

# A Pathway for Lethbridge to Become a Living City



How Lethbridge 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 Lethbridge to become a Living City





## Introduction

This document was created to illustrate a pathway for how Lethbridge 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 Lethbridge, applies the strategies laid out in the Framework to the policy and operational context of the City of Lethbridge. It:

- 1 assesses how much progress the City of Lethbridge has made toward implementing equitable, abundant, and thriving GI, and
- 2 provides an overview of recommendations that Lethbridge 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 Lethbridge that relate to GI. We also interviewed nine individuals, four of whom work for the City of Lethbridge.

## 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 pavements<sup>1</sup>; 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.<sup>2</sup>

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.



### 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

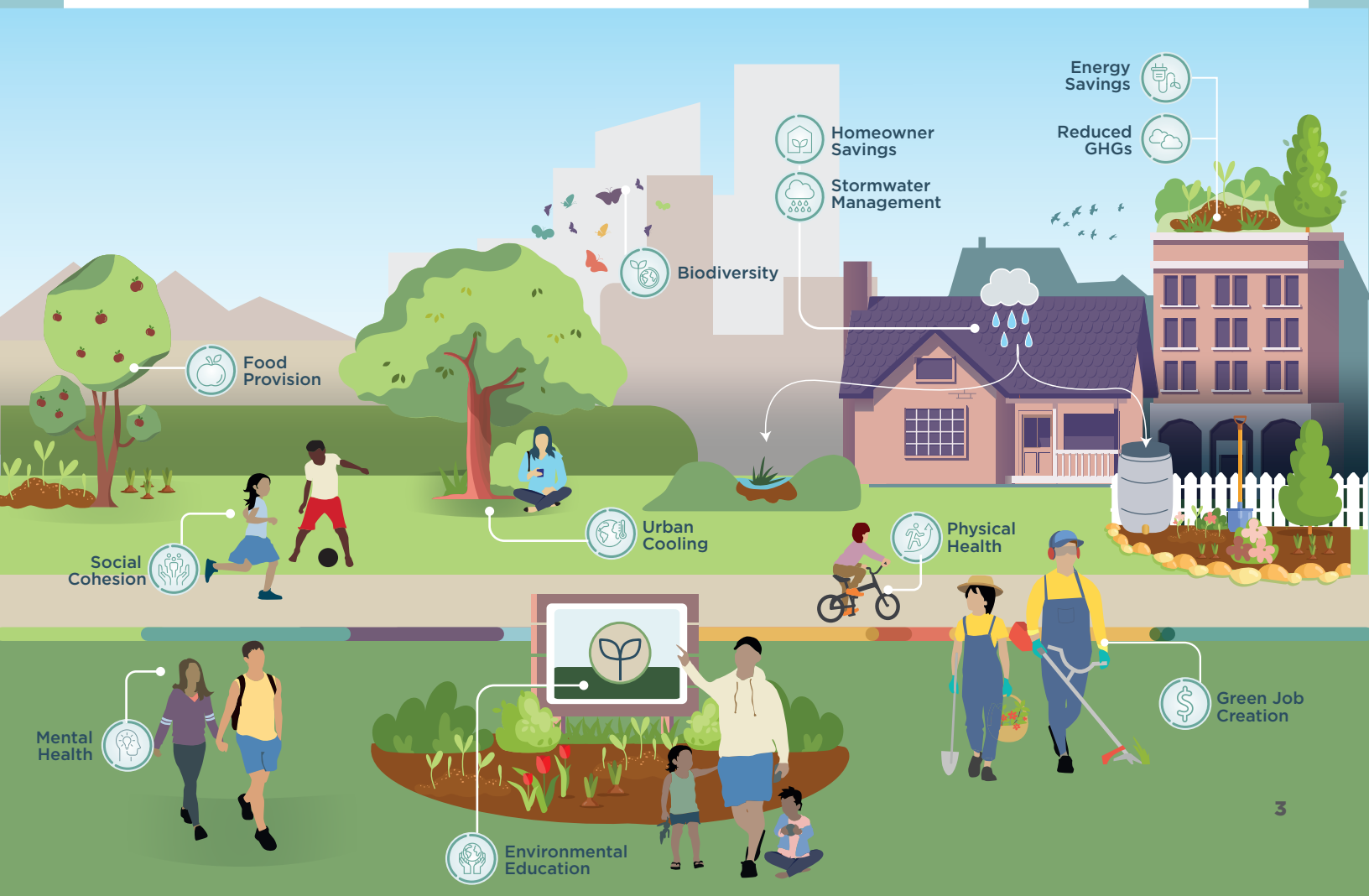
GI is installed, maintained and functions well over the long-term.

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 Lethbridge

If Lethbridge 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 Lethbridge and how GI could help to address these.

### Development-Related Concerns

Lethbridge, Alberta, is the fourth largest city in Alberta, with a population of 104,524 people reported in 2021.<sup>3</sup> The city has seen rapid population growth and is expanding more quickly compared to other regions in the province. Between 2016-2021, Lethbridge grew by 6.1%.<sup>4</sup> The population is expected to further increase by 20% over the next ten years, making downtown revitalization and development a priority for the city.<sup>5</sup> The population density of Lethbridge is roughly 812 residents per square kilometer.

Development in Lethbridge has typically followed low-density development patterns, with many mature residential developments built at the edge of the city resulting in a car-centric environment.<sup>6</sup> Established and mature neighbourhoods have average residential densities ranging from 20-24 du/rnha, in contrast to core neighbourhoods which have an average density of 26 du/rnha. There has been a recent shift to design new neighbourhoods to follow more grid-like streets rather than the previous curvilinear street networks, with planned densities typically greater than 26 du/rnha.<sup>7</sup> These neighbourhoods are composed of smaller lot sizes and a more balanced array of housing types.<sup>8</sup>

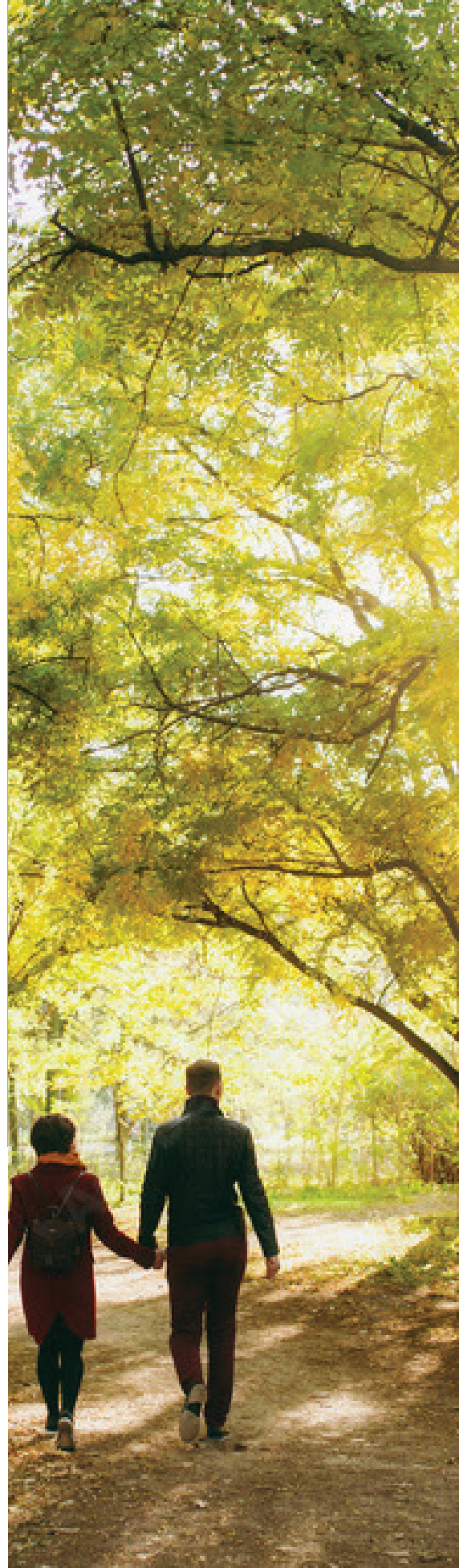
The majority of new development in Lethbridge is occurring on greenfield development sites; in 2017, greenfield site development accounted for 94% of total building permits issued, 93% of total construction expenditure, and 94% of total floor space developed.<sup>9</sup> Lethbridge has the ability to accommodate its growing population by capitalizing on opportunities for infill development. Many of the older neighbourhoods are currently supported by populations much smaller than they were originally designed for, as a result of both international and national trends in smaller household sizes. Seizing opportunities for infill development in existing neighbourhoods by incorporating secondary suites, duplexes and other strategies are proposed ways for developers to increase density in these established neighbourhoods without compromising quality of life for current residents.<sup>10</sup>

## Weather and Climate-Related Concerns

Lethbridge is known for its warm summers, mild winters, and bright sunshine. It is one of the windiest cities in Canada due to the Chinook winds, which can cause temperatures to fluctuate. Lethbridge is located within the prairies and as a result has a relatively dry climate, however the region does receive sufficient moisture to keep the valleys lush, sustaining the urban forests comprising mostly elm and birch.

In Southern Alberta, the number of hot days are expected to increase as climate change takes hold, increasing mean annual temperatures anywhere from 1.8 to 2.5°C.<sup>11</sup> Temperature changes are also expected to drive changes in the hydraulic cycle, leading to shifts in precipitation patterns. Climate models suggest there will be an increase in winter and spring rain, a decrease in the summer rain, and an increase in evaporation leading to an added risk of drought.<sup>12</sup> There will be less water available later in the year, while simultaneously a lengthened growing season and population increase placing further demand on water availability.<sup>13</sup> Greater volumes of precipitation are expected through rainfall events in the spring and fall, and less as snowfall in the winter.<sup>14</sup>

As is the case in many other locations, climate change acts as a risk multiplier that intensifies extreme weather events including wildfire, flood, and rainfall. Extreme weather events in Southern Alberta are increasing in frequency. In 2018, Lethbridge Country declared a state of emergency due to flooding impacting residents and highway roads in the county.<sup>15</sup> Drought and extreme heat are also increasingly impacting Lethbridge. According to a 2022 report by the Intact Centre on Climate Adaptation, *Irreversible Extreme Heat: Protecting Canadians and Communities from a Lethal Future*, Lethbridge has been projected to be one of the most at-risk communities in Canada for extreme heat in the coming years.<sup>16</sup> Extreme heat has many social, environmental, and economic consequences, such as increased incidence of hospitalization and death among residents, increased power consumption within a community, and exacerbation of drought conditions, which can impact food production and environmental viability. [Alberta's Climate Future](#) showcases increased drought and extreme heat for the region. Preserving existing GI and creating new GI can help buffer the impacts of drought, extreme heat, and flooding.



## Work That has been done

Lethbridge is a relatively small city, and while it has expanded and continues to develop, the city is limited by the amount of resources available to advance GI. Regardless, Lethbridge has made progress in several areas. Notably, Lethbridge's Municipal Development Plan and other secondary documents include important aspects that support GI, although these haven't been fully implemented in city operations. Lethbridge has prioritized its park network, and specifically done meaningful work to conserve the Lethbridge River Valley. Lethbridge has done significant work to commit to reconciliation and lay the foundation for meaningful collaboration with Indigenous peoples through their Reconciliation Implementation Plan and several other policies in their MDP.

### Parks and Urban Forests

Lethbridge is home to an expansive network of parks. With over 143 parks and green spaces, including two regional parks and the river valley parks system, the city prides itself on its parks system. Lethbridge's park system is consistently one of the most popular features in the city, and receives significant funding from the city to be maintained. Lethbridge is in the process of developing a forthcoming Parks Master Plan, which should be completed in 2023/2024, and currently operates off of their **2007 Parks Plan**. The city has set a recent goal of 10% of developed space to be parkland.

- ▶ **The 2021 Municipal Development Plan** focuses on parks systems, including the Parks and Open Spaces section. It recommends updating the 2007 Master Plan to include a minimum threshold of parks and open spaces in new and existing neighborhoods. The plan also outlines a long-term strategy to address access gaps and redevelopment opportunities. The Healthy and Active Living section emphasizes the need for equitable access to parks, recreation, and collaboration between the government and residents to enhance the parks system in new community developments.
- ▶ Lethbridge also relies on their **2021-2041 Forest Management Plan** which recommends pursuing an urban forest tree canopy cover target. Due to the extreme weather the city faces including high winds, it is difficult to drastically increase tree canopy coverage, and being selective in what trees to plant is important. In Alberta, it is not currently possible to have a private tree protection bylaw, however, there are calls for a public tree protection bylaw to be implemented.<sup>17</sup>
- ▶ **The Helen Schuler Nature Centre**, run by the City of Lethbridge's Recreation and Culture Department, offers nature exhibits, environmental education programs, and community resources. It houses an interactive green roof completed in 2013 and is a demonstration site for the effectiveness of green roofs in Southern Alberta. Since completing the roof, maintenance has been found to be extremely important, especially irrigation due to the dry climate and annual weeding for the invasive species.



## Climate Change Mitigation & Adaptation

- ▶ The City published the [Climate Vulnerability and Risk Assessment](#) in 2020, which provides risk mapping of city owned infrastructure and assets. The assessment proposes recommendations of potential adaptation measures based on climate hazards that are of most concern. Several proposed adaptation measures include GI measures, such as constructing rain gardens and bioswales, investigating options for permeable surfaces, using climate resilient and native species to provide environmental benefit and reduce the urban heat island effect, and requiring LID standards in all new developments.<sup>18</sup>
- ▶ A report by Environment Lethbridge, [Climate Adaptation in Lethbridge: Summary of Gaps and Barriers](#), highlights the need for Lethbridge to prepare for climate change while reducing carbon emissions. One key recommendation includes incorporating climate adaptation into all aspects of city planning. In the face of adapting to extreme weather events, structural updates to housing to better withstand wind, improvements to transportation systems and infrastructure, drainage upgrades, and opening cooling centres in the summer months were identified recommendations. The report also emphasizes protecting the 'greenbelt' and agricultural lands. Infrastructure and buildings should be designed with climate change scenarios in mind, and risk and vulnerability assessments should be conducted alongside a cost-benefit analysis that incorporates future climate scenarios.<sup>19</sup>
- ▶ The City of Lethbridge is currently working on a **Climate Adaptation Strategy and Action Plan**, which will be completed by 2024.

## Stormwater Management

Much of the city's stormwater management is conducted through the parks system, with many facilities operated on parkland. The Parks Department plays a crucial role in maintaining and planning stormwater management, including planting native plants, ensuring proper aquatic plants, aerators, and conducting water sampling.<sup>20</sup> Currently, there are more than thirty stormwater ponds within the city.

- ▶ The 2016 **Stormwater Management Standards** include best practices for stormwater management, such as the recommendation to incorporate grass swales and runways into pond inlets and green strip conveyance paths. Due to the projected increase in intense rainfall events and its potential impacts on the city's stormwater infrastructure, the city contracted Associated Environmental to develop a model of their stormwater system to allow them to better understand performance and plan for improvements.<sup>21</sup>
- ▶ The 2007 **Parks Master Plan** recommends incorporating bioretention facilities, such as rain gardens and swales, to improve stormwater runoff quality. Lethbridge park's already incorporate bioretention and biofiltration systems, and the **Municipal Development Plan** supports LID techniques to mitigate runoff from stormwater.
- ▶ At an individual level the city has programs to help bring attention to stormwater management. For example, the city runs the **Adopt a Storm Drain Program** where residents clean out and manage storm drains in their area, and the **Yellow Fish Road Program** educational program for kids to paint a drain and learn about urban runoff pollution.

## Ecosystem Conservation

Lethbridge is a part of the Grassland Natural Region, and the prairie sub-basin of the Oldman River watershed.<sup>22</sup> Lethbridge has a diverse natural landscape, with distinct ecosystems and species present in the grasslands, coulees, marshlands, and river floodplain. The Oldman River valley's wide range of flora and fauna contributes to the region's biodiversity and supports Lethbridge with all major ecosystem services, as well as acts as an important migratory corridor. The natural landscape of Lethbridge has been significantly altered throughout time as a result of population increase and economic development pressures. This has had a tremendous influence on the region's landscape. The vast majority of original prairie land in the South Saskatchewan region has been converted to farmland or fragmented as a result of oil and gas production, transportation infrastructure, urban growth and energy transmission. Only approximately 40% of grassland remains in native cover, and within the city limits, there are 2058 ha of grasslands.<sup>23</sup>

- ▶ The Biodiversity and Ecosystems section in the City's **Environment & Historic Resources Strategy** contains a current state analysis as of several identified issue areas: Wetlands, Riparian Areas, Natural Grasslands, Invasive Species, Conservation Management, Tree Canopy and Food Security. The Strategy contains mapping of wildlife connectivity and contiguous natural spaces within the city, as well as wetland, grassland and riparian areas. It proposes recommendations such as developing a natural spaces policy to assess development in key environmental areas, funding further restoration and enhancement of natural spaces in the City, and establishing a baseline and benchmark for year-to-year tree canopy coverage expansion,
- ▶ **The Municipal Development Plan** also outlines ecosystem conservation, which is integral to the Lethbridge community. Mapping has occurred to define areas of wetland and grassland. Within the plan's Land Use, Conservation and Protection section, the plan outlines the need to work with partners including Ducks Unlimited to explore and document methods of protecting ephemeral bodies of water and designing environmental reserves around these areas.
- ▶ Within the **Climate Adaptation in Lethbridge: A Summary of Gaps and Barriers** report, there is a recommendation to increase connectivity in Lethbridge through designing corridors and reforestation efforts. Invasive species are a major concern in Lethbridge, and the report outlines the need to mitigate and manage invasive species in the region.

## **Challenges and Gaps**

While Lethbridge has the tools needed to advance equitable, abundant, and thriving GI, the city faces some challenges and gaps that have limited their current efforts. As is the case in many municipal governments, resources for GI implementation are currently lacking. There is a lack of awareness about the benefits of GI within the community and local government. A lack of coordination (both internally and externally at the city) and the absence of a well-articulated overall commitment/direction contributes to the limited success of GI implementation.

Lethbridge does not currently have an overarching GI strategy or mandate in Lethbridge. While the Municipal Development Plan does include several policies that support GI, the term GI is not explicitly mentioned. Lethbridge struggles with the translation of high-level policy goals into on-the-ground practices. Also within the municipal government, it is commonplace for city plans to be created well into the future, therefore there is not much room for flexibility for upcoming planning to include GI in the near-term. For example, the Lethbridge Forest Management Plan spans from 2021-2041. The lack of targets and established priorities, compounded with a lack of technical expertise by staff, limits both capacity and commitment by the local government. There is a need for further education of municipal staff and council on the co-benefits GI can provide and the ability of GI to mitigate climate risk, in addition to the vital municipal services it can address.

There is a lack of funding for GI efforts within the municipal budget. While the parks department and stormwater management are well funded, there is not the same level of funding available for other GI initiatives around the city. Although the city has a very successful green roof, LID systems, and a robust watershed management strategy, there is no cohesive plan to translate these initiatives to a broader strategy. The lack of resources leads to a prominent gap, a lack of cohesive programs and policies to foster GI.

This is compounded by the low levels of public awareness of GI projects and their benefits, meaning that GI is currently not an identified priority for the public and decision makers. Increasing education and stronger support for GI initiatives could lead to a larger budget for GI in the future. The city has a successful green roof demonstration site at the Helen Schular Nature Centre, however this has not expanded to other sites within the city. While there are some educational campaigns around stormwater management such as the Adopt a Storm Drain Program, information about what green infrastructure is and how it can benefit local communities beyond stormwater management is important.



Interviews also identified that Lethbridge faces challenges regarding public acceptance with “naturalized GI”, due to a strong preference for manicured lawns and greenspaces. There is potential for this to be combated with further education on the purpose and benefits of naturalized GI, or and how plant materials can successfully grow and be low-maintenance in the setting of Lethbridge’s environment.

Lethbridge also lacks mapping of current GI assets or climate risk areas. Better understanding of GI within the city, and how it overlaps with social demographic data and other vulnerabilities would help support decision-making for future GI projects. While Lethbridge has undergone a Climate Change Vulnerability Assessment, it focuses on city-owned assets and doesn’t include a consideration of climate change impacts on social well-being and other inequalities. There is also a need for true consultation and engagement with residents. When the City does implement GI projects or related plans and policies, they are usually done without engaging with the general public.

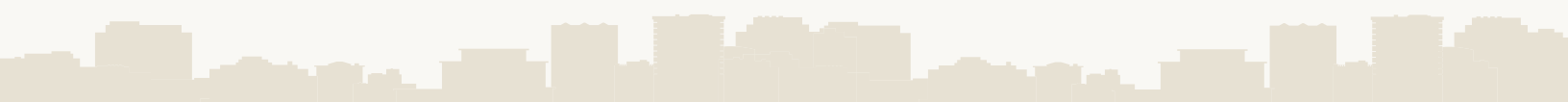
Lastly, the city of Lethbridge faces maintenance challenges. As GI projects are not standardised within the community, ensuring maintenance is part of the initiative as well as outlining who is in charge of maintenance is integral for the projects’ success. While maintenance can be a common challenge for many municipalities, it is especially important in Lethbridge due to the semi-arid climate. Climate impacts such as drought and high winds can cause plants to wilt, and invasive species to take over GI sites, therefore maintenance is particularly important.

## Living Cities Assessment: How Are We Doing?

This table offers an assessment of how Lethbridge 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 Lethbridge is at the start of its journey; the more “green” is the shade, the more Lethbridge 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 Lethbridge 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 Lethbridge doing?



**Work done:** To understand the possible effects that climate change may have on city-owned infrastructure, the city conducted a climate risk and vulnerability assessment. The Municipal Development Plan has some strong principles to encourage equitable access to green space.

**Gaps:** The city has not conducted climate risk mapping, or mapping of existing green infrastructure assets (other than parks). It is currently working on a Climate Adaptation Strategy and Action Plan, due in 2024, which may include this data.

## Advance Reconciliation with GI

## How is Lethbridge doing?



### What does this mean?

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

**Work done:** There is a great foundation set up to advance reconciliation and collaboration with Indigenous peoples by the City of Lethbridge. The Reconciliation Implementation Plan was created in collaboration with Indigenous nations and organizations, to advance reconciliation.

**Gaps:** Lethbridge has done a lot of work to commit to reconciliation and working in partnerships with surrounding First Nations and FNMI organizations. However, the majority of these partnerships are focused on social issues and housing, and not green infrastructure or land-based projects.



## 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 Lethbridge 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).

**Work done:** The MDP includes various policies that support GI, such as promoting low impact development approaches to decrease stormwater runoff, employing drought-tolerant and pollinator-friendly species in landscaping, and increasing density and infill to limit new constructions in greenfield areas. The City has established some linkages between GI and other initiatives. For example, the Healthy and Active Living Section of the Municipal Development Plan discusses the need of providing opportunities for healthy living and how parks might support achieving this (e.g. through active recreation).

**Gaps:** The MDP and other secondary strategies give some strong direction that supports GI, although many of them have yet to be implemented in city operations. Targets on major priorities are required to keep them moving ahead. There are also increasing chances to connect GI with other projects, including the city’s efforts to advance reconciliation.

## Lay the Groundwork for Systemic Integration

### 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;

## How is Lethbridge doing?



**Work done:** The updated MDP has made it easier to collaborate across departments. The parks department oversees stormwater and urban forestry management. Within the Waste and Recycling Utility, there is also a “Sustainability Team” that is focused on environmental sustainability for Lethbridge. The city works closely with developers on many fronts, and has partnered with the development community on some environmental initiatives.

**Gaps:** Despite policies, plans, and recommendations calling for GI-related interventions, actual change is minimal. Several interviewees stated that they did not believe green infrastructure was a city priority, and some city officials have expressed uncertainty about the practicality of GI in Lethbridge owing to the city’s semi-arid, grassland climate.

## Grow Support for GI

### What does this mean?

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

## How is Lethbridge doing?



**Work done:** Lethbridge has sought funding from a number of different sources. They applied for FCM funding to support stormwater management in the “Warehouse District.” as well as submitted an application to the Natural Infrastructure Fund. There are various environmental education programs in Lethbridge that are linked to stormwater management but not directly to GI. The City also has a “1,000 trees in 2023” project through the Nature Centre that encourages residents to plant trees on their properties. The City works closely with Environment Lethbridge to provide input on key environmental initiatives and policies, and promote public education on matters relating to environmental issues.

**Gaps:** There is a significant need and opportunity for community participation and education in the context of green infrastructure. With the exception of community gardens and the 1,000 trees in 2023 initiative, the programming offered by the city and its partners do not encourage community action on GI. Interviewees specifically mentioned some substantial issues in Lethbridge surrounding community acceptance of “naturalized GI.” By public education and demonstration projects, Environment Lethbridge could have a greater influence in helping to lead this aesthetic ‘culture shift’







# 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 Lethbridge doing?



**Work Done:** The City has collaborated with Environment Lethbridge on a number of important environmental initiatives. They have also worked alongside the Oldman Watershed Council (OWC). In 2017, Environment Lethbridge released a State of the Environment report, which outlines key indicators that the City should monitor over time. In 2018, the City began publishing the Sustainability Annual Report to track how far the MDP's environmental policies have progressed.

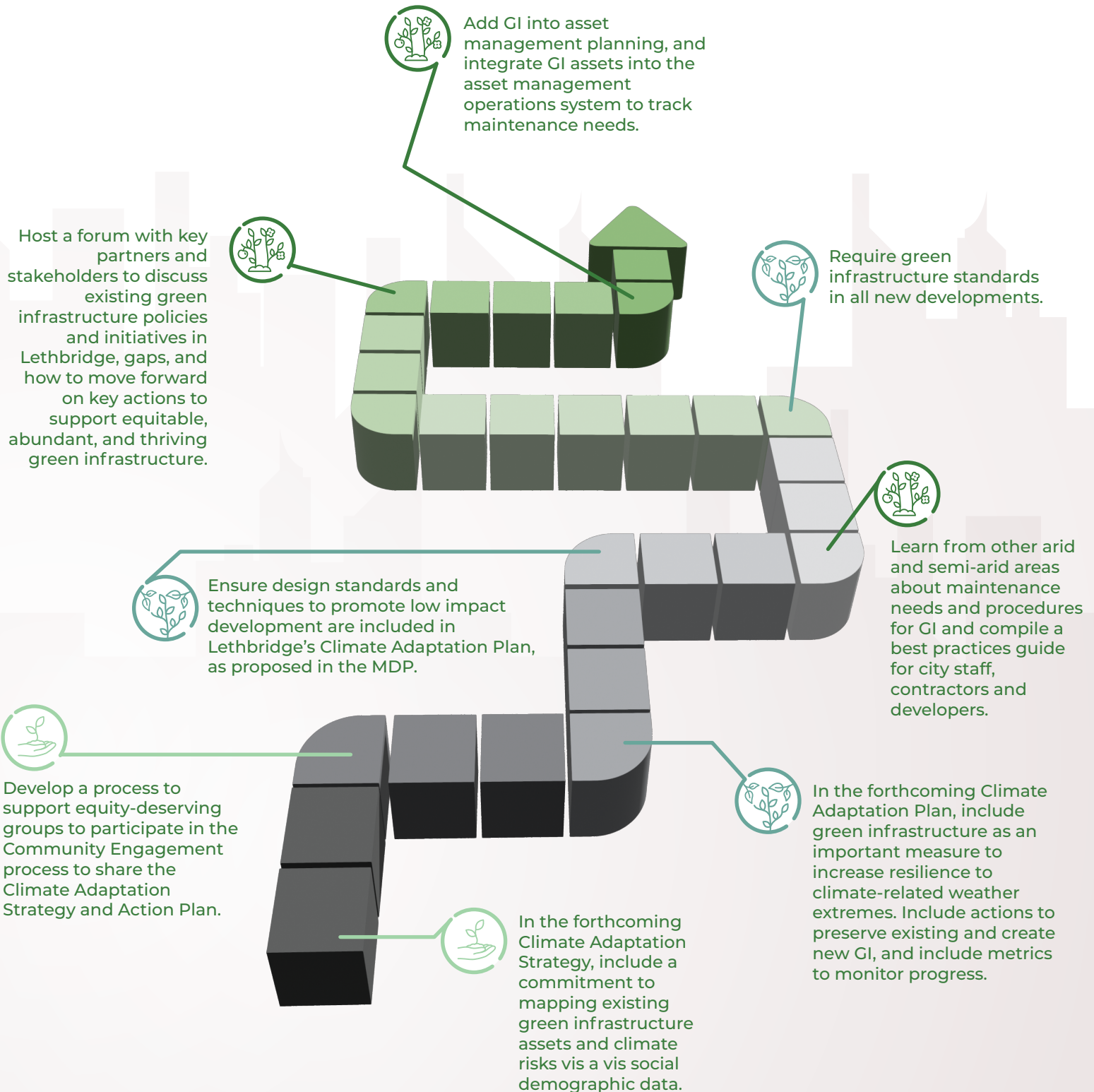
The City's asset management approach is well-coordinated, and it allows for the identification of facility maintenance and repair needs. The asset management strategy excludes GI and urban forestry, however there is opportunity to expand the scope.

**Gaps:** While the The Sustainability Annual Report showcases metrics, the majority do not report against specific targets set out in policies, making it difficult to track progress against environmental goals. The city has not conducted a condition assessment and or cost analysis related to maintenance needs of urban forestry, or any other GI assets. The lack of LID (green stormwater infrastructure) facilities in Lethbridge means no maintenance guidelines exist. In addition, the stormwater design standards do not include protocols on maintenance for naturalized stormwater ponds.

# Summary of Key Recommendations Along Pathway

The graphic below provides some key short, medium, and long-term actions that Lethbridge 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](#).



## Citations

<sup>1</sup> Also called Low Impact Development, or LIDs

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

<sup>3</sup> Statistics Canada. (2022). Table 98-10-0002-01 Population and dwelling counts: Canada and census subdivisions (municipalities) [Data table]. <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=9810000201>

<sup>4</sup> Ibid

<sup>5</sup> Edwardson, L. (2018, January 18). City of Lethbridge anticipates 20% growth over next decade. CBC News. <https://www.cbc.ca/news/canada/calgary/lethbridge-20-percent-growth-next-decade-1.4490670>

<sup>6</sup> City of Lethbridge. (2021). Municipal Development Plan. [https://ecom.lethbridge.ca/mycity/planningDocuments/MDP\\_Final.pdf](https://ecom.lethbridge.ca/mycity/planningDocuments/MDP_Final.pdf)

<sup>7</sup> Ibid

<sup>8</sup> Ibid

<sup>9</sup> City of Lethbridge. (2021). Municipal Development Plan. [https://ecom.lethbridge.ca/mycity/planningDocuments/MDP\\_Final.pdf](https://ecom.lethbridge.ca/mycity/planningDocuments/MDP_Final.pdf)

<sup>10</sup> Ibid

<sup>11</sup> Environment Lethbridge. (2022). Climate Adaptation in Lethbridge a Summary of Gaps and Barriers. <https://environmentlethbridge.ca/wp-content/uploads/2022/02/Climate-Adaptation-in-Lethbridge-Gaps-and-Barriers.pdf>

<sup>12</sup> City of Lethbridge. (2018). Environment and Historic Resources Strategy. <https://www.lethbridge.ca/media/3ruh5jhv/environment-and-historic-resources-strategy.pdf>

<sup>13</sup> Ibid

<sup>14</sup> Ibid

<sup>15</sup> Global News. (2018). Lethbridge County declares a local state of emergency due to flooding. [Video]. <https://globalnews.ca/video/4148683/lethbridge-county-declares-local-state-of-emergency-due-to-flooding>

<sup>16</sup> Mitchell, L. (2022). These are the Alberta cities projected to have the most extreme heat in the future. <https://dailyhive.com/calgary/alberta-cities-extreme-heat-projections>

<sup>17</sup> City of Lethbridge. (2021). Urban Forest Management Plan 2021-2024.

<sup>18</sup> City of Lethbridge. (2020). Climate Vulnerability and Risk Assessment.

<sup>19</sup> Environment Lethbridge. (2022). Climate Adaptation in Lethbridge a Summary of Gaps and Barriers. <https://environmentlethbridge.ca/wp-content/uploads/2022/02/Climate-Adaptation-in-Lethbridge-Gaps-and-Barriers.pdf>

<sup>20</sup> From interview with Blair

<sup>21</sup> Associated Engineering. (2021). Predictive citywide stormwater models help protect Lethbridge's infrastructure. <https://www.ae.ca/ae-today/latest-updates/details/blog/2021/12/20/predictive-citywide-stormwater-models-help-protect-lethbridge-s-infrastructure>

<sup>22</sup> City of Lethbridge. (2018). Environment and Historic Resources Strategy. <https://www.lethbridge.ca/media/3ruh5jhv/environment-and-historic-resources-strategy.pdf>

<sup>23</sup> Ibid