be maintained without putting staff at risk.



#### Attachment 4: Photographs of various TRCA flood infrastructure and projects



**Figure 9** Milne Dam's spillway is too small for extreme floods and requires upgrades to withstand overtopping.

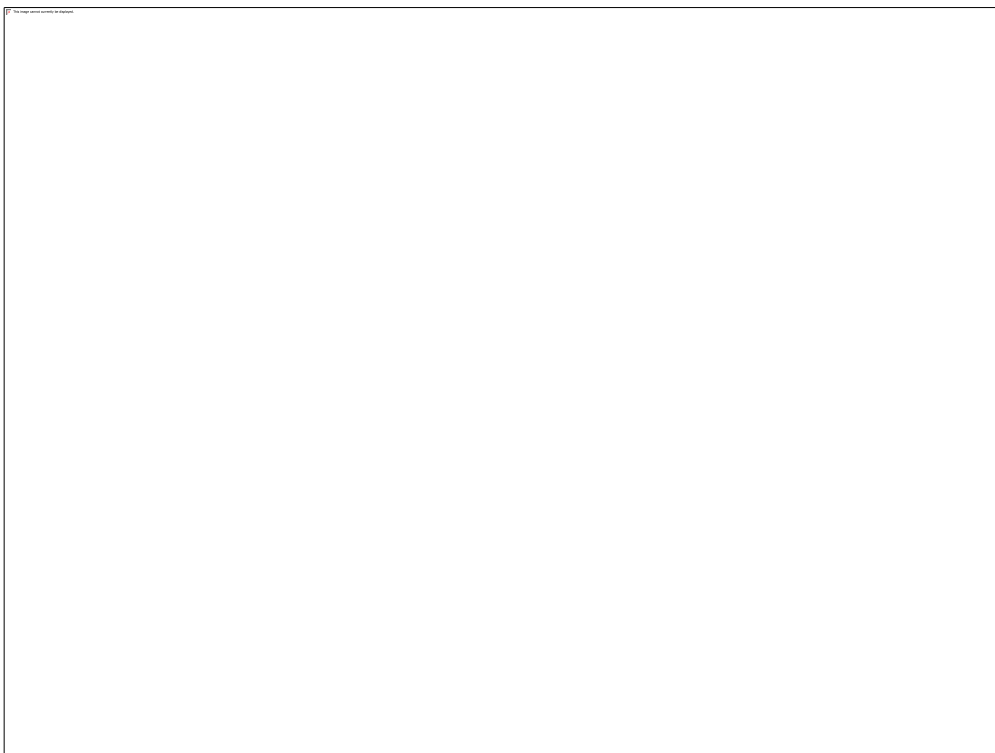


**Figure 10** Black Creek Flood Control Channel undergoing major maintenance to restore conveyance.

#### Attachment 4: Photographs of various TRCA flood infrastructure and projects



**Figure 11** Scarlett Flood Control Channel erosion repair before and after photos.



**Figure 12** Vegetation removal at Yonge/York Mills Channel as part of TRCA's preventative maintenance program.



#### Attachment 4: Photographs of various TRCA flood infrastructure and projects



**Figure 13** Partially blocked flood control channel at Black Creek.



**Figure 14** Black Creek Channel after major maintenance (2014).



#### Attachment 4: Photographs of various TRCA flood infrastructure and projects



**Figure 15** Bolton Berm before major maintenance and upgrades.



**Figure 16** Bolton Berm repair as seen from drone survey (2020).



**Figure 17** Bolton Berm rip rap installation (2020).

## Attachment 5: Priority Project List for Addressing TRCA's Flood Infrastructure Deficiencies

Dams						
Project Name	Structure	Priority	Funding Status	Potential Funding	Estimated Cost	Description
Bolton Berm Major Maintenance Phase II	Bolton Berm	High	Partially Funded	WECI	\$1,200,000	<ul style="list-style-type: none"> <li>• Berm requires raising in certain sections to meet 500-year flood protection.</li> <li>• Berm requires rip rap protection to prevent erosion.</li> </ul>
Stouffville Dam Embankment and Emergency Spillway Repair	Stouffville Dam	High	Unfunded	WECI/ICIP	\$450,000	<ul style="list-style-type: none"> <li>• Embankment requires rip rap buttressing on downstream slope to increase factor of safety.</li> <li>• Emergency spillway requires erosion protection.</li> </ul>
Palgrave Dam Major Maintenance and Overtopping Protection	Palgrave Dam	High	Unfunded	WECI/ICP/DMAF	\$1,000,000	<ul style="list-style-type: none"> <li>• Dam requires engineering design and repairs to install overtopping protection on the embankment.</li> <li>• Stop log deck and hoisting system require upgrades to allow installation and removal of stop logs.</li> </ul>
Glen Haffy Extension Dams Emergency Stabilization Works and Decommissioning	Glen Haffy Upper Dam and Lower Dam	High	Partially Funded	WECI/ICIP/DMAF	\$1,500,000	<ul style="list-style-type: none"> <li>• Installation of emergency stabilization works.</li> <li>• Engineering studies and dam removal works.</li> </ul>
Stouffville Dam Major Concrete Repair	Stouffville Dam	Medium	Unfunded	WECI/ICIP/DMAF	\$250,000	<ul style="list-style-type: none"> <li>• Emergency spillway requires erosion protection</li> <li>• Earthen embankment does not meet factor of safety requirements</li> <li>• Concrete requires repairs</li> </ul>
Stouffville Channel Major Maintenance and Naturalization	Stouffville Dam	High	Unfunded	ICIP/DMAF	\$900,000	<ul style="list-style-type: none"> <li>• Removal of existing gabion basket lining and replace with natural channel materials.</li> </ul>
Pickering/Ajax Dyke Reconstruction	Pickering Dyke/Ajax Dyke	High	Unfunded	ICIP/DMAF	\$12,600,000	<ul style="list-style-type: none"> <li>• Reconstruct dykes to meet current engineering guidelines.</li> </ul>
Black Creek Dam Spillway Pipe Modification	Black Creek Dam	Medium	Unfunded	WECI/ICIP/DMAF	\$1,000,000	<ul style="list-style-type: none"> <li>• Modify spillway pipe to eliminate debris blockages.</li> </ul>
G. Ross Lord Dam Gate Optimization and Operational Study	G. Ross Lord Dam	Medium	Partially funded	WECI/ICIP/DMAF	\$350,000	<ul style="list-style-type: none"> <li>• Engineering study to maximize G. Ross Lord Dam's reservoir storage for short duration, high intensity storms.</li> </ul>
Secord Dam Decommissioning	Secord Dam	Medium	Unfunded	ICIP/DMAF	\$1,100,000	<ul style="list-style-type: none"> <li>• Engineering studies and dam removal works.</li> </ul>
Osler Dam Decommissioning	Osler Dam	High	Unfunded	ICIP/DMAF	\$300,000	<ul style="list-style-type: none"> <li>• Engineering studies and dam removal works.</li> </ul>
Glen Haffy Dam East and Glen Haffy West Dam Safety Review	Glen Haffy Dam West Glen Haffy Dam East	Low	Unfunded	WECI	\$100,000	<ul style="list-style-type: none"> <li>• Undertake Dam Safety Review of both dams.</li> </ul>

Woodbridge Grade Control Structure Removal (Board of Trade Weirs)	Woodbridge Channel	Low	Unfunded	ICIP/DMAF	\$1,000,000	<ul style="list-style-type: none"> <li>• Engineering study and removal of two grade control weirs.</li> </ul>
G. Ross Lord Dam Safety Review	G. Ross Lord Dam	Low	Funded	WECI	\$170,000	<ul style="list-style-type: none"> <li>• Undertake Dam Safety Review</li> </ul>
Claireville Dam Major Maintenance	Claireville Dam	Low	Unfunded	WECI/ICIP/DMAF	\$7,000,000	<ul style="list-style-type: none"> <li>• Enlarge spillway apron for extreme flows.</li> <li>• Upgrade gate hoisting systems.</li> <li>• Repair spillway wall.</li> </ul>
Milne Dam Major Maintenance	Milne Dam	Medium	Unfunded	WECI/ICIP/DMAF	\$2,700,000	<ul style="list-style-type: none"> <li>• Install overtopping protection to earthen embankment.</li> <li>• Enlarge spillway apron for extreme flows.</li> <li>• Increase factor of safety for spillway and wing walls.</li> </ul>
<b>Total</b>					<b>\$31,620,000</b>	

### Section III – Items for the Information of the Board

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

**FROM:** Darryl Gray, Director, Education and Training

**RE:** **NATIONAL FLIGHT OF THE MONARCH DAY**  
Post Event Report

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#### KEY ISSUE

Information report on August 22, 2020 National Flight of the Monarch Day Proclamation and activities.

#### RECOMMENDATION

**WHEREAS** at Board of Directors Meeting #11/19, held on January 24, 2020, Resolution #A228/19 was approved, proclaiming August 22, 2020 as Flight of the Monarch Day;

**IT IS RECOMMENDED THAT** this report be received for information of the Board of Directors;

**AND FURTHER THAT** this update report be circulated the Minister of Environment and Climate Change, and to Toronto and Region Conservation Authority watershed municipalities that participated in Flight of the Monarch Day 2020;

#### BACKGROUND

TRCA is the national host of the Monarch Nation program, a federally funded biodiversity program seeking to achieve community activation in support of species at risk in Canada.

Monarch Nation brings together a collective of partners in Ontario and across Canada, whose combined experience and expertise in educating the public about species at risk, particularly monarch butterflies, places them in an ideal position to advocate for the monarch butterfly;

The monarch butterfly is designated as a species at risk in Ontario and Canada by The Committee on the Status of Endangered Wildlife in Canada (COSEWIC), Government of Canada Species at Risk Act (SARA) and Species At Risk in Ontario (SARO);

At Board of Directors Meeting #11/19, held on January 24, 2020, Resolution #A228/19 was approved, proclaiming August 22, 2020 as Flight of the Monarch Day, and requesting local watershed municipalities to recognize August 22<sup>nd</sup> as Flight of the Monarch Day.

#### RATIONALE

The initial Flight of the Monarch Day workplan included working with organizations across Canada to support multiple external agencies in organizing monarch-focused events on August 22<sup>nd</sup>, raising awareness of the at-risk status of the monarch butterfly. With the onset of the global pandemic related to COVID-19, plans shifted to enable participation on an individual or household basis. Monarch Nation developed a suite of resources to engage children in activities centred on the monarch butterfly which were distributed to all those registered for the event throughout the summer, building up to the August 22<sup>nd</sup> Flight of the Monarch Day event.



## Item 9.3

While delivering an event of this scale during a pandemic presented significant challenges, the inaugural National Flight of the Monarch Day provided the opportunity to forge new partnerships, build new learning and stewardship models and engage thousands of individuals, families and local community groups in activities in support of biodiversity across Canada. Nearer to the event, it became clear that there was appetite from many external agencies to hold targeted events, primarily online, however, several organizations developed strategies to run safe, in-person events, with over 50 external organizations registering Flight of the Monarch Day events, as well as over 200 smaller, localized groups participating in self-directed family or information activities.

Organizations participating and supporting Flight of the Monarch Day included eleven municipalities from within TRCA's watersheds: Ajax, Brampton, Caledon, Markham, Mono, Pickering, Richmond Hill, Toronto, Uxbridge, Vaughan, York Region. The following is a brief summary of programs or activities delivered by local municipalities in support of Flight of the Monarch Day:

- City of Brampton: childrens' activities through the libraries and through Blue Skies theatre company;
- Town of Mono: delivered a children's colouring contest;
- City of Richmond Hill: distributed monarch-friendly plant kits to 187 residents free of charge and created a video and community collage;
- Town of Pickering: socially distant creative dance performance in local municipal parks;
- City of Toronto: monarch-focused art workshop for children through Toronto Public Library online programs;
- Town of Uxbridge: guided, monarch-focused hike;
- City of Vaughan: online children activities and a Facebook video.

Other organizations that participated in, or supported, Flight of the Monarch Day included Alus Norfolk, Assiniboine Park Zoo, The Butterflyway Project, Cambridge Butterfly Conservatory, Georgian Bay Land Trust, Lake Simcoe Conservation Authority, Nature New Brunswick, Nature Saskatchewan, Parks Canada, Royal Botanical Gardens, Toronto Zoo and Wye Marsh. Activities included guided hikes and citizen science monitoring, interpretive dance, interactive live caterpillar and butterfly displays, monarch-related art instruction, butterfly releases, colouring contests, plant kit give-ways and planting events. In addition, a large number of engaging Facebook Live sessions and pre-recorded videos promoting the event were delivered.

Overall, the 2020 Flight of the Monarch Day saw an estimated total involvement of over 15,000 people across Canada, taking into account both virtual and in-person participation. Additionally, the event was covered on local and national media providing further exposure to individuals and communities on the importance of supporting and restoring biodiversity both locally and nationally.

### **Relationship to Building the Living City, the TRCA 2013-2022 Strategic Plan**

This report supports the following strategy set forth in the TRCA 2013-2022 Strategic Plan:

#### **Strategy 5 – Foster sustainable citizenship**

### **FINANCIAL DETAILS**

Funding for the Monarch Nation program is provided through a Government of Canada grant. Account #366-56/14160.

## Item 9.3

### **DETAILS OF WORK TO BE DONE**

Staff will continue to work with Environment and Climate Change Canada to achieve an official designation for August 22<sup>nd</sup> as National Flight of the Monarch Day.

Additionally, staff will continue to explore funding opportunities through Environment and Climate Change Canada and others in support of future Monarch Nation and Flight of the Monarch Day programs and services, including the submission of grant applications as appropriate.

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**Date: October 9, 2020**

**Attachments: 1**

Attachment 1: [Flight of the Monarch Day Supporting Doc](#)