

Toronto and Region Conservation Authority (TRCA) Service Areas and Services

Service Areas Included in this Agreement and
Possible Scope of Work that may be provided by TRCA for each Service Area

The TRCA services below are structured according to according to TRCA's current budget framework and encompasses the entirety of services offered by TRCA. Given that the Conservation Authorities Act enabling regulations have not been released at this time, the services below are not divided into mandatory and non-mandatory services. This list may be further refined and structured upon the release of Conservation Authorities Act regulations.

TRCA Service Areas

- Service Area 1 – Watershed Studies and Strategies
- Service Area 2 – Water Risk Management
- Service Area 3 – Regional Biodiversity
- Service Area 4 – Greenspace Securement and Management
- Service Area 5 – Tourism and Recreation
- Service Area 6 – Planning and Development Review
- Service Area 7 – Education and Outreach
- Service Area 8 – Sustainable Communities

TRCA Service Areas and associated services include the capacity for full project management. This includes:

- Full life cycle project management – planning, design and implementation.
- Permitting/approvals including Individual and Class Environmental Assessments as a lead or co-proponent.
- Planning Ecology liaison function between development approvals, and municipal and/or TRCA projects to ensure consistency and connectivity.
- Design, facilitate and lead mandated and non-mandated public consultation processes.
- Contract management for speciality technical services and detailed design.
- Conceptual/detailed designs.
- Volunteer and stewardship group coordination in support of planning, development and management initiatives.
- Watershed plan implementation.

In addition to overall project management, TRCA also offers services specific to construction related to the Service Areas below. These services include:

- Managing construction contracts.

- Construction site inspections and reporting.
- Detailed construction cost estimating.
- Constructability assessments.
- In-water or near-water construction including construction site dewatering and stream by-pass.
- Construction in environmentally sensitive areas.
- Managing construction contracts.
- Construction site inspections and reporting.
- Survey and Drafting:
 - Topographic surveying (Total Station/RTK GPS /RPAS-Photogrammetry) (Development of topographic mapping; Providing support for operational activities during all project phases including post-construction monitoring; Monitoring of Bluff Erosion, Waterfront Structures, Erosion Hazard Monitoring).
 - Hydrographic surveying (Produce bathymetric data/mapping; Providing support for operational activities during all project phases including post-construction monitoring).
 - Drafting CADD (Civil3D).

Scope of Work Available for each Service Area

Service Area 1 – Watershed Studies and Strategies

1.1 Watershed Planning and Reporting

TRCA conducts watershed and waterfront planning in collaboration with partner municipalities to develop comprehensive strategies that enable TRCA to fulfil its responsibilities for natural hazard and natural resource management under the Conservation Authorities Act and Planning Act, as well as to support partner municipalities in undertaking land use planning, by assessing risks, developing strategies, and identifying implementation priorities at a cumulative and comprehensive scale.

TRCA's jurisdiction includes the Humber, Etobicoke, Mimico, Don, Highland, Rouge, Petticoat, Duffins, and Carruthers watersheds as well as 67 km of Lake Ontario shoreline. This area encompasses 3,495 km² of land and 3,654 km of river or stream winding through 20 municipal jurisdictions.

- Development of updated integrated watershed and subwatershed plans, studies, and strategies to inform municipal land use and infrastructure decisions.
- Coordination and tracking of watershed and subwatershed plan implementation.
- Watershed plan partner and stakeholder engagement.
- Integrative policy and technical expertise in informing Municipal Comprehensive Reviews and other municipal policy initiatives.
- Environmental data acquisition to support watershed and subwatershed plan development.
- Development and ongoing maintenance of a Watersheds and Ecosystems Reporting Web Application to communicate up-to-date watershed and waterfront conditions.
- Development of Watershed Report Cards in partnership with Conservation Ontario every 5 years.

1.2 Emerging and Integrative Climate Science

Climate Science responds to information needs and knowledge gaps identified by partner municipalities, other government agencies, and external stakeholders. This includes undertaking projects and programs that increase the resilience of TRCA watersheds, natural systems, and partner

communities to extreme weather and a changing climate. The scope of the work includes obtaining the best knowledge of current and future patterns of weather and climate, understanding potential impacts, emerging policies, innovative practice, and developing programs to respond and adapt.

- Expertise in evaluating and quantifying the ecosystem services provided by natural features and green infrastructure.
- Development of, and support for interpreting and applying, updated future climate change projections.
- Expertise in climate vulnerability and risk assessments and adaptation planning with linkages to watershed planning.

Service Area 2 – Water Risk Management

2.1 Water Resource Science

Water Resource Science is focused on the engineering and science of water resource management. Technical services provide an understanding of the current state of the watershed, inform growth management strategies for new communities, support the work of flood management, and promote the implementation of green infrastructure. TRCA maintains research, monitoring, and data analysis capabilities to meet internal and municipal partner data requirements in a manner that maintains intellectual property, data integrity, and cost-effectiveness. Proper water management practices are critical for the protection of life and property from flooding as well as the continued health of aquatic and terrestrial habitats.

Groundwater Strategies

- Identification of areas of potential groundwater concern.
- Provide expertise in groundwater management and protection.

Source Protection Strategies

- Amend CTC Source Protection Plan and TRSPA Assessment Report based on best available science.
- Development of annual workplans for approval by Ministry of Environment, Conservation, and Parks.
- Provide administrative, technical and planning support to the CTC Source Protection Committee.
- Support municipalities in the implementation of the CTC Source Protection Plan.
- Provide annual reporting to the Ministry of Environment, Conservation, and Parks.

Regional Monitoring – Water

- Characterization and tracking of water quality conditions including nutrients, metals and conventional water quality parameters.
- Annual analysis and reporting and the provision of data to support development and infrastructure planning and maintenance.
- Stormwater characterization and monitoring of SWM control ponds and structures (including LIDs).
- Insitu flow measurement and instrumentation.
- Thermal (stream temperature) monitoring of project sites, SWM facilities.
- Long-term erosion monitoring and characterization of fluvial geomorphological processes.

- Installation, monitoring and maintenance of TRCA gauging networks including stream flow, precipitation and climate stations to support:
 - Flood Forecasting and Warning Program.
 - Hydraulic and hydrologic models.
 - Floodplain mapping.
 - Development Review.
 - Infrastructure Design.
- Installation, monitoring and maintenance of TRCA's gauging network of real-time stream flow and rain gauges for:
 - Issuing flood warning messages.
 - Data acquisition for TRCA's flood warning website.
 - Operation of flood control dams.
 - Emergency management.
- Installation, monitoring and maintenance of storm water quality stations to support municipal and provincial programs to improve riverine and Lake Ontario.

Stormwater Management

- Stormwater Management Strategy and Design:
 - Provide site level peak flow assessment and stormwater mitigation strategies for publicly owned properties.
 - Provide designs to mitigate stormwater runoff to meet municipal and Conservation Authority criteria.
 - Review of stormwater management strategies and designs to provide input and guidance, as required.
- Infrastructure Design and Support:
 - Provide water resources engineering design of trail culverts and drainage requirements.
 - Provide water resources engineering design of berms and spillways in support of wetland creation.
 - Provide design of erosion protection for infrastructure, including outfall structures.
- Support Municipal Water Resource Management Objectives:
 - Provide Technical Advice as it pertains to Water Resources Engineering towards Master Plans and Secondary Plan requirements.
 - Provide Technical Advice for development SOPs for Low Impact Developments within municipally owned lands, including ROW.

Flood Plain Mapping

- Hydrologic/Hydraulic Analysis, including urban drainage systems.
- Hydrology modelling and associated stormwater management criteria development.
- Hydraulic modelling including two-dimensional modelling.
- Establishing the flooding hazard limit through floodplain mapping studies.
- Development of engineered floodplain map sheets.
- Utilizing hydrometrics data gathered through Regional Monitoring to develop updated floodplain mapping.

2.2 Flood Management

TRCA provides municipalities and citizens with comprehensive flood risk identification, warning, and mitigation services as dictated by the *Conservation Authorities Act* (1946). The Flood Management program is responsible for producing long term plans to minimize the loss of life and property due to

flooding. Management of flood risk is achieved through operation of a Flood Forecasting and Warning Centre; implementation of flood remediation projects; maintaining and operating flood control infrastructure; operation of specialized gauging networks; and data management.

Flood Forecasting and Warning

- Monitoring of weather conditions that could lead to flooding; providing a complement of staff who are on-call, as weather conditions dictate, 24/7/365.
- Issuance of Flood Forecasting and Warning messages to partners and the public.
- Communication of flood conditions to the public via media requests.
- Technical advisory to municipal partners during a flood emergency, support of municipal emergency operations centre activities during flood emergencies.

Flood Risk Management

- Flood Risk and Remediation Assessment:
 - Riverine and fluvial flood characterization studies and scenario analysis.
 - Expertise in assessing flood risk to structures, roads, infrastructure, and communities; flood risk assessment and ranking of priority areas.
 - Flood remediation feasibility studies.
 - Project management of flood remediation environmental assessments and project management for preliminary design of flood protection capital works.
 - Support of detailed design process for flood protection capital works.
- Flood Emergency Management:
 - Flood risk communication and public engagement initiatives.
 - Support the development and execution of Emergency Management and Civil Protection Act compliance exercises with a flood risk focus.
 - Flood emergency plan development and training; development of flood emergency management resources for municipal staff.
- Project Management:
 - Environmental compliance.
 - Permitting/approvals.
 - Geotechnical investigation/review as necessary to assess slope stability and risk to private/public assets.

Flood Infrastructure and Operations

- Operation of Flood Control infrastructure to minimize flood risks.
- Asset maintenance and management for flood control infrastructure.
- Dam Safety Reviews.
- Emergency Preparedness Plans for Flood Infrastructure.
- Stormwater pond assessments, bathymetric surveys, clean-outs, retrofits and maintenance plans.
- Watercourse infrastructure inventories and assessments.

2.3 Erosion Management

Erosion Management protects life and property against the hazards of erosion and slope instability. TRCA offers comprehensive and integrated erosion identification, assessment and remediation services to TRCA owned assets and municipal and provincial partners and private property owners. Erosion works are frequently bundled with habitat and/or public greenspace enhancements to improve aesthetic, environmental, and economic value.

Erosion Management Capital Works

- Planning and implementation of remedial erosion control projects to protect existing infrastructure or support new infrastructure development. This includes the following services:
 - Overall project management including liaising and obtaining agreements with private landowners.
 - Obtaining all necessary permits and approvals.
 - Complete all Environmental Assessment requirements including leading public meetings and drafting Project Files or Environmental Study Reports.
 - Environmental compliance.
 - Develop detailed designs to address hazards including retaining consultants or utilizing TRCA's drafting and design team.
 - Construction of erosion control structures (e.g. retaining walls, revetments, weirs/turning vanes).
 - Implementation of remedial erosion control works and administer contracts for specialized services.
 - Post-construction compliance monitoring and reporting.

Erosion Hazard Monitoring

- Establishing scalable long-term monitoring programs to assess risk from erosion or slope instability to property or infrastructure.
- Condition monitoring of existing erosion control structures.
- Geotechnical investigation/review as necessary to assess slope stability and risk to private/public assets.
- Monitoring of watercourse-based erosion or slope instability through the establishment of formal sites that includes sketches, photos, and observations.
- Sharing of monitoring data/reports through a web-based database (Stream, Erosion and Infrastructure Database) that can be customized to better integrate with existing systems.
- Prepare technical reports that summarize findings from field inspections to establish priorities for action and to inform capital plans.
- Depth of cover monitoring and topographic surveys to assess erosion risk to buried infrastructure.
- Remotely Piloted Aircraft System (RPAS) assessments of erosion hazards.

Service Area 3 – Regional Biodiversity

3.1 Ecosystem Management Research and Directions

Ecosystem management research and directions delivers initiatives to develop, communicate and regularly update jurisdiction-wide ecosystem management strategies, while responding to information needs and knowledge gaps identified internally or by partner municipalities. In addition to ensuring value creation and capture in partnership arrangements, TRCA's on demand internal expertise allows independent research in support of internal, municipal, provincial, and federal program and policy development. Internal capacity also ensures the early inclusion of integrated watershed management principles and systems thinking in knowledge generation, planning and policy development, and practical application.

Aquatic System Priority Planning

- Aquatic ecosystem characterization and scenario analysis under future land use and climate.
- Water Resource System planning and mapping.

- Strategic management prioritization of aquatic species and habitat:
 - Developing ranking system.
 - Identifying potential habitats.
- Aquatic habitat connectivity and barrier assessments and management.
- Stormwater management systems and natural aquatic systems integration guidance.

Terrestrial (and Integrated) Ecosystem Planning

- Terrestrial ecosystem characterization and scenario analysis under future land use and climate.
- Updated and integrated Natural Heritage System planning and mapping.
- Strategic and integrated Natural Heritage System (terrestrial and aquatic) implementation to support land use planning, EA planning, watershed planning, restoration planning, and municipal comprehensive review processes.
 - Ecological data analysis, modeling, and synthesis.
 - Identify appropriate site level management actions within the context of broader watershed and regional priorities.
 - Develop method and map specific components of Natural Heritage System that are not comprehensively identified at the regional scale (e.g. significant wildlife habitat).
- Habitat Connectivity and Wildlife Movement Data, Priorities and Guidance.
 - Strategic guidance at preliminary stages of EA planning.
 - Field data collection and analysis to inform EA processes.
 - Studying before and after construction impacts and mitigation efficacy.
 - Collective ecosystem benefit of the mitigation at watershed / regional level
- Research and communication of best management practices for natural system and ecosystem protection and restoration, natural system planning and other natural heritage and aquatic habitat initiatives in support of municipal plans and strategies.
- General support and guidance in the application of the latest science and practice of ecosystem management, climate change adaptation, green infrastructure, and integrated water management.
- Support in incorporating climate change and natural assets into asset management planning.
- Ecosystem service valuation methods and application.
- Facilitating research partnerships to help fill priority knowledge gaps towards achieving municipal objectives.
- Planning Ecology liaison function between TRCA monitoring, research and restoration planning and implementation efforts and municipal planning process and other programs.

Restoration Opportunities Bank

- Habitat offsetting carried out in anticipation of future impacts that is generally created by restoring a damaged stream or an associated wetland.
- Post-Construction Monitoring (usually 3 years) is required.
- Credits can be used to obtain Authorizations under the federal Fisheries Act.
- Set up a banking arrangement between the proponent and DFO:
 - Legal Agreement.
 - Service Area.
 - Credit Release Schedule.
 - Monitoring Protocols.
 - Design, permit and construct the project.
 - Post-construction monitoring.

- Reporting with credit ledger.

3.2 Biodiversity Monitoring

Biodiversity Monitoring assesses catalogues and reports on the condition and trends of terrestrial and aquatic biodiversity throughout TRCA jurisdiction. These data contribute to the understanding and conservation of flora and fauna species and communities, the success of restoration and management activities, as well as the understanding of invasive species prevalence and trends. Data analysis further serves to guide and support TRCA and partner municipality activities. As part of an integrated service delivery model, Biodiversity Monitoring enables TRCA to accelerate the adaptive management cycle and to address emerging opportunities and concerns more quickly, comprehensively, and cost effectively.

Regional Monitoring – Biodiversity

- Long term monitoring at strategic locations across the municipalities, watersheds, and TRCA jurisdiction to track, assess, and report on the changes in terrestrial and aquatic habitat and biodiversity (e.g. plants, animals, fish, benthic) over time at these specific geographic scales.
- Comprehensive analysis and synthesis of the changes within the context of land use and climate change to provide on-the-ground evidence on type and extent of impacts and guidance on mitigation and management actions.

Activity Based Monitoring - Aquatic and Terrestrial

- Characterize the biophysical attributes of the Lake Ontario waterfront and 9 watersheds including: Fish, Benthic invertebrates, Sediments, Water quality, habitat, Breeding birds, Amphibians, Vegetation (tree health, composition, structure, regeneration), and species at risk.
- Targeted monitoring to address specific questions or project concerns such as effectiveness of crossing structure design for wildlife movement, habitat use of specific species of concern, stormwater management pond efficacy to reduce thermal load on streams etc. to ensure future management actions are effective and efficient.

Terrestrial Inventory and Assessment

- Strategic increase in the coverage of fauna, flora, and vegetation inventory data across the region to inform land use and EA planning process and complement the long-term monitoring data.
- Terrestrial biological inventory and assessments conducted on a site by site basis that can consist of the following activities:
 - Mapping of the vegetation communities to vegetation type (Ecological Land Classification – ELC).
 - Mapping of flora and fauna species of conservation concern (and Species at Risk) along with species list for the area. Fauna species surveys include breeding birds and amphibians.
 - Bat acoustic monitoring.
- Wetland Evaluation as per the ON Wetland Evaluation System.
- These data are used to describe baseline conditions for an area and provide the following:
 - Relevant data to inform land management decisions related to land development, trail, alignments or restoration plans.
 - Identifies sensitive natural heritage system features.
 - Watershed planning and report cards.

3.3 Restoration and Regeneration

Restoration and Regeneration includes a variety of programs and projects that restore physical habitat and improve ecosystem health and habitat function. The Restoration and Regeneration program undertakes comprehensive and integrated environmental restoration services for TRCA owned assets, public sector partners and private clients. The program offers the ability of streamlined restoration planning, implementation and permitting services, making TRCA's offerings unique in delivering both economic and environmental value-added services.

Watershed Restoration

- Watershed restoration recommendations and implementation.
- Restoration of appropriate natural cover and essential wildlife habitats preferably guided by the priorities identified by watershed plans and other TRCA and municipal partner strategies (e.g. urban forest strategies, climate adaptation strategies, sustainability strategies). Restoration can include meadows in hydro corridors and other natural cover in other transient areas across urban-rural gradient.
- Hydrologic improvements.
- Design and construction of community gathering spaces such as fishing nodes and lookouts.

Shoreline Restoration

- Shoreline improvements to address erosion concerns, improve water quality and enhance fish and wildlife habitat.

Wetland Restoration

- Restoration of degraded wetlands, including marginal lands (e.g. agricultural lands) and wetland creation to improve water quality and quantity, mitigate downstream flooding (where feasible), enhance fish and wildlife habitat and create opportunities for nature appreciation.

Riparian and Flood Plain Restoration

- Restoration of degraded riparian habitat and flood plains to improve water quality and quantity, mitigate downstream flooding (where feasible), enhance fish and wildlife habitat and create opportunities for nature appreciation.

Natural Channel and Stream Restoration

- Stream restoration including natural channel design implementation in failing concrete lined channels and erosion mitigation.
- Pond decommissioning and site remediation.
- Development and implementation of a long term, multi-year restoration strategy:
 - Restoration Opportunity Planning.
 - Restoration Strategic Prioritization.
 - 5-year reach based strategic plans.
 - Natural channel design planning.
 - Watershed Planning.

Natural Channel Design – Monitoring and Evaluation

- Monitoring and evaluation of Natural Channel Design (NCD) projects for:
 - improving water management.
 - promoting sustainable communities.
 - protecting and regenerating natural habitats.

- Developing monitoring plans to ensure that priorities have been and will continue to be met.
- Collection of monitoring data before, during, and after restoration work to track project outcomes and inform future NCD projects.

Wildlife Habitat Management

- Identifying strategic habitat needs for various groups of TRCA's regional Species of Concern and Vegetation Communities of Concern at regional and site scale and providing guidance and decision support tools to inform management actions.
- Structural habitat implementation such as bird boxes, snake hibernacula, and turtle habitat.
- Wildlife and ecosystem management to reduce human-wildlife conflict (e.g. Canada Geese, beaver dams, meadow management, etc.).

Inland and Lakefill Soil Management

- Identifying strategic soil disposal opportunities that benefit and accelerate restoration projects while providing Municipal and Regional partners with viable excess soil re-use options for infrastructure projects.

Compensation Restoration

- Guide and assist municipalities in replacing natural features lost through the development and/or infrastructure planning process in accordance with TRCA's "*Guideline for Determining Ecosystem Compensation*" after the decision to compensate has been made.

3.4 Forest Management

Forest Management is related to the establishment and maintenance of healthy, vigorous and diverse forest cover and associated habitat. TRCA's expertise allows it to offer comprehensive and integrated forest management, reforestation and restoration services to municipal and regional partners and private property landowners. To ensure supply availability and cost effectiveness for the use of native species in TRCA ecosystem regeneration projects, Forest Management operates its own nursery. Locally collected seed is used to grow highly desirable hardy native plant materials well adapted to local conditions.

Forest Management Planning

- Development of Forest Management Plans.
- Development of urban forest studies, strategies, and arborist reports.
- Completing ongoing monitoring of forest health.

Forest Management Operations

- Stand tending/thinning.
- Tree planting services.
- Supply of nursery stock from TRCA's local tree and shrub nursery.
- Full-service tree and shrub plantings/site prep/mulching.

Managed Forest Tax Incentive Planning

- Creation of Managed Forest Plans to make landowners eligible for the provincial Managed Forest Tax Incentive Program.
- Provide consulting services to landowners about managing their forests for various objectives.

Invasive Species Management

- Mapping and assessment of priority invasive species and management locations.
- Development of invasive species management plans.

- Implementation of invasive species management plans.

Hazard Tree Management

- Triage-based hazard assessment and mitigation (and emergency storm response).

• Service Area 4 – Greenspace Securement and Management

4.1 Greenspace Securement

Greenspace Securement brings lands into public ownership or otherwise secures the assurance of their protection through private landowner agreements. Greenspace securement protects human life and property by securing lands subject to erosion or flooding hazards, protects the form and function of natural heritage lands by bringing them into public ownership and management, and increases local and regional recreational health benefits by allowing for public use and programming. TRCA's current landholdings contain approximately 7.3% of the total land base of TRCA's jurisdiction with more than 18,000 hectares.

Greenspace Planning

- Strategic planning to identify criteria and priorities for securement that support natural heritage, cultural heritage and public use objectives.
 - Prioritization assessments and mapping to guide acquisition to ensure natural heritage objectives are met.
- Strategic planning to maximize the benefits of a watershed approach to land acquisition, ownership and management as it pertains to flood control, tree planting, erosion control, recreation.
- Support and coordination for contiguous ownership across municipal boundaries to create increased resilience for climate change. Lands can be holistically planned and managed to protect from erosion from significant weather events, improving overall tree cover, increased groundwater absorption facilitating conservation land improvements (providing permeable surface areas), and improved water quality through wetlands and groundwater infiltration.

Greenspace Land Acquisition

- Watershed plan implementation.
- Coordination of easements/grants to support municipal infrastructure development.
- When opportunities present themselves or when requested to act on behalf of municipalities, TRCA can move rapidly to secure greenlands, hazard lands, and valley lands.

4.2 Greenspace Management

TRCA undertakes comprehensive land asset management services on TRCA managed greenspace to reduce risk to human and assets from natural or human hazards, eliminate encroachments, and, where appropriate, provide opportunities for safe and enjoyable recreation experiences to residents and visitors. Projects under the program include monitoring and management of TRCA properties to ensure that their natural and cultural heritage values are protected in perpetuity while providing a safe visitor experience for the public.

Resource Management Planning

- Land management and master planning, including current conditions, background report, land management zones, management recommendations, public use plans, asset management plans, and implementation plans, and associated stakeholder and public engagement.
- Property site securement and protection planning.

Inventory and Audit

- Inventory, assessment and monitoring of property boundaries to address site securement and protection, hazard management and on-going property maintenance requirements.
- Easement compliance monitoring.

Implementation

- Fence and gate installation and maintenance.
- Property signs.
- Volunteer and stewardship group coordination in support of development and management initiatives.

Hazard Management

- Noxious plants (e.g., Giant Hogweed) management to address public safety concerns.
- Secured greenlands to provide a buffer from streams sources (agricultural or industrial activities, filter runoff).
- Ability to exclude incompatible uses from wellhead areas and recharge zones, thereby protecting drinking water sources.

Archaeology

- Stage 1 to 4 archaeological investigations and reporting.
- Indigenous engagement and consultation.

Service Area 5 – Tourism and Recreation

5.1 Conservation Parks

Conservation Parks offer visitors throughout the Toronto region a place to engage in outdoor recreation in a natural setting. As one of the largest landowners in the Toronto region, TRCA manages ten conservation parks across nine watersheds. Proximity to the urban core makes conservation parks attractive to urban and suburban residents and visitors seeking natural spaces and recreation opportunities within the Greater Toronto Area (GTA). Through diverse program offerings, TRCA Conservation Parks emphasize and encourage the connection between health and wellbeing and nature-based recreation within our communities.

- Provide and maintain available green space for recreational use including all facility maintenance, cleaning, reservation services, staffing, and customer services.
- Patrol TRCA parks and properties and promote appropriate public usage. Conduct inspections and investigations relating to public safety and land use infractions and respond to stakeholder concerns.
- Outdoor aquatic facility, campground and golf course management, maintenance, services and staffing.
- Development and delivery of community programs and education exhibits/displays that empower a diverse range of participants, build leadership, and tell the story of the Toronto region.

5.2 Waterfront Parks

TRCA is a significant waterfront landholder with jurisdictional authority over a portion of the Lake Ontario shoreline. TRCA's jurisdiction on the waterfront stretches 67 kilometers from Mississauga to Ajax, not including the Central Waterfront. In combination with TRCA's standing expertise in park development, project management, erosion and landform works, integrated shoreline management, environmental assessment, public consultation and stakeholder engagement, TRCA provides uniquely

comprehensive, streamlined, and value added waterfront park development offerings that mitigate municipal partner risk and associated expense.

- Provide support in acquiring funding, planning, design and construction of erosion protection and state of good repair of the Lake Ontario waterfront.
- Provide Lake Ontario waterfront planning and development services.
- Provide an advisory role in development of master plans for Lake Ontario waterfront parks and support Master Plan implementation through design and construction services.
- Work with Toronto Park, Forestry and Recreation on ongoing operations and maintenance of waterfront parks as per the 1972 Waterfront Agreement and provide construction support as needed.
- Conduct ongoing public engagement and outreach for Lake Ontario waterfront projects through communication with elected officials, partners and stakeholders.
- Support programs and projects related to debris clean-ups and provide services for naturalization/restoration projects with partners and stakeholders across the Lake Ontario waterfront.
- Primary liaison for Toronto Harbour Remedial Action Plan (RAP) program.
- Provide support through the Environmental Assessment process on large Lake Ontario waterfront projects.

5.3 Trails

TRCA is a leader in the planning, implementation and management of trails and associated infrastructure that provide safe, enjoyable recreational trail experiences for area residents and visitors. This expertise is utilized in the development and management of trail infrastructure on both TRCA managed greenspace and through fee for service agreements with partner municipalities to directly benefit communities across each region. This cooperation facilitates an integrated approach to the development and implementation of the jurisdiction-wide trail network identified in the Trail Strategy for the Greater Toronto Region. The TRCA trails program includes site specific planning, development and trail management activities that support TRCA's aim to create complete communities that integrate nature and the built environment by providing nature-based recreation experiences for a growing population while protecting and restoring the form and function of existing ecological systems.

Trail Planning, Development and Management

- Strategic and site planning for development of new trail networks and operational improvements to existing networks, including associated stakeholder and public engagement.
- Trail inventory, assessment and monitoring, including accessibility assessments.
- Wayfinding and trailhead signs.
- Amenity development, including parking lots, resting areas, benches, kiosks, interpretive signs.
- Maintenance, including mowing, minor repairs, sign replacement.
- User monitoring, including trail counts and user surveys.

5.4 Events and Festivals

Events and festivals promote community involvement and recreation while generating diversified revenue that supports TRCA's financial sustainability. TRCA offers a variety of unique indoor and outdoor accessible community event spaces for a variety of public events and festivals. With expertise delivering festival and event programming, TRCA can host and promote large-scale events in a manner that maximizes revenue, engagement, enjoyment, learning, and customer satisfaction.

Events and Festivals

- Provide tourism destinations and attractions, engaging large numbers of residents and out of area visitors, through the planning, development and execution of small to large scale festivals and events at a variety of TRCA property assets across our jurisdiction.
- Work with third party partners to host small to large scale events, including weddings, on TRCA property.

Service Area 6 – Planning and Development Review

6.1 Policy Development and Review

This program implements TRCA's mandated planning and regulatory responsibilities, as per TRCA's role as a watershed and shoreline manager, regulator, commenting agency, service provider and landowner. TRCA's role includes the review of federal, provincial and municipal legislation and incorporates the science and mapping of the integrated watershed management perspective. Participation in provincial and municipal initiatives (such as the Oak Ridges Moraine Coalition, Source Protection Committee, and Conservation Ontario, and Conservation Ontario sub-committees) are also key activities of Policy Development and Review.

Policy Development and Review

- Coordination of multi-disciplinary reviews of federal, provincial, municipal and TRCA policy initiatives of interest to TRCA, including municipal comprehensive reviews, comprehensive zoning by-law reviews, tree by-laws, sustainability initiatives, climate change action plans, etc.
- Development of policy and guidance documents to ensure natural hazards, natural features, water resources and ecological functions and hydrological functions are managed, protected and/or restored through development and infrastructure planning and to help ensure planning reviews are efficient and standardized.
- Providing policy, planning, technical and ecological input into policy related documents, including Official Plans and Special Policy Area reviews in accordance with provincial procedures.
- Implementation support to Development Planning and Permits, Infrastructure Planning and Permits, Watershed Planning and Reporting, Enforcement and Compliance, Conservation Lands and Trails Planning, Property, Restoration and Infrastructure.
- Managing TRCA regulation mapping.
- Managing TRCA Solicitor/Realtor Inquiry Service.

6.2 Development Planning and Regulation Permitting

Development Planning and Regulation Permitting provides advice to approval authorities under the Planning Act as a service provider, provincially delegated reviewer for natural hazards, public commenting body, and resource management agency. In working with approval authorities, private and public proponents, TRCA helps to facilitate sustainable development and infrastructure and ensures that it is adequately set back and protected from natural hazards and environmentally sensitive areas.

Development Planning and Regulation Permitting

- Watershed plan implementation.
- Review of applications made under the Planning Act for consistency with provincial natural hazard, natural heritage and water policies and TRCA permitting authority.
- Official Plan support (policy development and associated hearings/mediation), MESP's, transportation/servicing master plans.
- Facilitation of natural heritage and natural hazard lands into public ownership.

- Other environmental planning services as requested by municipality.
- Provide value added service to the development process through hands on assistance with developers and consultants with meeting challenging design mitigation strategies.
- Provide regular training to development and consulting community to assist with meeting TRCA criteria.
- Conduct compliance audits of TRCA Planning and Development permit sites to ensure compliance with site plans, permit conditions, construction techniques and methodology, and environmental controls/ protections.
- Identify and address non-compliance issues and environmental concerns associated with approved development sites. Negotiate compliance and required permit amendments or revisions relating to TRCA regulatory jurisdiction, legislation, and policies.
- Address stakeholder concerns associated with unauthorized development activities within TRCA jurisdiction, and coordinate with partnering agencies and TRCA technical, planning, and senior staff to formulate solutions, and to develop compliance strategies.

6.3 Environmental Assessment Planning and Permitting

TRCA undertakes environmental assessments on behalf of municipal and agency partners. In addition, the Environmental Assessment Planning and Permitting section provides advice to approval authorities under the Environmental Assessment Act and associated legislations as a service provider, provincially delegated reviewer for natural hazards, public commenting body and resource management agency. These roles position TRCA to offer value-added environmental assessment consulting services that reduce proponent uncertainty and risk.

Environmental Assessment Planning and Permitting

- Watershed plan implementation.
- Provide value added service to municipal partners through hands-on assistance with meeting challenging design mitigation strategies.
- Provide regular training to development and consulting community to assist with meeting TRCA and applicable regulatory criteria.
- Provide technical and ecological input into Terms of Reference for municipally run projects in a timely manner.

Service Area 7 – Education and Outreach

7.1 School Programs

TRCA designs and delivers environmental education programs that complement provincial curriculum outcomes and objectives. This approach leverages TRCA's long-standing relationships with district school boards in the co-creation of programs tailored for classroom, community, and TRCA field trip locations. School Programs include formal and non-formal environmental education programs provided to students from pre-kindergarten to university level.

School Programs

- Development and delivery of curriculum linked education programs (day, overnight) that meet municipal/regional public education and public awareness goals and objectives such as waste, water conservation, wastewater management, composting, climate change.
- Activate school communities through the EcoSchools Canada platform to merge sustainability-minded facility operations and student learning with municipal goals and objectives around waste reduction, active transportation, energy and water conservation, and community involvement.

- Support large scale environmental education events by providing staffing, technical, educational, and volunteer management expertise and resources (e.g. York Children's Water Festival).

7.2 Family and Community Programs

Family and Community Programs utilize TRCA landholdings and infrastructure to offer affordable, educational, family-oriented programming. Family and Community Programs seek to enhance the richness and educational value of the visitor experience by delivering programs in unique natural and cultural settings. Programming is delivered through regularly scheduled activities, special events, attractions, and exhibits and programming.

Family and Community Programs

- Engagement of residents in the municipality or region in natural heritage, energy conservation, water conservation, outdoor recreation, and cultural heritage programs and workshops on topics such as native plants gardening, water conservation, energy conservation and renewable technologies.
- In collaboration with Region Social Services branch (early interventionists, physiotherapists and social workers), provide support to staff and clients by providing outdoor space, program development support and program delivery support at select conservation areas to meet client therapeutic outcomes.
- Engage with parents/guardians to promote and facilitate community learning and activation around Active Transportation.
- Provide training and development programming to mentor early- to mid-career stream staff in advancing their environmental sector employment goals (i.e. Young Conservation Professionals).
- Work with municipalities to animate and create engaging spaces for communities to recreate, gather, and realize entrepreneurial opportunities locally (i.e. Bolton Camp).

7.3 Newcomer Employment and Education

TRCA provides support services for new Canadians to settle socially, culturally, academically and economically into the Toronto region. To support employment and economic outcomes, TRCA utilizes in-house staff expertise to provide employment and training for new Canadians through bridge training activities that address current and future labour market shortages. TRCA also provides services to the employment sector that supports the successful integration and retention of new Canadians within the work force. Beyond the employment context, TRCA develops and delivers programming to expose newcomers to local environmental issues and topics.

Newcomer Employment and Education

- Engage newcomers through in-class environmental educational programs at English language learning centres, as well as through field trips and participation at cultural/faith events (Multicultural Connections Program).
- Develop and provide training, mentoring and employment coaching to youth and adult newcomers to connect them to environmental employment opportunities through the PAIE Program and the Newcomer Youth Green Economy Program.

Service Area 8 – Sustainable Communities

8.1 Living City Transition

The Living City Transition program supports innovation and improvement in existing TRCA community sustainability projects and builds alignment for action on broader sustainability issues within the region. TRCA delivers sustainability and resilience development programs that require significant public assets, diverse partnerships, and innovative non-profit funding models. TRCA leverages this unique combination of capacities, in conjunction with 50+ years of city-building and sustainable technology expertise, to create network-based sustainability initiatives.

Sustainable Neighbourhoods

- Lead neighbourhood screening process to map areas having multiple municipal priorities for urban renewal and climate action, and a need for integrated, collaborative projects.
- Develop and implement neighbourhood action plans for improved sustainability and resilience by building strong community support and implementation partnerships to advance projects in the private and public realms.
- Prepare neighbourhood scale climate vulnerability assessments, adaptation plans and resilience strategies by downscaling and informing municipality-wide data with local perceptions of risk, assets, needs and local knowledge.
- Design and deliver one-window home retrofit programs which help homeowners and municipalities address local priorities (e.g. flood risk reduction, stormwater management, tree planting, water and energy efficiency and renewables, rainwater supported urban agriculture, waste diversion etc.).
- Engage private property owners and tenants in design and delivery of revitalization projects for multi-unit residential, commercial and institutional properties.
- Inform integrated infrastructure renewal project designs and identify innovative funding partnerships that can deliver enhanced greening, climate action, active transportation and community amenities as part of road, parks or other renewal projects.
- Deliver programming that fosters community connections, emergency preparedness and capacity building for resilience.

Community Transformation

- Sustainability
 - Engaging municipal partners across the GTHA in sharing best practices and experiences in sustainability, including climate mitigation and adaptation.
 - Review and provide input to development and infrastructure planning and development on sustainability best practices.
 - Development of achievable sustainability targets and implementation scenarios to meet long term corporate goals and objectives.
 - Development of policies, standard operating procedures and guidelines for the day to day application of sustainability best practices by staff. Provide ongoing review and guidance to business units on application of sustainability best practices.
 - Custom reporting, including data collection and analysis, for corporate annual reports, GRI aligned reporting and division, facility and business unit-based sustainability performance tracking and reporting, and to guide ongoing practices.
 - Development and delivery of staff sustainability training programs for general onboarding and targeted programs. Integration of sustainability outcomes into staff accountability and job descriptions.
- Solid Waste Management

- Develop corporate solid waste strategies and facilities plans, including incorporation of leading-edge practices, to achieve waste diversion while supporting corporate goals for preserving natural resources and achieving regulatory compliance.
- Providing sustainability oversight to solid waste contracts and operational support for billing and service delivery. Coordination of hauler activities on site that support sustainable waste management.
- Annual auditing of waste streams to help sites and staff identify and improve waste collection and diversion opportunities and measure performance for recycling stream contamination and capture rates.
- Facility Energy and Water Management
 - Preparation of corporate and individual facility energy and water use management plans to achieve corporate goals.
 - ASHRAE Level 1 and 2 audits to identify implementation measures to meet corporate goals.
 - Ongoing tracking of energy and water performance to guide onsite management. Includes data collection and analysis, annual and ongoing performance tracking, and diagnostics to identify and address issues.
- Climate Change
 - Develop facility GHG reduction strategies and plans, climate mitigation and adaptation site action plans, and monitor ongoing performance.
 - Develop, analyze and report on carbon inventories, emission factors and carbon calculations at the corporate and project scales based on GHG Protocol standards for carbon accounting. Research and development of marginal emissions factors to provide enhanced business case analysis for energy efficiency projects.
 - Apply Low Carbon Resilience lens is to coordinate and co-evaluate adaptation and mitigation strategies in policy, planning and implementation processes to reduce both emissions and vulnerability.
- Sustainable Procurement
 - Research and development of sustainable procurement policies, standard operating procedures and guidelines designed to facilitate buyers to specify sustainable criteria within procurement process and value net benefits of sustainable purchases using total cost of ownership analysis.
 - Provide procurement review for sustainability issues. Includes expert insight for the procurement request process to ensure that purchasing process includes sustainability considerations that are grounded in feasible options that reflect best practices or best products and are reviewed accordingly in the bid evaluation of proposals.

Partners in Project Green

- Municipal Climate Innovation
 - Develop and implement neighbourhood scale and business zone engagement initiatives for municipalities, including associated workplans. Ensure that initiatives align with municipal Climate Change Action Plans and other relevant strategies.
- Energy Performance and Low Carbon Transport
 - Development of energy and low carbon strategies, such as zero-emissions vehicle strategies, alternative fuels and fuel efficiency strategies. Includes research, analysis, project management, vendor procurement, and stakeholder consultation.
 - Develop and lead Energy Leaders Consortium. Work with businesses and municipalities to share best practices and collective initiatives on energy management and conservation.

- Develop and lead Small-Medium Enterprise (SME) Energy Management Consortium. Work with SME's and municipalities to facilitate knowledge transfer on energy management best practices, and disburse funding provided by IESO.
- Water Stewardship
 - Develop and lead Municipal Water Efficiency Eco-Cluster. Establish partnerships between municipalities and businesses, exploring the nexus of water conservation and energy conservation, including case studies and summary report.
 - Support green infrastructure and low impact development, through research, report development, and connecting members with relevant TRCA services, vendors and information.
- Waste Management
 - Arrange Material Exchanges by “matchmaking” organizations that have large volumes of waste to other businesses or organizations that can use the materials, reducing waste to landfill and lowering costs for businesses within municipalities.
 - Conduct Recycling Collection Drives. In partnership with Diabetes Canada, participating businesses within GTA municipalities collect and divert textiles and e-waste to support municipal diversion and circular economy programming.
 - Develop and conduct Plastics Challenge Hackathons, which are multi-sector events to find innovative solutions to reduce plastic streams to municipality waterways.
- Communications, Engagement and Events
 - Offer Business Sustainability Education Webinar Series to promote sustainability and educate local businesses on best practices in the areas of energy efficiency, climate change mitigation/adaptation, water conservation and waste management.
 - Support municipal and corporate employee engagement on sustainability through the People Power Challenge, a turn-key 3-month campaign including educational events, resources, webinars workshops.

Urban Agriculture

- Planning, design and implementation of urban agriculture projects (I.e., urban farms, community gardens, local food procurement on TRCA or municipal lands which focus on local food production, community engagement and educational outreach)
- Technical support pertaining to agri-environmental Best Management Projects (i.e., project planning, design, and implementation), and developing Environmental Farm Plans.
- Administration of agricultural leases for new and existing urban farm projects on TRCA lands
- Facilitation of partnerships for the purpose of developing new urban agriculture initiatives on TRCA or other public lands.
- Provide technical expertise on matter pertaining to urban agriculture (I.e., policy review, supporting municipal agriculture related advisory committees).
- Conduct feasibility studies for scoping out future opportunities and sites to support urban agriculture.
- Share/disseminate information locally and globally and engage diverse audience related to the project and /or program – conference presentations, public meetings, peer-review papers.

Sustainable Technology Evaluation Program

- Planning, design, implementation and maintenance inspections of low carbon, Green infrastructure and Low Impact Development technologies and approaches.
- Development of standard LID specifications to facilitate stormwater plan review and standard operating procedures to facilitate long term maintenance of practices.
- Green infrastructure retrofit priority mapping to identify key areas in the City where GI retrofits could be considered during road reconstruction and re-development projects.

- Share / disseminate information locally and globally and engage diverse audience related to the project and /or program – conference presentations, public meetings, peer- review papers.
- Provide training to municipal staff, consultants, developers, residents and stakeholders on low carbon technologies, stormwater management, green infrastructure, natural heritage and restoration related themes.
- Stormwater management plan implementation support through practice and site scale monitoring, data analyses and synthesis of regulatory compliance monitoring data collected at new and re-development sites.
- Pilot project and study design development and implementation to test and validate new low carbon, renewable energy and stormwater management approaches and practices.
- Pre-feasibility assessments of low carbon and green infrastructure approaches and practices.
- Provide technical support to municipalities in identifying options and implementing deep energy retrofits and green stormwater infrastructure within municipally owned buildings.
- Facilitate strategic partnerships with research, policy, and practice community to examine specific questions to support implementation of a plan / program.
- Provide field laboratories to test and evaluate new technologies and approaches related to green stormwater infrastructure and low carbon technologies.

Climate Science Consortium

- Expertise and support in understanding and addressing climate change implications to municipal and community programs and infrastructure including risk and vulnerability assessments and resilience planning. Support with incorporating green infrastructure and climate change considerations into municipal asset management planning.
- Partnership development with academic institutions to help facilitate research towards filling priority knowledge gaps for municipal partners.
- Provide support to municipalities in the incorporation of climate change into asset management planning.

Rural Clean Water Program

- Rural Clean Water Program offers grants and consultations to agricultural and rural landowners to assist them in managing the effect of their land management on water quality.

Green Infrastructure

- Provide support and guidance to municipalities in the incorporation of natural assets into asset management planning.
- Expertise and support in integrated water management including development of tools and mapping to quantify stormwater and other benefits of green infrastructure and prioritize implementation locations and designs.
- Expertise in ecosystem service valuation methods and general support in the application of the latest science and practice of green infrastructure into municipal strategies, plans, and actions.
- Research and application support.
- Facilitating research partnerships to fill priority knowledge gaps towards achieving municipal priorities.

8.2 Community Engagement

TRCA has both the strong reputation and expertise needed to collaborate with the community and stakeholders to deliver environmental stewardship and engagement programming. TRCA's community

engagement program activities employ unique and innovative collaboration models to engage residents, government, private sector and NGO's with the objective of achieving healthy ecosystems, community well-being and regional sustainability.

Citizen Based Regeneration

- Coordinate, organize and deliver community and corporate group native trees and shrubs plantings, pollinator plantings, and activities to build, monitor and maintain wildlife habitat structures.
- Coordinate, organize and deliver community and corporate group watershed wide clean-up activities to remove debris and garbage from watercourses and naturalized areas.
- Coordinate, organize and deliver community and corporate group activities to engage them in TRCA's Young Tree and Shrub Monitoring and Maintenance Program (YTMP) to maintain newly restored sites and collect long-term data on success of newly planted sites.
- Coordinate, organize and deliver community and corporate group activities to engage them in other meaningful citizen scientist programs such as road ecology monitoring or turtle nest protection programs.

Stewardship

- Develop and deliver programs that provide opportunities for residents to play an active role in the health and wellbeing of their natural environment.
- Coordinate and facilitate programs such as community tree plantings, habitat creation projects, citizen science workshops, clean-ups, nature walks, gardening workshops and stormwater and rainwater management programs that empower residents to live sustainably.
- Work with multiple partners, including municipalities, to coordinate and support community programming events to educate the public on water conservation, composting, gardening for native plants and supporting native wildlife.
- Providing support and/or assets to multiple organizations including libraries, museums, art centres, guides and scouts troops and community groups with the goal of supporting local environmental initiatives.
- Create opportunities and programming for youth to gain valuable experience within their communities as well as within the environmental sector (Conservation Youth Corps, Girls Can Too Program).

Watershed Engagement

- Develop and lead compelling experiences for various audiences within the watershed.
- Serve as stakeholder liaison for key projects, programs and initiatives.