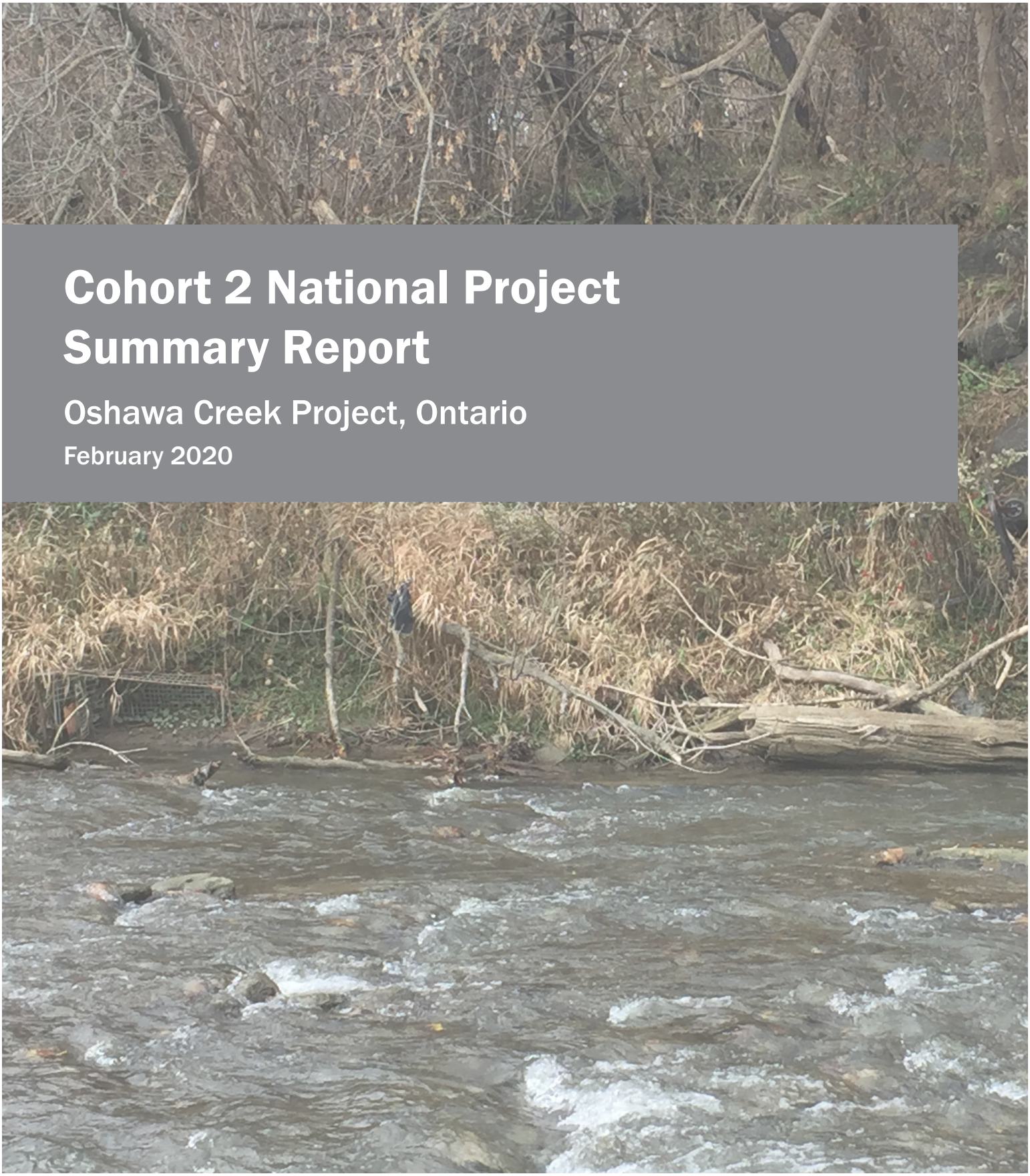

Cohort 2 National Project Summary Report

Oshawa Creek Project, Ontario

February 2020

Full technical report available at MNAI.ca

Municipal Natural Assets Initiative

Making Nature Count

INVEST IN NATURE

The Municipal Natural Assets Initiative (MNAI) is changing the way municipalities deliver everyday services, increasing the quality and resilience of infrastructure at lower costs and reduced risk. The MNAI team provides scientific, economic and municipal expertise to support and guide local governments in identifying, valuing and accounting for natural assets in their financial planning and asset management programs and developing leading-edge, sustainable and climate resilient infrastructure.

Acknowledgements

This report is a summary of MNAI Technical Reports prepared by the MNAI Technical Team and Project communities.

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Convening Organizations

Convening organizations: Smart Prosperity Institute, David Suzuki Foundation, Town of Gibsons, BC, and Roy Brooke and Associates were the original convening partners for the Municipal Natural Assets Initiative and the Cohort 2 project leading to this report was initiated by them.

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Summary

Communities like the City of Oshawa, Ontario, are committed to understanding the role of natural assets and the services they provide. The City already has an asset management plan that supports its strategic direction and complies with the province's regulation (O. Reg.588/17: Asset Management Planning for Municipal Infrastructure Regulation) that requires all Ontario municipalities to prepare an asset management plan for core infrastructure assets by July 1, 2021.

The City initiated the MNAI Oshawa Creek project to better understand the condition, function and value of the natural assets along the Oshawa Creek, and to make the area more resilient to storm events. The project measured how the natural assets are currently reducing erosion and maintaining water quantity and quality, and identified opportunities to improve both through natural asset management and low-impact development practices.

The total value of the Oshawa Creek watershed is between $392 million and $414 million.

Additionally, the City wants to ensure the developments upstream of the project area manage both water quantity and quality before it goes into the Oshawa Creek, and do not contribute to downstream erosion, flooding, water quality degradation and habitat loss.

The project results indicate that the natural assets in the 7-kilometre project area, excluding the floodplain, have a value of $18.9 million in terms of how they are currently managing stormwater. When including the full length of the creek and surrounding flood plain, the total value of the Oshawa Creek watershed increases to between $392 million and $414 million. Results demonstrated that preventative measures to protect natural assets upstream of the project area are required to manage post-development stormwater flows. These findings can support the City's ongoing asset management efforts, and provide a rationale for the project being replicated in other areas.

Introduction

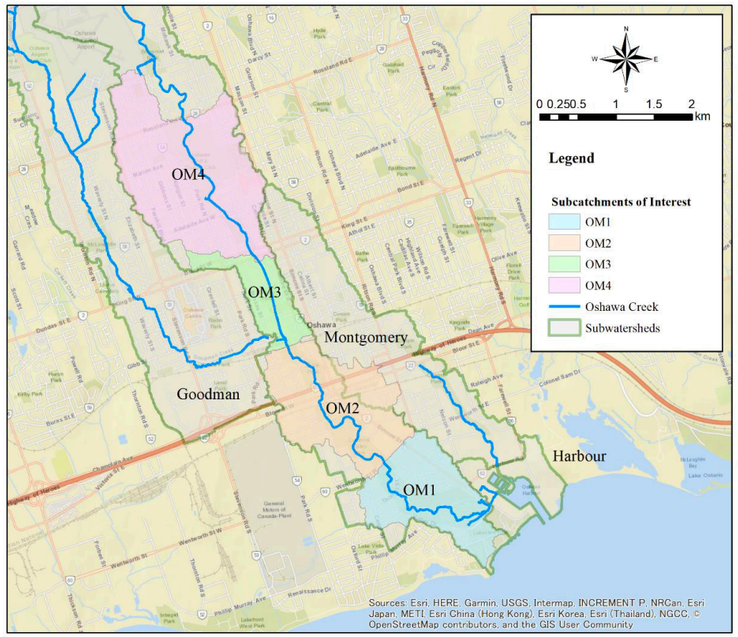
The term municipal natural assets refers to the stock of natural resources or ecosystems that is relied upon, managed, or could be managed by a municipality, regional district, or other form of local government for the sustainable provision of one or more local government services.

The City of Oshawa is located on the Lake Ontario shoreline approximately 60 kilometers east of downtown Toronto. It is the largest municipality in the Regional Municipality of Durham, lies in the eastern portion of the Greater Toronto Area and the Golden Horseshoe, and has a population of 172,434. The city has a diversified economy in the manufacturing, knowledge, health and technology-based sectors, with strong growth projections for the coming years.

Project

The project area was the southernmost 7-kilometre segment of the 50-kilometre-long Oshawa Creek within the Oshawa Creek watershed. The sub-watershed within which the 7 km segment resides is typical of a highly urbanized creek area with residential and commercial developments.

The Oshawa Creek and its tributaries drain an area of approximately 119 square kilometers from its headwaters in the Oak Ridges Moraine south through the Lake Iroquois Beach and into Lake Ontario. The Oak Ridges Moraine and the major Oshawa Creek valley lands are known as the Greenbelt Area. Oshawa Creek is a prime conveyance of stormwater to Lake Ontario and provides a necessary service to the City as part of its stormwater management process.



Proper natural asset management will minimize erosion and enhance stormwater services along the watershed

To measure the role and value of the natural assets, the project:

1. Assessed the current condition of the natural and built assets - this included examining current watershed conditions, watershed targets, the extent to which the creek and floodplain are currently providing stormwater management, and determining the value of those services.

VALUATION ESTIMATES				
Natural Asset	**Cost**	**Creek rehabilitation or restoration projects with Regression Analysis**	**Comparison with Rule of Thumb Estimates**	**Comparison with Vaughan Metropolitan Center Black Creek Renewal Class EA**
Oshawa Creek:	Flow conveyance	$18.9 million	$25.1 million	$35 million
Floodplain	Land purchase	$248 million	$248 million	$248 million
Channel	Cost of naturalized & urban buffers	$9.7 million	$9.7 million	$9.7 million
	Contingency (30%)	$116.3 million	$118.1 million	$121.1 million
Total		$392.9 million	$400.9 million	$413.8 million

   Results showed the total value of services provided by natural assets in Oshawa Creek and the surrounding flood plain ranges between $393 million and $414 million.

2. Compared the natural assets to engineered assets in how well they provide stormwater services under three scenarios: existing land use conditions under current climatic conditions, future land use conditions under current climatic conditions, and future land use conditions under future climatic conditions.

   Results here showed that replacing the natural asset with an engineered asset reduces the ability to retain water, which leads to the potential for more flooding.

Phase 2 assessed potential strategies to mitigate the negative impacts of urbanization via natural assets (by assessing the effectiveness of Low Impact Development alternatives, such as infiltration trenches). The project found that Low Impact Development options are more effective in the upper reaches of the project area.

This project only measured the benefits the creek and floodplain provide for stormwater management and not for other benefits they provide, such as improved human health and well-being, better-looking creek corridors (which increases property prices), aquatic and terrestrial habitat, and reduced flood risk. Such co-benefits are critical, however, and the full technical report details what the benefits are, the values, and specific recommendations on how to include co-benefits in an asset management plan.

Next steps and recommendations

The MNAI project team has identified and modelled additional ways the City of Oshawa can improve the function of natural assets to further protect against and prevent erosion in City-owned riparian lands, mitigate the negative impacts of urbanization, and avoid having to build additional engineered assets.

Implement additional preventative measures.

Recommendations include:

- Use the Oshawa Creek analysis and its quantifiable data as the first major step in a holistic asset management approach.
- Develop a natural asset policy.
- Develop a natural asset management roadmap.
- Enhance co-benefits.
- Implement additional preventative measures.

Infiltration trenches are one example of a preventative measure

About Municipal Natural Assets Initiative

MNAI is changing the way municipalities deliver everyday services, increasing the quality and resilience of infrastructure at lower costs and reduced risk. The MNAI team provides scientific, economic and municipal expertise to support and guide local governments in identifying, valuing and accounting for natural assets in their financial planning and asset management programs and developing leading-edge, sustainable and climate resilient infrastructure.