

# Investing in Watersheds

Towards Scalable, Outcomes-Based  
Financing for Natural Assets



May 2024



## Invest in Nature

The Natural Assets Initiative (NAI) is a Canadian not-for-profit that is changing the way communities deliver everyday services—increasing the quality and resilience of infrastructure with lower costs and reduced risk. The NAI team provides scientific, economic, municipal, and Indigenous governance expertise to support and guide communities in identifying, valuing, and accounting for natural assets in their financial planning and asset management programs to support leading-edge, sustainable, and climate-resilient infrastructure decision making.

Dark Matter Labs (DML) is an international not-for-profit agency committed to taking on the challenges of planetary scale changes via a new, civic economy. DML works with partners around the world to design and build the underlying infrastructure for this new economy, exploring how ownership, legal systems, governance, accountancy, and insurance industries might begin to change.

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# Executive Summary

## PART 1 INTRODUCTION

This report is the culmination of Phase I of the three-phase Investing in Watersheds project.

It provides a conceptual outcomes-based investment framework, including governance considerations and a proposed financing structure, to support investment in the restoration, protection, and management of biodiversity, ecosystems, and ecosystem services at watershed scales.

The overall context for the Investing in Watersheds project is the well-documented need for a significant scale-up in the amount of funding and financing that is available for investing in natural assets and watersheds, both in Canada, and more globally.

Ontario's Grindstone Creek watershed is the proposed site to pilot the proposed outcomes-based investment framework. It was selected both because a strong foundation has already been established through the 2022 Grindstone Creek Watershed Natural Asset Management (NAM) Project, and due to the presence of multiple interested entities with aligned governance frameworks and financial assets.

## PART 2 CONSIDERATIONS

There are over a dozen types of investment instruments (public, private, and philanthropic) that have been used globally to finance the restoration and protection of watersheds, nature, and natural assets. However, it can be challenging to apply many of these instruments at scale. There are well-documented barriers to nature-based solutions in general, and several that must be considered very specifically and overcome if investment in watersheds is to be scaled to the required level in a useful timeframe. The following barriers are considered, along with initial concepts on how they could be overcome:

- Property ownership systems that fragment ecosystems could be offset by identifying a “common pool” of ecosystem services that are of interest across these systems.
- Watershed governance limitations, which could be offset by mechanisms to engage a wider range of rights, liability, and property holders with an interest in maintaining ecosystem service levels (or “common pool” services).
- Consistent and reliable measurement of investment outcomes and attempting to overcome the limitations of a narrow focus on measuring CO2 emissions alone, which has drawbacks at the scale of many watersheds.

Based on the foregoing, eight proposed design principles can be considered to guide the development of investment and governance framework for scalable outcomes-based financing for watersheds:

- 1/ Link governance and investment to achieve watershed-scale outcomes
- 2/ Phase in systemic change through incremental initiatives to overcome current governance limitations
- 3/ Consider ecosystem services in “bundles” and “stacks” to achieve more holistic investment outcomes
- 4/ Adhere to best management practices for additionality, leakage minimization, permanence, and transparency
- 5/ Achieve and maintain social license for durable outcomes.
- 6/ Define “generic value stacks” to replicate efforts across watersheds.
- 7/ Consider multiple viable projects at a watershed scale rather than focusing on individual projects
- 8/ Draw on existing research for management of common pool resources

### **PART 3 PROPOSED STRUCTURE**

The idea of a Common Asset Trust (CAT) model is proposed as a means to overcome the challenges identified in Part 2, and align with the proposed principles. CATs are a collection of agreements, institutions, and schemes designed to care for ecosystems in a sustainable manner, maximizing a full range of common pool natural assets and sharing the co-benefits. Common Asset Trusts are rooted in both Indigenous tradition and public trust doctrine. Their potential is explored to overcome the challenges of replicability and applicability inherent in many existing mechanisms such as land trusts, environmental impact bonds, and carbon and biodiversity credits alone. Environmental impact bonds are used to illustrate how an investment can be structured to provide financial returns to investors within a CAT. A CAT would accept investments from multiple investors funding various restoration projects. Benefits arising from the portfolio of projects could be returned to investors through direct and indirect financial returns.

### **PART 4 BRINGING IT TOGETHER IN A GRINDSTONE CREEK PILOT**

A phased approach for the introduction of a CAT in the Grindstone Creek watershed is proposed. Subject to resources for Phase II of the Investing in Watersheds project, the proposed initial step is to establish governance and finance working groups to design the CAT and report to a steering committee that includes representation from all watershed partners, potential outcomes buyers, and technical partners that are supporting Conservation Halton staff. Immediate next steps include resource mobilization for the design of Phase II and implementation of the foregoing activities in Grindstone Creek.

# Investing in Watersheds

This section describes the purpose of this report provides an overview of the need for investment in watersheds/natural assets, and outlines why the Grindstone Creek watershed is an ideal place to pilot a scalable outcomes-based investment framework for nature-based solutions (NbS).

This report provides a conceptual outcomes-based investment framework, including governance considerations and a proposed financing structure, to support investment in the restoration, protection, and management of biodiversity, ecosystems, and ecosystem services at watershed scales. The framework will be initiated in Ontario's Grindstone Creek watershed. Thereafter, it can be refined, replicated, and adapted in other watersheds where foundational work for natural asset management (NAM) has been completed.

Audiences for the report include investors; local, regional, and national outcome buyers; as well as researchers, natural infrastructure practitioners, and non-governmental organizations. It also provides a basis for action and resource mobilization for the people currently working on activities in the Grindstone Creek watershed, specifically, the current Working Group<sup>1</sup> members and their organizations (see [Figure 1](#)); the current project Advisory Group members<sup>2</sup>; and potential watershed partners (see Text Box 1 for definitions).

- <sup>1</sup> The Working Group includes the City of Hamilton, the City of Burlington, Conservation Halton, the Natural Asset Initiative, and Dark Matter Labs. The Advisory Group has a wider membership. Details are in the document, *Statement of Work: Watershed Financing Project*. Version: November 24, 2022.
- <sup>2</sup> The Advisory Group includes a cross section of entities to help ensure coherence between this, and related, Canadian undertakings.

# Partners of the Grindstone Creek Watershed Financing Project

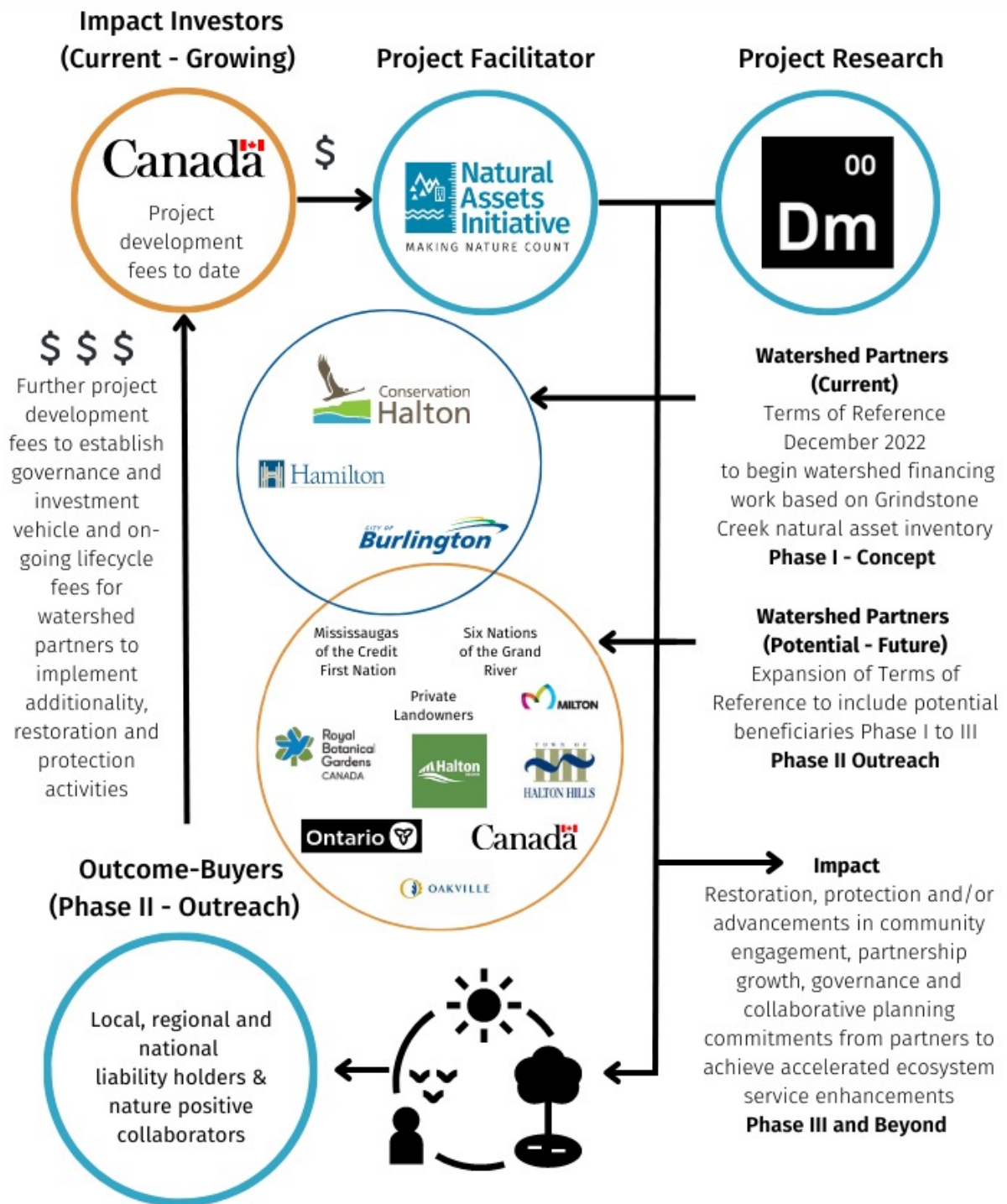


Figure 1: Watershed Partners Responsible for the Health of the Grindstone Creek Watershed



## Defining the Players

A **stakeholder** is a person/business/organization or even a government with interest or concern in something. In contrast, **rights holders** are people, and/or legal entities representing people, with an obligation to uphold rights and responsibilities that may be at stake, in this case the natural assets within a watershed.

In Canada, it is not appropriate to use the term “stakeholder” to refer to people, legal entities, or organizations that are, in fact, rights holders to lands, waters, and other natural resources. More specifically when used incorrectly, “stakeholder” undermines inherent Indigenous rights and responsibilities.

In general, this report uses the term watershed partners, with the word “watershed” recognizing that watershed partners have specific rights at stake within defined ecosystems; and the term “partner” denoting legal entities representing people that hold decision-making rights and responsibilities and that can execute/uphold commitments made in agreements to protect, restore, and maintain services provided by natural assets within a watershed.

Thus, **watershed partners**:

- are legal entities that represent the rights holders to the benefits provided by the natural assets in the watershed; and
- have explicit responsibilities, as laid out by their own laws, sovereignty, and democratic processes, to protect, restore, and maintain the services provided by the natural assets that exist in or adjacent to the watershed.

“Stakeholder” is used only when denoting community members within the ecosystem who have interest in or concern for the watershed and who may or may not be rights holders but are not explicitly noted as a watershed partner.

**Project developer** is used to describe legal entities that may propose, design, and execute restoration, protection, and/or monitoring work to enhance natural assets within the watershed, for a fee, paid by watershed partners. A project developer could be any one of the watershed partners or other entities that watershed partners agree to compensate for the undertaking of responsibility for positive improvements to natural assets within the watershed.

This report is the culmination of Phase I of the three-phase *Investing in Watersheds* project.<sup>3</sup>

<sup>3</sup> See *Statement of Work: Watershed Financing Project*. Version: November 24, 2022.

- **Phase I** includes the base investment case, background research, and a conceptual outcomes-based investment framework.
- **Phase II**, which will begin as resources allow, includes:
  - elaboration of, and engagement on, the proposed governance and financing model with current and potential watershed partners, and;
  - fundraising for investment structure development costs from early-stage investors (impact investors), who may or may not seek to have a role in Phase III of the project.
- **Phase III** will seek outcome buyers/investors; execute benefit sharing and co-management/governance agreements between local governments, Indigenous Nations, and other watershed partners identified in Phase II; and build a portfolio of ecosystems to which an adapted governance and financing model could be expanded.

The *Investing in Watersheds* project builds upon and applies other NbS financing case studies/transactions, natural asset management projects, and NbS financing and scaling research to help underpin a novel and scalable outcomes-based NbS financing approach, the need for which is explored below.

## Overview of Natural Assets and Natural Asset Management

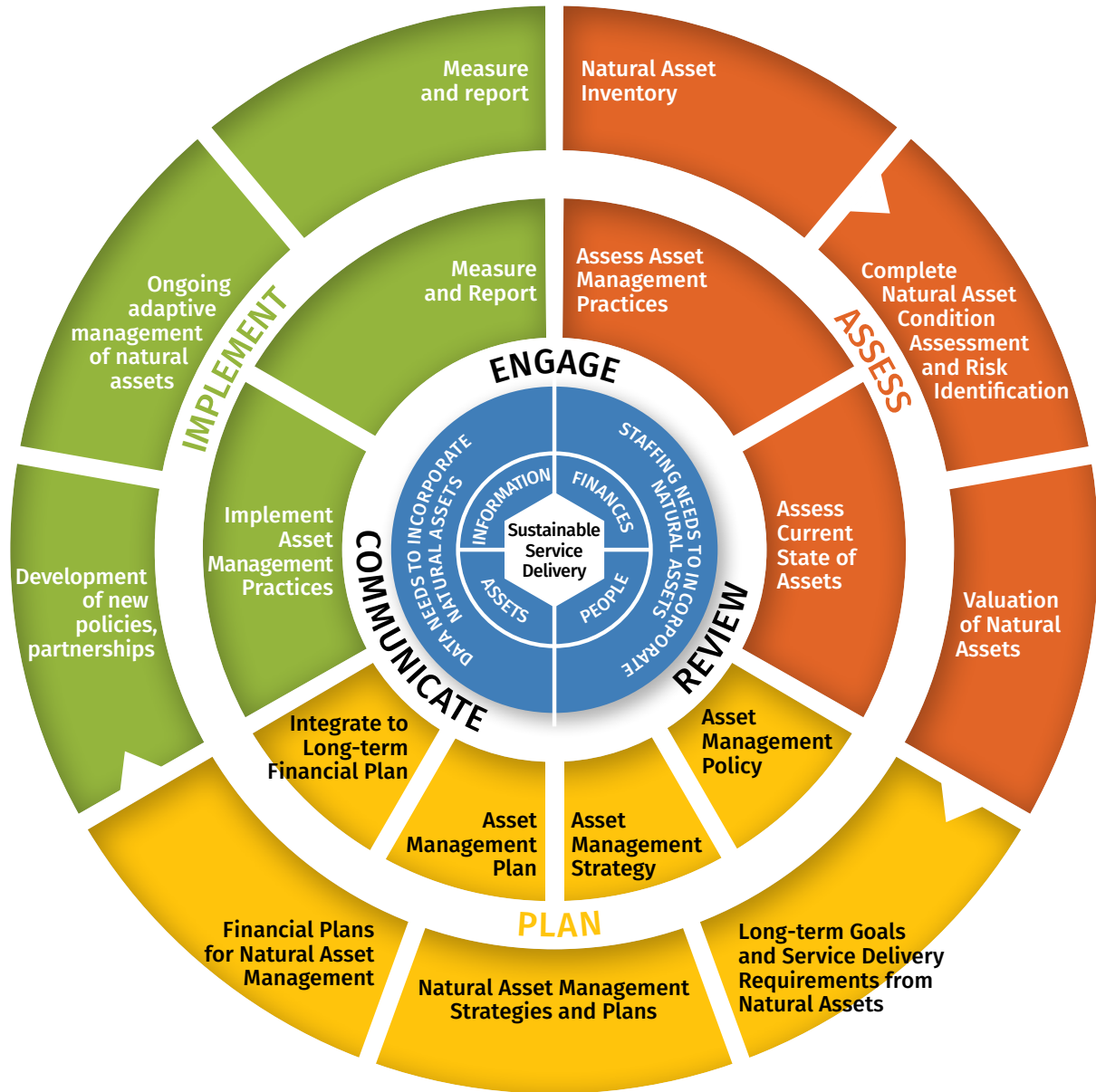
The term natural assets refers to the stocks of natural resources or ecosystems that contribute to providing one or more services required for the health, well-being, and long-term sustainability of a community and its residents (e.g., water filtration, stormwater management, climate regulation).<sup>4</sup>

The protection, restoration, and enhancement of natural assets are increasingly recognized as a means by which communities can secure vital flows of infrastructure services such as drinking water filtration, stormwater management, flood and erosion management, and aquifer recharge, as well as co-benefits such as health outcomes, and the provision of social, cultural, and recreational amenities (often referred to as non-infrastructure or intangible infrastructure services).

Figure 2 depicts a standard asset management framework and some unique considerations for natural assets. The framework consists of assessment, planning, and implementation phases in a continuous cycle. Asset management allows for a comprehensive and integrated understanding of natural assets and their service values in terms of a broad suite of infrastructure and non-infrastructure services, thus ensuring that they are managed in a sustainable and resilient manner for current and future generations. This practice is known as natural asset management. Importantly, NAM is inherently scalable because public sector entities in Canada are increasingly required to adopt it.

<sup>4</sup> See *Defining and Scoping Municipal Natural Assets* for more details.

Figure 2: Natural Asset Management Processes<sup>5</sup>.  
 Source: Asset Management BC (2014), adapted by NAI



<sup>5</sup> Adapted by NAI for natural asset-specific contexts. The source framework was developed by Asset Management BC.

# The Need for Investment in Natural Assets and Watersheds

## GLOBAL INVESTMENT

Globally, financial investments in nature overall are small, both in absolute terms—equivalent to around 0.1% of global nominal GDP—and in relative terms.<sup>6</sup> According to the United Nations Environment Programme<sup>7</sup>, the current US \$154-billion per year financial flows to NbS must triple in this decade to address the converging sustainability crises of climate change, biodiversity loss, and land degradation.<sup>8</sup> Notwithstanding the importance of nature and natural assets, few transactions pool private capital towards this asset class.

## NATIONAL INVESTMENT

Domestically, the Government of Canada has allocated some funding towards watershed ecosystems. However, these funds alone cannot match the scale of required investment. For example, the 2021 federal budget committed more than CA \$3.3-billion over five years to deliver on Canada’s target of protecting 30% by 2030. Three years into this commitment, there is still much to be done. As of December 2021, only 13.5% of land and 13.9% of ocean is in protected areas and other effective area-based conservation measures (OECMs).<sup>9</sup> The federal Natural Infrastructure Fund also illustrates the funding gap: it allocates CA \$200-million nationally over three years, but a single project to rehabilitate wetlands and re-establish floodplains in British Columbia’s Kettle Valley will cost an estimated CA \$50-million.<sup>10</sup> This contrast suggests that the Natural Infrastructure Fund is insufficient to achieve long-term national impact.

Overall, it is estimated that approximately CA \$5-billion per year in mostly public and philanthropic funds are invested into nature in Canada. To reach 30% by 2030, CA \$20- to 25-billion per year is required, much of which must come from private sector funds.<sup>11</sup>

Canada also has two carbon markets: the federal government’s Output-Based Pricing System, with an estimated size of US \$230-million in 2020; and the Western Climate Initiative that includes California, Washington, Québec, Nova Scotia, and Ontario, with a total revenue of CA \$31-billion since 2013, of which

<sup>6</sup> Deutz, A. et al. (2020). *Financing Nature: Closing the global biodiversity financing gap*. The Nature Conservancy and the Cornell Atkinson Center for Sustainability.

<sup>7</sup> UNEP. (2022). *State of finance for Nature - Time to act: Doubling investment by 2025 and eliminating nature-negative finance flows*. United Nations Environment Programme.

<sup>8</sup> See Footnote 5

<sup>9</sup> See Environment and Climate Change Canada’s *Canadian Protected and Conserved Areas Database*

<sup>10</sup> Case study information available at [mna.ca/where-are-they-now-grand-forks](https://mna.ca/where-are-they-now-grand-forks)

<sup>11</sup> Elgie, S. et al. (2021). *Invest in Nature: Scaling Conservation Finance in Canada for a Nature-Smart Economy*. Smart Prosperity Institute.



CA \$6-billion comes from the Canadian provinces.<sup>12</sup> However, as described below, carbon storage is only one of the many services provided by nature, and carbon projects are not appropriate for all watersheds.

The Smart Prosperity Institute estimates that in Ontario, where Grindstone Creek is located, conservation investments for biodiversity, floods, and healthy natural environments need an annual CA \$20- to \$25-billion increase between now and 2030 to realistically meet climate and biodiversity goals.<sup>13</sup>

Stated differently, sustained investments at the scale of watersheds to restore and preserve ecosystem health is novel, not the norm.

No changes are required to maintain the status quo, but this is not desirable. More financing, and more financing instruments, are required *if investments in watersheds are to become commonplace, scalable practices in a meaningful timeframe, with the term “scalable” connoting something that can be readily replicated across diverse geographies and contexts such that it becomes commonplace.* It is within this context that the *Investing in Watersheds* project is being developed.

## Why Grindstone Creek Watershed for an Outcomes-Based Financing Pilot?

The Grindstone Creek watershed is a 91 km<sup>2</sup> watershed that forms part of Ontario’s Greenbelt. It is located within the Lake Erie-Lake Ontario ecoregion, which contains the greatest diversity of wildlife of any Canadian forest zone and includes species found nowhere else in the country.

It was selected as the location to launch the *Investing in Watershed* project for two reasons: its natural assets have been assessed through the Grindstone Creek NAM Project (see below), and there are well-established entities with sound governance and financial assets within the watershed.

### A STRONG FOUNDATION: THE 2022 GRINDSTONE CREEK NAM PROJECT

In August 2022, NAI completed the Grindstone Creek NAM Project<sup>14</sup> together with Conservation Halton, the City of Burlington, the City of Hamilton, the Royal Botanical Gardens, and the Greenbelt Foundation. The Grindstone Creek NAM Project provided a rich analysis of natural assets and demonstrated a strong foundation for the development of an adapted governance and financing approach to increase investment for natural assets in this watershed. As an example, NAI performed an economic evaluation to measure how natural assets contribute to the core services provided by the local government and other agencies (see Table 1). While far from exhaustive, this economic evaluation provides a basis for asset management

<sup>12</sup> “Results and Impacts | Our Work,” WCI, Inc., accessed April 11, 2023, [wci-inc.org/our-work/results-and-impacts](https://wci-inc.org/our-work/results-and-impacts).

<sup>13</sup> Twigg, M. et al. (2022). *Investing in the future of Ontario’s Greenbelt*. Smart Prosperity Institute.

<sup>14</sup> [mnai.ca/media/2022/12/MNAI-Grindstone-main-report.pdf](https://mnai.ca/media/2022/12/MNAI-Grindstone-main-report.pdf)

and community awareness and gives a better understanding of the potential to achieve investment outcomes through private sector participation. The Grindstone Creek NAM Project also identified areas requiring sustained investment in the watershed.

*Table 1: Stormwater Management (SWM) Value of Natural Assets by Asset Class*

NATURAL ASSET TYP	AREA (HA)	POND COST	LID COST	TOTAL SWM COST
Forest	452.39	\$ 129,260,470	\$ 49,480,361	\$ 178,740,831
March	53.65	\$ 155,204,143	\$ 961,390	\$ 156,165,533
Swamp	789.15	\$ 1,607,866,305	\$ 10,616,012	\$ 1,618,482,317
Open Water	36.06	\$ 117,768,428	\$ 784,378	\$ 118,552,806
<b>Total</b>	1331.25	\$2,010,099,346	\$ 61,842,141	\$ 2,071,941,487

Further, Grindstone Creek is well-positioned to launch investment in the Watersheds project because:

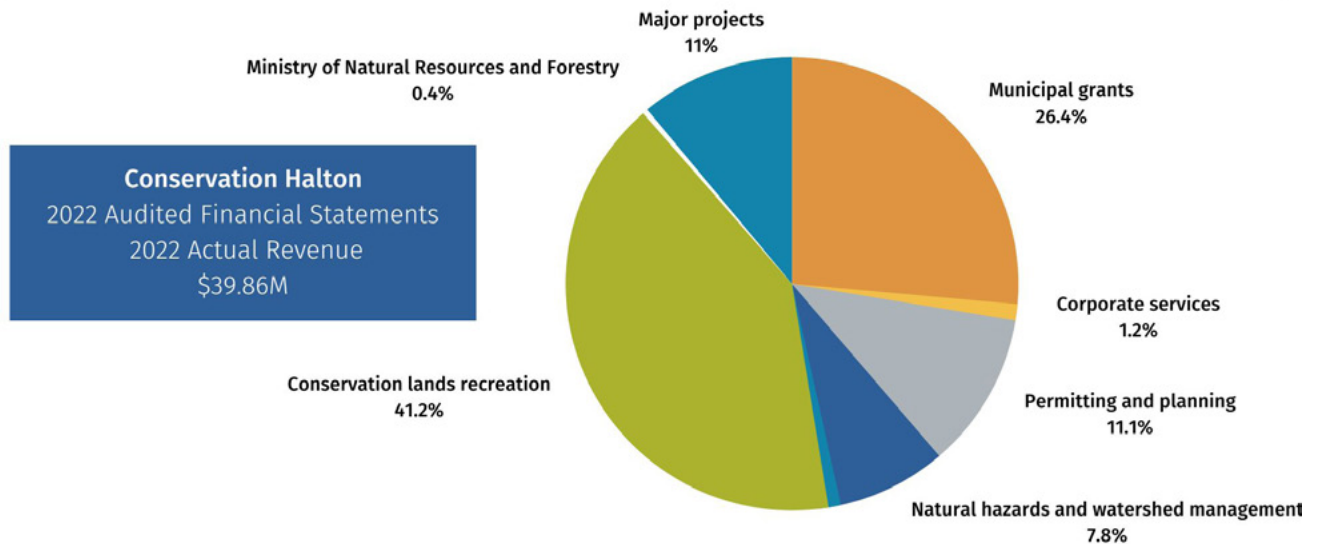
- There is willingness and support from multiple partners with responsibilities for the protection and restoration of natural assets in the Grindstone Creek watershed to consider increased private sector investment into natural assets to achieve a wide variety of measurable outcomes that will contribute to improving community resiliency.
- The Grindstone Creek watershed presents a solid value proposition; of note there are multiple financial incentives and benefactors of financial benefits when flood prevention and mitigation ecosystem services are maintained by stewards of the watershed.
- There is a heightened public awareness of and support for the services that nature provides in the watershed, thus creating a positive climate for additional efforts.
- There are existing partnerships with the governance structures and capacity to provide publicly funded, fee-for-service, and philanthropic investment in natural assets.

## ENTITIES WITH SOUND GOVERNANCE AND FINANCIAL ASSETS IN GRINDSTONE CREEK

Conservation Halton is the Conservation Authority<sup>15</sup> that has some responsibility for protecting and restoring natural assets in the Grindstone Creek watershed as well as two other main watersheds and several smaller watersheds. Conservation Halton’s 2022 audited financial statements demonstrate a total investment of CA \$40.85-million into the watersheds they care for through two entities: Conservation Halton (CA \$39.86-million) and its charitable investment vehicle Conservation Halton Foundation (CA \$0.987-million). (See *Figures 4* and *5*). Both entities continue to grow. The 2023 Conservation Halton operating budget of CA \$37.2-million provides for an investment of CA \$21.6-million in watershed management and support services programs and an investment of CA \$15.6-million in conservation areas. Consistent with past years, the majority of the funding for the 2023 operating budget is through self-generated revenue, leaving less than 30% of the operating budget funded by municipalities.<sup>16</sup>

*Figure 3: Conservation Halton, Actual Revenue - 2022 Audited Financial Statements<sup>17</sup>*

### Conservation Halton: Providing diverse revenue sources to support natural asset management

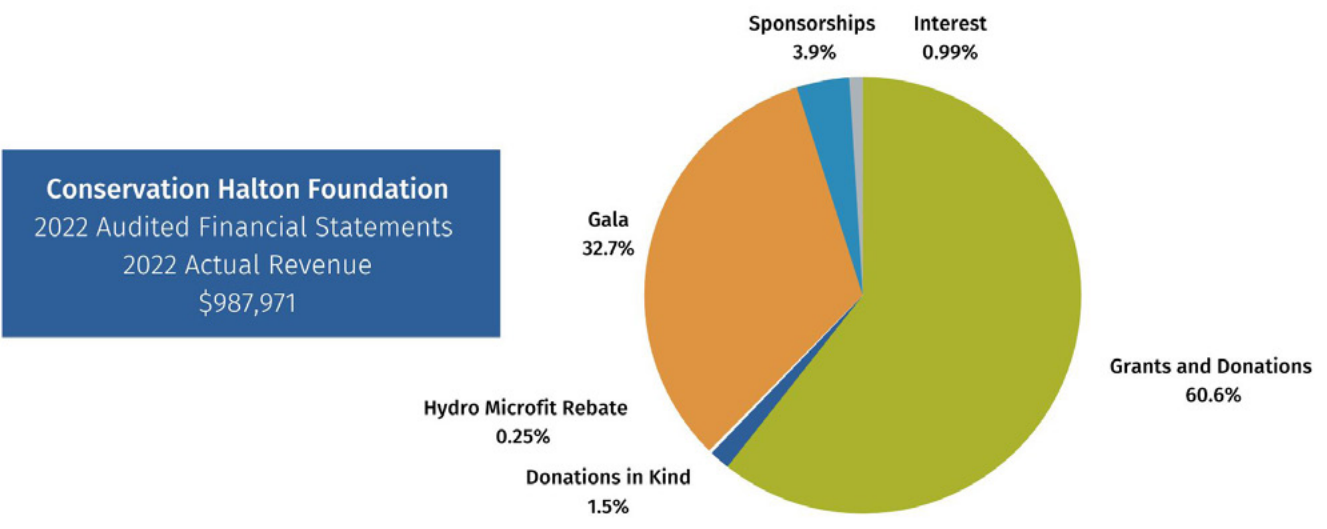


- <sup>15</sup> Ontario’s 36 Conservation Authorities, of which Conservation Halton is one, are local watershed management agencies mandated in legislation to ensure the conservation, restoration, and responsible management of Ontario’s water, land, and natural habitats. See [conservationontario.ca](http://conservationontario.ca) for more details.
- <sup>16</sup> Page 5 - [www.conservationhalton.ca/wp-content/uploads/2022/11/Conservation-Halton-2023-Budget-Business-Plan-002.pdf](http://www.conservationhalton.ca/wp-content/uploads/2022/11/Conservation-Halton-2023-Budget-Business-Plan-002.pdf)
- <sup>17</sup> Conservation Halton 2022 Audited Financial Statements [www.conservationhalton.ca/wp-content/uploads/2023/05/2022-12-31-Conservation-Halton-FS-signed.pdf](http://www.conservationhalton.ca/wp-content/uploads/2023/05/2022-12-31-Conservation-Halton-FS-signed.pdf)

Conservation Halton Foundation is an arm’s-length governance and charitable investment vehicle that improves the overall investment baseline for Conservation Halton to support private sector investment into natural assets. The operation of a charitable investment vehicle to support natural asset management work is not a common practice for watersheds in Canada, but the fact that many Ontario conservation authorities have created foundations demonstrates replicability.

Considering how this existing charitable investment vehicle could be adapted to support new private sector investment into the Grindstone Creek watershed and other watersheds cared for by Conservation Halton will be explored further in Part 3 of this report and in Phase II of this project.

## Conservation Halton Foundation: A charitable investment vehicle to support natural asset management



*Figure 4: Conservation Halton Foundation, Actual Revenue - 2022 Audited Financial Statements<sup>18</sup>*

<sup>18</sup> Conservation Halton Foundation - 2022 Audited Financial Statements  
Conservation Halton Foundation - 2022 Audited Financial Statements  
[www.conservationhalton.ca/wp-content/uploads/2023/04/2022-12-31-Conservation-Halton-Fdn-wFS-1.pdf](http://www.conservationhalton.ca/wp-content/uploads/2023/04/2022-12-31-Conservation-Halton-Fdn-wFS-1.pdf)



# Considerations for Scaling Watershed Investment

This section provides a brief overview of existing investment instruments and what is needed to overcome the challenges and complexities of accessing a range of investment opportunities for watersheds at scale.

## Types of Watershed Investment Instruments

There are over a dozen types of investment instruments (public, private, and philanthropic) that have been used globally to finance the restoration and protection of watersheds, nature, and natural assets. *Figure 5* outlines these investment instruments, their prevalence in Canada, and how, in principle, they could be applied by watershed partners in the Grindstone Creek watershed. For more information on the methods used to classify prevalence of these investment instruments in Canada, see *Appendix 1*.

Types of Watershed Investment Instruments		Investment Instrument prevalence in Canada	Investment Instrument accessibility to Watershed Partners	
Public	Ecosystem, biodiversity and/or carbon taxes	Moderate (carbon taxes)	Low (Provincial/Federal)	
	Environmentally-motivated subsidies	Moderate	Low (Provincial/Federal)	
	Overseas Development Finance (ODA)	Not available	Not available	
Domestic	Development Banks	Not available	Not available	
	International	Sovereign Debt (e.g. debt-for-nature swaps)	Not available	
Public and/or Private	Public Private Partnerships (PPP) and/or Project for Permanence (PFP)	Moderate (3-4 PFP examples)	Low-Moderate	
	Domestic/International	Payment for Ecosystem Services (PES)	Low (1 voluntary PES example)	
	Bonds/Loans	Low (1-2 bond examples)	High	
Private	Sustainability Linked Loans, Term Loans	Low	Low	
	Voluntary carbon market (VCM) - carbon credits	Moderate - High	Low	
	Biodiversity loans and/or equity and/or credits	Low-Moderate	Moderate	
	Sustainable commodities	High	Moderate	
	Domestic/International	Impact Investing	Moderate	High
	Philanthropy	Moderate	High	

Source: Natural Assets Initiative (NAI), adapted from Biodiversity: Finance and the Economic Case for Action, OECD (2019) and The Investment Case for Nature, KPMG (2023)

*Figure 5: Types of Watershed Investment Instruments, Their Prevalence and Accessibility. For more information on how each instrument works, review the investment case for nature, KPMG (2023)<sup>19</sup>*

Of particular interest to most organizations collaborating on a watershed scale to maintain and enhance ecosystem services are public and/or private investment instruments like payment for ecosystem services (PES), bonds/loans, voluntary carbon market, and emerging biodiversity markets. Each one

<sup>19</sup> The Investment Case for Nature, KPMG (2023) [assets.kpmg.com/content/dam/kpmg/xx/pdf/2023/12/investment-in-nature.pdf](https://assets.kpmg.com/content/dam/kpmg/xx/pdf/2023/12/investment-in-nature.pdf)

of these investment instruments could be accessible to watershed partners to finance restoration and protection activities in the watershed.

To implement the existing and available investment instruments beyond a small number of sites to a point where they become widespread, several barriers—or areas of challenges and complexity—must be considered and overcome.

However, prior to selecting any one of these investment instruments communities and watershed partners must first consider that to implement any one of the above-noted investment instruments to a point where they become widespread, several barriers—or areas of challenges and complexity—must be considered and overcome:

- Property ownership systems that fragment ecosystems;
- watershed governance; and
- consistent and reliable measurement of investment outcomes.

To overcome these challenges and complexities, several concepts and eight watershed principles are explored in this section to guide the development of a new investment model that can be established to access a wide variety of emerging public and/or private investment instruments— from carbon markets to bonds—sharing the wide variety of co-benefits from ecosystems services for the public good with all watershed partners.

## Overcoming Specific Barriers to Scalable Use of Financing Instruments

As noted above, there are a variety of investment instruments available. There are, however, “barriers”—or challenges and complexities—to consider and overcome when evaluating which investment instruments may be most appropriate for natural assets.

At a general level, Sarabi et al. (2020), for instance, identified 15 political, institutional, and knowledge-related barriers to nature-based solutions.

This section focuses on a subset of these challenges that are of particular relevance to investing in watersheds, and provides some considerations for overcoming them.

### BARRIER TO SCALE: PROPERTY OWNERSHIP SYSTEMS FRAGMENT ECOSYSTEMS

The challenges with financing natural asset management at scale (as opposed to at a single site) is inherent in the nature of ecosystems and the tools available to govern and finance them. In economic terms, natural assets are usually considered non-rival and/or non-excludable, but private property systems introduce complications that make an increasing number of natural assets rival and excludable. Even when a natural asset becomes rival and excludable through private property ownership systems, it continues to

provide “common pool” services and resources to the community.

For example, a wetland on private property provides water filtration, habitat preservation, stormwater retention, carbon sequestration, and social well-being services and co-benefits to all of the surrounding community. These common pool services and resources provide a non-excludable and non-rival public good that can be measured, monitored, and invested in to incentivize Indigenous, public, and private land stewards to maintain and enhance these services.

Conventional economic markets effectively manage goods and services that are “simple” in that they are rival, scarce, and easily excludable. Ecosystems, however, can be used or consumed by multiple people without diminishing their availability to others (i.e., they are non-rival), and it is difficult to exclude people from consuming them (i.e., they are non-excludable). (See Figure 6).

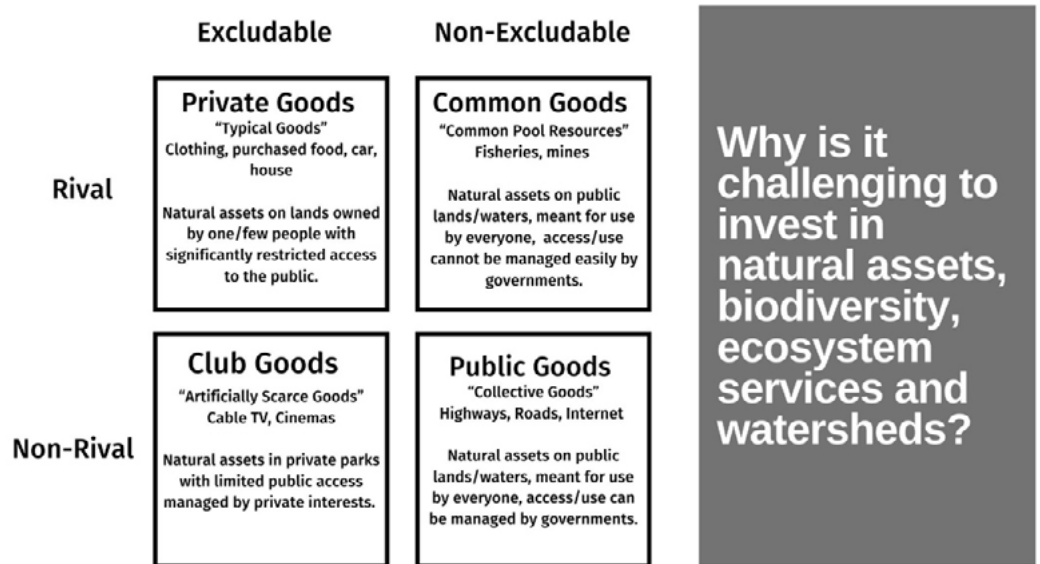


Figure 6: Goods and Services Classified According to Rivalry and Excludability<sup>20</sup>

Overfishing in a shared water body, for example, is a negative, non-excludable, and rival activity that can lead to the depletion of fish stocks; it affects the livelihoods of everyone who depends on that resource. In contrast, planting trees is a positive, non-excludable, and non-rival activity that benefits the environment and people’s health; everyone in the surrounding area can benefit from the improved environment and air quality. It is these positive, non-excludable, and non-rival common pool services that form the basis for natural asset investment models to incentivize and provide returns on investment to a multitude of beneficiaries, including Indigenous and local governments, businesses, and private property owners. By establishing a widespread understanding of the common pool services that natural assets provide it is possible to structure investment models that allow property owners to maintain ownership while receiving incentives to

<sup>20</sup> Costanza, R. et al. (2020). *Common Asset Trusts to Effectively Steward Natural Capital and Ecosystem Services at Multiple Scales*. Journal of Environmental Management

maintain natural assets that contribute to common pool services.

Governments and/or not-for-profits are often responsible for managing non-rival and non-excludable access to ecosystems as a public good. However, they are often limited in their ability to influence human activities, particularly across the multiple ownership and jurisdictional boundaries that characterize many watersheds. This can lead to depletion and degradation of natural assets that benefit many people. Investment models that provide incentives for Indigenous, public, and private land stewards to maintain and enhance common pool services and resources that natural assets provide present an opportunity to overcome some of the challenges and complexity that rivalry and excludability present to watershed scale investment.

### **On the Ground: Understanding the Complexity of Property Ownership in the Grindstone Creek Watershed, and how the Concept of Common Pool Services Can Help Manage it**

Building on the Grindstone Creek NAM Project results and data, [Figure 7](#) provides a general overview of the natural assets by current watershed partner type. These could be considered common pool services with measurable outcomes for a watershed investment model. This map visualizes the complexities of property ownership and creates a baseline understanding of the natural assets that could be immediately available for the private sector investment by current watershed partners. Overall, current watershed partners have care and responsibility for 488.6 hectares (ha) of natural assets, or 6.75% of natural assets in the watershed.

Table 2 provides a breakdown of the natural asset types that are located on property owned by watershed partners and on private or other public lands. Private lands and other public lands (schools, hospitals, etc.) represent the potential amount of natural assets (93%) that could be considered using a common pool services investment model via expanded partnerships, governance structures, and financial incentives that could be supported by private sector participation.

This analysis suggests that to scale any investment model for the Grindstone Creek watershed, watershed partners can first consider the initial common pool services for which they have care/responsibility of existing governance structures; and, in tandem, grow new governance structures that are inclusive of Indigenous rights holders and private and publicly owned lands to incentivize common pool service maintenance and enhancement with shared benefits for all of the people that rely on these common pool services.



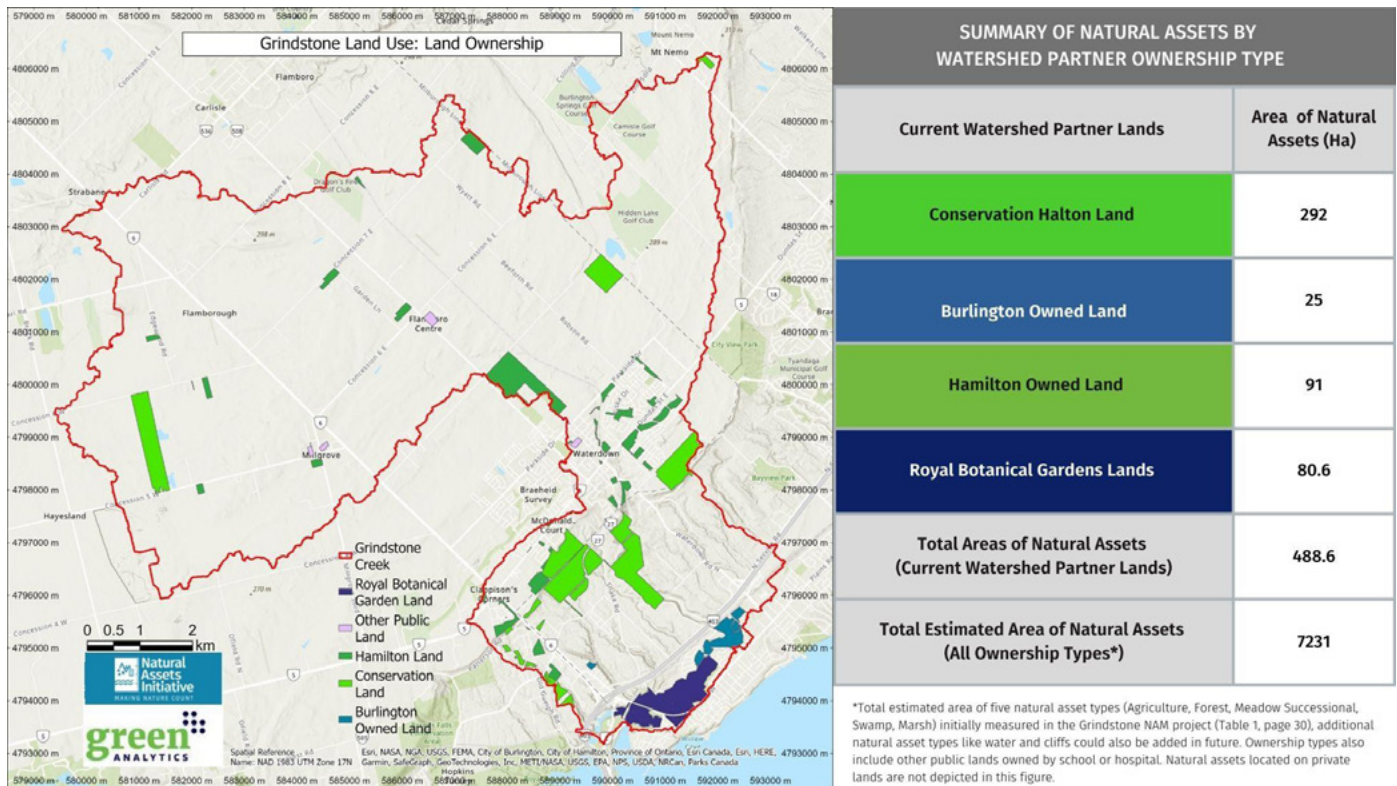


Figure 7: Breakdown Of Natural Assets by Watershed Partner Ownership Type

NATURAL ASSET TYPE	Area Conservation Halton Land (Ha)	Area Burlington Land (Ha)	Areas Hamilton Land (Ha)	Area Royal Botanical Gardens Lands (Ha)	Private Land or other public lands (Ha)	Total Area of Natural Assets (Ha)
Agriculture	2.9	0.4	21.7	--	3867	3892
Forest	163	18	16.8	36	783	1017
Meadow Successional	36.6	2.5	12.4	2	321	374
Swamp	59	3.6	32	11	1368	1474
Marsh	30.6	0.2	4	32	403	474
<b>Total</b>	<b>292</b>	<b>25</b>	<b>91</b>	<b>81</b>	<b>6742</b>	<b>7231</b>

Table 2: Grindstone Creek NAM Project Natural Asset Types Organized by Ownership Type

## BARRIER TO SCALE: WATERSHED GOVERNANCE LIMITATIONS

Unlike traditional “built” infrastructure, ecosystems and the natural assets they contain often extend beyond a single jurisdictional boundary and are owned and/or controlled by various entities and rights holders. Therefore, effective management of natural assets—and the preservation of their benefits (common pool services)—requires collaboration among multiple entities at the scale of entire watersheds or other similarly significant ecological units.

To overcome this challenge and complexity, watershed partners can include a wider range of rights, liabilities, and property holders (per [Figure 1](#)) with an interest in maintaining ecosystem service levels (or common pool services). Expanding existing watershed governance to include Indigenous Nations and private property owners through benefit sharing agreements and financial incentives could increase the number of natural assets available for private sector investment; improve permanence, functionality, and performance of natural assets; and reduce liability for all watershed partners.

### On the Ground: Expanding Grindstone Creek Watershed Governance

The Grindstone Creek watershed has a complex framework that governs land use and conservation efforts. The watershed is situated upon the Treaty Lands and Territory of the Mississaugas of Credit First Nations and the traditional territories of the Huron-Wendat, Neutral, Petun, and Haudenosaunee Nations. The regulatory and treaty frameworks comprise various legislative vehicles with specific implications for advancing conservation and restoration initiatives and also for regulating industrial and agricultural activities that could contribute to ecosystem degradation.

In the Grindstone Creek NAM Project, several steps were recommended for the inclusion of all rights holders and watershed partners, with a particular focus on including local Indigenous Nations. Outreach with Indigenous Nations in this watershed continues to evolve, and a summary of the current status of engagement can be found in [Appendix 2](#). Continuously improving and implementing recommendations outlined in [Appendix 2](#) will be a key deliverable in Phase II and III of this initiative and will require resources and new working groups to co-create watershed governance approaches that considers both regulatory and treaty frameworks and benefit sharing agreements with Indigenous Nations.

## BARRIER TO SCALE: MEASURING INVESTMENT OUTCOMES CONSISTENTLY AND RELIABLY

Significant efforts have been made to value ecosystem services and design key performance indicators (KPIs) to measure the outcomes of investment in conservation, watershed maintenance, and enhancement. There is, however, a lack of harmonization and standardization of how watershed

investment relates to commonly used metrics defined by Environmental, Social, and Governance (ESG) in investing. NAM provides the opportunity to bridge conservation and investment worlds. Because there are no universally recognized metrics for ESG factors,<sup>21</sup> and no universally recognized metrics for ecosystem services and watershed health KPIs, each watershed (or similarly significant ecological unit) must:

- define the outcomes that watershed partners and investors want to measure,
- agree upon methodologies used to measure these outcomes, and
- consistently apply these methodologies to measure outcomes related to investment.

Once consistent and reliable methods are established to measure outcomes holistic returns on investment for many beneficiaries can be realized.

At present, the most prevalent outcomes-based investment instrument used to measure return on investment is carbon because of its universally accepted measurement, tons of CO<sub>2</sub>. While carbon markets present an opportunity for conservation proponents to receive direct investment to support the maintenance and protection of intact ecosystems, they require large volumes of a watershed to be included, owned and controlled by watershed partners. However, this type of singular outcomes-based investment instrument alone has two key drawbacks in a watershed context. First, it captures only a small fragment of the values or benefits that any given watershed provides. Second, it has significant upfront costs to entry with minimal returns on investment via carbon credit sales for heavily fragmented watersheds that struggle to measure additionality and manage leakage due to external factors. Thus, a more holistic suite of outcomes that includes ecosystem services, biodiversity, carbon, and socio-economic co-benefits that can be used to calculate return on investment in watersheds would present a more accurate and inclusive opportunity for heavily fragmented watersheds like the Grindstone Creek watershed that may not qualify for the carbon markets.

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<sup>21</sup> (2019). *Into the wild: integrating nature into investment strategies*. WWF France & Axa Insurance.

## On the Ground: Grindstone NAM Project Results and Existing KPIs for the Grindstone Creek Watershed

The results of the Grindstone Creek NAM Project concluded that natural assets provide CA \$2-billion in stormwater management services and CA \$34-million in erosion control, carbon storage, and recreation co-benefits annually. These NAM results, combined with Conservation Halton's 2023 KPIs, resulted in identification of:

- 105 ha of wetlands, forests, and other natural areas restored
- 8.5 km of improved creek and stream habitat
- More than 130,000 trees and shrubs planted
- 39 invasive species managed
- 842 environmental sites monitored

These demonstrate that the Grindstone Creek watershed has well-established outcomes that can be measured, monitored, and reliably tracked to determine returns on investment for a wide range of beneficiaries. Phase II of this initiative will identify a wider suite of:

- Natural asset maintenance and enhancement outcomes;
- beneficiaries of those outcomes, and;
- dynamic, consistent, and reliable methods for tracking the benefits received by a multitude of beneficiaries.

This will help determine (a) the cost-benefit of restoration, protection, and maintenance activities, and (b) the return on investment for a wide range of outcomes-buyers that may benefit from these actions in the form of avoided loss and damage, increased property values, increased revenue due to recreation, and/or reduced risk to flooding or impacts from climate change.

## Looking Ahead: Proposed Design Principles for Successful Watershed Investment

Eight design principles are explored to inform a proposed watershed investment instrument, called a Common Asset Trust, that could be phased in and operated parallel to existing conservation investment instruments used by Conservation Halton and that apply initial results from the Grindstone Creek NAM Project.

The eight watershed investment design principles outlined below are based on: existing research on the barriers to resourcing nature-based solutions, emerging dialog with watershed partners, and an understanding of the actual and perceived limitations of other existing watershed financing investment instruments such as carbon credits or sustainability-linked bonds.



**WATERSHED INVESTMENT PRINCIPLE 1:****GOVERNANCE AND INVESTMENT MUST BE LINKED FOR WATERSHED SCALE OUTCOMES**

To invest in watersheds and receive a return on investment in a manner that is readily replicable beyond individual sites, the inextricable links between watershed governance and investment instruments must be recognized and accommodated.

Costanza (2020) argues that for society to solve challenges related to natural systems, institutions—and by extension, investment instruments—must be more nuanced and should explore an optimal balance between private and community property.

Given that ecosystems provide many benefits to diverse beneficiaries, it is unreasonable for a single entity to pay for the maintenance of common pool services provided by all the natural assets within a watershed or jurisdiction. For example, in most cases it would not make sense to ask local governments to solely fund ecosystem rehabilitation, restoration, and acquisition when benefits such as flood risk reduction, aquifer recharge, stormwater management, and drinking water filtration are dispersed throughout the watershed and are within multiple jurisdictions. It would also be impractical. Canadian local governments already manage about 60%<sup>22</sup> of Canada's infrastructure but collect only 10 to 12 cents per tax dollar. It is not viable for local governments alone to take on more debt or transact privately to maintain, protect, and restore ecosystems beyond limited individual sites, underscoring the need for a common pool services approach in partnership with Indigenous, public, and private partners that benefit from natural assets.

Therefore, any scalable watershed investment model must link multiple rights holders and beneficiaries to the multiple services provided by a defined common pool of services.

A related implication is that, while it may be possible to get financial sponsorship for some ecosystem services some of the time, any durable, replicable, and potentially scalable solutions must have a governance element that addresses the unique challenges of each ecosystem, watershed, or similarly significant ecological unit.

**WATERSHED INVESTMENT PRINCIPLE 2:****SYSTEMIC CHANGE SHOULD BE PHASED IN THROUGH INCREMENTAL INITIATIVES TO OVERCOME GOVERNANCE LIMITATIONS**

Ecosystems are dynamic. Human interventions that cause positive and negative impacts on common pool services must be measured over longer periods of time than traditional investment approaches which generally seek returns on investment within two- to ten-year intervals.

<sup>22</sup> Johal, S. (2019). *The case for growing the Gas Tax Fund*. FCM

Scalable watershed investment models can be phased in and improved as structures and institutions improve and returns on investment must be calculated at the speed of these phased approaches.

Currently, there are limitations in watershed governance. This includes regulatory, institutional, and coordination barriers (see MNAI 2023b for examples). There are also limitations within the financial sector, which cannot fully incorporate the costs associated with negative externalities into pricing and economic decisions without supportive government policies and regulations. A good example is the exclusion of nature in Public Sector Accounting Board (PSAB) standards.

In light of these limitations, initiatives like the *Investing in Watersheds* project must simultaneously work within the constraints of existing institutional frameworks while constantly developing and mobilizing a case for systemic change. Throughout, watershed partners already collaborating on NbS can continue to measure conservation outcomes and incrementally implement investment models that provide a return on investment for measured outcomes to beneficiaries while monitoring and adapting to emerging standards and regulatory changes and affecting systemic change. Continuing to push forward on natural asset management will improve investor interest in natural assets and eventually create conditions for systemic change and a wide variety of outcomes-based watershed investment models.

### WATERSHED INVESTMENT PRINCIPLE 3:

#### ECOSYSTEM SERVICES SHOULD BE CONSIDERED IN “BUNDLES” AND “STACKS” TO ACHIEVE MORE HOLISTIC INVESTMENT OUTCOMES

Financial viability of watershed investments requires sufficient, stable, and sustained payments for projects and acceptable rates of return for project investors, including public financiers seeking societal benefits. Highly variable provision of services may lower investor confidence in returns, deter investors, and erode financial viability. Furthermore, properly measuring common pool service flows, which can boost investor confidence, often requires complex and expensive assessments. The investment instruments outlined in *Figure 5* often trade a single-service commodity (e.g., credits for carbon sequestration), for example, rather than reward the provision of multiple services, whereas restored watersheds are designed and positioned to optimize the cost-effective delivery of these services.

As watersheds deliver multiple ecosystem services to multiple beneficiaries, investment instruments focusing on a single service (e.g., carbon sequestration) do not value and reward the provision of other benefits and thus limit the pool of people willing to pay for the services. Subsequent trading prices are often insufficient to deliver positive returns from watershed restoration in countries like Canada.

Therefore, natural asset investment should employ the strategies of **stacking** and **bundling** (see Table 5), which offer a more holistic approach for packaging and funding environmental services from nature. Stacking and bundling are effective strategies, the key is whether environmental services are sold separately from the same piece of land or as a single product with more than one common pool service.<sup>23</sup> The choice between the two approaches will depend on a project’s specific goals and circumstances and may involve a combination of stacking and bundling to maximize the financial viability and environmental impact.

BUNDLING	STACKING
<p>The bundling of ecosystem services from a single piece of land or watershed into a single transaction or package. Services are not sold separately in different markets.</p> <p>Bundling allows for greater diversity in the types of environmental services sold. It can reduce the risks associated with investing in a single project and is primarily an input-based strategy.</p>	<p>This selling of multiple environmental services from the same project or area separately into different markets.</p> <p>Stacking is largely an output-based approach with separate payments for each quantifiable service. Stacking allows for multiple environmental benefits to be generated from a single project and can increase the overall financial viability of the project.</p>

*Table 3: Comparison of Stacking and Bundling Strategies for Financing Environmental Services and Conservation Projects*

### WATERSHED INVESTMENT PRINCIPLE 4:

#### ADHERE TO BEST MANAGEMENT PRACTICES FOR ADDITIONALITY, LEAKAGE MINIMIZATION, PERMANENCE, AND TRANSPARENCY

Financing schemes that incentivize the provision of vital ecosystem services must be credible, which means they must demonstrate additionality, leakage minimization, permanence, and transparency.

- **Additionality** means that projects must demonstrate they are making a difference that would not have occurred without intervention. For example, pollution reduction must be additional to what would have occurred through normal business practices and regulations.
- **Leakage minimization** means that the project’s benefits must not be outweighed by negative changes occurring elsewhere. To achieve this, the scheme must show a net gain in providing ecosystem services. This net gain must be assessed at the appropriate scale for each ecosystem service as some services, such as recreation, occur locally, while others, such as greenhouse gas reductions, have broader impacts.

<sup>23</sup> Curtis, T. et al. (2021). *Background paper: stacking and bundling*. Financing Nature Recovery UK.

- **Permanence** minimizes the risk of future developments that could undo actualized benefits. For example, assurances that a restored wetland will not be drained. Measuring the likelihood of natural asset permanence is the most difficult on private lands, while lands owned by public institutions may have a higher likelihood of being permanently protected, maintained, and conserved.
- **Verification** is necessary to ensure that benefits are real and measurable. To achieve this, reporting must be transparent. This level of accountability builds trust and credibility, and positions market-based schemes as a powerful tool for promoting sustainable development.

### WATERSHED INVESTMENT PRINCIPLE 5:

#### ACHIEVE AND MAINTAIN SOCIAL LICENSE FOR DURABLE OUTCOMES

Any investment instruments for natural assets have positive and negative impacts and may create winners and losers, perceived or actual. A complete consensus among partners and rights holders is unlikely and trade-offs must be managed to ensure schemes are socially acceptable. By contrast, investment instruments may be rendered unviable if their social license—acceptance of an activity by the community—is lost or never established. Social license is critical for investment instruments reliant on legislated environmental limits and legislated trading (e.g., regulated carbon market), as democratic political decisions are highly sensitive to societal willingness. Without social license, politicians in a modern democracy are unlikely to support an investment instrument. Trade-offs may be necessary as conflict can arise within and between environmental, social, cultural, and economic goals. Contentious trade-offs may include differences in ecosystem service provisions driven by the location, design, and alteration of individual and/or community use rights. The social license watershed investment principle underscores the importance of Watershed Investment Principle 1, which connects rights holders to beneficiaries, and why watershed governance structures must align with the mechanics of watershed investment instruments.

### WATERSHED INVESTMENT PRINCIPLE 6:

#### DEFINE “GENERIC VALUE STACKS” TO REPLICATE EFFORTS ACROSS WATERSHEDS

As noted, watersheds provide numerous benefits, some well-known and documented and others that may not yet be fully understood. It is possible to attach a financial value to some of these benefits, while others cannot be easily quantified or are unlikely to ever have a financial value ascribed without trivializing the underlying benefit.

Benefits that can be readily quantified and are common to most watersheds collectively comprise a “generic value stack.” Based on recent NAI work, a generic value stack could include values related to infrastructure (including

stormwater management, drinking water filtration, aquifer recharge, flood risk reduction, and heat island reduction values) and non-infrastructure (or intangible infrastructure services), such as carbon sequestration, recreation, tourism, social, cultural, hunting, and fishing.

A generic value stack will express itself differently according to the ecosystem to which it is applied. Initial proposed elements for ecosystem-specific value stacks should:

- Be scoped to the broadest range of ecosystems services that can be quantified
- Be rooted in sound economic valuations that are based on rigorous modeling
- Exclude items that would be inappropriate to try to value, for example, medicinal plants that are culturally important to First Nations communities but have no specific financial value
- Acknowledge that the stack likely represents a minimum set of services
- Be clear on what services are excluded from the stack but may nevertheless be present and which can be considered at a future date

### WATERSHED INVESTMENT PRINCIPLE 7:

#### CONSIDER MULTIPLE VIABLE PROJECTS AT A WATERSHED SCALE RATHER THAN FOCUSING ON INDIVIDUAL PROJECTS

To be successful, any investment model that can transact more than one investment instrument based on an ecosystem-specific value stack should:

- Contemplate multiple projects at a watershed scale rather than focus on individual projects
- Contemplate management by a single entity (owned/governed by multiple watershed partners) rather than multiple competing entities
- Include ecosystem services that have a financial value and are likely to attract potential outcomes-buyers
- Bridge the gap between the services' value and the beneficiaries willing to pay for them
- Acknowledge and address the complex nature of watersheds including the fact that natural, political, and ecosystem boundaries are typically misaligned
- Consider a landscape scale as opposed to a site scale as this can allow for greater incorporation of diverse right holders and stakeholders. (Forcing all ecosystem services to fit within conventional markets designed for rival and excludable goods is challenging as many ecosystem services are not easily excluded and are non-rival)
- Have clear governance models that connect a wide variety of rights holders, watershed partners, and beneficiaries who align on the outcomes being measured to achieve community returns on investment



**WATERSHED INVESTMENT PRINCIPLE 8:****DRAW ON EXISTING RESEARCH FOR MANAGEMENT OF COMMON POOL RESOURCES**

Given the centrality of collaborative and inclusive approaches to restoring watersheds, it is important to consider, for example, Nobel laureate Elinor Ostrom's design principles for enabling collective management of common pool resources/services (Ostrom, 1990):

- Define clear watershed partner roles and responsibilities
- Match parameters governing use of common services to local needs and conditions
- Ensure that those affected by the parameters can participate in modifying the outcomes being measured
- Make sure the parameters, outcomes, and rights of community members are respected by outside authorities
- Develop a system, carried out by community members, for monitoring members' behaviour
- Use graduated sanctions for participating watershed partners that operate outside of agreed upon parameters
- Provide accessible, low-cost means for dispute resolution
- Build responsibility for governing the common pool services in nested tiers from the lowest level up to the entire interconnected system

The initial proposed principles for a scalable investment model that can apply multiple investment instruments aligns with several of the principles for sustainable stewardship of natural resources. The focus on managing the watershed as a whole rather than as individual projects aligns with the systems thinking principle, for example, which emphasizes understanding the interconnectedness of different aspects of a socio-ecological system (Meadows, 2008). The inclusion of ecosystem services with financial value and engagement with a wider range of rights holders and stakeholders align with the intersectoral participation principle, which emphasizes the importance of involving all rights holders and stakeholders in decision-making. The focus on efficient use of funds and financial sustainability aligns with the financial sustainability principle. The conditionality principle, which emphasizes the need for payments to be tied to successful outcomes, is also relevant to ensuring the success of a watershed investment model. Additionally, recognizing the complex nature of watersheds and engaging with partners aligns with the additionality principle, which emphasizes the importance of building on existing initiatives and engaging with other stakeholders. Legal soundness is also essential for ensuring the long-term success of a scalable watershed investment model. Overall, these principles can help ensure the successful implementation of an investment model to support sustainable watershed management.

# Overcoming Barriers: A Proposed Investment Structure

This section introduces a Common Asset Trust (CAT) as an emergent watershed investment instrument that could be phased in to overcome many of the barriers identified in this report. It could be implemented as pilot for the Grindstone Creek watershed during Phases II and III of the Investing in Watershed project and then refined and applied in other watersheds.

This report has provided a general overview of the existing investment instruments operating to support watershed health for the Grindstone Creek, the types of watershed investment instruments that could be accessed by applying the Grindstone Creek NAM Project findings and general watershed investment principles that could be considered when designing a watershed investment approach that is inclusive, scalable, and durable.

Based on the foregoing, it is suggested that a Common Asset Trust (CAT) model be introduced gradually in the Grindstone Creek watershed. This approach allows for testing, refinement, and replication elsewhere as deemed suitable.

## What is a CAT?

A CAT is a collection of agreements, institutions, and schemes designed to care for ecosystems in a sustainable manner, maximizing a full range of common pool natural assets and sharing the co-benefits. Rather than replacing current structures or existing parallel to them, a CAT complements and builds upon them. As discussed in more detail below, CATs could address challenges of ecosystem fragmentation, governance, and monitoring identified earlier and introduce measures and processes aligned with the proposed watershed investment principles. CATs could also provide more scope for replicability than conventional land trusts, and can be applied to more services or outcomes than conventional impact bonds.

CATs have their roots in a centuries-old Indigenous treaties and public trust doctrine, which emphasizes protecting critical natural resources for the benefit of current and future generations<sup>24</sup>. CATs rely on well-established legal mechanisms. From a modern economics perspective, CATs are based on the notion that private property regimes and markets alone cannot effectively manage natural capital and are not appropriate for sustainable management or practices. Instead, through a CAT framework, the benefits derived from nature provide a common benefit to many. A CAT can hold in trust, without impacts on property ownership, the beneficial shared values of natural assets as community assets (common pool natural assets) and manage them responsibly for the benefit of current and future generations.

<sup>24</sup> Robert Costanza, Paul W.B. Atkins, Marcello Hernandez-Blanco, Ida Kubiszewski, Common asset trusts to effectively steward natural capital and ecosystem services at multiple scales (2021)

In a CAT, all participating watershed partners would retain property ownership and voluntarily commit the benefits being provided by natural assets on their property to a common trust for the benefit of all. Benefits from the trust are shared amongst watershed partners and the public to maintain and improve natural assets and ecosystem services. All watershed partners benefit through economies of scale and increased financial support to improve and maintain ecosystem services.

It is important to note that entities like the Conservation Halton Foundation already incorporate characteristics similar to CATs.<sup>25</sup>

## Why is a CAT an Appropriate Solution for Watershed Investment?

As noted, ecosystems are vastly different in every watershed. Furthermore, fragmentation, governance, and existing systems for outcomes measurement and reporting present challenges and complexities that are difficult to overcome on a widespread basis using commonly available watershed investment instruments such as carbon offsets, environmental impact bonds, and, increasingly, payments for ecosystems services and biodiversity credits. Application of these instruments is inherently limited to situations with specific conditions and circumstances. Practically, their use is limited to narrow subsets of the ecosystem services present in an area.

A CAT, by contrast, could present an opportunity to establish the finance and governance structures that help build the rights holder, private property owner, and outcomes-buyer partnerships required to aggregate the common pool natural assets of multiple high-value conservation areas using a phased implementation approach.

To foster a collaborative and inclusive watershed investment instrument design approach on a pilot basis, it is proposed to incorporate attributes of the CAT model into the *Investing in Watersheds* project. This includes phasing in elements over time based on their appropriateness and feasibility. This approach ensures alignment with the CAT concept while allowing for a nuanced and flexible implementation strategy. By doing so, stakeholders can engage with the CAT concept without feeling overwhelmed or obligated to adopt an all-or-nothing approach.

The intention is to align the proposed CAT attributes with the goals and priorities of watershed partners and provide a framework that guides the next steps for the *Investing in Watersheds* project. This approach acknowledges the importance of collaboration, adaptability, and the gradual incorporation of CAT principles into the existing frameworks that support natural assets.

<sup>25</sup> Ostrom, E. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press.

# Conceptual Stacked Watershed Common Asset Trust (CAT)

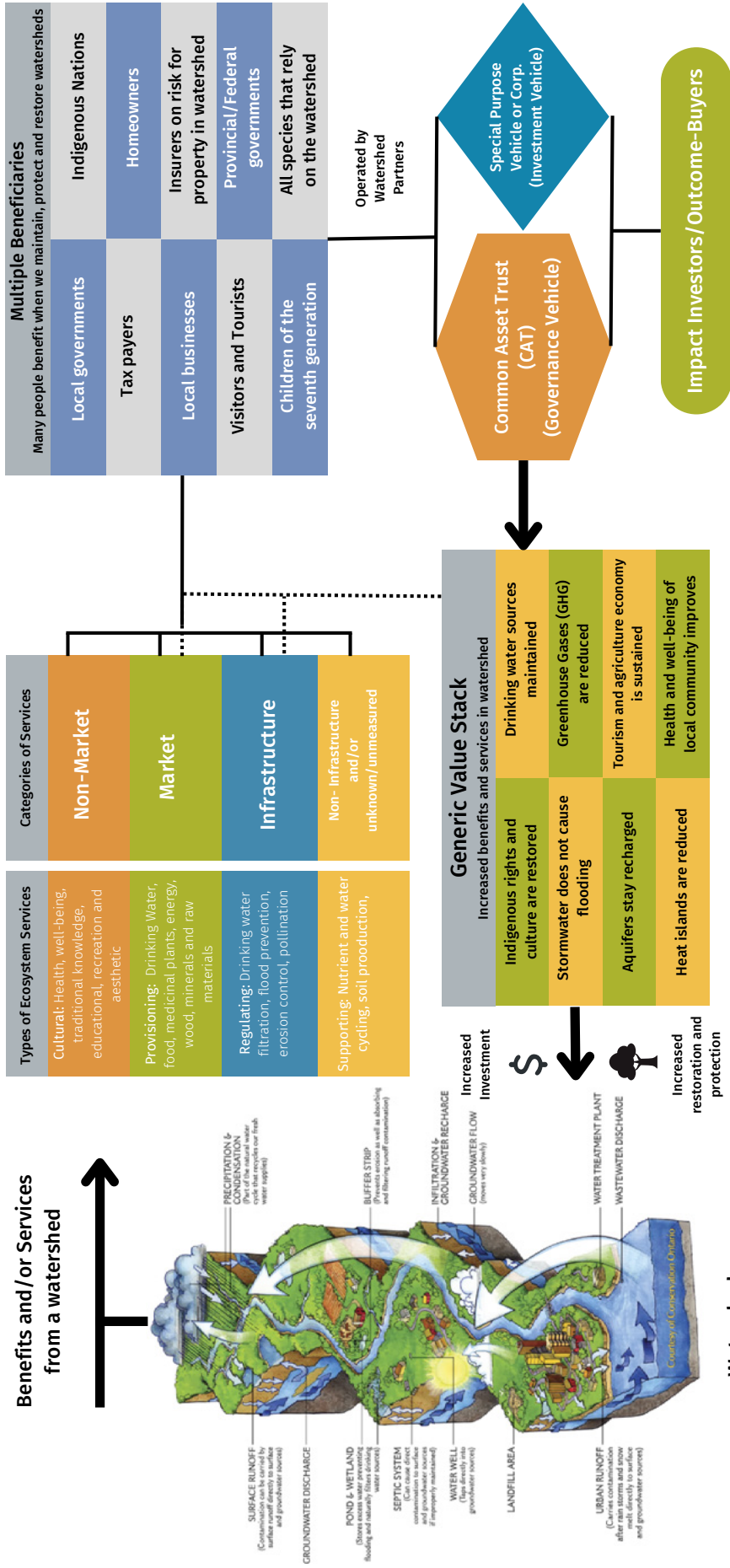


Figure 8 : A CAT Provides the Finance and Governance Approach that Fosters Shared Decision-making Amongst Watershed Partners that are Incentivized to Achieve Improvements in Common Pool Natural Assets

CATs can facilitate coordinated, collaborative, prioritized, and transparent governance throughout entire watersheds, amongst many partners. In principle, they also provide an instrument to convene watershed partners as co-trustees with a fiduciary responsibility to protect natural assets. CATs are much different than the more common land trusts in which land ownership is transferred to one entity in trust. The CAT model could enable all watershed partners to maintain land ownership while voluntarily committing to protect and improve the common pool natural assets for their benefit and that of the public.

The CAT as a watershed investment instrument is used to support the implementation and financial sustainability of NbS in parallel with other investment approaches. The trust's governance structure ensures that any financial activities align with the CAT's mission, values, and goals and that the benefits are equitably distributed amongst rights holders and stakeholders. Figure 9 provides a conceptual view of the CAT model, noting multiple beneficiaries, ecosystems, and values that could be considered by impact investors and outcome buyers by stacking multiple ecosystem service outcomes. Each CAT may have a different ecosystem service value stack depending on the terms and priorities of the watershed partners. Of note, is that the generic value stack (depicted here as an example only) is not trading lands; rather, it depicts the common benefits that watershed partners voluntarily commit to maintaining and improving while retaining land ownership.

By connecting outcome buyers with agreed upon common benefits and services, the CAT's overall approach fosters sustainability, resilience, and equitable distribution of benefits derived from common pool natural assets management rather than sources of independently privatized services.

## Generating Sustainable Revenue from an Ecosystems Service, Outcomes-Based CAT

To understand how watershed partners maintain sustainable revenue to support ecosystem service outcomes and investors realize financial returns from an investment in watershed restoration projects, it is helpful to look at how similar projects are being funded through financing instruments such as impact bonds (environmental or social) and investment funds.

At the outset, however, it is important to differentiate between bonds or loans (debt instruments) and publicly listed shares and equity funds of publicly listed companies (equity instruments), as well as shares of private (i.e., non-listed) companies (private equity investments). Debt, equity, bonds, and other financial instruments are simply legal “wrappers” for what are essentially blended investment instruments, meaning an organized and formal collection of investors and investment instrument types—whether they are individuals, institutions, joint ventures, or other kinds of collaborative partnership capital funds.

Environmental impact bonds (EIB) provide a generic basis for understanding how an investment can be structured to provide financial returns to



investors. EIBs are a type of watershed investment instrument that typically provides funding to environmental projects related to renewable energy, water conservation, or carbon reduction. Investors in EIBs receive returns based on the success of the environmental project in achieving specific outcomes or targets.

EIB success is typically measured through predefined environmental performance metrics or indicators agreed upon by the involved parties, including the bond issuer, investors, and relevant rights holders/stakeholders. The specific metrics can vary depending on the nature of the environmental project or initiative being financed. The responsibility for measuring success is usually shared amongst multiple entities (which is similar to a CAT), including the project implementers, independent evaluators, and, potentially, regulatory bodies or oversight committees. These parties work together to monitor and assess the project's progress, collect relevant data, and evaluate whether the stated environmental outcomes or targets have been achieved.

The returns to investors in EIBs can take several forms, including:

- **Principal plus interest:** Similar to traditional debt securities, some EIBs may provide a fixed return on the investment in the form of principal plus interest, regardless of the project's success.
- **Outcomes-based returns:** The more common structure for EIBs is an outcomes-based return structure, where investors receive a return on their investment if the project achieves specific predetermined outcomes or targets. For example, if the project is focused on reducing greenhouse gas emissions, investors may receive a return if the project meets a specific reduction target. In this case, the government may allocate funds, but project-generated revenues can also be used or collaborative efforts between the government and private entities can be established to cover the returns.
- **Shared savings:** Similar to outcome bonds, some EIBs may provide investors with a portion of the savings generated by the project, such as reduced costs for energy or water. This structure is typically used for EIBs focused on reducing costs associated with environmental challenges. An example is a restored watercourse that results in reductions in the size of downstream culvert and thus cost savings that could be shared with the investor.

The returns to investors in such bonds are typically structured to align investors' incentives and receive financial returns with the desired outcomes of the environmental project. In some cases, the returns may be linked to the achievement of specific environmental metrics, such as reductions in greenhouse gas emissions, increases in renewable energy production or improved reliability/regeneration of water resources that are required for supply chains. In other cases, the returns may be linked to financial savings generated by the project, such as reduced energy, water costs, stormwater management and reduced loss/damage as a result of climate change.

In summary, EIBs illustrate ways to incentivize private investment in

environmental projects while also ensuring that the projects are aligned with specific environmental goals and outcomes. Their structure can vary based on project needs and investor preferences.

A CAT and an EIB have similar functions. A CAT, however, provides watershed partners with a greater amount of flexibility in setting outcomes and could eventually be used to access multiple watershed investment instruments like carbon offsets, biodiversity credits, and payments for ecosystem services under one financial and governance structure. An EIB may require multiple financial and governance structures to diversify and/or blend outcomes buyers, thus limiting its scalability due to administrative costs. This is relevant because early consultation for this report with potential investors and outcomes buyers indicates that a broader suite of the key performance indicators that Conservation Halton already measures annually would be of interest in the marketplace, demonstrating the need to consider a CAT structure over that of an EIB.

## Equitable Sharing of Common Asset Benefits and Returns

While EIBs present an equitable watershed investment instrument that can distribute returns and capital equitably amongst watershed partners who are actively implementing ecosystem service improvements, the rigidity of how these returns is calculated can be limiting. By contrast, a CAT offers the opportunity to establish flexible agreements that distribute royalties from the commercial use of the ecosystem services portfolio that can also be returned to investors as dividends or reinvested into the CAT. Investors could examine the fund performance and plans regarding the ecosystem services they are most interested in and make investments according to their ability, requirements, and desired return (Table 4 provides some examples on how flexible returns could be using a CAT.) In addition to dividends, the CAT may create eco-labels or certificates to attract and recognize large investors wishing to convey social and environmental responsibility. This is analogous to how the Conservation Halton Foundation recognizes sponsors at different levels through various “perks” (e.g., larger logos on signs at events for bigger donors).

POTENTIAL WATERSHED TRUSTEES	
<b>Conservation Authority</b>	Monitoring and related servicing provision fees related to restoration projects.
<b>Indigenous Nations</b>	As beneficiaries, working to protect and restore ecosystem services within a traditional territory can result in treaty rights being upheld in line with UNDRIP.
<b>Municipal Government</b>	Tangible benefit from not having to build green, grey, or engineered assets to provide the same level of service.
<b>Provincial Government</b>	Intergenerational climate-resilient ecosystems.

POTENTIAL WATERSHED TRUSTEES	
<b>Federal Government</b>	Intergenerational climate-resilient ecosystems; national and global climate adaptation targets (Global Biodiversity Framework, etc.).

POTENTIAL INVESTORS	
<b>Pension Funds</b>	Directly from financial returns and indirectly environmental and social returns for pension plan beneficiaries.
<b>Impact Investors</b>	Directly from financial returns based on monitored and verified environmental and social outcomes.
<b>Foundations (non-grant)</b>	Directly from financial returns (e.g., covering at least their cost of capital), as well as social/environmental outcomes.
<b>Grant Capital</b>	Social and environmental outcomes.

POTENTIAL OUTCOMES BUYERS	
<b>Asset Owners</b>	Directly, for example carbon credits for sustainable land management and practices.
<b>Asset Insurers</b>	<p>Tangible benefit gained by reduced liability.</p> <p>ROI specific to insurers and calculated based on property and risk exposures within the watershed and avoided loss/damage because of improved ecosystem services.</p> <p>For example, for every dollar of insurer investment into restoration in high-risk flood zones, an insurer can expect to realize an ROI based on decreased property losses as a result of floods, wildfire, or other increased loss exposure as a result of climate change.</p>
<b>Economic Development</b>	Directly through cost savings and/or gross value-added increase.
<b>Health Services</b>	Reduction in health care costs.
<b>Utilities/Environmental Services</b>	Tangible benefit from not having to build green, grey, or engineered assets to provide the same level of service; potential reduction in contingent liabilities and risks (sewage spillage fines, etc.).

*Table 4: Return on Investment (ROI) for Watershed Trustees, Investors, and Outcome-Buyers*

### TYPE OF INVESTORS AND OUTCOMES BUYERS

A CAT would accept investments from multiple investors (per Table 4) funding various restoration projects. Benefits arising from the portfolio of projects could be returned to investors through direct and indirect financial returns. These would be generated through contracts with outcome buyers who either pay for ecosystem services through payment-on-delivery or provide upfront capital expenditure (CAPEX) with any funding gaps to be made whole by

private investment and any potential grant/convertible grant capital.

Other types of returns may be fungible securities: carbon or nature credits/claims, tokens, or hybrid security/bonds, all of which provide financial return and verified quantity/level of a stipulated outcome or ecosystem service, thus demonstrating the flexibility of a CAT versus a carbon credit or EIB that only provide returns on a limited number of ecosystem outcomes.

Investors interested in a specific ecosystem service, such as carbon abatement, may invest based on historical performance and expected future improvements, as determined by the restoration plans. For example, a company may invest in Grindstone Creek watershed restoration projects to offset their carbon emissions based on the expected amount of carbon sequestered by a wetland, forest, or other carbon-rich ecosystem.

Co-benefits, such as improved water quality, fisheries, tourism, or mental health, would also be acknowledged in marketing the fund to investors. Integrated reporting demonstrates the broad societal and environmental benefits of the restored ecosystem, compared to initiatives that only focus on improving one ecosystem service, such as technological carbon offset projects. Thus, demonstrating how a CAT, as an outcomes-based watershed investment instrument, can drive more holistic ecosystem outcomes that are more resilient and adaptative to climate change.

## Proposed CAT Implementation Process

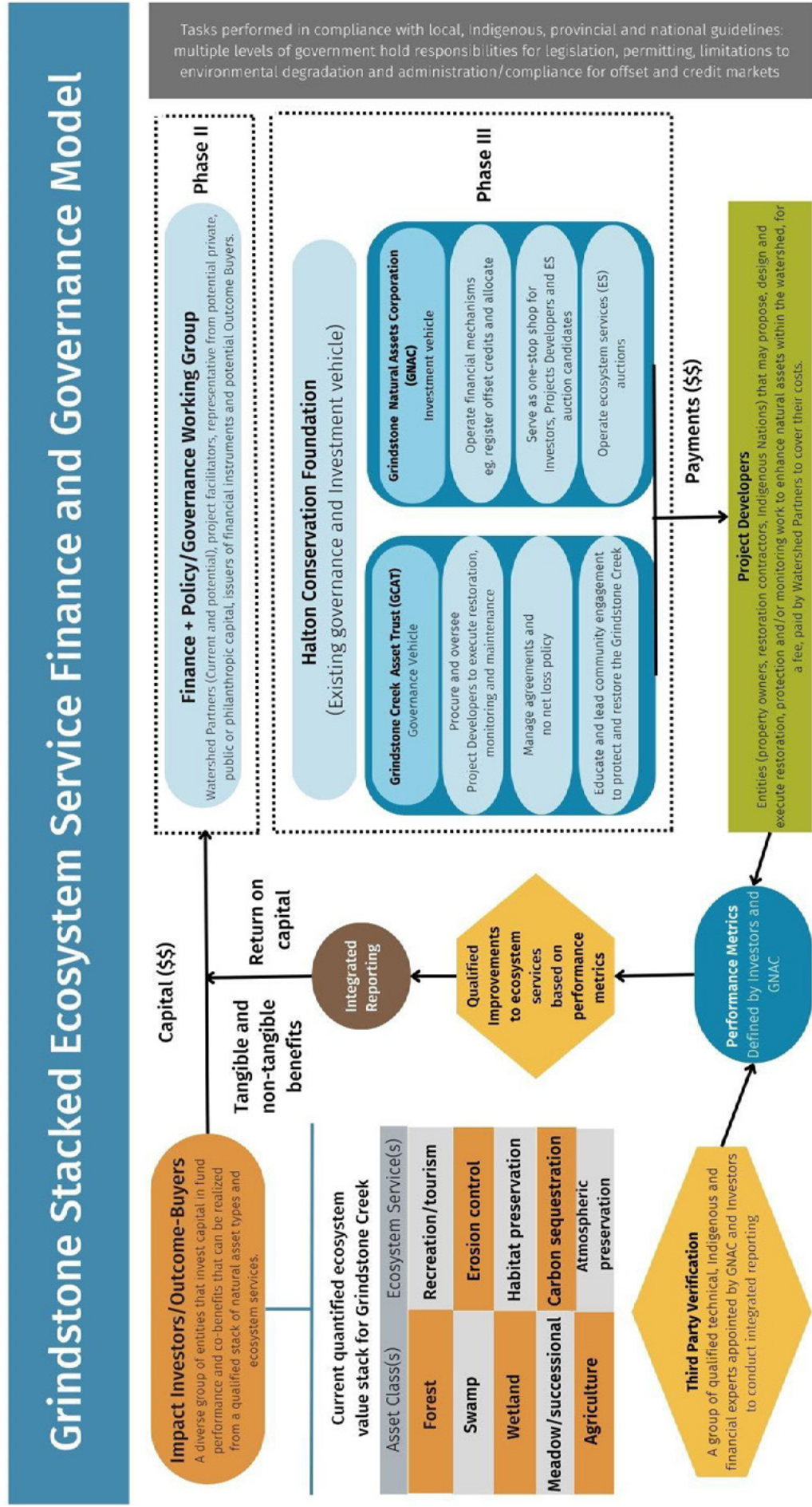


Figure 9: Proposed Institutions, Agents, Roles, and Relationships Using the CAT Model



# Bringing Everything Together: Next Steps for Grindstone Creek

**This section describes a phased CAT implementation approach for Watershed Partner consideration. The activities it proposes would be part of Phase II of the *Investing in Watersheds* project, which will commence as soon as resources are available.**

This section proposes a phased approach for the introduction of a CAT investment vehicle for watershed partner consideration in the Grindstone Creek watershed, although, the same steps could be followed in other watersheds that meet the thresholds for data, mechanisms, and financing described in Part 2.

The proposed first step is to establish governance and finance working groups in Phase II that will work in parallel to design the CAT and report to a steering committee that includes representation from all watershed partners, potential outcomes buyers, and technical partners that are supporting Conservation Halton staff to convene working groups. Each working group will have specific roles and responsibilities to execute the implementation of a CAT for natural assets in the Grindstone Creek watershed. *Figure 10* outlines a phased approach and, for illustration, considers the Conservation Halton Foundation as an existing investment and governance vehicle that could be adjusted via the introduction of new governance agreements to expand watershed partners (Grindstone Creek Asset Trust – GCAT) and establishment of a separate joint venture (Grindstone Creek Natural Assets Corporation – GNAC) that could act as a new investment vehicle for governance agreements to anchor to. It will be the responsibility of the governance and financing working groups to determine if a GCAT and GNAC, or other equivalent, will be required to implement a CAT. It is possible that relatively small adaptations to existing Conservation Halton Foundation governance structures may be sufficient to accommodate the governance of a CAT if watershed partners are expanded to include key rights holders such as Indigenous Nations, local governments in adjacent watersheds, and the private sector. The overall goal of the governance and financing working groups is to consider how existing structures can be adapted to accommodate a new watershed investment vehicle that enables private sector participation in the maintenance and improvement of common pool natural assets in the Grindstone Creek watershed and beyond.

## Phase II Working Group (s): Key Tasks & Outputs

### Governance Working Group

- Review and research on existing policy, structures and function(s) that could accommodate a CAT
- Interviews and engagement with Watershed Partners
- Draft any new policy/governance that may be required
- Lead benefit sharing and/or reciprocity agreement(s) creation and negotiations with FN, LG and other emerging private landowners

### Finance Working Group

- Development of cost-benefit modelling and proposal to governance on application in decision-making
- Interviews and engagement with potential outcome buyers
- Development of ROI modeling for each outcome buyer
- Model 5yr revenue, cashflow and private property stakeholder buy-in for initial term sheet



### STEERING GROUP OVERSIGHT

- Review and approval of working group proposals for agreements and financial modelling
- 5yrs strategic plan for CAT/SPV that can be agreed upon by all Watershed Partners, Impact Investors, Outcome Buyers and other emerging partners
- Establishment of CAT and SPV to begin first transactions by March 31, 2025

Figure 10: General CAT Steering Committee and Working Group Functions

The role of a **governance working group** could be to:

- Consider current governance, boards, and policies at Conservation Halton and the Conservation Halton Foundation.
- Evaluate feasibility of existing Conservation Halton Foundation governance structures to accommodate the governance of a CAT that includes more watershed partners.
- Recommend adaptations to existing governance for expanded watershed partners to govern a CAT (see [Figure 6](#) Partners of the Watershed Financing Project).
- Determine if a CAT requires a supplemental governance vehicle to operate in tandem with existing governance mechanisms operated by Conservation Halton Foundation. (For example, many post-secondary institutions in Canada operate multiple trusts and endowment funds through one Board of Governors but some of their trusts and endowment funds have sub-committees that oversee the functions of the trust/endowment as a way to expand investment stakeholder engagement without significantly altering regulated governance practices.).
- Engage with expanded watershed partners.
- Negotiate working group terms of reference that will form the basis for ongoing governance of a CAT or equivalent.
- Integrate watershed partner terms of reference with finance working group master outcome contracts for potential private sector participants.

The membership of a **governance working group** should include:

- Current watershed partners with a good understanding of their own internal governance policies and practices related to natural assets;
- potential/expanded watershed partners with a good understanding of their own internal governance policies and practices related to natural assets;
- legal representation (internal and/or third-party) to provide guidance on regulatory, policy, and contractual frameworks for the structure of an adapted or parallel complementary governance vehicle; and,
- a project facilitator with experience coordinating complex, multi-rights holder negotiations to convene working groups and act as a third party that is not a rights holder, potential watershed partner, or investor.

The role of a **financing working group** could be to:

- Determine a name and operating parameters for a CAT investment vehicle. (At present, the term GNAC or equivalent is used to denote the investment vehicle for a CAT but the finance working group may consider alternative names and corporate structures based on governance working group findings).
- Explore the availability of initial capital expenditure (CAPEX) from potential outcome buyers, such as government departments or agencies, and private sources, including insurance/reinsurance, financial institutions, and businesses of various sizes (some of which have already agreed to act as Advisors for Phase I of the Watershed Financing project).
- Assess the potential investment capital that could be provided by private investors and grant capital providers such as foundations and endowments.
- Model initial cost-benefit of priority restoration interventions for initial investment.
- Model risk reduction outcomes of priority restoration interventions.
- Establish draft master outcomes contracts for initial impact investors and outcomes buyers to consider in advance of Phase III.
- Structure the non-refundable and transferable units or credits that investors purchase.

The membership of the **finance working group** should include:

- Conservation Halton and/or Conservation Halton Foundation finance staff,
- one or two representatives with a good understanding of financial modelling from watershed partners; and,
- academic/NGO or private sector experts that have experience in ecosystem service cost-benefit modelling and beneficiary modelling.

The finance working groups should also be responsible for generating proposals on how to calculate and distribute annual “dividends” to investors based on the ecosystem services generated by their investment. They would work closely with the governance working ground on analyzing governance implications and the application of equitable benefit distribution via benefit sharing agreements.

Additionally, in later stages, once an overall governance and finance structure is approved by a steering group and has undergone community participation from watershed partners, the finance working group coordinates the registration and sale of credits, such as carbon or nutrient credits, ensuring that investors receive the dividends or cash when these credits are sold on their behalf. This allows investors to offset their organizations’ activities and maximize the benefits of their investment in ecosystem services.

Long-term, once an investment vehicle (like a GNAC or equivalent) is established, the financing working group’s role would evolve to become an innovative investment platform that enables the mobilization of capital for sustainable natural asset projects by:

- **Transacting financing mechanisms:** Restoration interventions require financial resources to implement projects and initiatives. A mechanism such as a fund or other financing entity can be established by, and within, the GNAC or equivalent to attract investments from various sources, including public and private investors. The investment mechanism can help mobilize capital and allocate it strategically to support natural asset management. *Figure 5/Appendix 1* provides examples of relevant financing mechanisms (e.g., carbon credits, habitat stamps, payment for ecosystem services, etc.) that would be evaluated by the finance working group.
- **Revenue generation:** Some ecosystem services have the potential to generate revenue, for example, through erosion control, ecotourism, or carbon sequestration. In such cases, the GNAC or equivalent would manage and optimize financial returns from these activities. The revenue generated could be reinvested in further conservation initiatives or used to sustain the trust’s operations.
- **Incentivizing participation:** The GNAC or equivalent could provide incentives for participation in watershed financing. By offering the potential for financial returns, the investment vehicle can attract private investors, businesses, or impact investors who are interested in supporting nature-based solutions. This can help broaden the funding base and attract additional resources to enhance the trust’s effectiveness.
- **Leveraging external expertise:** The GNAC or equivalent could leverage external expertise in finance, investment management, and impact assessment. This ensures that the financial aspects of ecosystem services are handled efficiently and professionally. Expertise in structuring investment opportunities, financial risk management, and monitoring financial performance can be brought in through the investment vehicle to support the trust’s goals.

Introducing working groups to design and implement a CAT will provide a watershed partners the opportunity to:

- Fundraise for Phase II and III of Watershed Financing project. Co-operators has already committed \$50,000 for Phase II.
- Expand watershed partner engagement activities.
- Begin executing recommendations from the Grindstone NAM Project, particularly those related to collaborative planning and priority restoration projects.
- Build on existing governance frameworks to establish an innovative investment vehicle that begins to address commonly agreed upon natural asset investment gaps for the Grindstone Creek NAM Project.

Immediate next steps include resource mobilization for design of Phase II and implementation of the foregoing activities. Pending the outcomes of Phase II, preparations would begin for Phase III, the purpose of which would be to both identify outcome buyers/investors and execute benefit sharing and co-management/governance agreements between local governments, Indigenous Nations, and other watershed partners; and, to build a portfolio of other locations and ecosystems to which an adapted governance and financing model could be refined, replicated, and expanded.



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# Glossary

## CO-BENEFITS

Co-benefits refer to the additional positive outcomes or advantages that are derived alongside the primary intended benefits of implementing NbS. Co-benefits are the secondary or collateral benefits across environmental, social, and economic dimensions.

## COMMON POOL RESOURCES

Elinor Ostrom’s framework emphasizes that common pool resources are distinct from pure public goods because they possess both “subtractability” (rivalness) and collective, shared, and joint use(s).

## ECOSYSTEM SERVICES

This term refers to the various benefits and functions provided by natural assets to humans and the broader environment. For example, natural assets documented within the Grindstone Creek watershed can provide services such as stormwater management, water purification, carbon sequestration, recreation, and cultural values amongst others.

## FIXED COSTS

Fixed costs refer to the expenses or costs that do not vary with the level of goods or services produced.

## LIABILITY HOLDER

A liability holder in the context of natural asset protection, restoration, and conservation is any entity or person that may be responsible (contingent or otherwise) for damages, costs of environmental remediation, fines, penalties or indemnities whether based in contract, tort, implied or express warranty, strict liability, criminal or civil statute or common law, including any arising under or related to any environmental laws, environmental permits, or in connection with any release or threatened release or presence of a hazardous material whether on, at, in, under, from or about or in the vicinity of any real or personal property.

## PROPERTY HOLDER

A property holder in the context of this report is any entity or person that owns property where natural assets also exist.

### MISALIGNED PRICE SIGNALS

Misaligned price signals refer to situations in which the prices of goods and services do not accurately reflect the true costs and benefits associated with their production or consumption, particularly in relation to nature and natural assets. Many pricing signals degrade nature and do not adequately reflect the negative impacts on the environment.

### NATURAL ASSETS

In its plural form, natural assets are the stock of natural resources or ecosystems that contribute to providing one or more services required for the health, well-being, and long-term sustainability of a community and its residents (e.g., water filtration, stormwater management, climate regulation). When expressed in a non-plural form, the term natural asset is intended to describe only one type of natural feature providing a service (e.g., a wetland is one type of natural asset; and a forest, swamp, or river are examples of other types of natural assets).

### NATURAL ASSET MANAGEMENT (NAM)

Natural asset management is a comprehensive approach that involves systematic and strategic planning, monitoring, and decision-making processes employed by organizations or groups of organizations to care for and improve natural assets. In this particular case, the goal of NAM is to create a shared understanding of the wide range of ecosystem services provided by natural assets to maximize the shared value and benefits obtained from these natural assets in a defined watershed.

### NATURE-BASED SOLUTIONS (NBS)

Nature-based Solutions are approaches that utilize and work in harmony with nature to leverage the natural processes and functions of ecosystems to provide multiple tangible and intangible co-benefits that address societal challenges.

### NATURAL ASSET FINANCING

Natural asset financing involves accessing sufficient financing for the rehabilitation, restoration, and protection of natural assets over the long term.

### NET PRESENT VALUE (NPV)

Net present value calculates the difference between the present value of cash inflows (benefits) and the present value of cash outflows (costs) over a specified time period. NPV takes into account the time value of money, recognizing that money received or paid in the future is worth less than the same amount received or paid today. A positive NPV indicates that there will be more value or benefits than costs incurred, whereas a negative NPV indicates that it may not be financially viable.

## **NON-INFRASTRUCTURE SERVICES**

Non-infrastructure services encompass a wide range of benefits that are not directly related to physical structures or traditional infrastructure. They go beyond the tangible functions and features of infrastructure and play a vital role in supporting human well-being and ecological health. For example, the rehabilitation, restoration, and protection of natural assets can produce outcomes that contribute to health benefits, among other intangible benefits that bring forward important considerations for decision makers who want to understand the diverse benefits provided by natural assets. This report also uses “intangible infrastructure services” to explain the same concept.

## **NON-EXCLUDABLE**

In economic terms, “non-excludable” refers to a characteristic of a good or resource where it is difficult or impractical to exclude individuals from consuming or benefiting from it, regardless of whether they have contributed to its provision or not. It means that once the good or resource is available for one person to use, it is difficult to prevent others from accessing or utilizing it as well.

## **NON-RIVAL**

In economic terms, the concept of “non-rival” refers to goods or resources that can be used or consumed by multiple individuals without diminishing their availability to others.

## **OPPORTUNITY COSTS**

Opportunity costs are the benefits or opportunities foregone when choosing one option or course of action over another.

## **RIGHTS HOLDER**

The term “rights holders” refers to Indigenous and non-Indigenous entities as well as private sector participants who have recognized rights to participate, benefit, and contribute to the conservation and stewardship of natural assets. While stakeholders may have an interest or concern in a particular issue or ecosystem, rights holders go beyond that and possess specific rights and responsibilities related to the natural assets within the ecosystem.

## **STAKEHOLDER**

In this report, stakeholder is used only when denoting community members within the ecosystem who may or may not be rights holders, but who have interest or concern for the Grindstone Creek watershed and may not be explicitly included amongst the watershed partners.



## **STORMWATER MANAGEMENT**

Stormwater management are the practices, strategies, and systems implemented to effectively control, collect, treat, and manage stormwater runoff. Stormwater runoff is the excess rainwater or melted snow that flows over surfaces such as roads, parking lots, and rooftops and is not absorbed into the ground. The goal of stormwater management is to mitigate potential adverse impacts of stormwater runoff, such as flooding, erosion, water pollution, and damage to infrastructure.

## **WATERSHED PARTNERS**

“Watershed partners” are defined here as legal entities representing rights holders to the benefits derived from the natural assets within the Grindstone Creek watershed. They have specific rights, as recognized by their own laws, sovereignty, and democratic processes, and they also bear explicit responsibilities for the protection, restoration, and maintenance of the services provided by the natural assets in the watershed.

## **TASKFORCE ON NATURE-RELATED FINANCIAL DISCLOSURES (TNFD)**

A market-led collaboration with a mission to develop and deliver a risk management and disclosure framework for organizations to report and act on evolving nature-related risks, with the ultimate aim of supporting a shift in global financial flows away from nature-negative outcomes and toward nature-positive outcomes.

## **STACKING**

Stacking is selling multiple environmental services from the same project or area, separately into different markets. It is largely an output-based approach with separate payments for each quantifiable service. Stacking allows for multiple environmental benefits to be generated from a single project and can increase the overall financial viability of the project.

## **BUNDLING**

Bundling is when ecosystem services from a single piece of land or watershed are bundled into a single transaction or package. In other words, the services are not sold separately into different markets. Bundling allows for greater diversity in the types of environmental services sold. It can reduce the risks associated with investing in a single project and is primarily an input-based strategy.

## **ADDITIONALITY**

Additionality is a principle used to evaluate the impact of projects or interventions. It assesses whether the project or intervention has produced a difference or outcome that is beyond what would have naturally occurred without its implementation.

### LEAKAGE MINIMIZATION

Leakage minimization is a key principle in the implementation of ecosystem service schemes or environmental projects. Leakage refers to the unintended negative consequences that can occur outside the designated project area when efforts are made to enhance ecosystem services in a specific location. These negative consequences may undermine the overall effectiveness of the project or offset the benefits gained within the target area.

### PERMANENCE

Permanence refers to the long-term sustainability and durability of the benefits delivered by environmental or ecological projects. It is a crucial aspect of such projects because it aims to minimize the risk of future developments or actions that could reverse or undo the positive outcomes that have been achieved through restoration efforts.

### VERIFICATION

Verification refers to the process of confirming and validating the actual and measurable environmental benefits achieved through market-based schemes or environmental projects. It is essential to ensure that the reported benefits are genuine and accurately represent the positive changes or improvements in the environment.

### SOCIAL LICENSE

In the context of this report, social license refers to the acceptance and permission granted by the community for a financial mechanism or environmental scheme. It is crucial for schemes, balancing positive and negative impacts. Managing trade-offs is vital for social acceptance and viability. Without it, legislated schemes face political resistance, jeopardizing viability.

### VALUE STACK

Value stacking is the process of combining multiple benefits or revenue streams from a single asset or activity. In various contexts, it involves leveraging one resource or action to generate diverse and complementary sources of value. Stacking of ecosystem services can have positive outcomes, but there are potential challenges. Double counting, where one service is sold twice to offset two impacts, should be avoided. Additionality, however, where projects generate additional benefits to offset impacts, must be ensured. Careful consideration of these factors can enhance the effectiveness of ecosystem service stacking.

### CONDITIONALITY PRINCIPLE

Conditionality refers to a crucial principle in payment systems where disbursements are contingent upon the successful and verified delivery of the predetermined outcomes as agreed upon in the contract. This means that payments are not made unconditionally but are tied to the achievement of specific goals or results. By enforcing conditionality, payment providers can ensure accountability and performance from the recipients, promoting transparency and effectiveness in achieving the desired objectives. This robust approach encourages responsible behaviour and diligent efforts to meet the agreed-upon targets, fostering trust between parties and ultimately increasing the likelihood of successful outcomes.

### COMMON ASSET TRUST (CAT)

A Common Asset Trust is a legal entity that manages shared resources on behalf of beneficiaries to ensure equitable access, sustainable use, and responsible management. It promotes collaboration and fair distribution of benefits amongst stakeholders. This trust structure allows multiple parties, such as local communities, organizations, or governments, to pool their resources and interests to collectively manage and preserve the asset. It provides a framework for decision-making, governance, and allocation of benefits or revenues derived from the asset, ensuring that all beneficiaries' interests are considered.

### INVESTMENT VEHICLE

An investment vehicle is a broad term that refers to any financial instrument, strategy, or entity that allows individuals or institutions to invest their money.

### COMMON BENEFIT

Common benefit refers to the benefits received by shared resources, such as land, forests, or water bodies, collectively owned and managed by a group of individuals or a community. It involves shared rights and responsibilities for sustainable use and conservation, aiming to prevent overexploitation and ensure equitable access to the resource.

# Appendix 1

## Background Research – Accessible and Relevant Investment Instruments

The investment instruments that are accessible to watershed partners in the Grindstone Creek watershed vary due to their prevalence in Canada and the findings of the Grindstone Creek NAM Project. Table 5 outlines the rationale behind low, moderate, and high accessibility assumptions for available/accessible investment instruments that could be available to watershed partners.

Table 5: Accessible Watershed Investment Instruments.

	Accessibility to watershed partners	Rationale
<b>Public Private Partnerships (PPP) and/or Project for Permanence (PFP)</b>	Low-Moderate	<p>Prevalence is low and the natural assets available for investment are fractured.</p> <p>To date, PFP’s in Canada have been successful for large intact landscapes where fracturing is low and new development/extraction is capped. For example, the Great Bear Rainforest in British Columbia and Indigenous Protected and Conserved Areas in the Northwest Territories.</p> <p>This investment instrument may still be available to watershed partners, and sustainable businesses like the Conservation Halton recreation areas and skiing operation are already demonstrating characteristics of a PFP. Provincial/local policies to cap development and extraction will increase the accessibility of this investment instrument.</p>
<b>Payment for Ecosystem Services (PES)</b>	Moderate	<p>While the prevalence of this type of investment is low, the opportunity to implement something similar for the Grindstone Creek project is high due a resident population whose sustainability relies on the watershed’s diverse ecosystem services.</p> <p>To date, there is only one example of a voluntary PES investment instrument in Canada, led by the Tla-o-qui-aht First Nation in British Columbia.</p>
<b>Bonds/Loans</b>	High	<p>The prevalence of this type of investment is low, however the Deshkan Ziibi Conservation Impact Bond (DZCIB) project offers a recent example.</p> <p>This outcomes-based investment approach is the most accessible since watershed partners have the ability to customize social, environmental, and financial outcomes to meet investor needs.</p>

Funding for natural assets can come from diverse mechanisms. The funding landscape is dynamic, with opportunities and challenges depending on the governments in power, donor priorities, and the broader economic picture. Assessing the suitability of each mechanism for a watershed organization requires careful consideration of its unique context. This section discusses these mechanisms and their limitations.

## Overview of Relevant Investment Instruments

*Table 6: Most Relevant Financing Mechanisms for Natural Assets to the Grindstone Creek Watershed*

<b>Taxes</b>	Place costs on natural resources to capture the negative externalities generated through their use. The revenue generated from fiscal instruments can be channeled back into the conservation, restoration, and sustainable use of natural assets. Taxes often have an enforcement and legal mechanism governed by a jurisdictional authority to operate these financial flows.
<b>Fees</b>	Can be similar to taxes but are often administered on a voluntary basis by local governments, Indigenous Nations, or community organizations that steward nature. Examples include the 1% ecosystem service fees paid by local businesses to the Tla-o-qui-aht First Nations for guardianship over Tribal Parks in the Meares Island watershed <sup>26</sup> and provincial and federal government park entrance and usage fees.
<b>Subsidies</b>	Relevant support aimed at reducing activities that have proven adverse impacts on ecosystems, like subsidies for forest management and reforestation.  However, public finance often goes to harmful activities like fossil fuels and agriculture, distorting prices and hiding their true cost. Identifying and reforming harmful subsidies is crucial.
<b>Bonds</b>	
<b>Green Bonds</b>	Debt instruments that can involve one project or a bundle of projects in which up-front capital is provided by investors who receive a predetermined rate of return after a defined period.  Green bonds have primarily funded projects addressing climate-change mitigation and adaptation. Still, they can also address natural resource depletion, loss of biodiversity, and water and air pollution. Scaling this tool can be challenging, but adopting a wider project with a sufficient pipeline could help address these issues for potential investors.

<sup>26</sup> [tribalparcs.com/meet-our-allies/#:~:text=Every%20Ally%20here%20has%20agreed,behalf%20of%20the%20First%20Nation](https://tribalparcs.com/meet-our-allies/#:~:text=Every%20Ally%20here%20has%20agreed,behalf%20of%20the%20First%20Nation)

<b>Environmental Impact Bonds</b>	Performance-based, privately financed bonds with payouts based on achieving pre-established project objectives. This tool requires coordination between multiple partners and identifying outcome buyers. Transaction costs for establishing this type of model can be high depending on issuance program costs, although outcomes-based financing instruments do not necessarily have to be in the form of a bond; they can simply be outcomes-based financing and contracting agreements.
<b>Resilience Bond</b>	Buyers provide capital for a project to enhance a specific ecosystem service. They are repaid with interest based on the cost savings the project delivers to target beneficiaries. The main challenge is determining an appropriate return on investment to create an incentive for participation.
<b>Recreation Bonds</b>	Similar to resilience bonds in structure but are based on capital revenues generated by the project, where bond buyers provide initial capital investment and are repaid with a coupon repayment rate after achieving a predetermined outcome on recreational activities, either directly to project outcomes or indirectly through more tourism-based economic activity.
<b>Payment for Environmental Services (PES)<sup>27</sup></b>	
<b>Carbon Markets (voluntary and compliant)</b>	Those emitting greenhouse gases pay for carbon credits to offset their emissions. Carbon credits can be gained through any activity that results in carbon sequestration and storage, including that stored by a restored watershed.  Leakage, additionality, permanence, and tensions between biodiverse and carbon-rich landscapes remain major questions that are currently unaddressed. These questions increase the vulnerability of improperly structured programs to result in high investment values with limited ecological returns.
<b>Biodiversity Credits</b>	Similar to carbon credits, they are units of ecological value that can be traded in a marketplace to generate revenue for restoration projects. They incentivize landowners, developers, or stakeholders to protect or restore natural ecosystems and offset the impacts of development or other activities that may harm these ecosystems.
<b>Water Quality Trading</b>	Agents discharging nutrients via point or nonpoint sources pay for pollution offsets that involve implementing better agricultural practices or watershed restoration on another property.
<b>Habitat Stamps</b>	Involve the sale of stamps for the recreational use of ecosystems. Stamps are sold as part of a licensing requirement to carry out an activity (hunting and fishing), though many schemes operate completely or partially voluntarily. Funds from stamps are typically earmarked for watershed conservation or restoration activities.

<sup>27</sup> Market-based mechanisms where beneficiaries pay for the benefits they receive from ecosystems, such as clean water or carbon sequestration, which are used to incentivize landowners or stewards to conserve or restore those ecosystems.



<b>Water Funds</b>	Schemes that pool public and private resources, primarily from downstream beneficiaries, to invest in conservation, restoration and practice change that benefits water within a catchment. Though their desired objectives and funding sources differ, all aim to restore and protect hydrologic ecosystem services.
<b>Insurance Products</b>	
<b>Best Management Practice insurance (Risk Transfer)</b>	Assures private landowners to adopt conservation or restoration practices, incentivizing agricultural producers to enhance local ecosystem functioning while mitigating the risk of changing operations by bridging the revenue gap during the establishment period.
<b>Premium reductions</b>	Insured parties who implement restoration or conservation activities that reduce property risk can reduce their premiums, with large-scale projects like wetland restoration potentially lowering insurance premiums for municipalities or groups of property owners and incorporating a resilience fund to enable the participation of multiple stakeholders.
<b>Insurance Products</b>	
<b>Impact Investment</b>	A kind of investment fund, bundling companies or projects in forestry or agricultural sectors that generate revenue through activities like timber sales, offset generation, and land value appreciation, delivering returns to investors alongside conservation outcomes, with traditional revenue-generating activities needed to generate market-rate returns and net improvements to environmental conditions.
<b>Revolving Funds</b>	Revolving funds loan to multiple nature-based projects, specifying eligible types, and supporting capital costs. The recipient repays the loan with interest over time through project-generated cost savings.

# Appendix 2

## Applying Recommendations for Upholding UNDRIP

Table 7: Upholding UNDRIP - Current Status and Next Steps for Engagement in Phase II of Investing in Watersheds Project

Recommendations	Progress on recommendations
Gather knowledge upfront about Indigenous Peoples and the land prior to engagement.	<p><i>Figure 1</i> Identifies the Mississaugas of the Credit First Nation and Six Nations of the Grand River as watershed partners</p> <p>Current watershed partners have undergone initial discussions and information sharing on the current status of their relationship with other watershed partners to gather a baseline for relationship building and knowledge.</p>
Articulate the intent of engagement, who should be engaged, what partners have to offer, and the expectations and wishes of the community.	Phase II of this initiative and serve as invitations to set a more inclusive table of watershed partners to execute an innovative financing, legal, community- and rights-based approach for the Grindstone Creek watershed.
Adhere to OCAP <sup>28</sup> (ownership, control, access, and possession) principles to ensure ethical research practices and to ground community engagement.	As this project moves into Phases II and III, the watershed partners must be inclusive of these principles.
Become familiar with guidance on applying Indigenous knowledge through a code of ethical conduct.	<p>These principles include:</p> <p>The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), Free, prior and informed consent, protection of Traditional Ecological Knowledge (TEK) and Biocultural Indicators (BI) using tools like Local Contexts<sup>29</sup> which provides clear guidelines for applying TEK and BI labels, equitable sharing of the benefits that arise from shared natural assets, recognition that the inclusion of Indigenous Peoples in natural asset management is reconciliation at the local level.</p> <p>All watershed partners should undergo training in applying these principles, and they cannot be applied until Indigenous Peoples sit at the decision-making table.</p>

<sup>28</sup> As defined by the *First Nations Information Governance Centre*

<sup>29</sup> Available at <https://localcontexts.org/>

# Appendix 3

## The Deshkan Ziibi Conservation Impact Bond Project

The Deshkan Ziibi Conservation Impact Bond (DZCIB) is a five-year project launched in 2019 to pilot the Conservation Impact Bond (CIB) financing model. The project is focused on a specific area of land in the Lake Erie Lowland Ecoregion in southern Ontario, known as the Carolinian Zone. This region is unique because it includes the traditional territories of several Indigenous Nations, diverse flora and fauna, and a large human population. The DZCIB aims to improve the coexistence between humans and ecosystems in the spirit of reconciliation.

Five evaluation pillars guide the DZCIB model: connecting healthy habitats, connecting opportunities, connecting knowledge, connecting hearts and minds, and connecting bodies. The project's success is measured using multiple metrics, with one selected for each evaluation pillar directly tied to defining project success and determining outcome buyer payment and investor return on investment.

The CIB financing model aims to mobilize capital to reverse the habitat loss trend and increase the growth and stewardship of healthy landscapes in the Carolinian Zone. After the pilot project, the goal is to scale the CIB model to other regions within and beyond the Carolinian Zone. The five evaluation pillars contain multiple potential pay-for-success metrics that can be selected to adapt the outcomes of the bond to the local community and environmental needs while remaining consistent with the five categories of holistic impact.

**PART 2 CAROLINIAN CANADA CONSERVATION IMPACT BOND**

**PARTNERS OF THE DESHKAN ZIIBI CONSERVATION IMPACT BOND**

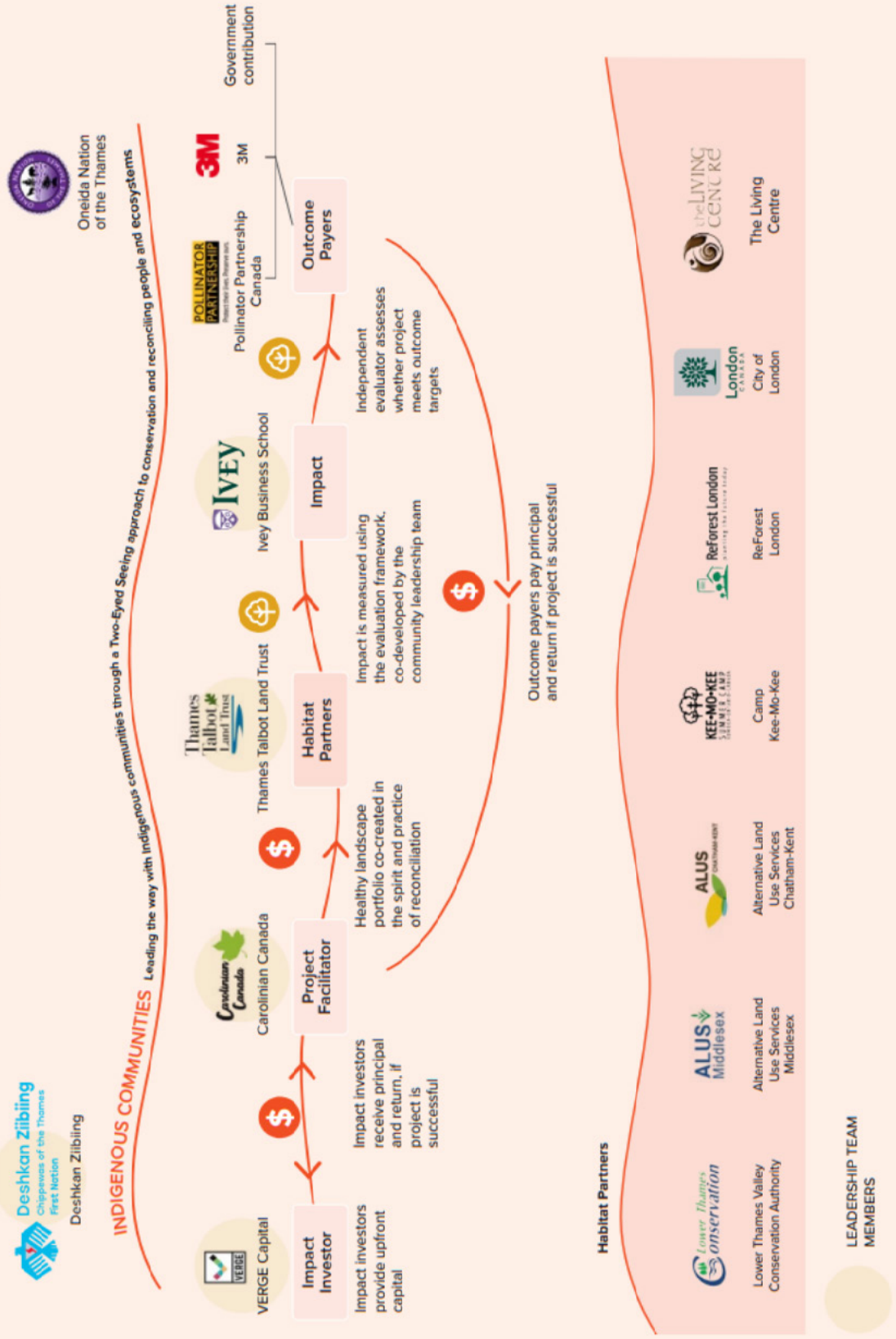


Figure 11: Partners of the Deshkan Zibi Conservation Impact Bond

Some of the DZCIB main findings that could be applied in Phase II of the Watershed Investment project:

- 1/ There needs to be more alignment between the three-year financing cycle of the CIB model and the long-term benefits of ecological restoration projects.
- 2/ Attracting investment for future CIB models is challenging due to the diversity of partners. The CIB model should aim to communicate with partners in a way that resonates with them and that blends financing approaches.
- 3/ The valuation of nature is complex and influenced by the valuator, but standardization is needed to scale funding for nature-based solutions.
- 4/ The CIB model should balance the unique features of local contexts with the need for standardization and stay engaged with market developments.
- 5/ The Coalition for Climate Resilient Investment is developing a standardized taxonomy to integrate physical climate risks and attract private investment capital.

## State Revolving Funds (SRFs)

Governments establish financial programs called State Revolving Funds (SRFs) to provide low-cost financing for water and wastewater infrastructure projects. These programs fund themselves through public grants, bonds, and repayments from previous borrowers. The loan repayments “revolve” the fund and support new projects, making SRFs a self-sustaining source of financing. With favorable terms such as lower interest rates and extended repayment periods, SRF loans offer communities a better option than traditional financing. SRFs aim to upgrade and maintain water and wastewater systems, protect public health and the environment, and drive economic growth.

Some advantages:

- **Low-cost financing:** SRFs provide low-cost financing options for water and wastewater infrastructure projects, which can help communities and local governments stretch their budgets.
- **Self-sustaining:** Loan repayments from previous borrowers fund SRFs, allowing the funds to be sustainable and able to support new projects.
- **Long-term financing:** SRFs often provide long-term financing options with favorable terms, such as lower interest rates and more extended repayment periods, compared to traditional financing options.
- **Promotes economic growth:** By investing in water and wastewater infrastructure, SRFs can help promote economic growth by improving public health and the environment.

Some disadvantages:

- **Limited funding:** SRFs are typically limited in the amount of funding they can provide, so they may not fully support larger infrastructure projects.
- **Competition for funding:** Competition among communities and local governments for funding from SRFs can limit the availability of financing for specific projects.
- **Complex application process:** The application process for SRFs can be complex and time-consuming, which can discourage some communities from applying for funding.
- **Rigid eligibility requirements:** SRFs may have rigid eligibility requirements that limit the types of projects that can be funded, which can make it difficult for specific communities to access financing.
- **Dependence on state funding:** SRFs may depend on state funding thus are subject to budget cuts or other economic factors.

### CASE EXAMPLE: EVOLVING WATER FUNDS IN ECUADOR

Since 2000, Ecuador has gradually developed water funds in different locations across the country. The funds use nature-based solutions for water security by channeling user payments toward conservation efforts that ensure sustainable water management and supply. The water funds advance environmental sustainability and address other dimensions through innovative financing mechanisms and participatory governance structures. Furthermore, Ecuador's water funds represent an infrastructure system on a large scale—the watershed that provides the water to entire cities and regions—with institutional coordination instead of an individual water management infrastructure project.

Establishing the Water Funds as 80-year trust funds provides a stable financial arrangement, which allows for planning and encourages investment from other entities like water users, public utilities, companies, and non-governmental organizations. Independent trust managers manage these funds by investing the assets in financial markets and distributing the income to various stakeholders.

A board of directors, with broad representation from local government, water users, and other stakeholders, makes the decisions regarding using funds. The funds ensure financial sustainability by integrating environmental sustainability and relying on user contributions. The contractual arrangements between members maintain the inclusiveness of the financing mechanism without privatizing control of water resources.

The water funds in Ecuador represent a large-scale system of assets, nature-based solutions, and institutions. There were legal barriers to creating water funds initially, but a national law change altered this. The water funds have decentralized governance structures that allow for a broad range of stakeholders. They have helped to develop a sufficient water supply system in multiple areas of the country. The funds also rely on grassroots social



foundations, often reflecting local knowledge and preferences, which have helped to build a sustainable and inclusive “water culture.” Examples include the Tungurahua Fund, which was set up via consultation and negotiation among the province’s indigenous movements and has developed institutions such as the “Water Parliament.”

### CASE EXAMPLE: WYRE RIVER PRECEDENT TRANSACTION

The Wyre River Catchment Finance Project is an innovative financing initiative aimed at improving water quality in the Wyre River catchment area in Lancashire, England. The project is being led by the Environment Agency, in partnership with the Rivers Trust and other local stakeholders.

The goal of the project is to implement a range of natural flood management measures and other environmental interventions, such as tree planting, to improve water quality and reduce the risk of flooding in the Wyre River catchment area. To finance these measures, the project is using a combination of public and private funding sources, including:

- Government grants: The project has received funding from the UK government’s Catchment Restoration Fund, which supports initiatives to improve water quality and biodiversity in river catchment areas.
- Private investment: The project encourages private investment from businesses and other organizations which allows investors to support environmental projects while also receiving a financial return.
- Outcomes-based contracts: The project is using outcomes-based contracts to incentivize private sector involvement and ensure that the interventions are effective. This involves paying contractors based on the outcomes achieved, such as improved water quality or reduced flood risk, rather than the inputs or activities undertaken.

Overall, the Wyre River Catchment Finance Project is an example of an innovative financing approach that combines public and private funding sources to achieve environmental outcomes. The use of outcomes-based contracts and private investment funds is a relatively new approach in the environmental sector but has the potential to unlock new sources of funding and increase the impact of environmental interventions.

The Wyre River Catchment financing has successfully closed, a process which took approximately 18 months to complete. It is a straightforward model that, rather than using a common asset trust, is operated and governed through a Community Interest Company, which was specifically created for this project in recognition of its natural flood management; and biodiversity, social, and economic benefits.

#### Outcome buyers:

- United Utilities
- Floor Re, a time-limited reinsurance scheme in the United Kingdom that makes flood insurance coverage more widely available and affordable for residents
- Local municipal council
- Environmental agency
- Anonymous private outcomes buyer

#### Total Initial Funding Amount: £985K

- Payment for ecosystem services of £250K per annum of which £32K per annum will be paid to landowners in the form of carbon credits, and £218K per annum to private investors (two investment funds, and high net worth individuals). The £218K per annum represents interest payments made on a loan of £850K from private investors.
- Two grant-making organizations (Defra, the Department for Environment, Food, & Rural Affairs; and Esmee Fairbairn) provided a total of £135K in a non-repayable grant.

The borrower (i.e., the Community Interest Company) was able to reduce its interest rate payable on the loan from private investors by 1% through the SITR (Social Investment Tax Relief) program in the United Kingdom.

# Appendix 4

## Grindstone Creek Watershed Priorities, Estimated Budget, and Investment Gap

*Table 8: Short-Term Estimated Financial Needs in the Grindstone Creek Building to Recommendations from the Grindstone Creek Watershed Natural Asset Management Project*

Grindstone Creek Watershed	Progress on recommendations	Type of Cost and Timeline	Estimated Cost ( )
<b>1/</b> Engage with potential watershed partners, including Indigenous Nations	Expand terms of reference for the Watershed Financing Project to include additional watershed partners that have been identified in section 3 of this report.	Operational: community engagement <b>Short-term</b> (immediate)	\$200,000
<b>2/</b> Advance development of financing mechanism for the Grindstone Creek	Move forward financial structure and expansion of the current working group mandate to create a special-purpose vehicle or otherwise to transact funds to execute recommendations.	Capital: financing	\$500,000
<b>3/</b> Review policies to protect existing natural assets	Ensure that future land use change considers the value of existing natural assets and their role in service delivery.	Operational: planning and policy <b>Continuous improvement</b>	\$100,000
<b>4/</b> Develop a collaborative watershed management strategy and plan for the Grindstone Creek watershed	A strategy and plan that describes practices, processes, tools, and decision-making framework that watershed partners can use to prioritize actions.	Operational: planning and policy <b>Short- to medium-term</b>	\$300,000
<b>5/</b> Expand collaborative monitoring plan  See Conservation Halton's current monitoring program here or review on page 54-56 of Grindstone Creek NAM Project.	Additional water monitoring areas identified include south of Waterdown; the southeast portion of the outer edges of Clappison, Pleasantview, and Sassafras subwatersheds.	Additional annual operating cost to expand current monitoring activities. <b>Medium-term</b>	\$500,000

6/ Advance priority restoration projects	Watershed partners identified restoration as a priority in Clappison, Pleasantview, and Dundas. To address flood risk, the area north and south of Concession 5 W was identified as a priority for natural heritage system work in upland forests and in wetlands.	Capital: restoration <b>Medium-term</b>	\$2,500,000
7/ Install low impact development (LID) projects in priority areas	Seek opportunities to install LID projects in priority areas and to build them into asset management plans. Specific LID sites and priority areas could be identified via strategy and plan.	Capital, LID <b>Continuous improvement</b>	To be determined pending outcomes from recommendation #3
8/ Strengthen assessment of natural assets in Grindstone Creek	Enhance the understanding of the condition of natural assets in Grindstone Creek, the risks to them, and the services they provide.	Additional annual operating cost to expand current monitoring activities	\$300,000
9/ Develop a communications plan and presentation to build awareness of natural asset management needs in the Grindstone Creek watershed	Communicate the value of services provided by the Grindstone Creek watershed among decision-makers and the broader community.	Operational: community engagement <b>Medium-term</b>	\$300,000
10/ Better integrate natural asset management into overall asset management practices	All watershed partners were at an early stage of integrating natural asset management into their asset management practices, which focused primarily on built infrastructure.	Operational: planning and policy Watershed partners have each made different commitments to this objective. For example, the City of Hamilton will undertake a natural asset management roadmap project in the spring of 2023.	Costs included in recommendation #9
<b>Estimated total</b>			<b>\$4,700,000</b>



