

2026 Natural Asset Management Study: Integration of Natural Assets into Municipal Asset Management Plans

The Greenbelt Foundation

Final Report

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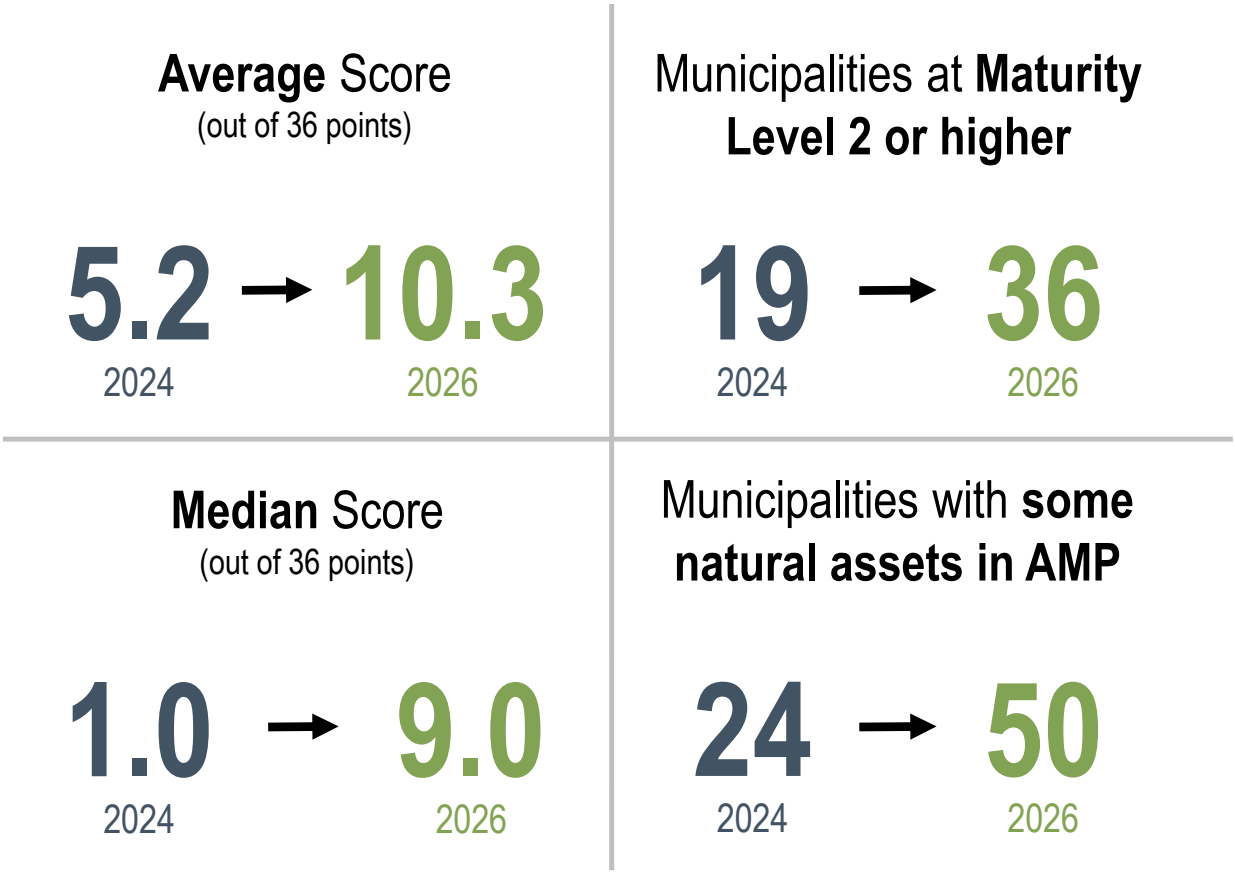
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Executive Summary



Executive Summary

The Greenbelt Foundation (Foundation) supports the advancement of natural asset management across municipalities within Ontario's Greenbelt. Natural assets provide essential municipal services, including stormwater management, flood mitigation, erosion control, and source water protection. Integrating these assets into municipal asset management programs therefore is critical in ensuring the continuity of municipal service delivery over the long term.

In 2024, the Foundation engaged Watson & Associates Economists Ltd. (Watson) to establish a baseline understanding of natural asset management maturity across 73 Greenbelt Municipalities. The Foundation re-engaged Watson in 2026 to measure progress against that baseline, identify the continuing and emerging challenges facing municipalities, and develop recommendations on where the Foundation should focus its near-term efforts. This Technical Report presents the study methodology, provides an analysis of the assessment results, and summarizes the findings and recommendations arising from the 2026 study.

Study Purpose and Scope

The purpose of the 2026 study was to determine how natural asset management practices across Greenbelt Municipalities have evolved since 2024 and how the Foundation can best support continued progress. In order to provide a consistent framework that would allow for a comparison of results, the 2026 study applied the same scoring criteria and assessment rubric used in 2024.

The study assessed all 73 Greenbelt Municipalities and included direct engagement with municipal staff through a questionnaire and optional 30-minute interviews. Forty municipalities responded to the questionnaire, representing a response rate of approximately 55%, and ten participated in interviews. Of the 40 questionnaire respondents, 31 completed the questionnaire in full, and their maturity scores were assessed based on their questionnaire responses. For the nine municipalities that submitted incomplete responses, Watson reviewed the available questionnaire information and supplemented it through a review of their most recent asset management plans and related documents to assess their maturity levels. A review of asset management plans and related documents was also conducted to assess the 33 municipalities that did not respond to the questionnaire.

The maturity assessment measured cumulative progress. Each criterion was assessed using the information collected in 2026 and compared with the corresponding 2024 score. Where the 2026 evidence supported a higher score, the higher value was applied; otherwise, the 2024 score was retained. Criterion-level scores from 2024 were retained for 34 of the 73 Greenbelt Municipalities across 153 individual criteria. This approach recognizes that completed asset management components continue to contribute to a municipality's maturity, even when supporting evidence is not repeated in subsequent questionnaire responses or asset management documents. As a result, a municipality's maturity score or level could increase or remain unchanged, but could not decrease from its 2024 baseline.

Current Maturity Scores and Progress Since 2024

The average maturity score across the 73 Greenbelt Municipalities increased from 5.2 out of 36 points in 2024 to 10.3 out of 36 points in 2026. The median score increased from 1.0 to 9.0 points, indicating that progress extended beyond the municipalities that were already more advanced in 2024. Forty-nine municipalities increased their total score, while the remaining 24 retained their 2024 score.

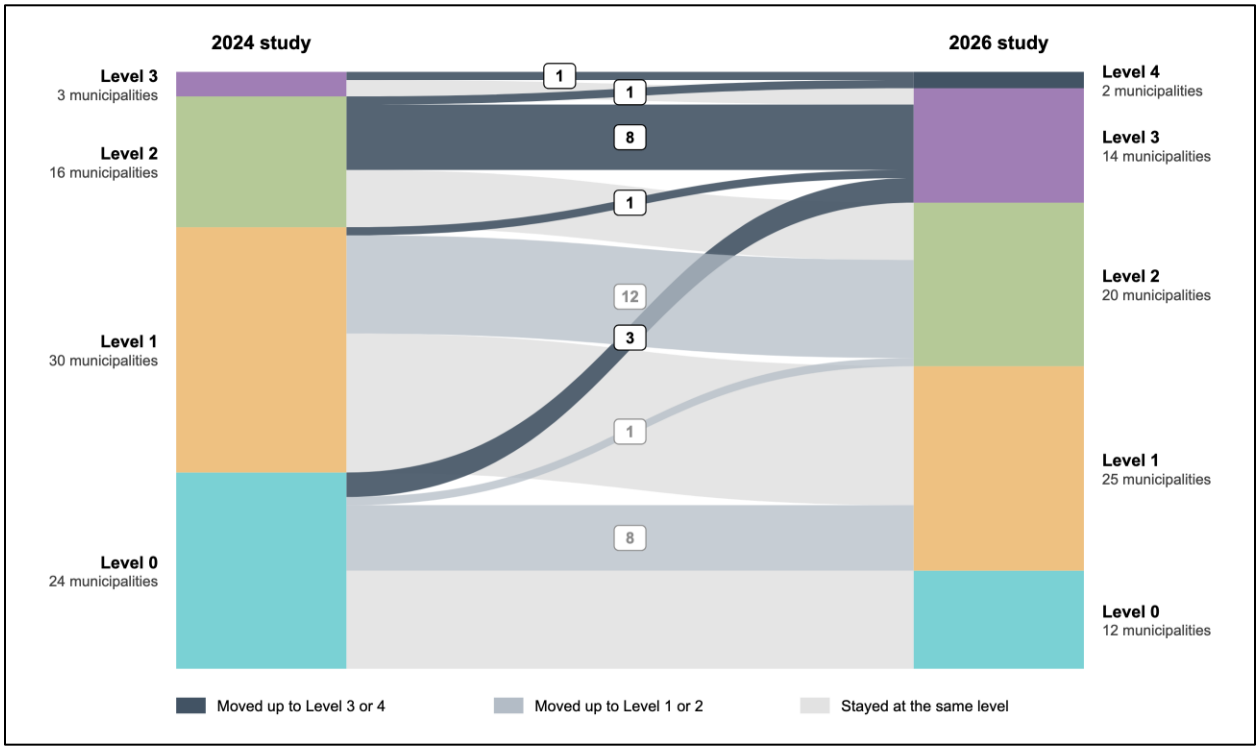
Each Greenbelt Municipality was also assigned a natural asset management maturity level from 0 to 4 based on its total score and the number of scoring categories in which it earned points. The rating conditions for each maturity level are provided in Table 1.

Table 1: Natural Asset Management Maturity Levels

Total Score	Minimum Number of Categories with Points Earned	Maturity Level
0 points	Not Applicable	0
1 to 9 points	Not Applicable	1
10 to 18 points	2 categories	2
19 to 27 points	4 categories	3
28 points or more	5 categories	4

The distribution of municipalities across the five maturity levels shifted considerably from 2024 to 2026. Overall, 36 municipalities reached Level 2 or higher in 2026, compared with 19 in 2024, representing an increase of approximately 89%. The change in the distribution of Greenbelt Municipalities by maturity level is illustrated in Figure 1.

Figure 1: Change in Distribution of Greenbelt Municipalities by Natural Asset Management Maturity Level, 2024 to 2026



These results demonstrate that municipal natural asset management is progressing beyond foundational inventory work and into the more advanced components needed to guide long-term service delivery and investment.

Key Drivers of Progress

Municipalities identified several key drivers that have helped them advance natural asset management maturity, as summarized below.

Regulatory Requirements

Ontario Regulation 588/17 provided an important catalyst for municipal natural asset management by requiring municipalities to include natural assets in their asset management plans. This requirement helped staff demonstrate that natural asset management was a necessary component of regulatory compliance rather than a discretionary initiative, strengthening the rationale for funding natural asset inventories and plans. For example, one municipality reported that the regulatory requirement was essential to securing budget to retain consultants and prepare its natural asset

management plan. However, while the regulation establishes the need to include natural assets, it provides limited direction on how municipalities should assess these assets and integrate them into their asset management plans.

Extreme Weather Events

Experiences with extreme weather events helped some municipalities demonstrate the practical need for better natural asset information and management. Following a major ice storm, one municipality found that staff could not readily determine whether damaged trees were municipally owned, privately owned, or located on property boundaries. More accurate location and ownership information would have helped staff identify municipal responsibilities, prioritize cleanup activities, and respond to residents' questions. In another municipality, a history of flooding helped reinforce Council's recognition of the services natural assets provide and the importance of protecting them.

Direct Engagement and Visual Tools

Direct engagement and visual information helped some municipalities communicate the importance of natural asset management to Council. One municipality described inviting Council members to public events at natural areas, providing opportunities to experience natural assets firsthand and learn about them in the field. The same municipality is also developing an interactive online dashboard to display natural asset locations and condition information in a format that is more accessible to Council and the public.

Determining Avoided Costs

Demonstrating the potential to avoid future costs provided another means of explaining the financial value of natural asset management. Some municipalities highlighted that sustaining natural assets can reduce demands on engineered infrastructure, helping offset the costs of natural asset maintenance over the long term. This framing connects proposed investments in natural assets with the engineered infrastructure and municipal services they protect, rather than presenting them solely as additional financial burdens.

Community Stewardship

Community stewardship provided another avenue for fostering support for natural asset management where existing Council support was limited. Some municipalities with

active community groups highlighted residents' attachment to local natural features as a basis for encouraging Council support for their protection and management.

Continuing and Emerging Challenges and Barriers

The lack of financial resources, staffing resources, and subject-matter expertise remained the most commonly reported barriers in 2026. These challenges are not unique to natural assets and are expected to persist as municipalities balance competing infrastructure priorities, limited staff capacity, and evolving technical requirements. The Foundation can help municipalities use their available resources more effectively, but it cannot directly resolve the underlying funding and staffing constraints facing each organization.

The nature of these continuing challenges and barriers has evolved as municipalities have progressed in their natural asset management journeys. Some municipalities have moved beyond the initial need to fund the preparation of natural asset management plans and now require sustainable annual funding to support their implementation. Similarly, municipalities increasingly need specialized guidance that connects ecological information with conventional asset management components, including levels of service, lifecycle strategies, financial planning, and risk and asset criticality assessments.

Municipalities further along in their natural asset management journeys reported difficulty demonstrating return on investment and establishing a compelling business case for continued funding. Natural asset investment often seeks to sustain existing services and prevent decline, making its outcomes less visible than investments in engineered infrastructure. Municipalities also lack consistent and defensible methodologies for completing valuations, condition assessments, levels of service frameworks, and developing lifecycle strategies for different natural asset types.

Other emerging challenges include managing natural assets on private property, balancing natural asset objectives with housing growth and other strategic priorities, integrating natural asset information into software designed for engineered assets, and addressing increasing lifecycle pressures associated with invasive species, climate change, and severe weather events. These challenges reflect the progression of natural asset management programs from understanding their natural infrastructure towards integrating them into established decision-making processes.

Priority Recommendations

The Foundation should focus its near-term efforts on challenges where targeted support can reduce the time, cost, and technical uncertainty involved in natural asset management. The following five recommendations respond directly to the needs of Greenbelt Municipalities identified through the study.

1. **Develop Consolidated Natural Asset Management Guidance**

   The Foundation should work with its partners to develop a single source of practical natural asset management guidance, organized by natural asset type and asset management planning component. The resource should consolidate relevant standards, guidance documents, and case studies; establish consistent definitions and minimum inventory attributes; and provide step-by-step methodologies for completing valuations, condition assessments, levels of service frameworks, and lifecycle strategies.

2. **Develop a Business Case and Return on Investment Toolkit**

   The Foundation should develop a toolkit that helps municipalities demonstrate the value of investing in natural assets and the consequences of underinvestment. It should include methods and templates for estimating avoided costs, illustrating how natural asset deterioration affects engineered assets and service delivery, and connecting natural asset condition with recognized municipal risks such as flooding, shoreline erosion, and property damage from significant weather events.

3. **Engage Municipal Councils Directly**

   The Foundation should use its planned engagement with municipal councils to build understanding of natural asset management and support for its funding. Engagement following the 2026 municipal election should use easy-to-understand, non-technical materials that explain the services natural assets provide, municipal responsibilities under O. Reg. 588/17, the consequences of underinvestment, and explain concepts that council members may find difficult to interpret. The Foundation should also make these materials available for municipal staff to adapt for their own reports and presentations.

4. **Establish Municipal Working Groups**

   The Foundation should form working groups that bring municipal staff and natural asset experts together with asset management experts. These groups should provide direct guidance on completing specific asset management components and applying them to different natural asset types. They should also address the integration of natural asset information into asset management software, decision-support tools, and GIS through recommended data structures, minimum inventory attributes, and practical lifecycle modelling approaches.

5. **Develop Guidance for Managing Natural Assets on Private Property**

   The Foundation should work with its partners to develop guidance on how municipalities can guide the management of natural assets on private property. The guidance should identify non-infrastructure solutions available to municipalities, including strengthened policies and by-laws, enhanced enforcement, penalties for non-compliance, property-owner education, and partnerships with community organizations.



Technical Report

Chapter 1
Introduction

1. Introduction

1.1 Study Background

The Greenbelt Foundation (Foundation) supports the advancement of natural asset management across municipalities within Ontario's Greenbelt (Greenbelt Municipalities) in collaboration with municipal partners, conservation authorities, and other organizations. Its efforts aim to help municipalities understand and manage natural assets as vital infrastructure that supports municipal services such as stormwater management, flood mitigation, and source water protection. By integrating natural assets into their asset management programs, municipalities can make better informed and more cost-effective infrastructure investment decisions that promote the long-term sustainability of both natural and engineered assets.

In 2024, the Foundation engaged Watson & Associates Economists Ltd. (Watson) to establish a baseline understanding of natural asset management practices among Greenbelt Municipalities. Through questionnaires, interviews with municipal asset management staff, and reviews of asset management plans and related documents, the study scored each municipality on 28 criteria across seven categories and assigned it a natural asset management maturity level. It identified the lack of financial resources, staffing resources, and subject-matter expertise as the key barriers to fully integrating natural assets into municipal asset management plans, and recommended how the Foundation could assist municipalities overcome these barriers.

Since the 2024 study, the regulatory expectations facing municipalities with respect to asset management have evolved. Under Ontario Regulation (O. Reg.) 588/17, municipalities were required to include natural assets in their asset management plans by July 1, 2024, and to establish proposed levels of service and a supporting financial strategy by July 1, 2025. The 2024 study was completed before either deadline had passed. During this period, the Foundation also introduced several initiatives to support municipalities in advancing their natural asset management maturity, including guidance documents, webinars, workshops, direct municipal consultations, and a natural asset management community of practice. A summary of these initiatives is provided in Appendix E.

In 2026, the Foundation re-engaged Watson to update the findings of the 2024 study and assess how natural asset management practices across Greenbelt Municipalities

have since evolved. The findings of this study are presented in two companion reports. The Monitoring Report documents each Greenbelt Municipality's score on the 28 assessment criteria and its resulting maturity level, while this Technical Report interprets what those scores reveal about the current state of municipal natural asset management across the Greenbelt. The chapters that follow summarize the study methodology, the current maturity levels of Greenbelt Municipalities, the progress municipalities have made since 2024, the challenges and barriers they continue to face, and the extent to which the Foundation's recent initiatives have contributed to their efforts. Building on these findings, the report concludes with recommendations on how the Foundation can enhance its support to help municipalities further advance their natural asset management maturity.

A full list of the 73 Greenbelt Municipalities within the scope of this study is provided in Appendix A.

1.2 Study Purpose and Key Questions

The purpose of this study is to measure how natural asset management practices across Greenbelt Municipalities have evolved since 2024 and to determine how the Foundation can best support their continued progress. The 2024 study established a baseline of municipal natural asset management maturity against which future progress could be measured. This study identifies how far municipalities have advanced from that baseline and evaluates the effectiveness of the Foundation's recent efforts in supporting that advancement. It was guided by the following three key questions:

What is the current state of natural asset management maturity across Greenbelt Municipalities, and how has it changed since 2024?

This question seeks to establish each Greenbelt Municipality's current level of maturity and how far it has advanced from its 2024 baseline. The 2026 study applies the same assessment rubric used in 2024 so that each municipality's current score and maturity level can be compared directly against its 2024 results.

What progress have Greenbelt Municipalities made in overcoming previously identified challenges and barriers, and what new challenges and barriers have emerged?

This question examines whether the barriers identified in 2024 continue to limit natural asset management maturity, and the progress municipalities have made in addressing these barriers. It also seeks to identify challenges and barriers that have since emerged or become more significant.

How can the Foundation enhance its efforts to better respond to the evolving needs of Greenbelt Municipalities?

This question seeks to identify where the Foundation should focus its future efforts. During the municipal interviews, Watson asked staff whether they had participated in or used the Foundation's initiatives and how helpful those initiatives had been in supporting their natural asset management efforts. Staff were also asked to identify the tools, resources, and support that would help them advance natural asset management and to share successes and lessons learned through their own work. This feedback, together with the findings related to the preceding questions, informed the recommendations presented in Chapter 5 of this report.

1.3 Regulatory Background and Context

Municipal asset management planning in Ontario is governed by O. Reg. 588/17, which explicitly includes natural assets within the scope of assets for which municipalities must plan. The regulation defines a municipal infrastructure asset as:

> *"[A]n infrastructure asset, including a green infrastructure asset, directly owned by a municipality or included on the consolidated financial statements of a municipality, but does not include an infrastructure asset that is managed by a joint municipal water board."*

The regulation further defines a green infrastructure asset as:

> *"[A]n infrastructure asset consisting of natural or human-made elements that provide ecological and hydrological functions and processes and includes natural heritage features and systems, parklands, stormwater management systems, street trees, urban forests, natural channels, permeable surfaces and green roofs."*

Natural assets are a subset of green infrastructure assets and refer specifically to naturally occurring resources and ecosystems that provide services to the community. However, O. Reg. 588/17 does not define natural assets explicitly or prescribe how they should be managed.

The asset management plans required under O. Reg. 588/17 were to be prepared over three compliance deadlines (i.e., phases), with each successive phase expanding the scope and depth of the plans. Table 1-1 summarizes the requirements of each phase and its compliance deadline.

Table 1-1: Phased Requirements of O. Reg. 58/17

Phase	Requirement	Deadline
Phase 1	Approval of an asset management plan for core infrastructure assets (i.e., roads, bridges, structural culverts, water assets, wastewater assets, stormwater assets) which identifies current levels of service and forecasts the capital and significant operating expenditures required to maintain them.	July 1, 2022
Phase 2	Approval of an asset management plan for non-core infrastructure assets that meets the same requirements as the Phase 1 plan. Non-core infrastructure assets include all municipal infrastructure assets not defined as core infrastructure assets, including natural assets.	July 1, 2024
Phase 3	Approval of an asset management plan for all infrastructure assets that establishes proposed levels of service, forecasts the capital and significant operating expenditures required to achieve them, and includes a financial strategy identifying the sources and levels of funding available to undertake the required lifecycle activities.	July 1, 2025

This study is the first assessment of Greenbelt Municipalities conducted since all four compliance deadlines passed. The 2024 study was completed before the July 1, 2024 deadline, at a time when many municipalities had yet to begin inventorying their natural assets and were not yet required to include them in their asset management plans. Municipalities are now required to have included natural assets in their plans and to have established proposed levels of service and a supporting financial strategy for all

infrastructure assets. This study therefore measures how natural asset management maturity has changed over a period in which natural asset management moved from a pending regulatory requirement to an established one.

O. Reg. 588/17 also imposes ongoing requirements that support the continuous improvement of municipal asset management programs beyond the final compliance deadline. Municipal councils must conduct an annual review of asset management progress on or before July 1 of each year, beginning the year after the municipality completes its Phase 3 asset management plan. Each review must address the municipality's progress in implementing the plan, any factors impeding its ability to fully implement the plan, and a strategy to address those factors. Municipalities must also review and update their asset management plans at least every five years. Together, these requirements give municipalities a recurring opportunity to report on their progress in integrating natural assets and to bring the challenges and barriers they face to Council's attention.

1.4 2024 Natural Asset Management Study

1.4.1 Overview and Study Methodology

The 2024 study established a baseline understanding of natural asset management maturity across the 73 Greenbelt Municipalities. The study assessed municipalities utilizing an assessment rubric comprising 28 criteria across seven categories to score the extent to which each municipality had completed asset management analyses for its natural assets. The maximum possible score was 36 points. The study's work plan is summarized below:

1. **Municipal Questionnaire**: Watson collected information on the types of natural asset municipalities were managing and the asset management planning components they had completed. Responses were assessed against the assessment rubric.

2. **Document Review**: For municipalities that did not respond to the questionnaire, Watson reviewed asset management plans, strategic asset management policies, and related publicly available documents to assess the extent of natural asset integration/.

3. **Interviews and Consultation**: Interviews with municipal staff supplemented the questionnaire and document review findings and provided insight into the challenges and barriers municipalities were facing. Watson also consulted with the Toronto and Region Conservation Authority (TRCA) to establish maturity profiles for Greenbelt Municipalities.

4. **Analysis and Recommendations**: Watson consolidated the information gathered to finalize each municipality's maturity score and develop recommendations on how the Foundation could support municipalities in addressing barriers and advancing natural asset management.

Table 1-2 summarizes the number of criteria and the maximum score within each assessment category.

Table 1-2: Assessment Rubric Categories

Assessment Category	Number of Criteria	Maximum Score
State of Infrastructure	5	8
Levels of Service	5	5
Climate Change Measures	3	4
Lifecycle Management and Financial Strategies	4	6
Risk Management Plan	3	5
Project and Policy Implementation	3	3
Continuous Updates and Improvements	5	5
Total	**28**	**36**

Each Greenbelt Municipality was subsequently assigned a natural asset management maturity level from 0 to 4 based on its total score and the number of scoring categories in which it earned points. This requirement ensured that higher maturity levels reflected progress across multiple asset management planning components, rather than strong performance within a single category. Table 1-3 summarizes the rating conditions for each maturity level.

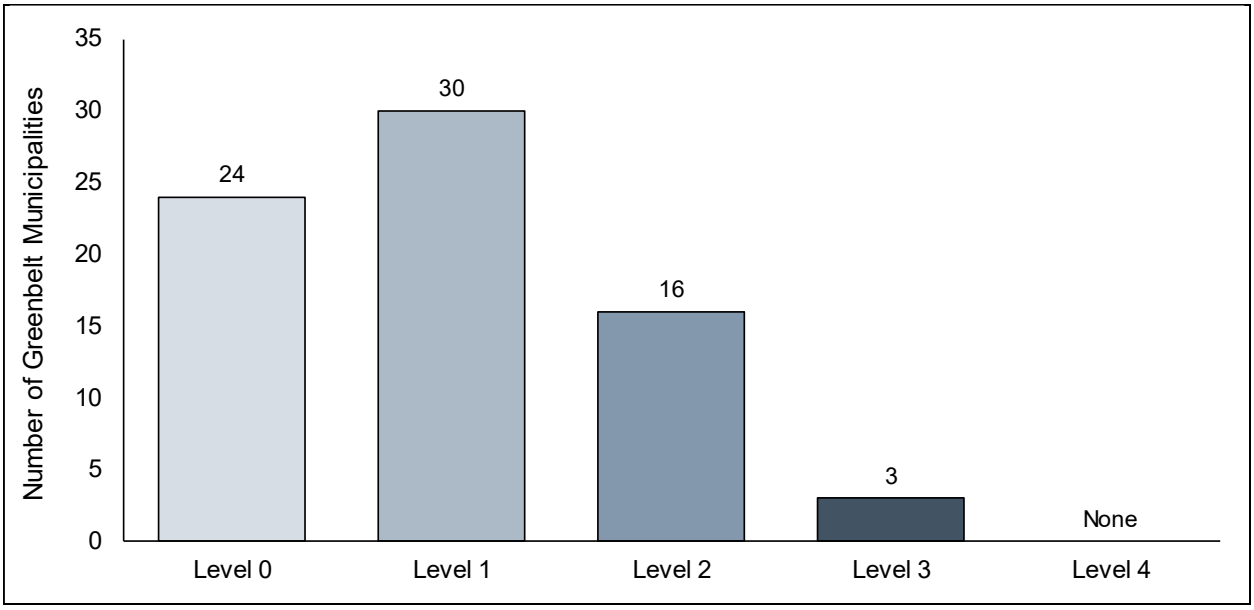
Table 1-3: Natural Asset Management Maturity Levels

Total Score	Minimum Number of Categories with Points Earned	Maturity Level
0 points	Not Applicable	0
1 to 9 points	Not Applicable	1
10 to 18 points	2 categories	2
19 to 27 points	4 categories	3
28 points or more	5 categories	4

1.4.2 Maturity Results

The 2024 results showed that most Greenbelt Municipalities were in the early stages of natural asset management. Of the 73 municipalities assessed, 54 (74%) received a maturity level of 0 or 1. The average score was 5.2 points out of a possible 36, and the median score was one point. Figure 1-1 illustrates the distribution of Greenbelt Municipalities by maturity level in 2024.

Figure 1-1: Distribution of Greenbelt Municipalities by Maturity Level in 2024



The 24 municipalities assessed at Maturity Level 0 had not included any natural assets within the scope of their asset management plans. At the other end of the scale, three municipalities reached Level 3, with the highest score being 24 points. No municipality

reached Maturity Level 4, largely because the regulatory timelines of O. Reg. 588/17 had not yet required municipalities to establish proposed levels of service or the lifecycle management strategies needed to achieve them.

Scores were low in every category. State of Infrastructure had the highest average score, at 1.6 out of 8 points, while the remaining six categories averaged between 0.5 and 0.7 points. Parks, street trees, park trees, and forests were the natural asset types most commonly inventoried and included in asset management plans.

1.4.3 Challenges and Barriers

The 2024 study identified the lack of financial resources, staffing resources, and subject-matter expertise as the key barriers preventing Greenbelt Municipalities from fully integrating natural assets into their asset management plans. These barriers are further described below:

- **Financial resources:** Preparing asset management plans for core infrastructure had shown municipalities the size of their funding gaps for those assets. As a result, they gave priority to core assets and directed any new funding towards them rather than towards natural assets.

- **Staffing resources:** Smaller and more rural municipalities often had one full-time equivalent or less dedicated to asset management planning for all infrastructure assets. Requests for additional staff were frequently denied, and high staff turnover eroded institutional knowledge. Larger municipalities generally had enough staff, but departments often worked in silos, which limited data sharing and led to inconsistent natural asset management practices.

- **Subject-matter expertise**: Municipal staff reported knowledge gaps in:
    - Data governance;
    - Condition assessments and replacement cost valuations;
    - Levels of service frameworks;
    - Risk and asset criticality assessments; and
    - Integration of natural asset inventories into existing systems and software (e.g., asset management software, GIS, etc.).

Municipalities also identified several other challenges, which included:

- Lack of consistent definitions of natural asset terminology;
- Lack of well-defined roles and segregation of duties between municipalities, conservation authorities, the Province, and other stakeholders;
- Perspectives of Council driven by expectations from residents to dedicate as much funding as possible for the maintenance and upgrade of core infrastructure assets such as roads;
- Weakening of environmental standards;
- Lack of appropriate guidelines from senior levels of government;
- Lack of Council support for regional approaches to asset management; and
- Lack of inclusion of natural assets in existing policies and planning documents.

1.4.4 Recommendations

The 2024 study recommended a series of actions the Foundation could take to address the identified barriers and challenges, which are summarized below:

- **Financial resources:** It was recommended that the Foundation:
    - Compile a comprehensive inventory of the grant funding opportunities available to municipalities for natural asset and green infrastructure projects;
    - Notify municipalities as applications open and deadlines approach;
    - Provide guidance on how to complete grant funding applications; and
    - Develop resource materials to help municipalities establish a business case for natural asset management that considers the criticality of natural infrastructure and assesses the expected return on investment.

- **Staffing resources:** It was recommended that the Foundation encourage regional approaches to natural asset management that involve conservation authorities, so that municipalities with limited capacity can draw on the resources and expertise of their neighbours.

- **Subject-matter expertise:** It was recommended that the Foundation develop best practice guides for:
    - Compiling natural asset inventories and establishing effective data governance frameworks;
    - Completing replacement cost valuations and condition assessments;
    - Establishing levels of service frameworks; and

- Assessing lifecycle management strategies.

The study also recommended several other actions as summarized below:

- Developing a glossary of natural asset terminology and standardized data governance models;
- Facilitating training sessions for smaller municipalities who are at the initial stages of their natural asset management journeys;
- Creating more opportunities for municipalities to collaborate on natural asset management;
- Developing templates and models to assist with asset management planning for natural assets; and
- Preparing case studies tailored to their intended audience (e.g., Council, senior staff, technical/operational staff, etc.).

Chapter 2
Study Methodology

2. Study Methodology

2.1 Study Approach

The 2026 study was designed to measure progress against the 2024 baseline while collecting additional information to gauge the effectiveness of the Foundation's initiatives. To make direct comparisons possible, the study relied on the same assessment rubric used in 2024 and included a similar municipal engagement process. The study was completed utilizing a phased approach as summarized in Table 2-1.

Table 2-1: 2026 Study Process

Phase	Timing	Description
Review of Assessment Rubric	June 2026	Workshop with the Foundation's project team to review the 2024 assessment rubric.
Municipal Questionnaire	June to August 2026	Distribution of an online questionnaire to all 73 Greenbelt Municipalities.
Municipal Interviews	August 2026	Optional 30-minute virtual interviews with municipal staff.
Review of Asset Management Documents	August to September 2026	Review of asset management plans and related documents for municipalities that did not respond to the questionnaire.
Maturity Assessment	September 2026	Scoring of each municipality against the assessment rubric and assignment of maturity levels.
Comparative Analysis	September 2026	Comparison of 2026 results with the 2024 baseline.

2.2 Review of Assessment Rubric

Watson facilitated a workshop with the Greenbelt Foundation’s project team in June 2026 to evaluate how effectively the 2024 assessment rubric’s criteria, categories, and scoring rules measured natural asset management maturity, and to determine whether any changes were required. The workshop also covered the objectives of engagement

with Greenbelt Municipalities, the proposed engagement process, and the scope of the questionnaire and interviews.

During the workshop, it was confirmed that the 2024 assessment rubric was to be retained without changes so that 2026 results could be compared directly with the 2024 baseline. Changing any criterion or scoring rule would have prevented a like-for-like comparison of individual results between the two studies. The rubric therefore continues to score each municipality on 28 criteria across seven categories, for a maximum possible score of 36 points. The maturity level conditions remain as described previously in Section 1.4.1.

2.3 Municipal Questionnaire

The municipal questionnaire was the primary source of information for scoring Greenbelt Municipalities. Similar to 2024, the questionnaire was designed to measure the extent of integration of natural asset types within municipal asset management plans while also identifying natural asset management initiatives that may not be explicitly documented in the plan or supporting documents. A copy of the questionnaire is provided in Appendix F.

In general terms, municipalities were asked to identify the following for each natural asset type within their geographical boundaries:

- Whether an asset inventory had been established;
- Whether replacement cost valuations and condition assessments had been completed;
- Whether the asset type was included in the municipality's most recent asset management plan;
- Whether current levels of service had been identified;
- Whether proposed levels of service targets had been established; and
- Whether 10-year lifecycle expenditure forecasts to achieve the proposed levels of service and a supporting financial strategy had been developed.

The questionnaire also included questions on climate change, risk and asset criticality assessments, policy changes, business case development, continuous improvement initiatives, and external funding applications. Most questions required respondents to select a yes or no response. Comment fields were also provided throughout the

questionnaire so that municipalities could explain their responses, identify related work underway, describe the challenges and barriers they are facing, and provide additional context that could affect the interpretation of their results.

In total, 40 Greenbelt Municipalities responded to the questionnaire, representing a response rate of approximately 55%. Nine respondents did not fully complete the questionnaire. For these municipalities, Watson assessed the information provided in each submission and supplemented incomplete responses with information gleaned through reviews of asset management plans and related publicly available documents. The document review process is further described in Section 2.5.

2.4 Municipal Interviews

Alongside the distribution of the questionnaire, Watson offered each Greenbelt Municipality an optional 30-minute virtual interview. The municipal interviews were designed to add context to questionnaire responses and the information presented in asset management plans and supporting documents. They also served as the main source of qualitative information on staff's experience with natural asset management.

The interviews were designed to address the following core questions:

1. Whether the municipality had made notable progress in natural asset management and what contributed to that progress;
2. Which areas of natural asset management remain a challenge, what factors contribute to those challenges, and what support would help address them;
3. Whether municipal staff had utilized any natural asset management resources or tools since 2024 (including those developed by the Foundation), how helpful those initiatives had been, and if they had any suggestions for improvement to those resources and tools; and
4. How the Foundation could engage municipalities, including Councils and senior leadership, most effectively to build awareness of and support for natural asset management.

Ten municipalities took part in interviews. The feedback received during these interviews was combined with the questionnaire responses to identify the challenges and barriers municipalities face, how helpful the Foundation's initiatives have been, and

how the Foundation should focus its future efforts to support continued advancement of natural asset management maturity.

2.5 Review of Asset Management Documents

For the 33 Greenbelt Municipalities that did not respond to the questionnaire, Watson reviewed each municipality's most recent asset management plan and related documents to determine its natural asset management maturity score. As noted in Section 2.3, this review was also conducted for the nine municipalities that did not fully complete the questionnaire. The review assessed whether natural assets were included within the scope of the municipality's most recent asset management plan and, if so, to what extent. Information gleaned through these documents was assessed against the same 28 criteria used to evaluate questionnaire responses, thereby maintaining consistency with the assessment framework used in 2024.

The review focused on information explicitly presented within the available documents. Each municipality received points only where the documentation provided sufficient evidence that the applicable criterion had been satisfied. Where a document did not address a criterion, Watson assumed that the related work had not been completed. It should be recognized that while this approach allowed maturity assessments to be completed for municipalities that did not respond to the questionnaire, available documents may not always capture the full extent of natural asset management activities that may be underway but not yet documented.

2.6 Maturity Assessment

The maturity assessment consolidated the information gathered through the municipal questionnaire, interviews, and review of asset management documents to determine each Greenbelt Municipality's natural asset management maturity score and level. For municipalities that responded to the questionnaire, the assessment was based primarily on their responses. For municipalities that did not respond, the assessment was based on the information explicitly documented in their most recent asset management plans and related materials.

Each municipality's points were totalled to determine its natural asset management maturity score and level. Maturity levels were assigned utilizing the same conditions used in 2024, which were presented earlier in Table 1-3. The maturity assessment

framework considers both the total score and the number of scoring categories in which points were earned, ensuring that higher maturity levels reflect progress across multiple components of asset management planning rather than strong performance within a single category.

The resulting scores and maturity levels were documented in the Monitoring Report. They provide a consistent measure of the extent to which each Greenbelt Municipality has integrated natural assets across the principal components of asset management planning and form the basis for the comparative analysis presented in Chapter 3.

2.7 Study Limitations

The study provides a consistent assessment of natural asset management maturity across all 73 Greenbelt Municipalities, but several limitations should be considered when interpreting the results. These limitations are described below:

- **Self-reported information:** Scores for questionnaire respondents are based primarily on information reported by municipal staff. Respondents may have interpreted certain questions differently or may not have been aware of relevant work being undertaken by other municipal departments. The questionnaire design sought to improve consistency by organizing questions around the assessment rubric and using standardized response options; however, differences in interpretation and organizational knowledge may have affected the completeness of individual responses.

- **Document review:** The document-based assessments were limited to information explicitly presented in the asset management plans and related publicly available materials reviewed by Watson. Municipalities may have completed natural asset management activities that were not documented in these materials or that were underway when the review was conducted. Accordingly, the absence of documented evidence does not necessarily mean that the related work had not been completed, but it prevented points from being awarded under the applicable criterion.

- **Completion vs. quality:** The assessment rubric measures whether defined asset management planning components have been completed, but it does not evaluate the quality, accuracy, or effectiveness of the underlying work. For

example, a municipality may receive points for completing a natural asset inventory, condition assessment, or lifecycle management strategy, but the rubric does not assess the accuracy and rigour of that work or the extent to which it has been effective in influencing municipal decisions. The maturity scores should therefore be interpreted as indicators of the trajectory of natural asset management maturity at an aggregate level, rather than evaluations of the performance of specific municipalities.

- **Information sources:** Differences in the information available in 2024 and 2026 may affect the extent of progress that could be demonstrated. As noted earlier, to prevent incomplete questionnaire responses or limited documentary evidence from being interpreted as regression, the 2024 score was retained wherever the 2026 evidence supported a lower score. As a result, the assessment may understate recent progress where new activity was not documented, but it does not reduce a municipality's score because previously completed work was not reconfirmed.

- **Response bias:** Municipalities that are more advanced in natural asset management may have been more likely to respond to the questionnaire or take part in interviews. As a result, questionnaire responses may not be representative of all Greenbelt Municipalities.

- **Interview participation:** Participating in interviews was optional, and 10 municipalities took part. The qualitative findings reflect the experiences of those municipalities and may not apply universally to all Greenbelt Municipalities.

Despite these limitations, the application of a consistent assessment rubric across all municipalities and over both study periods provides a reasonable basis for describing the current state of natural asset management across the Greenbelt and identifying broad changes since 2024. The results therefore are most appropriately interpreted at an aggregate level.

Chapter 3
State of Municipal Natural Asset Management in 2026 and Progress Since 2024

3. State of Municipal Natural Asset Management in 2026 and Progress Since 2024

This chapter presents the state of natural asset management across Greenbelt Municipalities in 2026 and examines the progress made since the 2024 study. It summarizes the maturity scores and levels assigned to the 73 municipalities, compares results across the seven assessment categories, describes the extent to which individual natural asset types have been integrated into municipal asset management plans, and identifies broader trends and patterns evident in the findings.

3.1 Interpretation of Results and Progress

The results should be interpreted in relation to the study methodology described in Chapter 2. Municipalities were assessed using questionnaire responses, reviews of asset management plans and related documents, or a combination of both. The information available for scoring therefore varied by municipality. Some criteria could not be assessed through document reviews alone because no explicit evidence was available. Consistent with the 2024 study, these criteria were recorded as not applicable where they could not be scored from the available documents.

The assessment measures cumulative progress in completing natural asset management planning components. Information gathered through the 2026 questionnaire, interviews, and document review was first assessed independently against the same 28 criteria and scoring rules used in 2024. Each resulting criterion-level score was then compared with the corresponding 2024 score. Where the 2026 evidence supported a higher score, the higher value was applied; otherwise, the 2024 value was retained. This approach recognizes that previously completed work continues to contribute to maturity even when supporting evidence is not reproduced in subsequent questionnaire responses or asset management documents. Retaining the 2024 baseline affected the results for a meaningful number of municipalities. Criterion-level scores from 2024 were retained for 34 of the 73 Greenbelt Municipalities across 153 individual criteria.

Changes in scores should therefore be interpreted as demonstrated additions to previously completed work. A higher score indicates that the 2026 evidence demonstrated further completion for at least one criterion, while an unchanged score

indicates that the available information did not demonstrate additional completion beyond the 2024 baseline. Under this approach, maturity scores and levels could increase or remain unchanged, but could not decrease.

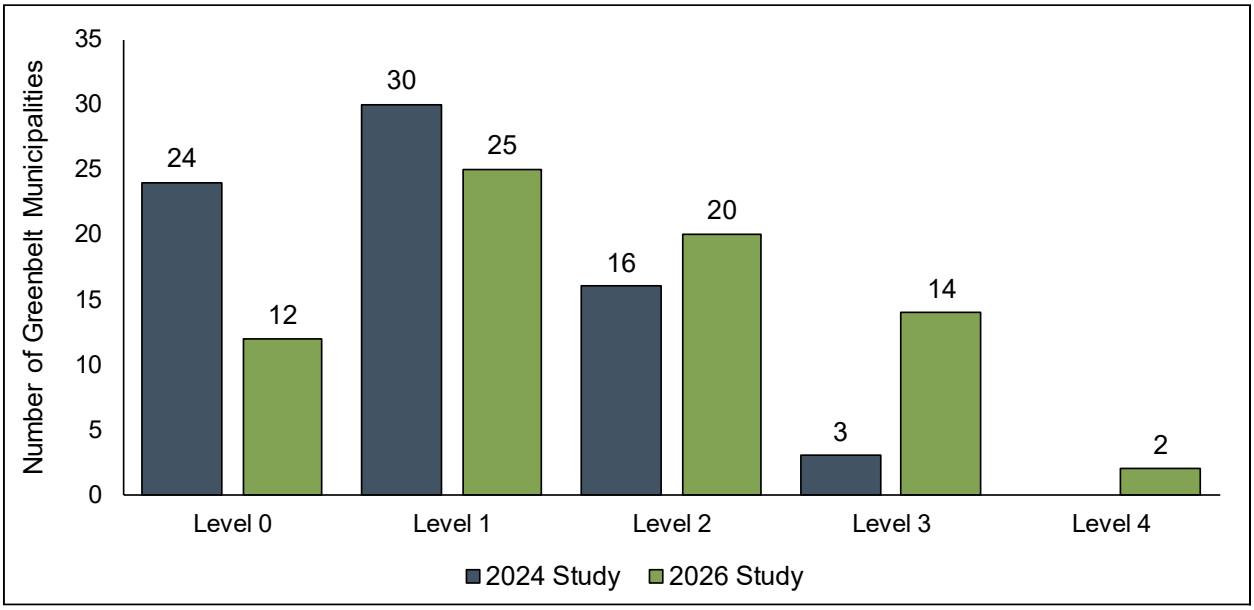
3.2 Natural Asset Management Maturity and Change Since 2024

Natural asset management maturity increased substantially between 2024 and 2026, although it continues to vary considerably across Greenbelt Municipalities. The average score increased from 5.2 to 10.3 points out of a possible 36, representing an increase of approximately 99%. The median increased from 1.0 to 9.0 points, indicating that progress extended beyond the municipalities that already had more advanced natural asset management programs in 2024. At the individual level, 49 municipalities increased their total score, while the remaining 24 retained their 2024 score.

Each municipality was also assigned a maturity level from 0 to 4 utilizing the same conditions used in 2024, which were presented earlier in Table 1-3. This approach ensures that higher maturity levels reflect completion across multiple asset management planning components rather than concentrated progress within a single category. Where a municipality received a half-point score between two maturity level ranges, its score was rounded down for the purpose of assigning a maturity level. This approach was consistent with the 2024 study.

Figure 3-1 illustrates the change in distribution of Greenbelt Municipalities by maturity level between 2024 and 2026.

Figure 3-1: Change in Distribution of Greenbelt Municipalities by Maturity Level, 2024 to 2026



Most Greenbelt Municipalities remain at the earlier stages of natural asset management maturity. Thirty-seven municipalities, representing 50.7% of those assessed, were assigned to Level 0 or 1 in 2026. Of these, 12 received no points, indicating that the available questionnaire responses and asset management documents did not demonstrate completion of any assessed criterion. The other 25 received between 1 and 9 points, indicating that some natural asset management activities had been completed but remained limited in scope.

Progress was evident among municipalities that had not previously demonstrated completion of any assessed component. The number at Level 0 decreased from 24 in 2024 to 12 in 2026, representing a 50% reduction. Under the cumulative scoring approach, this means that half of the municipalities at Level 0 in 2024 had demonstrated completion of at least one component by 2026. The number at Level 1 also decreased, from 30 to 25, representing a reduction of 16.7%.

Nearly half of Greenbelt Municipalities reached Level 2 or higher in 2026. Thirty-six municipalities, representing 49.3% of those assessed, reached these levels, compared with 19 in 2024, an increase of approximately 89%. Twenty reached Level 2, demonstrating completion across at least two assessment categories, compared with 16 in 2024, an increase of 25%.

The largest change in the maturity distribution occurred at the higher levels. Fourteen municipalities reached Level 3 in 2026, reflecting completion across at least four categories, compared with three in 2024, an increase of 366.7%. Two municipalities reached Level 4 by earning at least 28 points across five or more categories; none had reached this level in 2024. Together, the number at Level 3 or higher increased from three to 16, representing an increase of 433.3%.

The distribution of total scores indicates that higher-scoring municipalities continue to raise the overall average. The 2026 average of 10.3 points remained above the median of 9.0 points. However, the median indicates that at least half of the municipalities assessed had reached the upper end of Level 1 or a higher maturity level.

3.3 Results and Progress by Assessment Category

Progress was recorded across all seven assessment categories between 2024 and 2026. Average scores increased by more than 60% in every category, including increases of more than 100% in Levels of Service, Climate Change Measures, and Lifecycle Management and Financial Strategies. The category results provide a more detailed understanding of the components municipalities have completed, the areas in which they have advanced, and those where completion remains limited.

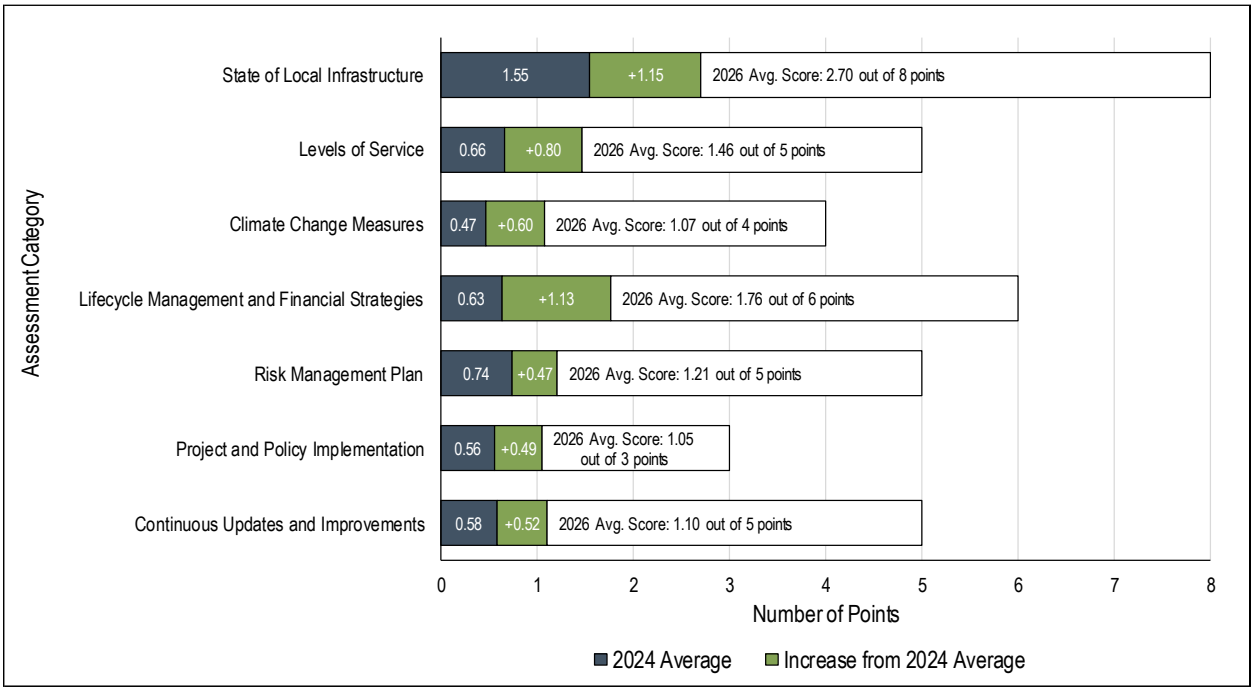
Table 3-1 presents the 2026 average and median score in each category, the maximum possible score in each category, the average as a percentage of the maximum possible score, and the number of municipalities earning points.

Table 3-1: 2026 Results by Assessment Category

Assessment Category	Maximum Possible Score	Average Score	Median Score	Avg. as a % of Maximum	Municipalities Earning Points
State of Local Infrastructure	8	2.70	2.5	33.7%	53
Levels of Service	5	1.46	1.5	29.2%	46
Climate Change Measures	4	1.07	1.0	26.7%	37
Lifecycle Management and Financial Strategies	6	1.76	1.5	29.3%	51
Risk Management Plan	5	1.21	0.5	24.2%	39
Project and Policy Implementation	3	1.05	1.0	35.2%	50
Continuous Updates and Improvements	5	1.10	0.0	21.9%	35
Overall	**36**	**10.35**	**9.0**	**28.7%**	**61**

Figure 3-2 illustrates the change in average scores between 2024 and 2026 across the seven assessment categories.

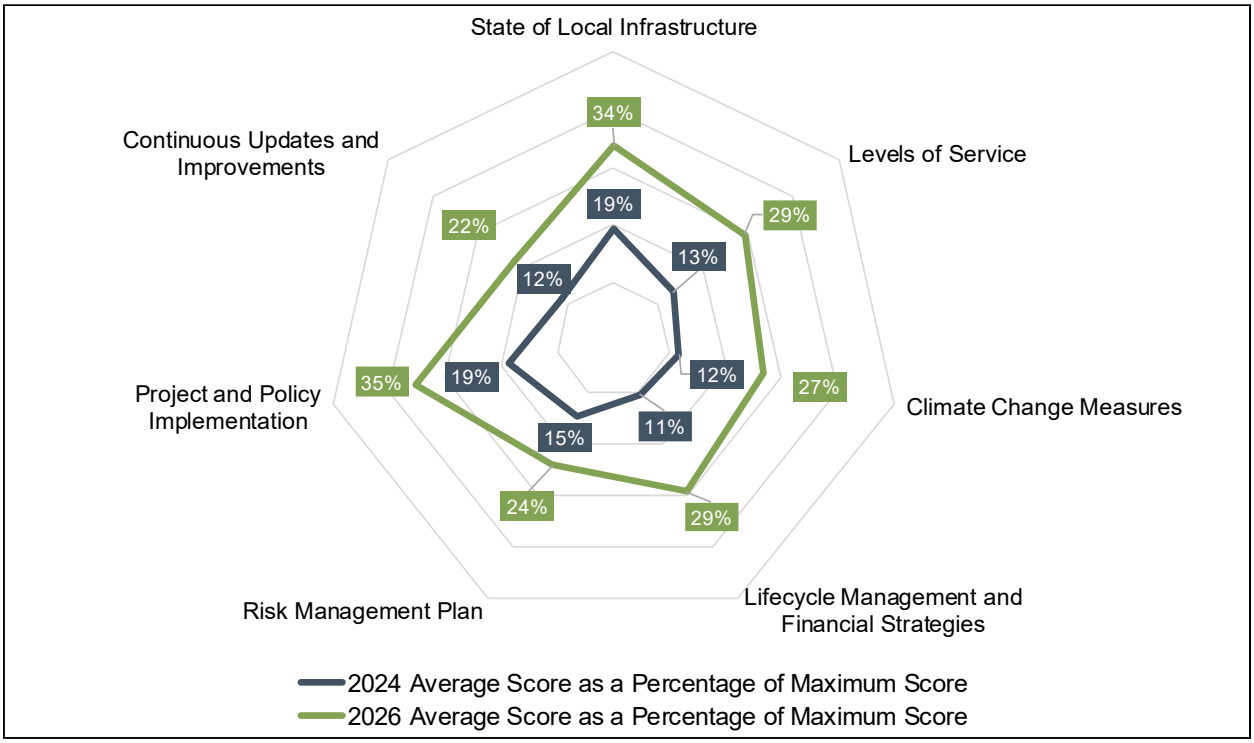
Figure 3-2: Change in Average Score by Assessment Category, 2024 to 2026



Improvement is also evident across all seven assessment categories between 2024 and 2026 when average scores are expressed as a percentage of each category's maximum possible score. The largest gain was in Lifecycle Management and Financial Strategies, where the average score increased from 11% to 29% of the maximum possible score. Levels of Service and Project and Policy Implementation also recorded notable gains, with average scores increasing from 13% to 29% and from 19% to 35% of their respective maximum possible scores. Risk Management Plan and Continuous Updates and Improvements recorded modest gains and remained the lowest-scoring categories relative to their maximum possible scores. Despite this progress, average scores remained between 22% and 35% of the maximum possible score in 2026, indicating that substantial work remains across all categories.

Figure 3-3 illustrates the change from 2024 to 2026 in the average score for each assessment category, expressed as a percentage of the category's maximum score.

Figure 3-3: Change in Average Scores by Assessment Category as a Percentage of Maximum Score, 2024 to 2026



3.3.1 State of Infrastructure

The average score in the State of Infrastructure category increased from 1.55 to 2.70 out of 8 points between 2024 and 2026, representing an increase of 74.2%. The number of municipalities earning points increased from 36 to 53. Nearly three-quarters of Greenbelt Municipalities had therefore completed at least one activity related to inventories, service identification, replacement cost valuation, condition assessment, or the integration of natural assets into an asset management plan.

Progress was observed across all five criteria within this assessment category. The number of municipalities identifying the services supported by their natural assets increased from 22 to 43. Those completing replacement cost valuations increased from 28 to 43, while those completing condition assessments increased from 29 to 44. The number incorporating natural assets into their asset management plans more than doubled, increasing from 24 to 50.

Despite this progress, foundational analyses remain incomplete for many natural asset portfolios. The average score represents approximately one-third of the maximum available points, indicating that inventories often cover only selected asset types and that replacement cost valuations, condition assessments, and full integration into asset management plans have not been completed consistently for all natural assets.

The change in average scores across the five criteria within this assessment category between 2024 and 2026 is summarized in Table 3-2.

Table 3-2: Change in Average Scores for State of Local Infrastructure Criterion, 2024 to 2026

Criterion	Maximum Score	2024 Avg. Score	2024 Avg. as a % of Maximum	2026 Avg. Score	2026 Avg. as a % of Maximum
Completion of natural asset inventories	3	1.42	47.5%	0.93	31.1%
Identification of municipal service(s) supported by natural assets	1	0.16	16.4%	0.34	34.2%
Completion of replacement cost valuations	1	0.22	21.9%	0.34	33.6%
Completion of condition assessments	2	0.36	17.8%	0.66	32.9%
Integration into asset management plan	1	0.17	17.1%	0.43	43.2%
Total	**8**	**1.55**	**19.4%**	**2.70**	**33.7%**

3.3.2 Levels of Service

Substantial progress was observed in the Levels of Service category between 2024 and 2026. The average score increased from 0.66 to 1.46 out of 5 points, representing an increase of 121.2%. The number of municipalities earning points increased from 27 to 46. The 2026 median score of 1.5 points indicates that at least half of the municipalities had completed some work related to service attributes, community levels of service, or technical levels of service.

Completion increased across all five criteria in this category. The number of municipalities identifying relevant service attributes increased from 24 to 41 while those determining the relative importance of these attributes increased from 10 to 23. Municipalities defining community levels of service increased from 23 to 43 and those defining technical levels of service increased from 20 to 39. The number establishing proposed levels of service increased most markedly, from eight to 34.

Work remains more concentrated on current levels of service than on proposed levels of service. Current levels of service describe existing performance, while proposed levels of service establish the performance municipalities intend to achieve and provide the basis for identifying future lifecycle requirements and associated costs. Although proposed levels of service remain less prevalent, their increased adoption indicates that more municipalities are progressing beyond describing current performance and towards establishing future service objectives.

The change in average scores across the five criteria within this assessment category between 2024 and 2026 is summarized in Table 3-3.

Table 3-3: Change in Average Scores for Levels of Service Criterion, 2024 to 2026

Criterion	Maximum Score	2024 Avg. Score	2024 Avg. as a % of Maximum	2026 Avg. Score	2026 Avg. as a % of Maximum
Identification of service attributes	1	0.21	20.5%	0.36	35.6%
Determination of relative importance of service attributes	1	0.07	6.8%	0.18	17.8%
Determination of community levels of service	1	0.18	18.5%	0.35	34.9%
Determination of current service levels	1	0.15	15.1%	0.32	31.5%
Determination of proposed service levels	1	0.05	5.5%	0.26	26.0%
Total	**5**	**0.66**	**13.3%**	**1.46**	**29.2%**

3.3.3 Climate Change Measures

Within the Climate Change Measures category, increased completion of climate-related analyses was observed between 2024 and 2026. The average score increased from 0.47 to 1.07 out of 4 points, representing an increase of 127.7%. The number of municipalities earning points increased from 26 to 37 and the 2026 median score was 1.0 point.

Progress was evident in the assessment of financial costs associated with climate change, although this work remained limited to a relatively small number of municipalities. The number earning points for this criterion increased from two to 14. More municipalities also identified additional lifecycle strategies to reduce climate-related risks, indicating that some are beginning to incorporate these risks into lifecycle planning.

Quantification of climate-related financial impacts nevertheless remained less common than other work in this category. Municipalities most often earned points for assessing climate-related impacts on asset condition or identifying lifecycle strategies to mitigate those impacts. While financial analysis became more prevalent, fewer municipalities had translated climate-related risks into quantified financial requirements.

The change in average scores across the three criteria within this assessment category between 2024 and 2026 is summarized in Table 3-4.

Table 3-4: Change in Average Scores for Climate Change Measures Criterion, 2024 to 2026

Criterion	Maximum Score	2024 Avg. Score	2024 Avg. as a % of Maximum	2026 Avg. Score	2026 Avg. as a % of Maximum
Integration of climate change impacts into asset performance forecasts	1	0.05	5.5%	0.26	26.0%
Identification of additional lifecycle management strategies to manage climate change risk	1	0.36	35.6%	0.48	47.9%
Assessment of financial costs associated with climate change	2	0.05	2.7%	0.33	16.4%
Total	**4**	**0.47**	**11.6%**	**1.07**	**26.7%**

3.3.4 Lifecycle Management and Financial Strategies

The largest proportional increase in average score among the assessment categories was observed in the Lifecycle Management and Financial Strategies category. The average score increased from 0.63 to 1.76 out of 6 points, representing an increase of 179.4%. The number of municipalities earning points in this category increased from 27 to 51.

Progress extended across lifecycle planning, financial forecasting, and budget integration. The number of municipalities completing lifecycle management strategies increased from 21 to 41, while those preparing related financial forecasts increased from 22 to 40. Municipalities considering natural asset lifecycle expenditure forecasts when preparing annual budgets increased from 16 to 33.

The identification of non-infrastructure solutions also became more common. The number of municipalities earning points for this work increased from 12 to 36. These solutions include policy and by-law changes, public education and outreach, land-use planning measures, and partnerships with other organizations.

Lifecycle and financial planning remain more focused on maintaining current levels of service than achieving proposed levels of service. Municipalities most commonly earned points for identifying lifecycle activities or preparing expenditure forecasts to maintain current performance. Despite the increased consideration of lifecycle forecasts in annual budgets, comprehensive integration of natural asset requirements into municipal budgets and financial strategies remains limited.

The change in average scores across the four criteria within this assessment category between 2024 and 2026 is summarized in Table 3-5.

Table 3-5: Change in Average Scores for Lifecycle Management and Financial Strategies Criterion, 2024 to 2026

Criterion	Maximum Score	2024 Avg. Score	2024 Avg. as a % of Maximum	2026 Avg. Score	2026 Avg. as a % of Maximum
Completion of lifecycle management strategies to support current and proposed levels of service	2	0.21	10.3%	0.61	30.5%
Completion of lifecycle expenditure forecasts to support current and proposed levels of service	2	0.21	10.6%	0.60	30.1%
Identification of non-infrastructure solutions	1	0.09	8.9%	0.29	28.8%
Consideration of lifecycle expenditure forecasts in annual budgets	1	0.33	33.3%	0.26	26.0%
Total	**6**	**0.63**	**10.5%**	**1.76**	**29.3%**

3.3.5 Risk Management Plan

Within the Risk Management Plan category, a more modest increase in average score was observed relative to the other categories. The average score increased from 0.74 to 1.21 out of 5 points, representing an increase of 63.5%. The number of municipalities earning points increased from 23 to 39. The 2026 median score was 0.5 points, and 34 municipalities received no points.

Completion increased across risk assessment and treatment activities. The number of municipalities completing probability and consequence of failure analyses increased from 23 to 37. Those incorporating climate-related or environmental risks increased from 11 to 21, while those developing risk treatment matrices doubled from 12 to 24.

Risk management nevertheless remains one of the least advanced areas of municipal natural asset management. Some municipalities have identified consequence of failure factors or assigned probability and consequence of failure ratings to selected assets. Fewer have developed treatment frameworks that connect these ratings with specific management actions, and the integration of climate-related risks remains limited.

The change in average scores across the three criteria within this assessment category between 2024 and 2026 is summarized in Table 3-5.

Table 3-6: Change in Average Scores for Risk Management Plan Criterion, 2024 to 2026

Criterion	Maximum Score	2024 Avg. Score	2024 Avg. as a % of Maximum	2026 Avg. Score	2026 Avg. as a % of Maximum
Identification of consequence of failure factors and determination of probability of failure and consequence of failure ratings	3	0.48	16.0%	0.77	25.6%
Integration of climate change risks	1	0.11	11.0%	0.22	21.9%
Completion of risk treatment framework which identifies treatment actions based on risk scores	1	0.15	15.1%	0.23	22.6%
Total	**5**	**0.74**	**14.8%**	**1.21**	**24.2%**

3.3.6 Project and Policy Implementation

The Project and Policy Implementation category had the highest average score relative to its maximum in 2026, at 35.2%. The average numerical score increased from 0.56 to 1.05 out of 3 points, representing an increase of 87.5%. The number of municipalities earning points increased from 29 to 50 and the 2026 median score was 1.0 point.

The identification of barriers and opportunities remained the most commonly completed criterion in this category. The number of municipalities earning points for this work increased from 29 to 50. Those using natural asset information to support a business case increased from four to 14, while those making changes to relevant municipal policies increased from 10 to 13.

These results indicate that natural assets are becoming more formally recognized in municipal policies and decision-making processes. Some municipalities have amended policies, official plans, or other corporate documents to recognize natural assets. However, fewer have demonstrated that their asset management plans are being used to establish business cases for restoration or conservation projects. Policy recognition

has therefore not yet translated consistently into project initiation and investment decisions.

The change in average scores across the three criteria within this assessment category between 2024 and 2026 is summarized in Table 3-7.

Table 3-7: Change in Average Scores for Project and Policy Implementation Criterion, 2024 to 2026

Criterion	Maximum Score	2024 Avg. Score	2024 Avg. as a % of Maximum	2026 Avg. Score	2026 Avg. as a % of Maximum
Identification of barriers and opportunities related to natural asset management	1	0.40	39.7%	0.68	68.5%
Success in establishing business case for natural asset restoration or conservation projects	1	0.15	14.8%	0.19	19.2%
Modifications to municipal policies or by-laws to incorporate natural assets	1	0.30	29.6%	0.18	17.8%
Total	**3**	**0.56**	**18.7%**	**1.05**	**35.2%**

3.3.7 Continuous Updates and Improvement

Some progress was observed in the Continuous Updates and Improvement category, but it remained the category with the lowest average score relative to its maximum. The average increased from 0.58 to 1.10 out of 5 points, representing an increase of 89.7%. The number of municipalities earning points increased from 22 to 35. In 2026, the average represented 21.9% of the maximum available score, while 38 municipalities received no points and the median score was zero.

Municipalities earned points for sharing achievements, identifying and tracking continuous improvement initiatives, implementing other long-term mechanisms, or

monitoring progress towards proposed levels of service. The number sharing natural asset management achievements increased from 10 to 19, while those tracking progress towards proposed levels of service increased from three to nine.

The increases indicate that a growing group of municipalities is treating natural asset management as an ongoing program rather than a one-time planning exercise. Nevertheless, formal processes for monitoring, reporting, and improving practices remain uncommon, including among municipalities that have completed foundational asset management components.

The change in average scores across the four criteria within this assessment category between 2024 and 2026 is summarized in Table 3-8.

Table 3-8: Change in Average Scores for Continuous Updates and Improvement Criterion, 2024 to 2026

Criterion	Maximum Score	2024 Avg. Score	2024 Avg. as a % of Maximum	2026 Avg. Score	2026 Avg. as a % of Maximum
Sharing of natural asset management achievements internally or externally	1	0.37	37.0%	0.26	26.0%
Implementation of long-term improvement measures or initiatives	1	0.07	7.4%	0.04	4.1%
Completion of continuous improvement plan and ongoing tracking of included initiatives	2	0.37	18.5%	0.67	33.6%
Tracking of progress to achieve proposed levels of service for natural assets	1	0.04	4.1%	0.12	12.3%
Total	**5**	**0.58**	**11.5%**	**1.10**	**21.9%**

3.4 Integration of Natural Assets by Asset Type

The analysis of individual natural asset types reflects the 40 questionnaire responses received in 2026 rather than all 73 Greenbelt Municipalities. Participants were asked to identify the natural asset types within their municipal boundaries and, for each type, whether an inventory and other asset management planning components had been completed.

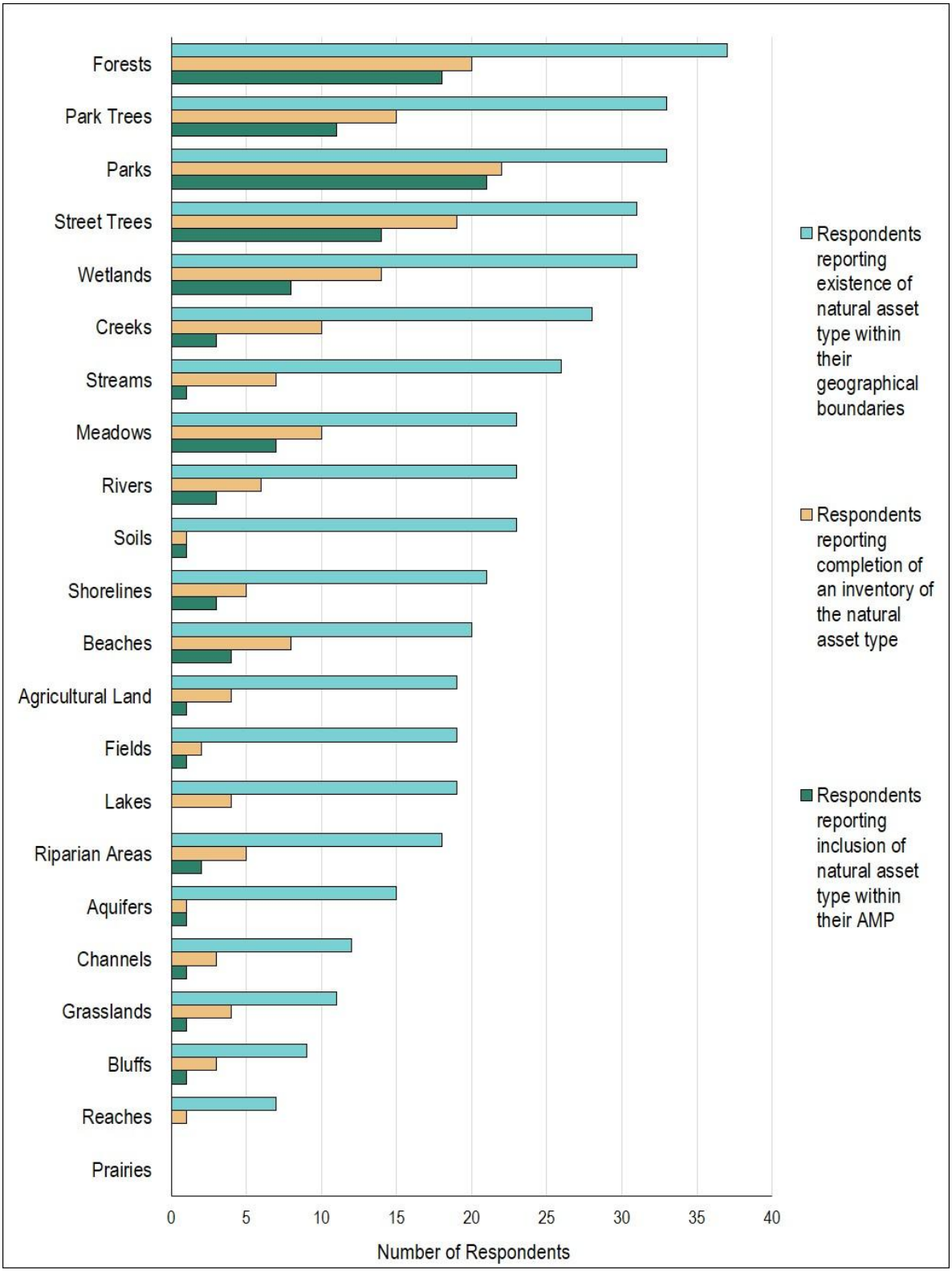
Table 3-9 summarizes how frequently each asset type was reported, inventoried, and included in the municipality's most recent asset management plan. This information is further illustrated in Figure 3-4.

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Table 3-9: Integration of Natural Assets by Asset Type Among Questionnaire Respondents

Natural Asset Type	Respondents with Asset Type in Municipality	Respondents with an Inventory of Asset Type	Respondents Including Asset Type in AMP
Forests	37	20	18
Park Trees	33	15	11
Parks	33	22	21
Street Trees	31	19	14
Wetlands	31	14	8
Creeks	28	10	3
Streams	26	7	1
Meadows	23	10	7
Rivers	23	6	3
Soils	23	1	1
Shorelines	21	5	3
Beaches	20	8	4
Agricultural Land	19	4	1
Fields	19	2	1
Lakes	19	4	0
Riparian Areas	18	5	2
Aquifers	15	1	1
Channels	12	3	1
Grasslands	11	4	1
Bluffs	9	3	1
Reaches	7	1	0
Prairies	0	0	0

Figure 3-4: Integration of Natural Assets by Asset Type Among Questionnaire Respondents



Forests were the natural asset type most commonly reported to exist within municipal boundaries, identified by 37 respondents. Parks and park trees followed, each reported by 33 respondents, while wetlands and street trees were each reported by 31. Parks were also the natural asset type most frequently inventoried and included in asset management plans. Twenty-two respondents reported having a parks inventory, and 21 reported including parks in their most recent asset management plan. Forests and street trees were the next most frequently included asset types, appearing in the asset management plans of 18 and 14 respondents, respectively. Park trees were included by 11 respondents. These findings indicate that integration is most extensive for natural assets commonly located on municipal property.

Integration was less extensive for natural systems that may cross property boundaries or be managed in coordination with conservation authorities and other organizations. Although wetlands, creeks, streams, rivers, riparian areas, and shorelines were widely reported, relatively few respondents included these assets in their asset management plans. For example, wetlands were reported by 31 respondents but included in only eight asset management plans. Streams were reported by 26 respondents but included only in one asset management plan, while creeks were reported by 28 respondents and included in three asset management plans.

Soils, aquifers, agricultural land, fields, and channels were also seldom included in asset management plans. Soils were reported by 23 respondents but inventoried and included in an asset management plan by only one. Aquifers were reported by 15 respondents and included in one asst management plan, while agricultural land was reported by 19 respondents and included in one asset management plan. These results may partly reflect uncertainty about municipal ownership and responsibility, which is discussed further in Section 4.2.3.

This gap between the number of natural asset types reported to exist within municipal boundaries and the number incorporated into asset management plans indicates that most respondents are integrating natural assets incrementally. Rather than addressing every natural asset type at once, municipalities generally appear to be starting with a smaller group of assets for which ownership, inventory data, and management responsibility are clearer.

Figure 3-5 compares the percentage of questionnaire respondents reporting each natural asset type within their municipal boundaries in 2024 and 2026.

Figure 3-5: Percentage of Respondents Reporting Each Natural Asset Type Within Municipal Boundaries, 2024 and 2026

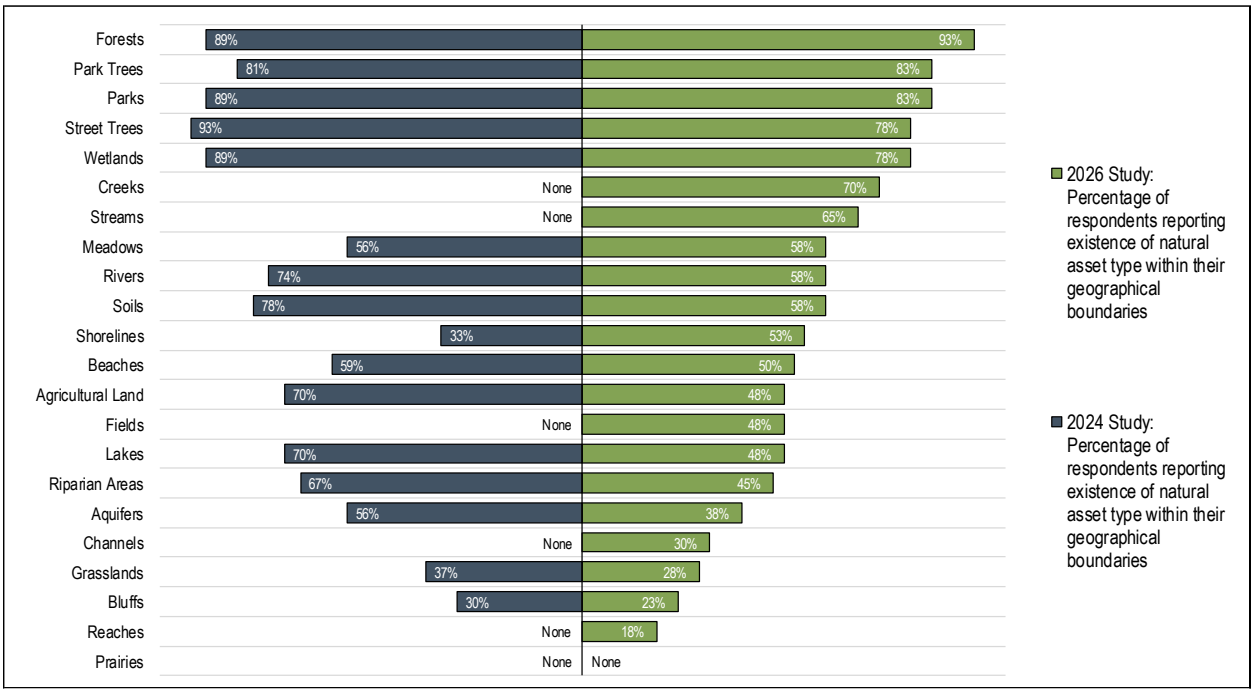


Figure 3-6 compares the percentage of questionnaire respondents reporting completion of an inventory for each natural asset type in 2024 and 2026.

Figure 3-6: Percentage of Respondents Reporting Completion of an Inventory for Each Natural Asset Type, 2024 and 2026

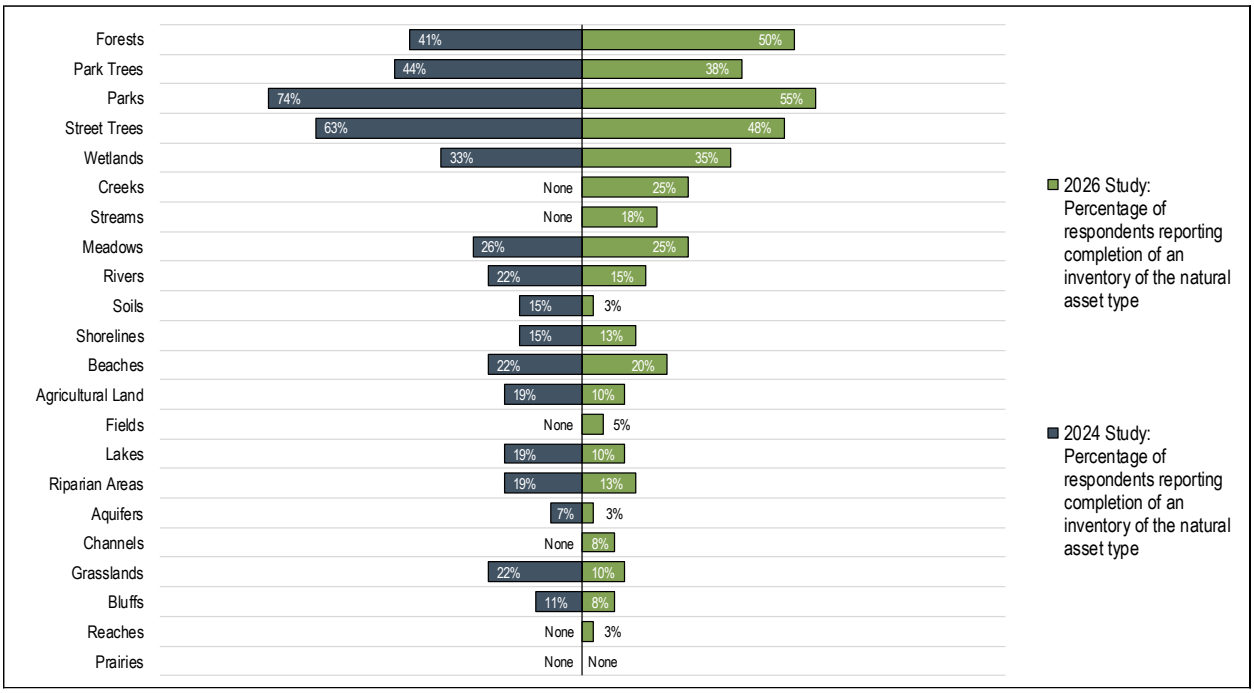
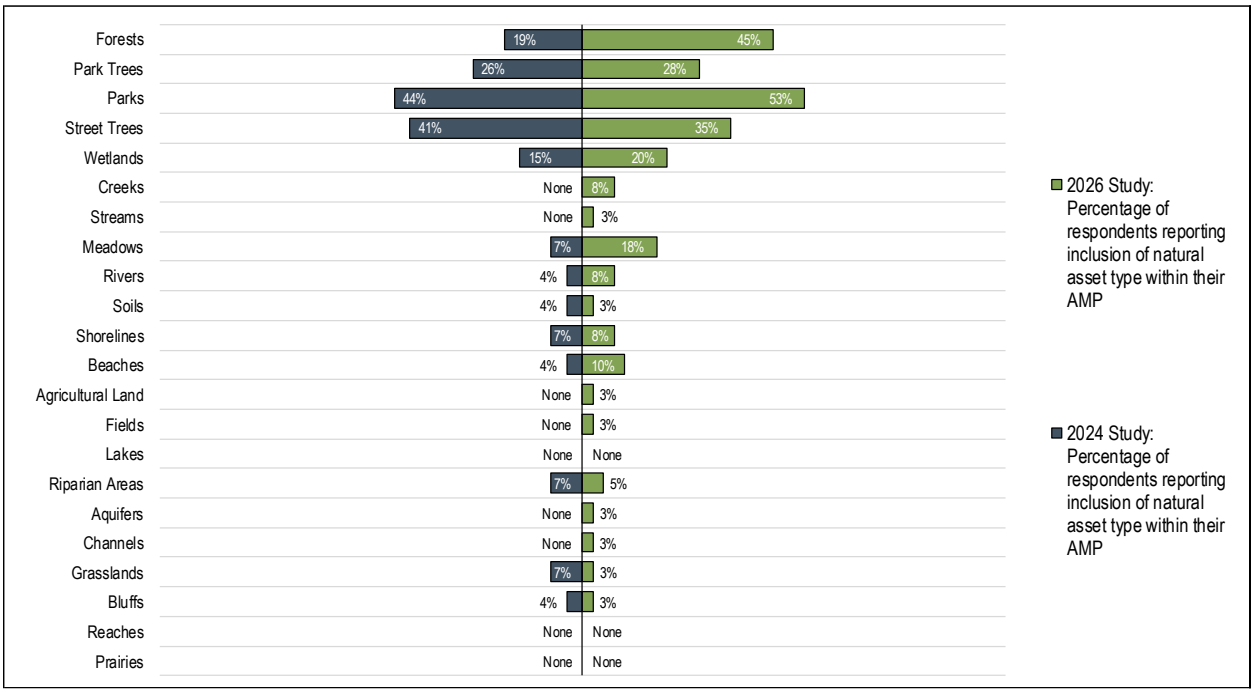


Figure 3-7 compares the percentage of questionnaire respondents reporting inclusion of each natural asset type in their most recent asset management plan in 2024 and 2026.

Figure 3-7: Percentage of Respondents Including Each Natural Asset Type in Their Asset Management Plan, 2024 and 2026



It is noted that differences in response rates between the 2024 and 2026 studies limit the extent to which changes in the reported integration of natural assets can be attributed to progress, as the results are based on questionnaire responses rather than a consistent assessment of all Greenbelt Municipalities. The number of questionnaire respondents increased from 27 in 2024 to 40 in 2026, meaning that the comparison reflects a larger respondent group whose composition also differs. A lower percentage in 2026 therefore does not necessarily indicate a corresponding decrease in the number of municipalities, as it may be a consequence of the larger respondent group. Differences in the composition of respondents between the two studies also influence the comparisons, as municipalities vary in terms of the natural assets existing within their boundaries and the extent to which those assets have been incorporated into asset management plans. The comparisons are therefore most useful for identifying broad patterns in reported integration rather than measuring progress or regression for individual asset types.

3.5 Trends and Patterns

3.5.1 Foundational Activities Are More Common Than Ongoing Management

Overall, the results indicate that natural asset management generally follows a progressive sequence, consistent with historical advancement in asset management for engineered infrastructure. Activities associated with understanding what assets exist and recognizing them in municipal policies are more common than the later-stage activities needed to manage them over the long term. This pattern is evident in category averages and medians, the number of municipalities earning points, and the detailed questionnaire responses.

Nevertheless, progress since 2024 extends beyond foundational inventory work. Increased completion of proposed levels of service, lifecycle and financial analyses, climate-related cost assessments, and risk treatment frameworks indicates that more municipalities are developing the components needed to guide future service delivery and investment. However, the comparatively low scores for risk management and continuous improvement show that these practices are not yet broadly established.

3.5.2 Municipalities Are Generally Advancing One Asset Type or Component at a Time

The questionnaire results indicate that natural asset management is generally being advanced incrementally rather than through comprehensive integration of all natural asset types. Parks, street trees, park trees, and forests account for most of the asset types included in asset management plans. Other natural systems, including wetlands, watercourses, soils, aquifers, shorelines, and agricultural land, are frequently identified within municipal boundaries, but are much less frequently incorporated ino asset management plans.

A similar pattern is evident within the assessment categories. Forty-six municipalities earned points in Levels of Service, but the average score was only 1.46 out of 5. Fifty-one earned points in Lifecycle Management and Financial Strategies, but the average was 1.76 out of 6. These results indicate that many municipalities have completed selected components or addressed some asset types, but fewer have completed comprehensive asset management analyses consistently across their natural asset portfolios.

3.5.3 Progress is Widespread, but Maturity Remains Uneven

Progress since 2024 was not confined to municipalities with more advanced natural asset management programs. Forty-nine municipalities increased their total score, the median rose from 1.0 to 9.0 points, and the number at Level 0 decreased from 24 to 12. These findings indicate advancement among municipalities initiating foundational work as well as those completing more advanced components.

Maturity nevertheless remains unevenly distributed. The average score of 10.3 points exceeded the median of 9.0, indicating that higher-scoring municipalities raised the overall average. The maturity distribution reinforces this pattern. Sixteen municipalities reached Level 3 or 4, while 37 remained at Level 0 or 1. The results therefore show a smaller group completing multiple asset management components and a larger group remaining at the initial stages of natural asset management.

3.5.4 Summary

Natural asset management has advanced substantially since 2024, but integration remains partial and uneven. More municipalities have identified and inventoried natural assets, defined their services, and recognized them in municipal policies. A growing number have also established proposed levels of service and completed lifecycle, financial, climate change, and risk analyses. However, comprehensive application across entire natural asset portfolios remains less common.

Chapter 4
Challenges and Barriers

4. Challenges and Barriers

4.1 Continuing Challenges and Barriers

The lack of financial resources, staffing resources, and subject-matter expertise remain the most commonly reported barriers to advancing natural asset management across Greenbelt Municipalities. The 2024 study identified these same three challenges as the key barriers preventing municipalities from fully integrating natural assets into their asset management plans. In 2026, they were again raised most frequently in both the interviews and the questionnaire responses, by municipalities of all sizes and levels of maturity.

These challenges are expected to persist for some time. Municipalities face the same constraints in managing their engineered assets, where funding gaps, limited staff capacity, and evolving technical practices have been addressed gradually over many years and in ways suited to each municipality's unique circumstances. Natural assets are likely to follow a similar path, with each municipality balancing these constraints against its own priorities, resources, and Council direction. However, the way each challenge presents itself has changed since 2024, as described in the following subsections. These changes can help inform where the Foundation's support can be most effective.

The Foundation can help municipalities use their available resources more effectively by providing guidance, training, opportunities for collaboration, and access to technical expertise. However, its ability to directly resolve these underlying constraints in the short term is limited. The findings presented in this section provide important context for distinguishing these continuing structural constraints from the barriers that the Foundation may be able to directly address in the short term.

4.1.1 Lack of Financial Resources

Limited financial resources continue to restrict municipalities' ability to develop and implement natural asset management programs. The 2024 study found that municipalities lacked sufficient funding to complete the foundational work required to support effective asset management planning (e.g., compiling inventories, assessing condition, etc.). It also found that some municipalities were not fully aware of the

external funding opportunities available to support natural asset and green infrastructure initiatives and lacked the administrative capacity required to prepare grant applications.

The 2026 findings indicate that the financial challenge has evolved as some municipalities have advanced beyond preliminary planning. Municipalities continue to require funding for inventories, valuations, condition assessments, and other foundational work, but several now also face the more substantial cost of implementing completed asset management plans for natural assets. This includes funding lifecycle activities, condition monitoring programs, asset data maintenance activities, and the capital and operating expenditures required to sustain or improve levels of service. As discussed later in Section 4.2.1, some Councils have approved natural asset management plans without committing the ongoing funding required to implement them.

Securing this funding remains difficult because natural assets compete with roads, water systems, facilities, and other engineered assets for limited municipal resources. Staff reported that these competing needs often receive greater priority because their deficiencies and investment outcomes are more immediate and visible. The difficulty of demonstrating the benefits of investing in natural assets is discussed further in Section 4.2.1.

The findings also suggest that external grants remain important but do not provide a complete solution. Grants can allow municipalities to initiate inventories, studies, and pilot projects, but implementation requires stable funding annually. Municipalities must therefore establish how natural asset needs will be considered through annual budgets and long-term financial planning rather than relying exclusively on temporary external funding.

The Foundation can continue to improve awareness of funding opportunities and assist municipalities in preparing grant applications. However, it cannot directly resolve the broader infrastructure funding constraints facing municipalities or determine how limited municipal resources are allocated. Each municipality will need to balance natural asset needs against its other service priorities and establish an affordable approach to implementation.

4.1.2 Lack of Staffing Resources

Limited staffing resources continue to constrain the amount of time and organizational capacity municipalities can dedicate to natural asset management. The 2024 study

found that many municipalities lacked staff with dedicated responsibility for natural assets and that available personnel were often required to complete this work alongside their existing duties. It recommended greater use of regional collaboration and conservation authority partnerships to help municipalities draw on shared capacity and expertise.

The 2026 findings demonstrate that these pressures remain widespread, particularly among smaller municipalities. Staff reported insufficient capacity to compile and maintain asset inventories, coordinate information across departments, undertake technical analyses, and integrate completed studies into their asset management programs. In some municipalities, fewer than one full-time equivalent is dedicated to the broader asset management program, while others have only recently established a dedicated asset management position.

Even for municipalities that have successfully secured dedicated staffing resources, capacity remains fragile. Some of these newly created positions are shared with neighbouring municipalities or filled on a temporary basis. Some municipalities are also anticipating hiring freezes following the 2026 municipal election. However, where newly created positions exist, municipalities attributed much of their recent progress in natural asset management to the added capacity.

Staff turnover further compounds these capacity constraints. Where natural asset management knowledge is concentrated in one employee, a shared position, or temporary staff, turnover can interrupt progress and result in the loss of institutional knowledge. Even where municipalities have established environmental or asset management positions, those staff may be responsible for several unrelated initiatives and have limited time available for natural asset management.

Partnerships with conservation authorities, academic institutions, consultants, neighbouring municipalities, and community organizations have helped some municipalities supplement their internal capacity. However, these arrangements do not eliminate the need for municipal staff to coordinate the work, retain organizational knowledge, maintain the resulting information, and integrate findings into municipal decisions.

The Foundation can help municipalities make better use of limited staff capacity by supporting regional service delivery models, creating expert-led working groups, developing practical templates, and providing tailored technical assistance. It cannot,

however, directly resolve municipal staffing shortages or competing demands on staff time. Municipalities will need to determine whether their needs are best addressed through dedicated positions, shared services, consultants, phased implementation, or a combination of these approaches.

4.1.3 Lack of Subject-Matter Expertise

Limited subject-matter expertise remains a significant barrier to integrating natural assets into municipal asset management programs. The 2024 study found that municipalities lacked established methodologies and technical guidance for compiling inventories, completing replacement cost valuations and condition assessments, establishing levels of service, developing risk and asset criticality frameworks, developing lifecycle management strategies, and integrating natural asset information into existing software (e.g., asset management software, GIS, etc.).

Since 2024, awareness of natural asset management has increased and additional guidance has become available. However, municipalities that have started inventorying their natural assets now described more specific technical gaps rather than the general uncertainty about how to begin that was commonly reported in 2024. These methodological gaps are discussed further in Section 4.2.2.

This challenge has evolved as municipalities have moved from understanding natural asset management concepts to applying them within their own established asset management programs. Municipalities increasingly require guidance that connects ecological information with conventional asset management planning components, including state of infrastructure analyses, levels of service, lifecycle management strategies, and financial planning.

Several interviews indicated that expertise in natural asset management and expertise in asset management often reside in different departments or organizations, with neither group possessing all the knowledge required to complete the work independently. The knowledge gap is therefore both technical and organizational. Environmental and planning staff may understand ecological systems but have limited experience with asset management and financial planning. Conversely, engineering, finance, public works, and asset management staff may understand conventional infrastructure planning but lack familiarity with the characteristics and management needs of natural assets. Differences in terminology and professional approaches can impede the integration of these knowledge areas even where staff collaborate across departments.

Municipalities also reported limited access to experienced consultants as a challenge. Some staff indicated that traditional asset management consultants were not sufficiently familiar with natural assets.

Subject-matter expertise is the continuing challenge that the Foundation is best positioned to influence. The Foundation can help consolidate available guidance, support training, facilitate knowledge sharing, document municipal case studies, and provide access to experts.

4.2 Emerging Challenges and Barriers

As municipalities have advanced their natural asset management practices, several challenges have emerged or become more prominent since the 2024 study. Unlike the continuing resource and knowledge constraints discussed in Section 4.1, these challenges generally arise as municipalities move toward the integration of natural asset management within established municipal processes and workflows. Some challenges stem from external pressures that have intensified since 2024, including invasive species management, climate change impacts, and increasing competition with other strategic priorities.

These challenges do not necessarily indicate that the barriers identified in 2024 have been replaced. Rather, they reflect the additional issues municipalities encounter as their natural asset management programs mature. The following subsections examine the most prevalent emerging challenges and identify the areas in which focused support from the Foundation could help municipalities progress from planning to implementation.

4.2.1 Difficulty Establishing Business Case and Demonstrating Return on Investment

Municipalities continue to face difficulty establishing a compelling business case for investment in natural assets. Although the 2024 study recognized the need for municipalities to demonstrate the criticality of natural infrastructure, municipal feedback in 2026 indicates that this has become a more immediate challenge as municipalities seek sustainable annual funding to implement completed natural asset management plans.

The benefits of investing in natural assets are often less visible than those associated with engineered infrastructure. Investments in roads, facilities, and other engineered assets can produce tangible improvements that are readily understood by Council and the public. By comparison, investing in natural assets generally aims to sustain the services they already provide and prevent their decline. Municipalities described this work as largely preventive: when it succeeds, the flooding, shoreline erosion, or loss of tree canopy it guards against does not happen. This distinction makes it difficult for municipal staff to demonstrate the value of proposed expenditures. Council may therefore question the value of investing additional funds where the intended outcome is to sustain current conditions rather than deliver an observable improvement.

Municipalities also noted that the decline of natural assets is often not apparent to the public. For example, a woodland overtaken by invasive species may look healthy to most residents even as its biodiversity and ecological function deteriorate. One municipality said this has led to a long-standing assumption that natural assets need little or no investment to stay in their current condition.

Several municipalities reported that Council supports natural asset management in principle but has not committed funding to put it into practice:

- One municipality's Council approved its natural asset plan but declined to endorse the recommended lifecycle scenario. That scenario would have required additional annual funding to sustain current levels of service, and Council members questioned the return on an investment that would maintain the status quo.
- Another municipality deliberately sought Council endorsement of current levels of service only, as it did not expect Council to support a request for additional funding to improve service levels.
- Several municipalities have paused requests to raise levels of service until the Council elected in 2026 has set its priorities.

Municipalities also reported that the technical nature of natural asset management makes the business case harder to communicate:

- Council members may question whether a dollar value can be placed on nature, or confuse related concepts such as replacement cost and the value of ecosystem services.

- Some municipalities do not yet have enough confidence in their natural asset data to report investment needs and funding gaps for natural assets.
- Available case studies rarely include the costs of the work they describe. Council members often ask about cost first when shown another municipality's example.

The absence of accepted valuation methodologies, discussed further in Section 4.2.2, further limits the credibility of these figures. Despite these challenges, municipalities described several approaches that have helped them build support:

- Several municipalities pointed to the requirements of O. Reg. 588/17 to justify the initial cost of developing natural asset inventories and plans.
- Others used events such as ice storms and flooding to show the risks of not managing natural assets and how better information would have improved their response.
- Some municipalities used visual tools, such as interactive online dashboards, and invited Council members to public events at natural areas.
- Some municipalities highlighted that well-managed natural assets could reduce the demand placed on engineered assets and help avoid future costs.
- Municipalities with active community stewardship groups noted that residents' attachment to local natural features can help build support where Council support is limited.

The Foundation can help municipalities address this challenge by developing practical methodologies and communication materials for demonstrating natural asset criticality, avoided costs, service protection, climate resilience, and return on investment. These resources should help municipal staff translate technical analyses into clear business cases that support Council and budget decisions while recognizing that the benefits of natural asset investment may be preventative, cumulative over time, and distributed across several municipal services.

4.2.2 Lack of Standard Methodologies and Industry Best Practices

The lack of standard methodologies and established industry best practices has become more prominent as municipalities undertake increasingly detailed and complex natural asset management analyses. Although the 2024 study identified gaps in subject-matter expertise, the 2026 engagement showed that municipalities now require more than general guidance on natural asset management concepts. Staff are seeking

consistent and defensible methodologies that explain how each asset management planning component should be completed for different natural asset types.

Municipalities reported methodological gaps across most asset management planning components. These gaps included:

- **Asset Valuation:** consistent methods for estimating replacement costs and valuing ecosystem services and co-benefits, including models that reflect Canadian conditions;

- **Condition assessment:** methods for assessing the condition of natural asset types other than trees, such as wetlands, shorelines, and watercourses;

- **Levels of service:** approaches to developing levels of service metrics specific to natural assets; and

- **Lifecycle management:** guidance on the activities needed to sustain each natural asset type over the long term and assessing costs.

Without these methodologies, municipalities have had to develop their own approaches, often by adapting practices used for engineered assets. One municipality reported finding almost no useful examples, standards, or guidelines when it began its natural asset management plan. Its staff had to develop methods as the work progressed, with its asset management team adapting practices from engineered assets with varying degrees of success. Other municipalities noted that approaches designed for engineered assets do not always translate to natural infrastructure.

The absence of accepted methodologies has also made municipalities cautious about producing results they cannot defend. Municipalities expressed concern about reporting natural asset values that Council or the public could challenge, particularly where the values would be large. One municipality described weighing whether to adopt valuations developed by a larger municipality, but questioned how it would defend that choice. Some smaller municipalities reported waiting to see how larger municipalities and asset management consultants approach this work before starting their own, to avoid investing time and money in work that might later need to be redone.

Existing standards and guidance, where available, have limitations in practice. One municipality that used *CSA W218:23: Specifications for Natural Asset Inventories* found

that its condition ratings relied on fixed characteristics that no lifecycle management activity could improve.

Uncertainty about best practice also extends to data collection. Municipalities reported uncertainty about which attributes to collect for natural asset inventories and how precise that data needs to be. One municipality found that it had initially collected tree attributes, such as species and diameter, that had no effect on its useful life estimates, replacement costs, or lifecycle strategies. Municipalities also noted uncertainty about whether emerging technologies, such as vehicle-mounted or aerial LiDAR, will offer a cost-effective way to inventory natural assets. That uncertainty has led some to delay committing to manual data collection methods.

The Foundation is well positioned to help advance greater consistency by working with its partners to consolidate existing guidance and support the development of practical methodologies for different natural asset types. Where this type of targeted guidance has become available, municipalities reported that it helped. For instance, guidance on valuing forests and trees was described as helpful for determining replacement costs consistently. Municipalities asked for comparable guidance for other natural asset types. They also said they would prefer practical guidance documents that can be referenced as needed over webinars, and a single source that brings together best practices for each natural asset type.

4.2.3 Ownership and Management of Natural Assets on Private Property

As municipalities have begun inventorying their natural assets, deciding which assets fall within their responsibility has become a new challenge. The 2024 study identified poorly defined roles among municipalities, conservation authorities, the Province, and other stakeholders as a broader barrier. In 2026, municipalities described a more specific and practical form of this problem: natural systems do not follow property lines, and many of the natural assets that provide services to a municipality are located on private property.

This challenge stems partly from the scope of O. Reg. 588/17. As described earlier in Section 1.3, the regulation applies to infrastructure assets that a municipality owns directly or includes on its consolidated financial statements. Natural assets on private property therefore fall outside the formal scope of municipal asset management plans, even when they support municipal services such as stormwater management and flood

mitigation. Municipalities noted that natural asset management plans prepared with a broader ecological focus often cover all natural assets within the municipality, regardless of ownership. These plans do not fit neatly into municipalities' established asset management programs, which typically only include municipally owned assets.

Uncertainty about ownership was also reflected in the questionnaire responses. The questionnaire asked municipalities to identify the natural asset types within their boundaries. A municipality noted that many of these assets, such as aquifers, soils, and agricultural land, exist within the municipality but are not owned or managed by it. Others reported that watercourses, aquifers, and similar assets are inventoried and managed by conservation authorities, and that their own responsibility is limited to assets such as stormwater infrastructure. One municipality reported that it owns only street trees within its road allowances and landscaping features at its facilities, while its lower-tier municipalities and conservation authorities manage most other natural assets within its geographical boundaries.

Urban forests showed the scale of this challenge most clearly. One municipality reported that more than half of the trees within its boundaries are on private property. It actively manages trees on public property, but it regulates private trees only through bylaws that mainly seek to manage public safety risk. Shorelines raised similar concerns, where privately owned frontage makes it difficult for a municipality to manage these features consistently. Because natural systems are interconnected, municipalities also noted the difficulty of accounting for upstream and downstream effects that extend beyond the property they control.

Unclear ownership also has operational and financial consequences, particularly during severe weather events. One municipality reported that, after a major ice storm, staff often could not tell whether a damaged tree was on municipal property, private property, or the property line. Frontline staff were unable to answer residents' questions about responsibility. As a result, the municipality likely spent resources clearing trees that were not its responsibility, and it faced uncertainty about liability for damage caused by fallen trees.

To manage this challenge, some municipalities have limited the initial scope of their natural asset management work to assets on municipal property or under municipal management. They found this approach more realistic and achievable, and planned to consider natural assets on private property at a later stage. However, municipalities

identified the management of natural assets on private property as an area where they would benefit from further guidance. This includes guidance on how such assets should be treated in asset management plans and what policy tools are available to protect the services they provide.

4.2.4 Competing Strategic Priorities

Natural asset management increasingly competes with other strategic priorities that municipalities are required or expected to pursue. The 2024 study found that municipalities gave priority to core infrastructure because of the funding gaps their asset management plans had revealed, and that Council priorities were shaped by residents' expectations for core infrastructure assets such as roads. In 2026, municipalities described a broader set of competing priorities. Natural asset management now competes with other corporate and provincial objectives, not only for funding but also for land, staff attention, and the attention of senior leadership and Council.

Housing growth was the competing priority municipalities raised most often. Provincial direction to accelerate housing development has increased pressure on municipalities to approve new development quickly. Municipalities reported that this pressure can conflict with protecting and enhancing natural assets, particularly where development affects natural features or the services they provide. Municipalities described development pressures and provincial housing policy as limiting how much weight natural asset objectives receive in long-term planning and decision making.

Larger municipalities also reported conflicts between natural asset objectives and other environmental and operational goals. These included electrification and utility operations, which can require the removal or pruning of trees and the disturbance of natural areas. In these cases, municipal departments are each pursuing objectives that pull in different directions. Municipalities noted that competing environmental and operational objectives across departments make it difficult to agree on how natural assets should be managed and which outcomes should take precedence.

These competing priorities are reinforced by a stronger corporate focus on engineered infrastructure. Municipalities reported that senior leadership and Council continue to place greater emphasis on managing engineered assets, and that natural asset management has not yet become a corporate priority in many municipalities. Without a corporate focus, natural asset initiatives are more easily deferred when they compete with objectives that carry greater urgency.

Unlike the funding constraints described in Section 4.1.1, many of these conflicts cannot be resolved through additional resources alone. They reflect trade-offs between objectives that each serve the community, and resolving them requires municipalities to decide how natural assets should be weighed against other priorities. Municipalities that have made progress in this area described recognizing natural assets explicitly in corporate documents, such as asset management policies, official plans, and engineering guidelines. This gives natural asset objectives formal standing when they must be balanced against other priorities.

4.2.5 Software Integration

Municipalities that have compiled natural asset inventories are finding it difficult to integrate that data into their existing asset management software. In 2024, municipalities identified this lack of integration as a consequence of data incompleteness, and identified continued inventory development as the step required to address this challenge. Since then, several municipalities have inventoried their natural assets and begun adding natural asset inventories to their asset management and GIS software. They reported that these systems are not well suited to natural assets.

Most municipal asset management software, decision support tools, and GIS environments were designed for engineered assets. These systems are built around assets with defined service lives, replacement costs, and condition deterioration curves. Municipalities reported that, as a result, natural assets are hard to model in the same way as engineered assets, and their lifecycle needs are not readily captured in system-generated outputs that are used for capital planning.

Municipalities also reported difficulties with structure and hierarchization of their natural asset data. Some inventories were built from datasets provided by conservation authorities or other organizations, which were designed for ecological mapping rather than asset management and must be restructured before they can be integrated with asset management software.

4.2.6 Emerging Lifecycle Pressures

Municipalities reported that invasive species, climate change, and severe weather patterns are putting new or increasing pressure on the management of natural assets. The 2024 study did not identify these pressures as barriers, since few municipalities had begun actively managing their natural assets at that time. In 2026, municipalities that

have started this work described these pressures as factors affecting the condition of natural assets, the lifecycle activities needed to sustain them, and the cost of those activities.

Invasive species were the lifecycle pressure municipalities raised most often. Invasive species management requires sustained operating funding over many years, which municipalities reported as being hard to secure. Invasive species can also degrade a natural asset without the public noticing, as discussed in Section 4.2.1. This further weakens the case for funding their control. Municipalities identified invasive species management as an area where further guidance would be helpful, particularly with respect to identifying cost-effective management strategies.

Municipalities also reported that climate change is affecting how natural assets should be managed over their lifecycle. Changing temperatures, precipitation patterns, and more frequent wildfires and significant weather events affect the health of natural assets and place a greater demand on engineered assets. Municipalities noted that climate change adds uncertainty to the lifecycle forecasts used in asset management planning for both natural and engineered assets.

These pressures highlight the importance of establishing lifecycle management strategies for natural assets. Where natural assets are not actively managed, invasive species, climate change, and severe weather can reduce the services they provide and increase the demand placed on engineered infrastructure. Municipalities that have experienced these impacts described them as a practical basis for building Council support for natural asset investment.

Chapter 5
Recommendations

5. Recommendations

The recommendations outlined in this chapter set out where the Foundation should focus its efforts in the near term to help Greenbelt Municipalities advance their natural asset management maturity. They focus primarily on the emerging challenges described in Section 4.2, where targeted support can have a direct and more immediate impact. The recommendations are aimed at helping municipalities make better use of their available resources by reducing the time, cost, and technical uncertainty involved in natural asset management.

The following five recommendations are provided for consideration by the Greenbelt Foundation. These recommendations are explained further in the following sections of this chapter.

1. Develop a consolidated source of natural asset management guidance;
2. Develop a toolkit to help municipalities establish business cases for investing in natural assets and demonstrate the return on that investment;
3. Engage with municipal councils to enhance understanding of natural asset management and build support for funding natural asset management initiatives
4. Form municipal working groups that include experts on asset management planning and experts with technical knowledge on managing natural assets
5. Develop guidance on how municipalities can approach the management of natural assets on private property

5.1 Consolidated Natural Asset Management Guidance

It is recommended that the Foundation work with its partners to develop a single, consolidated source of natural asset management guidance, organized by natural asset type and asset management planning component. A central resource setting out best practices was the need municipalities identified most frequently. Bringing guidance documents, standards, and case studies together in one place would reduce the time staff must spend locating and evaluating resources before applying them. It would also give municipalities a consistent starting point for natural asset management, regardless of their size or level of maturity.

The consolidated guidance should focus on practical application, identifying specific steps and actions rather than providing detailed technical background. Municipalities

reported that comprehensive guidance manuals, while useful, are often too long, difficult to understand fully, and hard to apply within a municipal context. They also noted that many available case studies are several years old and may not reflect current practices or technology. The resource should therefore:

- Identify the industry-preferred approach for each asset management planning component, with references to more detailed guidance where needed;
- Distinguish between minimum requirements under O. Reg. 588/17 and more advanced practices, so that municipalities can progress at a pace suited to their capacity;
- Define natural asset types consistently and specify the minimum inventory attributes needed to assess the state of infrastructure, establish levels of service frameworks and metrics, and support effective lifecycle management; and
- Be reviewed and updated regularly as new information become available.

The Foundation should prioritize guidance for the natural asset types most commonly found within Greenbelt Municipalities and most frequently included in their asset management plans. Section 3.4 identifies these asset types based on the results of the 2026 questionnaire. Each guide should provide step-by-step instructions that municipalities can apply directly and should be incorporated into the consolidated resource once complete.

Accepted methodologies would also help municipalities address the difficulty of demonstrating return on investment described in Section 4.2.1. Municipalities expressed concern about reporting natural asset values that Council or the public may challenge, particularly where those values are significant. Guidance developed with recognized partners would give municipalities a defensible basis for their valuations and condition assessments. It would also improve consistency across Greenbelt Municipalities, allowing results to be compared.

5.2 Business Case and Return on Investment Toolkit

It is recommended that the Foundation work with its partners to develop a toolkit that helps municipalities establish a business case for investing in natural assets and demonstrate the return on that investment. Municipalities further along in their natural asset management journeys identified this as one of their most significant challenges. These municipalities have completed inventories, replacement cost valuations, and

prepared natural asset management plans, but have found it difficult to secure Council commitment to fund the lifecycle activities those plans identify. A practical toolkit would help municipalities present the value of natural asset investment in terms that Council can readily understand and compare with investment in engineered assets.

The toolkit would build on the 2024 recommendation that the Foundation work with its partners to develop risk management frameworks for natural assets. That recommendation aimed to help municipalities demonstrate the criticality of natural assets and build business cases for initiating natural asset management. Since 2024, the need has become more specific: municipalities that have completed their plans now require practical tools to assist in establishing a business case for sustainable annual funding.

The toolkit should help municipalities show the consequences of not investing in natural assets. As discussed in Section 4.2.1, investment in natural assets generally sustains existing services and prevents decline. Therefore, the return on investment is generally less visible than that of rehabilitating engineered assets. Municipalities also noted that a decline in the condition of natural assets is often not apparent to the public. The toolkit should therefore provide methods and templates for:

- Estimating the costs avoided by maintaining natural assets, including reduced demand on engineered assets such as stormwater infrastructure;
- Illustrating how underinvestment would affect the condition of natural assets, lead to faster deterioration in the condition of engineered assets, and ultimately impact levels of service; and
- Linking natural asset condition to risks that Council already recognizes, such as flooding, shoreline erosion, and property damage from significant weather events.

5.3 Council Engagement

It is noted that the Foundation plans to engage more directly with municipal councils in the coming years. It is recommended that the Foundation focus these efforts on building council understanding of natural asset management and support for funding it. Staff described limited capacity to build this understanding and support on their own, and several municipalities indicated that support from an independent organization such as the Foundation would strengthen their efforts.

The period immediately following the 2026 municipal election provides an important opportunity for this engagement, as newly elected councils will consider their first budgets and strategic plans during this time. Engaging council members early in their term would allow natural asset management to be considered as part of these planning activities.

To support this engagement, the Foundation should:

- Prepare non-technical briefing and presentation materials that explain what natural assets are, the services they provide, and the responsibilities for managing them under O. Reg. 588/17;
- Make these materials available for municipal staff to adapt and use in their own council reports and presentations;
- Provide support to municipal staff with presenting directly to municipal councils; and
- Develop reference materials that explain the concepts council members most often find unclear, such as the difference between replacement cost valuation and ecosystem services valuation.

Direct engagement by the Foundation would complement the efforts of municipal staff by adding an expert perspective that staff are often unable to provide on their own. Delivered early in the new council term and tailored to each municipality's circumstances, this engagement would help councils understand the value of natural assets and the consequences of underinvesting in them. It would also help to strengthen the business case for the ongoing funding needed to implement natural asset management plans.

5.4 Municipal Working Groups

It is recommended that the Foundation form municipal working groups that include asset management experts alongside experts with technical knowledge of natural assets. Municipalities reported that working groups they have participated in have helped them better understand what natural assets are and why they matter. However, they also noted that these groups provide little direct guidance on how to complete the asset management components required for natural assets. Bringing asset management and natural asset expertise together within the same working groups would help close this gap.

These working groups would also be well suited to developing guidance on integrating natural assets into existing software and tools. As discussed in Section 4.2.5, most municipal asset management software, decision support tools, and GIS environments were designed for engineered assets with defined service lives, replacement costs, and capital rehabilitation cycles. Asset management experts often support municipalities in implementing and configuring these systems, so they are well positioned to work with natural asset experts on practical solutions. These solutions could include recommended data structures, minimum inventory attributes for each natural asset type, and approaches for modelling the lifecycle of natural assets within existing software.

To support this recommendation, the Foundation should:

- Organize working groups around specific asset management components, such as replacement cost valuation, ecosystem services valuation, condition assessment, levels of service, lifecycle management, etc.;
- Invite asset management experts to participate alongside municipal staff and experts with technical knowledge of natural assets;
- Focus discussions on applying asset management methodologies to specific natural asset types and integrating natural assets into existing software and tools;
- Document the approaches developed through each working group and incorporate them into the consolidated guidance described in Section 5.1.

Working groups structured in this way would move beyond building awareness and provide municipalities with direct guidance on how to fully integrate natural asset management into their existing asset management programs. Combining natural asset and asset management expertise would also produce approaches that are technically sound, consistent with asset management best practice, and produce outputs that are comparable with engineered assets.

5.5 Management of Natural Assets on Private Property

It is recommended that the Foundation work with its partners to develop guidance on how municipalities can approach the management of natural assets on private property. Natural systems do not follow property lines, and many of the natural assets that support municipal services are privately owned. As described in Section 4.2.3, these assets fall outside the formal scope of municipal asset management plans under O.

Reg. 588/17. However, they still contribute to the levels of service municipalities provide and reduce the demand placed on engineered assets. Municipalities identified the management of natural assets on private property as an area where they would benefit from further guidance.

Municipalities cannot independently carry out lifecycle activities on private property, so they must influence how these assets are managed through other means. One municipality reported that more than half of the trees within its boundaries are on private property and are regulated only through by-laws that are limited in their scope (e.g., by-laws that regulate the removal of trees but do not address other aspects of lifecycle management).

The guidance should set out the non-infrastructure solutions available to municipalities to protect and sustain the services provided by privately owned natural assets. These may include:

- Strengthening policies and by-laws that protect natural assets, such as tree protection by-laws and official plans;
- Enhancing enforcement activities to improve compliance with policies and by-laws;
- Introducing fines or other penalties for non-compliance;
- Providing education to property owners on the services their natural assets provide and how to maintain them; and
- Partnering with community-led organizations that focus on environmental sustainability and conservation within the municipality.

Guidance of this kind would help municipalities manage the full range of natural assets that support their services, not only those they own directly. Once complete, this guidance should be incorporated into the consolidated resource described in Section 5.1.

Appendix A
List of Greenbelt Municipalities

Appendix A: List of Greenbelt Municipalities

Municipality	Tier	Region	% in the GB
Adjala-Tosorontio	Lower	Simcoe	19.50%
Ajax	Lower	Durham	0.00%
Alnwick/Haldimand	Lower	Northumberland	43.37%
Amaranth	Lower	Dufferin	1.70%
Aurora	Lower	York	0.00%
Barrie	Single	Barrie	N/A
Bradford West Gwillimbury	Lower	Simcoe	18.03%
Brampton	Lower	Peel	2.83%
Brock	Lower	Durham	99.07%
Burlington	Lower	Halton	51.29%
Caledon	Lower	Peel	80.33%
Cavan Monaghan	Lower	Peterborough	22.84%
Chatsworth	Lower	Grey	5.94%
Clarington	Lower	Durham	81.47%
Clearview	Lower	Simcoe	19.09%
Cramahe	Lower	Northumberland	7.76%
Dufferin County	Upper	Dufferin	N/A
Durham Region	Upper	Durham	N/A
East Garafraxa	Lower	Dufferin	16.04%
East Gwillimbury	Lower	York	77.07%
Erin	Lower	Wellington	45.91%
Georgian Bluffs	Lower	Grey	25.54%
Georgina	Lower	York	95.64%
Grey County	Upper	Grey	N/A
Grey Highlands	Lower	Grey	17.98%
Grimsby	Lower	Niagara	98.14%
Halton Hills	Lower	Halton	63.75%
Halton Region	Upper	Halton	N/A
Hamilton (City)	Single	Hamilton	77.22%
Hamilton (Township)	Lower	Northumberland	30.62%
Innisfil	Lower	Simcoe	0.63%
Kawartha Lakes	Single	Kawartha Lakes	3.89%
King	Lower	York	99.75%
Lincoln	Lower	Niagara	79.50%
Markham	Lower	York	27.56%
Meaford	Lower	Grey	22.96%

Municipality	Tier	Region	% in the GB
Milton	Lower	Halton	66.49%
Mississauga	Lower	Peel	0.00%
Mono	Lower	Dufferin	48.82%
Mulmur	Lower	Dufferin	34.69%
New Tecumseth	Lower	Simcoe	9.41%
Newmarket	Lower	York	46.79%
Niagara Falls	Lower	Niagara	3.84%
Niagara Region	Upper	Niagara	N/A
Niagara-on-the-Lake	Lower	Niagara	97.32%
North Dumfries	Lower	Waterloo	2.81%
Northern Bruce Peninsula	Lower	Bruce	30.15%
Northumberland County	Upper	Northumberland	N/A
Oakville	Lower	Halton	14.58%
Orangeville	Lower	Dufferin	0.00%
Orillia	Single	Orillia	N/A
Oshawa	Lower	Durham	31.75%
Owen Sound	Lower	Grey	0.00%
Peel Region	Upper	Peel	N/A
Pelham	Lower	Niagara	62.86%
Pickering	Lower	Durham	47.47%
Port Hope	Lower	Northumberland	18.61%
Puslinch	Lower	Wellington	22.92%
Richmond Hill	Lower	York	0.00%
Scugog	Lower	Durham	99.27%
Simcoe County	Upper	Simcoe	N/A
South Bruce Peninsula	Lower	Bruce	5.79%
St. Catharines	Lower	Niagara	38.86%
The Blue Mountains	Lower	Grey	51.92%
Thorold	Lower	Niagara	20.39%
Toronto	Single	Toronto	5.71%
Trent Hills	Lower	Northumberland	0.22%
Uxbridge	Lower	Durham	100.00%
Vaughan	Lower	York	28.76%
West Lincoln	Lower	Niagara	0.92%
Whitby	Lower	Durham	37.13%
Whitchurch-Stouffville	Lower	York	98.26%
York Region	Upper	York	N/A

Appendix B
Assessment Rubric

Appendix B: Assessment Rubric

Criterion	Category	Description	Indicators/Evidence	Scoring	Notes
1.1	State of Infrastructure	Natural asset inventory established. Asset types, quantity and location identified.	Proof of online or physical registry. One point granted to inventory containing at least 25% of owned asset types. Two points granted to inventory containing 50% or more of owned asset types. Three points granted to inventory containing all owned	/3	This criteria was not scored for municipalities for whom a total quantity of owned natural asset types could not be determined.
1.2		Identification of municipal service tied to each inventoried natural asset type.	Proof of identification of municipal service tied to each asset type. One point granted for completion.	/1	Half points (0.5) were given to municipalities that completed this criteria for some natural asset types. Full points (1.0) were given to municipalities that completed this criteria for all natural asset types.
1.3		Replacement cost valuation completed for inventoried natural assets (using a restoration cost method or similar approach focused on valuing the asset itself).	Proof of valuation in asset registry aligned with other municipal assets. One point granted for completion.	/1	Half points (0.5) were given to municipalities that completed this criteria for some natural asset types. Full points (1.0) were given to municipalities that completed this criteria for all natural asset types.
1.4		Completion of condition assessment of inventoried natural assets.	Proof of condition assessment included in asset registry with condition scoring aligned with other municipal assets. Two points granted for completion. Note, if proof of age and useful life included in registry instead, then only one point granted.	/2	Both elements of this criteria were scored as follows: - Half points (0.5) were given to municipalities that completed the criteria element for some natural asset types. - Full points (1.0) were given to municipalities that completed the criteria element for all natural asset types.
1.5		Natural asset inventory integrated into asset management plan.	Natural assets included as an asset type or service area in municipal asset management plan. One point granted for completion.	/1	Half points (0.5) were given to municipalities that completed this criteria for some natural asset types. Full points (1.0) were given to municipalities that completed this criteria for all natural asset types.
CATEGORY TOTAL				/8	
2.1	Levels of Service	Identification of relevant service attributes that influence levels of service framework (e.g., quality, climate resilience, preservation of ecological features, beautification of community, access, etc.)	Proof of identification of relevant service attributes. One point granted.	/1	Half points (0.5) were given to municipalities that completed this criteria for some natural asset types. Full points (1.0) were given to municipalities that completed this criteria for all natural asset types.
2.2		Determination of relative importance of service attributes in influencing capital and operational decision making.	Proof of establishment of relative importance. One point granted.	/1	Half points (0.5) were given to municipalities that completed this criteria for some natural asset types. Full points (1.0) were given to municipalities that completed this criteria for all natural asset types.
2.3		Determination of relevant community levels of service.	Proof of establishment of community levels of service statements. One point granted.	/1	Half points (0.5) were given to municipalities that completed this criteria for some natural asset types. Full points (1.0) were given to municipalities that completed this criteria for all natural asset types.
2.4		Completion of current technical levels of service.	Proof of determination of current values for identified technical levels of service. One point granted.	/1	Half points (0.5) were given to municipalities that completed this criteria for some natural asset types. Full points (1.0) were given to municipalities that completed this criteria for all natural asset types.
2.5		Completion of target technical levels of service.	Proof of determination of target values for identified technical levels of service. One point granted.	/1	Half points (0.5) were given to municipalities that completed this criteria for some natural asset types. Full points (1.0) were given to municipalities that completed this criteria for all natural asset types.
CATEGORY TOTAL				/5	
3.1	Climate Change Measures	Integration of climate change effects into asset degradation analyses.	Proof of integration (e.g., faster degradation of assets & increased PoF). One point granted.	/1	
3.2		Identification of additional lifecycle management strategies to reduce climate change risk and/or increase useful service life.	Proof of identification of additional lifecycle management strategies specific to climate change. One point granted.	/1	
3.3		Assessment of financial costs associated with climate change.	Estimate of capital and/or operating costs to be incurred due to inaction. One point granted. Estimate of capital and/or operating costs for climate change mitigation or adaptation efforts. One point granted.	/2	
CATEGORY TOTAL				/4	
4.1	Lifecycle Management and Financial Strategies	Creation of life cycle management strategy plan for current and desired levels of service. Must include life cycle costing, life cycle activities, and forecasted costs	Proof of strategy for current levels of service. One point granted for completion. Proof of strategy for desired levels of service. One point granted for completion.	/2	Both elements of this criteria were scored as follows: - Half points (0.5) were given to municipalities that completed the criteria element for some natural asset types. - Full points (1.0) were given to municipalities that completed the criteria element for all natural asset types.
4.2		Creation of financial projections for current and desired levels of service, must include projected funding, funding sources, asset type backlogs, annual funding shortfall (i.e., compare life cycle management forecasted costs to available funding), funding scenarios, and associated funding risks.	Proof of financial projections for current levels of service. One point granted for completion. Proof of financial projections for desired levels of service. One point granted for completion.	/2	Both elements of this criteria were scored as follows: - Half points (0.5) were given to municipalities that completed the criteria element for some natural asset types. - Full points (1.0) were given to municipalities that completed the criteria element for all natural asset types.

Criterion	Category	Description	Indicators/Evidence	Scoring	Notes
4.3	Lifecycle Management and Financial Strategies	Identification of non-infrastructure solutions (actions not directly related to assets such as enacting of by-laws, providing education opportunities, partnering with external agencies/companies, etc.) in the lifecycle management of natural assets.	Proof of identification of non-infrastructure solutions in lifecycle management strategy. One point granted.	/1	Half points (0.5) were given to municipalities that completed this criteria for some natural asset types. Full points (1.0) were given to municipalities that completed this criteria for all natural asset types.
4.4		Consideration of asset management plan for natural assets in Council approved capital and operating budgets.	Proof of consideration of AMP for natural assets in Council approved capital and operating budgets. One point granted.	/1	Half points (0.5) were given to municipalities that completed this criteria for some natural asset types. Full points (1.0) were given to municipalities that completed this criteria for all natural asset types. This criteria was not scored for municipalities that did not respond to the survey as this could not be determined through a review of asset management related documents.
CATEGORY TOTAL				/6	
5.1	Risk Management Plan	Completion of a risk management plan that identifies risks to service for inventoried natural assets, impact of risk factors (e.g., H&S, regulatory compliance, financial costs, etc.), probability of failure (PoF), and consequence of failure (CoF).	Proof of identification of risks to natural assets. One point granted. Proof of identification of impact of risks factors. One point granted. Proof of risk PoF/CoF analysis completed. One point granted.	/3	Due to difficulty in scoring, this criteria was amended to: Proof of identification of impact of risk factors. One point granted. Proof of completion of PoF analysis. One point granted. Proof of completion of CoF analysis. One point granted. Half points (0.5) were given to municipalities that completed this criteria for some natural asset types. Full points (1.0) were given to municipalities that completed this criteria for all natural asset types.
5.2		Completion of impact of climate change analysis and integration into risk management plan.	Proof of identification of climate change specific risks to natural assets. One point granted.	/1	Due to difficulty in scoring, for municipalities where scoring was completed through reviewing asset management related documents, this criteria was amended to: Proof of integration of environmental risk into risk management plan. One point granted. Half points (0.5) were given to municipalities that completed this criteria for some natural asset types. Full points (1.0) were given to municipalities that completed this criteria for all natural asset types.
5.3		Completion of a risk treatment matrix that prescribes treatment actions or strategies based on PoF x CoF ratings.	Proof of completion of a risk treatment matrix. One point granted.	/1	Half points (0.5) were given to municipalities that completed this criteria for some natural asset types. Full points (1.0) were given to municipalities that completed this criteria for all natural asset types.
CATEGORY TOTAL				/5	
6.1	Project and Policy Implementation	Barriers and opportunities identified in natural asset management.	Proof of identified barriers and opportunities. One point granted for completion.	/1	
6.2		Asset management plan for natural assets being used to establish business case for project initiation for natural asset related restoration or conservation projects.	Proof of usage of asset management plan for natural assets to provide justification for natural asset related restoration or conservation projects. One point granted.	/1	This criteria was not scored for municipalities that did not respond to the survey as this could not be determined through a review of asset management related documents.
6.3		Relevant municipal planning and asset management policies changed to integrate natural asset management (i.e. Asset Management Policy, OP, ZBL, Secondary Plans, etc.)	Proof of policy changes. One point granted.	/1	This criteria was not scored for municipalities that did not respond to the survey as this could not be determined through a review of asset management related documents.
CATEGORY TOTAL				/3	
7.1	Continuous Updates and Improvements	Natural asset management project achievements shared (i.e. lessons learned, co-benefits calculated, service delivery changes, etc.).	Proof of project achievements shared through presentations, workshops, memos, or reports. One point granted for completion.	/1	This criteria was not scored for municipalities that did not respond to the survey as this could not be determined through a review of asset management related documents.
7.2		Application for external funding to support natural asset management or nature-based solutions projects (federal, provincial, or private).	Proof of funding applications. One point granted for completion.	Excluded from Total	This criteria is excluded from scoring and determnination of NAM maturity level. It is presented for information only. This criteria was not scored for municipalities that did not respond to the survey as this could not be determined through a review of asset management related documents.
7.3		Other long-term mechanisms put in place (ex. incorporation of natural assets on private property, changes to development charges, etc.)	Proof of application of other beneficial mechanisms. One point granted for completion.	/1	This criteria was not scored for municipalities that did not respond to the survey as this could not be determined through a review of asset management related documents.
7.4		Continuous improvement processes identified and implemented for natural assets in asset management program or plan.	Proof of continuous improvement process identified for natural asset management. One point granted for completion. Continuous improvements implemented in a subsequent natural asset management plan. If subsequent AMP not yet completed, proof of progress tracking of continuous improvement items sufficient. One point granted for completion.	/2	

Criterion	Category	Description	Indicators/Evidence	Scoring	Notes
7.5	Continuous Updates and Improvements	Identification of the progress to achieve target LOS compared to previous AMP/studies and/or commitment to track future progress as part of continuous improvement process.	One point granted for proof that progress is being tracked and/or plan to track future progress.	/1	
CATEGORY TOTAL				/5	
GRAND TOTAL				/36	

Appendix C
Interview Questions

Appendix C: Interview Questions

1. Has your municipality made any notable advancements in natural asset management in recent years?

   For example, advancements may include developing natural asset inventories, undertaking valuation exercises, integrating natural assets into asset management plans and processes, developing levels of service frameworks, identifying lifecycle management strategies, improving data quality, establishing business cases, securing senior leadership or Council support, or adopting innovative approaches to managing natural infrastructure.

   a. If yes, what factors contributed to the success of these efforts?

      For example, contributing factors may include dedicated staff resources, budget allocations, grant funding, support from senior leadership or Council, technical guidance or training, or collaboration with other municipalities or organizations.

   b. Are there any insights, lessons learned, or best practices that you believe would be valuable for other municipalities?

   c. Would your municipality be willing to participate in a future case study or knowledge-sharing opportunity?

2. What areas of natural asset management remain a challenge for your municipality?

   a. What are the primary factors contributing to these challenges?

      For example, contributing factors may include staffing constraints, funding limitations, competing priorities, data gaps, technical capacity, policy barriers, or difficulties securing support from senior leadership or Council

   b. Have any new factors emerged in the recent past, or have existing factors become more significant?

   c. What tools, resources, or forms of support would most help your municipality address these contributing factors in the near term?

3. Has your municipality participated in, or made use of, any natural asset management initiatives, resources, tools, or support programs since 2024?

   For example, participation may include webinars, guidance documents, case studies, peer learning opportunities, workshops, technical resources, or other Foundation-supported initiatives.

   a. If yes, how helpful were these initiatives in supporting your municipality's natural asset management efforts?

      For example, have these initiatives increased awareness, informed decision-making, improved data quality, strengthened business cases, or advanced natural asset management practices?

   b. Has your municipality participated in, or made use of, any of the Greenbelt Foundation's natural asset management initiatives, resources, or tools since 2024?

      A list of the Foundation's recently deployed natural asset management initiatives, resources, and programs is provided in Appendix A.

      i. If yes, how helpful were these initiatives in supporting your municipality's natural asset management efforts?

      ii. Do you have any suggestions for how the Greenbelt Foundation could improve or expand its natural asset management supports for municipalities?

4. As the Greenbelt Foundation explores opportunities to engage municipal Councils on natural asset management, what approaches do you believe would be most effective in building awareness, understanding, and support?

   a. Based on your experience, what arguments, evidence, or information would be most effective in demonstrating the value of natural asset management to Council? What messages are most likely to resonate with elected officials?

b. Are there any common misconceptions, concerns, or barriers that the Foundation should be aware of when engaging Council members on natural asset management?

Appendix D
FAQ Document

Appendix D: FAQ Document

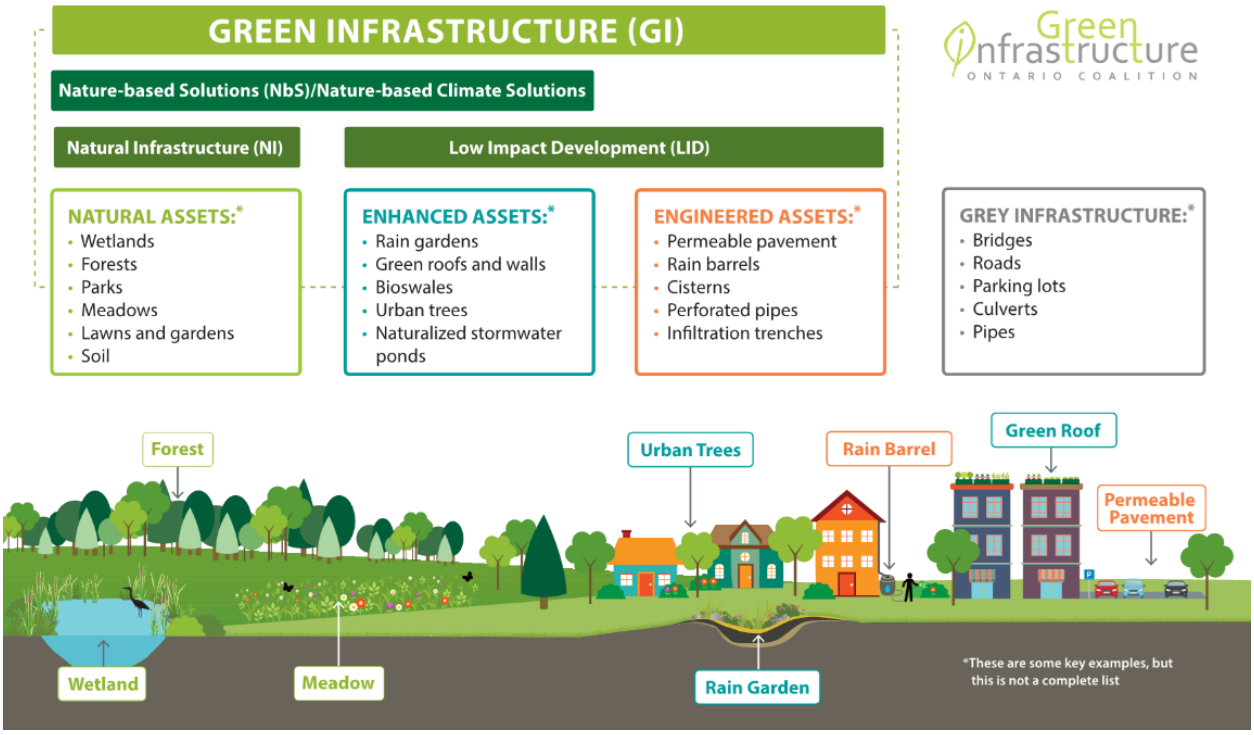
What is a natural asset?

O. Reg. 588/17: Asset Management Planning for Municipal Infrastructure defines “green infrastructure asset” as:

> (A)n infrastructure asset consisting of natural or human-made elements that provide ecological and hydrological functions and processes and includes natural heritage features and systems, parklands, stormwater management systems, street trees, urban forests, natural channels, permeable surfaces and green roofs.

Natural assets are a subset of green infrastructure assets. While green infrastructure includes both natural and engineered features that provide ecological or hydrological functions, natural assets specifically refer to naturally occurring resources and ecosystems that provide benefits and services to people.

In the municipal context, natural assets are natural features that contribute to the delivery of municipal services. Examples may include wetlands, forests, watercourses, and other natural areas that provide services such as stormwater management, water filtration, flood mitigation, erosion control, and climate regulation. These services can complement or, in some cases, reduce the need for traditional engineered infrastructure. Recognizing and managing natural assets as part of municipal asset management practices helps municipalities better understand the full range of assets supporting service delivery and make more informed, cost-effective infrastructure investment decisions over the long term.



What is the Greenbelt Foundation?

The Greenbelt Foundation is an independent charitable organization dedicated to supporting and enhancing Ontario's Greenbelt, a protected landscape of more than two million acres that provides clean air, clean water, climate resilience, agricultural lands, and natural heritage features. Through funding programs, research, policy work, strategic initiatives, and stakeholder engagement, the Foundation works to ensure that the environmental, economic, and social benefits of the Greenbelt are sustained for current and future generations.

Since 2018, the Foundation has been actively supporting the advancement of natural asset management in collaboration with municipal partners, Conservation Authorities, and other organizations. These efforts are aimed at helping municipalities better understand, account for, and manage natural assets as part of their infrastructure systems. By supporting the integration of natural assets into municipal decision-making and asset management practices, the Foundation is helping municipalities strengthen climate resilience, enhance service delivery, and protect the natural systems that contribute to stormwater management, flood mitigation, recreation, source water protection, and other essential community services.

Through this work, the Foundation seeks to support the long-term sustainability of municipal infrastructure while helping to protect and enhance the Greenbelt's natural heritage system, which is vital to the region's environmental health, economic sustainability, and quality of life.

What is Watson & Associates Economists Ltd.?

Established in 1982, Watson & Associates Economists Ltd. is one of Canada's leading economic consulting firms comprised of municipal economists, planners, and accountants. With a municipal client base of more than 250 Ontario municipalities and utility commissions, and 47 school boards, many of which are long-term repeat clients, the firm is recognized as a leader in the municipal finance/local government field. In recent years, Watson has assisted more than 110 municipalities with preparation of asset management policies, municipal action plans, asset management software implementations, and preparation of comprehensive AMPs.

What is the scope of the project?

In 2024, the Greenbelt Foundation, with support from Watson & Associates Economists Ltd., completed a study to establish a baseline understanding of natural asset management practices across municipalities within Ontario's Greenbelt. The study assessed the extent to which municipalities had integrated natural assets into their asset management planning processes, identified common challenges and barriers to implementation, and developed recommendations to help advance natural asset management across the Greenbelt. The resulting monitoring report provided a snapshot of municipal practices and served as a benchmark for measuring future progress.

Building on that work, the Greenbelt Foundation is now undertaking an update to assess how natural asset management practices have evolved since 2024. The purpose of the current study is to evaluate the progress municipalities have made in integrating natural assets into asset management plans and decision-making processes, identify ongoing and emerging challenges, and better understand how municipalities can be supported in advancing this work.

The study will include a review of municipal asset management plans and related documents, supplemented by direct engagement with municipal staff through questionnaires and interviews. Information gathered through this process will be used to assess the current level of natural asset management maturity across Greenbelt

Municipalities, identify leading practices and implementation trends, and develop recommendations to inform the Greenbelt Foundation's future programs, resources, and initiatives.

Ultimately, the study will provide an updated picture of how municipalities within the Greenbelt are accounting for and managing natural assets as part of their broader infrastructure systems and will help identify opportunities to further support the integration of natural assets into municipal asset management planning and practices.

What data will be collected for my municipality?

The study will begin with a review of publicly available asset management documents to assess the extent to which natural assets have been integrated into municipal asset management planning and related decision-making processes. This review may include strategic asset management policies, asset management plans, and other relevant asset management related documents.

The second phase of the study will focus on understanding the opportunities, challenges, and barriers municipalities are encountering as they advance natural asset management practices. To support this analysis, a questionnaire will be distributed to Greenbelt Municipalities. In addition, municipalities will have the option to participate in a short (30-minute) interview to provide further context and insight into their experience.

Who will use the data I provide?

Any non-public information collected as part of this project will be used exclusively by the Greenbelt Foundation and Watson & Associates Economists Ltd. Information provided by municipalities will only be used for purposes directly related to the study, including assessing natural asset management practices, identifying common trends, challenges, and opportunities, and informing the development of the monitoring report and recommendations.

How will my data be used?

Information collected through this study will be used to assess how municipalities are currently incorporating natural assets into their asset management plans, policies, and decision-making processes. The study will also examine the progress municipalities have made since 2024 and identify the factors that are supporting or limiting further advancement of natural asset management practices.

The purpose of this work is not to evaluate or critique individual municipalities. Rather, the information collected will help identify common challenges, highlight emerging practices, and inform recommendations on how the Greenbelt Foundation can better support municipalities in managing natural assets as vital infrastructure that contributes to service delivery and community resilience.

Is my data confidential?

Yes. Any non-public information provided by your municipality will be treated as confidential and will not be publicly disclosed. Information collected through questionnaires and interviews will be securely managed and will not be shared with third parties without your municipality's consent.

The study is intended to identify trends and observations at a broad level across Greenbelt Municipalities. Individual municipal responses will not be published, and any reporting of findings will be presented in a manner that protects confidential information.

Will the monitoring report be shared with participating municipalities?

The monitoring report itself will not be publicly released, as it is intended to contain information derived from confidential municipal inputs. However, participating municipalities will be provided with their individual assessment results and will have an opportunity to review information related to their municipality.

The study findings and key observations will also be shared with participating municipalities and project partners. These materials will focus on broad trends, common challenges, and emerging practices across the Greenbelt. Where appropriate, case studies may be developed to highlight successful approaches and lessons learned. The objective is to support knowledge sharing and foster continued collaboration among municipalities and partner organizations advancing natural asset management.

Appendix E
Foundation-Supported Natural Asset Management Initiatives

Appendix E: Foundation-Supported Natural Asset Management Initiatives

Year Released	Resource	Description
2024	Nature is Infrastructure: How to Include Natural Assets in Asset Management Plans	A guidebook for municipal staff to learn about natural asset management and how to meet the requirements of O. Reg. 588/17.
2024	Pelham Natural Asset Management Project Report	Detailed the value natural assets provide to the municipality and what it would cost to replace them.
2024	How to Start Natural Asset Management Planning Webinar	Webinar focused on how municipalities can start natural asset management.
2024	In Person Workshop (2024 Latornell Conference)	Demonstrated the work conservation authorities are doing on the management of natural assets and how they can support member municipalities. Focused on inventory compilation, condition assessment, and lifecycle management strategies.
2024	Direct Municipal Outreach	Provided results from the 2024 Natural Asset Management Study to municipalities, including insights into study process and recommendations.
2025-Present	Green Infrastructure Asset Management Community of Practice	A group of natural asset management practitioners from municipalities and conservation authorities meet quarterly to discuss best practices, solve problems, and ask questions.
2025	Natural Asset Management: Advancing Policy Innovation and Municipal Leadership	A report for municipal councilors on ways they can support natural asset management in their communities, illustrated through practical examples.

Year Released	Resource	Description
2026	Natural Asset Checklist	A checklist for municipalities to determine which types of natural assets exist within their municipal boundaries.
2026	Natural Asset Management Valuation Guide: Forest and Tree Assets	A detailed guide outlining how to value trees and forests.

Appendix F
Questionnaire

Appendix F: Questionnaire

The questionnaire first asked Greenbelt Municipalities to select the natural asset types that exist within their geographical boundaries. For each selected natural asset type, municipalities were asked the following questions, organized by assessment category.

State of Local Infrastructure

1. Have you established an asset inventory for this natural asset type?
2. Have you determined which municipal services are supported by this natural asset type?
3. Have you conducted a replacement cost valuation of this natural asset type?
4. Have you conducted a condition assessment of this natural asset type?
5. If you have conducted a condition assessment, were the results based on the physical state of assets?
6. Is this natural asset type included in your municipality's most recent asset management plan?

Levels of Service

1. Have you established relevant service attributes for this natural asset type? E.g., quality, quantity, climate resilience, access, etc.
2. Have you determined the relative importance of those service attributes in influencing capital and operational decision making?
3. Have you defined community levels of service for this natural asset type?
4. Have you defined technical levels of service for this natural asset type?
5. Have you established proposed levels of service (performance measures and metrics) for this natural asset type?

Lifecycle Management Strategies

1. Have you developed a lifecycle management strategy to sustain the current levels of service provided by this natural asset type over the long term?

2. Have you developed a 10-year forecast of capital and significant operating expenditures required to sustain the current levels of service provided by this natural asset type?

3. Have you developed a lifecycle management strategy to achieve the proposed levels of service for this natural asset type?

4. Have you developed a 10-year forecast of capital and significant operating expenditures required to achieve the proposed levels of service for this natural asset type?

5. Have you identified any non-infrastructure solutions to manage the lifecycle of this natural asset type? E.g., changes to policies or by-laws, public education and outreach initiatives, land-use planning measures, partnerships with organizations, etc.

6. Is consideration given to the 10-year forecasts of capital and significant operating expenditures for this natural asset type in your municipality's annual budgeting process?

Risk Management Framework

1. Have you identified consequence of failure factors for this natural asset type?

2. Have you assigned probability of failure (PoF) ratings to assets within this natural asset type?

3. Have you assigned consequence of failure (CoF) ratings to assets within this natural asset type?

4. Have you developed a risk treatment framework for this natural asset type which identifies treatment actions based on the risk ratings of assets?

5. Have you identified climate change specific risks to this natural asset type and integrated them into your risk management framework?

Climate Change Mitigation and Adaptation

The following questions relate to both green infrastructure assets and engineered infrastructure assets (e.g., roads, bridges, water and wastewater systems, etc.) within your municipality.

1. Have you assessed the impact of climate change on asset condition and risk?

2. Have you developed lifecycle management strategies to mitigate or manage the impact of climate change on assets?

3. Have you assessed infrastructure costs that would potentially be incurred as a result of climate change inaction?

4. Have you assessed infrastructure costs related to climate change mitigation and adaptation efforts?

Project and Policy Implementation

1. Are there any barriers or opportunities that you have encountered in your natural asset management planning journey? Please limit your response to 200 words.

2. Have you been successful in establishing a business case for natural asset related restoration or conservation projects within your municipality?

3. Have you made any changes to municipal policies or by-laws to incorporate natural assets?

Continuous Improvement

1. Have you shared your natural asset management achievements internally or externally?

2. Have you applied for external funding to support natural asset management or natural asset related initiatives?

3. Have you implemented a continuous improvement plan for natural asset management?

4. Are you tracking the progress of continuous improvement initiatives related to natural asset management?

5. Are you tracking the progress to achieve the proposed levels of service for natural assets?

6. Are there any long-term improvement measures or initiatives related to natural asset management that you have implemented and would like to highlight? Please limit your response to 200 words.