ADVANCING MUNICIPAL NATURAL ASSET MANAGEMENT:

The Town of Gibsons' experience in financial planning & reporting

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FOREWORD

In the Town of Gibsons, natural assets play an essential role in our infrastructure system. Our foreshore area provides protection from storm surges and sea level rise. Our creeks, ditches and wetlands help us effectively manage stormwater. A naturally occurring aquifer located beneath Gibsons stores and filters drinking water so pure it meets health standards without chemical treatment.

The value of these natural assets is clear to us now, but before the Town recognized their economic significance we were - in hindsight – at risk of making decisions without all the facts. We had an incomplete understanding of what our service delivery depends on, and what the implications might be, if a natural asset we relied on were to fail or deliver lower levels of service. Therefore, our planning, investment and reporting decisions and practices were narrower and more limited than was desirable.

Today, for example, we have the numbers and evidence to show that it is smarter and cheaper, by orders of magnitude, to invest in maintaining and expanding green infrastructure, such as forests, urban parks and stormwater ponds, than to design, build and manage engineered stormwater infrastructure.

As a result, we are better-positioned to make sound decisions about future spending – decisions which may allow us to direct more money toward other priorities, reduce costs to end-consumers, or require fewer amenities in new developments (while delivering the same level of service).

Additionally, better management of natural assets has meant new funding sources, both through the application of Development Cost Charges to support the rehabilitation of natural assets, and through federal-provincial funding streams that can be applied to natural assets.

In our experience, not considering natural assets as part of an overall asset management strategy would mean only doing part of our job.

We hope the information in these pages helps you in your own municipal asset management journey. While the details will differ from one local government to the next, we believe the outcome will be the same: a more resilient and prosperous community.

Wayne Rowe, Mayor
Town of Gibsons, BC

KEY MESSAGES

1. Natural assets such as aquifers, forests, streams and foreshores can provide municipalities with vital services equivalent to those provided by many engineered assets.
2. Asset management is an effective platform for integrating natural asset considerations into core municipal decision-making.
3. An important distinction can be made between financial *planning* and financial *reporting* in the context of municipal natural asset management.
4. While there are hurdles and limits to including natural assets in financial planning and reporting, these challenges should not be overestimated.
5. Municipalities may find gaps between what they require as amenities and services in new developments, and what they can afford to maintain over the long-term. Municipal natural asset management may help close this gap.
6. In British Columbia, Development Cost Charge Bylaws can be updated to include natural assets and draw a funding stream for their improvement and, in some cases, their rehabilitation.
7. The tools available to measure the biophysical services of natural assets and translate this data into financial terms are evolving quickly, meaning that data verifiability and reliability is improving steadily.
8. Integrating natural assets into financial planning and reporting is relevant to risk reduction, supports integrated decision-making and can encourage a systems approach in local government.
9. Federal and provincial government programs now include natural assets as eligible funding categories in a variety of programs.[1]

1 These include the federal-provincial Clean Water and Wastewater Fund and soon a national $9.2 billion Green Infrastructure Stream enabling the use of natural infrastructure such as natural shorelines and wetlands for adaptation, resilience and disaster mitigation under the Investing in Canada Program.

1. INTRODUCTION

Canadian local governments are seeking new strategies to improve their ability to deliver core services in affordable, financially and environmentally sustainable ways. Many are turning to modern *asset management*. Asset management involves inventorying community assets, determining their condition and value, and preparing and implementing asset management plans to maintain or replace them, with the goal of ensuring sustainable service delivery to a community (Asset Management BC 2013). The urgency to adopt asset management is driven by factors including the poor state of Canadian infrastructure, and increased pressure on infrastructure[2] from factors including climate change and land intensification. Furthermore, the 2009 Public Sector Accounting Board (PSAB) standard PS 3150 includes a provision for municipal tangible capital assets to be identified, counted, valued and amortized over their useful lifetime. This standard highlighted the need for proactive assessment and management of assets as communities clarified the magnitude of the value of the infrastructure they own.

Asset management focuses on *sustainable service delivery*, not the individual asset that delivers those services. Stated differently, it matters less if the service comes from an engineered or natural asset, and more if that service is delivered reliably and cost effectively. Here, natural assets can have a distinct advantage.

Municipalities are increasingly realizing that natural assets (e.g. aquifers, forests, streams and foreshores) can, in fact, provide equivalent or even better services (e.g. stormwater management, flood protection, provision of drinking water) to many engineered assets. Moreover, they can often do so at a fraction of the cost of engineered assets, and usually with other benefits such as increased community resilience.

Deliberate management of natural assets to provide sustainable services to municipalities – or *municipal natural asset management* – harnesses this potential and offers a solution to the twin problems of aging infrastructure and ecosystems decline (see for example Brooke et al. 2017 and MNAI 2017).[3]

Box 1. Defining assets and municipal natural assets

"Assets" are the physical infrastructure owned by local governments to enable service delivery including, but not limited to: water and wastewater systems, drainage and flood protection systems, transportation systems, civic facilities, parks and fleets. It also includes natural resources (or natural assets) and the essential ecological functioning that nature provides (based on Asset Management BC 2013).

The term "municipal natural assets" refers to the stock of natural resources or ecosystems that is relied upon, managed, or could be managed by a municipality, regional district, or other form of local government for the sustainable provision of one or more municipal services (Municipal Natural Assets Initiative 2017).

2 The Federation of Canadian Municipalities (2016) found that one-third of Canada's infrastructure is in fair, poor or very poor condition, increasing the risk of service disruption.

3 While this paper focuses on issues related to natural asset management in a municipal context, many principles are applicable in other decision-making fora.

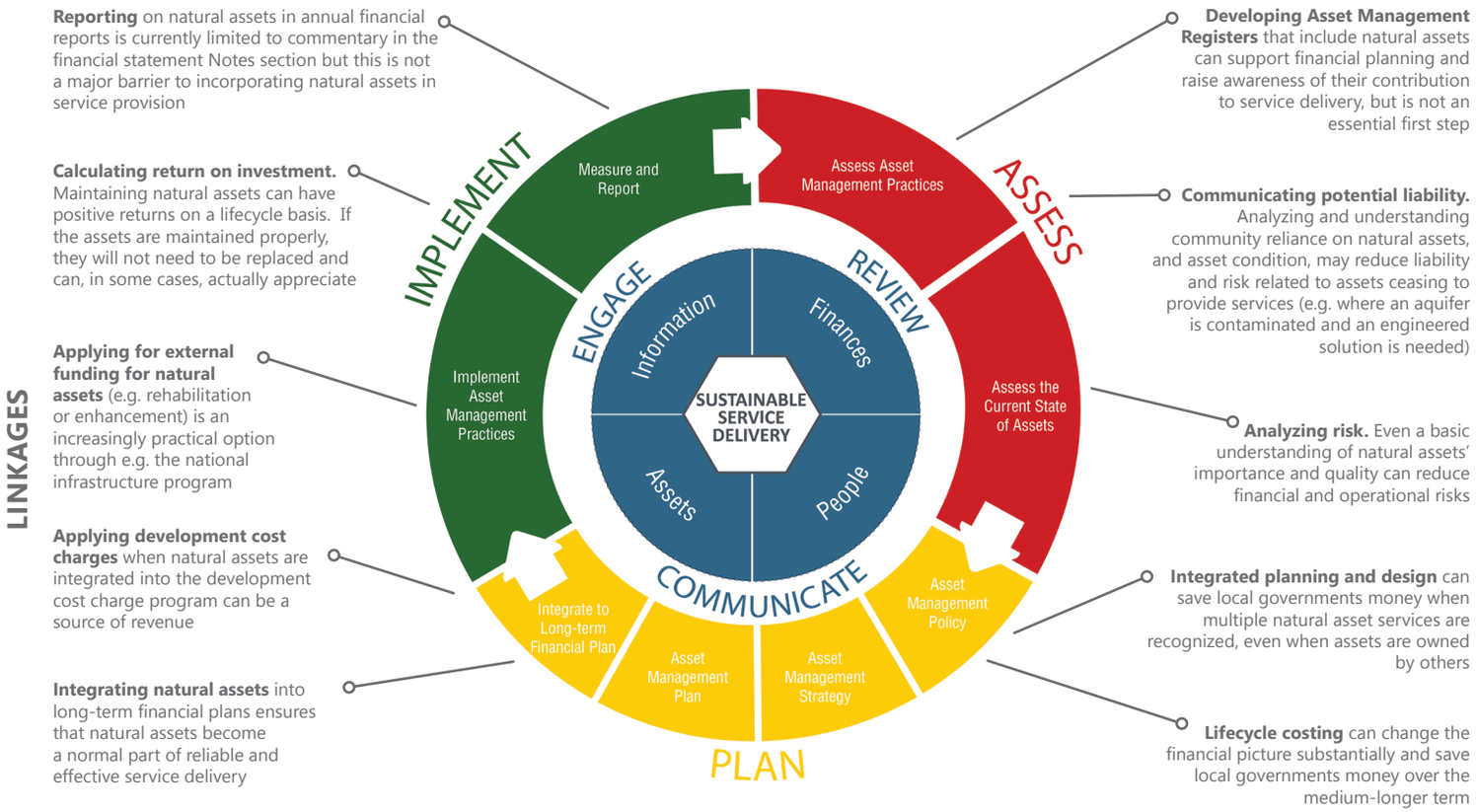


Figure 1. Gibsons' findings on linkages between asset management and financial planning and reporting.
(Figure adapted from Asset Management BC)

Figure 1. The Town of Gibsons' findings on linkages between asset management and municipal finance cover a wide spectrum of planning and reporting issues (Figure adapted from Asset Management BC 2013).

Box 2: From Gibsons to Municipal Natural Assets Initiative

The pioneering work in Gibsons, BC, demonstrated many benefits to municipal natural asset management including reduced risk through better understanding municipal dependence on natural assets to avoided capital expenditures. For example, the Town determined that the stormwater services provided by ponds in White Tower Park have a value of $3.5-$4.0 million if they had to be replaced by an engineered asset, a cost that can be avoided through regular maintenance in the Park (Sahl 2016).

At a multi-stakeholder meeting in November 2015 to review the Town's experience and its applicability elsewhere, participants concluded that its approach could - and should - be replicated. Based on this, the Municipal Natural Asset Initiative was launched to help other local governments to refine and replicate a municipal natural asset management approach.

The first such projects are taking place in the City of Grand Forks, BC; City of Nanaimo, BC; District of West Vancouver, BC; Town of Oakville, ON; and, Region of Peel, ON. Further expansion of MNAI is expected in late 2017 and early 2018.

The Town of Gibsons ("the Town"), a coastal community of 4,600 people on British Columbia's Sunshine Coast, was North America's first community to experiment with strategies to integrate natural assets into asset management and financial planning. Based on their pioneering work (see Box 2), the Municipal Natural Assets Initiative (MNAI) was developed to replicate the Town's approach in other municipalities by providing tools and support to measure natural assets within the context of their asset management programs.

Municipal natural asset management is in its infancy in that the Town and MNAI projects are its primary examples. Initial efforts to document the overall impacts, benefits, and lessons of municipal natural asset management are ongoing. As part of this effort, this document focuses on a subset of issues related to financial planning and reporting.

Specifically, this document describes:

- **Financial planning and reporting lessons from the Town to date (Section 3) that can be used immediately by local government staff; and,**
- **Areas for future potential research and policy development (Section 4).**

Audiences for this document include any municipal staff with responsibility for managing municipal assets, municipal decision-makers, and financial and accounting staff. Consistent with the overall goal of MNAI, of which the Town is a founding partner, the intention is to provide municipal staff with information to help them adopt municipal natural asset management. There is also preliminary evidence to suggest that the municipal natural asset management approach could be adapted for use in other decision-making contexts in which natural assets are, or could be an issue. Therefore, the document may also interest asset managers in provincial or federal government, natural resource companies, universities or ports and airports, for example. A description of tools and lessons related to municipal asset management more broadly are documented in, for example, Town of Gibsons (2014) and Brooke et al. (2017).

2. LIMITATIONS & TERMS

This document is based on the observations and findings of Town staff since 2013; interviews with Town staff; Town documents; and analyses produced by partners working with the Town (e.g. Sahl et al. 2016). Because municipal natural asset management is an emerging practice, the lessons are not refined fully or yet corroborated by the experience of multiple local governments. The applicability of the lessons may vary according to provincial jurisdiction. Nevertheless, every attempt has been made to provide information that will have near-term operational value to other local governments embarking upon their own natural asset management journey, including conducting a peer review of the contents of this document.

The terms used in this document are drawn from the document "Defining and Scoping Municipal Natural Assets" (MNAI 2017), summarized in Figure 2.

"Valuing the services from nature and investing in nature, our most important asset, is vital to our Town's financial bottom line.

It is also a key element of our resilience to severe weather and other climate impacts, and protection of nature for future generations."

– **Emanuel Machado, Chief Administrative Officer, Town of Gibsons**

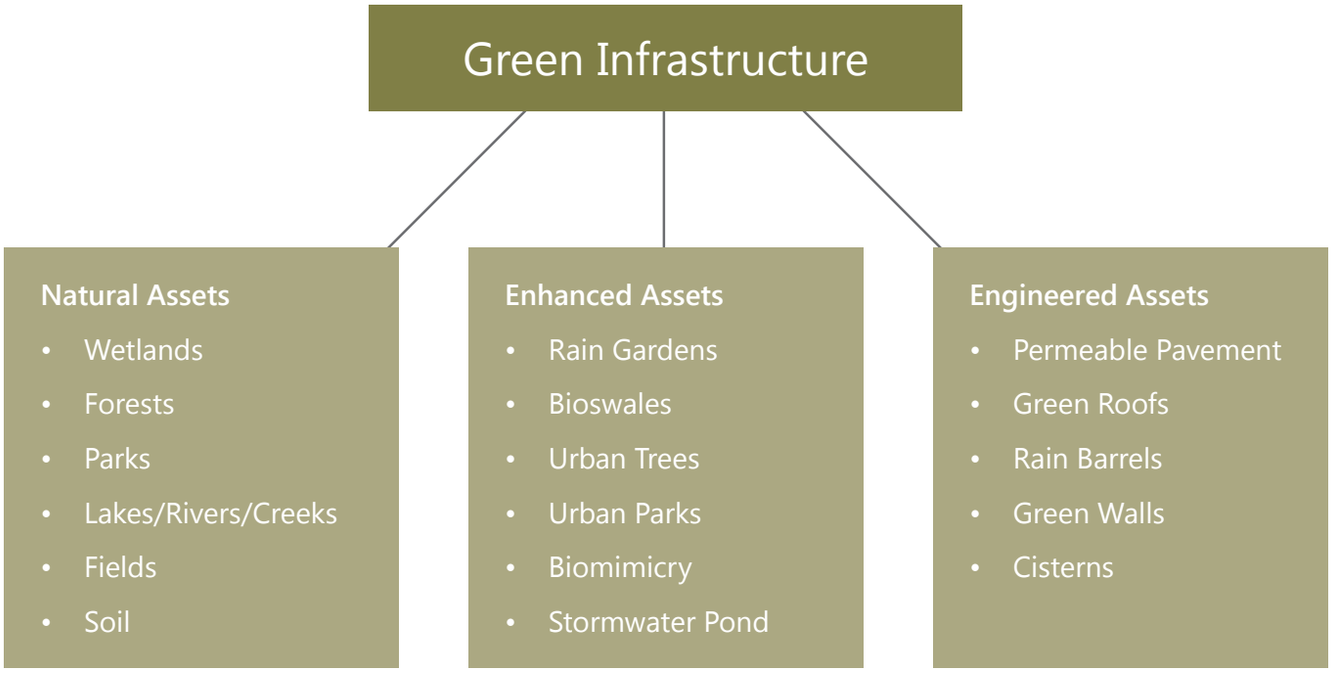


Figure 2. **The terms natural asset and green infrastructure are often used interchangeably, but have different meanings. "Natural assets" refers to the stock of natural resources and ecosystems that yield a flow of benefits to people. "Green infrastructure" also includes designed and engineered elements that have been created to mimic natural functions and processes in the service of human interests (text and figure from Municipal Natural Assets Initiative 2017).**

3. KEY CONSIDERATIONS FOR LOCAL GOVERNMENTS

Based on the experience to date in the Town, the following are key issues that other local governments could consider as they adopt municipal natural asset management. The ordering is generally according to steps of the asset management cycle (Figure 1).

3.1 It is not necessary to wait for a natural asset financial reporting requirement before incorporating natural assets into overall asset management.

Bottom line: In the immediate term, local governments can make use of the Notes section in annual financial statements, departmental reports, municipal publications and annual public meetings to describe the local government's approach to municipal natural assets, and focus on financial ***planning*** *aspects of municipal natural asset management.*

Strategic, policy, financial and operational decisions now increasingly reflect the importance of natural assets in providing vital services to citizens.

The Public Sector Accounting Board (PSAB) creates a Guidance Handbook to guide public sector accountants. The current Handbook limits what can be reported within public sector financial statements by excluding natural assets from recognition as Tangible Capital Assets in the accounting standards. One of the reasons cited for this exclusion is that "the costs, benefits and economic value of such items cannot be reasonably and verifiably quantified using existing methods."[4]

Given the potential complexity of natural asset valuation, incorporating natural asset reporting requirements into the Handbook will take time. In the interim and as a first step to recognition, the Town has added a statement to the Significant Accounting Policies - Tangible Capital Asset Note in their financial statements (see Annex 1) to acknowledge the importance of natural assets and the need to manage them in conjunction with engineered assets.

4 See for example the Municipal Finance Officers Association of Ontario newsletter at this link: http://www.mfoa.on.ca/MFOA/webdocs/PSAB_Newsletter_No_23.pdf

In this context, David Suzuki Foundation environmental economist Michelle Molnar notes, "We understand the emphasis in accounting on data reliability and verifiability. The tools available to quantify the biophysical functions of natural assets and characterize these are continually improving, so the ability to verify is growing steadily. Furthermore, we must distinguish between what is fully verifiable, and what is relevant. In many cases, municipal natural assets are highly relevant even where the data is imperfect."

Furthermore, an important distinction can be drawn between financial reporting and financial planning. The activities described in the remainder of the document apply almost exclusively to financial planning and are not substantially affected by the PSAB guidance. As the Town's Deputy Treasurer Lorraine Coughlin notes, "Audited financial statements are an annual reporting requirement. There are, however, opportunities *throughout* the year to incorporate natural assets into asset management and financial planning."

Box 3: Decision-making in the Town: Then and Now

Before Municipal Natural Asset Management	After Municipal Natural Asset Management
Services provided by natural assets were not fully recognized or understood.	Strategic, policy, financial and operational decisions increasingly reflect the importance of natural assets.
Inventories did not include natural assets.	Town is beginning to include natural assets in inventories.
Town had a very incomplete view of which assets provided vital services.	Town understands value of key assets – including natural ones – in terms of service delivery.
Bylaws did not reflect the role of natural assets.	Several bylaws now recognize the role of natural assets.
Development permitting focussed on clearing land and then designing and building new engineered assets.	Development permitting focussed more on making better use of existing assets as a priority, and building nature-like assets (e.g. the enhanced assets referred to in Figure 2).
Departments worked in silos according to their specific mandate.	Departments work together to maintain asset service levels.
External funding was not received (or applied for) for the municipal service function that natural assets perform.	External funding has been received for natural assets for the municipal service function they perform.
Financial reporting made no mention of natural assets.	Natural assets are noted in financial plans and in the Notes section of annual financial reports.
Development charges were applied only to engineered assets.	Development charges support rehabilitation of natural assets.

3.2 Natural asset registers add value but are not an essential first step

Bottom line: When local governments are starting municipal natural asset management efforts and considering only a few natural assets, including them in asset registers is not essential. As work progresses, natural assets can be readily included, can be integrated into existing local government asset registers – whatever form these take - and it can be helpful to do so.

Asset registers give an indication of the quality and level of service of an asset. Asset registers are not a codified requirement of asset management but a logical starting point to ensure information is consolidated and tracked. Including natural assets in registers can increase awareness of the services they provide and the likelihood that they are considered from an operational perspective, for example, tracking maintenance.

Registers differ widely across local governments and vary in complexity. Some registers consist of spreadsheets noting simply the asset type and an estimate of condition. For example, an asset such as a water main may be noted as "*100 meters of water main – good condition*". Others local governments have more detailed registers that distinguish between water main material (e.g. ductile iron, PVC, asbestos cement), break rates per kilometre, average age, useful life, and percentage of life remaining. Few local governments have registers that encompass every asset owned.

Gibsons has two registers: one is high level for financial reporting, the other detailed for asset management purposes. To date, the Town's natural assets are not included in either. This has not inhibited improved management of the natural assets. Nevertheless, efforts are underway to determine how best to integrate them in registers in future years. Challenges arising for the Town as it does so include how to classify natural assets that perform many functions – for example, an area that is used for a park as well as stormwater management; and, how to record assets that are used by the Town but under the jurisdiction of others (see Section 3.11 for a fuller discussion on issues related to jurisdiction).

Local governments could consider adding basic information on their natural assets' existence and location, as well as whatever is known about quality and service levels, in whatever register they use. Section 4 provides an example of a more sophisticated asset register being researched in B.C.

Natural assets, disaster risk and a changing climate

Following Hurricane Sandy in 2012, researchers found that healthy marshes, beaches, dunes, oyster reefs and flood plains provided important natural barriers against storm surges and flooding risks. This makes them a complement to – or, in some cases, a replacement for – engineered infrastructure, with two bonuses: there is no capital cost to leaving nature alone, and it offers a multitude of benefits besides protecting coastal communities. A subsequent report by the US Army Corps of Engineers highlighted the specific role of natural and nature-based features in reducing risks from future storms (US Army Corps of Engineers 2015).

3.3 Gathering natural asset risk information supports more informed and integrated decision-making

Bottom line: Understanding community reliance on natural assets and conducting a basic risk analysis that includes information on asset quality does not need to be difficult, and may reduce risk and the chance of unpleasant surprises.

The Town, as with all local governments, documents and communicates numerous potential liabilities, and as an example, must declare ongoing legal cases that could give rise to liabilities. There is no requirement to document community reliance on natural assets. Nevertheless, the Town believes that it is important to understand, document and communicate reliance on natural assets (whether or not they own the asset) as a matter of prudence and risk communication. Steps to this end include:

- Developing a basic inventory (list) of natural assets;
- Describing services they provide (e.g. water from aquifers, stormwater management and flood mitigation from creeks);
- Estimating in "ballpark" terms the value of the natural asset in terms of the costs if it had to be replaced with engineered alternatives; and,
- Determining the value of the services from that asset.

Once local governments have a basic inventory of natural assets and a sense of the services they provide, a simple risk assessment such as the one in Figure 3 can help prioritize efforts and focus on assets that pose the highest risk, where **Risk = Likelihood of Event * Impact of Event.**

As part of this process, it is useful to estimate the condition of the natural assets to determine how vulnerable they are. A heavily degraded stream, for example, is less likely to withstand shocks or hazards (e.g. a spill or encroachment) and a shallow, unconfined aquifer is more vulnerable to contamination from spills than a deep, confined aquifer. A detailed condition assessment may require considerable effort; an indicative one does not. Generally, it makes sense to start with an indicative assessment to get a sense of potential risks. If the indicative assessment points to high likelihood *and* high impact, then it is advisable to complete a detailed assessment.

Natural asset	Services	Hazards	Impact	Likelihood	Risk
Aquifer	Water provision	Leak from gas storage tank	High	Medium	High
		Spill from transport truck	High	Low	High
Foreshore	Protection of business and residential districts from storms	Storms, development	High	Low	Medium-high
Healthy creek distant from developments	Stormwater absorption, conveyance, and flood protection	Development and overuse	Low	Low	Low
Degraded creek near area with land intensification	Stormwater absorption, conveyance, and flood protection	Development and overuse	Medium	High	High

Figure 3. A basic yet indicative risk assessment of natural assets can help with prioritization

3.4 Municipal natural asset management can encourage integrated approaches

Bottom line: Municipal natural asset management can lead to integrated approaches within local governments and this can support effective service delivery.

Prior to the Council's decision defining nature as an asset, favouring low cost and efficient asset inventories and considering lifecycle costs, the Town typically approached new developments in a linear fashion that did not maximize potential synergies between departments or consider developments in integrated terms. For example, the Town would:

- Define required service levels for the development that were often higher than required;
- Propose engineered or biomimicry solutions[5] to meet the service levels; and,
- Allow developers to clear the land and put in place new engineered or biomimicry assets, all of which required upkeep and maintenance.

These disconnected steps "resulted in a gap between what we asked developers to build, and what we could afford to maintain over the long-term," notes Town Chief Administrative Officer Emanuel Machado.

Now, as a result of its natural asset policy and lifecycle consideration of assets, the Town:

- Considers developments holistically to see whether fewer new amenities can provide equivalent levels of service; and,
- Determines whether existing assets can be preserved, maintained or enhanced, before proposing new assets and allowing developers to clear land.

For example, in some recent developments the Town is examining the costs and benefits that rain gardens, bioswales and permeable pavers provide, compared to an integrated approach that reaps the benefits of healthy downstream forests to channel and treat rainwater from developments.

This integrated approach can result in a smaller, lower-cost asset inventory for the Town to manage, with a greater proportion of natural assets left intact. It also results in Town departments working together in teams, not in disconnected silos. This approach is leading to other, related changes in Gibsons. For example:

- A review of the Town's Integrated Stormwater Management Plan (ISMP) is underway, and is focusing on the merits of natural assets and reducing the need for engineered assets to accommodate growth;
- Based on the recommendations from the ISMP, changes will be made to the Subdivision Bylaw that will reflect an increased reliance on the Town's natural assets, where appropriate; and,
- As discussed in Section 3.8, the *Development Cost Charge Bylaw* has been changed to reflect the role of nature as infrastructure.

The journey and learning are still underway. However, it is apparent that recognizing the role of nature in service delivery is a first step towards municipal natural asset management that leads to many other related and/or supporting changes.

5 Biomimicry solutions are those engineered solutions that mimic nature. For example, a bioswale mimics properties of natural drainage systems.

3.5 Think in terms of lifecycle costing and investment returns

Bottom line: Considering only immediate costs hides expenses that occur over the life of the asset. Also, engineered assets must be disposed of (and replaced) at the end of their life, whereas natural assets may well grow in value and have no end of life.

As part of its more integrated decision-making, the Town, where relevant, now compares the lifecycle of natural and engineered assets before making capital decisions, including:

- **Start-up costs and financial flexibility.** Existing natural assets often have no upfront capital costs, whereas engineered assets do.[6] Using them effectively can therefore reduce costs. The Town was able to develop an alternative to an engineered stormwater pipe to service a higher-elevation area, using natural assets. The cost of the engineered option is approximately $4 million, which creates a barrier to development, both given the high cost, and the fact that the engineered option must be built all at once. Natural asset costs, by contrast, were estimated at $30,000-$50,000 per acre of maintenance costs. Additionally, implementation can be phased in over time, so costs would be incremental and achievable as development progresses.
- **Operating and maintenance costs.** Operating and maintenance costs for engineered assets are just that: necessary but committed costs that keep the asset functioning and delivering service until the end of its useful life. An operating cost for a natural asset can be an *investment* because the natural asset does not necessarily have an end of life, and with proper stewardship, gets more valuable. For example, making operational improvements to a creek to ensure safe stormwater conveyance could include replanting of natural vegetation and making upstream improvements (e.g. upstream ponds and wetlands) that reduce silt and allow existing creek plantings to become more mature and established, all which can improve habitat for aquatic life.
- **End-of-life.** Both natural assets and engineered assets require ongoing maintenance and/or rehabilitation. However, at the end of the lifecycle of an engineered asset, the local government is left with an asset that has completely depreciated and must be disposed of and replaced. By contrast, well-maintained natural assets such as a forest or wetland will likely have appreciated in terms of both service to the municipality and benefits from healthy ecosystems including habitat, biodiversity, cultural and recreational value.

6 The term natural asset is used per MNAI (2017) and as illustrated in Figure 2. Natural assets may have upfront capital costs if they are in poor condition and require restoration.

3.6 A park is not always just a park

Bottom Line: Some existing naturl assets may have the potential to deliver multiple, diverse services.

Traditionally, the Town's parks were managed *solely* for recreational benefits. For example, the Parks Department maintained trails, benches and similar amenities to ensure a positive recreational experience.

However, looked at through a municipal natural asset management lens, some of the Town's recreational parks are, in fact, not just parks. White Tower Park, for example, is being operated and maintained not only for its recreational benefits by the Parks Department, but also managed in concert with other departments for its stormwater management services (see Box 1).

The Town was able to develop a natural asset alternative to an engineered stormwater pipe to service a higher-elevation part of the town.

Financial planning for White Tower Park reflects this combined management: annual operational budgets include park-related maintenance, and costs for stormwater management (i.e. dredging of the ponds) are incorporated over the longer term at regular intervals.

Other local governments may benefit from taking a critical look at assets such as parks, and determining whether they can be managed for a broader set of objectives and outcomes.

Assets such as the Town's parks are now being managed for a broad set of service objectives and outcomes.

"Investing in nature is proving to do more than just reduce our risks. Over the long-term it makes our asset base more valuable to the community and that is good for all of us."

– **Gracelyn Shannon, Asset Management Coordinator, Town of Gibsons**

3.7 Including natural assets in financial planning can be straightforward

Bottom line: Integrating natural assets into financial planning is not much different from dealing with any other asset.

The Town produces an overall 5-year financial plan supported by detailed plans divided by asset classes such as water or sanitary sewers. Detailed plans may cover periods from 20 to 100 years. In this context, the Town's approach to including natural assets is straightforward. For example:

- Budgeted costs relating to the Gibsons Aquifer are operational and reflected as "Aquifer Monitoring = $30,000 / year" and "Cross Connection Control Testing = $25,000 / year" in the 2017 Water Fund Operating Budget, and inflated by 2% each year in the Long-Term Financial Plan. The only capital project planned for the aquifer at this time is the installation of an additional monitoring well.
- Capital improvements related to the White Tower Park Pond design and construction appear in the Town's 5-year general capital budget.

Determining the *Annual Cost for Asset Replacement*– or how much is being put aside for asset renewal and replacement - has direct bearing on recommended rate increases for taxpayers. This needs to be included in financial plans, but so far have proved to be no more challenging for natural assets than for engineered.

Details of financial planning may differ across local governments in terms of software and reporting formats but the basic elements are the same, and so, in principle, all local governments should be able to integrate natural asset considerations into their financial plans.

"It is a matter of integrating the costs associated with the ongoing operations and maintenance of natural assets into our financial plans," observes Deputy Treasurer Lorraine Coughlin.

3.8 Development Cost Charges can fund natural asset restoration & enhancement

Bottom line: In British Columbia, Development Cost Charges (DCCs) can support the rehabilitation of natural assets in situations where the project meets the requirements of an eligible capital cost that supports a DCC-eligible service, and the restoration and enhancement project will service, directly or indirectly, the development in which the charge is imposed.

In British Columbia, Division 10 Part 26 of the *Local Government Act*[7] sets out how local government can apply DCCs, which are intended to pay for common services incurred as a direct result of a new development. DCCs can offset costs to the local government by ensuring that one or more users or beneficiaries pay part or all of new costs associated with a development. The *Local Government Act* permits DCCs to be established for providing, constructing, altering, or expanding facilities related to:

- Roads, other than off-street parking;
- Sewage;
- Water;
- Drainage; and,
- Parkland acquisition and improvement.

Once the Gibsons Council defined nature as an asset and as the Town's understanding of natural assets grew, it became apparent that natural areas were contributing to common storm services. Accordingly, the Town amended its DCC bylaw, including the rates, fees and charges to include the capital costs of new projects for some drainage natural assets that directly or indirectly service the development for which the charge is being imposed. The Town now collects charges for improvements to natural areas. Eligible drainage projects are discussed in chapter 2 of the *Development Cost Charge Best Practice Guide* provided by the B.C. Ministry of Municipal Affairs and Housing. Local governments considering including drainage capital project costs related to natural assets in a DCC bylaw should consult with staff in the relevant Ministry (in B.C., the Ministry of Municipal Affairs and Housing) to determine project eligibility. The practice could potentially apply to a large number of local governments, and help direct more resources to natural asset regeneration and maintenance.

7 See this link for further details on the DCC section of the Local Government Act: http://www.cscd.gov.bc.ca/lgd/finance/development_cost_charges.htm

3.9 Know and use the available funding sources for natural asset management, rehabilitation and enhancement

Bottom line: There are several funding sources for natural assets management, rehabilitation and enhancement. By developing an evidence base around natural assets, local governments can be well-positioned to take advantage of these.

The Town received approximately $249,000 through federal-provincial Clean Water and Wastewater Fund to update their Integrated Stormwater Management Plan (ISMP), which will have a focus on the role of natural assets that underpin the Town's stormwater management system. Projects will include:

- A functional design for expanding the stormwater management ponds at White Tower Park in order to address erosion and capacity issues in Charman Creek, the primary watercourse running through the Town;
- A functional design for emergency stormwater storage at Brother's Park. The concept is to construct improvements to existing playing fields to allow them to retain stormwater for less frequent storm events;
- Management plans for Charman Creek to address potential downstream flood concerns;
- Management plans for Goosebird Creek to identify restoration priorities;
- Updates to Development Permit Areas to better manage flooding and geotechnical hazards and protect environmentally sensitive areas; and,
- Updates to the Subdivision, Development Services, Stormwater Management and Drainage Development Cost Control Bylaws to align with the updated ISMP.

Other funding sources are on the horizon across Canada. The *Investing in Canada Plan* announced by the Federal government in 2017 provides for Integrated Bilateral Agreements with Provinces. These Agreements include a national $9.2 billion *Green Infrastructure Stream* enabling the use of natural infrastructure such as natural shorelines and wetlands for adaptation, resilience and disaster mitigation. If appropriate definitions, direction, guidance and targets are put in place by provinces, then this will result in a substantial boost for the health of natural assets (See Annex 2 for sample letter on this topic).

As the concept of municipal natural asset management expands, it is also reasonable to expect that other organizations involved with conservation activities can have a role in service delivery and become viable funding partners. Shelley Petrie from the Friends of the Greenbelt Foundation (in Ontario) notes, "It is important that natural assets be managed, restored and secured for the essential services they provide. There are many organizations involved in this type of work and their contribution to the maintenance and enhancement of those cost-effective services needs recognition. This could form the basis of important partnerships in the years ahead."

> *"Receiving federal-provincial funding for our natural assets was made possible by our emphasis on municipal natural asset management. The funding is a win for the Town and its ability to deliver service sustainably. It is also very much a win for healthy ecosystems that can support habitat and biodiversity for generations to come."*
>
> – **Dave Newman, Director of Infrastructure Services, Town of Gibsons**

3.10 Service can be more important than jurisdiction

Bottom line: Asset ownership should not be a barrier to considering the services they provide.

Charman Creek runs through the municipal boundaries of the Town and provides stormwater services. The Town manages Charman Creek as a natural asset even though it is under the jurisdiction of the Province of BC. Practically, this means that the Town seeks permission to enter riparian areas and maintain, rehabilitate and/or enhance the asset.

It may seem counter-intuitive for the Town to dedicate resources to maintaining a natural asset under another jurisdiction. However, notes Town Chief Administrative Officer Emanuel Machado, "Doing nothing at the creek, or the bare minimum, would be very short-term thinking from a financial perspective. We are prepared to pay a little more now, for a long-term or potentially perpetual benefit of stormwater services from the Creek for which we would otherwise require an engineered asset."

The lesson for other local governments may be to balance inter-jurisdictional governance and ownership issues with issues related to overall watershed integrity to maintain services. This may entail different and more collaborative approaches with other entities and/or levels of government.

4. AREAS FOR FUTURE POTENTIAL RESEARCH AND POLICY DEVELOPMENT

Based on the Town's experience to date, the following could be explored to enable stronger, consistent approaches to municipal natural asset management.

4.1 Developing a natural asset accounting framework

At national levels, natural capital accounting is guided by System of Environmental-Economic Accounts (SEEA). More than 30 countries have started to implement the SEEA, and programs like World Bank WAVES uses the SEEA Framework to implement natural capital accounting in countries to inform economic decision-making on natural resources such as minerals, timber, and fisheries.

By contrast, there is very limited guidance from national or international bodies specific to municipal natural assets.[8]

Furthermore, SEEA generally applies to natural resources for which there is a market (e.g. forests and minerals) and not to the non-market services that are of primary interest to municipalities (e.g. flood mitigation, water quality, carbon sequestration).

There are opportunities for organizations such as the Chartered Professional Accountants of Canada to contribute to the development of an accounting framework for municipal natural asset management. This could link to consideration of PSAB guidelines (Section 4.6, below). Starting points could include rigorous identification of best practices and the development of partnerships, potentially in the context of the Natural Capital Lab.[9]

4.2 Knowledge development

Knowledge needs to be expanded in areas related to the development of a municipal natural asset accounting framework (see Section 4.1) including:

- The 'service life' of natural assets under different demand and management scenarios so that lifecycle costs can be calculated;
- Impact of climate change on key urban natural assets;
- How to consistently assess natural asset condition;
- How best to define expected service levels from natural assets;
- Mapping different ways in which natural assets can be integrated into municipal planning, budgeting and processes; and,
- Trade-offs between natural asset services; for example, increasing and connecting retention ponds for stormwater management may reduce recreational opportunities in some cases.

8 TEEB (2012) is aimed at local policy makers but is a high-level overview of frameworks and tools rather than an operational approach focussed on asset management. Value of Nature to Canadians Study Taskforce (2017) provides an extensive and valuable overview of ecosystem valuation tools and approaches but is substantially broader in scope than municipal natural asset management.

9 http://naturalcapitallab.com

4.3 Clear definitions, and direction from Provinces & Territories related to Integrated Bilateral Agreements

As noted in Section 3.9, the Integrated Bilateral Agreements could be an important source of funding for natural asset rehabilitation. The Town, together with other stakeholders, sent a letter to all Provinces and Territories recommending measures to ensure that funds flow in the most effective possible manner. Annex 2 contains the letter sent to one of the Provinces; similar copies were sent to all other Provinces and Territories.

4.4 Future development of asset registers

Some local governments are researching more detailed approaches to the inclusion of natural assets in asset registers. For example, the Victoria Capital Regional District has developed initial register templates such as the one in Annex 3. As municipal natural asset management matures, these more detailed registers could be piloted, refined and shared.

4.5 MMCD guidelines

The Master Municipal Construction Documents (MMCD) Design Guideline Manual provides a standardized set of guidelines that can be adopted by municipalities and other agencies involved with design and construction of municipal infrastructure. Importantly, many local governments simply refer to these guidelines in their own policies and bylaws. Therefore, Analysis of the Guidelines to explore opportunities to include or align with municipal natural asset management could have a substantial, positive impact.

4.6 PSAB Guidelines

Ideally, PSAB will adapt their Guidance Handbook to ensure that the value of natural assets can be appropriately reflected in financial reports. This would be important because by not placing natural assets on balance sheets, a statement is being made that they have no inherent value and make no contribution, which is decidedly not the case. Furthermore, their exclusion means that any reduction in the value of that natural asset's future economic benefit is not reflected. A requirement to reflect natural assets in the financial statements would likely encourage municipalities to consider natural assets as part of their overall asset management strategy.

There have been initial steps to consider the issue. In 2016, a submission on urban forests was made to their Public Sector Accounting Discussion Group (PSADG), the venue for public sector professionals to debate issues arising from the application of their standards. The submission set out the potential of integrating urban forest assets into financial statements and prompted extensive discussion on the issue.[10] A follow-up discussion occurred in November 2017. As an immediate starting point, it would be helpful for the PSADG to consider:

- How to enable valuation of natural assets in terms of the engineered asset being replaced;
- What financial statements may lose in completeness as a result of excluding natural assets; and,
- How to balance the needs for data reliability and relevance in municipal natural asset contexts, and whether the former is still an issue given numerous advances in natural asset measurement and management tools.

> *"Relevance and reliability are important concepts in financial reporting. Being able to reflect the inherent value of natural assets with a reliable measurement of their future economic benefit would enhance the usefulness of the information to the reader."*
>
> – **Lorraine Coughlin, Deputy Treasurer, Town of Gibsons**

10 See discussion on Green Infrastructure blog post: http://greeninfrastructureontario.org/7-key-takeaways-urban-forest-assets-public-sector-account-standards/

ANNEX 1

Excerpt from the Town's 2016 Financial Statements showing how natural assets are currently referenced.

1. Significant Accounting Policies

(a) Tangible Capital Assets

Tangible capital assets are recorded at cost less accumulated amortization and are classified according to their functional use. Cost includes all costs directly attributable to acquisition or construction of the tangible capital asset including transportation costs, installation costs, design and engineering fees, legal fees and site preparation costs. Amortization is recorded on a straight-line basis over the estimated life of the tangible capital asset commencing once the asset is put into use. Contributed tangible capital assets are recorded at fair value at the time of the contribution.

Estimate useful lives of tangible capital assets are as follows:

Buildings	50 to 60 years
Equipment and Furniture	5 to 25 years
Vehicles	10 to 15 years
Roads	15 to 80 years
Drainage	30 to 80 years
Geo Utility	10 to 80 years
Other Tangible Capital Assets	15 to 40 years
Sewer Infrastructure	3 to 80 years
Water Infrastructure	10 to 80 years
Work in Progress	Not amortized until put into use

The Town is fortunate to have many natural assets that reduce the need for engineered infrastructure that would otherwise be required. This includes the Gibsons aquifer (water storage and filtration), creeks, ditches and wetlands (rain water management) and the foreshore area (natural seawall). Canadian public sector accounting standards do not allow for the valuation and recording of such assets into the financial statements of the Town. As such, these natural assets are not reported in these financial statements. Nevertheless, the Town acknowledges the importance of these assets and the need to manage them in conjunction with engineered infrastructure. For example, on July 19, 2016, the Town adopted a revision to the Development Cost Charges Bylaw 1218 which included a $3.2 million valuation for an increase in the White Tower storm retention pond volumes. This pond system is a natural storage and retention system that would replace, in part, a traditional pipe system. The valuation recognizes the service this natural asset will provide.

ANNEX 2

Example of letter sent to all Provinces and Territories regarding Investing in Canada plan.

August 31 2017

The Honourable Donna Harpauer, M.L.A.
Minister of Government Relations,
Minister Responsible for First Nations,
Métis and Northern Affairs
Government of Saskatchewan
Room 348, Legislative Building
2405 Legislative Drive Regina, Saskatchewan S4S 0B3

Dear Minister Harpauer:

We are writing further to the 6 July 2017 letter to you from Minister Amarjeet Sohi regarding the *Investing in Canada Plan*, including the Integrated Bilateral Agreements ("the Agreements").

The Agreements include a national $9.2 billion *Green Infrastructure Stream* enabling the use of natural infrastructure such as natural shorelines and wetlands for adaptation, resilience and disaster mitigation. This is a promising and far-sighted measure consistent with leading global practice. However, we believe that its full potential will not be realized unless measures, including those recommended below, are put in place by your Province.

As you are aware, natural infrastructure (or natural assets) provide vital services to Canadian communities. These range from water purification, drinking water supply, flood mitigation, carbon sequestration, and urban heat island reduction. Furthermore, there is increasing evidence that natural infrastructure can provide equivalent services to engineered infrastructure, without capital costs and with lower operating expenses, and fewer (or even net positive) carbon implications. For example, healthy and intact urban wetlands may store and help manage rainwater and reduce flooding risks, without the need for engineered retention ponds and bypass pipes, particularly in less-developed areas. Hard-won lessons following disasters such as Hurricane Sandy underscore the importance of natural infrastructure as a vital complement to engineered infrastructure in reducing disaster risk and the human and financial costs of natural disasters. By contrast, there can be risks to communities when they do not understand the extent of services provided by natural infrastructure and their reliance upon it.

Notwithstanding the importance of natural infrastructure to Canadians' well-being, assets such as wetlands, forests and foreshores are typically over-used and seldom considered within asset management frameworks or economic indicators and measures. This is starting to change, however. The annex below provides examples of new research and programming in Canada and beyond that demonstrate practical benefits to measuring, managing and rehabilitating natural infrastructure.

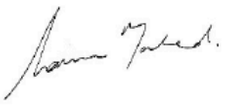
The *Green Infrastructure Stream* is an outstanding opportunity for Provinces, together with local governments, to identify, manage, maintain and rehabilitate natural infrastructure in communities such that it provides reliable, long-term services. However, engineered infrastructure remains the default option in almost all communities. Based on our experience, realizing the full opportunity presented by the program in your Province will require specific direction, definitions, guidance and targets.
Therefore, we urge that your Province:

1. **Commit publicly to the principle** that natural assets are a vital component of sustainable service delivery in all Canadian communities;
2. **Establish the goal** of ensuring, together with local governments, that wherever a natural asset can be managed, monitored, preserved or rehabilitated to provide the same service as an engineered asset in a cost-effective and ecologically sustainable manner, the former is prioritised for funding;
3. **Address research and capacity gaps** that may exist within Ministries responsible for infrastructure programming so that staff can work effectively with local governments to identify and seize opportunities for natural assets to provide infrastructure services;
4. **Provide financial support for municipalities** (or other relevant public sector organizations that manage natural assets) to help them: identify the services provided by local or regional natural assets; determine the condition of priority natural assets; develop and cost plans for long-term management of priority natural assets; and conduct restoration, rehabilitation and preventative maintenance, as warranted.
5. **Require analysis as a pre-condition for funding** to determine whether, for certain asset classes (e.g. water, waste water, resilience-related) natural assets could provide the required services in whole or part, as opposed to relying solely on engineered assets. (To emphasize, we are not proposing a conditionality wherein municipalities must *undertake* certain projects, but that there be a requirement for natural asset *analysis* in project proposals. The analysis could also indicate how projects will ensure complementarities between natural and engineered assets to maintain or enhance watershed health.
6. **Include a focus on smaller communities** that form the bulk of Canadian municipalities, often face serious capacity constraints, and may stand the most to gain from cost savings from including natural assets within an overall asset portfolio. This should not be at the expense of larger urban centers.

We believe that these measures constitute a reasonable approach to enable the full, transformative potential of the *Investing in Canada* plan.

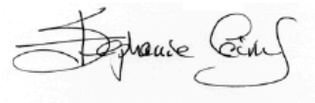
In closing, we offer our support, as organizations engaged in diverse activities to measure, manage and rehabilitate natural assets across Canada, to help your Province seize the full opportunity presented by the program. For example, we would be pleased to help elaborate on the analysis that would be helpful as a precondition for funding.

With kind regards,



Emanuel Machado
Chief Administrative Officer
Town of Gibsons

Jay Ritchlin
Director-General, BC & Western Region, David Suzuki Foundation



Stephanie Cairns
Director, Cities & Communities
Smart Prosperity Institute

Roy Brooke
Director, Municipal Natural Assets Initiative

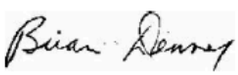
David Hughes
President and CEO
The Natural Step Canada

Jeffrey Wilson
Chief Executive Officer,
Green Analytics

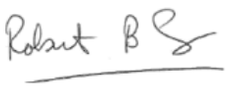
Burkhard Mausberg
CEO, Friends of the Greenbelt Foundation

Mike Puddister
Deputy CAO & Director Watershed Transformation, Credit Valley Conservation Authority

Mark Anielski
President & CWO,
ANIELSKI Management



Brian Denney, CEO, Toronto Region Conservation Authority



Rob Smith,
Principal, Midsummer Analytics

Lara Ellis, Director, Strategic Initiatives
ALUS Canada

Brian Hepworth
Manager of Provincial Operations (Saskatchewan) Ducks Unlimited Canada

ANNEX 3

Example of an advanced asset register template for natural assets being researched by the Victoria Capital Region District. The template uses UniFormat, a standard for classifying building specifications and cost analysis in the U.S. and Canada.

UNI-FORMAT CODE FOR NATURAL ASSETS			
Level 1	**Level 2:**	**Level 3:**	**Level 4:**
EcoSystem Group	**Group Elements**	**Individual Elements**	**Sub-Elements**
H - COASTAL / MARINE			
H - COASTAL / MARINE	H10 Intertidal Zone		
	H20 Altered Shorelines		
	H30 Rocky Shorelines		
	H40 Sand/Gravel Shorelines		
	H50 Boulder/Cobble Shorelines		
	H60 Pocket Beaches		
	H70 Estuaries		
	H80 Intertidal Mud Flats		
	H90 Salt Marshes		
	H100 Coastal Sand Dunes		
	H200 Tidal Lagoons		
	H300 Coastal Bluffs		
I - FRESHWATER			
I - FRESHWATER	I10 Riparian Zones		
	I20 Streams & Rivers		
	I30 Wetlands		
J - TERRESTRIAL			
J - TERRESTRIAL	J10 Riparian Zones		
	J20 Coastal Douglas Fir		
	J30 Coastal Western Hemlock		
	J40 Garry Oak Meadows		
	J50 Inland Cliffs/Bluffs		
Terrestrial (example)	*Coastal Douglas Fir*	*J2010 Roots*	
		J2020 Crown	*J2021 Leaves*
			J2022 Branches
		J2030 Trunk	*J2031 Heartwood*
			J2032 Xylem
			J2033 Cambium
			J2034 Pholoem/Inner Bark
			J2035 Bark
	Alpine Tundra		
Province wide	Spruce - Willow - Birch		
	Boreal White and Black Spruce		
	Sub-Boreal Pine - Spruce		
	Sub-Boreal Spruce		
	Mountain Hemlock		
	Engelmann Spruce - Subalpine Fir		
	Montane Spruce		
	Bunchgrass		
	Ponderosa Pine		
	Interior Douglas-fir		
	Coastal Douglas-fir		

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This document forms part of the Town of Gibsons' overall asset management strategy. It was developed in collaboration with the Municipal Natural Assets Initiative by:

Emanuel Machado, Chief Administrative Officer - Town of Gibsons

Lorraine Coughlin, Deputy Treasurer - Town of Gibsons

Roy Brooke, Director - Municipal Natural Assets Initiative

Dave Newman, Director of Infrastructure Services - Town of Gibsons

Design and Layout: Caroline Mitic

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The Convening Partners of the Municipal Natural Assets Initiative are:

Brooke and Associates

David Suzuki Foundation

Smart Prosperity Institute

Town of Gibsons

The authors gratefully acknowledge the generous involvement of the reviewers of this report:

Brian Bedford, British Columbia Ministry of Municipal Affairs and Housing

Stephanie Cairns, Smart Prosperity Institute

Geneva Claesson, Deloitte

Bill Cox, BDO Canada LLP

Isabel Gordon, District of West Vancouver

Andreas Link, Ontario Ministry of Natural Resources and Forestry

Angela Mawdsley, District of North Vancouver

Michelle Molnar, David Suzuki Foundation

Simon Pek, Gustavson School of Business, University of Victoria

Gordon Sparks, NAMS Canada Inc.

Umar Saeed, PSAB Canada

Robert Sidall, Metrolinx

Carlo Vijandre, Capital Regional District

Wally Wells, Asset Management BC

FOR MORE INFORMATION, CONTACT:

Emanuel Machado, Chief Administrative Officer, Town of Gibsons

email: emachado@gibsons.ca

phone: 604-886-2274

fax: 604-886-9735

website: www.gibsons.ca/eco-assets