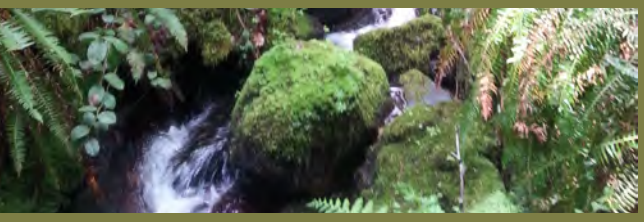

TOWN OF GIBSONS

TOWARDS AN ECO-ASSET STRATEGY IN THE TOWN OF GIBSONS

Nature plays an integral part in a municipal infrastructure system

Eco-Asset Strategy is an Initiative of the Town of Gibsons

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INTRODUCTION

Nature, and the ecosystems services that it provides, is a fundamental component of the Town of Gibsons' municipal infrastructure system.

The condition of urban infrastructure is of universal importance in Canada. For municipalities and other levels of government, well-constructed, well-maintained infrastructure is the foundation of economic prosperity and qualilty of life and underpins effective delivery of almost all services.


Parkland Reservoir: Engineered Asset


Gibsons Aquifer: Natural Asset

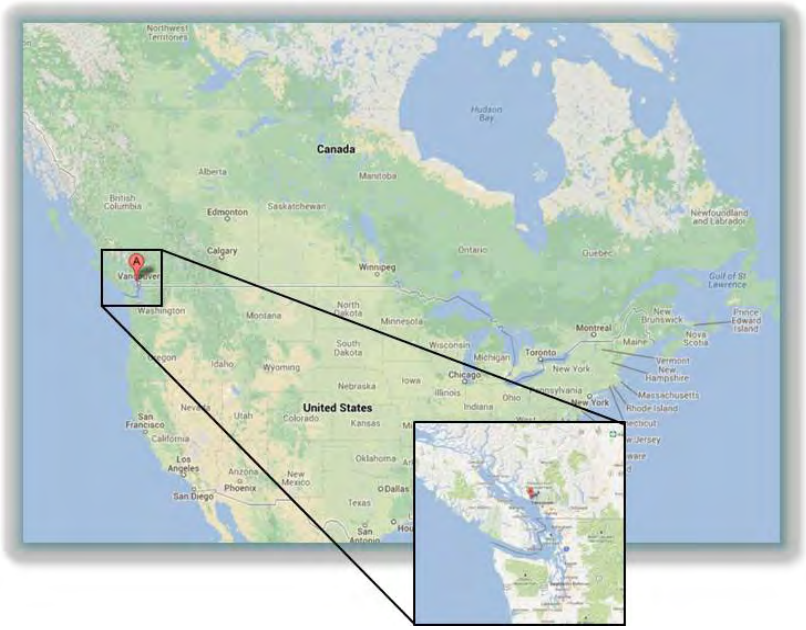
However, aging infrastructure, combined with deferred maintenance and high renewal and replacement costs, has resulted in poorer asset condition and increased maintenance costs. A 2012 report card on Canada's infrastructure, for example, found that the value of municipal water, wastewater, stormwater and road systems across the country is approximately $538 billion, $50.7 billion of which is in poor or very poor condition, and a further $121.1 billion of which is in only fair condition."[1, 2]

The Federation of Canadian Municipalities argues that the root of the problem is a "funding crunch." Municipalities collect only eight cents of every tax dollar but build and maintain half of the country's core infrastructure.[3] Beginning in 2014, 2% of gas tax funds will be allocated for infrastructure, but this and other sources are considered insufficient relative to needs. Indeed, the Organization for Economic Cooperation and Development notes that, in no scenario, can Canada or other developed countries meet future infrastructure needs with traditional sources of public financing alone.[4]

Improving the management of Canada's infrastructure and other assets is a vital, yet complex, challenge. This paper documents a pioneering approach being undertaken by the Town of Gibsons, in British Columbia, Canada to place nature, and the municipal services that it provides, at the core of the Town's municipal infrastructure system. The focus is to:

- Continue developing the practices associated with the Town's Eco-Asset Strategy
- Raise awareness and understanding of asset management and the role of eco-assets within Gibsons and beyond

1 http://csce.ca/sustainable-infrastructure/
2 http://csce.ca/custom-content/uploads/2012/06/Infrastructure_Report_Card_ENG_Final1.pdf
3 http://www.fcm.ca/Documents/reports/Building_Prosperity_from_the_Ground_Up_Restoring_Muncipal_Fiscal_Balance_EN.pdf
4 http://www.oecd.org/futures/infrastructureto2030/40953164.pdf



In Canada and elsewhere, responsibility for municipal asset management plans traditionally existed within individual departments, for example, Parks, Public Works, Engineering and Finance, independent of core financial systems. Departments used data that was specialized, incomplete, and not comparable across the municipal system,[5] making it challenging to develop a holistic picture of the quality of assets or their relative costs and maintenance priorities. Municipal asset management also often had the narrow objective of avoiding or addressing breakdowns, rather than maintaining an overall healthy asset portfolio over the lifecycle of each asset.

These issues and pressures as well as recent provincial requirements are causing many municipalities to develop an *asset management* strategy as part of the solution. Asset management is a systematic business process for making strategic and operational decisions about municipal assets over their entire lifecycle, rather than merely maintaining assets. The emphasis of asset management is on a process for operating infrastructure throughout its full life cycle in the most sustainable and cost-effective manner. An important feature of this process is having financial plans to ensure that assets are repaired and replaced at appropriate times.

Another important change regarding asset management occurred in January 2009, when the Public Sector Accounting Board determined that municipalities must not only record the purchase or construction of infrastructure or assets, but also include asset depreciation in financial statements. This requires municipalities to inventory and understand the state of their entire existing stock. A natural outcome of this change is that it encourages municipalities to think about and understand what the annual costs are to use an asset, when it will need to be replaced and how to put this information in the center of financial decision-making, as opposed to simply recording it on the books of the department that built or bought the asset.

Within this context of changing approaches to managing municipal assets and infrastructure in Canada, the Town of Gibsons, is taking effective asset management a step further. The Town is considering the role of engineered assets such as roads and storm sewers, as well as the role of natural assets such as forests, aquifers, creeks, wetlands and foreshores that provide essential civil services to citizens.

5 *Guide to Accounting For and Reporting Capital Assets.* Public Sector Accounting Group of the Canadian Institute of Chartered Accountants, April 2007.

Gibsons is applying asset management, financial planning and ecological management principles to operate and maintain its infrastructure.

Town officials reason that if asset management requires that all assets be considered, then assets must include not only built or engineered infrastructure but also natural assets, or "*eco-assets*" wherever these provide equivalent civil services on which the Town relies. The Town has four main objectives in considering natural as well as engineered assets:

1. ***Managing risk*** by ensuring that Gibsons has a clear understanding of what services they receive from natural assets, such as flood prevention, provision of drinking water and rain water management, and what it would cost to replace the natural asset with an engineered alternative if the assets were degraded or destroyed
2. ***Saving costs*** by managing natural assets in a way that they will provide services at lower cost and in perpetuity
3. ***Maintaining healthy ecosystems*** as a result of sound asset management strategies
4. ***Managing the asset*** to provide services for future development without degrading the condition

Gibsons' journey towards a robust eco-asset strategy is in its early stages. Evidence to date indicates that their strategy can save money, reduce risks and may also have implications far beyond the Town itself.

"Infrastructure is a means for ensuring the delivery of goods and services that promote prosperity and growth and contribute to quality of life, including the social well-being, health and safety of citizens and the quality of their environments."

- Organization for Economic Co-operation and Development

Terminology: The term *natural capital* is used as an economic metaphor for the limited stocks of physical and biological resources found on earth. *Ecosystem goods* are the products of ecosystems such as food, fibre, clean air and water. *Ecosystem services* include processes such as climate regulation, stormwater reduction and nutrient cycling as well as recreation, aesthetic and cultural benefits. *Ecosystem goods and services* flow like interest or dividends from stocks of natural capital. In this document, *natural assets and eco-assets* refer to assets of the natural environment such as aquifers, creeks and foreshores that provide equivalent civil (engineered) municipal goods and services. *Eco-asset strategy* refers to the strategy by which the Town of Gibsons manages natural or eco-assets as part of an overall asset management approach. (Adapted from *The Benefits of Canada's Protected Areas: A Scoping Study on Ecological Goods and Services Valuation.* S. Cairns and S. Wilson, March 2010)

TOWN OF GIBSONS' EMERGING MUNICIPAL ECO-ASSETS STRATEGY

Gibsons is a town of 4,400 people on British Columbia's Sunshine Coast. As a coastal community, Gibsons is blessed with a natural shoreline, as well as a healthy natural environment. Consistent with the practice of effective asset management practices, the Town is moving away from *reactively maintaining individual assets* to *managing all assets* over their entire lifecycle.

An asset inventory revealed that Gibsons owns approximately $60 million in assets. This value reflects the historical costs of the assets as required by financial reporting. Current replacement cost can be significantly higher depending on the age of the asset. Each asset requires upkeep, repair and maintenance, which in turn requires corresponding financial plans. The Town established that to maintain assets properly they must spend or put aside, as a rough guide, up to 3-4% of asset value, or about $1.8 million to $2.4 million, each year for asset replacement. This was an uncomfortable realization for the Town given that the Town's annual revenue for operating, maintaining and replacing assets as well as constructing new assets is only about $6.6 million. Town administration realized that a major change would be required to ensure long-term financial sustainability. Practically, Gibsons needed to reduce the number and value of the assets they owned and operated and reduce the maintenance costs for those assets they retained – all while meeting community expectations for services. Part of the solution lay, quite literally, at their feet.

GIBSONS AQUIFER

The Gibsons Aquifer is a *confined aquifer* underneath the Town that holds water and provides it to the Town's wells and springs. Gibsons conducted an extensive study of the aquifer during 2009 to 2013 to determine its properties. One finding was that the aquifer filters and stores enough water to supply the present and future projected populations of the Town who can drink from water pumped from the aquifer.

Long-term financial sustainability requires that Gibsons retains the fewest assets possible, and to ensure that assets are natural, energy efficient and the lowest cost possible to operate over the long term.

Simply recognizing the services provided by the Gibsons Aquifer gave the Town a basis for more informed decisions and better risk management. The Town's research helped staff determine that if the aquifer became degraded, then engineered assets would be required to provide the same services, at a cost that could be calculated based on costs in other municipalities. Conversely, a well-managed aquifer provides clean drinking water in perpetuity and reduces the risk of liabilities for new water purification and storage infrastructure. Gibsons also invests $28,000 annually in monitoring the aquifer, a small fraction of the operating costs of an engineered facility. These insights have given Gibsons the basis for determining the actions, timelines and costs needed to maintain aquifer health and officially include them in the Asset Management Plan in order to ensure sufficient funds are in place to do so.

GIBSONS' CREEKS AND WOODLANDS

The very fact of recognizing the services provided by natural assets in the community leads to more informed and holistic decision-making.

Gibsons has identified Goosebird, Charman and Gibsons Creeks as providing the vital services of conveying and treating rain water run-off, although more analysis on their properties are required before they are formally entered into the asset management strategy. The headwaters of Charman Creek are located in a forested recreation area in Upper Gibsons. Stormwater run-off from development in Upper Gibsons flows into the creeks, through natural settling ponds that clean and filter it, and finally, into the ocean as a naturally treated product. This means that Upper Gibsons has less engineered drainage infrastructure than if the creeks did not exist.

Ponds at White Tower Park (Upper Gibsons)

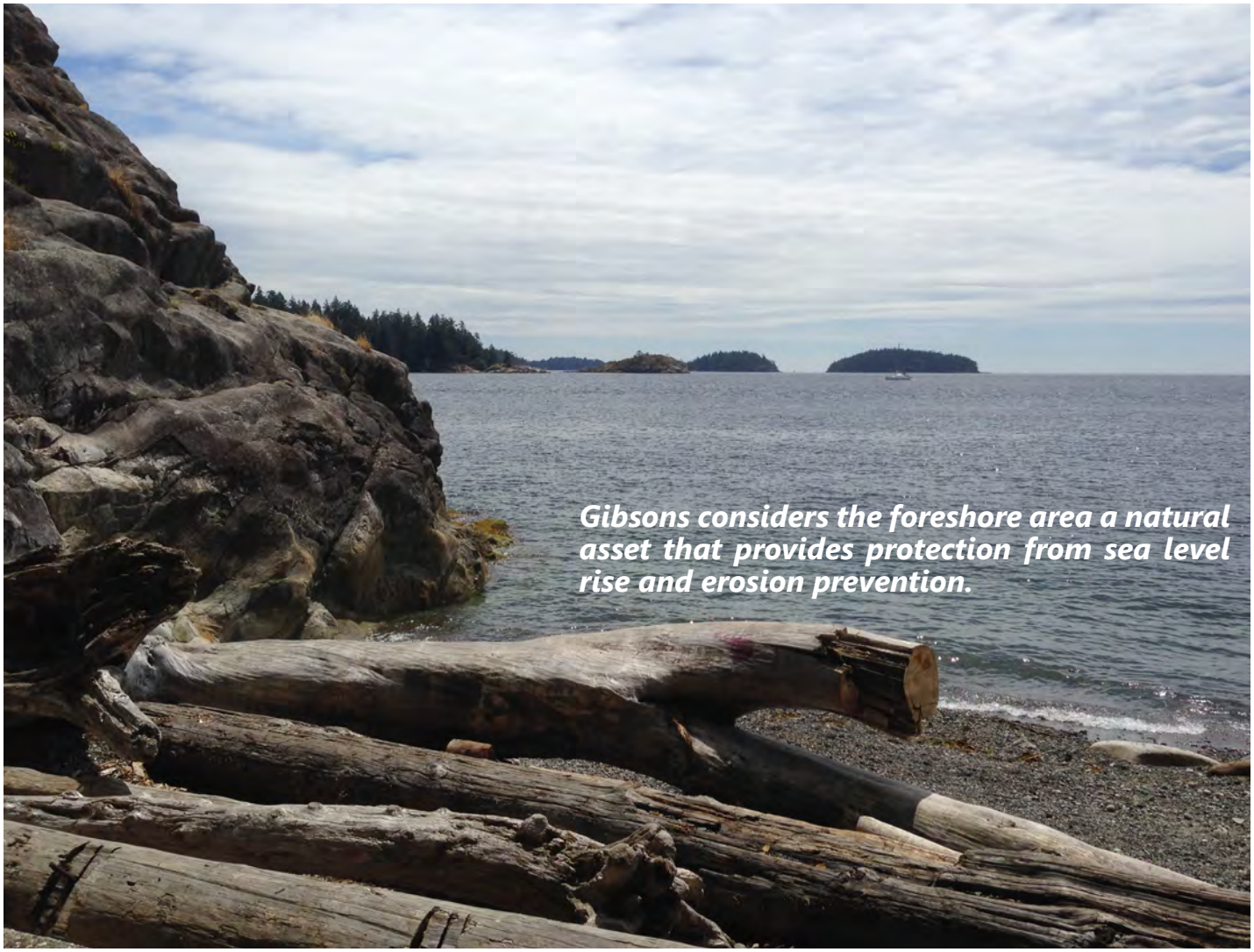
If these creeks and ponds ceased to perform their current functions then flooding would result and either development in Upper Gibsons would need to slow or stop, or engineered infrastructure would need to be constructed and maintained, again, at a cost that can be determined based on similar structures elsewhere in the Town and in other municipalities. Engineered asset replacement for the woodland would, in almost any scenario, be far more expensive than simply keeping the woodland healthy, which requires only general maintenance and pond dredging every three to four years at a cost of approximately $10,000 per dredging. Additional analysis is required to determine the optimal number and type of trees in the woodland, as well as best practices for dredging, maintenance and associated costs, to maximize the ecosystem services provided by the creeks and woodland.

GIBSONS' FORESHORE

Natural assets help the Town of Gibsons realize its objective of having fewer assets; they also provide services to the Town at a fraction of the cost of an engineered alternative, and with proper maintenance, they can do so in perpetuity.

The Town has another important eco-asset in the foreshore of Lower Gibsons, where much of the commerce is located. The foreshore provides a vital seawall to protect the waterfront from more storm surges and sea level rise, both of which are the ongoing and now-unavoidable consequences of climate change.

Engineered alternatives would be required if the foreshore became degraded, with associated capital and operating costs that likely far exceed what is required to keep the foreshore in good health. A foreshore condition assessment, completed in August 2014 by an engineering firm, provides a basis for a long-term master plan for the redevelopment of the foreshore to ensure the shoreline, associated infrastructure, and adjoining development is properly protected from an anticipated sea level rise of about one metre around the Town of Gibsons by the year 2100. This analysis will also provide a basis for long-term stewardship and for formally deeming the foreshore to be an asset within the Town management framework.

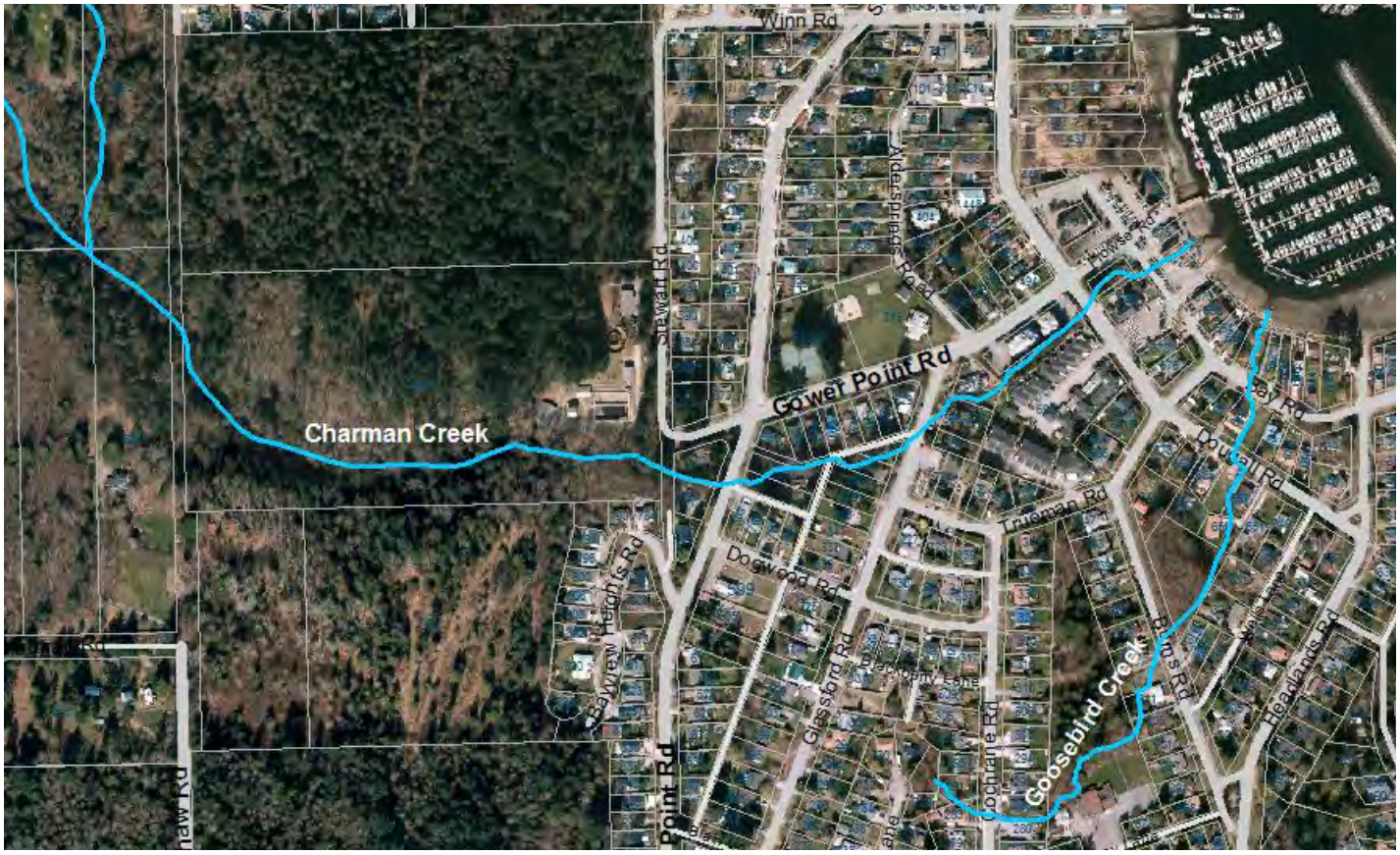


Gibsons considers the foreshore area a natural asset that provides protection from sea level rise and erosion prevention.

OTHER NATURAL ASSETS

The Town also identified soil and treed areas outside the creek and woodland area as providing services including stormwater management. For example, vegetated areas and underlying soils in Upper Gibsons absorb rainwater. These assets need evaluation to determine their characteristics and role in stormwater management.

This evaluation would, in turn, allow for the development of a long-term strategy and financial plan to optimize the ecosystem services provided and allow for their formal inclusion in the Asset Management Plan.



Vegetated areas and underlying soils in Upper Gibsons absorb rainwater thus reducing impacts on local creeks.

In summary, Gibsons' aquifer, creeks, foreshore and other natural assets provide vital services that the Town would otherwise have to provide through engineered solutions. The assets can, in theory, last indefinitely and they never depreciate. They can also typically be maintained at a fraction of the cost of an engineered alternative.

The Gibsons Aquifer is already formally listed as an asset within the Town asset management framework, and analysis is underway that could allow the others to also be included. Also noteworthy is that the Town is calculating the value of these natural assets relative to the cost of an engineered substitute; each of these assets provides additional ecosystem services that can also be calculated, such as recreation opportunities. Moreover, all of the assets may play an increasingly important role in climate change adaptation. As has been conducted on the Gibsons Aquifer, research is also needed in other classes of natural assets to understand more fully the civil services that each natural asset provides, and how best to maintain them.

OVERHAULING GIBSONS' ASSET MANAGEMENT PROCESS

An asset management plan is a strategic document that states how a group of assets are to be managed over a period of time.

The plan describes the characteristics and condition of infrastructure assets, the levels of service expected from them, planned actions to ensure the assets are providing the expected level of service and financing strategies to implement the planned actions.

Gibsons has made other changes to properly manage its assets over their entire lifecycle, reduce the number of assets managed and reduce operating costs.

1. Moving to an evidence-based approach

Gibsons recently invested in sophisticated asset management software to help the Town analyze its assets and calibrate its efforts.

This revealed that:

- A large amount of asset management effort was spent addressing crises and breakdowns instead of on preventive work
- Gibsons spent the majority of asset management budgets on a minority of engineered assets

These insights have given Gibsons a stronger basis for both strategic and operational decisions that will help prevent potentially costly and disruptive breakdowns and infrastructure crises.

2. Developing a natural asset policy

In July 2014, Gibsons became the first municipality in North America – and possibly anywhere – to pass a municipal asset management policy that:

- Explicitly defines and recognizes natural assets as an asset class
- Creates specific obligations to operate, maintain and replace natural assets alongside traditional capital assets, including having natural asset management strategies and financial resources to maintain them

With this move, Gibsons moved natural assets from the periphery of municipal decision-making to its core and together with the natural asset policy, provided a framework for the Town's future asset management actions.

3. Adapting financial statements

Following extensive discussion with its auditors, the Town of Gibsons also included the following text in its financial statements:

> *"The Town is fortunate to have many natural assets that reduce the need for man-made 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 man-made infrastructure."*

This statement sends an important message about the Town's focus on natural assets and creates an opportunity to set future standards for their management.

4. Team-based management and training

Repairs to engineered assets such as stormwater drains have well-known solutions that can typically be handled by a single Town department. Gibsons' increasing focus on preventive measures, by contrast, requires team-based, collaborative approaches across Town departments and disciplines.

The eco-asset strategy is also prompting changes in how the Town works. For example, Town departments have traditionally addressed different aspects of the foreshore in isolation; Public Works would address storm outfall related issues, and Parks would address recreation or horticultural matters. The result was piecemeal management that often did not support the integrity of the natural asset.

In some instances, the team-based approaches require additional knowledge and training. That training will be identified as needed. For example, Town crews may require additional training to ensure that they maintain woodland ponds in a way that maintains ecosystem integrity.

5. Developing partnerships

The Town does not have all the required resources in-house to implement an eco-asset strategy and as a pioneer, cannot emulate what others have done. As a result, they are exploring partnership opportunities with academia, granting organizations and others that can help them further the eco-assets strategy.

6. Long-term financial planning

The Town is developing financial plans for all assets within the Asset Management Plan to ensure sufficient resources to manage them over their lifecycle. This task has led to challenges such as determining the *Annual Cost For Asset Replacement* (ACFAR), which has direct bearing on recommended rate increases for taxpayers.

The ACFAR can represent a significant percentage of the overall annual cost of each engineered asset category; if natural assets are maintained appropriately ACFAR does not need to be considered, as the proper management of these assets means that they will last in perpetuity. This is a significant financial advantage to incorporating natural assets into an overall asset management plan.

Town crews are being trained to sensitively manage natural assets.

NEXT STEPS

The Town's asset management policy, new financial statement and actions to date are the start of an eco-asset strategy. However, much remains to be done.

Looking ahead, the focus of the Town will be to:

- Continue developing the practices associated with the Town's Eco-Asset Strategy
- Raise awareness and understanding of asset management, the role of eco-assets within Gibsons and beyond

DEVELOPING ECO-ASSET PRACTICES

The Town has formally included the Gibsons Aquifer in their Asset Management Plan and must now consider doing so for the foreshore, woodland areas and creeks, and soil and vegetated areas. As with the aquifer, this requires the following steps:

- Assessing the **asset conditions** from a biophysical perspective to determine their properties, and the civil services they provide
- Determining the **asset worth** and substitution or replacement cost so that the municipality understands the risk and exposure in the event that the asset deteriorates and needs to be replaced with an engineered alternative
- Determining the **impact of increased** demands on the asset
- Determining **objectives for the asset** which could range from maintaining it at the lowest possible cost to being protected in perpetuity
- Developing an **operations and maintenance plan** that meets the Town's objective for the asset. These could include simply monitoring changes over time, site maintenance or ecosystem restoration (for example choosing optimal trees for stormwater management and dredging appropriately in the case of the woodland and creeks), and regulatory or permitting measures
- Developing a **financial plan** that includes all costs of the actions so that a financial plan can be developed and the asset considered in the Asset Management Plan

COMMUNICATION AND ENGAGEMENT

Gibsons needs to continue raising awareness about the importance of eco-assets. Making an *environmental* case for why eco-assets should be maintained is straightforward, but explaining their value within a *financial strategy* remains challenging as operational evidence from other municipalities is lacking. Communication and education are therefore important in successful asset management planning.

Public Works crew responds around the clock to maintain our valuable assets.

The Town has found that taking inventory and managing natural assets in the same manner as engineered assets provides a common basis for stakeholders to discuss and value nature from both environmental and traditional standpoints. This is a strength that the Town can continue to build upon.

Communication about managing natural assets can also help the public to consider and better understand the challenges of funding an overall asset management plan.

Recently, Gibsons' Council implemented a 25% increase in water rates over two years to help address the funding gap that exists in their water system. Negative feedback from the public was minimal, a fact that Town staff attribute in part to the increased awareness of the key role that the Gibsons Aquifer plays in the Town's water system.

In the near term, while the Town is not allowed to account and report fully on the value of its natural assets under public accounting standards, it does have options to use the Annual Report required by the *Community Charter* to highlight their financial aspects.

Gibsons will also need to determine the extent to which it wants to engage stakeholders in broader public policy issues such as making the case that public sector accounting standards be changed to allow for consideration of eco-assets.

Excerpt from City of North Vancouver's draft Official Community Plan

Softscape areas provide storm-water management capacity and mitigate heat island effect; watercourses transport and clean water resources; and trees improve air quality by filtering out pollution particulates. Tracking and recording natural assets and applying similar physical asset management approaches would help lead to better long-range planning decisions.

SUPPORTING OTHER MUNICIPALITIES

Most municipalities have at least some natural assets. As the concept of eco-assets evolves, some are considering how the approach could be beneficial. The City of North Vancouver, for example, is developing a new Official Community Plan (OCP), and the draft bylaw clearly recognizes the importance of natural capital in asset management. Next steps could include determining how to make the OCP commitments operational and whether, for example, they will manage natural assets as a means to improve asset management, implement their climate change adaptation plan, or both; a fact that could shape asset management decisions for the foreseeable future.

Gibsons is keen to share their experiences and approach with other other municipalities and support them with implementation. They have already been working with the Union of British Columbia Municipalities, the Federation of Canadian Municipalities and the Sustainable Communities Conference, and will potentially work with other organizations such as the Organization for Economic Cooperation and Development, the Urban Sustainability Directors Network and the C40 Cities Climate Leadership Group.

IS YOUR MUNICIPALITY INTERESTED IN AN ECO-ASSET STRATEGY?

If so, then these could be first steps:

1. Consider an asset management policy, bylaw or financial statement that directs the municipality to consider the role of eco-assets within an asset management strategy
2. Determine what natural assets you own through an inventory
3. Calculate what the asset is worth both in terms of civil services and substitutions costs (i.e. the costs if it had to be replaced with an engineered alternative)
4. Determine the asset condition
5. Assess the impact of predicted increased demand on the asset
6. Determine management objectives for the asset
7. Develop an operations and maintenance plan
8. Develop a financial plan
9. Conduct ongoing assessments

CONCLUSIONS

There is growing scientific and policy attention on sustaining natural capital and the flow of ecosystem services that support human wellbeing. Ecosystem services are also increasingly assessed and given a financial value so that better decisions can be made concerning the value of the services provided by nature. Nevertheless, moving from scientific knowledge to real-world decision-making has slowed advances in assessing ecosystem services.[7] Municipalities still appear to consider natural assets on an ad hoc basis, typically when they must contend with an individual issue such as drinking water. Few municipalities consider natural assets on a systematic basis as part of overall good asset management, and indeed, as Gibsons notes in its financial statements, there are barriers, such as Canadian public sector accounting standards, to doing so.

The evolution of eco-asset strategies in Canada and beyond will require:

- Continuing to develop the practice of managing eco-assets as part of an overall asset management strategy and documenting and sharing the results in an effective manner. As a starting place, a "tool-kit" based on Gibsons' experience could be developed and piloted in other communities to enhance knowledge and experience-base in this field
- Education and awareness on the role of eco-assets
- Research to determine how to maximize the effectiveness of eco-asset strategies for outcomes beyond asset management including climate change adaptation, ecosystem restoration and other fields
- Policy changes to create an enabling framework for eco-asset strategies. For example, options for public accounting standards to include natural assets could be researched and developed

7 http://www.sciencedirect.com/science/article/pii/S0921800913002498

This document forms part of the Town of Gibsons' overall asset management strategy and was prepared by:

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