



Community Planning and Development Department

Wednesday, November 06, 2024

Subject: Pelham-Greenbelt Natural Asset Management Project Summary

Recommendation:

BE IT RESOLVED THAT Council receive Report 2024-0253 Pelham-Greenbelt Natural Asset Management Project Summary, for information.

Background:

Town of Pelham Council identified a strategic priority of Environmental and Climate Adaptation as part of its 2023-2027 Strategic Plan. Town staff identified Natural Asset management as a key tool to achieve this strategic priority in late 2022 and submitted a grant application to the Greenbelt Foundation for the project. The Town was successfully awarded the grant and work on the project commenced in 2023.

To complete the work, the Town of Pelham, with the generous support of the Greenbelt Foundation, partnered with the Natural Assets Initiative (NAI) to undertake the Pelham-Greenbelt Natural Asset Management (NAM) Project. The aim of the project was to identify, measure, value, and ultimately provide recommendations for how we can preserve and manage Pelham's natural assets, therefore maintaining the essential services they provide.

Natural assets refer to the stock of natural resources or ecosystems that provide essential services to the community. This initiative recognizes that the natural environment, such as forests, wetlands, and watercourses which offer critical infrastructure services to the Town, including stormwater management and flood mitigation. Managing these natural assets is important because they provide a sustainable and cost-effective alternative to traditional built infrastructure solutions. While built infrastructure often requires high levels of capital investment, maintenance, and replacement costs, natural assets can deliver these services with minimal intervention when effectively managed. Additionally, natural assets offer many additional benefits, such as carbon storage, biodiversity support, and recreational opportunities, all of which contribute to community well-being and resilience.

The project focused on the portion of the Town within the Ontario Greenbelt (Figure 1), though assets were identified and valued across the Town and project results and recommendations can also be applied Town-wide. The modeling component of the project was scoped to the Upper Twelve Mile Creek sub-watershed, which intersects with the Ontario Greenbelt and the Town of Pelham's municipal boundaries, as shown in Figure 2.

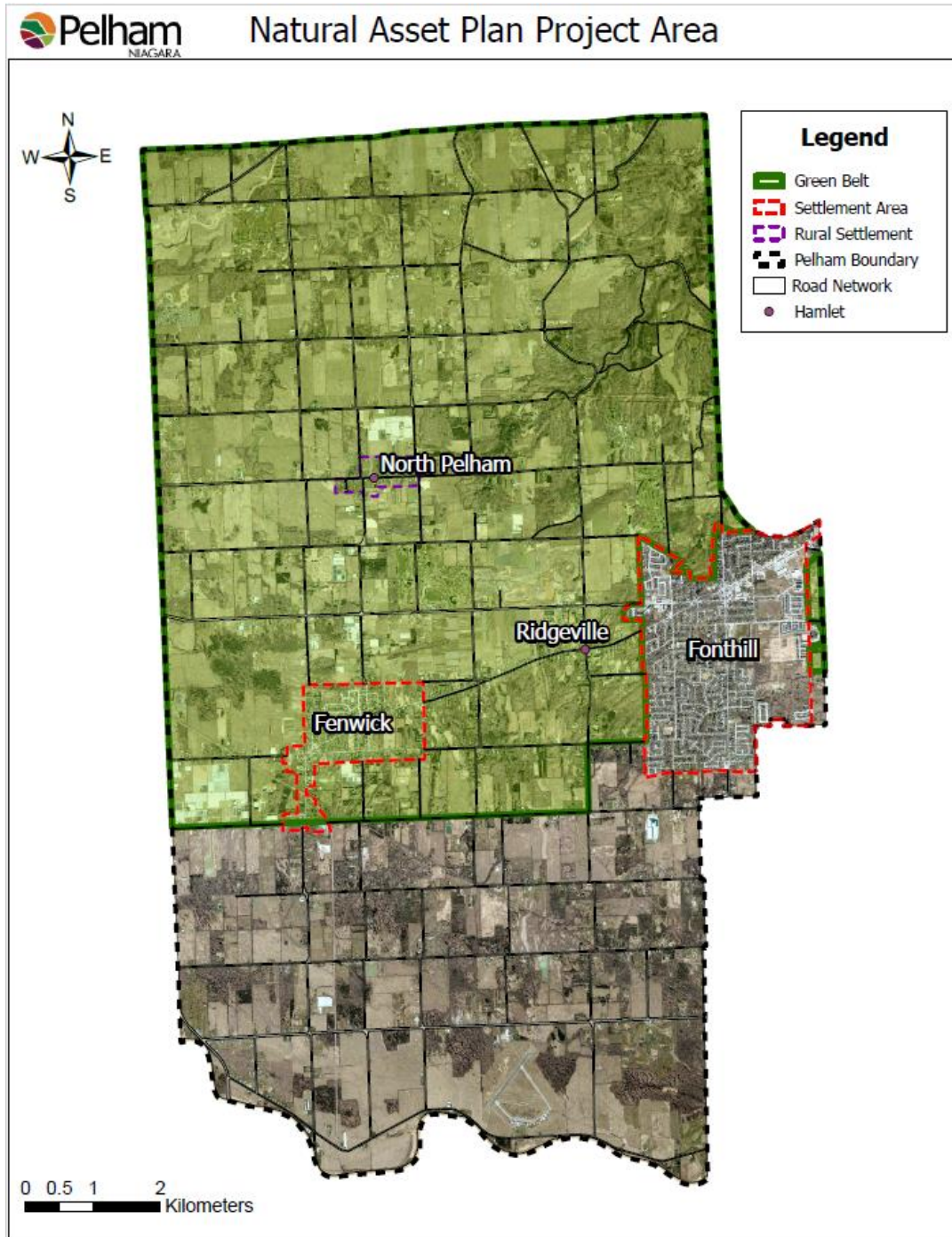


Figure 1. Natural Asset Plan Project Area.

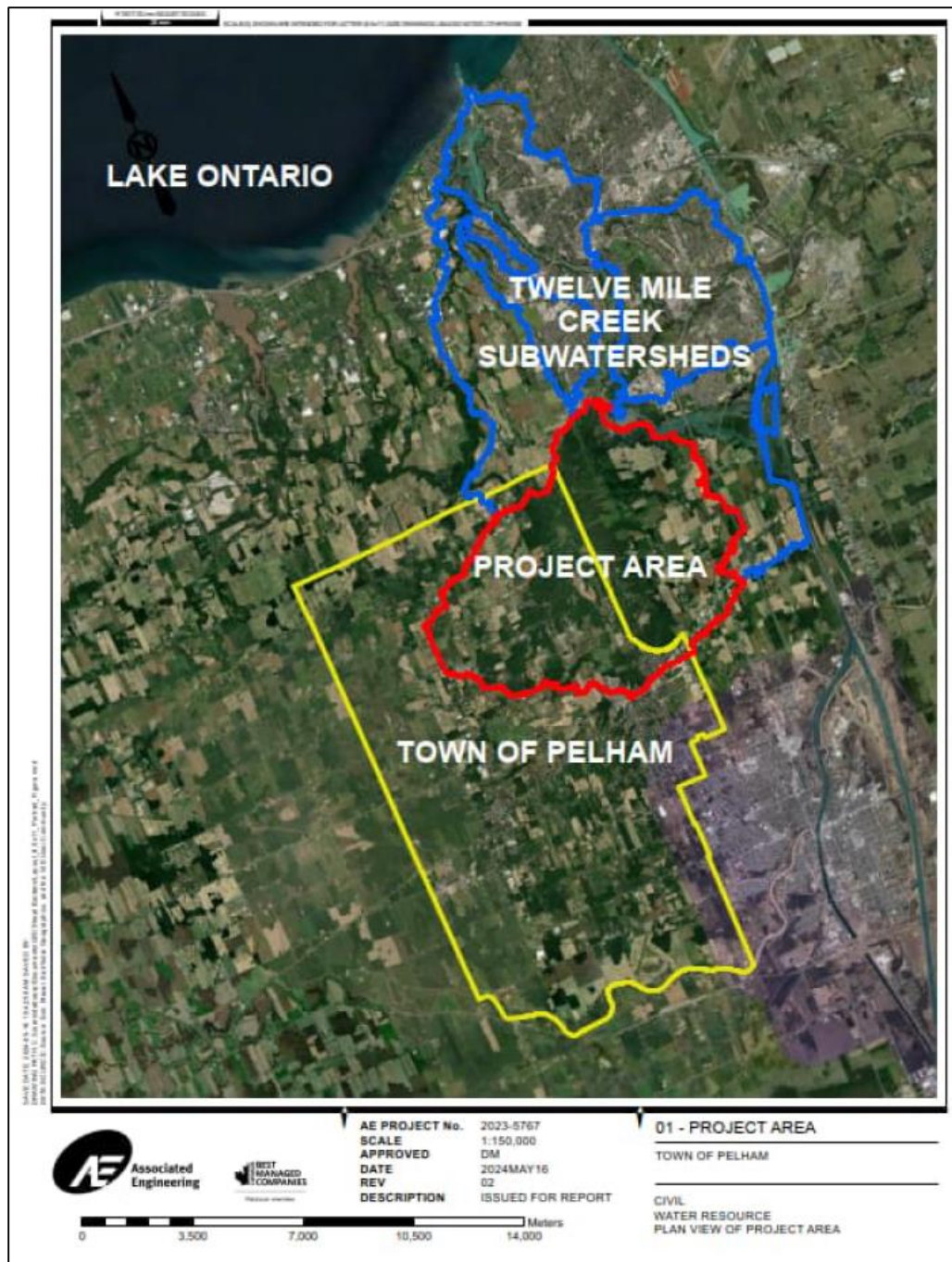


Figure 2. Upper Twelve Mile Creek Sub-Watershed Modelling Area.

Within this context, three objectives were identified for the project:

1. Understand the current roles of natural assets in the project area in providing **stormwater management** and **flood mitigation** services to the residents of Pelham;

2. **Quantify the value** of natural assets in the project area in terms of service provision, including determining costs and benefits relative to engineered alternatives; and
3. Develop **strategies for long-term management** of natural assets based on this understanding.

This project sets the foundation for integrating natural assets into the Town's financial and asset management planning, helping us address immediate needs and prepare for long-term sustainability. Additionally, this project is also assisting the Town in meeting the upcoming requirements under Ontario Regulation 588/17, which mandates municipalities to include natural assets in their asset management planning. By developing an inventory and valuation of our natural assets, the project is ensuring that the Town is well-prepared to integrate these assets into its asset management planning.

Analysis:

This section provides an overview of key results from the NAI project. Results are presented in three parts, corresponding to the objectives outlined above.

Part 1: Developing the Inventory and Outlining Current Roles of Natural Assets

Utilizing data from multiple sources, NAI first established the natural asset inventory, which identified 4,428 natural assets, covering 10,458 hectares within Pelham. These assets include forests, wetlands, meadows, and watercourses.

Next, the NAI underwent a process to assess the condition of these assets from an ecological perspective. The assessment found that approximately 38% of the Town's natural assets are in 'very good' or 'good' condition. However, some areas, particularly meadows and hedgerows, were found to be in fair to poor condition, indicating a need for enhanced management and protection.

The project also revealed that much of Pelham's stormwater management relies on these natural systems, with forests and wetlands playing a significant role in absorbing rainwater and reducing peak flows during storms. These areas also contribute to biodiversity and the health of the broader ecosystem, particularly in the Upper Twelve Mile Creek sub-watershed.

This information is available for viewing in an interactive dashboard available through <http://go.greenanalytics.ca/pelham>.

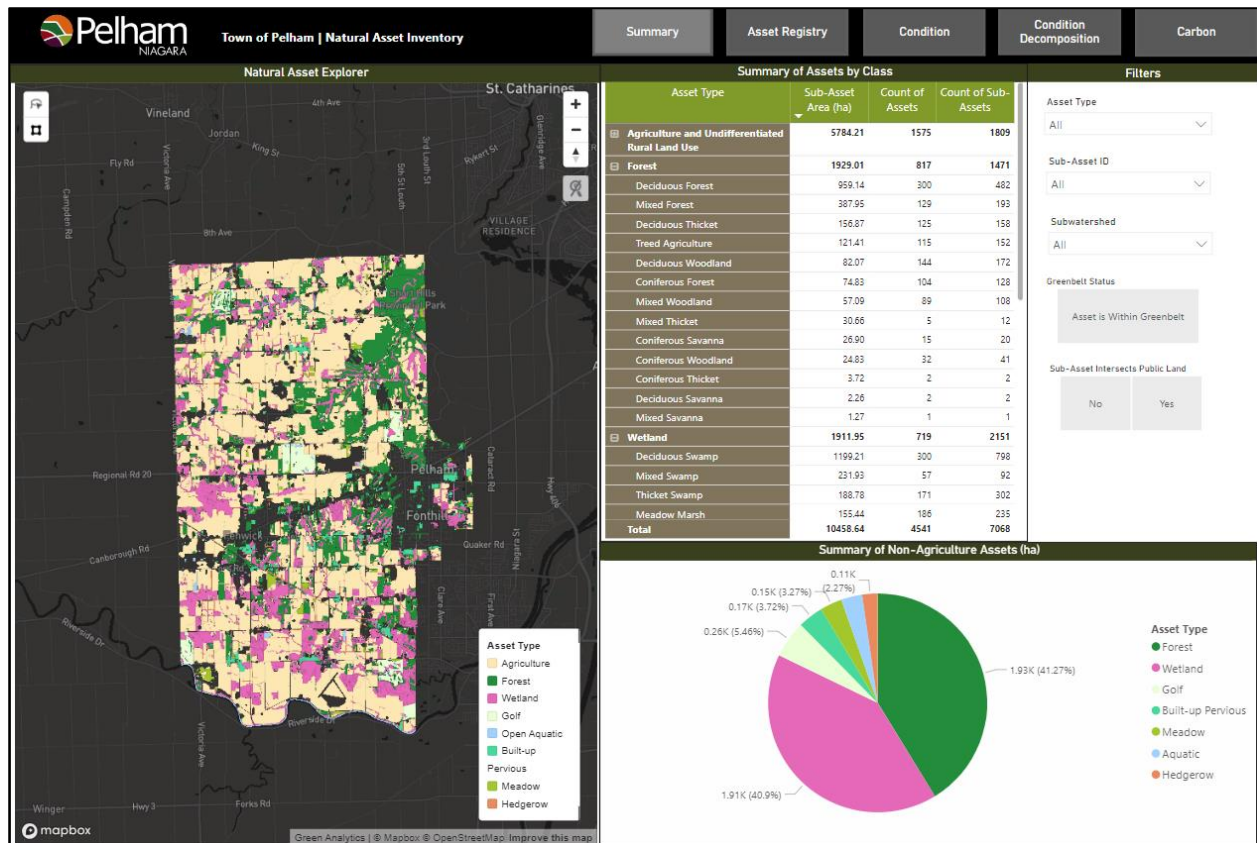


Figure 3. Interactive Online Dashboard – Town of Pelham’s Natural Asset Inventory.

Phase 2: Stormwater Modelling and Valuation of Services/Benefits

To develop a deeper understanding of the role that natural assets play in managing stormwater, the next phase of the project focused on assessing the stormwater management services provided by these natural assets. These results also allowed for a valuation of our natural assets, through a comparison of the estimated cost of replacing these ecosystem services with engineered stormwater management facilities.

Using hydrologic modelling, the project demonstrated that Pelham’s natural assets are crucial in reducing peak stormwater flows. More specifically, our natural assets, such as forests and wetlands, naturally reduce stormwater runoff and peak flows during storms. Without these assets, peak flows would increase by up to 486 percent, resulting in greater flooding, erosion, and infrastructure damage. In addition, replacing natural services with engineered solutions (i.e., stormwater management ponds and low-impact development units), would be more costly and less effective.

The NAM project also conducted a costing analysis of the Upper Twelve Mile Creek sub-watershed to determine the value of stormwater services provided by natural assets. Using hydraulic modelling, the project compared the performance of existing natural systems (i.e., forests, wetlands, watercourses) with engineered stormwater infrastructure (i.e., stormwater management ponds and low-impact development units). Through this analysis, it was determined that:

- The value of stormwater services is \$585,859,327.00, based on the capital cost to replace similar services with built infrastructure.
- Removal of the natural assets resulted in significant projected increase to peak flow and a significant projected increase to runoff depth.
- Built infrastructure was able to reduce runoff depth, but this solution comes with larger construction and maintenance costs, in addition to a loss of co-benefits provided by natural assets.

In addition to stormwater management, natural assets were also found to provide important co-benefits such carbon sequestration, supporting biodiversity, recreational opportunities, and fresh water. Taken together, the combined annual value of these benefits was estimated to range from \$22.1 M to \$24.7 M per year.

These findings indicate that maintaining natural assets offers a more cost-effective solution compared to constructing and maintaining engineered alternatives and can offer a range of additional benefits as well.

Phase 3: Planning and Strategies for Long-term Management

The planning phase of the Pelham-Greenbelt NAM Project focused on integrating natural assets into the Town's asset management system. Some key components include:

1. **Level of Service (LOS) Framework:** The project team developed an LOS framework to guide the decision-making related to natural asset management. The framework defines performance metrics for priority services, such as stormwater management, water supply, biodiversity, recreation, and climate mitigation. It aligns with Pelham's strategic goals, ensuring that natural assets are considered in Town-wide service delivery plans.
2. **Operations and Maintenance (O&M) Costing:** The project team evaluated the costs associated with maintaining natural assets, such as forests, wetlands, and watercourses. The analysis revealed that O&M costs for natural assets are generally lower than for traditional engineered infrastructure.

The planning phase laid the groundwork for integrating natural assets into Pelham's broader financial and asset management systems, ensuring sustainable service delivery for the long-term.

Conclusion and Recommendations

The Project provides the Town of Pelham with insight into the state of natural infrastructure in its jurisdiction, with specific emphasis on lands within the Greenbelt. It has also estimated the value of stormwater services and other co-benefits the natural assets provide.

Natural asset management is an iterative process that requires continual improvement—in other words, ongoing, adaptive management. To this end, NAI provided 11 recommended next steps for Pelham to better protect and proactively manage natural assets, with consideration to the project results and the NAM roadmap that Pelham completed in 2023.

Each recommendation is detailed in the Technical Report and can be grouped into 3 overarching themes /key takeaways that can be applied to any community interested in progressing resilient, cost-effective service delivery through natural infrastructure:

1. Protect What You Can

It is more cost effective and beneficial to protect existing ecosystems than it is to rehabilitate them if degraded. Key actions can include:

- policy reviews/bylaws to ensure natural areas are proactively management where possible;
- naturalization of priority areas; and,
- continued efforts to secure or protect forests and wetlands.

2. Make Evidence-Based Decisions to Manage Natural Assets

Monitoring, management, and assessment activities are continuous, and local governments can benefit from using existing studies and increasing their capacity for regular data collection where possible. For Pelham, priority actions include:

- identifying risks to erosion sites; and
- formalizing invasive species management.

3. Build Awareness and Partnerships

Many of the natural assets that provide services to Pelham residents are not owned by the Town of Pelham, and it does not have direct control over their management. Collaborative partnerships with neighbouring jurisdictions (rightsholders and stakeholders) and building awareness of the benefits of

natural assets among its Council, staff, and the public is necessary to generate support and implement effective natural asset management strategies.

Town staff will be working toward implementation of the recommendations coming out of the projects with the assistance of the Environmental Coordinator.

Financial Considerations:

There are no specific financial implications as a result of this report. Any future project or undertakings with budget implications will be brought to Council through a future budget process or report.

Alternatives Reviewed:

This report is provided for information purposes. No recommendations are being made and therefore, no alternatives reviewed in the report.

Strategic Plan Relationship: Environmental and Climate Change Adaptation

This project furthers both infrastructure-related and environmental components of the strategic plan. This inventory will assist staff in planning future growth and being mindful of the pragmatic value of the Town's extensive natural assets.

Consultation:

As part of the project activities, a Launch Workshop was held in March 2023 with external agencies to determine data sets that might exist that could be used in the project. A cross-departmental workshop was held with Town staff in February 2024 to receive input on implementation of the recommendations coming out of the project. A stakeholder engagement workshop was held in June 2024 with indigenous contacts, external agencies, interested community groups, advisory committees, members of Council and Town staff to share project results, recommendations and receive feedback. Town staff also received a report from Pelham Advocates for Trees and Habitat (PATH) in October 2024, endorsing the Natural Assets Initiative approach and supporting the project's recommendations.

Throughout the project, a project page was maintained through the engaging pelham site: <https://engagingpelham.ca/mnamp>

Other Pertinent Reports/Attachments:

Appendix A – The Pelham – Greenbelt Natural Asset Management Project Technical Report

Appendix B – Pelham Advocates for Trees and Habitats’ Review of Town of Pelham
Natural Asset Management Project

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