

A Pathway for Saint John to Become a Living City



How Saint John can accelerate equitable, abundant, and thriving green infrastructure.





Table of Contents

- 01** **Section 01**
Introduction
- 02** **Section 02**
What is a Living City?
- 03** **Section 03**
Benefits of Green Infrastructure
- 10** **Section 04**
How Are We Doing?
- 14** **Section 05**
Summary of Recommendations for Saint John to become a Living City





Introduction

This document was created to illustrate a pathway for how Saint John can become a Living City: a place with equitable, abundant and thriving green infrastructure. It is based on the [Framework for Living Cities](#) – a document that shows how cities across North America and Europe have successfully implemented green infrastructure (GI), and synthesizes key strategies and actions to help other cities do this, too. Based on an extensive scan of academic research, grey literature, and case studies, the *Framework for Living Cities* presents a number of practical strategies that local governments have used to integrate GI into city-building in ways that: (1) prioritize equity, (2) support abundant implementation across the landscape, and (3) ensure GI is thriving and delivering its full range of benefits. It also points practitioners to resources and tools to help them integrate these strategies into their own policy and operational contexts.

This document, a Living Cities Policy Pathway for Saint John, applies the strategies laid out in the Framework to the policy and operational context of the City of Saint John. It:

- 1 assesses how much progress the City of Saint John has made toward implementing equitable, abundant, and thriving GI, and
- 2 provides an overview of recommendations that Saint John can take to continue to make progress on green infrastructure.

The information contained here and the recommendations made in this Pathway is based on a review of existing policies and programs in Saint John that relate to GI. We also interviewed nine individuals, four of whom work for the City of Saint John.

What is a Living City?

Living Cities are places where green infrastructure—parks and green spaces; green stormwater facilities like bioswales, rain gardens, and permeable pavements¹; urban forests and natural heritage systems; wetlands and meadows; green roofs and walls—is **equitable, abundant, and thriving**.

As cities grow and develop, we lose natural land cover to hardened surfaces like roads, buildings, and compacted soils. As a result, urbanized areas are less able to infiltrate rainwater and snowmelt, generating excess runoff that can result in increased flooding. When the land is less able to hold onto moisture, it also is less able to regulate temperature, since evapotranspiration has a cooling effect. Hard engineered surfaces like asphalt and concrete reflect heat back into the surrounding areas, compounding this problem. This is why cities are often warmer than the surrounding countryside during hot summer days— from 2 to 8°C warmer.²

Both flooding and heat waves are becoming more common as climate change takes hold, and the loss of natural land cover makes cities even more vulnerable to these weather extremes. Green infrastructure (GI)—both naturally existing GI and constructed GI—is critical to making cities more resilient to climate change. And, unlike grey infrastructure—engineered systems like stormwater sewers that serve a single purpose—GI also delivers a number of other social, economic, and environmental co-benefits, as shown on the following page.

¹ Also called Low Impact Development, or LIDs

² Heisler, G. M., & Brazel, A. J. (2010). The urban physical environment: Temperature and urban heat islands. *Urban ecosystem ecology*, 55, 29-56.



Equitable

GI is prioritized in locations with the greatest environmental and social need and underserved communities shape GI decision-making.



Abundant

GI is the new normal; it is implemented widely and championed by diverse stakeholders.



Thriving

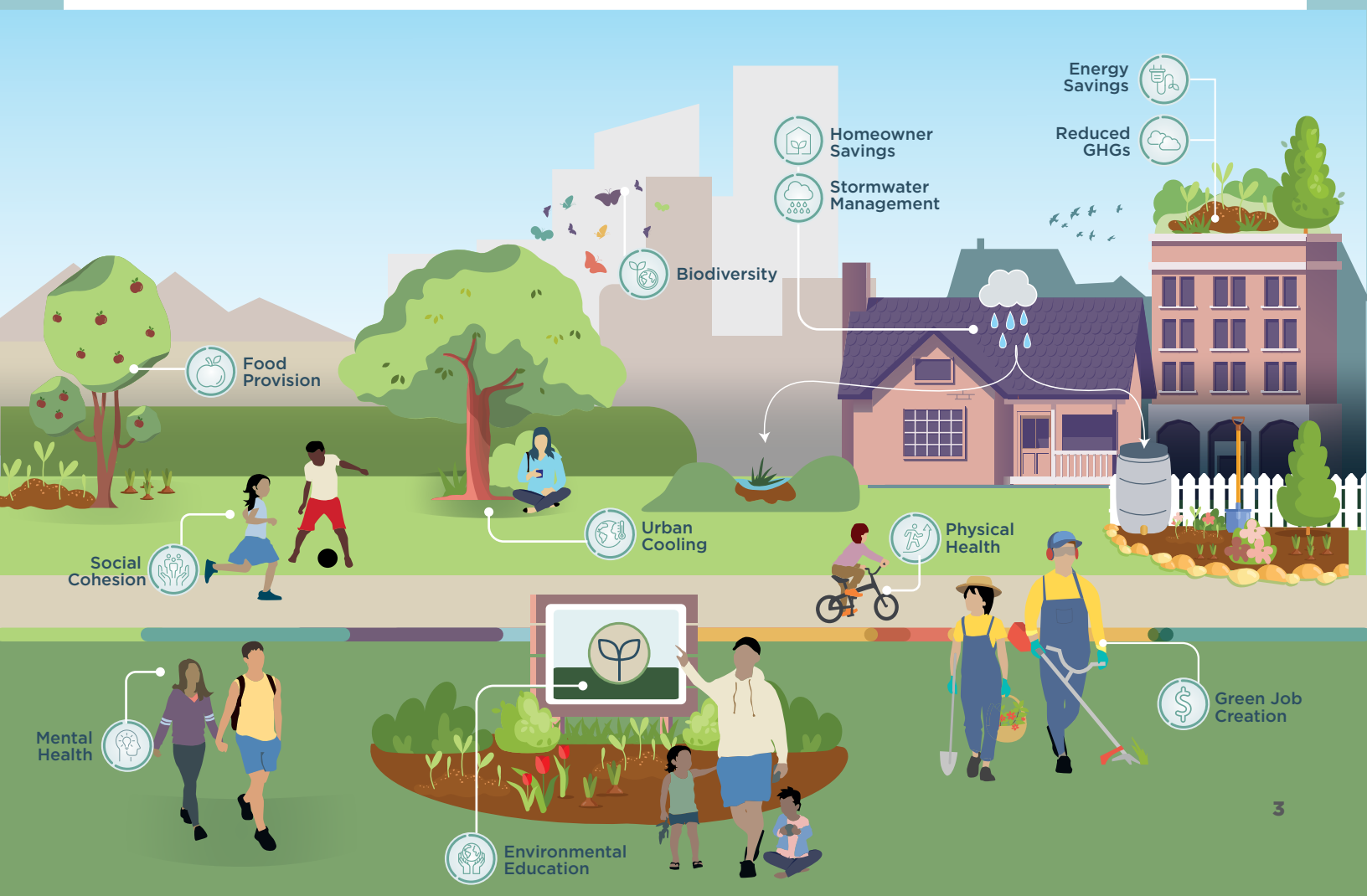
GI is installed, maintained and functions well over the long-term.

There is ample research that speaks to the multiple benefits of green infrastructure. There are also many cities around the world that have successfully implemented GI to provide municipal services and solve a number of other problems. But despite the strong case for GI, it remains limited in implementation and poorly integrated into land-use planning and decision-making in most municipalities in Canada. A number of policy, technical, financial, and social barriers inhibit its uptake and success and prevent most Canadians from reaping the benefits of GI where we live. For the full benefits of GI to be felt in Canadian cities, it must be equitably implemented, abundant throughout the landscape, and thriving.

Living Cities are places where this is happening, or that are committed to making this happen. Living Cities are implementing or have plans to implement evidence-based approaches to mainstream GI and transform their communities into healthy, livable, vibrant places to live.

These are communities that are committed to:

1. Involving communities and prioritizing GI for environmental equity and reconciliation;
2. Setting requirements and standards in policies, plans, and bylaws for GI;
3. Laying the groundwork for systemic integration of GI throughout city operations;
4. Growing support for GI among members of the public and key stakeholders;
5. Ensuring GI can thrive over the long term by building partnerships and finding champions to maintain and steward GI.





Why We Need GI in Saint John

If Saint John were to commit to implementing equitable, abundant, and thriving green infrastructure, it would become an even more vibrant, beautiful, sustainable, and healthy place to live. It would also help to shield residents from some of the worst impacts of climate change, especially those residents who are disproportionately impacted. Below, we detail some challenges facing Saint John and how GI could help to address these.

Alleviating Pressure on Outdated Infrastructure

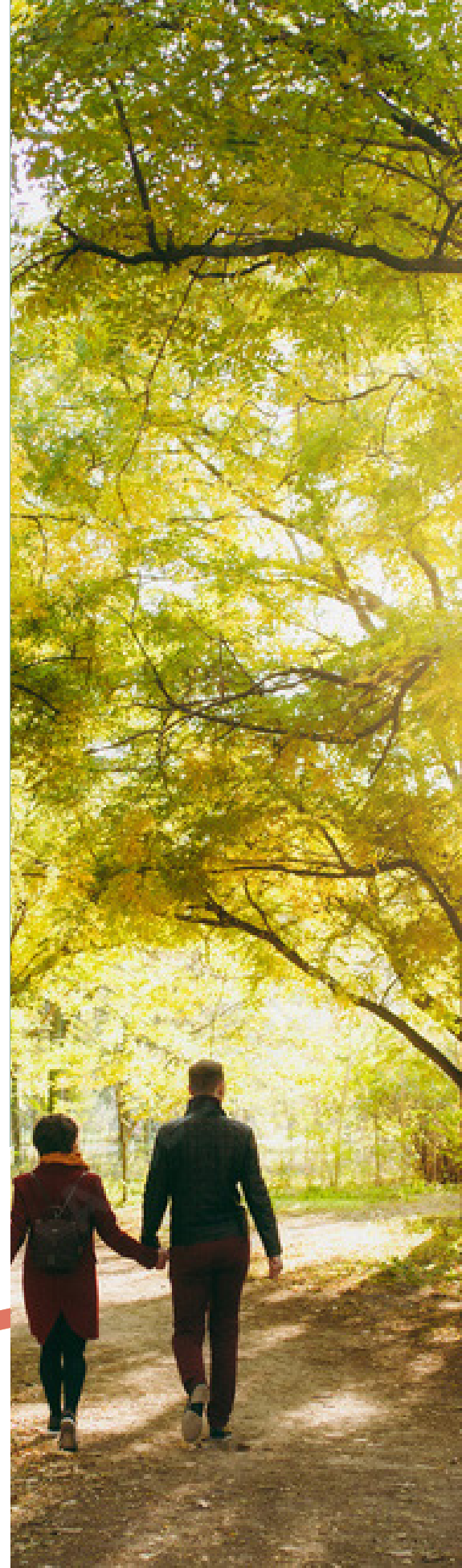
Saint John is a port city located on the Bay of Fundy, in NB, Canada with a population of approximately 69,895 as of the 2021 census. It is the oldest incorporated city in all of Canada, and is currently the second largest city in New Brunswick, after Moncton. Like many historic cities in Canada, Saint John's urban stormwater system is built upon the "rapid conveyance" model, focused on protecting infrastructure and property from flooding by efficiently carrying rain and stormwater to local water bodies through a complex of storm sewers, combined storm and sanitary sewers, catch basins, manholes and combined manholes.³ This model, while ubiquitous among the urban landscape - is dated and problematic for many reasons:

- ▶ It is expensive to maintain - Saint John is spending nearly 13MIL in 2023 alone addressing water and sanitary utility projects.⁴ For example, the separation of the combined sewers near Bayside Middle school Bayside Drive will cost an estimated \$250,000. These costs are increasing year over year, and cannot be managed appropriately without implementing new stormwater charges and fees. This is a particularly challenging concern as Saint John residents already pay among the highest residential tax rates in all of Atlantic Canada.⁵
- ▶ It is built for a different storm regime than what currently exists - when these sewer systems were first built, the IDF curves that represent intensity, duration and frequency of storm events looked very different than they do today. Climate change is creating higher intensity storms and ongoing development is expanding urban sprawl, such that even smaller intensity storms are creating large volumes of stormwater runoff. Despite expensive ongoing retrofits, these traditional systems simply can't keep up with the increasing volume demands.
- ▶ It reduces opportunities for natural drainage - due to the bypassing of natural infiltration in the traditional "grey infrastructure" model of stormwater management, there are less opportunities for groundwater recharge. Further, the rapidly conveyed stormwater from urban areas pollutes and warms local waterways during intense downpours. Combined sewer systems are another significant concern during these intense events, as they have the potential to backflow and release untreated sewage into local waterbodies too.

Climate Challenges: Increased Incidences of Extreme Weather Events

As a coastal city, City of Saint John is more vulnerable to the impacts of climate change, and can expect two main types of flooding as a result: inland flooding from heavy precipitation and high river flows and coastal flooding due to sea level rise or storm surge.⁶ In New Brunswick there will be up to 20% more extreme rainfall events per year,⁷ and as the average annual temperature increases, Saint John will experience earlier snowmelt, mid-winter thaws, and ice breakups which can lead to significant infrastructure damage when combined with intense rainfall. Climate models project that New Brunswick will experience an extension of dry periods and an increase in heavy precipitation events resulting in a net increase in mean annual precipitation. This means that more precipitation will be falling during shorter periods, increasing the amount of stormwater that will be running through sewer infrastructure and into nearby waterways. Determining the best strategies for climate adaptation and building climate resilience needs to be a priority for the City of Saint John to ensure the safety of residents into the future.

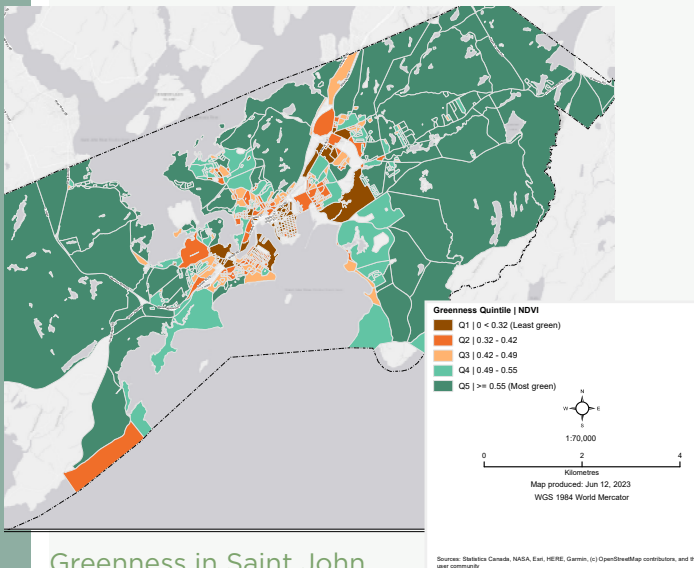
Flooding is an ongoing concern for the City of Saint John. Historically, extreme rainfall events (50 millimetres or more over a 24-hour period) have caused millions of dollars in damages in Saint John, with significant events in 2008, 2018, and 2019 during periods of heavy rain and snow melt. With shifting hydrological conditions and warming temperatures, Saint John can expect an increase in the intensity and frequency of heavy precipitation, storm surges, thunderstorms, hail storms, hurricanes, and severe winter storms. These events are often associated with high damage and recovery costs, emphasizing the importance of preparedness and adaptation.⁸



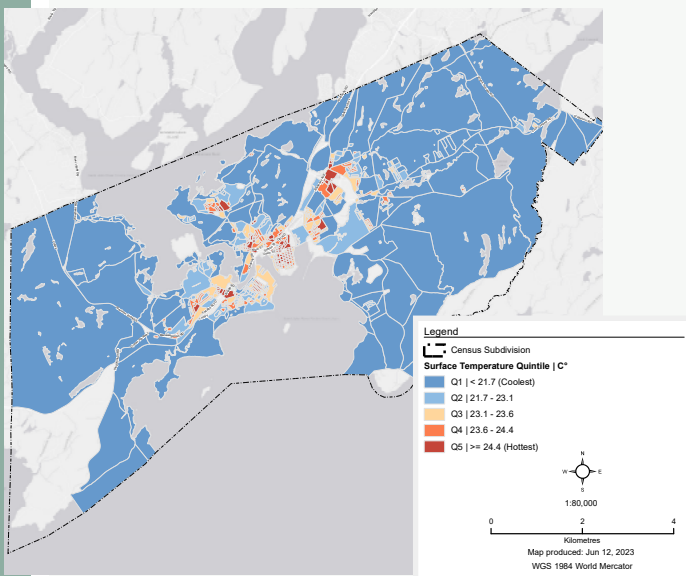
Social Challenges: Inequitable Distribution of GI and Climate Risks

Vulnerability to flooding in Saint John is widespread, as a large portion of the city's urban development is in low-lying areas, along the coast or within former wetlands or watercourses. This has resulted in recurrent flooding for properties in these areas. This vulnerability is also compounded by existing social and economic inequity - 22.5% of the population are living below the poverty line - and areas with the most severe poverty rates are also those at highest flood risk, and lowest levels of "greenness." Poverty is geographically concentrated in 5 specific neighbourhoods within the City of Saint John: Crescent Valley, Lower South End and Deep South End, Waterloo Village, Old North End and Lower West Side.¹⁰

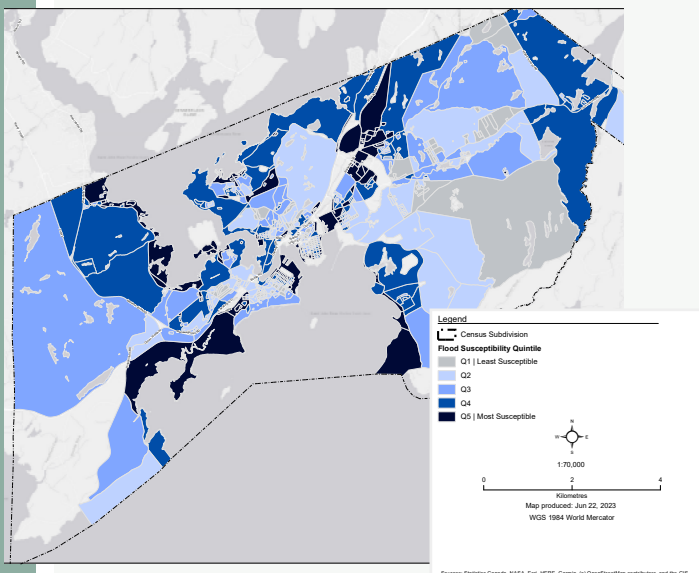
Some of the low lying areas of the east side of Saint John have been dealing with recurrent flooding concerns year over year - and the costs of addressing these issues via traditional means are prohibitively expensive. For example, a study completed to identify the cost of partially fixing the flooding in the Glen Falls and Golden Grove rd areas in 2008 estimated it would cost at least \$50 MIL¹¹, and one councillor at the time even proposed buying all the properties in the area (valued at the time at around \$6 MIL) and relocating these flood-prone residents as the best solution. While neither proposal ever came to pass, the ongoing risks and struggles of residents in this area remain, and maintaining the thread-bare stormwater systems in place in this area is an ongoing challenge. Increased investments in these areas can help to address multiple issues simultaneously, by integrating green infrastructure projects within new supportive housing developments and reducing the impact of building new dwellings, and bringing increased vibrancy to these communities. Unfortunately, the challenges faced are only worsening with climate change.



Greenness in Saint John



Average Surface Temperatures in Saint John




Flood Susceptibility in Saint John



Work That has been done

City Council priorities from 2021-2026 are to “Grow, Green, Belong, Move, and Perform”.¹² This platform was developed through several workshops using input from an online public survey and guided by several municipal strategic plans including Plan SJ¹³, Play SJ¹⁴, Move SJ¹⁵, and the Long-term Financial Plan.¹⁶ These priority areas will guide all aspects of municipal activities, policies and procedures, and budgets during the term. Each of these plans makes sustainability, smart growth, community vitality, and economic prosperity a key priority - and within each, one can identify how Green Infrastructure can be a multifaceted tool in achieving these overarching goals. Though there may be few direct targets and policies in place at this time, the City of Saint John is already well on its way to becoming a Living City!

In 2020 ACAP Saint John published the Climate Change Adaptation Plan for Saint John, in collaboration with the City of Saint John and the NB Climate Change Secretariat. This comprehensive report is one of the strongest pieces of literature linking Saint John’s city priorities and comprehensive climate action, including specifically integrating Green Infrastructure as a priority strategy. The report identifies protecting and enhancing the City’s natural assets (including coastal areas, green spaces, and water resources) through low impact development and green infrastructure as one of its core goals. Further, the plan strongly integrates an equity lens and looks at how to address and mitigate climate change impacts for the most vulnerable populations. Throughout the development of the report, the project team integrated meaningful opportunities for engagement using participatory mapping strategies to highlight the importance of including all voices in climate change adaptation planning. This equity lens is vital in ensuring community plans are appropriate to the regions in which they are aiming to be implemented. The process for engagement for the Climate Change Action Plan also provides a fantastic example of how these activities can be organized for developing new GI related policies in the future. The Climate Change Adaptation Plan makes many recommendations which are echoed by the Saint John Community Pathway to Living Cities report (see appendix). Furthermore, the Climate Change Adaptation Plan identifies how to integrate adaptation into various municipal plans including PlanSJ, the Saint John Climate Action Plan, and three central Neighborhood Plans. As municipal documents are updated, the City of Saint John has the opportunity to integrate the recommendations from the Climate Change Adaptation Plan and lead the East Coast in climate resilience and coastal adaptation.



Although the Climate Change Adaptation Plan is one of the strongest examples of a local report supporting the integration of Green Infrastructure in Saint John - connections to GI can be found among many of the city's key planning documents, policies and programs. For example, Plan SJ recognizes the important role of trees and vegetation in maintaining and enhancing the quality of life in the City and has policies to plant street trees in public spaces and on City rights-of-way. While developing the Climate Change Adaptation Plan, ACAP SJ conducted a formal tree inventory within 3 neighbourhoods of Saint John: the Central Peninsula, Lower-West Side, and North End. The inventory data showed that approximately 76% of surveyed trees were identified to be in good condition - but that the other 24% were invasive and prone to disease and risk. This data is extremely useful in planning future urban canopy strategy. In order to address the impacts that Climate Change will have on urban parks and forests such as wind/ice storms and invasive species, and to manage urban forests to maximize their ecosystem services, the Climate Change Adaptation Plan recommends the City of Saint John develop an Urban Forest Management Plan.

In Saint John's PlanSJ municipal planning document, improved stormwater management is recognized as a priority to protect city assets and growth. PlanSJ specifically suggests a more intensive development pattern, focusing on the urban core; "growing up and not out." The focus is on reducing urban sprawl by creating compact mixed-use communities at densities that allow people to live, work, learn and play in their neighbourhoods. With a more compact development pattern, Saint Johners will enjoy greater opportunity for transit, walking, cycling and other active forms of transportation that help to minimize carbon output and reduce dependence on private automobiles - certainly there are opportunities within this plan to integrate GI as a strategy for making more "complete streets" - with bike lanes, street trees, pocket parks and the like. The plan also promises to help Saint John become a leader in sustainability, by protecting and identifying strategic improvements to cherished green spaces, natural assets and key recreational facilities and creating new and expanded connections to public waterfront areas, parks and open spaces, trails, beaches, boardwalks and cycling routes by focusing on enhancing key public views to the water. PlanSJ identifies a number of policies that set a clear mandate for protecting existing green infrastructure, improving stormwater management, and integrating more low impact design, setting the stage for further action towards Saint John becoming a Living City!

Some of the most important policies within the PlanSJ document that can support increased Green Infrastructure adoption, and advancing Saint John's pathway to becoming a Living City have been summarized and reproduced in table 1 in the appendix. These policies address and acknowledge many important aspects for developing a more equitable, abundant and thriving living city - places where GI is prioritized where its needed most, where GI is widespread among the landscape and where it is well maintained into the future.

The Roadmap for Smart Growth also sets a target to undertake a fair taxation analysis and implement key recommendations within its control, in order to support the City's ongoing effort to receive fair and just revenue associated with the existing property and infrastructure within our municipal boundaries. This target is important to the goals of addressing CSJ's ongoing infrastructure deficit as it would ensure industry pays their fair share of tax, and contributes to the rising costs of maintaining city infrastructure. This is especially important as City of Saint John undergoes its Asset Management process, funded under the Federation of Canadian Municipalities Climate and Asset Management Network, and better understands the city's ongoing infrastructure maintenance costs and needs.

There are also a number of policies and programs that the city of Saint John has already established that could be modified to more explicitly support GI. For example, *the Urban Development Incentive Policy* offers financial incentive to develop and beautify areas of the Central Peninsula - a residential density grant, construction challenges grant and building permit grant. A separate Beautification grant helps to cover costs associated with improving exterior appearance of buildings and some landscaping costs. All of these initiatives could more explicitly prioritise projects that have a stormwater amelioration co-benefit from redevelopment; and promote the use of Green Infrastructure in doing so.

Challenges and Gaps

Saint John may face some challenges and hurdles to establishing itself as a Living City, most of which relate to the direct infrastructure deficits that must be addressed through this transition. Some interview respondents noted that there was an over \$50 million infrastructure deficit on pipes alone. While innovating new green infrastructure may help to relieve the pressure on these systems and may be a more cost effective choice in the long run, this deficit makes it really difficult to pass new plans and targets. Some interviewees also mentioned that a top-down approach, with direct federal support and funding could help to push the province to support the municipality in moving forward on these objectives. While the council is generally seen as supportive towards these initiatives, there was some concern that there may not be enough provincial support to enable advancing GI locally. Furthermore, GI needs to be better understood locally (education is needed), and framed in such a way that helps the public to understand the multi-faceted role it can play to help meet local needs beyond just flood reduction (ex. Towards social, economic and cultural goals too).

Living Cities Assessment: How Are We Doing?

This table offers an assessment of how Saint John has or is working toward implementing evidence-based strategies that support equitable, abundant, and thriving green infrastructure. The strategies are taken from the Pathways to Living Cities Framework—and are based on extensive research and case studies from across North America and Europe.



The more “grey” is the shade, the more Saint John is at the start of its journey; the more “green” is the shade, the more Saint John has made progress on the strategies to advance the respective pillars of equity, abundance, and thriving. The table below provides a high-level summary of the progress Saint John has made and some notable gaps. A more comprehensive assessment is [available here](#).



Equitable

Not everyone has the same access to GI and its benefits. Research has shown that neighbourhoods with higher proportions of marginalized residents—e.g. low-income people, BIPOC groups, etc.—tend to have less GI compared to other neighbourhoods. Living Cities actively work to address this inequity by prioritizing GI in areas of high environmental and social need. Six key strategies can help to achieve this, broken down into two overarching categories, as detailed below.

Prioritize GI for Environmental Equity

What does this mean?

1. Identify under-natured areas;
2. Understand the distribution of social and environmental challenges in these neighbourhoods;
3. Engage people in GI planning and decision-making;
4. Employ policy tools to enhance accessibility and avoid displacement.

How is Saint John doing?



Many of SJ's existing local policies and plans identify under natured areas, and areas of equity concern, including:

- Climate Change Adaptation Plan
- Tree Inventory
- NB Flood Hazard Mapping and
- SJ-Specific ArcGIS Mapping tool

City of SJ promotes equitable access to greenspace in Neighbourhood Parks, and cultivating diverse alliances to ensure their stewardship (PlaySJ).

Advance Reconciliation with GI

How is Saint John doing?



What does this mean?

1. Support Indigenous-led green infrastructure;
2. Build municipal-indigenous partnerships to advance GI.

This is a gap: CSJ does not have any clear indigenous partnerships related to GI.

Relationship building between CSJ and indigenous communities could enable greater leadership toward Green Infrastructure in CSJ.



Abundant

GI is most effective at delivering services and its multiple co-benefits when it is implemented widely across the landscape: a few street trees provide some stormwater management and cooling benefits; an urban forest provides much more. Living Cities work to make GI “the new normal”, using it as an infrastructural default whenever and wherever possible. Eight key strategies to do this are listed below, in three overarching categories.

Set Requirements for Standards for GI

How is Saint John doing?



What does this mean?

1. Provide a public mandate for GI through policy instruments;
2. Align GI implementation with other strategic priorities (e.g. public health, climate change adaptation).

There are a number of high-level policies that encourage the use of GI and/or LID, but these are not accompanied by specific and measurable targets.

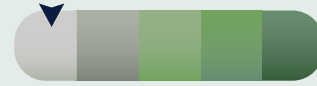
There's a need to integrate GI targets and mandates into a number of the different community plans; ex. GI can be integrated into sustainable and affordable housing, transportation planning (complete streets/green streets), recreational planning (playSJ), and more - GI is already mentioned in PlanSJ, and CSJ Climate Change Adaptation Plan.

There are currently no specific GI or LID-related targets, no GI or stormwater management plan, or GI design criteria for the CSJ. Targets and standards provide important actionable baselines and measurable goals.

GI goes unmentioned in SJ's [Storm Drainage Design Criteria Manual](#)

Lay the Groundwork for Systemic Integration

How is Saint John doing?



What does this mean?

1. Build knowledge and technical capacity among practitioners involved in urban development;
2. Use valuation approaches and asset management to integrate GI into city-wide decision-making;
3. Introduce and expanding funding mechanisms (e.g. stormwater fees);
4. Collect and improving GI data and monitoring;

There is a significant knowledge gap regarding GI among decision makers, despite local championing from ACAP SJ.

CSJ is just beginning their Asset management journey, and has an opportunity to integrate natural assets into this monitoring and maintenance exercise and integrate GI performance into city-wide decision making

While there are no financing measures in place to help support increased investment in maintenance backlogs, and establishment of new stormwater facilities in SJ, the financial plan aims to use asset management approaches to help make the case for greater investment during budgeting cycles - new financing measures such as a stormwater fee have not yet been considered.

Grow Support for GI

How is Saint John doing?



What does this mean?

1. Seek support from higher levels of government;
2. Facilitate community-based action.

The City has not yet joined with other municipalities or organizations to advocate on matters specifically related to green infrastructure (e.g. requesting more funding or supports from higher levels of government), and it was noted in interviews that asks to the provincial government sometime pose more of a local barrier than a solution;

ACAP SJ, supported by CSJ has made a lot of progress towards facilitating community-based GI, delivering community environmental programming, policy review, and facilitating community-engagement.

The online resources relating to stormwater from CSJ do not yet provide a lot of guidance or support to community members if they would like to partake in personal greening projects on their properties, but there are many great broadly applicable resources that could be linked to if a community-specific resource is not available.





Thriving

If GI is not properly protected, planned for, designed, constructed, maintained, and monitored, it will not be able to deliver its full range of benefits (or, the benefits it provides will not be given due consideration in city decision-making processes, and opportunities to implement GI may be missed). Living Cities work to ensure GI can thrive over the long term by setting GI up for success. Three key strategies can help accomplish this, as detailed below.

Create GI that Flourishes Over the Long Term

What does this mean?

1. Build partnerships and finding champions to bring GI goals and operations into alignment;
2. Pick indicators and monitoring over time to understand how GI is delivering services;
3. Support and adequately funding GI maintenance and operations.

How is Saint John doing?



ACAP SJ is the main partner for the city in pursuing this work and they have been very effective in doing so - but expanding these partnerships to other community organizations can only help to strengthen networks of action in CSJ

The Climate Adaptation Plan suggests to establish an urban forestry management plan

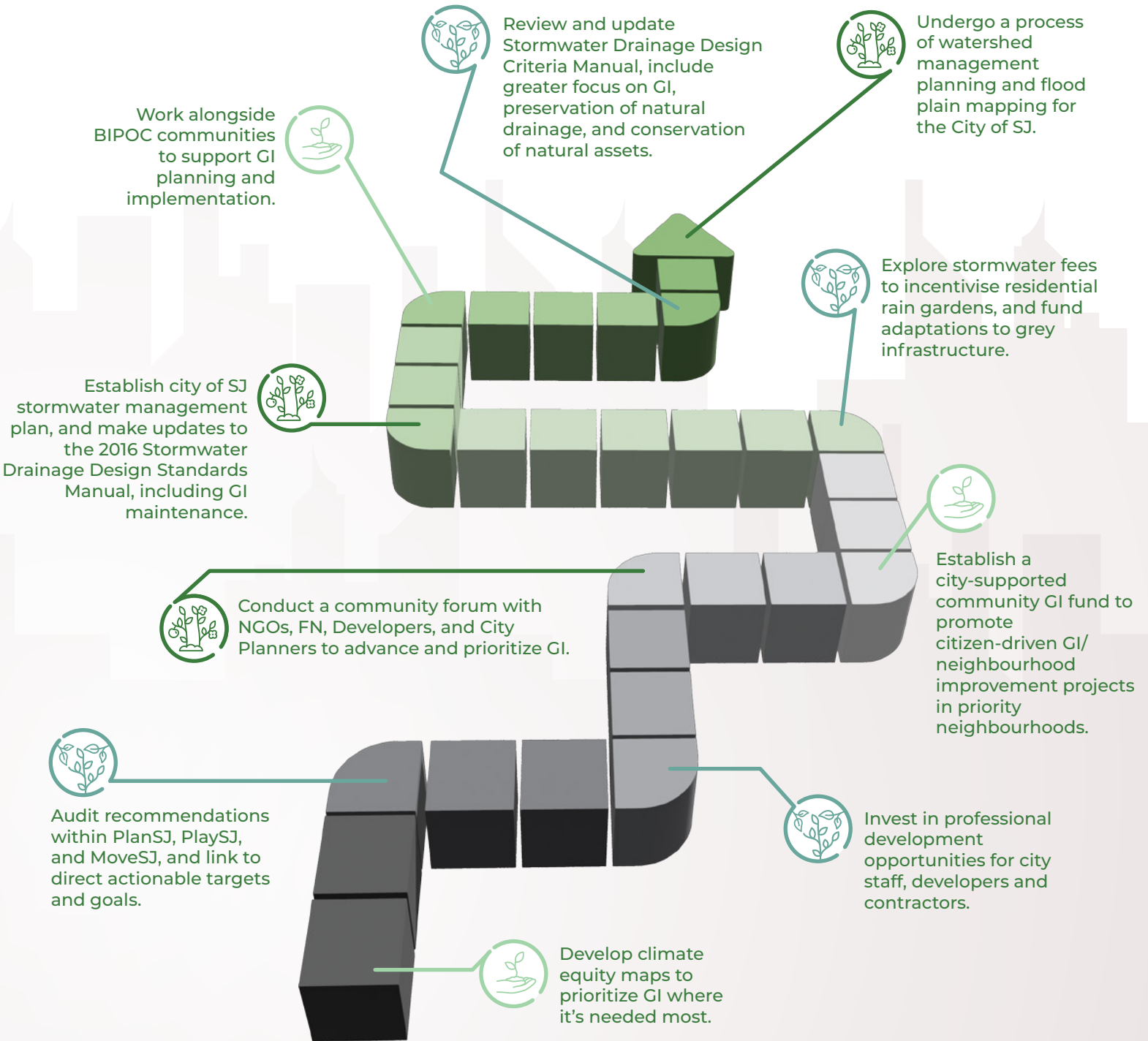
There is currently no existing publicly available CSJ stormwater management plan

Because there are few examples of engineered GI in CSJ to draw from, formalized operations and maintenance planning appears to have yet to be developed; some existing stormwater ponds were noted to be past their dredge date and in need of attention - this is being encompassed within the Asset Management exercise the city is currently pursuing.

Summary of Key Recommendations Along Pathway

The graphic below provides some key short, medium, and long-term actions that Saint John can take to embed equitable, abundant, and thriving green infrastructure into its city-building strategy.

For a more fulsome and detailed list of recommendations, [see the full assessment](#).



APPENDIX 1: Summary of Policies that can help Advance Green Infrastructure from PlanSJ

Policy	Description	Rationale
NE-31	Update and implement the Saint John Flood Risk Area Bylaw to regulate development in floodplains.	This bylaw will help to ensure smart growth in the future, outside of floodprone areas.
NE-32	Support flood-proofing initiatives to protect property and people in floodplains and flood-prone areas including the Glen Falls area and the McAllister Regional Retail Centre.	Flood proofing initiatives may include the implementation of engineered green infrastructure/ LID solutions.
NE-33	Prepare a comprehensive Stormwater Management Master Plan for areas within the Primary Development Area that are at risk of flooding to mitigate and resolve issues in these areas. Where possible, these should be prepared in conjunction with Neighbourhood or Structure Plans	A stormwater management master plan would be a significant step towards taking a more watershed-based approach to stormwater management; within this plan, restoring natural hydrology and improving stormwater infiltration should be a key priority.
NE-34	<p>Protect and enhance the natural flood storage capacity of flood plains by:</p> <ul style="list-style-type: none"> a. Supporting the Marsh Creek Restoration Initiative as proposed by the Atlantic Coastal Action Program (ACAP) and the restoration of other key wetland systems in the City b. Limiting development in flood plains and exploring options for safeguarding, flood proofing or relocating existing development in flood plains; and c. Exploring options for floodplain zoning and working with the Government of New Brunswick to develop flood proofing standards. 	Protecting and enhancing natural assets/ green infrastructure is a significant target for any Living City, and utilizing policy tools such as the development of flood proofing standards is a fantastic strategy for doing so.

Policy	Description	Rationale
NE-35	<p>Improve the natural stormwater storage capacity of watercourses and wetlands in urban and suburban areas on a comprehensive watershed basis in accordance with the City's Storm Drainage Design Criteria Manual and by:</p> <ul style="list-style-type: none"> a. Restricting development in natural and rural areas; b. Utilizing 'low impact development' techniques for on-site stormwater management wherever possible and encouraging innovative stormwater management methods such as green roofs, permeable surfaces, and rainwater collection; c. Designing stormwater management facilities as local amenities by locating them adjacent to parks, open spaces, or greenways and permitting public access where appropriate; and d. Increasing public awareness and engagement regarding stormwater management practices and site design. 	<p>This policy most directly focuses on reducing impacts to natural water courses through mindful development strategies, and integrating more low impact development / green infrastructure as well as addressing an important gap in making these advancements possible; increasing education and public awareness around sustainable stormwater management and site design.</p>
LU-51	<p>Notwithstanding Policy LU-50, recognize that new housing development of higher density may be appropriate in the Low to Medium Density designation, such as apartment and condominium dwellings, and shall be permitted subject to a rezoning process, where such development demonstrates compliance with the following requirements:</p> <ul style="list-style-type: none"> f. Site design features that address such matters as safe access, buffering and landscaping, site grading and stormwater management are incorporated; 	<p>This policy relates to new housing development and provides a mandate for ensuring stormwater management is incorporated into the design of new dwellings.</p>
LU-62	<p>Require the preparation of a comprehensive stormwater management plan that addresses current flooding and stormwater management issues in the McAllister Regional Retail Centre, and proposes measures to mitigate and/or resolve them, prior to major new development in the McAllister Regional Retail Centre.</p>	<p>This policy is great in that it addresses an area of ongoing flooding concern, and (unlike many of the other policies presented) it provides a directive in terms of timeline; the development of this stormwater management plan must take place prior to new development in the region.</p>

Policy	Description	Rationale
UD-9	Designing for water conservation and on-site stormwater management; v. Promoting the conservation and adaptive re-use of existing buildings and designing sites to retain mature trees; vi. Designing sites and buildings to work with, rather than against, the natural environment by designing according to the topography, hydrology, ecology and natural drainage patterns of the site and taking advantage of passive solar gain and natural light; and vii. Using native vegetation for landscaping where appropriate	This urban design policy provides a clear directive towards designing with green infrastructure and sustainability in mind - through the preservation of mature trees, integration of on-site (decentralized) stormwater management, working with the existing environment, and using native vegetation for landscaping.
MS-6	Pursue any available financial assistance from the Government of New Brunswick and the Government of Canada to carry out improvements to the water, wastewater, and stormwater systems.	Approaching higher levels of government for support and financial assistance can greatly help to reduce the infrastructure deficit Saint John is facing, and facilitate the integration of larger-scale, new and innovative GI projects.
MS-24	Require the management of stormwater in accordance with the Storm Drainage Design Criteria Manual through appropriate Bylaws, policies and procedures.	This is an important step to creating a more regulated stormwater policy regime in Saint John, at this point the drainage design criteria manual is not bolstered by bylaws, policies and procedures.
MS-25	Support the development of industry education and engagement regarding implementation of the City's stormwater management criteria.	Creating opportunities for industry education is an important step in addressing education gaps, and reducing resistance to GI/ LID adoption.
MS-29	Require that stormwater impacts are considered when development is reviewed and approved and techniques such as 'low impact design' and natural stormwater management approaches are used where appropriate	Though it would be nice to see low impact design approaches mandated and required, it's amazing to see it integrated as a consideration within this policy.
MS-31	Undertake a regionalized approach to stormwater management, where possible.	As above, although it would be nice to see the language of this policy tightened up, it is encouraging that regionalized approaches to stormwater management are being considered.

Policy	Description	Rationale
MS-34	Require developers to assume the cost of any necessary surface runoff remediation initiatives to ensure that the impact of stormwater generation on natural drainage courses, abutting properties and infrastructure is minimized	This policy will help address the rising costs of stormwater infrastructure and can be adjusted to suggest or mandate the integration of GI and lot-level stormwater management by developers.

Citations

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