



Trent Lands and
Nature Areas Plan

**Together, putting our best effort
forward towards something important**

GGWEPNANDIZAWIN





Territorial Acknowledgement

We respectfully acknowledge that we are on the treaty and territory of the Michi Saagiig Anishnaabeg, home to Curve Lake First Nation, Hiawatha First Nation, Alderville First Nation, and Mississaugas of Scugog Island First Nation.

We offer our gratitude to the First Nations for their care for, and teachings about our earth and our relations. May we honour those teachings.

Version	1.0
Approval Date	February 6, 2026
Implementation Start Date	May 1, 2025
Implementation End Date	April 30, 2032

Acknowledgements

This plan was made possible thanks to the financial support from TD Bank Group through their TD Ready Commitment Fund, which funded the staff, equipment and time needed to complete this work.

This document is the result of collaboration and input from many individuals and groups who were generous with their time, patience, and knowledge. Chi miigwech to Trent University's Michi Saagiig Elders and Knowledge Keepers Council and Land Resource Consultation officers for Curve Lake, Hiawatha, and Alderville First Nations, who contributed their knowledge and advice with humility, kindness, and responsibility. We value the lessons shared. We recognize, with thanks, the hours of time given to the team by Trent faculty, staff, and students to provide scientific knowledge, data, processes, review, and history of the Symons Campus.

Additional key contributors include:

- Trent University's stewardship co-op and placement students who participated in the field work to gather on-the-ground data.
- Professors Emeriti, including Roger Jones, Michael Fox, and John Marsh whose determination, passion, and vision of the nature areas on the Symons campus created the foundation of the University Green Network.
- Trent Nature Areas Stewardship Advisory Committee.
- North-South Environmental Inc. team members, Kristen Harrison, whose involvement with the Trent Lands and Nature Areas Plan led to the idea of the University Green Network and to Benjamin Meinen for the mapping in this document.

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1.0 Purpose

Ggwepnandizamin translates to “together, putting our best effort forward towards something important.”

This spirit of collective effort represents ongoing collaboration between Trent University and the Michi Saagiig Anishnaabeg communities, whose treaty and territory Trent occupies. At the core of this partnership lies an intention to honouring and integrating Michi Saagiig Knowledge Systems in the caretaking of Trent’s natural spaces—an essential foundation for the work ahead. Through Ggwepnandizamin, the aim is to establish a resilient, and interconnected **University Green Network** which represents a mosaic of natural features that supports biodiversity, encourages land-based learning, research and discovery, and nurtures reciprocal relationships and experiences with the land and water. Recognizing the intricate connections within nature and the responsibilities that come with its use, Trent University will care for the Nature Areas and green spaces across the UGN. This approach will balance ecological integrity with the University’s evolving academic, research, and infrastructure needs and priorities. In doing so, Trent University will emerge as a leader in environmental education, respectful weaving of knowledge systems, and collaborative land planning.

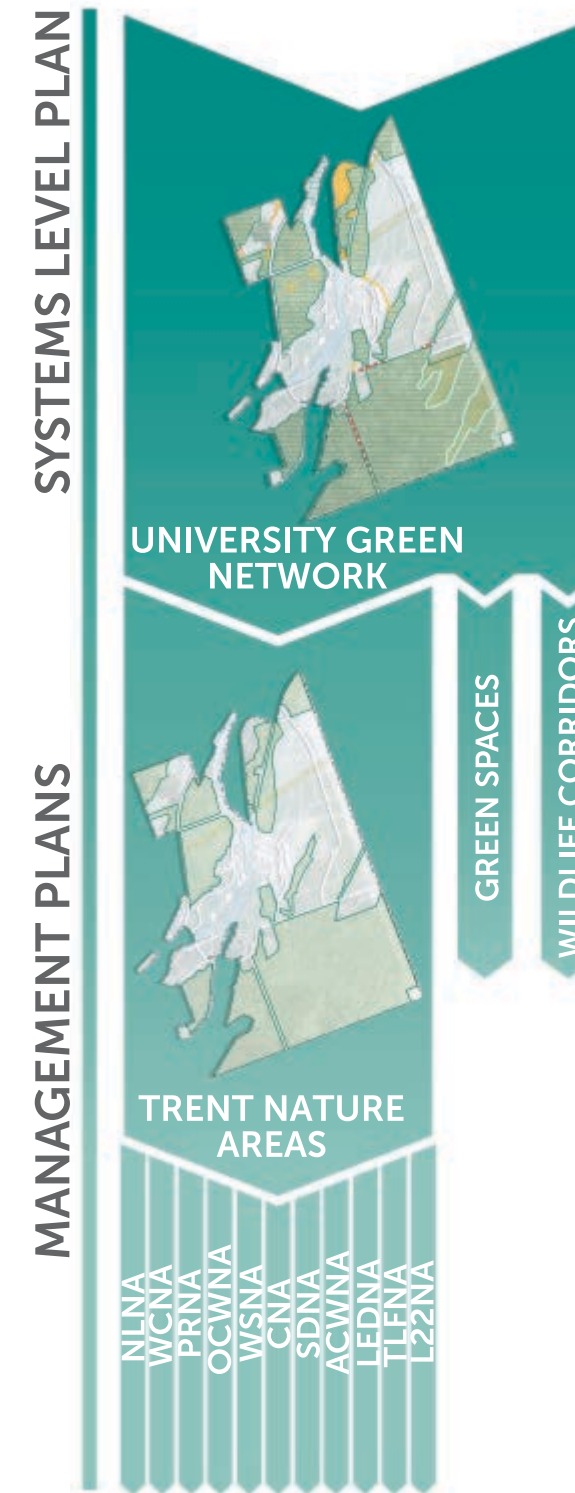
1.1 Setting the Stage

Trent University’s Symons Campus in Peterborough/Nogojwanong is known for its stunning natural landscape and location along the Otonabee River (Odoonabii-ziibi). The 583-hectare (ha) (1,440 acre) campus features award winning architecture, eleven Nature Areas, gardens, gathering spaces and agricultural land.

Trent University presented a vision for a regenerative future for the Symons Campus through the Trent Lands and Nature Areas Plan (TLNAP) (Trent University, 2021b) – a campus planning framework, that will guide the University as it continues to grow, evolve, and address challenges and opportunities across the campus and beyond. The core mission of the University to advance teaching, research and learning remains, but with an acknowledgement that Trent also has a responsibility in caring for its natural spaces. The TLNAP emphasizes the importance of a diverse and interconnected natural system known as the **University Green Network (UGN)**, which acts as a mechanism for supporting the existing natural spaces on campus and creating opportunities for new areas as the campus evolves. This network will cover **60% of the Symons Campus lands** and includes Trent’s Nature Areas, naturalized spaces within the built-up areas, and connections between them. While some of these components are defined by policy or legislation (Trent’s property and land use policy, Provincial Planning Statement (2024), City of Peterborough’s Official Plan - Natural Heritage System (2025)) and currently exist, others will be introduced over time with the integration of green spaces and corridors into the built landscapes on campus, as part of the regenerative design concept introduced in the TLNAP.

Ggwepnandizamin, referred to as the systems level plan in the TLNAP, acts much like a municipal natural heritage system exercise for the University, and uses a landscape approach to place value on the connections between natural features and their ecological functions. This approach allows for the identification of opportunities across the UGN to maintain, enhance or create ecological connections and promote resiliency as climate conditions continue to shift. The plan will outline the extent of the UGN, existing conditions, and how Trent University will move from vision to action in caring for the elements within the UGN. The Trent Nature Areas comprise the largest portion of the UGN and their nature area plans represent the implementation of Ggwepnandizamin at a smaller, site-specific scale (Figure 1).

Figure 1: Implementation plan from the Trent Lands and Nature Areas Plan



Ggwepnandizamin is a living document and resource that evolves as information is learned and shared. It represents a circular journey, much like the nature of Indigenous values, ensuring we are always circling back and checking in, before moving forward.

Trent's commitment to support an interconnected system of natural features comes at an important crossroads in the global fight to protect the world's biodiversity, to combat climate change, to work in the spirit of reconciliation and to reconnect urban communities to nature. Conservation planning exercises are being undertaken at multiple levels of government to address these crises. The United Nations declared 2021-2030 as the decade of Ecosystem Restoration which aims to prevent, stop, and reverse ecosystem degradation. The Government of Canada has developed Canada's 2030 National Biodiversity Strategy that outlines a set of targets that focus on protection, restoration, threat reduction, species recovery and sustainable use and management. Of relevancy to Trent's planning exercise is the target to increase the area and quality, connectivity of, access to and benefits of green and blue spaces in urban areas. Similarly, in 2023, the province of Ontario updated Ontario's Biodiversity Strategy that identifies actions that the province will undertake to benefit biodiversity, address climate change, and improve human health through to 2030. The City of Peterborough updated its Official Plan in 2023, which included the incorporation of a natural heritage system and guiding principles that include environmental stewardship, sustainability, and promoting land use patterns that protect biodiversity. Alongside this momentum, priorities and landscape patterns are changing that reflect community needs. For all these reasons, there is no better time to shape a more resilient nature network at Trent University.

1.2 Open Standards for the Practice of Conservation

To put our best effort forward, Ggwepnandizamin has adopted the Open Standards for the Practice of Conservation (<https://conservationstandards.org/about/>) (CMP, 2020) which is used globally by communities undertaking conservation planning. The Standards bring over 20 years of experience in project and program design to improve the practice of conservation by using common concepts, terminology, monitoring, and support, while still offering flexibility in how it is used for each individual project. The key principles behind the Standards – collaboration, thoughtful decision making, adaptation and learning - align seamlessly with the aim of Ggwepnandizamin.

The Conservation Standards present an easy-to-follow guide or cycle to move communities and organizations through the planning, implementation, analysis and sharing phases of a project, allowing space for continued learning (not linear but circular) at each step. The Conservation Standards are here to help teams do better conservation work, allowing groups to tackle environmental problems that are as complex as nature itself, but in a systematic way. Of primary importance with what we are striving to achieve here is the adoption of a common language in creating action plans so that sharing and learning can occur regardless of the organization or location (CMP, 2020). With a strong emphasis on working together, the Conservation Standards will complement the TLNAP to guide successful planning and implementation of Ggwepnandizamin. These standards are also intended to be consistent with, and conform to federal, provincial and local policies, legislations and regulations as it relates to sustainable land use and environment protection. In the face of climate change, the Conservation Standards support resilience by promoting adaptive, knowledge-informed stewardship. Their emphasis on iterative learning and flexible planning ensures that actions taken today can evolve as environmental conditions shift. To work through the steps, Miradi software is used, which is a project management software supported by the conservation standards. Aspects or 'screenshots of Miradi are displayed throughout the document to illustrate the thought process that has led to the outcomes and decisions for the UGN.

Figure 2 illustrates the project cycle for the Conservation Standards, with steps 1 to 5: Assess, Plan, Implement, Analyze and Adapt and Share. With the work of the Nature Areas Stewardship Committee, the Stewardship Plan for Trent University Nature Areas (Jones et al. 2002) and the TLNAP (Trent University, 2021a/b), various steps of the project cycle had been addressed and allowed us to customize and move back and forth through the steps, which the standards encourage. Each step is outlined below.



Step 1: Assess

Step 1 places a project in the current context and helps to review the reason or purpose of the work. This step includes various sub-steps that include identifying the project team, geographic scope, vision, and targets of the project (CMP, 2020). The vision is a concise and visionary statement of what one is working to achieve. Targets represent a suite of species, communities, ecological systems, and cultural values within a project area (CMP, 2020). It represents what one cares about and cares for within the project scope. When broader communities or ecological system targets are chosen, nested targets can be identified that include species, natural communities, species assemblages and cultural values that are associated with the focal target and directly benefit from any work done to protect or restore the target (CMP, 2020). Nested targets then can be species that are important to conserve within the project scope or are locally rare (Appendix B).

At this step one also determines the overall status or viability of the targets and desired future status, which then forms the basis for goal and action setting. Goals and actions can focus on improving or maintaining the viability of the targets, which in theory and in practice should support the native biodiversity within the project and support habitat complexity and longevity at the UGN scale (CMP, 2020). These goals should also align with prevailing federal, provincial, and local land use policies and legislation.

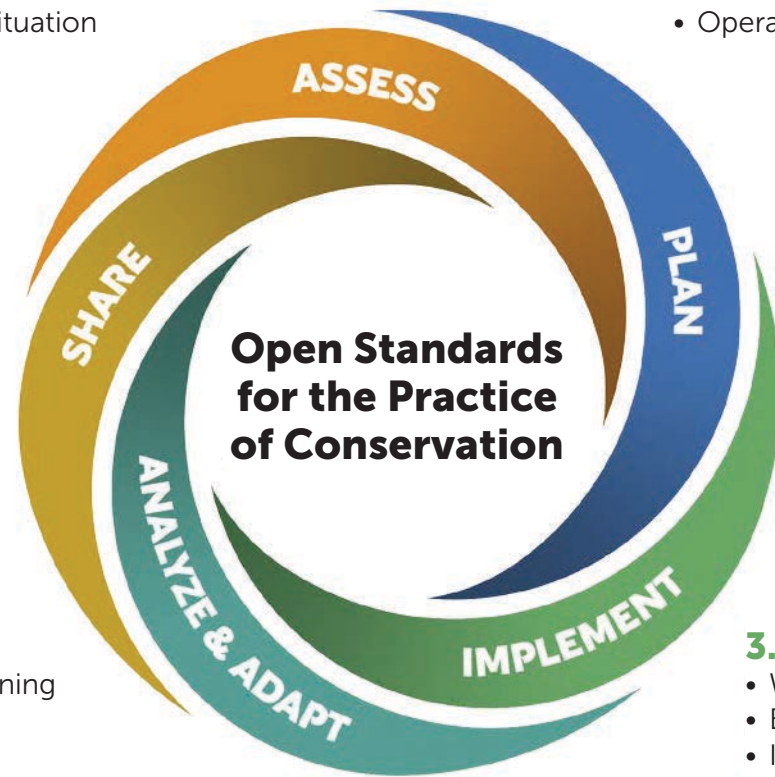
As part of this step, it is also important to consider how climate change may influence the viability of targets over time. Incorporating climate-related stressors, such as altered hydrology, temperature shifts, or extreme weather, at this early stage supports proactive adaptation and builds resilience into long-term planning.

1. ACCESS

- Purpose & team
- Scope, vision, & targets
- Critical threats
- Conservation situation

2. PLAN

- Goals, strategies, assumptions, & objects
- Monitoring plan
- Operational plan



5. SHARE

- Document learning
- Share learning
- Foster learning

3. IMPLEMENT

- Work plan & timetable
- Budget
- Implement plan

4. ANALYZE & ADAPT

- Prepare data
- Analyze results
- Adapt plans

Figure 2: Open standards for the practice of conservation project cycle (CMP, 2020)

The overall health status of each target, ranging from poor to very good, is determined using available knowledge of existing conditions (Appendix A). These health rankings can be done using key ecological attributes (KEA), which are factors that help to 'diagnose' the status of a target. These attributes can be extensive (e.g. 144 listed in Schick et al., 2019) that intend to characterize the health of a feature based upon the complex interactions between each attribute and how anthropogenic actions may have affected these features. Using this highly precautionary method, the attributes indicate if something is in good or bad health to inform the subsequent planning process (CMP, 2020).

In this application, the UGN target for Forest and Woodlands might examine the attribute of forest health which could include the size of the forest, the indicator being the area of forest in hectares or square kilometres. Thresholds for each indicator can be based on scientific literature or policies like the natural heritage reference manual (NHRM) (OMNR, 2010). To continue the example of forest health, the NHRM (OMNR, 2010), notes that a forest patch less than two hectares is less resilient to impacts of human disturbance, and therefore, smaller forest patches could be placed under the poor threshold. The number

of indicators used to assess the overall health of a target will depend on the project scope, knowledge of the area, and level of detail that can be achieved. Ideally, attributes relating to the features size, condition and landscape context should be selected. Indicators can and should get far more detailed as you move down to the site level (e.g. a Nature Area).

Alternatively, Conservation Standards also allow a simple ranking system that allows for the assessment of integrity or health without the use of the more complex KEAs and instead ranks based on what is known historically or at the current time (CMP, 2020). This allows for flexibility in what and how we know and is an excellent example of how different ways of knowing can be used in conservation or land use planning. Regardless of what level of viability assessment is done, measurable indicators and known thresholds form a comprehensive monitoring plan and allow for analysis and progress evaluation.

Alongside the establishment of the targets and their viability, available evidence is used to identify historical, current and future pressures or threats within the project scope that affect the targets' viability. These are often human-induced or introduced that are leading to the degradation of one or more targets (CMP, 2020). Pressures can also be due to natural disasters like drought or extreme storm events that are typically caused by human activity (e.g. climate change). Pressures or threats are ranked from low to very high and several tools are available to help with this prioritization. In this circumstance, the extent (or scope) of the threat, the severity of its impacts on the targets and irreversibility of the threat was considered. The project team can then prioritize and determine critical threats – those that are most important to address, based on ranking and the team's ability to influence that threat (CMP, 2020). Actions can then concentrate in particular areas, on reducing the extent or permanence of critical threats and mitigating against future threats. A situation or conceptual model is built out from this information that provides a visual portrayal of the relationships between targets, pressures/threats, indirect threats (or causes), impacts of the pressures (biophysical factor) and potential opportunities (marked with a + sign). Question marks and dotted lines in the diagram symbolize an uncertainty in the presence or relationship, respectively (CMP, 2020). By understanding the project context and elements involved and identifying areas with knowledge gaps, the project team is better equipped to design a plan with impact (CMP, 2020).

Step 2: Plan

The planning stage is where the project's action plan is developed and includes goals, objectives, and strategies. At this stage a monitoring plan to track progress and an operational plan (analysis of funding, resources, and skills required) is developed to form the overall strategic plan (CMP, 2020). For the purpose of this document, the monitoring plan, operational plan, and work plan (Step 3) are combined with some aspects being housed in Miradi to track our progress through implementation. Evidence-based, on the ground knowledge obtained via field work and through Michi Saagiig teachings shared with us is fundamental to forming a good action plan.

A goal is a formal statement that outlines the desired impact of a project and/or the desired future status of a target (identified in Section 6.3). These represent what you want to accomplish within the project scope. Ideally, goals are specific, measurable, achievable, realistic, and timely (SMART) and have a direct relation to one or more of the targets (CMP, 2020). This is where the viability assessment in Step 1 becomes a useful tool in forming your goals because the team has already identified the key elements that are needed for a 'healthy' target and what needs to be measured (or monitored). Integrating climate adaptation into the planning stage strengthens the project's ability to respond to future uncertainties. Strategies that anticipate shifting conditions, such as species migration, changing hydrology, or increased disturbance, can build ecological resilience while also supporting long-term institutional flexibility.

With goals established, the next step is determining what needs to be done (strategies and activities). A strategy represents a group of activities with a common focus that work collectively to reduce threats, protect, or restore habitats and seize opportunities (CMP, 2020). This involves determining where and how the team will or will not intervene. The selection of strategies involves researching strategies used in other conservation projects within Miradi Share, reviewing national and provincial biodiversity strategies, other organizational management plans and having knowledge of the situation within the project scope. Strategies include an array of action types that can include restoration (both general restoration as well as potential ecological offsetting opportunities), site management, land protection, community outreach and research.

Objectives are intermediate results that act as stepping stones to reaching the goals of the project. This is particularly relevant when goals have longer timelines, like within the UGN. The objectives highlight the necessary changes that the project team assumes need to occur to reduce threats and capture opportunities in the short- and medium-term (CMP, 2020). It is important to remember that goals are linked to targets, and objectives are linked to direct pressures/threats. With the theory that the reduction in the pressure will lead to an improvement of the target and ultimately the goal.

The activities within the implementation plan represent what Trent will do on the ground to achieve the plan's goals and objectives over the course of the project timeline.

While there are differences in the terminology used, with the adaptation of the conservation standards, the concepts, approaches and priorities identified in the TLNAP fall nicely within the conservation standards principles and practises. Figure 3 is intended to illustrate the commonality between the terminology used in TLNAP and the Conservation Standards language.



Figure 3: Terminology differences between the TLNAP and Ggwepnandizamin

Step 3: Implementation

Arguably the most important step in the entire process, Step 3 is where plans are put into action. This includes developing and implementing work plans, identifying resources needed (including staff and funding) and partners involved (CMP, 2020). At this step, short- and long-term plans are developed that identify the activities required to implement the strategies. Detailed information about who will do the implementation, when and where the work will be done, and available budget is included to ensure the work plans are specific and clear to those implementing them (CMP, 2020).

It is recommended that short-term work plans cover 3 -12 months, with higher-level information for long-term actions to allow refinement of those activities over time (CMP, 2020). In the case with this plan, the activities for the next seven years have been planned in accordance with Step 2, but implementation plans will be pulled annually from the overall list to assist with financial and resource planning. Each year will involve reviewing activities, addressing new or emerging issues and policy changes, identifying the funding available, and making refinements as needed. As implementation proceeds, it is important to recognize that climate conditions may shift over time. Embedding adaptive approaches into work plans helps ensure that actions remain relevant, resilient, and responsive to changing environmental and institutional contexts.

A budget or estimate of costs associated with the annual work plan will help to determine appropriate resources, support financial planning and identify funding sources or gaps (CMP, 2020).

Progress tracking of key performance indicators through Miradi will be completed annually to ensure successful implementation and reflection in Steps 4 and 5. This includes ensuring a suitable database is used to allow for data collection, storage, and access.

Step 4: Analyze and Adapt

This step prompts the project team to manage data entry and perform regular analysis to convert the data into information that is useful and informative to the plan. Assessing the data on a regular basis also allows reflection on whether the team is on track to achieve goals, strategies, and objectives. It is good practice to regularly check that the data collected helps to fill knowledge gaps, so that adaptation of the plan is continuous. As climate variability increases, analyzing trends over time can help identify new pressures or thresholds that require a shift in strategy. Incorporating climate-informed indicators and scenario-based thinking, alongside the teachings of Michi Saagiig Knowledge Holders on cyclical patterns and signs from the land, strengthens the plan's ability to navigate uncertainty and build long-term resilience. Reflecting on the operational process is equally important to ensure the appropriate resources and team skillsets are available (CMP, 2020). It is expected that changes will be made to reflect the knowledge learned over time and that time is given to allow for important reflection and analysis.

Step 5: Share

The final steps in the project cycle involve sharing lessons and receiving feedback to promote learning. This step involves documenting what was learned, sharing these learnings with the appropriate audiences, and fostering an environment where all parties learn and benefit from the team's experiences (CMP, 2020). Opportunities to share and receive feedback should occur at all stages throughout the cycle. As climate change introduces new challenges and pressures, sharing information on adaptation successes, barriers, and evolving strategies bolsters environmental stewardship. This stage is especially important for Trent as a learning institution, and we will seek to include this ongoing work in classroom and education forums.

The following sections of the plan reflect the outputs of using the conservation standards.



2.0 Project Team

In alignment with the Trent-specific approach (section 17.1 of the TLNAP) the project team consists of individuals and groups who worked on the design and will contribute to the implementation of the project. To make this an integrated plan that values both western and Indigenous knowledge, key team members have and will include Trent University staff and faculty, collaborators from local Michi Saagiig communities (Curve Lake, Hiawatha, and Alderville First Nations) through their lands and resource consultation departments, and Trent University's Elders and Knowledge Keepers Council, which has core representation from local Michi Saagiig communities. Partners and local organizations will continue to be engaged at key points in the implementation of the plan and Trent faculty, and students will bring the resources to advance initiatives for research and land-based learning. The plan will fall under the jurisdiction of the Board of Governors and relevant committees.

3.0 Project Scope

The scope defines what the project intends to affect, and in this case, the geographic focus. The scope of Ggwepnandizamin is within Trent University's Symons Campus and more specifically within the University Green Network (Figure 4). The UGN encompasses 351 hectares (60%) within the 583-hectare campus, comprised of diverse land types and waterways that support biodiversity, learning on the land, research, and opportunities to (re)build relationships with nature. As noted in section 1.1, the eleven Nature Areas within the Symons Campus make up the bulk of the UGN (86%) and their features contribute to the existing land cover and biodiversity that is supported through the UGN. The care of the Nature Areas, identified through individual Nature Area plans, will be interrelated and their implementation is vital to achieving the vision of Ggwepnandizamin.

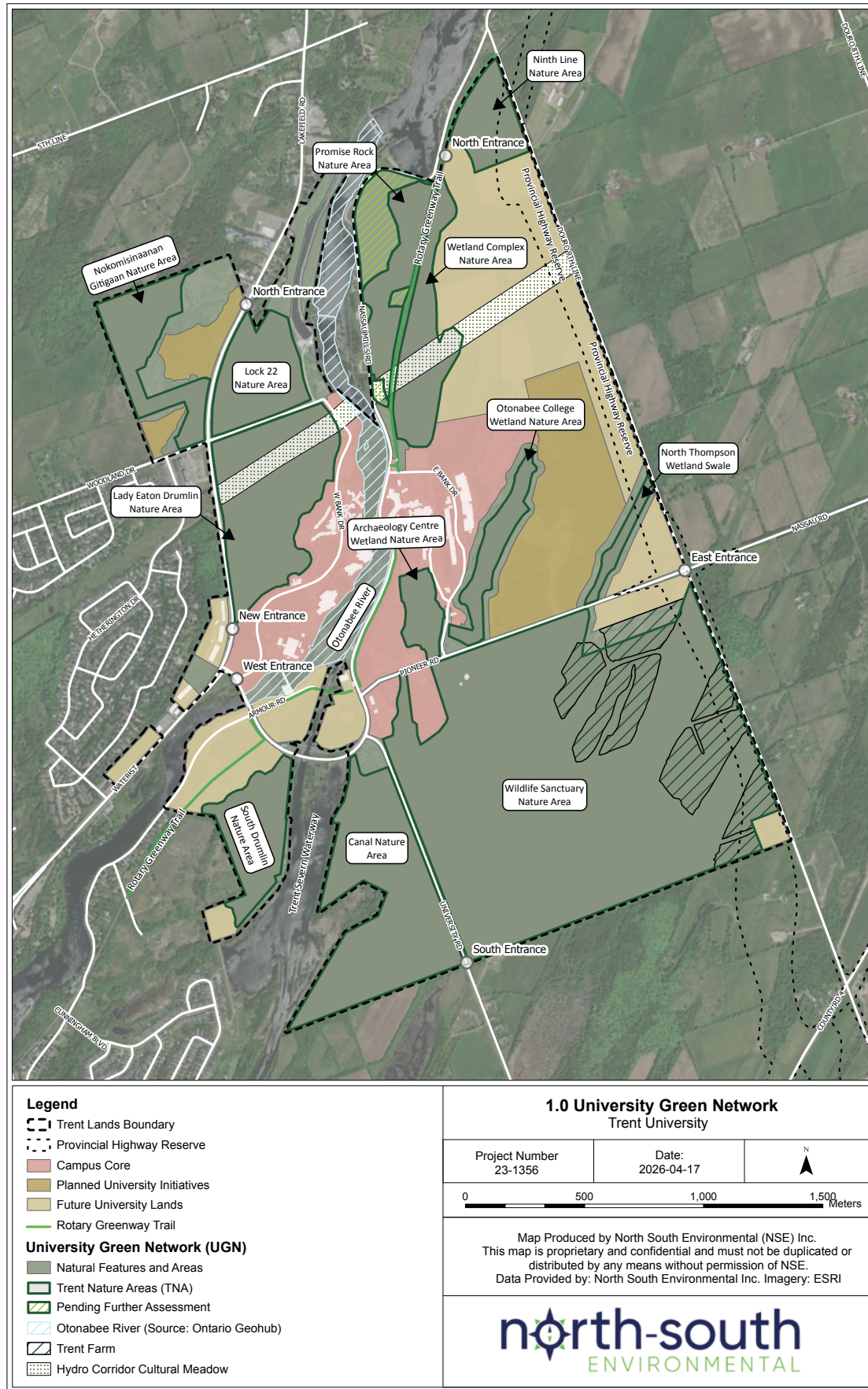


Figure 4: University Green Network



3.1 Michi Saagiig History of the Land

Traditional teachings and history of Michi Saagiig Anishnaabeg in this area tell us they have resided on the land around Lake Ontario since time immemorial. Below is a brief history from different publications (*Trent University Indigenous Protocol Guidebook, 2023; Williams and Kapyrka, 2015; Migizi, 2018*).

The territory of the Michi Saagiig was a vast area of what is now known as southern Ontario. The Michi Saagiig are the original people of this area and were the first to establish a relationship with this land (Migizi and Kapyrka, 2015). Known as the “People of the big river mouths” and the “Salmon People” the Michi Saagiig Anishnaabeg occupied and fished the north shore of Lake Ontario in the spring and summer and moved north in the winter in smaller groups to hunting grounds into and beyond the Kawarthas (Migizi and Kapyrka, 2015). The Michi Saagiig people have resided on the land around Lake Ontario and its northern tributaries for centuries, moving around according to the seasons (Migizi, 2018). Prior to European settlement, there were treaties made amongst other Indigenous nations and these agreements were sealed by Wampum. This included an agreement between the Michi Saagiig and Huron Wendat peoples, to allow the Huron Wendat to set up villages and grow corn in their homelands. These were legal, political, social, and spiritual agreements that were honored annually (Migizi and Kapyrka, 2015). Initially First Nations and European settlers co-existed peacefully, but by the mid-1600s, populations of European settlers were growing and competition for resources and land created unrest. To escape diseases brought by the Europeans and to avoid conflict, the Michi Saagiig people moved inland to Lake Huron. It was during this time that the Jesuits met the Michi Saagiig at the mouth of the Mississauga River and referred to the people as Michi Saagiig. Around 1670, the Michi Saagiig returned to their lands and in time, participated in 18 treaties, allowing for the growing population of European settlers to establish in Ontario. Specific to this region, Treaty 20 was signed in 1818, followed by the Williams Treaties in 1923. There are seven First Nations within Treaty 20, four of which are within the geographical area served by Trent University and with whom the University works most closely with. These include Curve Lake First Nation, Alderville First Nation, Hiawatha First Nation, and the Mississaugas of Scugog Island First Nations (Trent University, 2023). These treaties were made to allow non-Indigenous people to live here and establish their own relationship with the land. It is the responsibility of settlers then to uphold responsibilities made and honour the privileges that have been granted to them by the Michi Saagiig peoples (Migizi and Kapyrka, 2015).

Michi Saagiig Anishnaabeg Creation Story

The addition of the creation story helps to create context for how Michi Saagiig peoples understand respect and responsibility and forms the foundation of ceremonies, beliefs, ways of being and worldview. At its core, it explains how Michi Saagiig relate to the natural world and to each other. There are different tellings of the creation story by Elders and storytellers and in different areas of Anishnaabeg territory though they are never dramatically different from each other (Migizi, 2018).

The following Michi Saagiig Nishnaabeg Creation Story was taken directly from Migizi (2018):

This is the second time life was created. A long time ago, way back in time, it was total darkness. There was nothing. At this time the Gzhwe Manidoo had a dream. In that dream, Gzhwe Manidoo saw the world that we know today. Gzhwe Manidoo saw the mountains, the plains, the trees, the rocks, the deserts, great rivers, animals, birds flying and humans. The dream stuck with Gzhwe Manidoo and thought it must happen. Gzhwe Manidoo is sometimes called the Creator, who is neither man or woman and is a benevolent spirit that loves us unconditionally. The earth happened and everything was created instantly, and everything was beautiful. This went on for a long time. It was harmonious, everyone was living in peace with each other, including the animals.

That continued until one day things started to go bad and everything died off. No one knows why that happened. Apparently, the elements were saved, there was still the sun, the great waters, the land, but everything had died off. This bothered Gzhwe Manidoo. Gzhwe Manidoo was very upset. The spirits that lived in the sky went to Gzhwe Manidoo and asked if they could help. So Gzhwe Manidoo asked one of the beings to go down and see if creation could be fixed. That's spirits name was Gizhiigokwe, which means Sky Woman. Gizhiigokwe decided to come to earth and find a spirit partner to try to create humans. She asked Gzhwe Manidoo for a partner. The first time she tried, they died off. She had two kids, and they died. Gizhiigokwe went back to the Spirit World and told Gzhwe Manidoo that she tried but it did not work out.

Another thing that happened at this point was a great flood. The great flood changed the physical surface of the earth. Gzhwe Manidoo told Gizhiigokwe to not give up and to keep trying to make the dream a reality. Gizhiigokwe went back to earth. One of the animals from the first creation was the Turtle because it could live in the water. When the flood happened only the fish and the water animals like the beaver survived because they could swim. When Gizhiigokwe came down again, it was all water. She couldn't settle anywhere because she could not swim. The water was a strange element to her because she is from the sky. The turtle came to her and offered her a place to land on the turtle's back. The turtle is called Chi'Mikinak – The Great Turtle. Gizhiigokwe noticed all the beautiful designs on the turtles' back and from there came the thirteen moons as depicted on the Turtle's back. The twenty-eight days for each moon are depicted around the rim. She thought the turtle must be carrying something. The turtle was and wanted to help her create the world again. I remember how beautiful it used to be. The turtle thought they needed to get some soil to make it happen.

Gizhiigokwe was sitting on the turtle's back and all the water animals were watching. A bird that could swim and float, the Loon had survived and offered to dive to the bottom to get earth to put on the turtles back. The loon was gone a long time, and finally floated to the surface, but it had drowned. The next day, the Otter came to help her and offered to dive down. The same thing happened, and Otter floated up dead. Then beaver offered to try and go further than the Otter and the Loon. The same thing happened, even though Gzhwe Manidoo gave beaver a special gift of being able to hold oxygen in its tail. That is why the tail of a beaver is so large. Gizhiigokwe was pretty disappointed. She was getting worried she may not be able to help Gzhwe Manidoo with the visions.

Muskrat came along and Gizhiigokwe told Muskrat what happened. Muskrat offered to dive because muskrats can also keep oxygen in their tails. So, the Muskrat dove and was gone for what seemed like days. Gizhiigokwe and Turtle waited. Finally, Muskrat floated to the surface and had drowned but clutched in Muskrat's paws was a tiny paw full of earth. They took that earth and placed it on the turtle's back and thought out the dream of the Gzhwe Manidoo. Sure enough, that little bit of earth grew and began to have mountains, streams, and lakes, as we know it today. Nishnaabeg country was created with beautiful big lakes. There were clouds, wind, rains, trees, and beautiful animals – deer, moose, elk, caribou and bear were all created. This is why they call this place Turtle Island or Chi'Mikinak – The Great Turtle.

Gizhiigokwe said I am going to go back and think about creating humans. Gizhiigokwe went back to the sky to contemplate. She went back and became the moon. Instead of calling the moon Dibi-giizis, which is night sun, we call her Kookoom or Nokomis or Chi'Nokomis, which means Grandmother. Nokomis said I am going to give the gift of giving birth to humans once they are created. Gizhiigokwe then asked Gzhwe Manidoo for another spirit to help her create humans. Gzhwe Manidoo sent Pingizhimok (where the sun sets), the west. Pingizhimok is a spirit in male form, and he picked a woman from earth. We do not know how the woman survived the flood. We don't know who the woman was. Maybe she was a spirit as well. One story says that Pingizhimok and this woman had two kids, and the kids had a fight, and they killed each other. The essence was just not there. The second time, Pingizhimok picked another woman – Wenona. Pingizhimok and her tried again, and they had a boy and girl. These were not a boy and a girl in terms of sexuality, but more in essence. They in turn had a child. That is how humans were created.

Anishnaabeg Worldview

Anishnaabeg worldview believes that all living beings have a Spirit. Humans are intrinsically connected to each other, to all living beings, to the spirit of the lands and waters and to all in the Spirit World.

Gzhwe Manidoo provided original instructions or sacred law to humankind that described our roles and responsibilities. These instructions or gifts were to live "a good life" and an important responsibility of this gift to Anishnaabe is to care for Mother Earth and speak for the living things that cannot speak for themselves (Trent University, 2023).

This central philosophy is an important foundation upon which Ggwepnandizamin is built.

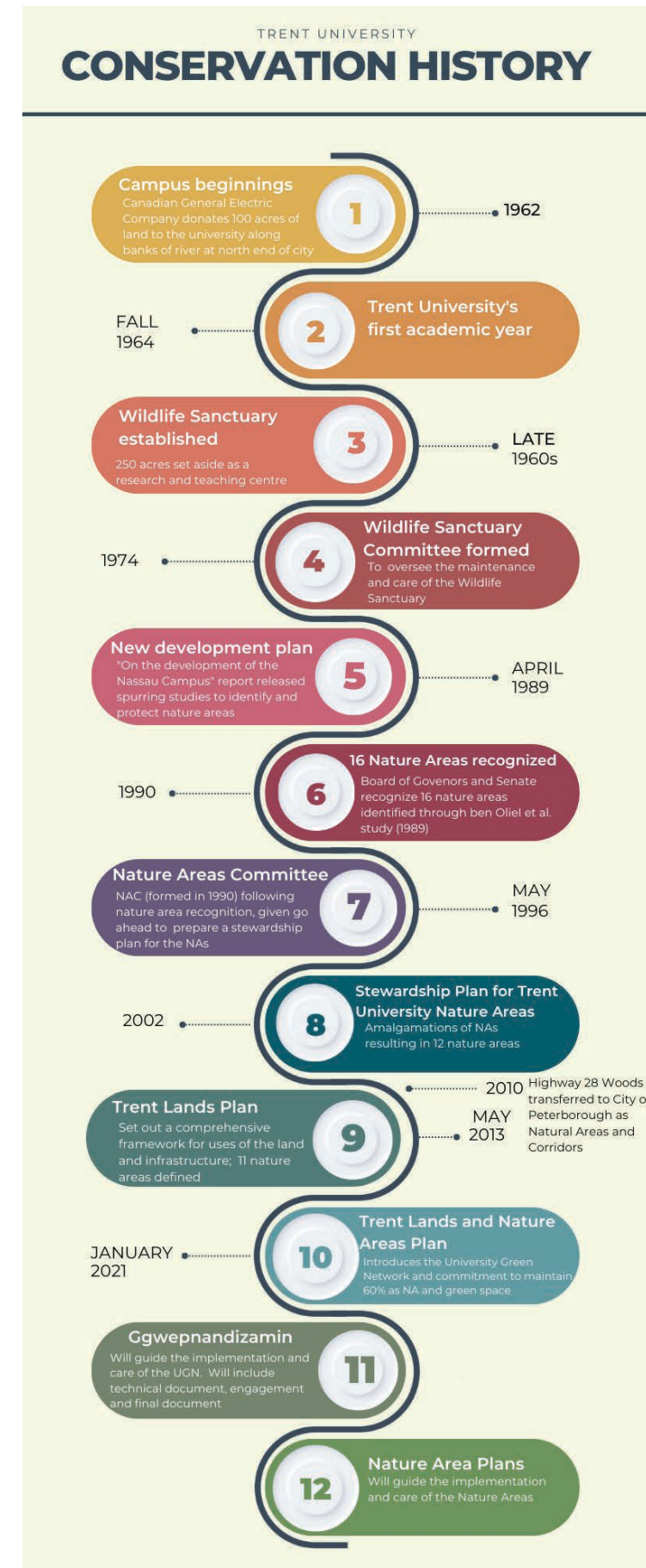
3.2 History of Indigenous Studies and Nature Area Conservation at Trent

Trent has been a leader in Indigenous Studies for more than 50 years, being the first University in Canada and the second in North America to form an academic department devoted to the study of Indigenous peoples and Indigenous knowledges. The Michi Saagiig of Curve Lake First Nation were among the group of original donors who helped to create Trent University in 1964. In 1969, the first department of Indigenous Studies in Canada was created at the University. From there, a series of firsts followed, including the first Indigenous elder hired to teach Anishinaabemowin language and culture, Elders and Traditional Peoples Gathering, the creation of Indigenous Environment Studies B.A. and B.Sc. programs and most recently the launch of the co-op stream in applied Indigenous knowledges. In keeping with this leadership in environmental and Indigenous studies, Trent took a collaborative approach to its land-based planning during the creation of the TLNAP and prioritized the collection and inclusion of Indigenous knowledge and engagement with the local First Nations.

Trent also has a long history of nature conservation (Figure 5), dating back to the late 1960s, when 250 acres of land was first set aside from development to serve as a research and teaching centre, which became known as the Trent Wildlife Sanctuary.

This history is thanks to several current and past faculty, students, and staff of Trent and local community members that have repeatedly advised on the importance of maintaining these natural features on the landscape. Since that time, and through a series of planning exercises, Trent Nature Areas account for 54% of the Symons campus area. In the most recent iteration in the TLNAP, that included a 4% increase (20 ha) to the nature area boundaries.

Figure 5:
Trent University
Conservation History



3.3 Geological and Landscape Context

The UGN is situated within the Mixedwood Plain Ecozone and the Lake Simcoe-Rideau Ecoregion. The natural features within the UGN are characteristic of the Peterborough Ecodistrict (6E-8) with the presence of drumlin fields occurring as frequently as two to three within a square kilometre. The Peterborough Drumlin fields are the result of the latest glaciation period, the Wisconsin, and their orientation in a northeast-southwest direction, indicates the movement of the ice (Gillespie and Acton, 1981). Deciduous and mixed forest, and large deciduous swamps of the Great Lakes – St. Lawrence Forest region are found amongst a landscape dominated with crop and pasture lands (Wester et. al., 2018).

The UGN falls within the Otonabee Region Watershed covering an area of 1,951 square kilometres, and in the Otonabee River sub watershed. All water flowing within the UGN ultimately drains into the Otonabee River (Odoonabii-zibi). Soils consist of varying calcareous loam varieties with small organic pockets, drainage ranges from well-drained to poorly drained (Gillespie and Acton, 1981).

Much of the area within and surrounding the UGN was cleared for farmland or timber in the mid to late 1800s and some still remain as active farmland, while other farmland areas have been inactive for roughly 60 years (Trent University, 2021b). This history of disturbance is evident within the species and communities observed today. Those features that persisted due to their unsuitability for agriculture (wetlands) or were retained as a resource (woodlots), show a higher diversity of native species.

On the broader landscape, the UGN is surrounded by agricultural and natural lands to the east, rural and natural lands to the south, residential areas to the west and a mix of agriculture, natural, commercial and residential land to the north. Topography is highly variable, with elevations ranging from 254 m to 212m (OMNRF, 2023). Within the campus boundary there are seven drumlin features. The UGN is connected through the waterways to Hiawatha, Alderville, Curve Lake, and Scugog Island First Nation Reserve lands. It is also linked to protected and conserved areas within the Kawartha lakes, including the James McLean Oliver Ecological Centre- a 109-hectare waterfront property on Pigeon Lake owned by Trent University.

3.4 Cultural Heritage Significance for Michi Saagiig Peoples

The original name for the Kawarthas, “kawaatehgahmog” means in English the “land of shining waters”, referring to the lakes, rivers, creeks, beaches, forests, marshes, and grasslands of the area (Migizi and Kapyrka, 2015). What is now known as Peterborough was called Nogojiwanong which translates to “a place at the end of the rapids” (Trent University, 2023). This was because the Otonabee (Odoonabii-zibi) river was once a series of rapids making travel from the top end of Buckhorn Lake to Lovesick Lake, to Stoney Lake to Little Lake very challenging and long. The Chemong Portage, an 8–10-kilometre footpath was used to save a lot of time to get into the Kawartha Lakes system (Chemong, Buckhorn and Pigeon Lakes). This footpath now forms present-day Reid Street and Chemong Road and it was believed it began around the present-day King Street (Migizi and Kapyrka, 2019). Salmon used to migrate from Lake Ontario up to Stoney Lake, Eels once graced the waterways, Chemong Lake was so thick with wild rice that only a small path existed up the middle of the lake to canoe through, wildlife was abundant making the area prime hunting grounds, and Woodland Caribou once existed in the area (Migizi, 2018; Migizi and Kapyrka, 2019). This is how the Michi Saagiig peoples remember what the land and waters used to be. Much has changed on the landscape since this time, with the arrival of Europeans, the Nassau Mills sawmill, the construction of the Trent Severn Waterway and Chemong railway and the land alterations associated with agriculture and development.

3.5 Ecological Significance

In Ontario, significant features are identified within the Provincial Planning Statement (PPS; 2024) and receive varying levels of protection during the land use development process. These features include significant wetlands, significant woodlands, significant valleylands, significant wildlife habitat, and Areas of Natural and Scientific Interest (ANSI). Fish habitat and habitat of endangered and threatened species are also protected by the province, though are not referred to as ‘significant’ in the same way. Criteria for what is

‘significant’ is established by the province; however, a municipality is free to establish their own enhanced significance criteria to guide development. The City of Peterborough generally adopts the provincial criteria in their Official Plan outlined within the PPS. Similarly, in this document, provincial criteria are used when referring to ‘significant’ features.

Previous studies have verified the importance of wetlands in the area. Wetland and water feature regulations are under the jurisdiction of the Otonabee Region Conservation Authority. Within the UGN there are two provincially significant wetlands: the Nassau Mills Wetland Complex and Kiiiktaanaa Mash’ing Wetland Complex, both of which represent large areas within the UGN. Wetland areas deemed provincially significant are afforded protection under the PPS, and so are adjacent lands, unless studies demonstrate no negative impacts on the natural features or on their ecological functions (PPS, 2024). Several unevaluated wetlands are also present. Work to inform the Natural Heritage Report (Trent University, 2021a), which was part of Phase 1 of the TLNAP identified six significant woodland blocks and five additional blocks that are pending further assessment. Confirmed Significant Wildlife Habitat includes Seeps and Springs, Habitat for Rare and Special Concern Species, Amphibian Breeding Habitat (Woodland), and Amphibian Movement Corridor (Trent University, 2021a). There are no Areas of Natural or Scientific Interest (ANSI) within the UGN, however ANSIs of regional and provincial importance are located close by. Peterborough Drumlin Field No. 1, a regional earth science ANSI is located just half a kilometer east of Wildlife Sanctuary Nature Area and Peterborough North Quarry, a provincially significant earth science ANSI is roughly 800 m north of Promise Rock Nature Area.

The City of Peterborough’s Natural Heritage System identifies the Trent Nature Areas under the Natural Areas’ designation and illustrates the regional and proximity linkages provided by these areas. The intent of the Natural Area’s designation, as recognized by the City of Peterborough’s Official Plan (2025), is for protection and conservation of natural features and biodiversity that contribute to the health of the Otonabee River Watershed. With this designation comes policies that provide protection at different levels based on the significance, size, and function of the feature. These include Level A features – which are intended to be protected in situ; Level B features – for which functions are intended to be preserved unless it can be demonstrated that a net gain can be achieved through mitigative or compensatory measures; and Level C features – which may be removed if there is an opportunity to replicate form and function elsewhere within the City (Section 4.6.2(b); City of Peterborough OP, 2025).

The regional connections identified within Schedule F of the City of Peterborough’s Official Plan (OP) (2025) illustrate how the outer boundaries of the UGN (and Trent Nature Areas) contribute to Peterborough County’s Natural Heritage Features (County of Peterborough, 2025; Township of Douro-Dummer Official Plan – Schedule ‘A4-1’, 2014). They represent functional importance beyond the boundaries of the City of Peterborough and the Symons Campus and highlight the need to maintain connectivity, and where possible, enhance this connectivity. Similarly, proximity links, identified in Schedule F (City of Peterborough, 2025) that are within the UGN, illustrate areas that provide a connection between Natural Areas and should be treated as Level B features within the Natural Heritage System (City of Peterborough, 2025).

Field studies from 2022 to 2025 observed 17 species at risk (Appendix B) - for which habitat may be considered a Level A feature and is considered a significant feature under the PPS (2024). Current and past species observations include approximately 12 amphibian species, 9 reptiles, 35 mammals, 195 birds, 262 insects, 8 spiders, 23 fish and 457 plants. Ongoing inventories will continue within the UGN to maintain this database.

3.6 Symons Campus and Current Land Use

The UGN is situated in a built environment on Trent University’s Symons Campus. Spanning 583 hectares, the campus core covers 70 hectares and is home to most of the infrastructure, including 30 buildings, green spaces and gardens, 26 parking lots (four of which are permeable), two sports fields, a beach volleyball court, the Trent Vegetable Garden, rooftop garden, and two traditional areas (Figure 6). In the 2024/25 academic year, Trent University had 10,967 students and 2,257 employees on the Peterborough campus, which includes Traill College in downtown Peterborough.



Current University development initiatives (total of roughly 47 ha) include Cleantech Commons, the University-Integrated Seniors Village, and a new residence/academic building that will be home to the Gidigaa Migizi College and new Otonabee College residence. The remaining land will be maintained for future University uses (115 ha). In keeping with the objectives of the TLNAP, current and future initiatives will aim for a net-benefit approach to land planning to maintain the ecological functions and connectivity proposed within this document.

The Symons Campus includes over 20 km of recreational trails, and the Nature Areas are used routinely as on the land-living lab space by Trent researchers, classes, and Camp Kawartha Environment Centre students and campers. They are also regularly used recreationally by the Trent and surrounding communities. The Trent Research Farm, within the UGN, is currently 10 ha and over time will expand to 22 ha.

The Symons Campus is bound and accessed by Water Street, Pioneer Road, University Road, Nassau Mills Road, Armour Road, Woodland Drive and Douro 9th Line. Water Street, University Road, Armour Road, and part of Nassau Mills Road are high-capacity arterial roads. Pioneer Road is a medium capacity arterial road. The north/south portion of Nassau Mills Road is low capacity arterial. These roads are currently two laned and are owned and managed by the City of Peterborough. Douro 9th Line, owned and managed by the Township of Douro-Dummer, is unpaved. Interior roads owned and managed by Trent include West Bank Drive, East Bank Drive, and Gzowski Way totaling 2.7 km.

The Otonabee River (Odoonabii-ziiibi) runs through the center of the campus for 3 km. There are two power generating stations on the river within the campus boundary: the Stanley Adamson Powerhouse at the south end, and the Robert G. Lake Generating Station at the north end. The river is also part of the Trent-Severn Waterway (TSW) for 2.3 km between Lock 21 and Lock 23 (Figure 7). The TSW is maintained and operated by Parks Canada and sees many visitors through the waterway from May to October.

The Stanley Adamson dam is owned by TSW/Parks Canada, and the powerhouse is owned by Trent University, but both are operated by Trent Energy Inc. The Robert G. Lake Generating Station is owned by TSW/Parks Canada and is operated through the Trent Rapids Power Corporation. Lands associated with the powerhouse are leased from Trent University.



4.0 Vision

The vision for Ggwepnandizamin is: To put our best effort forward, together, to accomplish something important. Through Ggwepnandizamin, with ongoing engagement from the Michi Saagiig Anishnaabeg, Trent University will create a balanced and connected University Green Network within Trent's Symons Campus where the land and water is cared for and shared with all living things, honouring the generations before us, and ahead of us.

5.0 Composition of the UGN

To better describe the composition of the UGN, the TLNAP places features into one of three categories: **Natural Features and Areas, Ecologically Supportive Features and Areas, and Hydrologically Supportive Features and Areas.**

These are then further broken down into the feature and area types listed below. For detailed descriptions of each refer to Part II Section 6.2 of the TLNAP.

Natural Features and Areas:

1. Wetlands
2. Woodlands
3. Open country habitats (tallgrass prairie, shrublands and savannas)
4. Ecological buffers

Ecologically Supportive Features and Areas:

5. Wildlife corridors
6. Regenerative agriculture
7. Naturalized green spaces

Hydrologically Supportive Features and Areas:

8. Manicured Quads
9. Natural and Manicured Sports Fields

Moving forward, only features and areas 1 -7 have been included in the 60% calculation that makes up the UGN (Figure 6) in recognition that features 8 and 9 may be affected by intensification within the Campus Core over time. It is acknowledged that the hydrologically supportive features and areas (8 and 9) play a role as permeable surfaces that allow infiltration of water to support groundwater systems; however, these lawn areas provide limited ecological benefits, beyond their hydrological function, because of their use and purpose. If strategic plantings and biodiversity enhancement initiatives are proposed within the manicured quads and sports fields, Ggwepnandizamin can be used to support and advise as needed.

The UGN is represented through a diversity of habitat types that provide complexity within the local landscape and in turn support a range of different species. The following table (Table 1) provides a breakdown of land cover types within the UGN taken from the Ontario Land Cover (vol.1.0; OMNRF, 2023a), TLNAP and field investigations, and explains how they will be represented within this plan.

Table 1: Land cover types/class descriptions within the UGN from Ontario Land Cover (v1.0) (OMNRF, 2023a)

Land Cover Type	Area coverage (ha)	% UGN	Associated TLNAP feature and areas	Associated Target
Coniferous Forest	21.2	5.8	Woodland (2), Wildlife Corridor (5)	Forests & Woodlands
Deciduous Forest	28.2	7.7	Woodland (2), Wildlife Corridor (5)	Forests & Woodlands
Mixed Forest	38.8	10.6	Woodland (2), Wildlife Corridor (5)	Forests & Woodlands
Treed Swamp	91.5	25	Wetlands (1), Wildlife Corridor (5)	Wetlands
Thicket Swamp	1.4	0.38	Wetlands (1), Wildlife Corridor (5)	Wetlands
Marsh	2.9	0.79	Wetlands (1), Wildlife Corridor (5)	Wetlands
Open Water	13.2	3.6	–	Odoonabii-ziiibi and Streams
Hedgerows	0.5	0.14	–	Forests & Woodlands
Cropland	6.3	1.7	Regenerative Agriculture (6)	Regenerative Agriculture
Hay/Pasture	103.3	28.2	Regenerative Agriculture (6)	Regenerative Agriculture
Meadow	0.3	0.08	Open Country Habitats (3)	Open Country
Shrubland	54.5	14.9	Open Country Habitats (3)	Open Country
Anthropogenic	1.4	0.38	–	–
Transportation	1.9	0.52	–	–
Build-up areas pervious	1.0	0.27	Manicured Quads (8), Natural and Manicured Sports Fields (9)	–

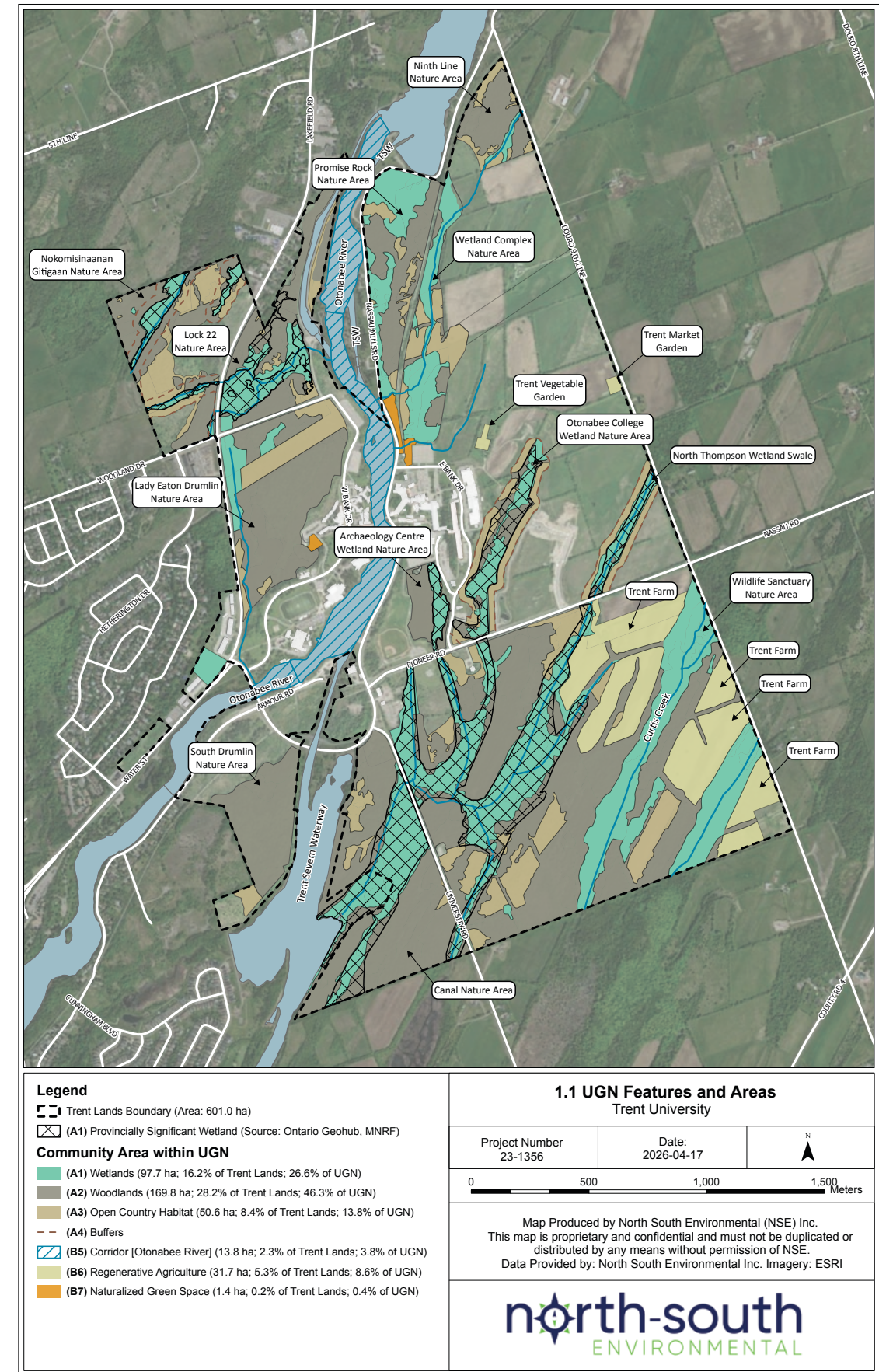


Figure 6: UGN features and areas.



6.0 UGN Targets

As described in section 1.2, targets represent what you care about and care for within the project scope. As described in the TLNAP (Trent University, 2021b), the UGN provides an opportunity to refine targets that reflect existing conditions.

The UGN supports seven targets that align with the language used in the Conservation Standards. A description of each is provided, as well as their importance and condition as it exists today. Existing conditions are used to determine their status. There is no hierarchy in the importance of one target over another and the focus on one or another is dynamic, however, more focus may be placed on those targets whose status is poor or fair. Figure 7 depicts what we can map spatially. Though we have identified different habitats and the species they support, there is an understanding and teaching that all life forms are interconnected and co-dependent. Each has a role to play, and without one, the system becomes unbalanced. As climate change continues to affect ecological conditions, each target may experience pressures that influence its long-term viability. Considering climate resilience, both ecological and cultural, helps ensure that targets remain functional, interconnected, and adaptable in the face of environmental change. For each target, the importance of that feature to Michi Saagiig Anishnaabeg has been described based on the information that has been shared with the Trent team. Reflections also include knowledge shared through Michi Saagiig Nishnaabeg: This is our Territory (Gidigaa Migizi, 2018).

6.1 Biodiversity Targets

6.1.1 Michi Saagiig Knowledge Systems

“To have biodiversity is to have Indigenous people” (G. Pritchard, personal communication, April 25, 2023). The Michi Saagiig have cared for this land since time immemorial, representing thousands of years of experience in carrying out their responsibility to the land and waters. “Every speck of dust in this part of Ontario has been raised by our feet”; “this place is very much a part of our soul, very much a part of our spirit” (Migizi, 2018). Michi Saagiig Elders and Knowledge Holders have the tools as historians to know what was here. Thousands of years have been spent watching, listening, and thinking about the world around us and observing the connections (Conroy et al. 2012). The fish, animals, plants, water and trees are harvested with care and ritual, as was instructed in the original instructions given to them at the time of creation (Migizi, 2018). For this reason, Michi Saagiig Knowledge Systems have been identified as a key target in relation to the UGN. Framing it this way highlights how indigenous Knowledge Systems are deeply connected to representing and advocating for biodiversity and relationships within an area. This approach also creates opportunities for (re)learning, mentorship, access and collaboration.

Given the history of exclusion within their territory and an inability to practice their traditional practices, some Michi Saagiig knowledge of the current state of the waters and habitats on Trent Lands is unknown. A strong commitment of Ggwepnandizamin is to allow time and space for the Michi Saagiig Anishnaabeg and Williams Treaties First Nations to reconnect and learn about the land and waterways as it exists today so we can care for them in a reciprocal way. As climate conditions continue to shift, Michi Saagiig Knowledge Systems provide critical insight into how ecosystems respond over time. Their teachings can guide adaptive and culturally grounded approaches to resilience planning.

6.1.2 Wetlands/M’shkiik

Wetlands, or m’shkiik are a prominent and important feature across the UGN, representing 26.6% (97.7 ha) of the UGN. These include two provincially significant wetland complexes (Nassau Mills Provincially Significant Wetland and Kiiiktaanaa Mash’ing Wetland Complex), along with a series of unevaluated wetlands. As defined by the City of Peterborough OP (2025), wetlands are lands seasonally or permanently covered by shallow water, and lands where the water table is close to or at the surface and is dominated by either hydrophytic or

water tolerant plants. Wetland areas identified in the Ontario Ministry of Natural Resources GeoHub (2023b) have been used with minor refinements to boundaries based on field assessments. Within the UGN, the wetlands are mostly forested swamps, consisting of deciduous, mixed, and coniferous mineral and organic swamps, with the occasional riparian thicket swamp and meadow marsh wetland types along streams, wet swales and along the Otonabee River and Trent-Severn Waterway shoreline. As is characteristic of swamps and meadow marshes, most of these areas experience periodic flooding in the spring and then dry up over the hot summer months. Nested targets include turtles, swallows, marsh birds, amphibians, including habitat for the federally listed species at risk, western chorus frog (*Pseudacris maculata* pop. 1), eastern white cedar, broad-leaved cattail, and the federally and provincially listed black ash/Baapaagigun.

In alignment with TLNAP, wetlands are presumed to be provincially significant until evaluated using the Ontario wetland evaluation system. Trent has committed to protecting wetlands, using a layered approach that includes thoughtful site design, buffering, and construction management and monitoring to ensure minimal to no impact on adjacent wetlands (Trent University, 2021b). All wetlands, including non-provincially significant wetlands, are regulated by Otonabee Conservation under Ontario Regulation 167/06 Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses.

Wetlands offer a remarkable range of ecological and hydrological benefits to the landscape, making them among the most valued ecosystems on the planet. Their vital functions include water filtration, carbon storage, flood mitigation and habitat for a variety of species. The PPS (2024) recognizes wetlands as key contributors to the hydrological function of a watershed. Their protection is essential in achieving water quality and quantity objectives.

Wetlands are biologically diverse, seasonally dynamic, and support many species throughout the year in the form of habitat, breeding grounds, and food. Those that have remained untouched from development and agriculture serve as natural cover and are critical wildlife corridors.

Monikers, like “nature’s sponge” or the “kidneys of the earth” reflects wetlands ability to absorb and retain water and improve water quality. As climate change intensifies storms events and drought periods, wetlands play a large role in buffering the effects through water retention, carbon storage and groundwater recharge. Their ability to absorb and release water slowly helps maintain flow and reduce flooding risks (Ontario Nature, 2024). Their vegetation acts as a natural filter to maintain water quality, while also providing resources like food and building materials (EC, 2013; Government of Canada, 2023; ORCA, 2023).

Wetlands are highly valued by the Michi Saagiig peoples. They support their cultural ways, are important for health and wellness and hold incredible and irreplaceable biodiversity. Wetlands are described as a natural medicine chest, equivalent to present day pharmacies, and are important for the cultivation and harvest of traditional medicines. The Anishinaabe word for wetland or swampy area – m’shkiik – is similar to the word for medicine – M’shkiki. Not only do they provide medicines, but food and materials for cordage, basket making and building materials. Anishnabee teachings hold high importance to water and its various forms, including wetlands. Water sustains all life, including humans, plants and animals (Trent, 2021b). Many species like fish and amphibians begin their life in wetlands. It is believed that Turtles have the role and responsibility in wetlands to keep the water/nibi clean (Conroy et al. 2012). Wetland communities are at risk, like many of the species that rely on them. As wetlands and wetland species are lost, so are the skills and people that rely on them for their craft. For all these reasons, care for the wetlands on campus is important to the Michi Saagiig.

Existing conditions

It is estimated that 80% of Canada’s wetlands in and around urban areas have been lost (ECCC, 2023). What remains needs to be protected and restored for a healthy and functioning watershed, to respect treaty rights, support Michi Saagiig peoples, and honour Michi Saagiig beliefs. The wetlands within the UGN contribute to the 11% wetland cover in the Otonabee Region Watershed (ORCA, 2023) and the 9% wetland cover within the City of Peterborough (Beacon Environmental, 2020). With 618 ha (9%) of wetland in the City of Peterborough, the wetlands within the UGN make up 97.7 ha of that total, or 16%.

Given the topography and landscape, the wetlands within the UGN are all in close proximity to each other and include a high diversity of wetland types, including coniferous, mixed, and deciduous swamps, thickets and meadow marshes.

Despite their proximity, their natural connectivity is poor, largely due to road density within the Symons campus. Within the Trent Lands boundary, there are almost 17 kilometres of roadways. This creates wetland edges (4, 332 metres, or 11%, of wetland edges are created by roads) and fragmentation which is known to have a significant impact on species richness (Findlay and Houlahan 1997). When roads are directly adjacent to wetlands, this also has devastating impacts on turtle and amphibian populations, as they are particularly vulnerable to road mortality, (Ashley and Robinson, 1996; MECP, 2019). Road networks are considered a main threat to blanding’s turtles (*Emydoidea blandingii*), listed as an endangered species federally and threatened provincially. This risk increases for mature females who move across the landscape to find suitable nesting sites (MECP, 2019).

As expected, the risk of road mortality increases significantly based on the volume of traffic per hour. Traffic counts conducted by the City of Peterborough in the fall of 2022 show a high level of traffic through the campus on municipal roads. University Road and Pioneer Road, two high-capacity arterial roads which pass through a series of wetlands see over 4,000 cars per day (City of Peterborough, 2023a). As residential and commercial development occurs in the surrounding area, this volume is likely to increase.

Beyond the risk of road mortality, the presence of roads adjacent to wetlands leads to increased run-off and sediment from road salt and maintenance, and a higher incidence of littering and dumping. Increased rainfall intensity from climate change can lead to greater runoff volumes and more transport of salt and contaminants into wetland systems (Ontario Nature, 2024). Knowledge of wetland water quality is variable throughout the UGN, but many areas that have been studied show exceedances with regards to pH, total Phosphorus, conductivity, salinity, and chloride.

Opportunities exist to address these impacts through mitigation efforts on the existing transportation networks (roads and trails) and bringing road ecology principles and practices into the planning and design of new portions of the network that are owned and managed by Trent University (Trent University, 2021b). It should be noted that most of the road infrastructure on campus is owned and managed by the City of Peterborough, which presents both limitations and opportunities for engagement and partnerships.

Non-native invasive plant species are present in the wetlands in varying extent and abundance and may be an indicator of wetland health and can direct restoration priorities (SERO, 2025). The Society of Ecological Restoration Ontario (SERO) has ranked invasive exotic plants into four categories based on a series of criteria and their behaviour, distribution, persistence, and level of functional change they cause (SERO, 2025). Category one species (considered top priority) found in or adjacent to the wetlands within the UGN include European buckthorn (*Rhamnus cathartica*), invasive phragmites (*Phragmites australis* spp. *australis*), reed canary grass (*Phalaris arundinacea*), wild parsnip (*Pastinaca sativa*), Eurasian water-milfoil (*Myriophyllum spicatum*) and European frog-bit (*Hydrocharis morsus-ranae*). Category two species (medium priority) include purple loosestrife (*Lythrum salicaria*) and narrow-leaved cattail (*Typha angustifolia*). Species within category one are considered a threat to natural areas because they disperse widely and quickly and should not be planted. Category two species disperse widely and are threat to biodiversity wherever they occur. Control of these species will occur where possible and prioritization will factor in current extent and opportunities for eradication and prevention. This list is expected to change over time as we experience climate shifts and species movement.

Emerald ash borer (EAB) and its impacts are evident throughout the UGN, with significant loss and decline of ash trees in the wetland swamps. This includes black ash/Baapaagigun, listed as endangered in Ontario in 2022 and considered a keystone species for its ecological and cultural role (FGCA, 2025). Black ash holds cultural and spiritual significance to local indigenous communities for basketmaking and several other uses (FGCA, 2025) and appears to be the most vulnerable of the ash trees in Ontario to EAB (COSEWIC, 2018).

6.1.3 Forests and Woodlands/Megyaak'ing

Forests and woodlands have a strong representation throughout the UGN and cover 46.3% (169.8 ha) of the area. These features include small and large wooded areas, consisting of coniferous, mixed, and deciduous forests (tree cover >60%), deciduous woodlands (35% < tree cover <60%), and coniferous plantations at varying degrees of succession. For the purposes of connectivity and addressing wildlife movement, this target also includes wooded hedgerows.

The City of Peterborough OP (2025) define *woodlands as treed areas, woodlots and forested areas, including treed wetlands, but excluding cultivated fruit and nut orchards and plantations for the purpose of producing Christmas trees or nursery stock*. This includes ecological land classification communities that are greater than or equal to 0.2 ha in size and are identified as forest (coniferous, mixed, or deciduous), swamps (coniferous, mixed, or deciduous), and cultural (woodland, plantation). If treed wetlands are included in the analysis, forest cover on campus increases to 64%.

As part of phase 1 of the TLNAP, the Natural Heritage Report (Trent University, 2021a) conducted a preliminary assessment of significant woodland patches and candidate significant woodlands throughout the UGN, based on criteria outlined in the Natural Heritage Reference Manual (NHRM) (OMNR, 2010). Of the 29 woodland patches within the Trent Lands boundary, 4 were significant based on the 20 ha size criteria. An additional 4 meet the 4-ha threshold in addition to other criteria. While this is preliminary, site-specific study will confirm significance. Moving forward, the City of Peterborough OP (2025) interpretation of a significant woodland will be used. Here significant woodlands are either woodlands greater than 2 ha in size, or woodlands greater than 0.5 ha in size that directly supports species at risk (SAR), or are within 30 m of a PSW or watercourse, or are identified as part of a corridor or linkage, or are dominated by native trees that are older than 100 years and have late successional characteristics (City of Peterborough, 2025). Candidate old growth forest was also identified in the Wildlife Sanctuary Nature Area. Nested targets include species-at-risk forests birds (Eastern wood pewee (*Contopus virens*), wood thrush (*Hylocichla mustelina*) and red-headed woodpecker (*Melanerpes erythrocephalus*), sugar maple bushes, butternut (*Juglans cinerea*), bats, area-sensitive birds, and amphibian breeding habitat (woodland) and movement corridors.

“Forests and woodlands” represent the woodlands identified in the “natural features and areas category 2” and “wildlife corridors category 5” (ecologically supportive features and areas) (Section 5 above) in the TLNAP. The decision to change the name to forests and woodlands in this plan is important as the two are different vegetation communities. Though they both contribute to forest cover, forests and woodlands have different needs, provide different habitats, and support different species. Hedgerows have been included, as a precaution in this target as they function as linear treed features and, in this agricultural landscape, may play a role as wildlife corridors.

Forests and woodlands are important regulators of the microclimate, providing shade for a cooling effect in hot urban areas. They are important habitat for many species, offering refuge for migratory land birds, allowing for movement of species, preventing erosion, sequestering carbon, and providing oxygen (WWF, 2025; EC 2013). Forests and woodlands are also areas for recreation and nature enjoyment. Forests have been referred to as the ‘lungs of our planet’ (Government of Canada, 2023) and must be healthy and of sufficient size to function properly and support these important tasks.

Forests are highly valued by Michi Saagiig peoples. Trees/Mitigook provide the gift of oxygen and with each exhale of carbon dioxide this is returned to the trees (Conroy et al. 2012). Trees have responsibilities as carbon storers, air purifiers, providers of fire, and makers of shade. They provide food that supports bugs and become homes for birds and small mammals (Conroy et al. 2012). Trees also support Michi Saagiig culture and provide medicines and materials. The notion of food forests has a literal meaning with Michi Saagiig peoples with the quantity of food sources available. White Cedar (*Thuja occidentalis*), one of the four sacred medicines, is found in abundance within the UGN. All are harvested with care, respect, and ritual taking only what is needed. Additional culturally valued trees within the UGN include white ash (*Fraxinus americana*), elm (*Ulmus sp.*), white pine (*Pinus strobus*), paper birch (*Betula papyrifera*), poplar (*Populus sp.*), basswood (*Tilia americana*), white

spruce (*Picea glauca*), oak (*Quercus sp.*) and willow (*Salix sp.*) to name a few. Little people trees are important and have been identified on campus. Traditional knowledge also emphasizes the recognition of seasonal signs from the environment of climate stress, such as phenological shifts or indicator species.

Maple bushes were lost during the treaty making process, and Elders remember wanting to keep the maple bushes so that they could collect sap and make maple sugar to maintain their sustenance (Migizi, 2018). As part of the University’s ongoing commitment to reconciliation, some sugar maple bushes within the UGN may be considered cultural areas under the Nature Areas management categories, which emphasizes respect of cultural resources.

As environmental conditions become more variable, forests and woodlands offer important buffers against environmental stressors such as heat, drought, and flooding. Their capacity to moderate microclimates, store carbon, and support native species makes them an essential component of a climate-resilient landscape. Continued stewardship, guided by both ecological knowledge and Michi Saagiig teachings, can help these forests adapt over time, while maintaining their cultural, ecological, and community value.

Existing conditions

In Ontario, south and east of the Canadian Shield it has been estimated that over 70% of the woodland cover has been lost since 1800 for agriculture, lumber, firewood, industry, and housing; with much of this occurring between 1800-1920 (Riley and Mohr, 1994; Larson, 1999; OMNR, 2010). In Peterborough County, the percentage loss of all woodland and scrubland within this same timeframe is 67.1% (Larson, 1999). Improving forest cover throughout southern Ontario has seen momentum with afforestation efforts, but losses are still occurring, largely due to agriculture (Forests Ontario, 2020).

The forests and woodlands within the UGN make up 22% of the 1,070 ha of woodland within the City of Peterborough (which includes treed swamps) and contributes to the 16% forest cover within the City of Peterborough (Beacon, 2021). The Otonabee River sub watershed was rated as good for forest condition in relation to forest cover, forest interior, and forested riparian cover (ORCA, 2023).

In an urban landscape, it is expected that forest patches will be fragmented and separated from each other by roads, trails, and buildings. Forests and woodlands twenty metres or more apart are considered separate patches (OMNRF, 2010). Using this threshold, all forest patches within the UGN are deemed separate from neighbouring forest and woodland patches. This results in a reduction of patch size and thus limits forest interior habitat for area-sensitive species.

Non-native invasive plants and forest pests are abundant throughout the UGN and may be an indicator of forest health and restoration priorities (SERO, 2025). Category one species (considered top priority) ranked by SERO (2025) that are found in or adjacent to the forests and woodlands within the UGN include garlic mustard (*Alliaria petiolata*), European swallowwort (dog strangling vine) (*Cynanchum rossicum*), goutweed (*Aegopodium podagraria*), European buckthorn, Japanese knotweed (*Fallopia japonica*) and invasive honeysuckles (*Lonicera sp.*). Category two species of medium priority include Manitoba maple (*Acer negundo*), and lily-of-the-valley (*Convallaria majalis* var. *majalis*) (SERO, 2025). Control of these species will occur where possible and prioritization will factor in current extent and opportunities for eradication and prevention. This list is expected to change over time as we experience climate shifts and species movement.

Emerald ash borer was first detected in the City of Peterborough in the summer of 2014, and its impacts are evident throughout the UGN (City of Peterborough, 2025b). Ash trees were a significant component of the tree canopy on campus and there has been a significant loss and decline of ash in the forests and woodland habitats. Echoed by Michi Saagiig Elders and Knowledge Keepers, ash trees are in difficulty. There is a lot of concern about this and its widespread scope across the area.

Plantations within the UGN consist mostly of red pine (*Pinus resinosa*), white pine (*Pinus strobus*), Austrian pine (*Pinus nigra*), scots pine (*Pinus sylvestris*), and white spruce (*Picea glauca*). The plantations in the Lady Eaton Nature Area and by the Founders Walk were planted in 1952 by the Kiwanis Club and the Lakefield

High School Forest club. With permission from General Electric (who owned the land at the time), a total of 5,000 trees were planted (Mann, 1992), therefore, the plantations in this location are over 70 years old. No thinning activities have occurred to open the canopy to allow growth of successional species, other than natural disturbance events, and thus natural succession within the plantations has been suppressed. The low species diversity and lack of understory cover is reflective of this, and the result is a simplified forest.

The forested areas within the UGN provide recreation opportunities for the Trent community and local residents, and host much of the 20 km of recreational trails on campus. Though it is an incredible benefit to the community, trails do introduce a range of incompatible uses and can be a vector for invasive species. Incompatible uses include mountain biking, all-terrain vehicles (ATV) and snowmobiles, informal trail creation, firepits, littering and dumping, and off-leash dogs.

6.1.4 Open Country/Skoosniing

Open country habitats represent 13.8% of the UGN, featuring communities with less than 35% tree cover and includes savannah, thickets, old fields, and meadows. Cultural savannah (25% < tree cover > 35%) and cultural thickets (tree cover <= 25% and shrub cover > 25%) are habitats often referred to as early successional habitat and includes open communities that are in various stages of succession to a woodland. Thicket swamp habitat is also present in the UGN but has been included under the wetland target. Open country includes candidate shrub and early successional breeding bird habitat identified in the Natural Heritage Report (Trent University, 2021a). Meadows within the UGN are herbaceous communities with an agricultural legacy (pasture and hay) or are industry right of ways (hydro lines). Within the UGN, thickets and meadows often act as an important ecological buffer adjacent to the river, provincially significant wetlands, and significant woodlands. These open country features will be maintained to support the minimum vegetation protection zones (VPZ) as listed in Table A within the City of Peterborough OP (2025), providing protection as an ecological buffer when a natural feature is adjacent to lands subject to development. Nested targets include shrubland birds (field sparrow, brown thrasher, Eastern towhee, willow flycatcher), many of which are experiencing steep declines (EC, 2014), tree swallows, monarch butterfly and grassland birds.

Historical records of native grasslands suggest that they did occupy several hundred hectares in the Kawarthas, largely around the north and south shores of Rice Lake, named by the Michi Saagiig Peoples as Pamitaashkodeyong, which translates to "Lake of the Burning Plains". This is because when the Michi Saagiig people moved through the area they saw the fires reflected in the waters of Rice Lake and Lake Ontario. These fires were the burning practices of the Huron-Wendat, who were allowed by the Michi Saagiig and Odawa alliance to settle in the area via wampum. They were known as the "people who live in longhouses" and they cleared the land using fire for various uses, such as agriculture, grazing, and for sight lines (ABOS, 2018; Bakowsky, 2009; Migizi, 2018). These burning practices allowed for the establishment of native grasslands or tallgrass prairie ecosystems (tallgrass prairie and savannah), which require this disturbance to be maintained on the landscape (ABOS, 2018). Within the City of Peterborough, between approximately present-day Parkhill Road and King Street and as far west as Park Street and east to the river, was once an expansive savannah. A remnant oak tree from this time still stands as a gentle reminder of the past near downtown Peterborough (Bakowsky, 2009). There are no accounts that show native grasslands existed within the UGN pre-European settlement (Bakowski, W. personal communication, Feb 22, 2023) and therefore the open habitats that make up this target are referred to as 'surrogate' or non-native grassland habitat because they have developed as a result of European activities (MDNR, n.d.). To maintain habitat diversity within the UGN, savannahs, thickets, meadows, and old fields are considered a biodiversity target, despite their agricultural or industrial legacy.

Having a combination of habitat types will support more biodiversity. Shrub and early successional habitat is declining in Ontario and is important for some declining bird species (OMNR, 2015). In the absence of native grasslands, surrogate grasslands are an important driver for species that depend on open country habitat, including grassland birds (EC, 2013). According to the State of the Birds Report, grassland birds have seen the biggest declines of any habitat type in North America (BirdLife International, 2022). The Monarch butterfly is also associated with this target as meadows and old fields provide both breeding and

nectaring habitat. The presence of monarch butterflies indicates a healthy ecosystem. To Michi Saagiig people, Monarchs are very special and are quite sensitive. Their primary source of food, milkweed, needs to be preserved. Meadows are also an important habitat for pollinators, small and large mammals, act as a corridor for wildlife movement and help to sequester carbon.

These types of communities are transient, and if they do not experience regular maintenance or disturbance to keep tree species from growing up and moving the community to woodland, open country habitat can be lost within 10-15 years (Audubon, n.d). Thus, a maintenance regime is an important tool to ensure their continued presence in areas deemed appropriate and feasible.

Existing conditions

As the land was settled and agriculture became a primary use, the natural ecosystems of the area were lost (ABOS, 2018). Today, native grassland habitats are the rarest ecosystem in Canada, with less than 3% remaining in Southern Ontario (Tallgrass Ontario, 2019). The largest intact tract of native grassland habitat left in Eastern Ontario is located at Alderville First Nation's, Alderville Black Oak Savanna (ABOS, 2018). In the landscape of the UGN, there were no areas known to be native grassland, but through agricultural practices, and then the abandonment of those practices, patches were left that remain open. However small these patches are, they are supporting species in decline, contributing to the biodiversity on campus and are home to species of Michi Saagiig value.

The Bird Conservation Strategy for Bird Conservation Region 13 in Ontario Region (EC, 2014) identifies the need for landscape-level planning to ensure enough shrub and early successional habitats are maintained in a landscape, however, not much is known on how much shrub habitat is considered sufficient or the effects of management on species that rely on this habitat. For the purposes of assessing size criteria within the UGN, the Significant Wildlife Habitat Criteria Schedules for ecoregion 6E (OMNRF, 2015) were used for Shrub and Early Successional Bird Breeding Habitat, which identifies significant shrubland as thicket habitat > 10 ha in size. Average patch size for thicket will never reach the 10-ha mark due to the limited space available within the UGN, but indicator species (brown thrasher) and common species (field sparrow) are present where thicket patches do currently exist. Work will focus on restoring these patches and maintaining them as shrubland, where appropriate.

As with thicket habitat, average patch size for existing meadows is small (~1 ha) and because of this, it is unlikely that average patch size can be increased to a point where a range of different species with area-sensitivity can be met. The surrounding agricultural landscape is augmenting this, and so habitat size might not be an important factor in habitat selection for bobolink, Eastern meadowlark, savannah sparrow, and grasshopper sparrow in this area (McDonald and Koper, 2022). The merit and conservation of small 'grassland' patches is becoming more evident and ignoring the conservation potential of small patches could limit the wildlife and plants supported through the UGN. The continued presence of meadows will require actions to maintain them through helpful disturbances such as mowing, given their tendency to transition into forested communities without a maintenance regime. Prescribed fire is a common method of maintenance performed by Michi Saagiig communities, and will be explored, but this method may be challenging in an urban setting given operational and safety concerns.

Several of the existing open country habitats within the UGN show a resemblance to alvar habitats, where shallow soils exist over limestone bedrock with a specific assemblage of plant species. These areas include exposed bedrock or are characteristically rocky. In these areas we have observed early saxifrage, hawkweed species, strawberry, gray and blue-stemmed goldenrod, and poverty oatgrass to name a few. They do lack the indicator species used to identify the existence of these rare communities and the Ontario geological survey does not show karst features in the area, but potential features are further north and east of Lakefield. Overburden thickness data indicates that some areas within the UGN have low values, meaning the soil depth over bedrock is shallow. These areas are similar to alvar habitats but are more likely to support calcareous bedrock community types. Further investigation is warranted as alvar areas are important to Michi Saagiig people.

Non-native invasive plants are abundant to dominant throughout the savannah and thicket habitat within the UGN. Category one, top priority species include European buckthorn, invasive honeysuckles, garlic mustard, and European swallowwort (dog strangling vine) (SERO, 2025). Given the agricultural legacy, many of the existing meadows are dominated with non-native cool-season grasses, such as smooth brome (*Bromus inermis*) and orchard grass (*Dactylis glomerata*) and may be the reason for the slow woody succession (Davis et al. 2005). Category one invasive species (SERO, 2025) found within the meadow habitats include autumn olive (*Elaeagnus umbellata*), white sweet clover (*Melilotus albus*), wild parsnip, European swallowwort (DSV), invasive phragmites, invasive honeysuckles, and European buckthorn. Category two species include spotted knapweed (*Centaurea stoebe*), multi-flora rose (*Rosa multiflora*), crown-vetch (*Securigera varia*) and guelder rose (*Viburnum opulus var. opulus*). Most are widespread in their distribution (extent) and rare to abundant in abundance. Control of these species will occur where possible and prioritization will factor in current extent and opportunities for eradication and prevention. This list is expected to change over time as we experience climate shifts and species movement.

Meadow areas include a variety of flowers that are used and collected for medicinal use. Likewise, sweetgrass, one of the four sacred medicines, grows in abundance amongst common field grasses and in meadow areas within the UGN.

As climate conditions continue to shift, the role of open country habitats in supporting biodiversity and resilience becomes increasingly important. Their capacity to provide refuge for vulnerable species, absorb climatic stress, and respond to adaptive management, such as mowing or cultural burning, positions them as a valuable part of Trent's climate-ready landscape.

6.1.5 Otonabee River/Odoonabii-ziibi and Streams

Odoonabii-ziibi is the original name of the Otonabee River and its description in Anishinaabemowin means 'the river that beats like a heart'. The river is the lifeline that flows through the centre of the UGN for roughly 3 kilometres and was an important blue corridor prior to the construction of the dams. All the streams, creeks, and wetlands within the UGN flow into the Otonabee/Odoonabii-ziibi, forming a complex and connected hydrological system. The riparian zone or lands adjacent to the streams and rivers act as both a buffer to the aquatic systems but also provide valuable habitat and are an important component in this target. Peterborough's watercourses and their associated shores are regulated by Otonabee Conservation, and within the Trent Lands boundary, the Historic canals regulations under the Department of Transport Act is applicable because of the Trent Severn Waterway.

The riparian zone provides important functions to aquatic systems, including helping to moderate water temperature, filter pollutants, control soil erosion, provide food, shelter and critical habitat and increase ecosystem function (EC, 2013; Dennison, 2022). Referred to as the ribbon of life, vegetated riparian areas are one of the most important habitats for wildlife. Studies suggest that 70% of terrestrial wildlife at some point in their life cycle rely on riparian zones (Dennison, 2022). These linear features can also act as an important corridor for wildlife. In some instances, the riparian area is also referred to as an ecological buffer, which reflects the categories identified in the TLNAP. Riparian buffers are increasingly important due to their ability to stabilize banks, reduce erosion and regulate stream temperatures, contributing to the ecosystem's adaptive capacity. Within the UGN, the riparian zone includes pocket forests, woodlands and thickets that have developed over time. Nested targets include fish, turtle, and swallow species.

According to the City of Peterborough OP (2025), the minimum width for vegetation protection zones adjacent to permanent and intermittent watercourses is 30 metres for cold/cool water regimes, and 15 metres for warm water regimes. It is Otonabee Conservation's recommendation that watercourses and adjacent riparian areas remain in their natural state to ensure their natural processes are maintained to the greatest extent possible (ORCA, 2025).

The river includes a portion of the Trent Severn Waterway (TSW), considered a national historic site that is managed by Parks Canada. Within the UGN, there are two lock stations (Lock 22 and Lock 23) and the TSW

floodgate. Water also flows through two power houses along this stretch of the river, the Robert G Lake Generating Station at the north end and the Stanley Adamson Powerhouse at the south end. Water levels are heavily regulated, and natural flow and migration of species are severely impacted. In more natural areas along the river, it does support fish habitat, including spawning sites for smallmouth bass (LIO, 2022). Fish habitat is afforded special protections under the federal Fisheries Act (1985) and include spawning grounds, and any other areas fish depend on to carry out their life processes, such as nursery, rearing, food supply, and migration areas, per the Peterborough OP (2025).

The Otonabee/Odoonabii-ziibi is used for a variety of uses: it is a main travel route for boaters, recreational uses include swimming, fishing, and rowing, and is used for educational opportunities at Trent. Natural embayments within the TSW, adjacent to Canal and South Drumlin Nature Areas create riverside marshes and floating aquatic habitat that are home to wood ducks and turtles. About 25 permanent and intermittent streams, many of which are associated with wetland habitats, flow through the UGN, eventually making their way to the river or TSW. Road crossings are at 19 locations on the 25 streams and are connected via culverts (City of Peterborough, 2023b). Much of the UGN is considered a highly vulnerable aquifer and some areas are considered significant groundwater recharge areas (LIO, 2023), both of which are vulnerable areas under the Clean Water Act (2006) and are subject to regulations to protect drinking water.

"Water has spirit" (Wilma Jacobs-Taylor in Gidigaa Migizi, 2018) and is considered precious and sacred to First Nation communities. "All the ponds, lakes, streams, oceans and seas are part of our Mother's body. For this reason, we give thanks to the veins of our Mother, the earth" (Wilma Jacobs-Taylor in Migizi, 2018). And in Michi Saagiig culture, "It is the women who are the caretakers and carriers of that water" (Wilma Jacobs-Taylor in Migizi, 2018). Every life form depends on water to survive. It is an ongoing responsibility to keep the water/nibi clean. "If we keep the life-blood of Great Mother clean, then she will keep us clean" (Alice Williams in Migizi, 2018). The water provides life, cleansing, food, travel, habitat for many species like fish, turtles, and waterfowl, and is used in ceremony for its healing power (Conroy et al. 2012). Some very important plants grow very close to the river. This is due to the presence of limestone found right underneath the soil in some areas.

To echo the Michi Saagiig's relationship with water, Ggwepnandizamin places a high emphasis on protecting water features and areas of hydrological importance like recharge areas, seeps and springs and headwater streams.

Existing conditions

The river has seen dramatic changes over the last 200 years. Based on knowledge from the Michi Saagiig community, it was once a cold-water system that supported salmon from Stoney Lake to Lake Ontario but now is considered a warm-water system due to land clearing, dams, agriculture, and the Nassau lumber mill (Migizi, G., personal communication, June 28, 2022). Throughout the watershed there is great concern about the health of the water and how it is used. First Nations communities in Ontario have seen the changes to the water systems, both above ground and underground (Conroy et al., 2012). The construction of the Trent Severn Waterway was destructive to the Michi Saagiig, which included flooding, loss of graves, scared locations, land, and islands (Migizi, 2018). With the influx of settlers, the life in the water suffered. Aquatic plants were killed off, wild rice/manoomin and muskrat populations declined, algae blooms began to appear, and the traditional fish species had to compete with introduced species like large-mouth bass and carp (Migizi, 2018). Today, within the boundaries of the Symons Campus, the river is highly anthropogenic due to the presence of the TSW, lock stations and powerhouses. The Peterborough rowing club and two boat launches are on the river within the Trent lands boundary, that support some of the recreational uses seen on the river.

Fish species in the river include banded killifish, black crappie, bluegill, brown bullhead, common carp, largemouth bass, mottled sculpin, muskellunge, northern pike, pumpkinseed, rock bass, smallmouth bass, walleye, white sucker, and yellow perch (Field studies 2023; OMNRF, 2022; Raby, G, personal communication, Oct 24, 2023). Minnow species include: blackchin shiner, bluntnose minnow,

brooke silverside, common shiner, golden shiner, Iowa darter, johnny darter, northern logperch, and spottail shiner (Raby, G, personal communication, Oct 24, 2023). Aside from providing spawning habitat for smallmouth bass, the river also provides valuable spawning ground to walleye, both of which are cultural keystone species to the Michi Saagiig. The non-native invasive round goby has now made its way up the Otonabee River. They compete with and prey on native bottom-dwelling fish like mottled sculpin and can reduce sport fish populations because they eat their eggs and young and compete for food sources (OFAH, 2024). The health of the fish in the waterways and access to the river is an important consideration to support Michi Saagiig treaty rights.

Measures of water quality on the Otonabee River are within federal and provincial guidelines (MECP, 2023; Xenopoulos, 2023). To the contrary, some recent monitoring on streams and stormwater management ponds within the UGN have seen exceedances with respect to pH, chloride, conductivity and total phosphorus. This in part, is a reflection of the effect of road salt on the ponds and their outflow (Eimers, C, personal communication Sept, 2024). Water quality, thermal regime and fish habitat is largely unknown for the tributaries within the Trent boundary, which represents a knowledge gap and an opportunity. The importance of good water quality for the plants, animals, and people to continue for the next seven generations cannot be understated.

The width of the riparian zone has a significant impact on its ability to carry out the important ecological services they are intended to provide. Buffers in the range of 20-30 metres have shown a reduction in nutrient and pollutant loading between 80-90% (EC, 2013). Though width seems to matter, there is a huge variation in recommended buffer widths, and growing evidence is suggesting that having some is better than none. At a minimum, the City of Peterborough requires a 15 m VPZ for natural lakes and warm water watercourses, and a 30 m VPZ for cool/cold water watercourses (City of Peterborough, 2025).

Several of the University's building that were part of the original Ron Thom Master Plan were built either immediately adjacent or in close proximity to the Odoonabii-ziibi (Otonabee) River because of the lack of policy for a setback at the time. As a result, there has been shoreline hardening within the Campus Core, including areas around the Faryon Bridge where gabion baskets and armor stones are in place to support the bridge, the stairs and retaining wall at Champlain College, and around the Bata Library. The remaining shoreline of the river within the Trent boundary is relatively natural, beyond the infrastructure needed for the lock systems. The riparian zone on the west bank of the river where Trent may be able to influence (~1.6 km) ranges in width from 60 m to 0 m. Adjacent areas include impervious surfaces like parking lots and walkways, which receive winter maintenance and pervious surfaces like mowed lawn and sports fields. Structure and native plant composition of the riparian zone is also important in slowing run-off and facilitating soil infiltration. Within the existing riparian areas, invasive non-native shrubs and trees like European buckthorn, invasive honeysuckles, and Manitoba maple (*Acer negundo*) dominate the subcanopy and shrub layer of vegetated areas, and herbaceous species like European swallowwort (DSV) are abundant in areas in the ground layer. With cover of invasive species greater than 25% of the buffer, this is a strong indication of ecosystem dysfunction (Johnson and Buffler, 2008). Within the 1.6 km of riparian and shoreline area on the Otonabee/Odoonabii-ziibi on the west bank, there is an opportunity for riparian restoration and expansion, where areas permit, to improve aquatic health and reduce run-off. Treaty 20 rights extend 66 feet (20 meters) on either side of the river, and any riparian work will need to be done in close collaboration with our Michi Saagiig partners.

Much of the east bank shoreline, north of the canal is a narrow band of vegetation on top of limestone situated between the river and concrete barriers adjacent to Nassau Mills Drive. These lands are outside of the influence of Trent; therefore, any riparian management would need support from the City of Peterborough and Parks Canada.

The riparian zone within the TSW between South Drumlin Nature Area and Canal Nature Area are well buffered because of the natural cover provided by the Nature Areas. Small areas of erosion are evident in areas where vegetation breaks along the Parks Canada trail that runs alongside the canal on the west side.

Where Trent can have additional impact and influence is on the 25 permanent and intermittent stream sections within the UGN (north Thompson creek, upper Curtis Creek and other unnamed) that outlet into the Otonabee/Odoonabii-ziibi River and TSW. Of these stream sections, 14 are Strahler Class 1, meaning they are the uppermost channels or headwater streams with no upstream tributaries. Eight are Strahler Class 2 and 3 are Strahler Class 3 (City of Peterborough, 2023b). Thermal regime is largely unknown except in the Curtis Creek subwatershed, where streams are cool-warm systems within the Trent lands boundary (City of Peterborough, 2023b). Opportunity exists with respect to headwater streams and adjacent vegetation cover, which shows high dependence on natural cover for moderation of stream temperature and flow, pollution loading and providing organic matter to fish and benthic communities downstream (EC, 2013). There are 19 watercourse road crossings and 1 trail crossing within the UGN (City of Peterborough, 2023b). Information on fish and minnow species on the tributaries within the UGN is also largely unknown.

Benthic invertebrates have been studied in tributaries throughout the UGN as a component of environmental monitoring programs for current university initiatives associated with Cleantech Commons, University Integrated Seniors Village, and SER-TU's potential wetland creation project. Using the Hilsenhoff Family Biotic Index (FBI), which estimates the overall tolerance of the benthic community to organic pollutants and allows for interpretation of water quality, all streams studied have high FBI values indicating poor water quality with high amounts of organic pollutants.

With ongoing changes in climate patterns, water systems may face new and intensifying pressures, including altered flow regimes, increased frequency of drought or flood events, and warming stream temperatures. Riparian areas offer a natural buffer to absorb these changes and support maintaining water quality, habitat integrity, and flood resilience. Ggwepnandizamin encourages proactive restoration and protection of riparian corridors and headwater streams as part of a broader strategy to adapt to a changing climate, in collaboration with Michi Saagiig partners and other watershed partners.

6.2 Complimentary Targets

Additional targets that represent the landscape within the project scope have been included to tie in the ecologically supportive features and areas from the TLNAP. These are not described well under ecosystem targets because they are working lands or semi-natural, but they do/will support biodiversity, hydrological function, and connectivity. Naturalized Green Spaces will evolve over time and current viability is based on a very small scope.

6.2.1 Regenerative Agriculture

Agriculture represents 8.6% of the UGN, featuring the Trent Farm Research Centre, the Trent Vegetable Garden (TVG), and the Trent Market Garden. The Trent Research Farm is currently 10 ha and is a faculty-run demonstration site that supports learning through the Trent School of the Environment's Sustainable Agriculture and Food Systems and research activities as a Trent Research Centre. With the primary focus on advancing research, practice and technologies applicable to local and regional small-scale, sustainable agricultural systems, the new Trent farm has been included in the boundaries of the Wildlife Sanctuary Nature Area on land already actively farmed (Figure 6 and 7). Further expansion of the farm to the fields to the south may happen over time to a total of 22 ha.

Agricultural land in rural areas can function as a linkage between natural features and does not present an impediment to wildlife movement for many species (OMNR, 2010). The key point here is that these lands are still pervious surface, but the composition of the fields (row crop vs. annual vs. perennial crops) does significantly impact the species they can support.

Existing conditions

The current location of the Trent Farm Research Centre is new, having been relocated in 2022. During the 2022 growing season, both corn and soybean were equally planted. In 2023, as a transitional year, all

the fields were soybean, except one that was in corn. A new purpose- designed tile drainage system has been installed in the lower northeastern and western field that will allow researchers to study water quality, soil health, and greenhouse gas (GHG) emissions as impacted by managed drainage stand crop and soil management approaches. Tile drainage was installed in half of the fields in a systemic manner to enable comparisons between fields with drainage and those without.

The farm aims to increase opportunities to train future small-scale sustainable farmers and support research that will address the challenges small-scale farmers face. The Trent Farm will focus on regenerative, agroecological agricultural practices that improve soil health, reduce nutrient loss to the surrounding environment, mitigate GHGs and promote biodiversity. As an experimental teaching and research farm, the land use will vary within fields based on scientific experimental field designs. A Farm Master Plan has been developed that will help guide the activities and structural components of the farm. Agricultural land to the south of the farm has been planted in various perennial and row crops; in these years the fields were managed by a contractor farmer. These southern fields will become part of the Trent Farm in later years as the program expands.

The Trent Vegetable Garden (TVG) was established in 2005 and is located northeast of the DNA/Life Sciences Building. Operating like a small-scale farm, it includes organic vegetable and medicine gardens and 20 community garden plots. Most of the vegetables grown are donated to the Seasoned Spoon Café on Trent's Symons Campus and the remainder to local organizations that serve meals to Peterborough community members (Trent Gardens, 2023).

The Trent Market Garden was established in 2015, and the area includes vegetable plots, storage cooler, storage container and a hoop house. Produce is available for purchase at local farmers markets and vegetable plants are available to the public for purchase at the farm site.

The viability or status for farmland (as explained in section 1.2) has not been completed at this point, and so the goal is supportive, recognizing that different partners within Trent are the project leads on these sites. Regenerative agriculture offers a meaningful pathway to build resilience into food systems. Practices that prioritize soil health, water retention, and biodiversity can help buffer agricultural productivity against climate stresses while contributing to broader ecosystem services. The integration of climate-smart, adaptive agricultural research within the UGN supports both academic inquiry and long-term landscape sustainability.

6.2.2 Naturalized Green Spaces

Naturalized green spaces (NGS) are considered complementary areas that can contribute to improving air quality, stormwater management, connectivity and biodiversity within the UGN. The utilization of NGS allows for the integration of habitat and the promotion of biodiversity within urban settings and is a tool to implement net-benefit development or nature-inclusive design. Naturalized green spaces have the potential to contribute climate adaptation and mitigation services, such as urban cooling, and carbon sequestration benefits.

NGS areas can take on a variety of forms (e.g. meadowscapes, rain gardens, native gardens, pocket forests, green roofs) within built-up areas. This target represents future opportunities and so very few identified NGS areas have been mapped in this iteration (Figure 6). Currently, NGSs represents 0.4% of the UGN (1.4 ha). New NGS locations will be identified as future University initiatives are known and their location studied. In general, it is anticipated that naturalized green space locations may change over time and should not be viewed as permanent and/or may be subject to maintenance and periodic disruption if in immediate proximity to existing infrastructure.

Existing conditions

As noted above, few naturalized green spaces currently exist within the UGN, but this is expected to change as the campus evolves. The existing NGSs within the UGN consist of a stormwater management (SWM) pond, and meadow areas adjacent to the rotary greenway trail and campus buildings.

The stormwater management pond on the east bank was built in 2004 to manage stormwater following the development of the DNA building, which was then further expanded with the Life Sciences building in 2008. This pond has grown in with cattails (*Typha latifolia*) and the surrounding berm was planted with a native meadow mix, consisting of big bluestem (*Andropogon gerardi*), little bluestem (*Schizachyrium scoparium*), switchgrass (*Panicum virgatum*), common milkweed (*Asclepias syriaca*), asters (*Symphyotrichum sp.*), and goldenrods (*Solidago sp.*). A few trees have grown up including willow (*Salix sp.*) and Eastern white cedar (*Thuja occidentalis*). This area supports breeding amphibians, provides turtle habitat, foraging habitat for swallows and bats, and nesting site for breeding birds. While naturalized, the SWM pond does have periodic maintenance and clean outs.

Adjacent to the rotary greenway trail at the north end of campus, just north of east bank drive, is a mixed meadow ecosite with non-native species in abundance, including common buckthorn, invasive honeysuckles, and European swallowwort.

An additional site is located between the Trent Daycare Centre and Lady Eaton College, where an underground battery storage facility is located. This area is being naturalized as a native meadow to limit programming atop this infrastructure but will also be subject to periodic maintenance.

Viability or status of these areas (as explained in section 1.2) is based on a simple ranking system based on non-native invasive species abundance and benthic invertebrate studies in the stormwater management pond from Trent's ERSC 3260 Applied Biomonitoring course.

Though not formally part of an NGS, many of the garden beds within the campus core have non-native species and contain priority invasive species like European swallowwort and Japanese knotweed. An opportunity exists to revitalize some of the garden beds on campus so they can be more ecologically functional and require less maintenance but remain aesthetically pleasing. Native gardens have an additional advantage as a teaching resource for various courses offered on campus.

6.3 Overall Target Status

Table 2 provides a summary of the overall status of the targets within the project scope. This represents a tally of the ratings based on the key attributes, indicators and thresholds used in the viability analysis. It provides a clear picture of targets that are most in need of attention and will assist in measuring success over time based on desired future status (CMP, 2020).



Table 2: Targets, how viability was determined, current overall status, and desired future status.

Target	Viability Mode	Status	Status Future
Michi Saagiig Knowledge Systems	Key Attribute	Not Specified	Very Good
Wetlands/ M'shkiik (1)	Key Attribute	Fair	Good
Forests & Woodlands/ Megyaak'iing (2/5)	Key Attribute	Good	Good
Open Country/ Skoosniing (3/4/5)	Key Attribute	Fair	Fair
Otonabee River/Odoonabii-ziibi and Streams (5)	Key Attribute	Fair	Good
Regenerative Agriculture (6)	Simple	Not Specified	Good
Naturalized Green Spaces (7)	Simple	Good	Good

Status explanation (modified from Low, 2002)

Very Good	The target is functioning at an ecologically desirable status and requires little interference.
Good	The target is functioning within its range of acceptable variation; it may require some interference.
Fair	The target lies outside its range of acceptable variation & requires interference. If unchecked, the target will be vulnerable to serious degradation.
Poor	Allowing the indicator to remain in this condition for an extended period will make restoration or preventing extirpation challenging.

Refer to Appendix A for the full details on Key Ecological Attributes and indicators used for each target where this viability mode was used. Appendix B includes a full list of nested targets and significant species.

7.0 Pressures

The pressures within the UGN were identified via on the ground assessments using the [IUCN – Conservation Measures Partnership Classification of Direct Threats](#) (version 4.0) as a guide. A description of the pressure and its impact is within the Miradi software. Each pressure/target combination is ranked based on scope (proportion of the target affected), severity (the level of damage to the target that is expected if trends continue) and irreversibility (degree to which the target can be restored if the threat is removed). The formula for the overall ranks is calculated within the Miradi software. The summary tab on the right illustrates the overall impact of the pressure on the targets, while the bottom row highlights the cumulative impact of these pressures across all targets. The rankings identify high-priority actions needed to reduce pressures and support target conservation. Refer to Appendix C for further details on scope, severity and irreversibility and how overall ranks are determined. Those with a plus sign indicate a potential opportunity and those with an asterisk are pressures that are either outside of the Trent's influence or are already established and difficult/not feasible to manage. Emerging threats related to forest pests and fungi present an opportunity for enhanced monitoring.

Climate change stressors are not ranked in Table 3, but it is recognized as a pervasive and compounding influence that interacts with many of the existing pressures outlined (Figure 8). Climate-related stressors, such as more frequent and intense storms, heatwaves, droughts, invasive species expansion, and changes in hydrology, can exacerbate the severity and scope of pressures already acting on UGN targets. Climate change is an important contextual factor that underpins the need for adaptive and forward-looking stewardship. Ongoing monitoring, inclusive planning with Michi Saagiig Knowledge Holders, and the integration of climate resilience into future actions is important for reducing future vulnerabilities and sustaining the integrity of the UGN's ecological and cultural features over time.

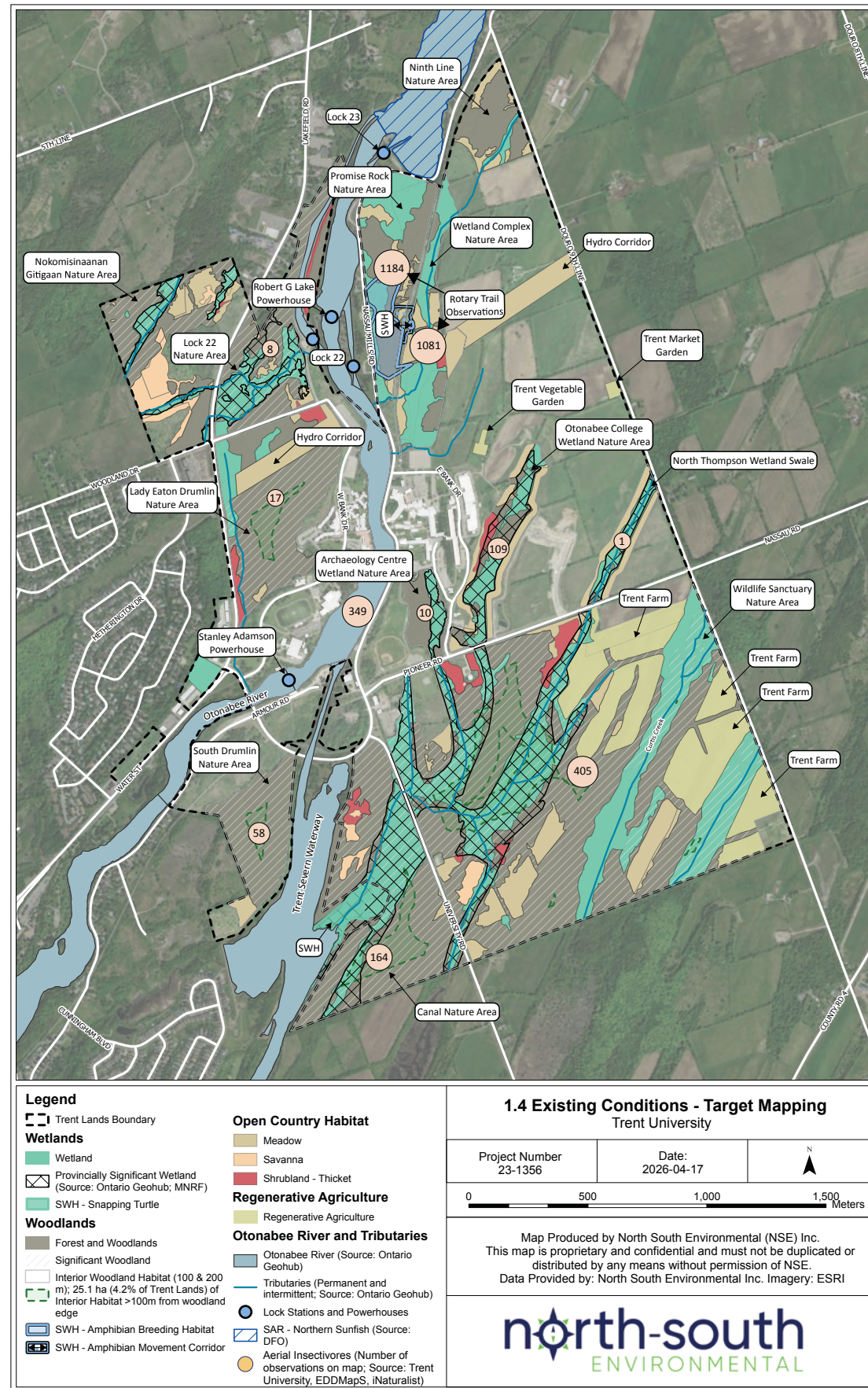


Figure 7: Target mapping

9.0 Action Plan

As stated in the introduction, an action plan includes goals, strategies, and objectives and describes how the situation will change over the course of the project timeline. Actions are derived from the strategies to achieve the goals and objectives, keeping in mind what is possible and within the scope of the project.

9.1 UGN Goals

Goals are directly linked to the targets and outline their desired future status. As such, goals are organized by target to show that linkage. The goals for the UGN in the TLNAP are reflected within the goals and strategies below (refer to Figure 3) (Trent University, 2021b). Climate change is a cross-cutting pressure that interacts with many of the existing goals within Ggwepnandizamin. It affects ecological connectivity, species composition, hydrology, and land care practices. While no additional goals have been added specifically for climate change, the current goals already support resilience and adaptation by protecting and restoring habitats, improving ecological function, integrating Indigenous knowledge systems, and promoting regenerative land use. Together, these efforts contribute to greater climate readiness on campus.

Overarching Goal

1. By 2032, continue the efforts of the TLNAP, and ensure that 60% (351 ha) of the campus remains as nature area and greenspace, and work towards net benefit that sees conservation, enhanced resiliency, and improved integrity through good use.

****net benefit:** directing recreational uses to less sensitive areas and integrating environmental features into the built environment and/or through restoration activities

Michi Saagiig Anishnaabeg Knowledge Systems

Throughout the timeframe of the plan, Michi Saagiig Knowledge Systems and ways of knowing remain an important consideration and are valued equally, to ensure meaningful land care practices and restoration for the UGN. Opportunities for placemaking will be identified, and information sharing includes traditional ways of knowledge exchange. Indigenous ceremony and cultural protocols will be respected and allowed, to ensure the spirit of the land and animals are honored and consulted through the process.

2. By 2028, Michi Saagiig traditional or cultural areas within the UGN are identified and key values are respected, with recognition of Treaty 20 and Williams Treaties rights.
3. By 2032, explore the establishment of a knowledge hub to share, train and educate practitioners in integrated monitoring and land care practices developed through Ggwepnandizamin. This hub will serve as a central resource for reassessing and evaluating ongoing progress within the Ggwepnandizamin framework.

Wetlands/M'shkiik

4. By 2028, reduce the abundance of invasive Phragmites in wetlands within the UGN from good (occasional) to very good (rare to none) by controlling existing patches and reducing further introductions through clean equipment best management practices.
5. By 2030, work towards the improvement of wetland connectivity within the UGN by advocating for relevant road mitigation measures on City of Peterborough roads identified as road mortality hotspots.

6. By 2032, identify wetland connectivity opportunities and road mortality hotspot locations on Trent-owned roads. Ensure new roadways on planned university initiatives and future university lands consider hydrological/ecological connectivity and road ecology measures as part of the design and prioritize retention of existing natural features and functions and appropriate buffers.

Forests and Woodlands/ Megyaak'iing

7. By 2032, improve forest connectivity and degree of fragmentation from poor to fair via the creation of wildlife corridors on the east bank to connect nature areas.

Open Country/Skoosniing

8. By 2035, increase the average patch size of meadow habitat from poor to fair by restoring habitat within the Nature Areas, under hydro corridors, and naturalized green spaces within the Symons Campus via site prep and overseeding/planting with native species. To be done in partnership with Michi Saagiig communities, Trent faculty, Trent Farm, Hydro One and other relevant partners and following appropriate approval processes.
9. By 2032, improve the condition of meadows from fair (abundant) to good (occasional) by controlling category one and two invasive species within Nature Areas, buffers and Naturalized Green Spaces. Highest priority sites include meadows supporting species at risk or significant wildlife habitat that is experiencing woody encroachment, with a focus on European swallowwort (DSV), common buckthorn, invasive honeysuckles, autumn olive and multi-flora rose.

Otonabee River/Odoonabii-ziibi and Streams

10. By 2032, where possible, improve the condition and width of the riparian zone adjacent to the river along the west bank to meet the minimum VPZ requirements outlined in Table A of the Official Plan (City of Peterborough, 2025). Tactics to achieve this can include invasive species control, native species overplanting and expansion of the zone width, using a combination of thickets and grassy strips. Focus invasive species removal on European swallowwort (DSV), invasive honeysuckles, and common buckthorn.
11. By 2031, work towards understanding the condition of the watercourses within the Nature Areas by supporting and fostering the development of a monitoring program that uses both Michi Saagiig Anishnaabeg Knowledge Systems and western science to establish a baseline and act as a vector for identifying restoration efforts.

Regenerative Agriculture

12. By 2032, support Trent's sustainable agriculture program on Trent farmlands, encouraging the maintenance or enhancement of hedgerows and wetland minimum VPZs, using best management practices to improve soil health, and advancing research in regenerative agriculture.

Naturalized Green Spaces

13. By 2035, aim for at least 70-80% native composition in any new naturalized green spaces that are integrated within the campus core as a component of nature-inclusive design strategies.

9.2 Strategies

A strategy represents a group of actions with a common focus that work collectively to reduce threats, protect, or restore habitats and seize opportunities (CMP, 2020). Some of the strategies were taken and/or reworded from the UGN goals in section 6.0 and section 16.1 in the TLNAP (Trent University, 2021b), while others are new to reflect what has been learned through the development of Ggwepnandizamin. As conditions shift and knowledge deepens, especially in the face of climate change and evolving land-based teachings, strategies should remain adaptive and responsive over time. The rating helps to identify the potential impact and how it will contribute to the goals and objectives and feasibility based on ethical, technical, and financial aspects. In some instances, a very effective or effective strategy can be implemented at the appropriate scale and time, but those that require more evidence may be piloted to determine its effectiveness.

Table 4: Project strategies and overall rating

Strategy	Details	Related TLNAP UGN Goal	Rating
1. Create/Maintain Ethical Space	Maintain an ethical space where Michi Saagiig Anishnaabeg Knowledge Systems and western science are equal and valid. Allow open dialogue and support respectful and meaningful discussions to do good work together and co-create solutions for how Trent cares for the land and water.	2, 7 and 13	Very Effective
2. Habitat, resource, and cultural protection	Strive for a net benefit, maintain 60% and demonstrate our commitment to protecting historical and current cultural areas.	3 and 4	Effective
3. Nature Area Framework	Achieve a balance between biodiversity, teaching, research and Michi Saagiig values throughout the UGN. Care for the Nature Areas through activities that help to inform, enhance, and restore the natural landscape.	1, 7, 8, 11, 12	Effective
4. Support and improve biodiversity	Enhance the University's natural landscape and care for the UGN and Nature Areas with guidance from the local Michi Saagiig communities so that native species and habitat diversity are supported and improved over time.	3,6 and 9	Effective
5. Enhance ecological connectivity	Movement of species within the UGN is enhanced via road mitigation measures and wildlife corridors to create a functional network of natural areas. Proactively support the movement of plants and animals in response to changing conditions on the landscape and build ecological resilience to climate impacts.	5, 6, and 9	Need More Info

Strategy	Details	Related TLNAP UGN Goal	Rating
6. Habitat restoration	Increase habitat integrity, quality and quantity through restoration efforts within the UGN, with a focus on building climate resilience, improving hydrological function, and supporting native species recovery.	3 and 7	Effective
7. Support species of interest	The UGN provides habitat to a range of species including Species at Risk, species of conservation concern, species of interest and cultural keystone species. Care of the Nature Areas will focus on identifying, protecting, and enhancing the presence or function of habitat for these vulnerable species.	3 and 7	Effective
8. Sustainable use	Improve access to and knowledge of the UGN and Trent Nature Areas and educate users and visitors on permitted activities and proper/sustainable use.	1, 10, 11 and 12	Very Effective
9. Learning from Nature	Advance the core mission of the University to teach, research and learn, by increasing the use of the Nature Areas and UGN as a natural classroom. Work with the Trent Elders and Knowledge Keepers Council to support knowledge sharing, and with Trent faculty and relevant community partners to identify opportunities for research and learning within the UGN.	1, 12 and 13	Very Effective
10. Address knowledge gaps	Work to fill key knowledge gaps to better inform how to improve the health of the UGN targets, approach Nature Area plans, and achieve strategies and objectives of the UGN and the implementation plan.	5, 7 and 12	Effective
11. Climate resilient restoration practices	Integrate climate-smart restoration techniques (e.g., Green Infrastructure, Nature-Based Solutions) to improve long-term resilience of the UGN targets. Ensure alignment with Michi Saagiig land care knowledge.	2,3,4,6, and 7	Effective
12. Regenerative and Nature-Inclusive Design	Work to develop ways where growth within the University Districts and preservation of the UGN can co-exist through applied research and design strategies that consider the system, siting and orientation and low impact development techniques.	4,5,6,8, and 12	Effective

9.3 Objectives

Objectives are the stepping stones to reaching the goals of the project since most goals span the full seven-year timeline of the plan. While goals are linked to targets, objectives are linked to direct pressures. The objectives are organized under the strategy headings to emphasize how the goals, strategies and objectives are interrelated and form the action plan.

Ethical space

- Within the timeframe of Ggwepnandizamin (seven years), regular check ins with local Michi Saagiig Anishnaabeg communities via the Elders and Knowledge Keepers Council and Land Resource Consultation Officers are achieved to embody the collaborative and circular process. Collective goals, as it relates to the Trent lands, are achieved.
- By 2028, explore the need and wish to co-develop additional teaching opportunities that speak to Michi Saagiig Anishnaabeg values, with input from faculty and Michi Saagiig First Nations, to foster future knowledge keepers and maintain the sustainability of their knowledge and language, including teachings that supports land-based responses to environmental and climate change.

Habitat, resource, and cultural protection

- By 2027, cultural areas/features, water, earth, and plant features and harvesting locations important to the Michi Saagiig First Nations that have been shared with Trent are acknowledged, if appropriate and feasible, via Nature Area management categories and Nature Area plans.
- By 2028, the role of the UGN in conserving biodiversity, providing ecosystem services, and mitigating climate change is acknowledged and celebrated.
- By 2030, Trent University is recognized as an institution of higher learning that leads by example, by actively caring for the spaces that make up the UGN using western and Michi Saagiig ways of knowing.

Nature area framework

- By 2026, Nature Area plans for the Trent Nature Areas are completed, in collaboration with the Michi Saagiig Anishnaabeg First Nations and Trent faculty. Implementation will continue through to 2030 to improve the resiliency, connection, and health of the UGN.
- By 2027, the UGN is an example of how uses can be balanced and supportive through Nature Area management categories and education of permitted uses, helping to preserve ecosystem integrity under shifting climate conditions.

Support and improve biodiversity

- By 2026, non-native invasive Phragmites becomes occasional on the campus landscape and the threat to our wetlands and waterways is reduced.
- By 2027, a biodiversity report card is complete which highlights areas of concern, critical habitat, and species of interest. The report card is then updated in 2032 to evaluate change and respond to emerging trends, including those linked to climate stressors.
- By 2028, we have a better understanding of why non-native invasive species are here and their cumulative impacts to improve priorities, strategies, control efforts and restoration goals for herbaceous and woody species.

Enhance ecological connectivity

- By 2026, wildlife movement is better understood and helps inform the location of a wildlife corridor. The corridor is conceptually mapped, and planning staff are effectively engaged throughout so new initiatives minimize impact and avoid where possible.
- Within four years of initiating the road mortality project (by 2026), key partners are engaged and are made aware of the intervention needs and potential solutions. Funding opportunities can be identified to motivate support and action.

Habitat restoration

- By 2027, no mow, high mow, naturalized green spaces and riparian restoration areas are identified and prioritized, and restoration plans/work are completed as funding allows.
- By 2029, identify and seek funding to support restoration efforts at scale.

Support species of interest

- By 2029, Trent University is an active participant in species recovery through research and habitat enhancement.

Address knowledge gaps

- By 2028, Trent programs, faculty and students are engaged and actively participating in research within the UGN that addresses knowledge gaps, including the impacts of climate change on biodiversity, hydrology, and land care practices. Collaboration between departments is increased and sharing of information is improved.
- As research/monitoring is complete and knowledge gaps are filled, adjustments to actions at the UGN and Nature Area level are made, in a way that supports long-term learning and adaptation.

Sustainable use

- By 2028, the Trent UGN website and accompanied awareness campaign, increases the click through rate to the website and the target audience has knowledge of how to use the nature areas responsibly.

Learning from nature

- By 2028, the nature areas have signage at key points and include relevant information on nature area name, boundaries, trails and permitted uses. Use of interpretive signage to assist with self-learning is developed and installed in strategic locations.
- By 2030, the use of the Nature Areas for classes and labs has increased by 25% to improve experiential/practical learning and fill knowledge gaps.

10.0 Implementation Plan

The activities within the implementation plan represent what we aim to do on the ground to achieve our goals and objectives, provided funding and resources are available. Activities have been assigned a priority ranking of Urgent, Necessary or Beneficial to assist with annual planning and to guide fundraising efforts. Those listed as beneficial may or may not be completed within the timeframe of the plan.

The standard classification or numbering beside the activity name refers to the Conservation Measures Partnership actions [classification scheme version 2.0](#) and organizes activities based on the purpose of the action classification. Those starting with a 1 or 2 are target restoration/stress reduction actions, 3 and 5 are behavioural change/threat reduction actions and 6, 8, 9 and 10 are enabling condition actions.

The implementation plan and monitoring process incorporates climate sensitive indicators, such as seasonal water depth, phenological shifts, and species migration patterns, to better understand and respond to ecosystem changes driven by a changing climate. Monitoring is informed by both community-based observations, led by Elders and youth, and scientific tools and long-term ecological datasets. This integrated approach enhances the ability to track ecological trends, supports climate adaptation and ecosystem resilience goals, and reflects the principles of meaningful engagement by drawing on both Indigenous Knowledge Systems and Western science for a more complete approach to land care and restoration.

Table 5: Action/implementation plan representing the next 7 years.

Activity	Details	Timeline	Associated Goal/Strategy	Priority
1.1.1 Species list	Maintain a species list for the UGN and share with Elders and Knowledge Keepers Council (EKKC) and Michi Saagiig liaisons to translate species names and learn of their stories.	Ongoing	2 & 4/4	Necessary
1.1.2 Visitor management	Prepare a master trail plan that identifies a formal trail network within the UGN with improved connections to and between the campus core, transportation nodes and the Nature Areas. Use as a vehicle to manage trail use and safety, accessibility, educational signage, trail re-routes to avoid sensitive areas, and to identify relevant partners.	2026	1/8	Necessary
1.1.3 Control non-native invasive Phragmites	Control non-native invasive phragmites using an Integrated Pest Management approach and best management practices within the UGN. Work in collaboration with the Michi Saagiig, to ensure continued support of control methods and potential uses. Secure funding to allow for control efforts and continued monitoring of sites for rapid response. Manage future introductions through the implementation of the clean equipment protocol for all construction projects, particularly those near wetland habitats.	Ongoing	5/4	Urgent

Activity	Details	Timeline	Associated Goal/Strategy	Priority
1.1.4 Control non-native invasive herbaceous species	Control non-native category one invasive herbaceous species using best management practices. Focus on forest (north of Lock 22), open country habitats (buffers), riparian zones and naturalized green spaces with European swallowwort (DSV) as a priority, where abundance is occasional/rare. Engage with Michi Saagiig and relevant organizations. Research and apply for funding opportunities to allow for control efforts.	Ongoing	10 & 11/4	Necessary
1.1.5 Control non-native invasive woody species	Control non-native category one invasive woody species using best management practices. Focus on riparian zones, and naturalized green spaces with European buckthorn, invasive honeysuckles, and Japanese knotweed as a priority. Overplant with relevant native species. Engage with the Michi Saagiig and relevant organizations. Secure funding opportunities to allow for control efforts and continued monitoring of sites.	Ongoing	10 & 11/4	Necessary
1.1.6 No mow, high mow and NGS zones	Map areas within the Symons campus (i.e., riparian areas, manicured lawns, and gardens) that will be deemed no mow, high mow and naturalized green space zones. <ul style="list-style-type: none"> No mow zones will be areas of manicured lawn where mowing will cease/or sod removed to create pollinator pathways. High mow zones will be upland from the riparian zone of the Otonabee River to allow sight lines to the river but improve sediment filtering and reduce geese issues. Naturalized green spaces (NGS) will include areas that will become part of the UGN within the built environment. These can include existing or new spaces where naturescaping can occur to shift landscaping towards native species mixes and promote habitat and biodiversity integration within the campus core. 	2027	1 & 9/6	Beneficial (no mow and NGS) Necessary (High mow)
1.1.7 No mow restoration	In no mow zones and existing NGS zones identified in action 1.1.6, prepare sites over the course of the remaining four years and restore them with native species to support wildlife, increase biodiversity, and outdoor teaching spaces. Learning on the land will be integrated through class led restoration plans and ensuring planting/seed selections are informed by Michi Saagiig communities and in line with the landscape palette in the TLNAP.	2032	1 & 9/6	Beneficial

Activity	Details	Timeline	Associated Goal/ Strategy	Priority
1.2.1 Design and implement wildlife corridor plan	Informed by action 2.1.2 and regional and proximity linkages identified in the natural heritage system (City of Peterborough, 2025) design a wildlife corridor on the east bank to improve connectivity of habitats and movement of species between Nature Areas. Maintain and enhance corridors to support biodiversity. Implementation to align with planned and future university initiatives. Expand to west bank as the need arises.	2028	8/5	Necessary
1.2.2 Classify riparian zone	Classify and map vegetation communities within the riparian zone that is currently naturally vegetated along the Otonabee River. Highlight concern areas within the boundary of Trent Lands in relation to observed erosion, non-native composition, slope and upland infrastructure. Create a prioritization matrix and phased approach for restoration.	2027	11 & 12/6	Necessary
1.2.3 Restore high priority riparian zones	Work to restore high priority riparian areas using natural materials and native species based on the assessment in 1.2.2, with emphasis on minimum VPZ widths. Will be restricted to areas where Trent University has influence and the opportunity exists. Work with the City of Peterborough and Parks Canada to improve shoreline areas under their ownership, if the occasion arises. Informed by action 1.1.6 consider establishing grassy strips (high mow zones), upland of the riparian zone, to allow further sediment filtration, particularly in areas adjacent to parking lots and paved walkways.	2032	11 & 12/6	Necessary
1.2.4 Open country maintenance	In areas outside of the Nature Areas, within the buffer zones, develop and implement a maintenance rotation plan for open country habitat to maintain and enhance meadow and shrubland habitat, with emphasis on transition zones (or VPZs) between provincially significant wetlands and significant woodlands. Explore the role of fire in the maintenance of open country areas and the feasibility of implementation within the UGN. Work in collaboration with Trent Research Farm, Michi Saagiig communities and Trent faculty.	2030	10/4	Beneficial

Activity	Details	Timeline	Associated Goal/ Strategy	Priority
1.2.5 Meadowway	Creation/enhancement of open country habitat beneath the hydro corridor that runs in an east-west direction across campus within Lady Eaton Drumlin Nature Area and on the East Bank, including within Promise Rock and Wetland Complex Nature Areas. Restoration will involve an application for a secondary use through the Provincial Secondary Land Use Program (PSLUP). Multi-uses within the hydro corridor are preferred and will be discussed, including recreation, research, teaching and projects (e.g. seed nursery) to support campus and community restoration projects.	2035	9/6	Beneficial
1.2.6 Restoration in areas affected by EAB	In collaboration with relevant partners and experts determine the best action forward for restoration (i.e. underplanting) of areas heavily impacted by emerald ash borer based on site conditions and neighboring tree health assessments.	2029	1 & 11/10	Beneficial
2.1.1 Road mortality project	Using available datasets and continuing surveys on Woodland Drive, University Road, Pioneer Road, and Gzowski Way/East Bank Drive obtain a baseline for wildlife movement across roadways, and use GIS analysis to identify road mortality hotspots, species impacted and peak migration times within the UGN. Field work to be completed using the road mortality protocol. Hotspots will be a recommended priority for road mitigation measures. Implement project onto other university owned roads (West Bank and remainder of East Bank Drive) to assess connectivity opportunities and potential hotspots as the need arises.	2026 TBD	6 & 7/5	Necessary
2.1.2 Finalize wildlife movement patterns	Confirm wildlife species and movement patterns throughout the UGN beyond roadways, but with a current focus on the east bank, using Michi Saagiig Knowledge Systems, trail cameras, winter tracking and mapping to support a wildlife corridor plan (action 1.2.1). Monitoring work will be done in accordance with relevant protocols. Mapping will complement the monitoring work and assist in identifying 'pinch points', additional regional and local linkages, and priority areas for protection and/or restoration. Identify target species, ideal corr https://tallgrassontario.org/wp-site/wp-content/uploads/2019/04/TGO_Brochure.pdf idor locations and desired width to inform action 1.2.1. Monitor additional connection needs as information is learned and university initiatives progress.	2026	8/5	Urgent

Activity	Details	Timeline	Associated Goal/ Strategy	Priority
2.1.3 Turtle recovery	Guided by Michi Saagiig Knowledge Systems, improve our understanding of turtle presence within the UGN using eDNA, relevant survey protocols and in appropriate survey windows for snapping turtle, midland painted turtle, blanding's turtle, northern map turtle, and musk turtle. Map critical habitat, identify concerns and propose habitat enhancements. Where areas overlap with Trent Nature Areas, implantation will occur within Nature Area plans. Involve Trent faculty and students, relevant partners and neighbouring landowners on recovery efforts.	Ongoing	2 – 7/7	Necessary
2.1.4 Aerial insectivore recovery	Monitor aerial insectivores within the UGN in collaboration with Trent faculty and students. Focus on establishing baseline insect diversity within Nature Areas, identifying habitat preferences within the UGN, mapping nest locations and foraging habitat and assess direct threats and their ranking (e.g. Light pollution). Information learned can guide best management practices and activities within the UGN.	Ongoing	2, 4,9 & 12/7	Beneficial
2.1.5 Butternut and Ash Health Assessments	Complete butternut health assessments within the UGN to assess retainability of butternut trees. To be done by a certified butternut health assessor during leaf-on and in appropriate conditions. Support critical ash recovery efforts with a focus on inventory, monitoring, and assessment.	Ongoing	1/7	Beneficial
2.1.6 Road mortality thresholds and mitigation opportunities	As a component of action 2.1.1, conduct a review of existing literature and best management practices and liaise with relevant experts, Trent faculty, and Michi Saagiig knowledge holders to determine appropriate thresholds to quantify the impact and urgency of road mortality on amphibian, turtle, snake, and mammal populations (i.e. poor to very good). Information will be used to better direct mitigation priorities, efforts, and design. Recommend appropriate road mitigation measures based on findings above to relevant parties.	2027	6 & 7/5 & 10	Necessary
2.3.1 Seed conservation	To support species recovery efforts and informed by action 2.1.5, work with relevant partners to ensure the preservation of viable seeds of species of interest that are showing resistance to forest pests/ fungi. Include species at risk or species in decline (for example butternut, ash, American beech, eastern hemlock) and culturally valued species informed by Michi Saagiig Knowledge Systems. Support and help address knowledge gaps through research.	2027	2 & 4/7	Beneficial

Activity	Details	Timeline	Associated Goal/ Strategy	Priority
3.1.1 Indigenous Placemaking	Where possible and appropriate, integrate Indigenous place names, art, and interpretive/ educational signage throughout the UGN, and in UGN materials and information, to reflect Michi Saagiig heritage, worldviews and their connections to the land and water.	Ongoing	2/1 & 9	Beneficial
3.1.2 Indigenous storytelling	Support the creation of an oral or visual compliment to Ggwepnandizamin to reflect traditional ways of knowledge exchange.	2027	2/1	Beneficial
3.1.3 Trent Nature Area website	Improve access to information regarding Nature Area trail maps, trail conditions, permitted uses, habitats and their importance. Available online, and through various media types.	2026	1/8	Necessary
3.1.4 Education and awareness campaign	Launch an education and awareness campaign on how to use Nature Areas appropriately, addressing known issues like off-leash dogs, unsanctioned firepits, motorized vehicle use, littering and dumping. Placing emphasis on why these are harmful and where visitors can engage in these activities elsewhere, if appropriate.	2026-2028	1/8	Urgent
5.2.1 Learn proper procedures and practices to uphold Michi Saagiig Treaties and rights	Learn proper protocols required for learning and research activities that involve use within the UGN. This includes activities that involve collection, foraging or harvesting. Inform Trent faculty, students, and local community groups that use the land on proper procedures.	Ongoing	3 & 4/8	Necessary
6.3.1 Explore programs to highlight the establishment and stewardship of the Nature Areas at Trent.	Perform a review of available programs that would recognize Trent University for the establishment and continued protection of the Nature Areas. Weigh the pros and cons of each and select the best one(s) to help achieve the vision and goals for the UGN.	2028	1/2	Beneficial
6.3.2 Michi Saagiig resource and cultural areas	Work with Elders and Knowledge Keepers Council and Land Resource Consultation Liaisons to allow ongoing identification of cultural areas, water, earth, and plant features and harvesting locations within the UGN. Where appropriate, respect these areas using Nature Area management categories (action 6.3.4).	Ongoing	3/2	Urgent

Activity	Details	Timeline	Associated Goal/ Strategy	Priority
6.3.3 Pending Further Assessment	In the area around Promise Rock Nature Area identified as pending further assessment in the Trent Lands and Nature Areas Plan, conduct relevant studies to confirm the features that make up the area and its significance. Based on findings, adjust the Promise Rock Nature Area boundary, or maintain the boundary as is.	2032	1/2	Necessary
6.3.4 Apply management categories to the Nature Areas	Use predetermined management categories from TLNAP and assign management categories to the Nature Areas. Categories include: Ecological Reserve, Conservation Area, Cultural Area, and Regenerative Agriculture Area to the Nature Areas through a mapping exercise. Once established, provide clear direction on permitted uses and purpose through the associated Nature Area plan. Work towards achieving a balance between biodiversity, teaching, research and Michi Saagiig cultural values.	2026	1, 3 & 4/3	Urgent
6.4.1 Develop and implement Nature Area Plans	Develop and implement plans on how to care for the Trent Nature Areas in collaboration with the Elders and Knowledge Keepers Council, Michi Saagiig consultation liaisons and the Trent academic community to ensure plans reflect both knowledge systems. All are to be completed by 2026, followed by implementation through to 2031.	2026, 2031	1-4/3	Urgent
6.5.1 Support outdoor teaching spaces	Working closely with relevant departments and faculty, identify the need and opportunities for outdoor teaching spaces (and any physical structures needed to facilitate this), in or adjacent to Trent Nature Areas, to support land-based learning and outdoor laboratories.	2030	1/9	Necessary
8.1.1 Biological research station accreditation	Explore the feasibility and relevancy of getting the Nature Areas and the Oliver Ecological Centre recognized as a biological field station to facilitate undergraduate and graduate research and education in a variety of fields. Work closely with and seek guidance from the Trent Research Farm. Use as a means to attract future students and promote field courses that also support the goals of the UGN.	2027	1/9	Beneficial
8.1.2 Biodiversity Report Card	Using examples of other environmental report cards and with guidance from experts, faculty and Michi Saagiig consultation liaisons and knowledge holders, develop a biodiversity report card for the UGN to identify areas of concern, critical habitat zones and key restoration areas. To be informed and to guide relevant actions identified in this plan.	2027, 2032	1 & 2/4	Urgent

Activity	Details	Timeline	Associated Goal/ Strategy	Priority
8.1.3 Cumulative impact assessment	Conduct a cumulative impact assessment that looks at neighbouring activities outside of the Trent Lands boundary to get a better understanding of pressures that may be impacting the biodiversity within the UGN.	2031	1/10	Beneficial
8.1.4 River and tributary health	In collaboration with partners and faculty, develop a monitoring program as a component of action 9.1.1 in strategic locations on the 14 headwater streams within the Trent boundary to assess existing tributary health and better identify pressures/sources within the system. Include information on water quality, water level/flow, thermal regime and presence of fish and minnow species, benthic organisms and plants to inform UGN and Nature Area activities. Include site(s) on the Otonabee River and/or Trent Severn Waterway if the opportunity exists and work in collaboration with faculty who are already collecting information within these waterways.	Ongoing	3 & 12/10	Necessary
8.1.5 Barn Swallow research	In conjunction with action 2.1.4, encourage undergraduate or graduate student research on knowledge gaps identified in the recovery strategy for Barn Swallows (Heagy et al., 2014). These include: identifying and describing the key characteristics of nest site and foraging habitats used by barn swallows in Ontario at various scales (nest-scale to landscape-scale) and identifying suitability of artificial nesting structures and actions appropriate at a landowner level. Information learned will help identify potential actions within the campus core where Barn Swallows are currently nesting.	2030	1/10	Beneficial
8.1.6 Support and encourage research and teaching within the UGN	Work with Trent department chairs, faculty, demonstrators, and students to support continued and encourage new research and teaching areas within the UGN. Communicate knowledge gaps identified in the UGN and Nature Area plans to facilitate research that helps to guide land stewardship. Identify facility needs, areas on campus already used for teaching and work collaboratively to ensure no competing areas or activities. Actively work to protect teaching/research sites. Create an interactive map that highlights the work being done on campus and will be used to direct additional research and teaching.	Ongoing	1/9	Necessary
8.2.1 Monitor salamander curb	Monitor effectiveness of the curb mitigation on Gzowski Way via evening spring/fall surveys in late March/early April and late Sept/early Oct for at least a total of two years. Use findings to guide future roadway infrastructure.	Ongoing	7/5	Urgent

Activity	Details	Timeline	Associated Goal/ Strategy	Priority
8.2.2 Database development	Research and develop/adopt a database for managing information and tracking annual progress and work plans to ensure implementation of goals, objectives and actions for the UGN and nature areas plans.	2028	1 & 4/3	Necessary
8.2.3. Carbon metrics	In collaboration with the sustainability office, estimate the amount of carbon that is sequestered within the UGN to understand the ecosystem services provided through the maintenance and restoration of the biodiversity targets.	2028	1/2,4,6 & 10	Beneficial
9.1.1 Support land-based learning/ mentorship opportunities	Support and if possible, help fund, land-based learning and mentorship opportunities for Treaty 20 and Williams Treaties First Nations youth and Trent students through a land-based learning program where youth can reconnect, learn compatible western and indigenous monitoring skills, and make recommendations for action. Program emphasis guided by Michi Saagiig community interests and Trent needs.	2030	2 & 12/2	Necessary
10.3.1. Incorporate ceremony	Led by the Trent Elders and Knowledge Keepers Council, begin and close the implementation of Ggwepnandizamin with ceremony to show due respect to Michi Saagiig culture, and the land, water, and biodiversity of the campus.	Ongoing	2/1	Necessary
10.3.2 Seek knowledge and advice from Trent Michi Saagiig Elders and Knowledge Keepers	Continue to meet with Trent's Elders and Knowledge Keepers Council to maintain good relationships and seek knowledge and guidance throughout the implementation of Ggwepnandizamin and in the preparation of Nature Area plans. Allow and be respectful of time to think, learn and discuss.	Ongoing	1-3, 12 & 14/1	Necessary
10.3.3 Seek knowledge and advice from First Nations consultation liaisons	Continue to meet with Michi Saagiig consultation liaison officers to seek knowledge and guidance on University initiatives, the implementation of Ggwepnandizamin and in the preparation of Nature Area plans. Allow and be respectful of time to think, learn and discuss.	Ongoing	1-3, 12 & 14/1	Necessary
10.3.4 Seek knowledge and guidance from Trent Faculty and students	Ensure the continued function of the Trent Nature Areas Stewardship Advisory Committee and meet regularly to seek guidance, knowledge and support on implementation of the UGN and Nature Area plans. Include emphasis on research and teaching and addressing knowledge gaps.	Ongoing	1, 6, 9, 11 & 12/5	Beneficial

Activity	Details	Timeline	Associated Goal/ Strategy	Priority
10.3.7 City of Peterborough partnership	Identify and contact key City of Peterborough staff to establish a partnership and provide the information and resources regarding projects with a shared interest. Includes community uses, restoration opportunities, road mitigation, and mapping.	2026	6 & 7/5	Necessary
10.3.8 Support local Michi Saagiig First nation community initiatives	Provide support as needed and requested to local Michi Saagiig First Nation community initiatives that are relevant to the implementation of the UGN.	Ongoing	2, 4, & 13/1	Beneficial
10.4.1 Identify and apply for relevant funding to finance the implementation plan	In collaboration with Trent Philanthropy and Advancement office and relevant partners, seek, identify and apply for funding opportunities to finance the implementation plan for Ggwepnandizamin.	Ongoing	All	Necessary



11.0 Engagement

Building on the information collected during three years of study and extensive public engagement through the TLNAP, engagement during the development of Ggwepnandizamin was focused on gaining a better understanding of the land, to understand the perspectives of the communities we intend to reach, and to solicit input and feedback. This included:

- Thirty-five meetings with Trent University faculty, staff, and students
- Regular meetings with Michi Saagiig Consultation Officers
- Three meetings with the Elders and Knowledge Keepers Council
- Twenty-seven meetings with partners, community, and local groups
- One meeting with the Indigenous Education Council at Trent University to highlight and share the work we are doing
- One meeting with the Indigenous Environmental Studies and Sciences faculty to discuss options for co-op placements
- Two engagement sessions with community groups and faculty on Ggwepnandizamin
- GEI Consultants Canada Ltd. consultant review

As we move to implementation of the plan, engagement and collaboration will continue, and the plan adapted as necessary on an ongoing basis to signify the concept of a 'living document.'

References

Aquafor Beech Ltd. (2020). City of Peterborough Watershed Planning Study. Characterization Report. DRAFT. 365 pp.

Ashley, E. Paul, and Jeffery T. Robinson. (1996). Road mortality of amphibians, reptiles and other wildlife on the Long Point causeway, Lake Erie, Ontario. *Canadian Field Naturalist* 110(3): 403-412.

Audubon, New York. (n.d.). Working Lands: Managing Habitat for Shrubland and Young Forests Birds Habitat management on private lands play an integral role in supporting at risk species. <https://ny.audubon.org/conservation/managing-habitat-shrubland-and-young-forest-birds>

Bakowsky, W.D. (2009). Tallgrass Prairies and Savannahs in the Kawarthas. Ontario Ministry of Natural Resources. Peterborough, ON. 5 pp.

Beacon Environmental Inc. (2021). City of Peterborough Official Plan Update Natural Heritage System Background Report. <https://www.peterborough.ca/en/doing-business/resources/Documents/Official-Plan/June-2021-Appendix-I-Natural-Heritage-System-Background-Report---Accessible.pdf>

Bell, N., Conroy, E., Wheatley, K., Michaud, B., Maracle, C., Pelletier, J., Filion, B., Johnson, B. (2010). The Ways of Knowing Guide. Toronto Zoo. Ways of knowing partnership Turtle Island Conservation Programme. <https://aldervillesavanna.ca/wp-content/uploads/2021/09/Ways-of-Knowing-Guide.pdf>

BirdLife International. (2022). State of the World's Birds. Insights and solutions for the biodiversity crisis. https://www.birdlife.org/wp-content/uploads/2022/09/SOWB2022_EN_compressed.pdf

City of Peterborough. (2011). Our Forests, Our Future. Urban Forest Strategic Plan. 61 pp. Final-Urban-Forestry-Plan.pdf (peterborough.ca)

City of Peterborough. (2023a). 2022 traffic counts via personal communication with Todd Nancekivell, Intelligent Transportation Systems Project Manager. Feb 28, 2023.

City of Peterborough. (2023b). Our watershed, Our blueprint: Peterborough Watershed Plan. Interactive Map. <https://experience.arcgis.com/experience/401362fedfe44a6d85d922fd78c8d91b/>

City of Peterborough. (2025a). City of Peterborough Official Plan. <https://www.peterborough.ca/media/vcxdo0mo/official-plan-may-2025-consolidation-aoda-copy-2.pdf> City of Peterborough. (2025b). Emerald Ash Borer. <https://www.peterborough.ca/living-in-peterborough/trees/emerald-ash-borer/>

Conroy, E., Wheatley, K., Harquail, A., Watson, K., Johnson, B. (2012). Walking with Miskwaadesi. Toronto Zoo. <https://aldervillesavanna.ca/wp-content/uploads/2021/09/Walking-with-Miskwaadesi-1.pdf>

Conservation Measures Partnership. (2020). Open Standards for the Practice of Conservation. Version 4. 81 pp. <https://conservationstandards.org/wp-content/uploads/sites/3/2023/09/CMP-Open-Standards-for-the-Practice-of-Conservation-v4.0-English.pdf>

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). (2018). COSEWIC assessment and status report on Black Ash *Fraxinus nigra* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 107 pp

County of Peterborough (2025). County of Peterborough Official Plan. 334 pp. <https://www.ptbocounty.ca/media/0waecu02/planning-county-op-1.pdf>

Davis, M.A., Bier, L., Bushelle, E., Diegal, C., Johnson, A., and Kujala, B. (2005). Non-indigenous grasses impede woody succession. *Plant Ecology*. Vol. 178. Pp. 249-264.

Dennison, Christopher. (2022). The Science Behind Vegetated Shoreland Buffers: Why the Ribbon of Life Matters. Edited by Darlene Coyle. (Watersheds Canada). <https://watersheds.ca/planning-for-our-shorelands>

Environment Canada. (2013). How Much Habitat is Enough? Third Edition. Environment Canada. Toronto, Ontario.

Environment Canada. (2014). Bird Conservation Strategy for Bird Conservation Region 13 in Ontario Region: Lower Great Lakes/St. Lawrence Plain. Canadian Wildlife Service, Environment Canada, Ottawa, ON. 197 pp + appendices.

Environment Canada. (2015). Recovery Strategy for the Western Chorus Frog (*Pseudacris triseriata*), Great Lakes/St. Lawrence – Canadian Shield population, in Canada, Species at Risk Act Recovery Strategy Series, Environment Canada, Ottawa, vi + 50 pp.

Environment and Climate Change Canada. (2016). Management Plan for the Monarch (*Danaus plexippus*) in Canada. Species at Risk Act Management Plan Series. Environment and Climate Change Canada, Ottawa. iv + 45 pp.

Findlay, C.S. and Houlahan, J. (1997). Anthropogenic correlates of species richness in southeastern Ontario wetlands. *Conservation Biology*. 11:1000-10009.

Forest Gene Conservation Association (FGCA). (2025). Black Ash: Recovering a keystone of Ontario's Forests. Your role in saving black ash and its ecosystems. <https://fgca.net/2024/06/black-ash-recovering-a-keystone-of-ontarios-forests/>

Forests Ontario. (2020). National Deforestation Monitoring System, special tabulation of data from NDMS: DD2021-R05f. Natural Resources Canada, Canadian Forest Service.

Gillespie, J.E. and Acton, C.J. (1981). Soils of Peterborough County. Report no 45. Agriculture Canada Research Branch. Ontario Ministry of Agriculture and Food. Department of Land Resource Science. University of Guelph. 60pp.

Government of Canada. (2023). Nature-based climate solutions. Environment and Natural Resources. Nature-based climate solutions - Canada.ca

Government of Ontario, Ministry of the Environment, Conservation and Parks (MECP). (2023). Provincial Water Quality Monitoring Network (PWQMN) (dataset). 4.0.0. DataStream. <https://doi.org/10.25976/tnw0-3x43>

Heagy, A., D. Badzinski, D. Bradley, M. Falconer, J. McCracken, R.A. Reid and K. Richardson. 2014. Recovery Strategy for the Barn Swallow (*Hirundo rustica*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 64 pp.

Hilsenhoff, W. L. (1987). An Improved Biotic Index of Organic Stream Pollution. *The Great Lakes Entomologist*, vol 20 (1) <https://scholar.valpo.edu/tgle/vol20/iss1/7>

Jones, R., Fox, M.G., and Marsh, J.S. (2002). The Stewardship Plan for Trent University Nature Areas. The Nature Areas Committee, Trent University.

Land Information Ontario. (2022). Fishing activity area. Ontario GeoHub. King's Printer of Ontario. <https://geohub.lio.gov.on.ca/datasets/lio::fish-activity-area/explore?location=44.391764%2C-78.253729%2C10.96>

Larson, B. (1999). The woodland heritage of southern Ontario: a study of ecological change, distribution and significance. Federation of Ontario Naturalists. 200 pp.

Low, G. (2002). Landscape-scale, Community-based Conservation. TNC

Mann, C. Written Communication, Jan 23, 1992. Drumlin History.

McDonald, L., Koper, N. (2022). Landscape openness, not patch size or grassland amount, drives area sensitivity of songbirds in northern tall-grass prairies. *Landscape Ecology* 37, 951–967 (2022). <https://doi.org/10.1007/s10980-022-01408-w>

Migizi, G. (2018). *Michi Saagiig Nishnaabeg: This is our Territory*. Arbeiter Ring Publishing.

Migizi, G., and Kapyrka, J. (2015). Before, During, and After: Mississauga Presence in the Kawarthas. In D. Verhulst, *Peterborough Archaeology* (pp. 127-136). Peterborough, Ontario: Peterborough Chapter of the Ontario Archaeological Society.

Migizi, G., and Kapyrka, J. (2019). The Chemong Portage. *The Kawartha Promoter*. <https://www.thepromoter.ca/news/2019/3/20/the-chemong-portage>

Ministry of the Environment, Conservation and Parks. (2019). Recovery Strategy for the Blanding’s Turtle (*Emydoidea blandingii*) in Ontario. Ontario Recovery Strategy Series. Prepared by the Ministry of the Environment, Conservation and Parks, Peterborough, Ontario. iv + 6 pp. + Appendix. Adoption of the Recovery Strategy for Blanding’s Turtle (*Emydoidea blandingii*), Great Lakes / St. Lawrence population, in Canada (Environment and Climate Change Canada 2018).

Ministry of the Environment, Conservation and Parks. (2022). Recovery Strategy for the Red-headed Woodpecker (*Melanerpes erythrocephalus*) in Ontario. Ontario Recovery Strategy Series. Prepared by the Ministry of the Environment, Conservation and Parks, Peterborough, Ontario. iv + 5 pp. + Appendix. Adoption of the Recovery Strategy for Red-headed Woodpecker (*Melanerpes erythrocephalus*) in Canada (Environment Canada 2021).

Ministry of Municipal Affairs and Housing. (2024). Provincial Planning Statement. <https://www.ontario.ca/files/2024-10/mmah-provincial-planning-statement-en-2024-10-23.pdf>

Minnesota Department of Natural Resources. (n.d). Tomorrow’s Habitat for the Wild and Rare. An action plan for Minnesota wildlife. Habitat Descriptions. Surrogate Grasslands. <https://files.dnr.state.mn.us/assistance/nrplanning/bigpicture/cwcs/habitats/13.pdf>

Ontario Federation of Anglers and Hunters (OFAH). (2024). Round Goby (*Neogobius melanostomus*) <https://www.invadingspecies.com/invaders/fish/round-goby-2/>

Ontario Ministry of Natural Resources (OMNR). (2010). Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition. Toronto: Queen’s Printer for Ontario. 248 pp.

Ontario Ministry of Natural Resources and Forestry (OMNRF). (2015). Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E. Peterborough, ON. 39 pp.

Ontario Ministry of Natural Resources and Forestry. (2022). Fish ON-Line Interactive Map. King’s Printer for Ontario. <https://www.lioapplications.lrc.gov.on.ca/fishonline/Index.html?viewer=FishONLine.FishONLine&locale=en-CA>

Ontario Ministry of Natural Resources and Forestry. (2023a). Ontario Land Cover. King’s Printer of Ontario.

Ontario Ministry of Natural Resources and Forestry. (2023b). Make a Topographic Map. King’s Printer of Ontario. https://www.lioapplications.lrc.gov.on.ca/MakeATopographicMap/index.html?viewer=Make_A_Topographic_Map.MATM&locale=en-CA

Ontario Nature. (2024, September 25). Wetlands are carbon storage superstars. <https://ontarionature.org/campaigns/wetlands/wetlands-are-carbon-storage-superstars/>

Otonabee Conservation. (2021). Climate change strategy. https://www.otonabeeconservation.com/media/kqvhfw5/climatechage_strategy2021_october2021_final_web.pdf

Otonabee Region Conservation Authority (ORCA). (2023). Otonabee Region Watershed Report Card. WRC_Otonabee_Conservation_FINAL-AODA2023.pdf (otonabeeconservation.com)

Otonabee Region Conservation Authority. (2025). Watershed Planning and Regulation Policy and Procedures Manual. <https://www.otonabeeconservation.com/media/bgyjsv0j/2025-022-appendix-a-watershed-planning-regulation-policy-procedures-manual.pdf>

Riley, J.L. and Mohr, P. (1994). The Natural Heritage of Southern Ontario’s Settled Landscapes: A Review of Conservation and Restoration Ecology for Land – Use and Urban Planning. OMNR. Aurora. 27 pp.

Schick, A., Porembski, S., Hobson, P.R., Ibsch, P.L. (2019). Classification of key ecological attributes and stresses of biodiversity for ecosystem-based conservation assessments and management. *Ecological Complexity*. 38: 98-111.

Society for Ecological Restoration Ontario. (2025). Invasive Exotic Plant Species Ranking for Southern Ontario. Society of Ecological Restoration Ontario, Ontario. 35 pp.

Tallgrass Ontario. (2019). Tallgrass Prairie and Savanna in Ontario. Brochure. TGO_Brochure.pdf (tallgrassontario.org)

Trent University. (2021a). Natural Heritage Report. 83 pp. Available at: https://www.trentu.ca/trentlandsplan/sites/trentu.ca.trentlandsplan/files/documents/2021-03-05%20TLNAP_NHReport%20%28AODA%29.pdf

Trent University. (2021b). Trent Lands and Nature Areas Plan. 237 pp. Available at: <https://www.trentu.ca/trentlandsplan/plan/2021-trent-lands-and-nature-area-plan>

Trent University. 2023. Indigenous Protocol Guidebook. 17 pp. Available at: <https://www.trentu.ca/fphl/sites/trentu.ca.fphl/files/documents/TrentU%20-%20INDG%20Protocol%20Guidebook%202023.pdf>

Trent Vegetable Gardens. 2023. Growing community on Campus. About the Gardens. <https://www.trentgardens.org/new-page-1>

Urban Forest Associates Inc. (2002). Invasive Exotic Species Ranking for Southern Ontario. 7 pp. <http://ufora.ca/index.php/resources/invasive-species/>

Wester, M.C., Henson, B.L., Crins, W.J., Uhlig, P.W.C., and Gray, P.A. (2018). The ecosystems of Ontario. Part 2: Ecodistricts. Science and Research Branch. Ministry of Natural Resources and Forestry. <https://files.ontario.ca/ecosystems-ontario-part2-03262019.pdf>

World Wildlife Fund. (2025). Why forests are so important. https://wwf.panda.org/discover/our_focus/forests_practice/importance_forests/

Xenopoulos, M.A. (2021-2022). Water samples collected by M.A. Xenopoulos and her lab with funding from Canada’s Research Chairs and Canada’s Natural Sciences and Engineering Research Council.

Appendix

Appendix A: Target Viability

Source	Viability Mode	Status	Future Status	Type	Poor	Fair	Good	Very Good	Progress
BDS. Odoonabii-zibi and streams (5)									
Adjacent land use	Key	Poor	Good	Landscape					
Proportion of watershed not natural cover	External	Poor	Not Specified		>60	31-60	11-30	0-10	Not Specified
Critical habitat zones	Rapid				65.1				
Fish community targets		Not Specified	Not Specified	Condition					
Cultural keystone species	Not Specified	Not Specified	Not Specified						Not Specified
Spawning/recruitment success: walleye	Not Specified	Not Specified	Not Specified		Very little	Some	Good	Excellent	Not Specified
Impervious land cover		Very Good	Very Good	Landscape					
% of campus that is impervious	Expert	Very Good	Very Good		>>30%	20-30	10-20	<10%	Not Specified
Otonabee Conservation Watershed Report Card		Fair	Not Specified	Condition					
Benthic macroinvertebrates	Expert	Poor	Not Specified		>5.75	5.01-5.75	4.26-5.0	0-4.25	Not Specified
Groundwater quality - Chloride	Expert				>250	>50, <250	<50		Not Specified
Groundwater quality - Nitrate/Nitrite	External	Not Specified	Not Specified		>10	>2, <10	<2		Not Specified
Overall Surface water quality	External	Good	Not Specified		Poor to very po...	Fair	Good	Excellent	Not Specified
Total Phosphorus	Expert					Fair	Good		
Otonabee River Water Quality	Expert	Good	Not Specified		>0.06	0.031-0.06	0.02-0.03	<0.02	Not Specified
DO, Dissolved Oxygen	Not Specified	Good	Good	Condition					
TDN, Total Dissolved Nitrogen	Intensive								Not Specified
TP, Total Dissolved Phosphorus	Intensive								Not Specified
Riparian vegetation		Good	Good	Condition					
Average width of natural vegetation adjacent to Otonabee river	Expert	Fair	Fair		<10	10-19	20-29	>>30	Not Specified
Average width of natural vegetation adjacent to streams	Rough Guess								Not Specified
Cover of invasive species within riparian buffer	External	Poor	Good		>25%				Not Specified
Percentage of river shoreline natural cover	External	Very Good	Not Specified		0-25	26-44	45-64	>>65	Not Specified
Percentage of streams that are naturally vegetated	Rapid	Very Good	Not Specified		0-25	26-44	45-64	>>65	Not Specified
Stream/tributary condition	External	Poor	Fair	Condition					
Benthic invertebrates	Intensive	Poor	Fair		>5.75	5.01-5.75	4.26-5.0	0-4.25	Not Specified

Source	Viability Mode	Status	Future Status	Type	Poor	Fair	Good	Very Good	Progress
E1. M'shkuik/Wetlands (1)									
Landscape connectivity									
Number of amphibian roadkills	Intensive								
Number of turtle roadkills	Intensive								
Wetland edges created by roads	Expert	Good	Good		>50%	26-50	11-25	0-10	Not Specified
Wetland proximity	Rapid								Not Specified
Natural vegetation adjacent to wetlands	Not Specified	Very Good	Not Specified	Condition					
Percent of natural cover within 120 m of wetlands	Rapid	Very Good	Not Specified		0-25	26-44	45-64	>>65	Not Specified
Size/extent of system		Good	Good	Size					
% wetland cover in the UGN	Expert	Good	Good						Not Specified
Avg size of contiguous wetland	Rough Guess	Fair	Fair		0.1 - 1.9	2-9	10-30	>30 ha	Not Specified
Species abundance/composition		Good	Good	Condition					
% cover of Invasive Phragmites	Expert	Not Specified	Very Good		>37%	19-37%	8-18.9%	0-7.9%	Not Specified
Avg abundance of reed canary grass	Not Specified	Fair	Not Specified		Dominant	Abundant	Occasional	Rare to none	Not Specified
Black Ash health	Rough Guess	Fair	Not Specified		all dead or dying	variable	most in good h...		Not Specified
Common Buckthorn abundance	Expert	Fair	Fair		Dominant	Abundant	Occasional	Rare to none	Not Specified
Culturally significant animal species	Rough Guess	Good	Good		Absent		Most present	All Present	Not Specified
Culturally significant plant species	Rough Guess	Good	Good		Absent		Present		Not Specified
European Frog-bit abundance	Expert	Good	Not Specified		Dominant	Abundant	Occasional	Rare to none	Not Specified
Purple loosestrife abundance	Rapid	Good	Good		Dominant	Abundant	Occasional	Rare to none	Not Specified
Wetland type diversity	Expert	Fair	Fair		1	2	3	4	Not Specified
Wild parsnip abundance	Not Specified	Very Good	Very Good		Dominant	Abundant	Occasional	Rare to none	Not Specified
Wetland Water Quality		Fair	Not Specified	Condition					
Benthics - HBI	Not Specified	Not Specified	Not Specified		>5.75	5.01 - 5.75	4.26 - 5.0	0-4.25	Not Specified
Conductivity	Not Specified	Poor	Not Specified		>400		<400		Not Specified
Dissolved Oxygen	Not Specified	Good	Not Specified		<5.5		>5.5		Not Specified
Total Phosphorus	Not Specified	Poor	Not Specified		>0.03		<0.03		Not Specified

Source	Viability Mode	Status	Future Status	Type	Poor	Fair	Good	Very Good	Progress
Landscape connectivity									
Number of amphibian roadkills	Intensive								
Number of turtle roadkills	Intensive								
Wetland edges created by roads	Expert	Good	Good		>50%	26-50	11-25	0-10	Not Specified
Wetland proximity	Rapid								Not Specified
Natural vegetation adjacent to wetlands	Not Specified	Very Good	Not Specified	Condition					
Percent of natural cover within 120 m of wetlands	Rapid	Very Good	Not Specified		0-25	26-44	45-64	>>65	Not Specified
Size/extent of system		Good	Good	Size					
% wetland cover in the UGN	Expert	Good	Good						Not Specified
Avg size of contiguous wetland	Rough Guess	Fair	Fair		0.1 - 1.9	2-9	10-30	>30 ha	Not Specified
Species abundance/composition		Good	Good	Condition					
% cover of Invasive Phragmites	Expert	Not Specified	Very Good		>37%	19-37%	8-18.9%	0-7.9%	Not Specified
Avg abundance of reed canary grass	Not Specified	Fair	Not Specified		Dominant	Abundant	Occasional	Rare to none	Not Specified
Black Ash health	Rough Guess	Fair	Not Specified		all dead or dying	variable	most in good h...		Not Specified
Common Buckthorn abundance	Expert	Fair	Fair		Dominant	Abundant	Occasional	Rare to none	Not Specified
Culturally significant animal species	Rough Guess	Good	Good		Absent		Most present	All Present	Not Specified
Culturally significant plant species	Rough Guess	Good	Good		Absent		Present		Not Specified
European Frog-bit abundance	Expert	Good	Not Specified		Dominant	Abundant	Occasional	Rare to none	Not Specified
Purple loosestrife abundance	Rapid	Good	Good		Dominant	Abundant	Occasional	Rare to none	Not Specified
Wetland type diversity	Expert	Fair	Fair		1	2	3	4	Not Specified
Wild parsnip abundance	Not Specified	Very Good	Very Good		Dominant	Abundant	Occasional	Rare to none	Not Specified
Wetland Water Quality		Fair	Not Specified	Condition					
Benthics - HBI	Not Specified	Not Specified	Not Specified		>5.75	5.01 - 5.75	4.26 - 5.0	0-4.25	Not Specified
Conductivity	Not Specified	Poor	Not Specified		>400		<400		Not Specified
Dissolved Oxygen	Not Specified	Good	Not Specified		<5.5		>5.5		Not Specified
Total Phosphorus	Not Specified	Poor	Not Specified		>0.03		<0.03		Not Specified

Appendix B: Nested Targets/Significant Species

Species in the table below were pulled from the Natural Heritage Information Centre within 1 km of Trent lands boundary, the Natural Heritage Report (Trent University, 2021a) and field observations of species at risk either federally, provincially, or both.

TYPE	COMMON NAME	SCIENTIFIC NAME	COSEWIC STATUS	SARO STATUS	G-RANK	S-RANK	Provincially tracked	TARGETS						EXCEPTIONS AND OTHER NOTES	
								Wetlands	Forest and Woodlands	Open Country	Otonabee River and Tributaries	Naturalized Green Space	Regenerative Agriculture		
Vascular Plant	Side-Oats Grama	<i>Bouteloua curtipendula</i>			G5	S2	Y			x					
Vascular Plant	American Chestnut	<i>Castanea dentata</i>	END	END	G3	S1S2	Y		x						
Vascular Plant	Black Ash	<i>Fraxinus nigra</i>	THR		G5	S4	Y	x						CR by IUCN red list	
Vascular Plant	Butternut	<i>Juglans cinerea</i>	END	END	G3	S2?	Y		x			x			
Vascular Plant	Winged Loosestrife	<i>Lythrum alatum</i>			G5	S3	Y		x	x					
Vascular Plant	Saltmarsh Sand-spurrey	<i>Spergularia marina</i>			G5	S1	Y				x	x			
Fish	Northern Sunfish	<i>Lepomis peltastes</i> pop. 2	SC	SC	G5TNRQ	S3	Y				x				
Amphibian	Western Chorus Frog	<i>Pseudacris maculata</i> pop. 1	THR	NAR	G5TNRQ	S4	Y	x	x						
Reptiles	Eastern Milksnake	<i>Lampropeltis triangulum</i>	SC	NAR	G5	S4	Y			x		x	x		
Reptiles	Snapping Turtle	<i>Chelydra serpentina</i>	SC	SC	G5	S4	Y	x			x				
Reptiles	Midland Painted Turtle	<i>Chrysemys picta marginata</i>	SC	SC	G5T5	S4	Y	x			x				
Reptiles	Blanding's Turtle	<i>Emydoidea blandingii</i>	END	THR	G4	S3	Y	x			x			EN -IUCN red list	
Reptiles	Northern Map Turtle	<i>Graptemys geographica</i>	SC	SC	G5	S3	Y				x				
Reptiles	Eastern Musk Turtle	<i>Sternotherus odoratus</i>	SC	SC	G5	S3	Y	x			x				
Birds	Chimney Swift	<i>Chaetura pelagica</i>	THR	THR	G4G5	S3B	Y		x	x	x			Foraging	
Birds	Eastern Wood-pewee	<i>Contopus virens</i>	SC	SC	G5	S4B	Y		x						
Birds	Bobolink	<i>Dolichonyx oryzivorus</i>	THR	THR	G5	S4B	Y			x			x		
Birds	Wood Thrush	<i>Hylocichla mustelina</i>	THR	SC	G4	S4B	Y		x						
Birds	Barn Swallow	<i>Hirundo rustica</i>	THR	THR	G5	S4B	Y	x			x		x		
Birds	Least Bittern	<i>Ixobrychus exilis</i>	THR	THR	G4G5	S4B	Y	x							
Birds	Loggerhead Shrike	<i>Lanius ludovicianus</i>	END	END	G4	S1B	Y			x				Historical record	
Birds	Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	END	END	G5	S3	Y	x	x						
Birds	Bank Swallow	<i>Riparia riparia</i>	THR	THR	G5	S4B	Y	x			x				
Birds	Eastern Meadowlark	<i>Sturnella magna</i>	THR	THR	G5	S4B,S3N	Y			x			x		
Mammals	Little Brown Myotis	<i>Myotis lucifugus</i>	END	END	G3	S3	Y		x						
Mammals	Tri-coloured Bat	<i>Perimyotis subflavus</i>	END	END	G3G4	S3?	Y		x						
Insects	Lilypad Clubtail	<i>Arigomphus furcifer</i>			G5	S4	N	x			x				
Insects	American Bumblebee	<i>Bombus pensylvanicus</i>	SC		G3G4	S3S4	Y			x					

TYPE	COMMON NAME	SCIENTIFIC NAME	COSEWIC STATUS	SARO STATUS	G-RANK	S-RANK	Provincially tracked	TARGETS						EXCEPTIONS AND OTHER NOTES	
								Wetlands	Forest and Woodlands	Open Country	Otonabee River and Tributaries	Naturalized Green Space	Regenerative Agriculture		
Insects	Red Sedge Borer	<i>Capsula laeta</i>			G4	S3S4	Y	x							Host plant Sparganium sp.
Insects	Brown Scoopwing	<i>Calledapteryx dryopterata</i>			G4	S3S4	Y		x						Host plant viburnum sp.
Insects	Owl-eyed Bird Dropping Moth	<i>Cerma cora</i>			G3G4	S3S4	Y			x					Host plant Pin Cherry and possibly hawthorn
Insects	Monarch	<i>Danaus plexippus</i>	END	SC	G4	S2N, S4B				x					
Insects	Red-chested Cuckoo Nomad Bee	<i>Epeolus scutellaris</i>			GNR	S3	Y			x					
Insects	Glorious Habrosyne	<i>Habrosyne gloriosa</i>			GNR	S3S4	Y			x		x			Host plant rubus sp. and ninebark
Insect	Fingered Lemmeria	<i>Lemmeria digitalis</i>			G4	S4?	N	x		x					sedges
Insects	Northern Bush Katydid	<i>Scudderia septentrionalis</i>			G3?	S3?	Y			x					Most often associated with oak and white pine

Appendix C: Threat Rating in Miradi

THREAT ASSESSMENT

Assess the Scope, Severity and Irreversibility of 3 threats to your Natural Area's targets. Utilize the quantified ratings for Very High, High, Medium & Low.

Scope - Most commonly defined spatially as the proportion of the target that can reasonably be expected to be affected by the threat within ten years given the continuation of current circumstances and trends. For ecosystems and ecological communities, measured as the proportion of the target's occurrence. For species, measured as the proportion of the target's population.

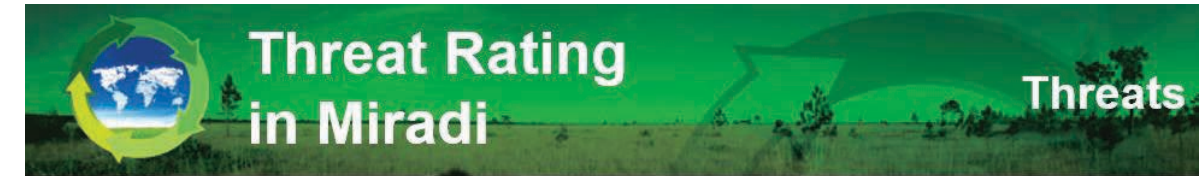
- **Very High**: The threat is likely to be pervasive in its scope, affecting the target across all or most (71-100%) of its occurrence/population.
- **High**: The threat is likely to be widespread in its scope, affecting the target across much (31-70%) of its occurrence/population.
- **Medium**: The threat is likely to be restricted in its scope, affecting the target across some (11-30%) of its occurrence/population.
- **Low**: The threat is likely to be very narrow in its scope, affecting the target across a small proportion (1-10%) of its occurrence/population.

Severity - Within the scope, the level of damage to the target from the threat that can reasonably be expected given the continuation of current circumstances and trends. For ecosystems and ecological communities, typically measured as the degree of destruction or degradation of the target within the scope. For species, usually measured as the degree of reduction of the target population within the scope.

- **Very High**: Within the scope, the threat is likely to destroy or eliminate the target, or reduce its population by 71-100% within ten years or three generations.
- **High**: Within the scope, the threat is likely to seriously degrade/reduce the target or reduce its population by 31-70% within ten years or three generations.
- **Medium**: Within the scope, the threat is likely to moderately degrade/reduce the target or reduce its population by 11-30% within ten years or three generations.
- **Low**: Within the scope, the threat is likely to only slightly degrade/reduce the target or reduce its population by 1-10% within ten years or three generations.

Irreversibility - The degree to which the effects of a threat can be reversed and the target affected by the threat restored.

- **Very High**: The effects of the threat cannot be reversed and it is very unlikely the target can be restored, or it would take more than 100 years to achieve this (e.g., wetlands converted to a shopping center).
- **High**: The effects of the threat can technically be reversed and the target restored, but it is not practically affordable or it would take 21-100 years to achieve this (e.g., wetland converted to agriculture).
- **Medium**: The effects of the threat can be reversed and the target restored with a reasonable commitment of resources or within 6-20 years (e.g., ditching and draining of wetland).
- **Low**: The effects of the threat are easily reversible and the target can be easily restored at a relatively low cost or within 0-5 years (e.g., off-road vehicles trespassing in wetland).



Scope + Severity = Threat Magnitude

		Scope			
		Very High	High	Medium	Low
Severity	Very High	Very High	High	Medium	Low
	High	High	High	Medium	Low
	Medium	Medium	Medium	Medium	Low
	Low	Low	Low	Low	Low

Threat Magnitude + Irreversibility = Threat Rating

		Irreversibility			
		Very High	High	Medium	Low
Magnitude	Very High	Very High	Very High	Very High	High
	High	Very High	High	High	Medium
	Medium	High	Medium	Medium	Low
	Low	Medium	Low	Low	Low



**Ggwepnandizamin
Systems Level Plan (2025)**