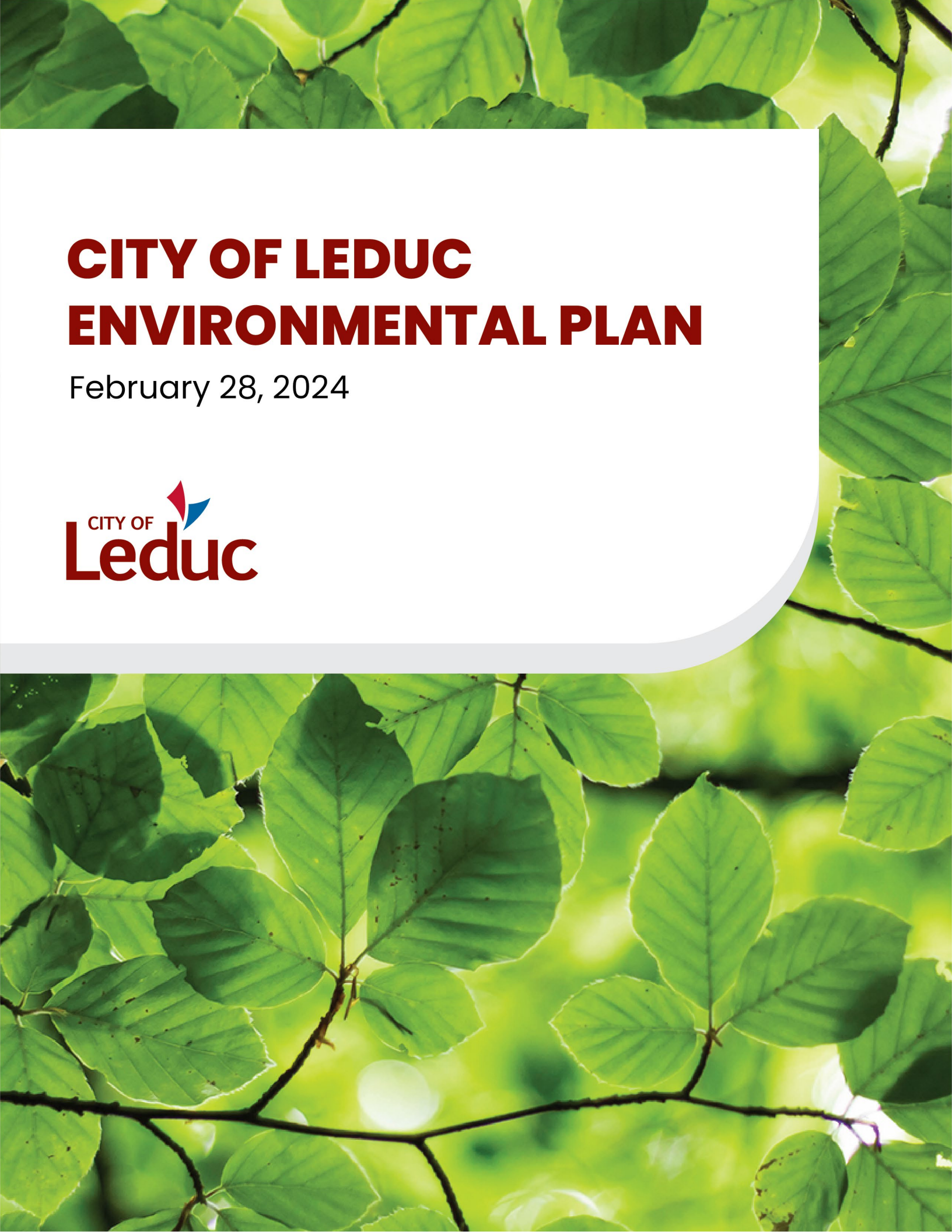
CITY OF LEDUC ENVIRONMENTAL PLAN

February 28, 2024

CITY OF Leduc



CONTENTS

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FIGURES

TABLES

APPENDICES

EXECUTIVE SUMMARY

The Environmental Plan Update for the City of Leduc builds upon the original Environmental Plan developed in 2012. The Plan aims to guide sustainability actions over a ten-year period. The original Plan contained forty-five actions, which were organized into six themes, including waste, water, air, land, climate change and energy, and light and noise. The City achieved 80% of the actions in the original Plan, with another 15% in progress. There were three key steps involved with updating the Environmental Plan.

The initial step was to understand the current context of the City through the development of a Baseline Report. This report outlined the changes the City has experienced since the original Plan was implemented. The Baseline Report demonstrated the importance of thoughtful planning to protect the City's key environmental areas, while considering the community's growth since 2012. Additionally, the Baseline Report examined the best practices of other communities and regional trends to ensure that the actions in the updated Plan meet the City's current and future needs.

The second step involved engaging with community members and stakeholders. The engagement ensured that diverse perspectives were included in this process, including youth, the school board, environmental organizations, City Council and community members. Over 500 community members participated through in-person and virtual opportunities, in which they shared their priorities and concerns. Participants were able to vote on their top priorities for the future of the City. The top community priorities identified through this process were waste, land, and climate resiliency and energy. Following this, City staff and Council were engaged. Staff listened to the priorities of residents and leadership, and identified implementation strategies for the next ten years.

The third and final phase of the project, actions were developed by bringing together the best practices and trends identified in the Baseline Report, the aspirations and concerns of residents, and the implementation strategies identified by City staff. The Updated Environmental Plan now includes five topic areas: Waste, Water, Ambient Impacts (Noise, Light, and Air), Energy and Climate Resiliency, and Land. In total, there are now 40 actions that the City will focus on over the next ten years. The distribution of actions across topic areas is shown in Table 1, below. Actions were prioritized based on several factors, including the City's current strategies, as well as departmental responsibilities, priorities, and resources needed for delivery. The Plan aims to be reasonable, measurable, and meaningful, guiding the city towards its environmental sustainability goals over the next decade.

TABLE 1 - ENVIRONMENTAL PLAN ACTION DISTRIBUTION

TOPIC AREA	ACTIONS	HIGH PRIORITY	MEDIUM PRIORITY	LOW PRIORITY
WASTE	10	2	5	3
WATER	6	0	3	3
AMBIENT IMPACTS	4	0	1	3
ENERGY AND CLIMATE RESILIENCY	11	2	3	6
LAND	9	4	1	4
TOTAL	**40**	**8**	**13**	**19**

1. BACKGROUND

This Environmental Plan Update builds off the City of Leduc's (referred to as Leduc, the City) original Environmental Plan (the Plan), which was developed in 2012. The Plan was a living document to guide Leduc's sustainability goals over a ten-year period. The mission of the Plan was "to protect the unique environment of our area and enhance the quality of life in our community through effective, innovative, responsible leadership and consultation." Leduc completed a noteworthy 80 percent of the 45 action items identified in the original Environmental Plan, and another 15 percent of the actions are currently in progress. Major accomplishments include implementing a curbside organic collection program, encouraging waste reduction, undertaking stormwater management initiatives, and developing an extensive multi-use trail network. Leduc also increased transit ridership through marketing and improved services, implemented urban forestry initiatives, and developed greenhouse gas reduction targets for the corporation and community, among other initiatives.

Since development of the original Plan, Leduc has experienced significant growth. In 2012, Leduc had a population of 26,676 residents. By 2022, Leduc's population had grown to 35,398 residents, which represented an increase of 32 percent over the ten-year period. This significant increase in population, coupled with the achievements to date and changes in societal context and technologies, have presented additional environmental considerations and opportunities as Leduc continues to grow and evolve, further highlighting the need for an updated Environmental Plan.

As a part of the updated Environmental Plan, an Environmental Baseline Report **(Appendix A)** was completed to highlight environmental priorities and concerns for the City as it continues to grow. Areas of significant environmental value, and therefore concern, identified within Leduc include:

Wetlands, lakes, and waterbodies: provide diverse habitat, flood retention, climate resiliency and are valuable community amenities;

Wildlife habitat: provide connectivity between habitats and maintains the integrity and functioning of ecosystems while supporting biodiversity conservation; and

Agricultural lands: support food security and economic growth.

Extensive community engagement occurred throughout the development of the updated Plan to ensure the community and all stakeholders had the opportunity to share their environmental priorities and concerns for the City of Leduc. Based on the feedback from the community, direction from the City, and information gathered from the Environmental Baseline Report, an updated Environmental Plan has been developed to help guide the City of Leduc's environmental initiatives for the next ten years.

1.1. HOW DID WE GET HERE?

From the beginning of the planning process, the City knew that to make an effective Plan, the voices of the community, field data, studies and surveys, coupled with industry best practices, needed to be incorporated. Over the course of developing the updated Environmental Plan, the City celebrated the achievements of the original Plan, while also looking ahead to future opportunities for innovation and leadership as stewards of the environment. The process to develop the updated Plan began in the summer of 2023, and extended into the early spring of 2024.

Summer 2023 – The Environmental Baseline Report outlined the current conditions, governmental standards, and leading environmental practices. This Report ensured the updated Plan was developed based on the previous achievements, while keeping an eye to future opportunities. The Engagement Strategy outlined meaningful and accessible activities to engage community members.

Fall 2023 – The City engaged with stakeholders through a variety of activities. Engagement opportunities were provided to a range of stakeholders including youth, environmental organizations, residents, businesses owners, City Council, and staff. Each group of stakeholders had the opportunity to indicate priority topic areas and actions. Engagement events included in-person and virtual opportunities through activities such as a booth at VolunteerFest, social media voting, and virtual workshops.

Winter 2023/Spring 2024 – Combining the results of the Environmental Baseline Report and community feedback, the Updated Environmental Plan was prepared. The actions included in the updated Plan resulted from industry best practices and engagement feedback. The draft Plan was reviewed by City staff from multiple departments, including: Engineering and Environment, Community Development, Planning and Development, Communications, and Economic Development, Leduc Environmental Advisory Board (LEAB), and the City Council.

1.2. COMMUNITY FEEDBACK

The citizens in Leduc care deeply about the environmental health of their community, which was captured as a prominent theme throughout the engagement process. Leduc has many well-used environmental amenities, which community members are passionate about preserving for future generations.

Engagement was crucial to the development of the Updated Environmental Plan, and allowed the City to understand community members' top environmental priorities. Engagement comments collected were used to inform the development of the Plan to ensure it aligned with the community's interests. A full What We Heard Report is available in **Appendix B.**

ENGAGEMENT OPPORTUNITIES INCLUDED:

In-person VolunteerFest : Project Team members attended the City's annual VolunteerFest to introduce the project to community members and receive feedback. Residents who stopped by the booth had an opportunity to learn about the achievements of the initial Environmental Plan, provide their opinions about which key areas were the most important to them, and share ideas related to potential actions which could be included in the updated Plan.

In-person Staff Workshop: A staff workshop was held with the City of Leduc's administrative staff to develop actions to implement the environmental objectives.

In-person Interactive Posters: Interactive posters were positioned at the entrance to the Leduc Civic Centre to share information about the project and offer an opportunity for the public to vote on their top environmental priorities.

In-person Youth: A youth engagement workshop was held with a local Scouts group to understand youth perspectives and priorities.

Online Survey: An online survey was hosted on the City of Leduc's Get Involved webpage. The survey included 13 questions about environmental priorities, programs, and services. The survey received 175 responses from community members.

Virtual Key Stakeholder Sessions: A total of four key stakeholder sessions were held to raise awareness about the Environmental Plan update and receive feedback about priorities and program implementation. The sessions included a Committee of the Whole presentation to Leduc City Council, a workshop with the Leduc Environmental Advisory Board, and two sessions for representatives from community organizations, environmental advocacy groups, the business community, and school boards.

Social Media: Engagement opportunities were promoted and facilitated through the City of Leduc's social media accounts and included polls and quizzes.

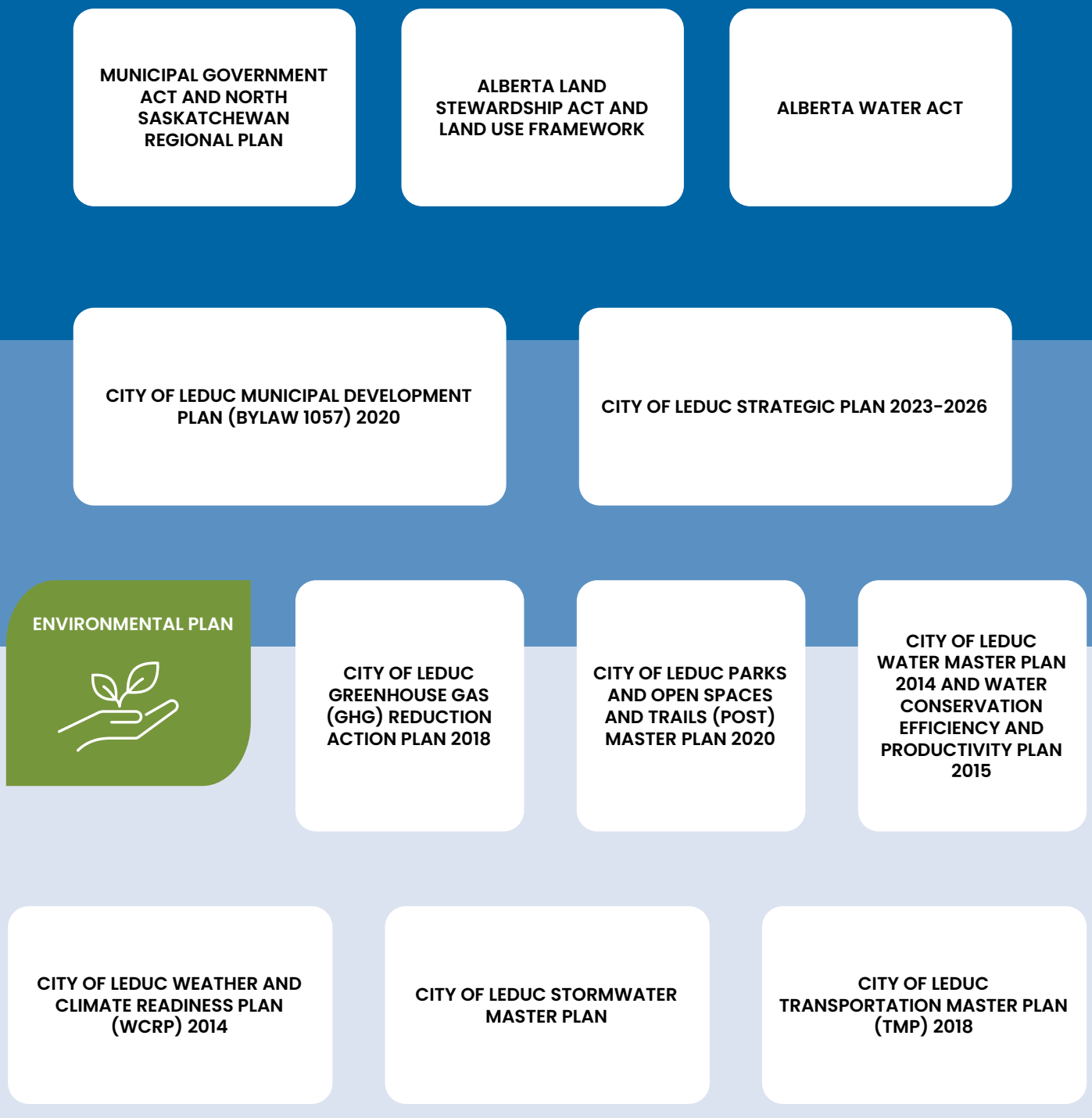
Through community engagement general themes and ideas for specific actions were provided for all the topic areas**. The community shared that Land, Waste, Water, and Climate Change and Energy were the most important topic areas to them.**

1.3. POLICY FRAMEWORK

The Plan will provide comply and connect with existing provincial, regional, and municipal regulations and plans. The relevant policy documents are shown on the following page, in Figure 2 in order of hierarchy, from the highest-level policy documents to the most detailed policy direction. During the update of the Environmental Plan, the City was also in the process of developing their Transportation Master Plan and Stormwater Master Plan, which are not referenced below, but have been coordinated with throughout the development of this Plan.

For additional information about each of the plans and policies shown in the figure below and how they relate to the environmental plan, please refer to **Appendix C.**

FIGURE 1 - POLICY FRAMEWORK HIERARCHY



2. KEY PRINCIPLES

2.1. VISION

Vision: Be a community leader in environmental sustainability and stewardship.

The Updated Environmental Plan takes its direction from the City's 2022 Municipal Development Plan's environmental statement, which is to: **"be a community leader in environmental sustainability and stewardship."** The vision guiding the development and implementation of this Plan is:

In 2034, Leduc has evolved into a leader in environmental sustainability and stewardship. Since 2024, the City has embraced a balanced approach to sustainability that supports urban growth while protecting natural areas. Leduc actively works to reduce greenhouse gas emissions, enhance local air quality, and encourage low-carbon transportation and building practices. The City has incorporated climate change adaptation and resiliency considerations into all planning initiatives. Leduc takes pride in efficient waste management and the responsible remediation of contaminated sites. The City remains committed to the protection of the urban forest and natural habitats throughout the community. In 2034, Leduc serves as a practical model for environmental responsibility, demonstrating how to achieve a sustainable future while still supporting economic and community growth.

2.2. OUR KEY VALUES

The following values will help guide the City of Leduc's journey and evolution to achieve the 2034 vision of Leduc as a leader in environmental sustainability and stewardship. These values were based on the key principles from the original Environmental Plan but updated to reflect the values in the 2023 – 2026 Strategic Plan.

Citizen Engagement: The City recognizes the wisdom of citizens and the importance of engaging them in decisions that impact their lives.

Environmental Stewardship: Leduc aims to balance growth and development with the conservation and preservation of the natural environment.

Excellence and Innovation: The City is committed to continuous innovation, development, and excellence in the delivery of programs and services.

Financial Sustainability: Leduc values the efficient use of public resources to keep services affordable while balancing the budget.

Transparency and Openness: The City is committed to transparency, honesty, and evidence-based decision-making processes.

Strategic Collaboration: Leduc values strategic partnerships with other organizations in the City and broader region to achieve environmental goals collaboratively.

3. ACTION AREAS

The actions included in the updated Environmental Plan were developed through interdisciplinary professional perspectives, community and staff engagement, and City needs identified in the Environmental Baseline Report. The action items outlined below are intended to help guide environmental policy and initiatives over the next ten years. A total of 57 Actions are identified across the priority topics.

3.1. WASTE

Within the topic area of waste, the actions will focus on improving and expanding the services of waste collection as well as encouraging recycling, reusing, and composting. The actions in this theme have been organized into categories including: diversion streams, community, and infrastructure .

Goals:

- Reduce the amount of waste going to the landfill by increasing diversion streams.
- Continue to provide high-quality services to residents through infrastructure management.
- Integrate circular economy practices into waste management approaches.

FIGURE 2 - WASTE

WHAT WE HEARD ABOUT WASTE

- The Eco Station is well run and organized
- Waste management is a tangible way for people to reduce their environmental impact
- Education and clear, fun communication are key
- Better waste diversion improves the health of the environment

ACCOMPLISHMENTS FROM THE 2012 ENVIRONMENTAL PLAN ABOUT WASTE

- Diversion opportunities through the City's collection programs have achieved 51% landfill waste diversion in 2022.
- Over 12,300 users accessed the Recycling Coach app in 2022.
- The City is in the process of developing a waste diversion program for multi-unit properties.
- The Eco Station received an award for the 2020 got the Collection Site Award of Excellent from the Alberta Recycling Management Authority.

3.1.1. DIVERSION STREAMS

The following actions support the City's goal to reduce the amount of waste going into the landfill by increasing diversion streams.

1. Assess expanding the Eco Station diversion streams (e.g. mattress recycling station, fridges, drywall).
2. Diversify recycling stream diversion opportunities (e.g. curbside glass, soft plastics).
3. Identify opportunities to expand Eco Station service offerings (i.e. re-use station, Library of Things).
4. Work with regional partners and other levels of government to identify opportunities to reduce the communities' dependence on single-use plastics.
5. Develop educational programs for schools about waste diversion.
6. Work with the Leduc and District Regional Waste Management Authority and the Province to investigate ways to enhance waste diversion and reclamation in the community (e.g. landfill bans).

3.1.1. COMMUNITY

The actions identified in this category support the City's waste management existing customers or expand the network of customers.

1. Work with multi-unit residential owners and operators to implement recycling and organics collection.
2. Develop requirements for multi-stream diversion for Industrial, Commercial & Institutional (ICI) customers.

3.1.2. INFRASTRUCTURE

The infrastructure actions identified in this section help the City to manage facilities and equipment that are needed to continue providing a high-quality service to the community.

1. Explore cost-sharing initiatives to accept waste at the Eco Station from additional municipal partners.

3.2. WATER

The topic area of water focuses on providing a sustainable approach to water management throughout the City by focusing actions around the core categories of stormwater, water conservation, natural water systems, and watersheds.

Goals:

- Innovate to meet the demands of stormwater treatment and retention as the City grows.
- Support water conservation through landscaping techniques and water recycling initiatives.
- Collaboratively work to improve and protect the watershed.

FIGURE 3 - WATER

WHAT WE HEARD ABOUT WATER

- Protection of Telford Lake
- Importance of clean water
- Water hardness and taste of drinking water
- Protection of the eastern slopes and its watershed
- Impacts of intensive fertilizer use in residential areas
- Stormwater management
- Regional collaboration

ACCOMPLISHMENTS FROM THE 2012 ENVIRONMENTAL PLAN ABOUT WATER

- Developed a 2012 Water Conservation, Efficiency & Productivity Plan.
- The City is developing a Stormwater Master Plan
- Working to improve the health of riparian areas and wetlands by accessing funding from the Alberta Environment and Protected Areas.
- Hosted annual Green Gold events, for residents to access eco-friendly products like rain barrels, and water timers.

3.2.1. STORMWATER

The actions in this category will support the City to effectively meet the demands of stormwater treatment and retention.

1. Coordinate with and support actions identified in the City's Stormwater Master Plan (2024).

3.2.2. WATER CONSERVATION

The water conservation actions outlined in this category will help the City reduce water demand and environmental impacts.

1. Investigate grass alternative incentives to support water conservation and pollinators on city sites (e.g. clover or xeriscaping).
2. Develop a staggered Drought Management Plan to prioritize preserving natural assets (e.g. community trees, etc.).
3. Identify and explore opportunities to reuse grey water for irrigation through continued discussions with Environment and Protected Areas (EPA) (e.g. dedicated non-potable water trucks for City irrigation).
4. Explore more water conservation programs for the residents (e.g. City's leak detection system).

3.2.3. NATURAL WATER SYSTEMS & WATERSHEDS

The action in this category will support the City to maintain its natural water systems and the broader watershed.

1. Preserve and improve healthy riparian areas and wetlands.

3.3. AMBIENT IMPACTS (AIR, LIGHT AND NOISE)

Ambient impacts are a collective topic area focused on air quality, noise pollution, light management, community safety, and accessibility.

Goals:

- Implement systems to help maintain high air quality during times of increased air pollution.
- Minimize light and noise pollution.

FIGURE 4 - AIR, LIGHT & NOISE

WHAT WE HEARD ABOUT AIR, LIGHT & NOISE

- Develop an anti-idling policy or program, especially targeting school areas
- Air quality impacts of heavy traffic and proximity to the airport
- Air quality impacts of increased forest fires
- Light and noise pollution is considered a big problem in Leduc
- Highway noise, airport noise
- Well-managed light and noise can increase overall quality of life

ACCOMPLISHMENTS FROM THE 2012 ENVIRONMENTAL PLAN ABOUT AMBIENT IMPACTS

- The City joined the Capital Airshed Alliance and participated in the 2022 air quality monitoring pilot program.
- Outlined sound monitoring requirements as part of the Transportation Master Plan.
- Converted all streetlights to LED.

3.3.1. AIR QUALITY STEWARDSHIP

The actions in this category will help City maintain high air quality, especially during severe weather events such as wildfires and extreme heat events.

1. Continue to partner with or participate in regional air pollution management organizations.
2. Investigate reporting on local air quality conditions (AQHI).

3.3.2. LIGHT MANAGEMENT

The following actions will enhance the City's management of light pollution support Dark Sky initiatives.

1. Explore opportunities to increase light efficiency (e.g. dark-sky friendly policy, all non-vital lighting to be solar).

3.3.3. NOISE MANAGEMENT

The following action is intended to contribute to a coordinated approach to managing noise pollution in the City.

1. Explore requirements for noise pollution/abatement for developments adjacent to environmentally sensitive areas.

3.4. ENERGY AND CLIMATE RESILIENCY

The theme of energy and climate change contributes to the resiliency of the City by focusing on sustainable transportation, energy efficiency, clean energy, and adaptation.

Goals:

- Encourage active transportation and reduce personal vehicle use.
- Improve the accessibility of public transportation.
- Decrease energy demand and increase energy efficiency.
- Reduce GHG emissions.
- Improve climate resiliency.

FIGURE 5 - ENERGY AND CLIMATE RESILIENCY

WHAT WE HEARD ABOUT ENERGY AND CLIMATE RESILIENCY

- Climate change needs to be addressed
- Residents want to see more solar panels and EV charging infrastructure
- The City's new solar panels are a big win
- The City should improve public and active transportation infrastructure

ACCOMPLISHMENTS FROM THE 2012 ENVIRONMENTAL PLAN ABOUT ENERGY AND CLIMATE RESILIENCY

- The City created a Greenhouse Gas Reduction Action Plan in 2019, that created a roadmap with prioritized emission reductions actions for the next ten years.
- City installed solar panels on public buildings to create an annual operational savings of $37,000 (as of 2022).
- Hosted the Clean Energy Improvement Program offering energy bill savings and retrofit opportunities to residents.

3.4.1. TRANSPORTATION

The list of actions in this category will help the City take a holistic approach to improving transportation. Actions identified in this list aim to support responsible personal vehicle use, and encourage active transportation and transit use.

- Explore requirements for new building developments (including residential) to include Electric Vehicle charging stations.
- Develop a corporate Electric and Low Emissions Vehicle Strategy (e.g. fleet, transit).
- Explore opportunities for a car-share program to reduce the need for personal vehicles.

3.4.2. ENERGY EFFICIENCY

By undertaking the following actions, the City will continue to decrease energy demand and improve energy efficiency across the community.

1. Identify opportunities to continue the Clean Energy Improvement Program (CEIP) to include both more residential and commercial properties.
2. Explore the feasibility of incorporating passive solar building design and green building guidelines into the design of municipal buildings.
3. Conduct a carbon audit in all facilities, and investigate the costs and benefits of converting equipment.

3.4.3. CLEAN ENERGY

These actions aim to reduce greenhouse gas emissions (GHGs) by informing the community about current achievements and identifying avenues for more sustainable energy production.

1. Share the progress of the GHG Reduction Action Plan (2018) with the community.
2. Evaluate solar feasibility for all new City facilities or major retrofits on corporate buildings.

3.4.1. CLIMATE ADAPTATION

These actions are designed to create a City that is resilient to the impacts of a changing climate and future extreme weather events.

1. Complete an update of the City's 2014 Weather and Climate Readiness Plan.
2. Support actions identified in the City's GHG Reduction Action Plan (2018).
3. Create sustainability criteria for procurement processes.

3.5. LAND

The topic of land is critically important to the City as it continues to grow and change. This topic area features actions that will address biodiversity management, naturalization, land use management, land stewardship education opportunities, and food security.

Goals:

- Support a healthy ecosystem through improved biodiversity management.
- Encourage sustainable land management while also supporting growth.
- Promote land stewardship and intentionally integrate heritage into land use planning.
- Evaluate food security and opportunities for local production

FIGURE 6 - LAND

WHAT WE HEARD ABOUT LAND

- **Balancing the need for development the need for natural areas**
- **The community is deeply connected to the existing parks and green spaces**
- **Telford Lake is a community gem and needs to be protected holistically**
- **Need to preserve natural areas for animal and plant species**

ACCOMPLISHMENTS FROM THE 2012 ENVIRONMENTAL PLAN ABOUT LAND

- **The City conducted an Environmentally Significant Areas Study in 2017 to protect local flora and fauna.**
- **Conducts an ongoing tree planting program throughout the community.**
- **Restored wetlands throughout the community**
- **Hosts a Backyard Hens and Bees program to promote local food security.**

3.5.1. BIODIVERSITY MANAGEMENT

These actions are intended to support the effective management of flora and fauna throughout the City to ensure all residents have access to a healthy and clean environment.

1. Research the effectiveness of natural weed management programs (e.g. weed grazing with goats).
2. Develop a Natural Asset Inventory to better communicate the value of natural amenities and the ecosystem services they provide.
3. Develop a Naturalized Area Plan to outline objectives and strategies for the management of vegetation, wildlife and their habitats.
4. Develop a public awareness campaign about pesticide use, alternative weed control methods, and restoration options.

5. Explore educational programming and communication opportunities to increase residents' understanding about human-wildlife interactions and biodiversity.
6. Support actions identified in the City's Parks, Open Space and Trails Master Plan 2020 (POST).

3.5.1. LAND USE MANAGEMENT

The outlined actions will support the City to balance the demands for growth and sustainable land management.

1. Explore opportunities for expanding the Environmental Reserve to protect natural areas. (e.g. conservation easements).
2. Research financial incentives for developers to encourage more residential infill development.

3.5.2. LAND STEWARDSHIP

The action below helps the City support land stewardship from a holistic approach.

1. Create a plan to meaningfully integrate heritage planning and environmental topics (ex: interpretive signage).

4. IMPLEMENTATION

Through the development of the updated Environmental Plan, a total of 57 Action Items were identified to support the City of Leduc in achieving its vision of being a community leader in environmental sustainability and stewardship. The Actions identified in this Plan are in alignment with the environmental elements of the City's 2023- 2026 Strategic Plan and were created to be reasonable, measurable, and meaningful approaches for the City to continue to progress its goals over the next ten years.

In order to facilitate strategic, efficient and effective implementation, the Actions are presented with various considerations including category, departmental responsibility, priority, and resources needed to complete the Action. The factors are described below:

PRIORITY

Priority is based on current City strategies to support environmental initiatives. This priority may shift over time due to additional factors; for example, limitations such as available funding or capacity, or participation of partners may delay implementation progress, where in other circumstances new grant funding opportunities or synergies may present opportunities to advance implementation. The Priority is meant to serve as a guide and will be routinely assessed and updated by the City as needed to reflect current circumstances.

Low – This action addresses a specific goal or priority of a single department or small group of residents.

Medium – This action may address the goals or commitments of one or more departments, or community interests.

High – The Action aligns with the direction of Council and community needs.

RESOURCES

This consideration outlines the relative amount of effort and time that may be required to implement a given Action. This considers staffing and workload capacity, and if additional or external support is needed.

Low – The team will be able to work this Action into their existing workload.

Moderate – The team will need to put considerable effort beyond regular duties to progress this Action and may need external support.

High – Notable planning, allocation of resources and external support are likely required to implement this Action.

TABLE 2 - HIGH PRIORITY ACTIONS

THEME	SUBTHEME	ACTION	RESPONSIBILITY	DELIVERY PARTNERS (IF NEEDED)	PRIORITY	RESOURCES
Waste	Community	Work with schools to broaden waste diversion services to schools.	Environmental Services	School Boards	High	Medium
Waste	Community	Work with multi-unit residential owners and operators to implement recycling and organics collection. *	Environmental Services	Communications, Producer Responsibility Organizations (PROs), Planning & Development	High	Medium
Energy and Climate Resiliency	Clean Energy	Evaluate solar feasibility for all new City facilities or major retrofits on corporate buildings	Environmental Services, Facilities	-	High	Medium
Energy and Climate Resiliency	Climate Adaptation	Complete an update of the City's 2014 Weather and Climate Readiness Plan.	Environmental Services	Public Services	High	High
Land	Biodiversity Management	Develop a Natural Asset Inventory to better communicate the value of natural amenities in the community and the ecosystem services they provide.	Environmental Services, Parks	Finance, Planning & Development, Community Development	High	High
Land	Biodiversity Management	Develop a Naturalized Area Plan to outline objectives and strategies for the management of vegetation, wildlife and their habitat	Environmental Services, Parks	-	High	Medium
Land	Biodiversity Management	Develop a public awareness campaign about pesticide use, alternative weed control methods on private property and restoration options. *	Environmental Services, Communicaions, LEAB	Parks	High	Medium
Land	Land Use Management	Explore opportunities for expanding the Environmental Reserve to protect natural areas. (ex: conservation easements)	Planning, Environmental Services	Engineering, Parks	High	High

TABLE 3 - MEDIUM PRIORITY ACTIONS

THEME	SUBTHEME	ACTION	RESPONSIBILITY	DELIVERY PARTNERS (IF NEEDED)	PRIORITY	RESOURCES
Waste	Diversion Streams	Assess expanding Eco Station diversion streams (examples, mattress recycling station, fridges, drywall).	Environmental Services	Public Services, Communications	Medium	Medium
Waste	Diversion Streams	Work with regional partners and other levels of government to identify opportunities to reduce the communities' dependence on single-use plastics.	Environmental Services	-	Medium	Low
Waste	Diversion Streams	Develop education programs for schools about waste diversion.	Environmental Services	Communications, School Boards	Medium	Medium
Waste	Diversion Streams	Work with the Leduc and District Regional Waste Management Authority and the Province to investigate ways to enhance waste diversion in the community and the reclamation (e.g. landfill bans)	LDRWMC, Environmental Services	-	Medium	Medium
Waste	Community	Develop requirements for multi-stream diversion for Industrial, Commercial & Institutional (ICI) customers	Environmental Services, Planning & Development	-	Medium	Medium
Water	Stormwater	Coordinate with and support actions identified in the City's Stormwater Master Plan (2024).	Engineering	Engineering/Public Services	Medium	Medium
Water	Water Conservation	Develop a staggered Drought Management Plan to prioritize preserving natural assets (e.g. community trees, etc.).	Develop a staggered Drought Management Plan to prioritize preserving natural assets (e.g. community trees, etc.)."	Environmental Services, Engineering	Public Services, Utility Services	Medium
Water	Natural Water Systems & Watersheds	Preserve and improve healthy riparian areas and wetlands	Environmental Services, Parks	Parks	Medium	Medium
Ambient Impacts	Air Quality Stewardship	Continue to partner with or patriciate in regional air pollution management organizations	Environmental Services	Public Services	Medium	Low

(Continued on next page)

TABLE 3 - MEDIUM PRIORITY ACTIONS (CONTINUED)

THEME	SUBTHEME	ACTION	RESPONSIBILITY	DELIVERY PARTNERS (IF NEEDED)	PRIORITY	RESOURCES
Ambient Impacts	Light Management	Explore opportunities to increase light efficiency (examples, dark-sky friendly policy to make all non-vital lighting to be solar)	Environmental Services, LEAB	Communications	Medium	Low
Energy and Climate Resiliency	Transportation	Develop a corporate Electric and Low Emissions Vehicle Strategy (fleet, transit)	Environmental Services	Public Services, Transit, Fleet	Medium	Medium
Energy and Climate Resiliency	Energy Efficiency	Identify opportunities to continue the Clean Energy Improvement Program (CEIP) to include both more residential and commercial properties.	Environmental Services	Finance, Alberta Municipalities	Medium	Medium
Energy and Climate Resiliency	Clean Energy	Share the progress of the GHG Reduction Action Plan (2018) with the community.	Environmental Services	Communications	Medium	Low
Land	Land Use Management	Research financial incentives for developers to encourage more residential infill development.	Planning, Environmental Services	-	Medium	Medium

TABLE 4 - LOW PRIORITY ACTIONS

THEME	SUBTHEME	ACTION	RESPONSIBILITY	DELIVERY PARTNERS (IF NEEDED)	PRIORITY	RESOURCES
Waste	Diversion Streams	Diversify recycling stream diversion opportunities (examples, curbside glass and soft plastics).	Environmental Services	Producer Responsibility Organizations (PROs), Communications	Low	Low
Waste	Diversion Streams	Identify opportunities to expand Eco Station service offerings (including a re-use station, Library of Things).	Environmental Services	Public Services, Communicaitons	Low	Low
Waste	Infrastructure	Explore cost-sharing initiatives to accept waste at the Eco Station from additional municipal partners.	Environmental Services	Public Services	Low	Low
Water	Water Conservation	Investigate grass alternative incentives to support water conservation and pollinators on city sites (e.g. clover or xeriscaping).	Environmental Services	Public Services, Communications, Planning & Development	Low	Low
Water	Water Conservation	Identify and explore opportunities to reuse grey water for irrigation and continue to have discussions with Alberta Environment and Protected Areas (EPA) (e.g. dedicated non-potable water trucks for City irrigation).	Environmental Services	Public Services, Utility Services, Parks	Low	Low
Water	Water Conservation	Explore more water conservation programs for the residents for example City's leak detection system	Utilities	Environmental Services	Low	Low
Ambient Impacts	Air Quality Stewardship	Investigate reporting on local air quality conditions (AQHI)	Environmental Services	-	Low	Low
Ambient Impacts	Noise Management	Explore requirements for noise pollution/ abatement for developments adjacent to environmentally sensitive areas.	Environmental Services	-	Low	Medium
Energy and Climate Resiliency	Transportation	Explore requirements for new building developments (including residential) to include Electric Vehicle charging stations.	Planning & Development, Environmental Services	Environmental Services, Planning & Development, Public Services	Low	Medium

TABLE 4 - LOW PRIORITY ACTIONS (CONTINUED)

THEME	SUBTHEME	ACTION	RESPONSIBILITY	DELIVERY PARTNERS (IF NEEDED)	PRIORITY	RESOURCES
Energy and Climate Resiliency	Transportation	Explore opportunities for a car-share program to reduce the need for personal vehicles.	Environmental Services	Communications, Economic Development	Low	High
Energy and Climate Resiliency	Energy Efficiency	Explore the feasibility of incorporating passive solar building design and green building guidelines into the design of municipal buildings.	Environmental Services, Facilities, Engineering	Planning & Development, Communications	Low	Low
Energy and Climate Resiliency	Energy Efficiency	Conduct a carbon audit in all facilities, and investigate the costs and benefits of converting equipment.	Environmental Services, Facilities	Finance	Low	Medium
Energy and Climate Resiliency	Climate Adaptation	Support actions identified in the City's GHG Reduction Action Plan (2018).	Environmental Services	Communications	Low	Medium
Land	Biodiversity Management	Research the effectiveness of natural weed management programs (examples, goats).	Environmental Services, Parks	-	Low	Low
Land	Biodiversity Management	Explore educational programming and communication opportunities to build resident understanding about human-wildlife interactions and biodiversity.	Environmental Services, Parks	Communications, LEAB, Animal Control	Low	Medium
Land	Biodiversity Management	Coordinate with and support actions identified in the City's Parks, Open Space and Trails Master Plan 2020 (POST)	Environmental Services, Parks	Community Development	Low	Low
Land	Land Stewardship	Create a plan to meaningfully integrate heritage planning and environmental topics (ex: interpretive signage)	Environmental Services. Culture and Heritage	Parks	Low	Medium
Energy and Climate Resiliency	Climate Adaptation	Create sustainability criteria for procurement processes	Procurement, Environmental Services	-	Low	Low

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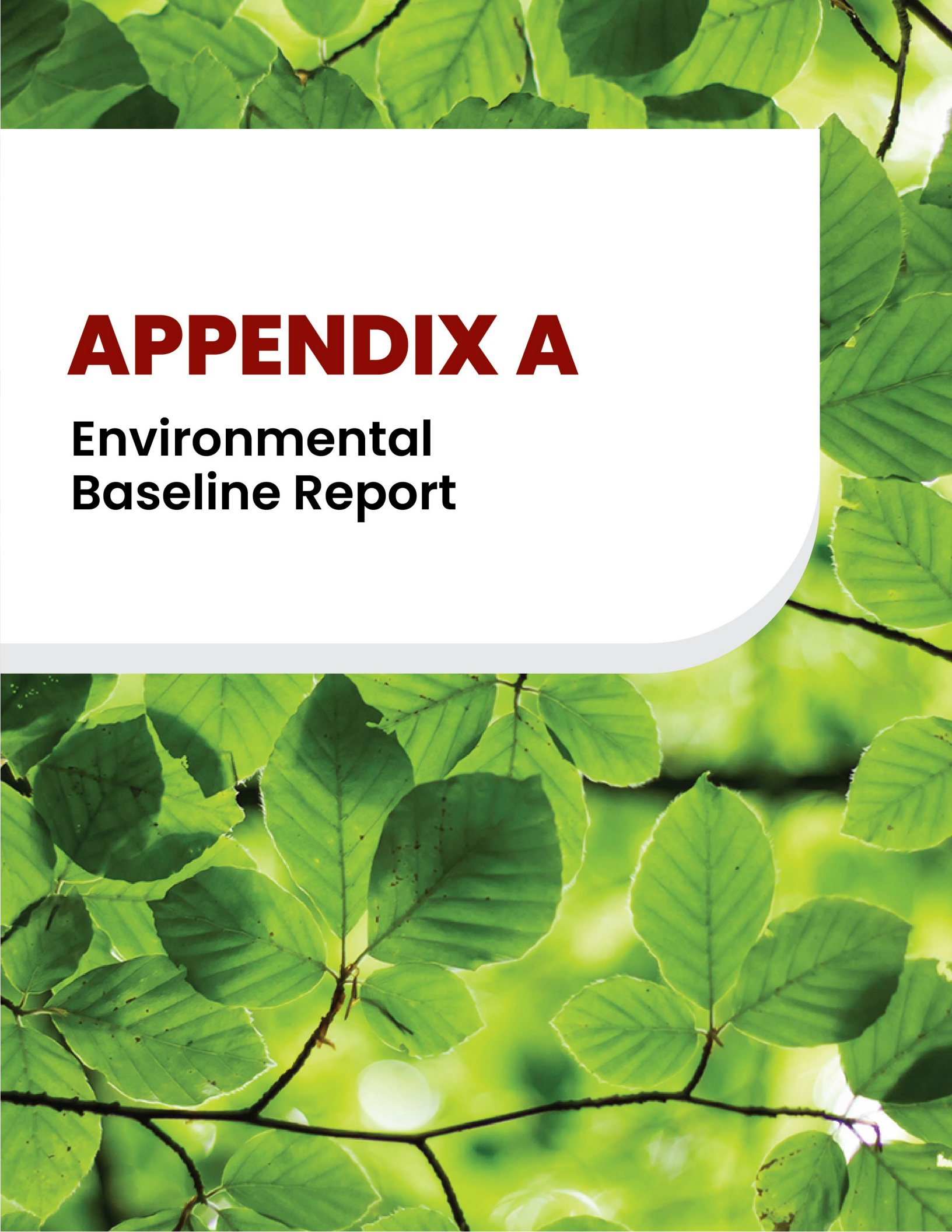
5. CONCLUSION

By building on the foundation and success of the original Environmental Plan and incorporating community feedback and best practices to develop relevant actions, the Updated Environmental Plan will support Leduc's environmental vision to **"be a community leader in environmental sustainability and stewardship.".** The updated Plan represents the community's vision for the future of Leduc and is intended to grow and evolve with the City and its residents overtime. The City will continue to publish yearly Environmental Progress Reports to highlight to the community the actions that have been taken and progress underway.



APPENDIX A

Environmental Baseline Report

BASELINE REPORT

ENVIRONMENTAL PLAN UPDATE

September 22, 2023

URBAN SYSTEMS

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File: 002931.0025.01

CONTENTS

FIGURES

LIST OF ABBREVIATIONS

AQHI	Air Quality Health Index	**LRC**	Leduc Recreation Centre
ACRWC	Alberta Capital Region Wastewater Commission	**LUF**	Land-Use Framework
ARMA	Alberta Recycling Management Authority	**LULUCF**	Land Use, Land-Use Change and Forestry
ASP	Area Structure Plan	**MEM**	Municipal Energy Manager
AVPA	Airport Vicinity Protection Area	**MF**	Multifamily
BAU	Business-as-usual	**MDP**	Municipal Development Plan
BoD	Biological Oxygen Demand	**ML**	Megalitres
CEIP	Clean Energy Improvement Program	**NBCS**	Nature-Based Climate Solutions
CEPA	Canadian Environmental Protection Act	**NEF**	Noise Exposure Forecast
dBA	Decibels A	**NO2**	Nitrogen Dioxide
DW	Drinking Water	**NSR**	North Saskatchewan River
EMP	Environmental Master Plan	**NSRP**	North Saskatchewan Regional Plan
EMRB	Edmonton Metropolitan Region Board	**NSWA**	North Saskatchewan Watershed Alliance
EPR	Extended Producer Responsibility	**O3**	Ozone
ESA	Environmentally Significant Areas	**PM**	Particulate Matter
GHG	Greenhouse Gas	**RFP**	Request for Proposal
ICI	Industrial Commercial Institutional	**SO2**	Sulphur Dioxide
ICLEI	International Council for Local Environmental Initiatives	**SUPPR**	Single-use Plastics Prohibition Regulations
IPCC	Intergovernmental Panel on Climate Change	**SW**	Surface Water
IPM	Integrated Pest Management	**TOR**	Terms-of-Reference
LEAB	Leduc Environmental Advisory Board	**WCRP**	Weather and Climate Readiness Plan
LED	Light Emitting Diodes	**WW**	Wastewater

EXECUTIVE SUMMARY

The City of Leduc's mission is "***People. Building. Community***". In order to better achieve this mission, the City of Leduc has developed the Environmental Plan – Phase 2, as a follow-up to the Environmental Plan – Phase 1 developed in 2012. The updated Plan will build on the targets and goals of the previous Plan while also setting new goals for the next ten (10) years, allowing Leduc to continue to thrive as a community and foster continued environmental stewardship. To support the development of the updated Environmental Plan, an Environmental Baseline Report has been prepared to determine Leduc's current state of the environment. The baseline report allows for the new Plan to be better tailored to Leduc's current environment while also celebrating the significant achievements of the previous Plan. The Environmental Baseline Report is focused on the following priority issues as identified by the City of Leduc:

- Summarizing the past work of the City
- The current state of the environment
- Achievements on the key focus areas of the initial plan
- Impacts of environmental issues on vulnerable populations.
- Opportunities for alignment with regional best practices
- Summaries of Provincial and Federal targets

Of the forty-five (45) action items in the original Plan, 80% of the action items have been completed, with another 15% in progress. Major accomplishments include implementing a curbside organic collection program, encouraging waste reduction, undertaking stormwater management initiatives, and developing an extensive multiuse trail network. Leduc also increased transit ridership through marketing and improved services, implemented urban forestry initiatives, and developed greenhouse gas reduction targets for the corporation and community, among other initiatives.

Since the previous Plan, Leduc's population has increased significantly from roughly twenty-six thousand (26,676) residents in 2012 to roughly thirty-five thousand (35,398) residents by 2022 and as such the environment has been changed as well, highlighting the importance of developing a new Plan and updated baseline conditions. Environmental aspects of Leduc which have been evaluated in this report include the regional watershed, land use changes, impacts of climate change, and natural assets such as wildlife, waterbodies, and soils. The environmental aspects mentioned above were considered based on their ecological significance, level of conservation concern, and their overall importance to the City of Leduc.

To help ensure that the City continues to align regional, Provincial, and Federal targets and best practices, existing legislation and initiatives have also been reviewed to identify other leaders in their respective areas.

This Baseline Report and subsequent updated Environmental Plan will support Leduc's vision to protect the unique context of the community. Furthermore, the updated Plan will help to enhance the quality of life of all who live in the City through effective, innovative, and responsible leadership that prioritizes the needs of community members as well as the natural environment.

Treaty 6 Territorial Acknowledgement

The City of Leduc acknowledges that the land we now know as Canada is the traditional territory of many First Nations, Inuit and Métis. Leduc is located on Treaty 6 land, the traditional territory to the Cree, Dene, Blackfoot, Saulteaux, and Nakota Sioux. We recognize and pay homage to these and all Indigenous peoples - past, present and future - that continue to support, educate and contribute to the strength of our region and country. As a Council, we are committed to listening and building our understanding of the sovereignty, lands, histories, languages, knowledge systems, and cultures of First Nations, Métis and Inuit nations.

1.0 INTRODUCTION

This Environmental Plan Update builds off The City of Leduc's (Leduc, the City) original Environmental Plan, which was developed in 2012 as a living document to guide Leduc's sustainability goals over a ten-year (10) period. The mission of the Plan was "to protect the unique environment of our area and enhance the quality of life in our community through effective, innovative, responsible leadership and consultation." The Plan was based on extensive community engagement and emphasized the importance of capacity building through educational outreach programs, leadership opportunities, and local environmental initiatives.

The original Plan focused on the following six (6) key areas: (1 Waste, (2 Water, (3 Energy and Climate Change, (4 Air, (5 Light and Noise, and (6 Land. Within each of the key areas, the Plan identified targets, action items, and timelines to help Leduc achieve their environmental goals. Leduc's progress on these action items was tracked and celebrated annually in Environmental Progress Reports.

Remarkably, Leduc completed 80% of the forty-five (45) action items in the original Environmental Plan, and another 15% of the actions are currently in progress. Major accomplishments include implementing a curbside organic collection program, encouraging waste reduction, undertaking stormwater management initiatives, and developing an extensive multiuse trail network. Leduc also increased transit ridership through marketing and improved services, implemented urban forestry initiatives, and developed greenhouse gas reduction targets for the corporation and community, among other initiatives.

Since the original Plan was developed, Leduc has experienced significant growth. In 2012, Leduc had a population of 26,676 residents. By 2022, Leduc's population had grown to 35,398 residents, which represents an increase of 32% in ten (10) years (Figure 1). This rapid growth presents environmental challenges for Leduc, which will be considered and addressed as part of the updated Environmental Plan. As the original Environmental Plan was intended to be a 10-year living document, Leduc has retained Urban Systems to complete this Environmental Plan Update.

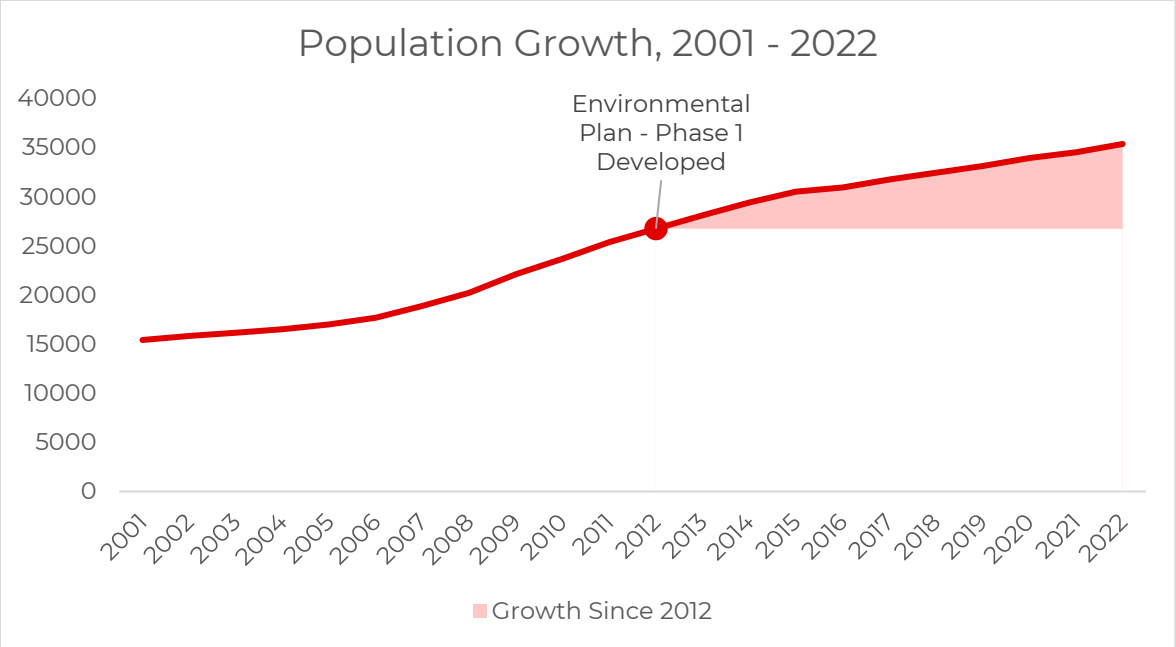


Figure 1: Population Growth, 2001 – 2022

2.0 BACKGROUND DOCUMENT REVIEW

A comprehensive review of background documentation was completed at the outset of this baseline report, to ensure a thorough understanding of the progress, initiatives, challenges, and opportunities specific to the City of Leduc over the prior decade. Below is a summary of each of the relevant City of Leduc reports with an environmental sustainability focus.

City of Leduc – Environmental Plan 2012

Leduc's Environmental Plan – Phase 1, functions as a living document outlining preliminary guiding principles, frameworks, strategies, and action items needed to fulfil its environmental sustainability mission along a 10-year (10) timeline. Leduc highlights six (6) key areas with supporting policy frameworks and programs to help reach key sustainability objectives and targets needed to achieve the City's 10-year vision for Leduc.

City of Leduc – Weather and Climate Readiness Plan (WCRP) 2014

The WCRP stresses the importance of employing an iterative risk management process to identify priority weather & climate risks for Leduc's corporate services and considers changing weather and climate risks to the 2050s. Twenty-one (21) weather-related risks to corporate services were identified, eight (8) of which were deemed "moderate" or "high-risk" events, thereby warranting immediate action, and acting as the focus of the WCRP. The WCRP acts as the preliminary document informing the development of a functional Climate Change Readiness Plan for Leduc.

City of Leduc – Integrated Pest Management Report (IPM) 2018

The 2017 IPM Report identifies five (5) key priority IPM areas to strengthen, mainstream, and refine within Leduc's existing IPM management and monitoring practices. The intent of this document aims to address Leduc's specific policies and procedures needed to fit the local Leduc context and primary IPM areas of concern, while remaining on par with industry best practices utilized across regional municipal equivalents.

City of Leduc – Environmentally Significant Areas (ESA) Study 2018

The primary objective of this study was to inventory natural areas in Leduc to identify a portfolio of ESAs by using an objective, standardized, and scientifically replicable framework. In total, eighty-six (86) natural areas were identified, with the top ten (10) highest-scoring natural areas formally designated as ESAs. It is recommended that Leduc pursue an assessment of existing legislation, policies, and guidelines present throughout the planning and development process to better leverage natural area acquisition tools needed to increase the potential of integrating environmental values in land-use planning and decision-making. Additionally, the study identified how Leduc could develop new environmental policies and tools to further support this endeavor. Items identified were to implement management policies such as monitoring plans, legislation, and/or guidelines outside of the Community Standards Bylaw, and increase the scope of public engagement and strategic partnerships to promote and improve conservation outcomes.

City of Leduc – Greenhouse Gas (GHG) Reduction Action Plan 2018

Leduc's GHG Reduction Action Plan provides a prioritized roadmap for municipal, community, and residents' GHG reduction actions over the next decade. As such, Leduc has chosen an overall target of reducing GHG emissions to 3% below business-as-usual (BAU) projections by 2030. Additionally, Leduc has set a corporate emissions reduction target of reducing emissions by 20% BAU by 2030 or an 8% reduction below 2015 levels, along with a community target of a 3% reduction from BAU by 2030 or for emissions at 6% above 2015 levels. The plan assigns departmental responsibilities, estimated cost profiles,

and timelines to ensure accountability and help Leduc meet these GHG reduction targets. Along with developing a GHG inventory to quantify which sectors were generating emissions, Leduc identified six (6) of its own action/sector areas that could reduce GHG emissions through action items within Leduc's control. Under each respective action/sector area, action items were organized by their capacity to produce a three (3)-, five (5)-, and nine (9) percent GHG reduction, and therefore created the three (3) different scenarios known as low-, medium-, and high-reduction scenarios, respectively. Leduc has also considered the tax implications and relative benefits that each scenario would bear on Leduc's social, economic, and environmental possible futures, and as such, has plans to implement specific monitoring programs for each key action area to assess levels of progress, with the intention of reporting this progress on an annual basis.

City of Leduc – Parks and Open Spaces and Trails (POST) Master Plan 2020

This is an update to the previous 2012 Parks, Open Space and Trails (POST) Master Plan and reflects updated community engagement, future Area Structure Plans (ASP), development of the Crystal Creek site and current Leduc strategies, and policies. The objective of this updated Master Plan is to ensure that parks in Leduc are well-managed fiscally, and ecologically sustainable, safe, accessible, natural, and to enrich the overall quality of life for everyone in the community.

The update has the following important changes from the 2012 version:

- References to recent policies such as the revised Municipal Development Plan, Transportation Master Plan, Environmental Policy and Plans,
- Changes to Open Space categories and sub-categories,
- Snapshot of current recreational trends,
- Update of volunteer opportunities,
- Summary of the Municipal Reserves and Environmental Reserves inventory.

This document is intended to direct POST planning over the next decade and based within seven (7) strategies:

- Access and connectivity,
- Nature and Environment,
- Facilities,
- Amenities,
- Safety,
- Management and Maintenance, and
- Programming.

The POST Master Plan 2020 identifies five (5) management areas for Leduc and includes an updated version of the Minimum Landscape Design and Construction Standards.

City of Leduc – Municipal Development Plan (Bylaw 1057) 2020

The Municipal Development Plan (MDP) is a high-level, long-range planning document used by City Administration to guide land use, identify, and direct community service priorities and infrastructure investment.

This document was last reviewed in 2012 and reflects many of the changes brought about by Leduc's exponential growth since that time. This MDP aims to influence how residents interact with Leduc's built and natural environments and includes the transportation network, amenities, and residences.

The MDP contains general policies for various sectors, which are grouped under nine (9) general categories, with various subsectors. These are:

- Complete communities: policies ranging from land development, growth, commercial development, and urban design to natural areas and developmental constraints,
- Environmental sustainability: climate adaptation, greenhouse gas reduction, solid waste, and hazardous materials management,
- Economy and local jobs: local and regional economic development, tourism,
- Infrastructure and utilities: general and communication infrastructure, water, stormwater and wastewater,
- Transport and Mobility: transportation, transit, and accessibility,
- Recreation and Parks,
- Arts, Culture, and Heritage,
- Community Services, and
- Agriculture

Furthermore, the MDP also identifies four (4) policy areas which concern all development conducted in Leduc and is categorized geographically by: urban centre, central redevelopment areas, residential areas, and employment areas. Finally, the MDP identifies additional policies that cover regional and intermunicipal relationships, public engagement, and implementation.

City of Leduc – Strategic Plan 2023-2026

This planning document highlights the overarching strategic direction desired for the City of Leduc and considers the City should develop its other plans, policies, and programs. Additionally, the Plan highlights the value Leduc's Council maintains in balancing growth and development with the intent to replenish what we've borrowed from our natural environment. Council is committed to protecting and enhancing both the natural and built environments by leveraging best practices and exploring new and innovative ways to improve our capacity to steward the environment and reduce our footprint throughout the Strategic Plan. This approach will help Leduc continuously safeguard the integrity of its environmental, social, and economic assets, helping to balance growth with environmental conservation for years to come.

The Strategic Plan, along with several master planning documents, influences the direction of its annual corporate and business plans once they're developed. Progress on the implementation of the Council's Strategic Plan is monitored on a regular basis, with updates and findings annually reported to the public.

Additionally, the Plan identifies nine (9) guiding values focus on, which include, citizens, excellence and prosperity, financial balance, transparency and accountability, a committed city team, environmental sustainability, social justice, working in partnership for success, and a regional focus.

It also lists goals for Leduc and identifies various strategies to achieve those four (4) goals which are:

- Making Leduc a city where people want to live,
- Ensuring that Leduc has the capacity to meet the current and future needs of its residents,
- Economic prosperity,
- Making Leduc a collaborative community-builder and regional partner.

3.0 CURRENT STATE OF THE ENVIRONMENT

The current state of the environment has been evaluated based on available desktop information and previous environmental reporting completed by Leduc, as outlined in the section above. This overview supports determining Leduc's environmental footprint and helps to identify areas that can be improved upon in the updated environmental plan moving forward.

3.1 REGIONAL ENVIRONMENTAL SETTING

Leduc is located within the Central Parkland Subregion (Parkland Region), which is both the most densely-populated subregion in Alberta, as well as the most productive agricultural region [1]. Due to extensive agricultural activities and primary land uses dedicated to serving the population, native vegetation is rare, with approximately 5% of native vegetation remaining in the subregion [1]. This subregion shares climate conditions of both the cold, snowy forests to the north and the warm, dry prairies to the south [1]. The presence of wetlands within the subregion is minimal, accounting for approximately 10% of land cover, with numerous small streams and ponds scattered throughout the area [1]. The region has a long growing season, with warm summers, fertile soils, and the most rainfall in the region contributing to the agricultural fertility of the area. Conventional oil and gas exploration is also widespread throughout the region, which has played a large role in the establishment of Leduc [2].

As shown in Figure 2, Leduc is within the North Saskatchewan Watershed and the Strawberry Sub-watershed, part of the Headwaters Alliance (HA) stewardship group [3].

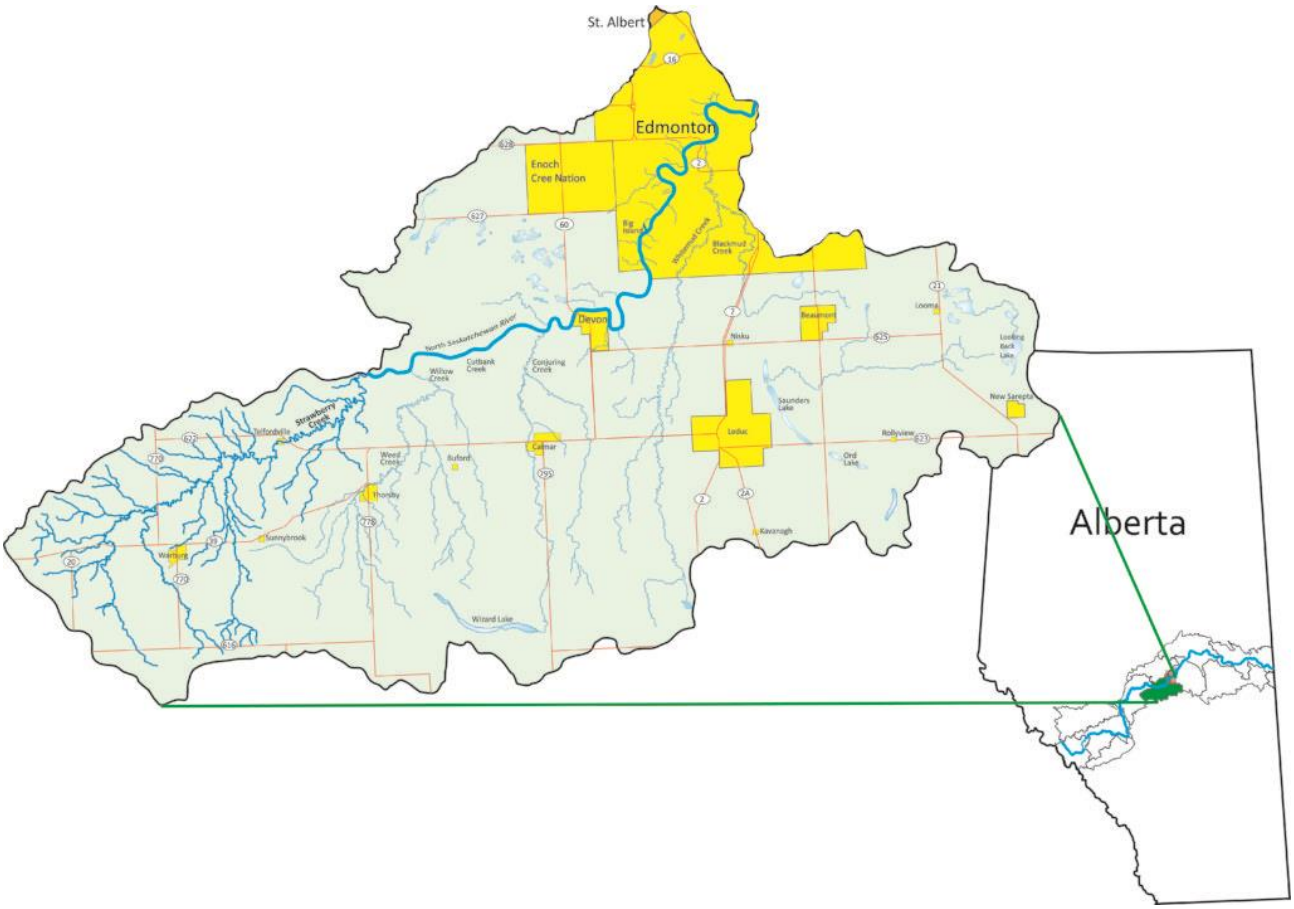


Figure 2: Strawberry Subwatershed within the North Saskatchewan Watershed [4]

3.2 SUBREGIONAL WATERSHED REVIEW

According to the State of The Watershed Report, Edmonton and its surrounding areas have the largest impact on the North Saskatchewan Rivers water quality, primarily due to wastewater inputs and stormwater runoff [5]. Surface water from Leduc predominately drains west to Whitemud Creek and east to Blackmud Creek [6]. Typical inputs of concern associated with stormwater, wastewater and agricultural runoff include increased Biological Oxygen Demand (BoD), fecal micro-organisms, total suspended solids, and nutrients such as total nitrogen and phosphorous. Increased concentrations of nutrients can impact water quality in multiple ways, such as causing increased frequency and severity of algae blooms. These impacts can result in insufficient amounts of dissolved oxygen available for fish and other aquatic species in addition to having a negative impact on recreation.

High sediment loads and suspended solids can also degrade the aquatic environment by accumulating on the bottom of the receiving waterbody and preventing the establishment of aquatic vegetation. High sediment loads also impair and suffocate fish and their spawning grounds. While numerous riparian inventories and studies have been conducted on the Strawberry Sub-watershed, information is lacking regarding the overall water quality of the region and further studies are needed [7]. As a densely populated and agriculturally productive area, it is important for all municipalities and communities within the watershed to play an active role in maintaining a healthy riparian environment, through both responsible stormwater/wastewater management and water conservation initiatives.

Based on the 2017 Blackmud/Whitemud Creek Surface Water Management Study, flooding risk has been determined to be relatively minor when considering 1:100-year events and accounting for future growth and development. However, the same report has also identified that significant erosion and runoff are projected as development increases within the water basins [8]. Increased erosion and runoff further contribute to increased sediment loads, and nutrient inputs, subsequently degrading water quality.

Invasive species were also identified as major problems in all areas assessed during the 2005 riparian health assessment within the sub watershed [5]. The presence of noxious weeds such as creeping thistle (*Cirsium arvense*), common tansy (*Tanacetum vulgare spp.*), and scentless chamomile (*Tripleurospermum inodorum*) are problematic in riparian zones. Noxious weeds and invasive species can have negative ecological impacts by competing with native species, causing an overall decline in biodiversity, in addition to economic and social implications such as increased parks maintenance costs and a decline in park aesthetics. Overgrown weedy vegetation can also create safety hazards if line of sight is disrupted, and may present an increased fire risk if not appropriately managed. Likely aggravated by long-term agricultural activities and anthropogenic disturbances, invasive species are a concern throughout the region, with remaining areas of native vegetation typically dominated by invasive species [1].

3.3 TEMPERATURE AND PRECIPITATION REVIEW

As per Leduc's Greenhouse Gas Reduction Action Plan, the City can expect to see an increase in annual mean temperature. These projections are backed up by regional reports such as a detailed climate projections study undertaken by Edmonton [9]. This report is referenced as Edmonton is within a suitable proximity to Leduc, to reasonably adopt certain climate projections for the purposes of this baseline report.

In line with regional projections, Leduc can expect average temperatures to increase in the future across all seasons, with winter season being impacted the most. Leduc's mean annual temperature has increased by 2.7°C over the past thirty (30) years , and Leduc can expect a further increase of 2°C by the

2050s [10]. This also implies that Leduc can expect maximum temperatures that are higher than previously recorded.

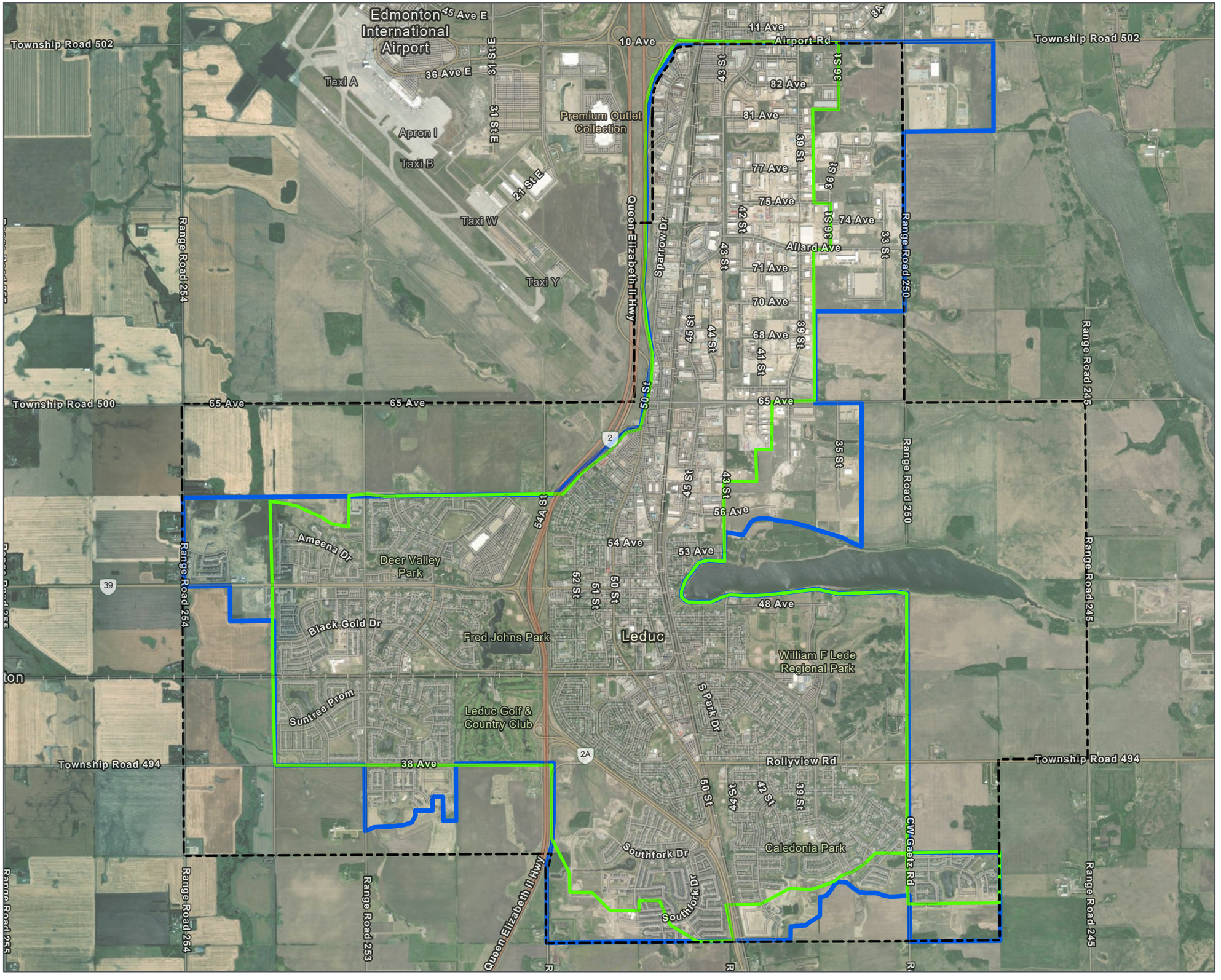
Due to increasing temperatures, there will be more energy in the atmosphere, which is likely to support more frequent and intense extreme weather events including lightning, tornados, hail, and high winds. Increasing temperature in the region is also expected to influence drought conditions since annual accumulated moisture is expected to decrease during the summer months, making drought more likely.

Precipitation patterns are also anticipated to change as annual precipitation is expected to increase by the 2050s, with spring season experiencing the largest increase. While there is an overall increase in precipitation, summer precipitation is expected to decrease. Leduc can expect extreme rainfall events of increasing magnitude and frequency, which are likely to lead to an increase in urban flooding events. Edmonton projections estimate that the likelihood of urban flooding will almost double by the 2050s. Overall, Leduc should be prepared for wetter winters, drier summers, and more extreme rainfall events.

The impacts of climate change and extremes of weather and climate events have the potential to affect every aspect of life in Leduc, including municipal infrastructure and services, private property, the local economy, the natural environment and the health, safety, and wellbeing of Leduc citizens.

3.4 LAND USE (2012-2022)

As Leduc continues to grow and accommodate a variety of land uses, primarily residential, ICI, and agricultural, how land is used will become increasingly important. Over the past decade, the developed area within Leduc's municipal boundary has increased by approximately 28% from 2012-2022 (Figure 3). Based on the current municipal boundary, as of 2022, approximately 1,423 ha, or 33%, remains undeveloped. From 2012-2022, land use has transitioned from agricultural to predominately residential in the south and ICI in the northeast, where the greatest expansion has occurred. The remaining undeveloped areas are nearly all agricultural lands, excluding the natural areas to the north, east, and south of Telford Lake.



CITY OF Leduc

City of Leduc
Environmental Plan Baseline Report
Land Cover Changes (2012 – 2022)

Legend

- Municipal Boundary
- 2012
- 2022

0 500 1,000 1,500
Meters

N

Coordinate System:
NAD 1983 3TM 114

Scale: 1:33,000
(When plotted at 11"x17")

Data Sources:

- Data provided by Alberta Government
- ESRI Imagery (June 2022)

Project #:	2931.0025.01
Author:	SDF
Checked:	DH
Status:	**Review**
Revision:	A
Date:	2023 / 7 / 19

URBAN SYSTEMS

FIGURE 3

The Edmonton Metropolitan Region Growth Plan put out by the Edmonton Metropolitan Region Board (EMRB) is a thirty (30) year growth plan with a fifty (50) year vision to create a contiguous and diverse thrivingly competitive metropolitan region [11]. The Plan includes a vision, guiding principles, and a framework for responsible growth & six (6) overarching strategies, a Metropolitan Regional Structure breakdown, and six (6) policy areas with objectives and policies. The regional structure of EMRB is characterized under three (3) distinct policy tier areas as follows: rural area, metropolitan area, and the metropolitan core.

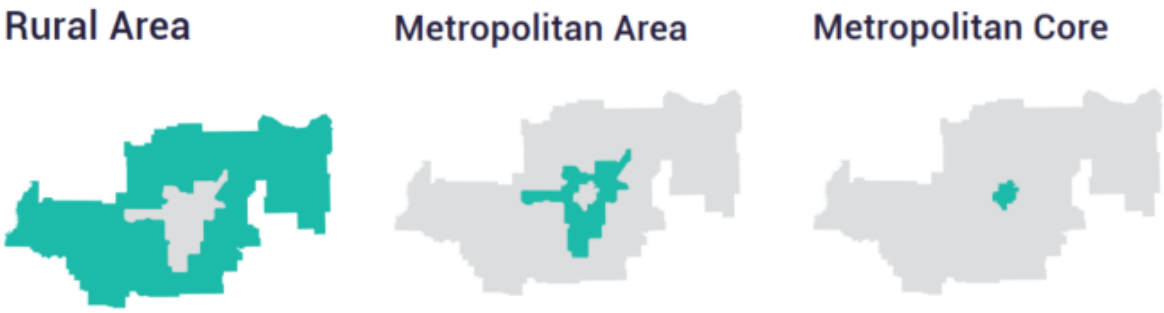


Figure 4: Distinct Policy Tier Areas making up the Edmonton Metropolitan Region for the EMRB

Each policy tier area represented above in Figure 4 contains its own unique set of community characteristics and as such, will require a context-specific interpretation of each of the six (6) policy areas listed below:

1. Economic competitiveness & employment
2. Natural living systems
3. Communities & housing
4. Integration of land-use & infrastructure
5. Transportation systems
6. Agriculture

A toolkit was created by the EMRB to help member municipalities navigate and understand the Regional Evaluation Framework, along with additional aids to support municipalities in their interpretation of the policy directives to create community-specific policies that reflect the growth projections of each respective policy tier, whilst contributing towards the contiguous growth outcomes for the Edmonton Metropolitan Region at large [12].

Of critical importance to enabling growth for the City of Leduc, are the new updates to the Airport Vicinity Protection Area (AVPA). As of May 2022, three (3) key changes to the AVPA established new Noise Exposure Forecast (NEF) contours, which have lifted restrictions on commercial and industrial development, and have relaxed residential development restrictions across many City areas. Now that 80% of the City is not covered under restrictive NEF contours, Leduc's growth and development across ICI, and residential asset classes, will likely necessitate updates or amendments to the Municipal Development Plan (MDP), the Land-Use Bylaw, and various Area Structure Plans (ASP's). Through tactful consideration, iterative community engagements, and stakeholder consultation, Leduc will be well positioned to update its MDP, Bylaw and ASPs to balance Leduc's desired growth with environmental concerns, thereby tangibly producing material co-benefits across various environmental and economic areas of concern [13].

3.5 NATURAL ASSETS

Natural assets can be defined as "*the stocks of natural resources and/or ecosystems that contribute to the provision of one [1] or more services required for health, well-being, and long-term sustainability of a community and its residents*" [14]. While the purpose of this report is not to evaluate and apply a monetary value to Leduc's natural assets, it is important to highlight the ecological value of Leduc's environment, and to subsequently identify areas of conservation concern, as well as those with environmental, social, and economic community value. Based on available information and professional knowledge of the area and its Environmentally Significant Areas (ESAs), the following have been identified as key areas of environmental, social, and economic value.

3.5.1 ENVIRONMENTALLY SIGNIFICANT AREAS

In the 2018 Environmentally Significant Areas (ESA) Study conducted by Fiera Biological Consulting, 8% of Leduc's land cover was identified as ESAs [15]. These areas were assessed for significance based on the ecological, social, and economic context specific to Leduc. The top ten (10) areas identified as ESA include wetlands, streams, and tree stands, with Telford Lake being the most highly-ranked area (Figure 5) [15].

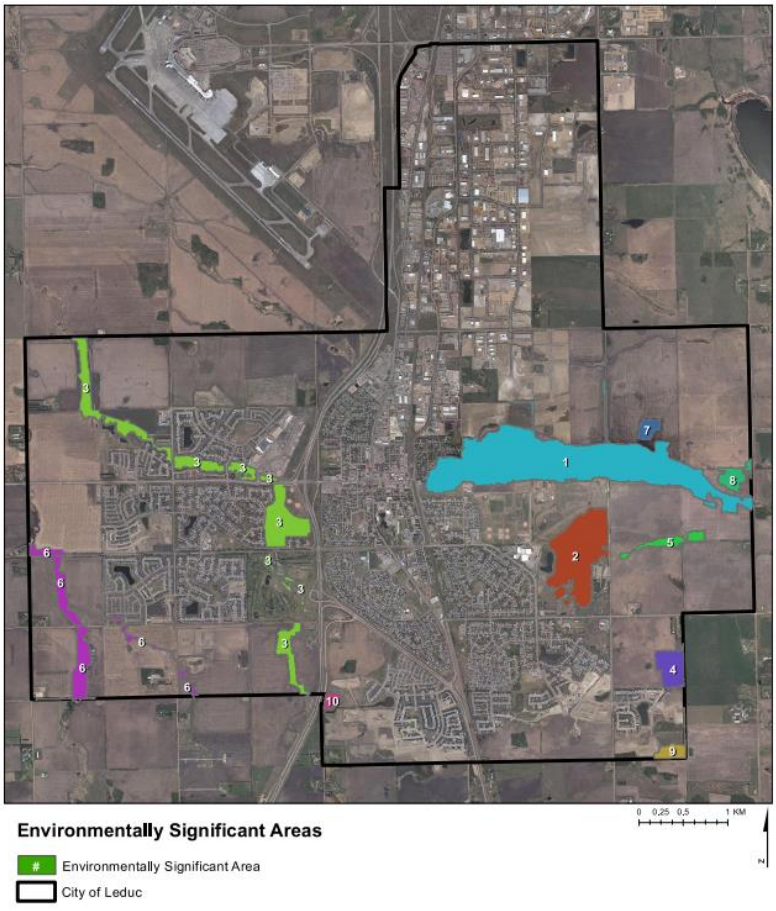


Figure 5: Top 10 ESA's Identified within Leduc [15]

3.5.2 WETLANDS, LAKES, AND WATERCOURSES

Leduc is home to a range of valued waterbodies that include temporary, seasonal, or permanent wetlands, lakes, streams, and creeks, all of which provide quality habitat, climate resilience, and social value to the community.

Wetlands are extremely dynamic and diverse ecosystems identified through many different characteristics including vegetation, hydric soils, topography, and the presence of temporary to permanent surface water. The Alberta Wetland Policy defines wetlands as "*land saturated long enough to promote the formation of water altered soils, growth of water tolerant vegetation, and various kinds of biological activity that are adapted to the wet environment*" [16].

Wetlands are an incredibly valuable ecological resource, helping to protect water quality by naturally filtering contaminants, aiding in flood mitigation through water storage and groundwater recharge, while also providing habitat for a wide range of species. It has been estimated that wetlands can contain upwards of four hundred (400) different plant species, further speaking to the vast biodiversity and ecological value they provide [16].

Despite their immense value, natural wetlands are declining in Alberta as land is converted for development, with an estimated loss of 60-70% in settled areas [17]. This dramatic decline emphasizes the importance for Leduc to conserve and restore the natural wetlands within Leduc's municipal boundary. Leduc has already taken a 'step in the right direction' through the previous restoration of two (2) wetlands to the north and south of Telford Lake in collaboration with Alberta Environment and Protected Areas. Following the completion of vegetation plantings in 2022, the wetlands will be monitored for four (4) years to help increase the chance of successful restoration.

An important step in restoring and preserving wetlands and watercourses is to address and establish a setback from the ecological boundary of the waterbody. Adaptive management techniques should be implemented where needed to adjust and adapt to challenges during establishment and restoration, helping to ensure that a healthy riparian zone can be established.

Telford Lake is a beautiful ecological community amenity, providing the same valuable ecological benefits as a wetland but to a greater extent due to its depth and size, and the ability to support a wide span of terrestrial and aquatic wildlife life stages. In addition to providing flood mitigation and helping to protect the overall water quality of the watershed, Telford Lake supports a large range of wildlife and biodiversity while also offering habitat connectivity downstream to Sanders Lake. As the crown jewel of the community, Telford Lake also exists as a great amenity for passive and active recreation, which include the boat launch and boardwalk.

Telford Lake currently experiences numerous stressors which, if not proactively managed, may negatively impact its ecological, social, and economic value. Stressors on the system include nutrient and sediment inputs from the surrounding lands and stormwater runoff, recreational pressure associated with the boat launch, and a reduction in catchment area as the surrounding lands are developed. If these impacts are not sufficiently managed, the Lake may be at further risk of increased erosion, declining water quality, sedimentation, algae blooms, reduced fish populations, and subsequently, an overall decline in ecosystem function, with social, environmental, and economic implications.

Given the value of Telford Lake, it is important to ensure this resource is responsibly managed. Options to support Telford Lake include:

- establishing and maintaining setbacks,
- restoration of riparian and highly-eroded areas around the lake,

- ensuring the catchment area of the lake in surrounding lands is sufficient to maintain water levels post-development, and
- Limiting stormwater inputs.

Numerous unnamed streams, particularly throughout agricultural lands within Leduc's boundary, also contribute to the overall ecological function of the community and of Telford Lake, with connectivity to major watercourses outside of the Leduc's municipal boundary.

For Leduc to preserve these valuable assets, early recognition at the high-level planning stage is key. By focusing on avoidance, minimization, and restoration and by building on provincial and federal policy, Leduc has the potential to improve upon existing regulations while also aligning with the communities' goals and visions, to support a thriving community for generations to come.

3.5.3 WILDLIFE

As Leduc is surrounded by agricultural lands, a major city centre to the north, and an airport to the northwest, it is important to consider how wildlife interacts and moves around and through Leduc, and what can be done to support and maintain urban wildlife.

The approach to land management and conservation will help to foster and integrate wildlife in an urban setting. Leduc provides habitat for a wide diversity of wildlife species and their various lifecycles from forested areas creating shade and shelter, to open water and riparian areas providing habitat for breeding birds and aquatic species.

Leduc provides a crucial wildlife corridor, creating habitat connectivity to downstream lands through Telford Lake, as shown in the Leduc Wildlife Corridor Study conducted in 2018 [18]. While the west, north, and south sides of Leduc are highly developed, fragmented habitat exists throughout Leduc in the form of parks and public spaces, providing steppingstones for wildlife to access the more preferred, high-quality habitat of Telford Lake.

Residents of Leduc are already embracing and interested in their natural environment, as evidenced through the Cornell Lab of Ornithology "hotspots" located within Leduc. The Cornell Lab of Ornithology utilizes citizen science to inventory bird species found within an area, where a high diversity of observations results in "hotspots" of activity. Two (2) hotspots exist within Leduc [19], one at the Leduc Reservoir and one at Telford Lake. Over 140 different species have been identified at the Telford Lake hotspot, 25 of which are federally, and/or provincially listed species of conservation concern. Such a high diversity of species observed speaks both to the biodiversity that Telford Lake provides, but also to the communities' interest in their natural environment. Fostering this relationship and ensuring Leduc's wildlife can continue to thrive for years to come provides an invaluable community amenity.

A diverse bird population also helps to support a healthy ecosystem and encourages biodiversity, as birds aid in plant distribution through the spreading of seeds. Furthermore, because birds are sensitive to environmental changes such as habitat loss, declining water quality, and climate change, they can be used as an indicator species to evaluate and monitor overall ecosystem health. Small fish species, such as brook stickleback and fathead minnow, have also been recorded within Telford Lake [20], providing a food source for resident wildlife, and contributing to the overall lifecycle of the aquatic and terrestrial environment.

By allowing for wildlife to thrive and integrate within an urban center, Leduc can enhance residents' relationship with nature and reap the social and health benefits that come along with having a strong connection to the natural world.

3.5.4 SOILS

Surrounded by vast, highly-productive agricultural land both within Leduc and beyond, the subregion's most common land-use has the potential to provide numerous ecological benefits while also supporting the regions economy.

All of earth's soils store carbon to varying degrees. Through the process of photosynthesis, vegetation removes carbon dioxide from the atmosphere and stores the carbon within its plant tissue. As the vegetation decomposes, the carbon is then stored in the soil as organic matter. This natural phenomenon results in large amounts of carbon being removed from the atmosphere through the process known as carbon sequestration. The extent to which agricultural lands can store carbon depends on how the agricultural resource is managed, with sustainable farming practices playing a large role in the soil's ability to mitigate climate change. Healthy agricultural lands, and in turn healthy soils, also contribute to overall ecosystem health through nutrient cycling and help to manage runoff by providing a permeable surface.

Overall, the agricultural lands within and surrounding Leduc offer a very valuable environmental and economic resource and are important to consider in land management decisions as the Leduc continues to expand.

4.0 BASELINE ASSESSMENT

4.1 PRIORITY ISSUES AND WHERE WE ARE NOW

Leduc's 2012 Environmental Plan committed to several actions listed under its six (6) key areas: Waste, Water, Energy and Climate Change, Air Quality, Light & Noise, and Land. We have highlighted the status of each area as completed, in progress, or ongoing, as well as the incomplete statuses of each action item/commitment in (**Table 1**). Additionally, and where appropriate, we have documented recommendations to increase the reach and impact of specific areas to leverage the 80% completion rate that Leduc has achieved.

We have noted that actions and commitments listed in the "Air Quality" action area were commitments whose successful completion status was contingent upon factors outside of Leduc's control, as air quality is primarily controlled through the province. Given this, we have made note of potential avenues for Leduc to investigate if they possess the appetite and financial resources to support the Province's measures to control air quality through municipal initiatives.

Progressive action across the Water action area includes the restoration of 0.4 ha of wetland north of Telford Lake and 0.37 ha of wetland south of Telford Lake, as well as consistently hosting environmental bulk purchase programs for water-wise home tools such as rain barrels, and the ongoing development of a Stormwater Master Plan.

The "Energy and Climate Change" action area made significant strides as renewable energy projects were completed and contributed towards a revolving energy financing fund that helped other environmental initiatives. Solar energy was found to be the most viable option for Leduc and has been installed on a number of City-owned buildings. A corporate energy efficiency and greenhouse gas plan addressing both corporate and community emissions was developed in 2019 with progress being made towards achieving the action items contained within this Environmental Plan. As part of the Municipal Energy Manager (MEM) Program, the City of Leduc hired a Municipal Energy Project Manager in 2021. Responsibilities include benchmarking municipal facilities, identifying energy savings opportunities, applying for energy and environment-related grants, and implementing greenhouse gas emission reduction projects. Leduc was the fourth municipality in Alberta to develop a Clean Energy Improvement Program (CEIP) showcasing its commitment to innovative municipal climate governance & leadership. Further action on initiatives for the 2019 plan is expected to continue over the next few years as more resources become available.

"Light and Noise" action areas were not as robust, since they included actions that were already part of many of Leduc's departmental processes. Leduc has, however, completed the development of local noise guidelines and has informal guidelines for noise control, as retrofitting buildings, and new developments, and Leduc's Transportation Master Plan also accounts for sound monitoring. Streetlights throughout Leduc have been converted to LED and further recommendations by LEAB are forthcoming for dark sky initiatives. A concerted marketing effort being undertaken to encourage the use of public transit is showing progress with "on-demand" transit resulting in a significant increase in ridership.

Regarding "Waste" action items, Leduc has an award-winning, Eco-Station waste drop-off accepting a wide range of waste from residents across the City of Leduc, Leduc County, and Beaumont, encouraging the landfill diversion rates. Leduc also implemented a curbside organics collection program and has implemented waste audits and green bin inspections regularly to monitor diversion progress and report results to the public. Waste reduction plans for corporations, businesses, and residents are in progress with a multi-unit waste diversion program, and the ICI sector are expected to follow.

"Land" has also seen progress as a key priority in certain action areas. A natural habitat inventory was completed in 2017. An initiative to provide residents with information on existing pesticide practices and educate them on alternatives to pesticides is planned for 2024, and the Integrated Pest Management plan was updated in 2018. The Urban Forestry Plan is also in the process of being implemented, and a Tree Protection Policy and Bylaw are expected to be forthcoming in the future. Leduc has also expanded its multiway system with 84 km of multi-use trails as of 2022. In the spirit of maintaining an exemplary leadership role stewarding the environment in the face of new challenges over the next ten (10) years, Leduc remains committed to fostering productive, collaborative relationships with key Capital Region organizations to enhance alignment with broader regional initiatives. These include but are not limited to increasing collaboration with initiatives such as the EMRB Climate Risk and Vulnerability Assessment & Solid Waste Collaborative, Alberta Capital Airshed, Edmonton Energy Transition Learning Network, and the Edmonton Region Waste Advisory Committee.

Table 1: Priority Issue and Progress

PRIORITY ISSUES AND PROGRESS	
Waste	**What has been achieved?** • Implementation of a curbside organics collection program. • Development of a corporate waste reduction plan that encourages Leduc employees to reduce waste. • Development of waste reduction plan for multi-family units in progress • Regular waste audits to track progress and report to the public. • Use of internal communication methods to reduce waste through accessing sorting stations in civic buildings for city staff. • School Waste Diversion pilot program. • Award winning Eco-Station offers Leduc, Leduc County, Beaumont and Calmar, the opportunity to drop off waste encouraging the diversion of a range of materials from the landfill. • New drop-off location at the City of Leduc & District Waste Management Facility now accommodating vehicle access. • Partnered with GFL & Telus to implement Artificial Intelligence (AI) technology to identify contamination in green bins during collection and notify residents from where contamination was detected. • Development of a waste reduction plan, and associated Waste bylaw update for Multi-Family units.
Water	**What has been achieved?** • Support of ongoing water conservation monitoring and developed water conservation & efficiency reports. • Continued to offer water conservation resources to homeowners. • Ensured infrastructure maintenance is undertaken regularly on catch basins. • Restored 0.4 ha of wetland north of Telford Lake and 0.37 ha of wetland south of Telford Lake through receiving funding support from the Alberta Environment and Parks Wetland Replacement program. • Developing a new Stormwater Master Plan - **Ongoing** • Consistently host environmental bulk purchase programs including, the Green Gold events held annually for composter and rain barrel sales in partnership with Rona - **Ongoing**

PRIORITY ISSUES AND PROGRESS	
	What barriers were identified? • Joining the North Saskatchewan Watershed Alliance (NSWA) was deemed cost prohibitive, reconsider joining and evaluate costs as of 2023.
Energy and Climate Change	**What has been achieved?** • Successfully completed a feasibility study for renewable energy project at the Leduc Recreation centre (LRC) where a solar system project was completed. • Developed a corporate and community energy efficiency and greenhouse gas plan in 2019. • Reporting on energy efficiency and GHG emissions are consistently addressed in the annual Environmental Progress Reports. • Offset credits generated from the solar systems at LRC and Operations buildings. • City Council agreed that the development of a revolving energy financing fund can be achieved using offset credits towards environmental initiatives. • Encouraging the use of public transit has been consistently marketed. • Increased use of on-demand transit ridership, and the successful implementation of an E-scooter Pilot Project. • Evaluations of the Backyard Hens and Bees Pilot Program will be evaluated in 2023 to encourage a deeper understanding and appreciation of where food comes from. • LEAB hosts annual community tree planting and pollinator garden events with increases to the number of trees planted each year. • 2021 Leduc joined the 2 Billion Trees Program initiative. • Multiple programs undertaken and implemented with the Municipal Climate Change Action Centre (MCCAC), including, Municipal Energy Manger Program, Electric Vehicles for Municipalities program to obtain a fleet of EV's, and Recreation Energy Conservation Program. • Solar carport is fully operational solar t in 2022. • Level 2 & 3 electric vehicle chargers installed. • Solar Installation at the LRC and Operations Building, Eco Station, Protective Services building allows the City to sell the offsets through Rewatt for $37,000/year. • Developed a Clean Energy Improvement Program (CEIP) and was the fourth municipality in Alberta to do so.
	What barriers were identified? • No specific reporting standards employed. • Potential to increase transparency around financial impact and opportunity presented by offset credits for environmental initiatives.
Air Quality	**What has been achieved?** • Providing the public with air quality monitoring information is accessible online through AQHI website or app, and through Alberta Capital Airshed and Alberta Environment websites.
	What barriers were identified?

PRIORITY ISSUES AND PROGRESS	
	• Increasing the reach and exposure of these resources through targeted marketing campaigns for vulnerable populations disproportionately affected by climate change-induced weather events (people experiencing houselessness, low-income residents, racialized minorities, elderly population, and other marginalized communities, etc.) could enhance the health of these populations residing in Leduc [21]. • The development of a local air quality plan was not pursued because these responsibilities fall under provincial and federal jurisdiction. • The Alberta Capital Airshed has identified the City as a priority area for a permanent air monitoring station however identifying funding sources has been challenging.
Light and Noise	**What has been achieved?** • All streetlights in Leduc have been changed to LED lights and Leduc is working with LEAB to integrate further recommendations to reduce light trespass and provide public information and resources on reducing light pollution. • Leduc maintains noise (DB) standards in the Engineering Guidelines for new developments, along with sound monitoring requirements as part of the Transportation Master Plan.
	What barriers were identified? • Consider what new standards have evolved with the use of independent building sustainability rating systems.
Land	**What has been achieved?** • Planning Department commissioned the ESA Study completed in 2017, which contains a natural habitat inventory. • As of spring 2022, Leduc now has 84 km of multiway trails, thereby continually enhancing their multiway system.
	What barriers were identified? • Development of a brownfield strategy is pending partnership with industry partners; City-owned contaminated sites have been prioritized and are currently being assessed, reclaimed (e.g., Drawdown wells) and/or risk managed as required.

4.2 VULNERABLE POPULATIONS/COMMUNITIES

As the effects of climate change become more prevalent throughout our environment, it will also be important to consider the implications on vulnerable populations. Vulnerable populations, in the context of climate impacts, are defined as "populations that are at higher risk of being harmed by the impacts of climate change." The effects of climate change to vulnerable populations range from health impacts to higher food costs and infrastructure liabilities. It is important to ensure that climate adaptation initiatives be viewed through a holistic, equitable lens to ensure that the most susceptible members of our community be protected from the impacts of a changing climate. This begins with an understanding of people who are at increased risk from climate change.

Health Canada lists a variety of populations that may be at higher risk by being harmed by the impacts of climate change [22]. These include:

- seniors,
- youth and children,
- Indigenous Peoples,
- racialized populations,
- people with disabilities,
- women who are pregnant,
- frontline emergency responders,
- residents of northern and remote communities,
- individuals who are socially and economically disadvantaged, and
- people who are immunocompromised and those living with pre-existing illness.

It is possible that Leduc may be able to reduce potential demands on their health care services if due consideration and proactive measures are adopted for vulnerable populations, since these may aid in diminishing the physical and mental health impacts of climate change. This holistic, equitable approach, coupled with planning ahead regarding climate change's impacts on vulnerable populations may also have positive effects on other municipal aspects such as food security and service delivery[1] [23].

Leduc has already taken some important steps in incorporating equity into their Environmental Plan by conducting youth engagement and can build on this foundation by adopting other measures that consider the increased sensitivity of vulnerable populations to climate change.

5.0 TARGETS AND BEST PRACTICES

The purpose of this section is to understand the direction that each of the key focus action areas is headed towards and the relevant strategies, plans, policies, programs, and best practices that apply on a municipal, provincial, and national scale.

5.1 OPPORTUNITIES FOR REGIONAL ALIGNMENT OF BEST PRACTICES

Existing environmental policy, initiatives, and best practices of Calgary, St. Albert, Strathcona County, Spruce Grove, and Okotoks were reviewed to understand what leading innovation and best practices have emerged in neighboring communities since the initial Environmental Plan was developed. Each community below to highlights a minimum of one of the key areas that is a priority for the City and provides a brief description of the program, policy, or initiative.

The City of Calgary

The City of Calgary requires multi-family residential developments to provide a three (3) stream diversion system of their own in alignment with the City's residential diversion targets [24]. The multi-family developments are required to arrange for municipal collection services or contractors of their choosing. Since 2016, businesses and organizations have been required to manage recycled materials including specific materials related to commercial waste, such as scrap metal and unprocessed wood.

The City of St. Albert

[1] Climate change: 7 steps to save the world's most vulnerable | World Economic Forum (weforum.org)

The City of St. Albert's Municipal Development Plan, known as *Flourish* focuses on responsible land use and urban design practices [25]. Balancing conflicting land uses with economic development and environmental conservation requires a holistic growth strategy that reimagines how the City of St. Albert can plan the City to accommodate a rising population of one hundred thousand (100,000), and up to 13,000 new jobs over the coming decades. The approach taken by the City of St. Albert for its MDP organizes policies and bylaws according to broader policy areas that St. Albert recognizes as valuable to its environmental, economic, and socio-cultural health. Flourish considers how to identify priority land-related challenges, while still working within the requirements of, the EMRB, and the North Saskatchewan Regional Plan currently under development, to achieve its desired community outcomes. Contending with how to balance growth and environmental sustainability over the coming years., Flourish clearly identifies the City of St. Albert's main challenges and how, if left without intervention, they will evolve to threaten the viability of achieving its growth and livability visions.

Approved in 2008 and then updated in 2018, the City of St. Albert has an Idel-Free Bylaw [26] to help prevent the idling of vehicles parked for longer than three (3) minutes and subsequently help to reduce air pollution. In an effort to enhance available data and resources on urban air pollution, St. Albert has also installed an Air Quality Monitoring Station [27] to measure particulate matter (PM2.5), nitrogen dioxide (NO_2), and ground-level ozone (O_3), all of which are components of smog and are harmful to human health. The data is used by the Alberta Government and Environment Canada to monitor and report on air quality.

Strathcona County

In 2008, the Beaver Hills Dark Sky Preserve invited Strathcona County (the County) to join the Preserve [28]. As part of the County's dedication to the importance of dark skies, a Light Efficient Community Policy was approved by the County's Council in 2010, in accordance with the International Dark-Sky Association. The policy provides guidance on appropriate lighting in rural and urban settings and outlines the roles and responsibilities of different stakeholders, including internal departments to retrofit fixtures and adjust policy documents such as the Municipal Development Plan.

The City of Spruce Grove

The City Spruce Grove's Climate Change Action Plan, accepted by the Council on May 9th, 2022, helps to clarify how Spruce Grove can prepare the community for the anticipated effects of climate change. By highlighting how both the City and the community can reduce GHG emissions, the Plan has identified ninety-nine (99) practical actions that residents and City staff can take immediately and over the next twelve (12) years to stay within their evidence-based carbon budget, helping to keep warming below 1.5°C. The Plan organized action types capable of achieving the plan's outcomes by characterizing actions as either Governance, Ventures, or Outreach types. Action sub-types were then developed under each action to clarify a pathway for implementation. For example, the subtypes for a Governance action such as "developing climate resilience design standards for city buildings and infrastructure", is categorized as a Policy subtype (rather than an assessment, or plan subtype option). Specific departments have been identified to work on actions and action sub-types, with monitoring, evaluation and progress reviews scheduled to occur every four (4) years to ensure alignment with the City of Spruce Groves carbon budget.

The Town of Okotoks

The town of Okotoks is pushing the boundaries of water conservation out of necessity as their water license has for many years been seen as a limiting factor to the community's future growth, and they have successfully continued to expand. The Town has taken steps to support community members to

partake in water conservation behaviors such as low-flow fixture rebates, and initiatives. The Town has begun to shift its focus to the businesses and institutions of the community to reduce their water use [29]. The Town has put out a Water Smart Business Grant of up to $10,000 per applicant to support businesses and institutions to reduce their water consumption through indoor low-flow upgrades, irrigation upgrades, water reuse structures, and water-wise landscaping. Projects are awarded based largely on the description of the project and the estimated water savings.

5.2 PROVINCIAL TARGETS

Waste

For many years, the recycling community in Alberta has discussed moving towards a different model for addressing recycling, known as extended producer responsibility (EPR), which is currently in place in most provinces across Canada. EPR shifts the costs and physical burden of collection, sorting, and processing recycling materials to the producers of the product and away from municipalities. This EPR regulation is currently geared towards residential waste streams, while the ICI streams will be considered at a later phase. One of the main intentions of an EPR framework is to encourage producers of a product to take responsibility for the end-of-life disposal of the products they produce, instead of shifting that responsibility to consumers who have little choice in the matter. Through an EPR framework, new economies are developed for each stream of waste, to ensure there is an end use, as moving to a circular economy becomes more tangible.

In November 2022, the **Extended Producer Responsibility (EPR) regulation** came into effect in Alberta with two (2) EPR systems, the first being single-use products, packaging, and paper products, while the second is for hazardous and special products [38].

This regulation is still new, and the development of bylaws are underway through the designated oversight authority, the Alberta Recycling Management Authority (ARMA). Leduc will notice the largest shift as producers become responsible for the curbside collection of single-use products, packaging, and paper products starting April 1, 2025. Single stream sorting of these products will not be requested through the EPR program, to encourage continued momentum of recycling behaviors. The largest disruption that residents are likely to notice is a shifting schedule of collection, as currently the regulation only requires bi-weekly collection through established curbside collection programs.

In terms of hazardous and special products, the Leduc Eco Station will likely continue to be a collection point, and the items collected will increase for residential scale volumes of these products. Similarly, to the single stream products, the collection of these materials will be the responsibility of producers and the costs of the facility will be undertaken as well.

Water

The **Water for Life** strategy is the tool used by the Government of Alberta to safeguard water resources [39]. The three (3) overarching goals of the strategy, which have been at the core of all work by the Alberta Water Council, include:

1. Safe, secure drinking water supply
2. Healthy aquatic ecosystems
3. Reliable, quality water supplies for a sustainable economy

To implement this plan, Water for Life Action Plans have been developed to support the implementation of short-, mid-, and long-term steps. The most recent Action Plan "*Our Water, Our Future,*" developed in

2014, includes the following action items focused on Healthy Lakes, Hydraulic Fracturing and Water, Drinking Water and Wastewater, and Water Management [40]. Action items relevant to Leduc include:

- Enhance lake governance systems to clarify roles and responsibilities.
- Fill information gaps to improve lake monitoring, evaluation, and reporting.
- Enhance public awareness about lake management to further support Albertans in keeping lakes clean and healthy.
- Continuing to promote information about Alberta's drinking water and wastewater systems.
- Work with municipalities to identify opportunities for enhancing the sustainability of municipal water systems.
- Develop a common approach for establishing source water protection plans to be used in all watersheds.
- Advance an outcome-based approach to the management of drinking water systems.
- Conduct analysis on conjunctive water use to inform future policy development.
- Advance a provincial lake policy that supports an integrated approach to healthy lakes in support of economic, environmental, and social interests.

While Leduc has already succeeded in implementing several of the action items shown above, the continuous improvement and evolution of initiatives and goals is important to help ensure continued growth. In order help achieve the objectives of the Water for Life strategies, the Alberta Water Council was developed a tool to help advance the objectives on a provincial level [41], with the North Saskatchewan Watershed Alliance advancing the objectives on a regional level [42]. Both non-profit organizations are multi-stakeholder groups comprised of members from government, industry, and non-government organizations, with the common goal of helping achieve the Water for Life outcomes.

Leduc can align with provincial water targets and actions by continuing to promote public awareness on the importance of conserving water, as well as through the development of lake policies and overall management of Telford Lake as an environmental, social, and economic resource for Leduc.

The **Alberta Wetland Policy**, implemented in 2013, provides the strategic direction and tools required to minimize the loss and degradation of wetlands within the province, while also supporting growth and development [16]. The Wetland Policy has also been developed with the core principles of the Water for Life strategy in mind. With an overarching goal to "conserve, restore, protect, and manage" Alberta's wetlands, the policy focuses on the protection and conservation of high-value wetlands, wetland conservation and restoration, and management through minimization/avoidance when possible. The strategic direction of the Wetland Policy includes flexible wetland management, and the building of knowledge, tools, and capacity, in addition to encouraging the conservation of wetlands through active stewardship.

By protecting and restoring wetlands within Leduc's city boundary and aiming to avoid and/or minimize wetland loss through responsible land-use planning, Leduc can align with provincial objectives of conserving wetlands from a regional perspective.

Land

Alberta's Land-Use Framework (herein referred to as LUF), formally put into force as of 2008, was created to usher in a new land-use planning system capable of effectively managing the mounting and competing land-use demand pressures associated with increased development. The regional land-use plans are the province's institutional arrangements for addressing integrated resource management, cumulative effects, and adaptive management. The LUF established regional planning regions that reflect the boundaries of Alberta's major watersheds, of which there are seven (7) that embed smaller

interconnected socio-ecological systems and city-regions. The LUF seeks to achieve three (3) desired outcomes:

1. A healthy economy supported by our land and natural resources.
2. Healthy ecosystems and environment
3. People-friendly communities with ample recreational and cultural opportunities

The LUF ultimately intends to integrate land-use policies that ensure the sustainability of the land for current and future generations to use, however, the regional alignment of land-use policies remains a challenge across the province under the LUF. Part of this challenge revolves around the fact that the Regional Land-Use policy for the North Saskatchewan Land-use area is incomplete and still being developed. Given that most of the land-use priorities needed for Leduc to develop their own land-use plan are contingent upon the currently incomplete Regional Land-use Plan for the North Saskatchewan land-use area, Leduc can only surmise what key land-use policy areas to develop based on a limited number of documents released by the Regional Advisory Council.

The Regional Advisory Council are responsible for overseeing that the development of the **North Saskatchewan Regional Plan** (NSRP) remains in alignment with Alberta's strategic priorities, as these strategic priorities will ultimately have influence over how land is used in Alberta. The key strategic priorities for Alberta include the Water for Life strategy, the Provincial Energy Strategy, Plan for Parks, and the Climate Change Strategy, and therefore filter, to a degree, which priority areas Leduc should remain focused on in developing the City's land-use plans, policies, and bylaws.

The completion of the Terms-of-Reference (TOR) needed to develop the NSRP was finalized in May of 2014 [43], and is one such document from which Leduc can draw upon to further define how to develop regionally-appropriate land-use plans, policies, zoning ordinances and bylaws. The TOR lays out the process through which the regional plan will be developed and provides guidance from Cabinet on specific economic, environmental, and social factors that must be considered within the North Saskatchewan land-use region. The TOR for the NSRP outlines recommendations for their "Healthy Ecosystem and the Environment" focus area, to be supported by more targeted and specific land-use policies and bylaws. These include:

- Identifying priority areas for wetland conservation and restoration to support the implementation of the Alberta Wetland Policy.
- Incentivizing the use of voluntary tools on private lands for conservation and stewardship and identifying potential new conservation areas through known voluntary and mandatory existing means of land tenure transfer for conservation purposes.
- Iterative improvements to the way working landscapes are managed to maintain ecosystem function and biodiversity.

Another document available for reference to Leduc when considering how best to define its regionally-appropriate land-use plans, policies, and bylaws is the **Profile of the North Saskatchewan Region** (2014) (herein referred to as the Profile) regional profile document [44]. The Profile similarly provides an overview of key social, economic, and environmental factors that are salient to the region and would therefore need to be reflected in the development of both the NSRP and municipally-iterated plans, policies, and bylaws. Within the Profile's "Ecosystems and the Environment" key focus area, the following valued components and their associated recommendations on how best to develop supportive policies and bylaws for the NSRP's context have been considered below:

- **Natural Regions and Subregions** – Identification of at-risk sub-regions within Municipal boundaries and the creation of a policy mandating that a certain percent of said sub-region

retain its native land cover to protect the productivity and ecological services provided by said agriculturally valuable subregion.

- **Biodiversity** – Measuring the decreased levels of biodiversity caused to a natural habitat by accessing the percentage (%) of converted parkland and natural landscapes to cropland, and/or the number of fragmented landscapes caused by the incursion of oil and gas projects, and integrating these findings into future land-use planning by determining a desired quantitative target representing a level of biodiversity for Leduc to maintain in it's land-use plans, policies and bylaws. Tracking the number of wetlands and other natural landscapes that have been fragmented and converted to other land-uses, and setting a limit on the amount of conversion possible within City limits within a timeframe to manage development and competing land-use pressures.
- **Species at Risk** – understand the inventory of species at risk and critical habitat present within Leduc's boundaries and develop species specific Recovery Plan's to align with NSRP requirements.
- **Air and Emissions** – no specific mention on how to comply with policies, zoning ordinances or bylaws designations are mentioned in this document, however, Leduc may investigate fortifying certain construction and manufacturing air control requirements in new residential and/or commercial and/or industrial developments including: dust control, enclosure requirements when dealing with toxic chemicals, and enhancing ventilation provisions in new builds.
- **Water** – management programs with detailed requirements for development standards that are specifically tailored to meet the needs of the North Saskatchewan River Basin.
- **Climate Variability** - consider developing a climate change conscious municipal asset management framework to protect natural and infrastructure assets utilizing an appropriate risk management framework (ex. ISO frameworks).

Given that the TOR and the Profile focus heavily on proactive environmental management and climate change resilience, priorities for land-use policies, zoning ordinances, and bylaw development and/or amendments for Leduc could be guided by the following considerations:

- Riparian area management.
- Prairie grassland protection.
- Increasing development setbacks from wetlands and other wetland protection requirements for developments.
- Species at Risk Inventory and development of species-specific Recovery Plans.
- Air Management programs focused on new build developments across different asset classes.
- North Saskatchewan River (NSR) Management Plan as developed by the North Saskatchewan Watershed Alliance (NSWA) [45].
- Municipal Asset Management Plan that integrates climate change priorities informed by the recommendations above [46].

Energy and Climate Change

In April 2023, the Government of Alberta released the **Alberta Emissions Reduction and Energy Development Plan** (the Plan). The Plan aligns with the federal government's target of achieving net-zero greenhouse gas emissions by 2050. The Plan emphasizes the importance of investing in carbon capture and storage technologies to achieve carbon neutrality. While much of the province's Plan focuses on reducing and capturing emissions from industry, the Plan does acknowledge the importance of working with municipalities to reduce greenhouse gas emissions and adapt to climate change. Specifically, the Plan commits to continued funding for the Municipal Climate Change Action Centre, which provides municipalities with funding, technical assistance, and support to reduce greenhouse gas

emissions. The province does not have a plan or strategy specifically focused on climate change adaptation.

Light and Noise

While there are several areas where the government of Alberta has worked towards reducing light pollution, such as through the designation of five (5) Dark Sky Preserves, there are no provincial requirements to address light pollution or light trespassing in Alberta [47]. The purpose of Dark Sky Preserves is to preserve these areas from artificial light, to support the habitat of nocturnal species and promote recreational stargazing [48]. As a result of these preservation efforts, economic opportunities for the tourism industry have arisen. Regulations are typically seen from select communities whose residents have identified it as a priority.

Traffic noise is defined as the sounds produced by vehicles operating on the highway and include engine and exhaust noises [49]. If a road is being widened and it is cost-effective, the responsibility for development of noise mitigation measures such as noise walls and or berms falls to Alberta Transportation, or the responsibility can fall to the residential subdivision if it is built adjacent to an existing roadway.

5.3 NATIONAL TARGETS

Waste

While jurisdiction over waste management primarily falls onto provincial and municipal governments, the federal government is committed to supporting waste reduction goals. The waste sector is responsible for approximately 3% of the country's greenhouse gas emissions, with roughly 70% of these emissions coming from landfills [50]. In 2018, Canadian Council of Ministers for the Environment (which includes environmental ministers from the federal and provincial governments) adopted aspirational waste reduction goals for the country. The goals included decreasing waste by 30% by 2030 and by 50% by 2040. The ministers also set an aspirational goal of achieving zero plastic waste by 2030 [51].

While provincial and municipal governments are largely responsible for managing solid waste, the federal government likely has the authority to regulate and prohibit the use of certain items in order to reduce waste. In 2022, the Government of Canada released the **Single-use Plastics Prohibition Regulations** (SUPPR), which prohibits Canadian businesses from manufacturing, importing, or selling six types of single-use plastic items. These six (6) types include: checkout bags, cutlery, foodservice ware (e.g., containers for food delivery), ring carriers for beverage containers, stir sticks, and straws. The regulations are being implemented on a staggered timeline between 2022 and 2025 [52]. However, the federal government's authority to implement these regulations is currently being challenged in court, with rulings not expected for several months [53].

Water

The governance of water in Canada is complex. Under the **Constitution Act**, the provinces are the "owners" of water resources and are responsible for most areas of water management and protection within their boundaries. This includes water allocation and use, source water protection, drinking water services, wastewater services, and hydroelectric power development. Provinces typically delegate the responsibility to manage drinking water and wastewater to municipalities.

However, the federal government does have certain responsibilities related to water, including regulating navigable waters, fisheries, and boundary waters. The protection of water resources is regulated federally through several pieces of legislation, including the **Canada Water Act**, the **Canadian**

Environmental Protection Act, the **Fisheries Act**, **Canadian Navigable Waters Act**, the **Arctic Waters Pollution Prevention Act**, and the **Canada Shipping Act**.

Energy and Climate Change

The **Paris Agreement under the United Nations Framework Convention on Climate Change** (also known as the Paris Agreement or Paris Accords) is an international treaty adopted by 196 parties in 2015 [54].The goal of the Paris Agreement is to limit warming to well below 2 degrees Celsius. The Government of Canada initially committed to reducing the country's greenhouse gas emissions to 30 percent below 2005 levels by 2030. In 2021, the Government updated its nationally-determined contribution to reduce emissions by 40 to 45 percent below 2005 levels by 2030. The Government also committed to achieving net-zero emissions by 2050 [55].

In 2022, the federal government released Canada's 2030 **Emissions Reduction Plan**, which is the first plan released under the Canadian **Net-Zero Emissions Accountability Act**. The plan outlines an emissions reduction plan and emissions pathway to meet Canada's most recent commitments under the Paris Agreement. The Emissions Reduction Plan includes actions related to carbon pricing, clean fuels, buildings, electricity, transportation, waste, nature-based solutions, agriculture, heavy industry, oil and gas, clean technology, sustainable finance, and sustainable jobs. The Plan emphasizes the importance of municipal leadership and collaborations between the federal and municipal governments, particularly related to buildings, transportation, water, waste, land-use, natural infrastructure, and community energy generation [56].

To support this work, the Government of Canada has provided several funding sources for municipalities to invest in sustainable practices. One notable example is the **Green Municipal Fund**, which is a $1.6 billion program funded by the federal government and administered through the Federation of Canadian Municipalities.

Following this, in 2023, the federal government released the **National Adaptation Strategy** (the Strategy). While the Emissions Reduction Plan focuses on climate change mitigation, the Adaptation Strategy aims to prepare the country for projected climate impacts. The Strategy acknowledges that "warming temperatures and changing precipitation are contributing to more frequent and devastating events like heatwaves, floods, droughts, and wildfires" across the country. The Strategy also notes that climate change will impact infrastructure within cities and emphasizes the importance of new climate-informed standards and guidance for communities. While the federal government does not have jurisdiction directly over municipalities, the Strategy does aim to ensure climate change is considered in all municipal planning and decision-making processes. To this end, the Strategy includes a target of having 80% of public and municipal organizations factoring climate change adaptation into their decision-making processes by 2030.

Air

In 2012, the Canadian Council of Ministers for the Environment (which includes environmental ministers from the federal and provincial governments) introduced the national **Air Quality Management System** (the System) to reduce air pollution across the country. The System consists of several components including the Canadian Ambient Air Quality Standards, which are non-regulatory health and environmental ambient air quality objectives. These standards have been developed for nitrogen dioxide (NO_2), sulphur dioxide (SO_2), fine particulate matter (PM2.5) and ozone (O_3). The Air Quality Management System also includes air zones and air shed. Alberta is located in the Prairie airshed, and Leduc is located with the Alberta – North Saskatchewan air zone [57].

The federal government also supports air quality improvements through the Canadian Environmental Protection Act (CEPA), which was introduced in 1999. CEPA regulates emissions from motor vehicles and off-road engines. The goal of these regulations is to reduce air pollution from vehicle engines. Businesses are not allowed to import, transport, or sell vehicles or engines that do not meet these requirements. The federal government also regulates emissions from railways, marine vessels, and off-road engines in other Acts [58].

Light and Noise

Light pollution is typically regulated at the municipal level and there are currently no federal regulations or targets focused on light pollution abatement in Canada. Environmental noises are regulated by different levels of government. The federal government regulates aircraft noise through Transport Canada, rail noise through the Canadian Transportation Agency, and occupational noises through Employment and Social Development Canada [59].

Land

In Canada, provincial and municipal governments are responsible for regulating land-use planning. However, the federal government can influence land-use planning through targeted financial support and programs for municipal and provincial governments. The Government of Canada recently committed to investing in nature-based solutions to address both biodiversity loss and climate change. These commitments include setting a target to protect 25% of the country's lands and oceans by 2025, and 30% of the country's lands and oceans by 2030 [60].

6.0 NEXT STEPS

Some of the preliminary ideas and areas for strategic improvement as highlighted by the environmental baseline assessment, could include but are not limited to:

- Telford Lake catchment analysis (inputs/outputs),
- Update the Telford Lake master plan from an environmental lens,
- Improved stormwater management plan and mitigation for Telford Lake inputs,
- Annual monitoring program to further water conservation efforts,
- Detailed framework/guideline for environmental impact assessment requirements on land development proposals,
- Conduct a natural asset inventory to assign an economic value to ecosystem services,
- Riparian enhancement and setbacks guidelines and policy, and
- Invasive weed management and educational signage on noxious/invasive species.

Specific and detailed recommendations and action items will be provided within the Final Environmental Plan and will also include suggestions on ways to improve or expand on the targets and goals of the previous environmental plan.

To ensure the Plan is an accurate reflection of the progress made from the initial 2012 plan and focused on maintaining that momentum, engagement with the public is critical. Through sharing the accomplishments of the previous plan with the community, residents can take pride in their City and consider what they hope the community achieves over the next ten (10) years. Engagement opportunities will aim to understand the perspectives of youth, residents, vulnerable populations, businesses, and City Council, as shown in **Appendix A**. Through approachable engagement techniques, the project will aim to minimize barriers to engagement and make it simple to participate.

Following a breadth of engagement initiatives, an updated plan will be developed to reflect the outcomes of engagement, community priorities, and best environmental practices, continuing to steward the City of Leduc towards environmental excellence and leadership in sustainability for the coming decade.

7.0 CORPORATE AUTHORIZATION

This document, entitled *Baseline Report* is prepared by Urban Systems Ltd. for the City of Leduc. The material in this report reflects the best judgment of Urban Systems based on the information available at the time of preparation. Any use, which a third party makes of this report, or reliance on or decisions made based on it, is the responsibilities of the third party. Urban Systems Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this report.

8.0 REFERENCES

[1] Natural Regions Committee, "Natural Regions and Subregions of Alberta," Government of Alberta, Edmonton, 2006.

[2] City of Leduc, "History of Leduc," 2023. [Online]. Available: https://www.leduc.ca/history-leduc.

[3] Headwaters Alliance, "North Saskatchewan Watershed Alliance," 2023. [Online]. Available: https://www.nswa.ab.ca/partnerships-programs/the-headwaters-alliance/.

[4] North Saskatchewan Watershed Alliance, "Strawberry," 2023. [Online]. Available: https://www.nswa.ab.ca/subwatershed/strawberry/.

[5] North Saskatchewan Watershed Alliance, "State of The Watershed Report - Strawberry," 2005.

[6] North Saskatchewan Watershed Alliance, "Blackmud/Whitemud Surface Water Management Study Final Report," NSWA, 2017.

[7] Fiera Consulting, "Strawberry Watershed Riparian Area Assessment FInal Report," 2018.

[8] Associated Engineering, "Blackmud/Whitemud Creek Surface Water Management Study Final Report," 2017.

[9] City of Edmonton, "Climate Resilient Edmonton Adaptation Strategy and Action Plan," Edmonton, 2018.

[10] City of Leduc, "Greenhouse Gas Reduction Action Plan 2020-2030," 2019.

[11] E. M. R. Board, "Re-imagine. Plan. Build. Edmonton Metropolitan Region Growth Plan," Edmonton Metropolitan Region Board, 15 January 2020. [Online]. Available: https://www.dropbox.com/s/a6jy9e9zp9akufq/EMRB%20Growth%20Plan%20%282020%29.pdf?dl=0.

[12] "EMRB Planning Toolkit: A guidebook for understanding the Regional Evaluation Framework and the implementation of the Edmonton Metropolitan Region Growth Plan: Re-Imagine. Plan. Build," Edmonton Metropolitan Region Board, 08 2021. [Online]. Available: https://static1.squarespace.com/static/6091a8036dae4b4781f5d71b/t/615e0a98d451516c34baa9c8/1633553246240/EMRB+REF+Toolkit.pdf. [Accessed 2023].

[13] "Airport Vicinity Protection Area," City of Leduc, 2022. [Online]. Available: https://www.leduc.ca/our-region/airport-vicinity-protection-area. [Accessed 2023].

[14] Natural Assests Initiative, "What are Municipal Natural Assets: Defining and Scoping Municipal Natural Assets," 2019.

[15] Fiera Biological Consulting, "City of Leduc Environmentally Significant Areas," 2017.

[16] Government of Alberta, "Alberta Wetland Policy," Edmonton, 2013.

[17] Government of Alberta, "Wetlands - Overview," 2023. [Online]. Available: https://www.alberta.ca/wetlands-overview.aspx#:~:text=A%20precious%20resource,wetlands%20in%20the%20settled%20areas..

[18] City of Leduc, County of Leduc and the University of Alberta, "Leduc Wildlife Corridor Study," 2018.

[19] Cornell Lab of Ornithology, "eBird Hotspots," 2023. [Online]. Available: https://ebird.org/hotspots.

[20] G. o. Alberta, "Fish and Wildlife Internet Mapping Tool," [Online]. Available: https://geospatial.alberta.ca/FWIMT_Pub/Viewer/?Viewer=FWIMT_Pub. [Accessed 22 August 2023].

[21] Partners for Climate Protection, "Integrating Equity, Diversity and Inclusion into Municipal Climate Action," 2022.

[22] Government of Canada, "Who is most impacted by Climate Change," 2023. [Online]. Available: https://www.canada.ca/en/health-canada/services/climate-change-health/populations-risk.html.

[23] World Economic Forum, "Seven ways to save lives on the frontline of the climate crisis," 2021. [Online]. Available: https://www.weforum.org/agenda/2021/10/climate-change-7-steps-to-save-the-world-s-most-vulnerable-communities/.

[24] C. o. Calgary. [Online]. Available: file://usl.urban-systems.com/projects/Projects_EDM/2931/0025/01/R-Reports-Studies-Documents/Phase%201%20-%20Baseline%20Report%20-%20Deliverables/1.4%20-%20Interview%20w.%20Key%20Admin,%20Council,%20and%20LEAB%20members/2023-08-25%20-Committee%20of%20the%2.

[25] C. o. S. Albert, "Flourish Growing to 100k.," The City of St. Albert, 2021. [Online]. Available: https://stalbert.ca/dev/mdp/.

[26] City of St. Albert, "Idle Free Bylaw," City of St. Albert, 2018. [Online]. Available: https://stalbert.ca/site/assets/files/1846/bylaw_16-2007_-_idle_free.pdf.

[27] City of St. Albert, "Air Quality Monitoring," City of St. Albert, [Online]. Available: https://stalbert.ca/city/environment/air-quality/monitoring/.

[28] City of Beaumont, "Environmental Master Plan," 2021. [Online]. Available: https://www.beaumont.ab.ca/DocumentCenter/View/6358/Environmental-Master-Plan-Our-Environmental-Management-2021.

[29] T. C. o. Edmonton, "River for Life Strategic Framework," USL, 2012. [Online]. Available: https://www.edmonton.ca/sites/default/files/public-files/documents/RFL_Framework_2012-12-21.pdf. [Accessed 26 07 2023].

[30] T. C. o. Edmonton, "City of Edmonton Wetland Strategy," City of Edmonton, 2012. [Online]. Available: https://www.edmonton.ca/public-files/assets/document?path=FINAL_Wetland_Strategy_low_res.pdf. [Accessed 26 07 2023].

[31] T. C. o. Edmonton, "The Way We Green," City of Edmonton, 2011. [Online]. Available: https://www.edmonton.ca/sites/default/files/public-files/documents/PDF/TheWayWeGreen-approved.pdf. [Accessed 26 07 2023].

[32] T. C. o. Edmonton, "Source Water Protection Plan: Edmonton's Drinking Water System," Epcor, 2020. [Online]. Available: https://www.epcor.com/products-services/water/Documents/source-water-protection-plan.pdf. [Accessed 26 07 2023].

[33] Dark Sky, "Glossary," 2023. [Online]. Available: https://www.darksky.org/our-work/grassroots-advocacy/resources/glossary/.

[34] Rod E. Mc Connell, "Light-Efficient Community Guide," 2022. [Online]. Available: https://light-efficientcommunities.com/LEC%20Guide%20-%202022%20L%20-%20P1.pdf.

[35] City of Edmonton, "Light Efficient Community Policy," 2013. [Online]. Available: https://www.edmonton.ca/sites/default/files/public-files/assets/PoliciesDirectives/C576.pdf?cb=1624584313#:~:text=The%20City%20of%20Edmonton%20strives,consumption%20and%20green%20house%20gas.

[36] City of Edmonton, "Urban Traffic Noise Policy," [Online]. Available: https://www.edmonton.ca/sites/default/files/public-files/documents/PoliciesDirectives/C506A.pdf.

[37] Strathcona County, "Traffic Noise," 2018. [Online]. Available: https://www.edmonton.ca/sites/default/files/public-files/documents/PoliciesDirectives/C506A.pdf.

[38] Government of Alberta, "Regulated Extended Producer Responsibility Systems," 2023. [Online]. Available: https://www.alberta.ca/regulated-extended-producer-responsibility-programs.aspx.

[39] Government of Alberta, "Water for Life Strategy," 2023. [Online]. Available: https://www.alberta.ca/water-for-life-strategy.aspx#jumplinks-2.

[40] Government of Alberta, "Our Water Our Future - A Plan for Action," 2014.

[41] Alberta Water Coucil, "About Us," 2023. [Online]. Available: https://www.awchome.ca/about/.

[42] North Saskatchewan Watershed Alliance, "About Us," 2023. [Online]. Available: https://www.nswa.ab.ca/about-us/.

[43] Environment and Sustainable Resource Development, "Terms of Reference for Developing the North Saskatchewan Regional Plan," 2014. [Online]. Available: https://landuse.alberta.ca/LandUse%20Documents/Terms%20of%20Reference%20for%20Developing%20the%20North%20Saskatchewan%20Region%20-%202014-05.pdf.

[44] Environment and Sustainable Development Resource, "Profile of the North Saskatchewan Region," 2014. [Online]. Available: https://open.alberta.ca/dataset/433ac634-2cb1-480c-9deb-98fe9b9d9631/resource/9e381eba-ef8a-4e82-a787-6173459f0122/download/profile-of-the-north-saskatchewan-region-2014-05.pdf.

[45] North Saskatchwan Water Alliance, "Integrated Watershed Management Plan for the North Saskatchewan River in Alberta," 2012. [Online]. Available: https://www.nswa.ab.ca/wp-content/uploads/2017/09/IWMP-Final-Report.pdf.

[46] "Learning journey: Climate resilience and asset management," 2023. [Online]. Available: https://fcm.ca/en/resources/mamp/learning-journey-climate-resilience-and-asset-management.

[47] Alberta Parks, "Dark Sky Guide," 2023. [Online]. Available: https://www.albertaparks.ca/albertaparksca/learning/parks-blog/dark-sky-guide/.

[48] Alberta Parks, "Cypress Hills Provincial Park," 2023. [Online]. Available: https://www.albertaparks.ca/parks/south/cypress-hills-pp/activities-events/recreational-activities/.

[49] Government of Alberta, "Noise Attenuation Guidelines for Provincial Highways Under Provincial Jurisdiction within Cities and Urban Areas," 2021. [Online]. Available: https://www.albertaparks.ca/parks/south/cypress-hills-pp/activities-events/recreational-activities/.

[50] Government of Canada, "Reducing Waste," 2021. [Online]. Available: https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview/healthy-environment-healthy-economy/annex-reducing-waste.html.

[51] CCME, "Waste," 2023. [Online]. Available: https://ccme.ca/en/current-activities/waste#:~:text=The%20Canada%2Dwide%20goal%20is,50%25%20reduction)%20by%202040..

[52] Government of Canada, "Single-use Plastics Prohibition Regulations - Overview," 2023. [Online]. Available: https://www.canada.ca/en/environment-climate-change/services/managing-reducing-waste/reduce-plastic-waste/single-use-plastic-overview.html.

[53] CBC, "Canada's single use-plastic ban faces its first legal test," 7 March 2023. [Online]. Available: https://www.cbc.ca/news/politics/single-use-plastic-ban-1.6770149.

[54] United Nations, "What is the Paris Agreement," 2023. [Online]. Available: https://unfccc.int/process-and-meetings/the-paris-agreement.

[55] UNFCCC, "Canada's 2021 Nationally Determined Contribution Under the Paris Agreement," 2021. [Online]. Available: https://unfccc.int/sites/default/files/NDC/2022-06/Canada%27s%20Enhanced%20NDC%20Submission1_FINAL%20EN.pdf.

[56] Government of Canada, "2030 Emissions Reduction Plan: Clean Air, Strong Economy," 2023. [Online]. Available: https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview/emissions-reduction-2030.html.

[57] CCME, "Canada's Air," 2023. [Online]. Available: https://ccme.ca/en/air-quality-report#slide-1.

[58] Government of Canada, "Guide to understanding the Canadian Environmental Protection Act: Chapter 9," 2019. [Online]. Available: https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/publications/guide-to-understanding/chapter-9.html#toc3.

[59] Government of Canada, "Guidance for Evaluating Human Health Impacts in Environmental Assessments," 2023. [Online]. Available: https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidance-evaluating-human-health-impacts-country-foods.html.

[60] Government of Canada, "The Government of Canada increases nature protection ambition to address dual crises of biodiversity loss and climate change," 2021. [Online]. Available: https://www.canada.ca/en/environment-climate-change/news/2021/11/the-government-of-canada-increases-nature-protection-ambition-to-address-dual-crises-of-biodiversity-loss-and-climate-change.html.

[61] City of Leduc, "Population and Demographics," 2023. [Online]. Available: https://www.leduc.ca/about-leduc/demographics.

[62] City of Edmonton, "North Saskatchewan River - Water Quality," 2023. [Online]. Available: https://www.edmonton.ca/city_government/environmental_stewardship/north-saskatchewan-river-water-quality.

[63] Edmonton Metropolitan Region Board, 2023. [Online]. Available: https://www.emrb.ca/.

[64] City of Edmonton, "25-year Waste Strategy," 2023. [Online]. Available: https://www.edmonton.ca/programs_services/garbage_waste/future-of-waste.

[65] City of Edmonton, "The Future of Waste," 2019. [Online]. Available: https://www.edmonton.ca/sites/default/files/public-files/assets/PDF/WasteStrategy_CR_5829_25YearWasteManagementStrategy.PDF.

[66] McElhanney Ltd., "Intermunicipal Planning Framework," 2019. [Online]. Available: https://www.leduc-county.com/uploads/11023/Doc_637116739094954400.pdf?ts=637183284822590206.

[67] "ME," [Online]. Available: https://www.pcp-ppc.ca/resources/edi.

[68] T. C. o. Edmonton, "Change Habits for Climate," The City of Edmonton, [Online]. Available: https://www.edmonton.ca/sites/default/files/public-files/assets/PDF/HabitGuide-web.pdf?cb=1690404730. [Accessed 2023.07.26].

APPENDIX A:

Engagement Strategy:

City of Leduc Environmental Plan Update

1.0 PROJECT OVERVIEW

The City of Leduc (the City) is updating its Environmental Plan (the Plan) developed in 2012 to reflect advances in the field of climate change and current national and provincial sustainability initiatives. The new Plan will guide the next 10 years of Leduc's efforts around environmental sustainability.

Engagement will be an important element of the Plan update and will be used to develop an understanding from the community around which environmental issues are their top priorities and why. Engagement comments collected will be used to inform the development of the Plan to ensure that the Plan aligns with the community's interests.

1.1 Objectives

The engagement objectives that will underpin and apply to the project are:

1. To provide stakeholders with opportunities to strengthen their understanding of environmental resiliency and sustainability.
2. To ensure that the identified stakeholders have meaningful opportunities to influence and shape the development of the project outcomes.

2.0 APPROACH

2.1 Principles of Engagement

As outlined in the City of Leduc's Public Engagement Framework, engagement activities will align with the following principles:

1. Impactful and meaningful: The public is involved in decisions that directly impact them and input is considered by the City as part of the decision-making process.

2. Inclusive and accessible: Opportunities to participate in public engagement are accessible and welcome diverse ideas, perspectives, and input.

3. Transparent: Public engagement opportunities are communicated clearly, openly, and in a timely way.

4. Well-planned and intentional: Public engagement opportunities reflect careful planning and preparation that supports the engagement purpose(s).

5. Accountable: Public engagement is reported on and evaluated to support continuous improvement.

2.2 Spectrum and Levels of Engagement

The International Association of Public Participation's (IAP2) Spectrum of Public Participation was designed to assist in selecting the level of engagement a stakeholder may have within any public participation process. The IAP2 Spectrum outlines differing levels of participation. The level assigned to a stakeholder depends on the goals, timeframes, resources, and anticipated levels of concern in the decision to be made. The five levels of public participation – as defined by IAP2 – are identified in Figure 1.

The levels of engagement selected for this project will largely from *Inform* to *Involve*.

IAP2 Spectrum of Public Participation

IAP2's Spectrum of Public Participation was designed to assist with the selection of the level of participation that defines the public's role in any public participation process. The Spectrum is used internationally, and it is found in public participation plans around the world.

INCREASING IMPACT ON THE DECISION

	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

2.3 Engagement Mapping

There are three (3) stakeholder groups that we will engage with in this project. Each stakeholder group will have opportunities to provide their feedback throughout the project. We will provide thoughtful, and tailored engagement opportunities for each stakeholder group.

Stakeholder Group	Stakeholders	Level of Engagement
Key Stakeholders	Leduc Environmental Advisory Board (LEAB)	Involve
	City Administration	
	City Council	
Community Stakeholders	Residents of Leduc • Trail users • Eco Station users	

	Youth
	• Leduc Youth Council
	• Boys and Girls Club of Leduc
	• Summer Camps
	  ○ PARKS Program
	  ○ Outdoor Day Camps
	• Leduc Public Library Youth Programs
	  ○ Summer Learning Challenge
	  ○ Summer Reading Challenge	

	Local businesses • Leduc Downtown Business Association • Leduc, Nisku & Wetaskiwin Regional Chamber of Commerce	
	School boards • Black Gold School Division • St. Thomas Aquinas Roman Catholic	
	Vulnerable persons service providers • Leduc Regional Housing Foundation • Leduc & District Food Bank	
	Local organizations • Leduc Communities in Bloom • Leduc Wildlife Conservation Society (LWCS)Action for Healthy Communities (Newcomer services)	

3.0 ENGAGEMENT TACTICS

3.1 Key Stakeholder Focus Groups

Up to three (3) focus groups with targeted key stakeholders including the Leduc Environmental Advisory Board (LEAB), City administration, and council. A list of contact information will be developed to identify individuals who may have an interest in contributing. A preliminary email will be submitted to determine availability to schedule an in-person or virtual meeting. Focus groups will consist of five (5) key stakeholders and will participate in a facilitated discussion.

City Council will be engaged through a Committee of the Whole in September 2023.

Purpose: To gain an understanding of barriers the initial Plan faced, and to identify issues and priorities for the next 10 years.

Timing: July to September 2023

Targeted Stakeholders: Key Stakeholders

Organization	Responsibility
The City of Leduc:	• Provide direct contact information for LEAB members, key members of administration, and City Council. • Provide meeting place for in-person meetings (when applicable). • Review list of potential interview questions. • Attend sessions as required.
Urban Systems:	• Email Key Stakeholder to invite them to participate in the sessions. • Prepare list of potential interview questions. • Record interview notes and prepare for distribution with interviewees for finalization. • Provide one (1) staff to facilitate meetings with up to five (5) key stakeholders. • Prepare materials and facilitation sessions.

3.2 Be Bold, Inviting, and Ask Questions

Several engagement opportunities will be made available for information sharing and feedback collection through online surveys and in-person installations at key sites within the City of Leduc. Tactics will be used to introduce the project to the greater community to receive preliminary feedback on environmental priorities within the community.

Purpose: To provide low-barrier opportunities to gather engagement feedback.

Timing: July - August 2023

Targeted Stakeholders: Public - Residents of Leduc

3.2.1 Project Webpage Update

An update will be made to the existing project page to reflect the upcoming changes to the plan. While this is not an engagement tactic, this page will act as a launch pad for the community to know how to get involved with the Plan. The project page will outline key dates throughout the project, opportunities to engage including an online survey, and will provide resources related to the Environmental Plan like a What We Heard Report.

Organization	Responsibility
The City of Leduc:	• Review all web content and provide direction on edits. • Provide any images or graphics to align content with internal branding guidelines. • Post and update content as the Plan develops.
Urban Systems:	• Draft website content and make any required edits.

3.2.2 Free Standing Survey Signage

Signage will be used to share information about the project and provide a QR code to direct individuals to an online survey. The survey will contain a maximum of eight (8) qualitative questions and two (2) open-ended questions. Laminated posters will be positioned for one (1) month near popular walking trails, outdoor recreation areas (i.e., golf courses, sports courts), and near the Eco Station.

Organization	Responsibility
The City of Leduc:	• Review signage and provide direction on edits. • Review survey and provide direction on edits. • Cost and installation of signage. • Monitor the status of the signage and adjust as needed. • Remove signage following the closure of the survey.
Urban Systems:	• Design signage including content and graphic design. • Create online survey draft and make any required edits. • Publish and host survey for three (3) weeks, monitor, and close survey.

3.2.3 Online Engagement - Social Media

Online engagement tools will be used to collect preliminary engagement comments on the Plan early in the engagement process to introduce the project and to gain a better understanding of the public's understanding and support of the past and future of the Plan. Tactics will include social media posts, polls, and quizzes. The questions used on social media will be similar, if not the same to some of the questions used in tactic 3.2.2 above. Social media posts will be shared through the City's platforms including the City's website and social media channels.

Organization	Responsibility
The City of Leduc:	• Review all social media posts and provide direction on edits. • Post social media posts according to the drafted schedule. • Send Urban Systems the summaries of polls and quizzes before they close.
Urban Systems:	• Prepare schedule and draft social media copy, graphic design, polls, and quizzes. • Monitor the progress of polls and quizzes. • Analyze and report on all online engagement.

3.2.4 Infographic Boards

Stationary signage will be designed to include project information and engagement feedback opportunities such as, but not limited to dotmocracies. Signage will be positioned at key indoor community areas within the City of Leduc like the Public Library or the Leduc Recreation Centre for a period of one (1) month.

Organization	Responsibility
The City of Leduc:	• Review infographic boards and provide direction on edits. • Obtain permissions for installation of infographic boards. • Cover printing and installation costs. • Work with the Library or Recreation Centre to monitor the boards and distribute engagement tools (stickers) as needed. • Periodically collect engagement inputs and ~~sent~~ send them to Urban Systems. • Print and install infographic boards.
Urban Systems:	• Draft content and graphic design for infographic boards. • Create guiding document on monitoring process. • Summarize engagement input.

3.3 Youth Engagement

Engagement will be designed to connect LEAB members and Administration with youth to facilitate age-appropriate activities centred around environmental topics as they relate to the Plan. Engagement will target summer camps, library programs, and summer activity providers as community partners to assist in facilitating engagement activities.

Purpose: Provide youth with educational opportunity to learn about the environment, Green House Gas's (GHG's), and sustainability, and collect engagement feedback on elements of Plan.

Timing: August - October 2023

Targeted Stakeholders: Youth

3.3.1 Youth Summer Programming

Summer camp activities will be designed around environmental topics and will be tailored to the age ranges being engaged. Camp opportunities could be incorporated into the Boys and Girls Club program, PARKS Program (for kids and their parents), or Outdoor Day Camps.

Programming could also be integrated into library programming like the Summer Learning Challenge or the Summer Reading Challenge.

Organization	Responsibility
The City of Leduc:	• Review activity design and materials and provide direction on edits. • Leverage connections with youth camp organizations to enable LEAB and members of Administration to facilitate activities in the camps. • Provide up to two (2) staff to attend and facilitate each session. • Assist in the recording of engagement feedback for reporting.
Urban Systems:	• Design activity, supporting materials, and facilitation guide for review two (2) weeks before scheduled engagement. • Review how to conduct the activity with the LEAB and Administration ahead of going into the camps
LEAB	• Provide up to two (2) members to attend and facilitate activities. • Assist in the recording of engagement feedback for reporting.

3.4 Go to the People

Engagement will focus on a go-to-the-people approach designed to reduce barriers to participation by implementing pop-up style booths at community events like VolunteerFest or the Fall Festival. Supporting engagement content will be developed to be clear and quick for community members to review and engage with. Feedback collection will be straightforward and engaging with a low time commitment to make the engagement an accessible and easy experience for community members.

Option to include a prize draw to encourage participation.

Purpose: To share the purpose and function of the Environmental Plan with the broader community and provide a low-barrier opportunity to provide engagement feedback.

Timing: July - November 2023

Targeted Stakeholders: Public - Residents of Leduc

Engagement pop-ups could align with one of the following community events below.

- Summer in the City - July 29th, 2023
- VolunteerFest - September 10th, 2023
- Leduc Pro Show N' Shine - September 15th & 16th, 2023
- Fall Festival - October (Date TBD)

Organization	Responsibility
The City of Leduc:	• Review engagement materials and provide direction on edits. • Provide one (1) staff to attend the event. • Costs for space rentals and materials. • Work with local event organizers to secure a venue for the engagement station
Urban Systems:	• Design engagement materials and facilitation guide for review two (2) weeks before community event date. • Provide two (2) staff to attend the event. • Summarize engagement input.

3.5 Meet with Community Stakeholders

Virtual focus groups will be held with key community stakeholders like local businesses/commerce groups, school boards, and vulnerable persons service providers to understand their experience with the previous Environmental Plan. Focus groups will be conducted virtually with the intention to respect the time of stakeholder's, and streamline the engagement process. A series of questions will be developed to guide the focus groups and collect engagement input. Up to three (3) one-hour focus groups will be conducted with community stakeholders.

Purpose: To perform targeted conversations with key community stakeholders to identify gaps, recognize stakeholder priorities, and understand opportunities to build on the initial Environmental Plan.

Timing: August - November 2023

Targeted Stakeholders: Community Stakeholders

Organization	Responsibility
The City of Leduc:	• Review invitation, agenda, questions and provide direction on edits. • Provide one (1) staff member to attend interviews.
Urban Systems:	• Reach out to community stakeholders via email and schedule focus groups. • Prepare email invitations for the City to review • Create meeting agenda including guiding questions. • Provide two (2) staff to attend/conduct interviews.

4.0 REPORTING BACK

A concise "What We Heard" Report will be produced with written and visual components to share quantitative and qualitative results from engagement tactics. The "What We Heard" Report will be written in plain language and shared on the Project Website. Elements of the "What We Heard" Summary Report may include a review of previous engagement initiatives, descriptions of tactics employed during the current engagement process, and key themes that emerged from the engagement activities.

Purpose: To share with all stakeholders how their input was captured and how it will inform the project.

Timing: Two (2) weeks after the completion of all engagement activities (November 2023)

Targeted Stakeholders: All Stakeholders

Organization	Responsibility
The City of Leduc:	• Review, approve, and post the final copy of the report in an appropriate location (project page on City website).
Urban Systems:	• To prepare a concise report, ensuring that the themes that were identified in the engagement activities are captured.

5.0 EVALUATION

1. **To provide stakeholders with opportunities to strengthen their understanding of environmental resiliency and sustainability.**

Indicators of Success:

Stakeholders indicate that the information provided in the tactic provided sufficient information to understand the project.

Method of Success:

Asking questions to participants about their comfort in understanding the materials.

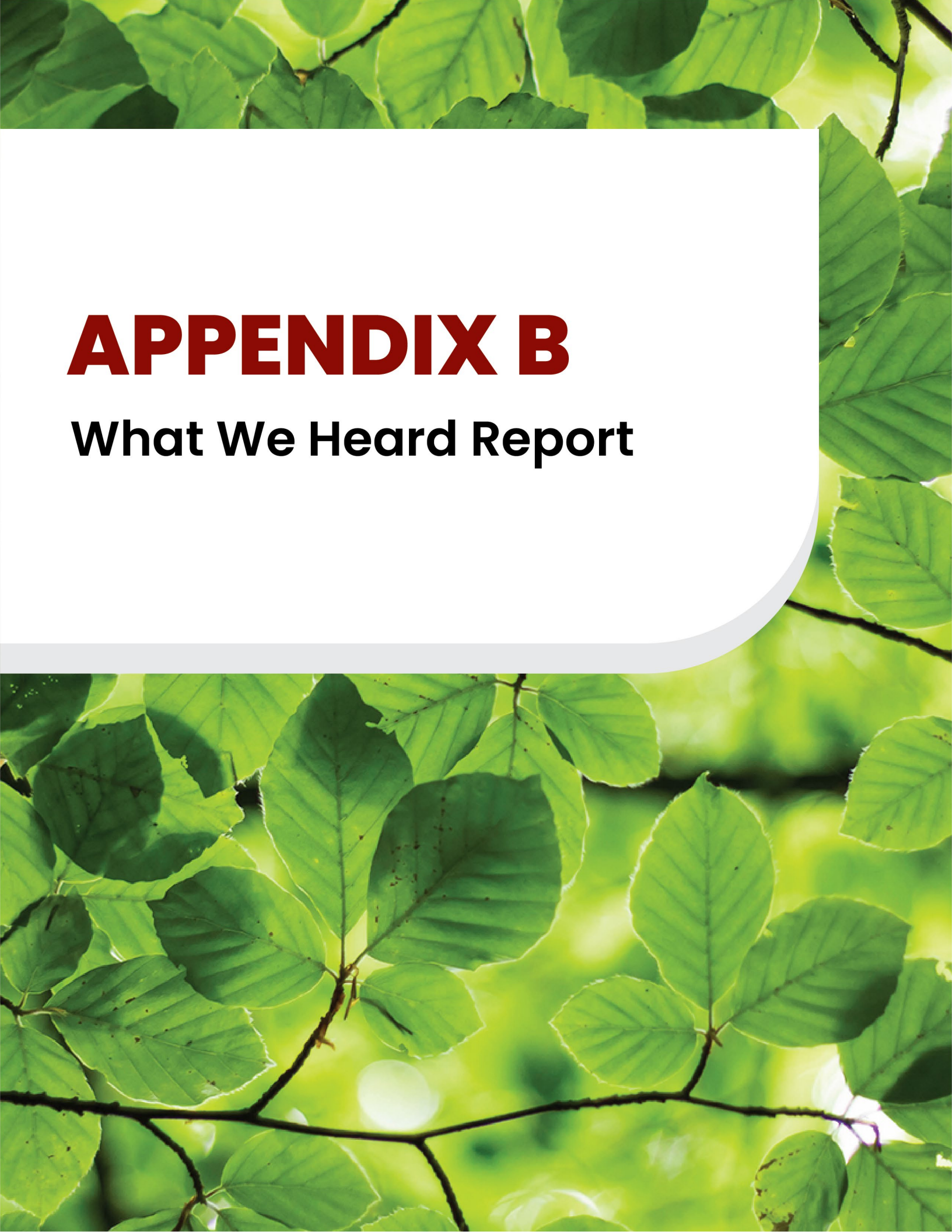
2. **To ensure that the identified stakeholders have meaningful opportunities to influence and shape the development of the project outcomes.**

Indicators of Success:

Stakeholders report that they had multiple opportunities to be heard through the engagement tactics.

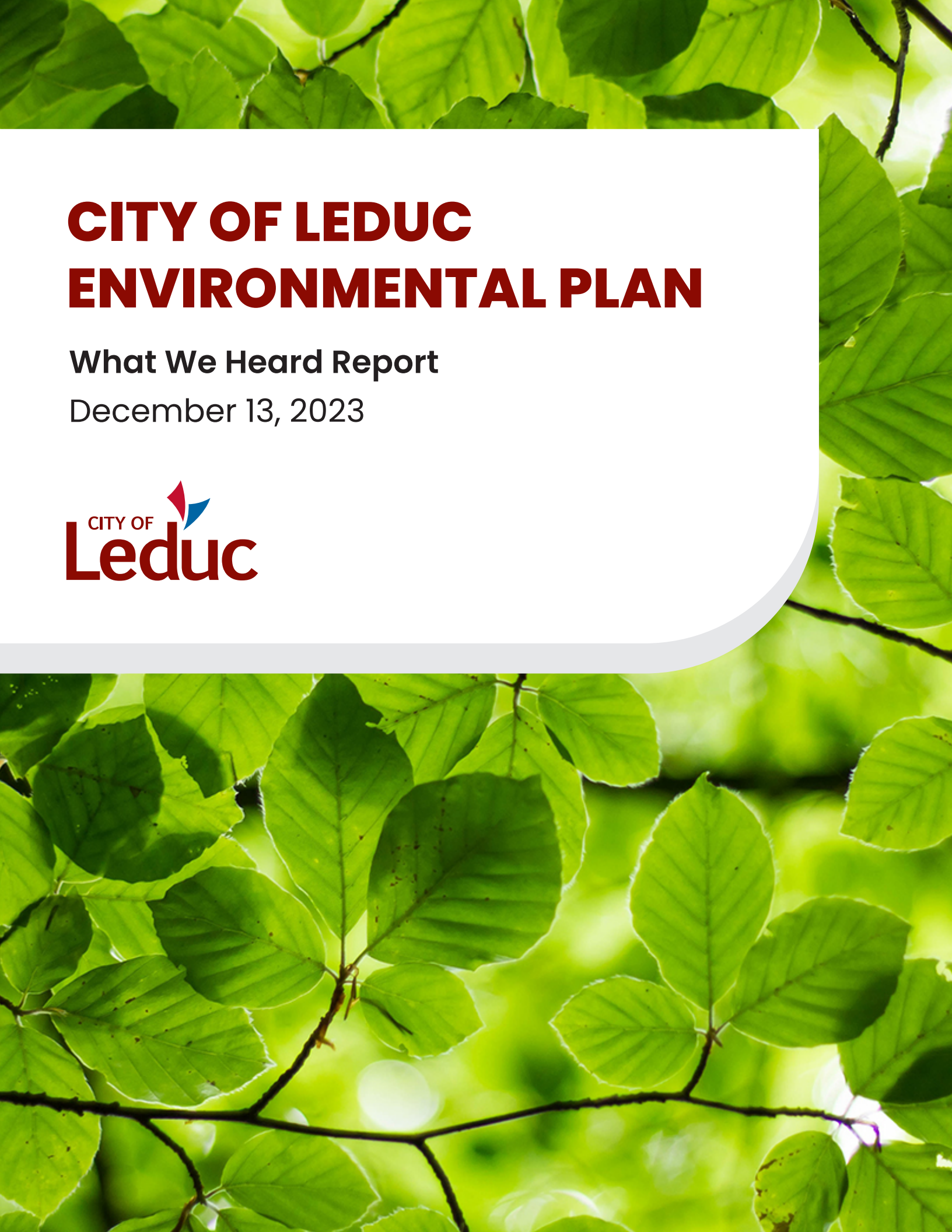
Method of Success:

Number of stakeholders that participate in the engagement opportunities and provide feedback.



APPENDIX B

What We Heard Report



CITY OF LEDUC ENVIRONMENTAL PLAN

What We Heard Report

December 13, 2023

CITY OF Leduc

CONTENTS

APPENDICES

PREPARED FOR
City of Leduc
#1 Alexandra Park
Leduc, AB T9E 4C4

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File Number: 2931.0025.01

1. EXECUTIVE SUMMARY

The City of Leduc (the City) is updating its Environmental Plan (the Plan) developed in 2012 to reflect advances in the field of climate change and current national and provincial sustainability initiatives. The Plan outlined various goals and objectives for the City of Leduc related to waste, water, land, air, light, noise, and energy. Since 2012, the City of Leduc has achieved 80% of the environmental action items outlined in the Plan, with an additional 15% of the action items in progress or completed as ongoing initiatives.

The City of Leduc is now updating the Plan to include new goals and objectives to guide the next 10 years of Leduc's efforts around environmental sustainability. Engagement was an important element of the Plan update to develop an understanding from the community around which environmental issues are their top priorities and why. Engagement comments collected were used to inform the development of the Plan to ensure that the Plan aligns with the community's interests.

Engagement opportunities were active between September 4 - October 26th, and included a public survey, pop-up events, key stakeholder and youth workshops. Engagement initiatives were undertaken by both the City Environmental and Engineering Department, as well as a hired consulting firm, Urban Systems.

City of Leduc Environmental Plan
(Originally Developed in 2012)

GOALS AND OBJECTIVES OUTLINED:

WASTE WATER LAND AIR LIGHT NOISE ENERGY

80%
OF THE ENVIRONMENTAL ACTIONS OUTLINE IN THE PLAN HAVE BEEN ACHIEVED SINCE 2012.

AN ADDITIONAL
15%
OF THE ACTION ITEMS IN PROGRESS OR COMPLETED AS ONGOING INITIATIVES

2. ENGAGEMENT SUMMARY

The citizens in Leduc care deeply about the environmental health of their community, which was captured as a prominent theme throughout the engagement process. Leduc offers many well-used environmental amenities, which community members are passionate about preserving for future generations. Engagement activities were designed to seek community priorities related to the Environmental Plan's (2012) key areas, which included land, waste, water, air, energy and climate, and light and noise. Additional themes that did not reference these categories were captured as 'cross cutting themes.' The key areas will be used to develop and build on the environmental action items achieved over the last 10 years and will utilize engagement input to formulate new action items in alignment with community priorities.

3. HOW WE ENGAGED THE COMMUNITY

VolunteerFest: Project Team members attended the City's annual VolunteerFest to introduce the project to community members and receive feedback. Residents who stopped by the booth had an opportunity to learn about the achievements of the initial Environmental Plan and provide their opinions about which key areas were the most important to them, and ideas related to potential actions could be included in updated Plan.

Online Survey: An online survey was hosted on the City of Leduc's Get Involved webpage. The survey included 13 questions about environmental priorities, programs, and services. The survey received 175 responses from community members.

Key Stakeholder Sessions: A total of four (4) key stakeholder sessions were held to raise awareness about the Environmental Plan update and receive feedback about priorities and program implementation. The sessions included a Committee of the Whole presentation to Leduc City Council, a workshop with the Leduc Environmental Advisory Board (LAEB), and two sessions for representatives from community organizations, environmental advocacy groups, the business community, and school boards.

Staff Workshop: A staff workshop was held with the City of Leduc's administrative staff to inform collective actioning and implementation of environmental objectives.

Interactive Posters: Interactive posters were positioned at the entrance to the Leduc Civic Centre to share information about the project and offer an opportunity for the public to vote on their top environmental priorities.

Youth: A youth engagement workshop was held with a local Scouts group to understand youth perspectives and priorities.

Social Media: Engagement opportunities were promoted and facilitated through the City of Leduc's social media accounts and included polls and quizzes.

4. WHAT WE HEARD

Overall, community members identified land, waste, water, and climate change and energy as the most important topic areas to consider in the updated Environmental Plan. Within those areas, community members identified a variety of actions and themes that could be considered in the updated Plan.

Land was the most significant key area for community members, where many shared the importance of preserving environmentally significant areas. Waste was also an important key area, where community members reported the highest rate of awareness and participation (80%+) in waste diversion programs when compared to the City's other environmental programs and initiatives. Community members also expressed a desire to expand waste services further. Water, climate change and energy also ranked as important to community members, where community members identified sustainability themes related to water conservation and renewable energy.

The following sections provide a snapshot of actions and overarching themes that were identified throughout all the engagement activities outlined in Section 3, How We Engaged the Community. For a complete summary of engagement feedback, please reference **Appendix A.**

KEY AREAS PRIORITIES

Each engagement activity involved a voting process to understand which environmental key area(s) were most important to participants. These votes were tallied and are outlined below:

Topic	Survey	Volunteerfest	Leduc Environmental Advisory Board (LEAB)	Committee of the Whole	Key Stakeholder Sessions	Staff Workshop	Interactive Posters	Youth	Social Media	Totals
Waste	89	25	2	3	2	3	5	2	7	138
Water	69	24	1	1	3	3	3	-	2	106
Air	36	17	1	1	1	-	1	-	-	57
Land	83	16	5	5	5	9	5	4	16	148
Climate Change and Energy	71	8	4	1	3	3	2	6	8	106
Light and Noise	62	16	5	4	2	-	4	4	-	97
Total	**410**	**106**	**18**	**15**	**16**	**18**	**20**	**16**	**33**	**652**

WASTE

Waste includes programs and initiatives related garbage, recycling, organics, re-using, and reducing waste generation. The following is a summary of the actions which were suggested about waste, and the general sentiments that are captured in the themes section.

Actions

- Explore expanding the curbside collection of glass and soft plastics
- Implement compost and recycling services for multifamily buildings
- Explore switching from blue bags to blue bins
- Accept a wider range of materials at the Eco Station (mattresses, etc.)
- Explore a waste recovery section at the Eco Station

Themes

- The Eco Station is well run and organized
- Waste management is a tangible way for people to reduce their environmental impact
- Education and clear, fun communication are key
- Better waste diversion improves the health of environment

WATER

Water includes programs and initiatives related to water preservation and stormwater management. The following is a summary of the actions which were suggested about water, and the general sentiments that are captured in the themes section.

Actions

- Purchase water conservation materials through initiatives such as the Green and Gold event
- Investigate grass alternatives (i.e. Clover) to support water retention and pollinators
- Provide education materials on water efficient grass alternatives and x-scaping
- Use gray water and/or rainwater for yard care
- Development of a beach and other recreational water amenities
- Installation of low-flow equipment

Themes

- Protection of Telford Lake
- Importance of clean water
- Water hardness and taste of drinking water
- Protection of the eastern slopes and its watershed
- Impacts of intensive fertilizer use in residential areas
- Stormwater management
- Regional collaboration

AIR

Air includes programs and initiatives related to air quality and pollution management. The following is a summary of the actions which were suggested about air, and the general sentiments that are captured in the themes section.

Actions

- Plant more trees throughout the City
- Improve public transit to help minimize air pollution
- Support active transportation initiatives

Themes

- Develop an anti-idling policy or program, especially targeting school areas
- Air quality impacts of heavy traffic and proximity to the airport
- Air quality impacts of increased forest fires
- Prioritize densification

LAND

Land includes programs, policies, and initiatives related to the protection of environmentally sensitive areas, landscape design/maintenance, and recreation. The following is a summary of the actions which were suggested about land, and the general sentiments that are captured in the themes section.

Actions

- Evaluate setbacks around environmentally sensitive areas
- Create education campaigns about the different levels of service for naturalized areas and parks
- Create a policy to better inform the community about naturalized areas
- Exploring including ecosystem services into considerations of land use planning
- Explore increasing the density of residential areas to reduce urban sprawl
- Identify opportunities for placemaking, heritage planning and indigenization of lands
- Explore policy mechanisms to increase the MR to protect natural areas
- Create an interdepartmental meeting framework to better integrate all departments into land use planning
- Explore ways to make better use of land set aside for school sites, including two story schools

Themes

- Balancing the need for development, with the need for natural areas.
- The community is deeply connected to the existing parks and green spaces
- Telford lake is a community gem and needs to be protected holistically
- Need to preserve natural areas for animal and plant species

ENERGY AND CLIMATE CHANGE

Energy and climate change includes programs and initiatives related to climate change mitigation, energy efficiency, and renewable energy. The following is a summary of the actions which were suggested about energy and climate change, and the general sentiments that are captured in the themes section.

Actions

- More incentives should be available to promote solar energy and other renewables for residents
- More incentives should be available to support energy efficiency upgrades in homes
- Identify investment opportunities for climate change adaptation
- Identify ways to encourage more EV stations to be build in the public areas and for new builds to have appropriate electric systems in homes
- Explore passive building design principles to reduce energy consumption in homes and buildings.
- Continue developing trail networks to reduce GHG emissions from transportation
- Explore safety codes for renewable energy on buildings roofs.

Themes

- Reduce greenhouse gas emissions
- Concerns about the rising cost of energy
- The City needs to continue demonstrating leadership in this topic area

LIGHT AND NOISE

Light and noise includes programs and initiatives related to noise and light pollution. The following is a summary of the actions which were suggested about light and noise, and the general sentiments that are captured in the themes section.

Actions

- Conduct research to identify needs for improved lighting in alleyways. Increase street lighting in alleyways
- Enforce construction noise bylaws
- Turn off lights in commercial buildings afterhours
- Increase the amount of lighting along Telford Lake to increase nighttime safety
- Implement light regulations depending on land use (residential/commercial/industrial)
- Incentivize LED upgrades

Themes

- Light and noise pollution is considered a big problem in Leduc
- Highway noise
- Airport noise
- Well-managed light and noise can increase overall quality of life
- Protection Telford Lake from light and noise pollution

- Dark sky initiatives in the commercial and industrial sectors
- Impacts on wildlife
- Light and noise within environmentally sensitive areas
- Lighting and its importance for safety

CROSS CUTTING THEMES

Cross cutting themes include any themes that did not directly relate to the key areas. The following is a summary of the general sentiments that were captured.

Themes

Volunteer activities are of interest from residents and environmental rebate programs.

Many community members preferred hearing about programs through the City's website, social media, email newsletters, and road signs

The City should continue to leverage available funding from all levels of government to support in implementing the actions in the Plan

Youth education is key to making sustainable changes about any of these topics

Topics cannot be addressed in silos; they need to integrate systems thinking into meaningful actions

5. NEXT STEPS

Upon the completion of the engagement opportunities outlined in Section 3, How We Engaged the Community, the Project Team will begin drafting the updated Environmental Plan.

Engagement feedback received across all engagement activities will be considered in the development of the updated Environmental Plan where appropriate and feasible. The updated Environmental Plan will then be presented to the Leduc City Council for consideration.

APPENDIX A

Engagement Feedback

1. VOLUNTEER FEST

On September 10th, 2023, the Project Team set up a booth at the City's annual VolunteerFest. Those residents who stopped by the booth had an opportunity to learn about the achievements of the initial Environmental Plan and provide their opinions about which topic areas were the most important and what potential actions could be for updated Plan. It is important to note that participants had the option to vote on their top priority and share comments, although not all residents did both.

Topic	Priorities	Comments (If any)
WASTE 	**24%**	• Interested expanding the recycling streams at the Eco Station to include more variety of materials • Interested in expanding the home collection to include soft plastics and glass • The Eco Station is well run and well organized • Desire to composting facility like in Olds • Waste is a tangible way for residents to improve the environment • Host more waste collection events (twice per year) • Multifamily homes should have waste diversion collection like single family homes • Desire to see changes to the organics program including, moving to a bagged program and weekly collection year round
WATER 	**23%**	• Telford lake needs to be better protected around all edges, perhaps with a buffer zone to protect biodiversity • It's important to keep the water clean • The Green and Gold event is helpful to purchase water conservation materials • Protect the eastern slopes and watershed • Fertilizer use in agriculture is being dictated by the government, but in residential areas, residents use a lot of it and it's impacting water quality • Explore clover instead of grass to support water retention and pollinators • The water in Leduc is 'hard' and has a strange taste
AIR 	**16%**	• Planting more trees will improve our air quality • Shipping trucks and airplanes are releasing fumes which are not good for our air • Forest fires causing air pollution • Idling needs to be addressed near schools, perhaps through educational posters

Topic	Priorities	Comments (If any)
LAND 	**15%**	• Need to protect the trees in the future • Sustainable land use planning would mean to balance green spaces and developed spaces. • Enjoy the trail systems in the City, but they should be divided by user types (cyclists, pedestrians, etc.) • Need to maintain healthy trees and greenspaces • There is only so much land in the City and it needs to be protected, and there should be more green spaces • Explore roof top gardens • The City should grow up, not out • Protect the trees around Telford Lake
CLIMATE CHANGE AND ENERGY 	**8%**	• Climate needs to be addressed to protect local species, and global ones like polar bears • The City should put more money into addressing climate change • More incentives should be available to promote solar energy, and other renewables for residents • The weather is being changed by the government spraying chemicals in the sky • Infrastructure to support EVs • The CEIP program is working well in the City
LIGHT AND NOISE 	**15%**	• Light and noise pollution are problems in the City • Highway noise pollution is an issue in some parts of the City • Alleys require more lights • Construction noise bylaws need to be enforced • Commercial buildings are often empty at night with lights on • Grant MacEwan Blvd. there are light and noise issues from trucks • Plane noise pollution is an issue • Streetlights in north Telford are too spread out and feel unsafe
OTHER	**N/A**	• Insects need to be protected as a core part of the health of the environment • The City is very bike friendly all year round • The City should hire a Biologist on staff

2. KEY STAKEHOLDER MEETINGS

Key stakeholder meetings were held with leadership, advisory board members, community organizations, and environmental advocates to share the Plan update and receive feedback on priorities and actions that could be incorporated into the Plan. In total, 4 sessions were held from October 12th – 23rd, 2023, and consisted of interactive presentations and discussion opportunities.

2.1. COMMITTEE OF THE WHOLE

The Project Team virtually presented at the Committee of the Whole meeting with City Council on October 16th, 2023. During this meeting, a presentation was used to facilitate discussions and ask questions about future directions for the updated Plan. The Mayor and Council (7 participants in total) were asked, and their responses were.

1. Which of the topic areas were their top 1-2 priorities?
2. What the opportunities are for the City, and the challenges to getting there.

Topic	Priorities	Comments (If any)
WASTE 	**20%**	• Education is key for proper sorting of waste • Interested in a waste recovery centre • Waste to energy is an avenue to explore more in the region, but regional partnerships are needed for this to succeed • Some schools do a great job showing kids how to divert waste
WATER 	**7%**	• No Comments
AIR 	**7%**	• Multiuse pathways are important to the City

(Table Continued on next page)

Topic	Priorities	Comments (If any)
LAND 	**33%**	• Protecting land in the City will become increasingly important. • There is a need to balance ecological value with development to improve the City • Ecosystem services should be considered for means of responsibility developing our land • Residents are satisfied and deeply connected with parks and green spaces, as shown by City surveys
CLIMATE CHANGE AND ENERGY 	**7%**	• Climate change is an emerging issue, and there are funding opportunities to support our City to address it • The solar panels the City has been able to secure are a big win for the City
LIGHT AND NOISE 	**27%**	• Well managed light and noise help bring a sense of serenity to the City and directly impacts people's quality of life • There is a need to continue protecting Telford Lake from light and noise • City did well at switching to LEDs throughout the community • Noise is being well managed • The City should work towards dark sky initiatives by working with the industrial and commercial sectors to lower their light and noise impacts • The solar panels the City secured are a source of community pride
OTHER	**N/A**	• City is leveraging federal and provincial grants well, and needs to continue doing this reduce the burden on taxpayers • The residents of the City truly care about their community • Our community is very connected to each other • Need to continue to improve on working with the residents on environmental stewardship

2.2. LEDUC ENVIRONMENTAL ADVISOR BOARD (LEAB) WORKSHOP

The Project Team held an in-person workshop on October 16th, 2023, with the Leduc Environmental Advisory Board (LEAB). During this meeting a presentation was used to facilitate discussions and ask questions about future directions for the updated Plan. In total, 11 participants attended the session. Workshop questions and a response summary is outlined below.

1. The Project Team held an in-person workshop on October 16th, 2023, with the Leduc Environmental Advisory Board (LEAB). During this meeting a presentation was used to facilitate discussions and ask questions about future directions for the updated Plan. In total, 11 participants attended the session. Workshop questions and a response summary is outlined below.
2. Which of the topic areas were their top 1-2 priorities?
3. What the opportunities are for the City, and the challenges to getting there.

Topic	Priorities	Comments (If any)
WASTE 	**11%**	• More education on recycling • Expanding what can be recycled in Leduc • Expand multifamily waste programs
WATER 	**6%**	• Protecting the watershed is important
AIR 	**6%**	• As a transportation hub for rail and HWY 2, Leduc experiences air pollution • Improvements to public transit to reduce car dependency
LAND 	**27%**	• There is a desire to balance natural areas and new development (ie. Telford Lake) • Respecting and maintaining natural area footprints • Create more awareness about pollinator garden program

(Table Continued on next page)

Topic	Priorities	Comments (If any)
CLIMATE CHANGE AND ENERGY 	**22%**	• Reduce GHG emissions • Shift to renewables • Concerns about rising costs of energy • Reduce energy demands by making more walkable/bikeable infrastructure and improve transit service • Increase energy efficiency of public buildings • Show leadership with climate change and strive toward net 0 ahead of provincial and federal goals • Become a leader in renewable energy • Develop a climate mitigation strategy
LIGHT AND NOISE 	**27%**	• Light pollution • Impacts on wildlife/nocturnal species • Light and noise around environmentally sensitive areas • Light intensity regulation based on residential/commercial/ industrial, downward facing light sources
OTHER	**N/A**	• Develop flexible and adaptable policy to accommodate innovation and new technology, minimize restrictions • Incentivize new green development, and energy efficiency initiatives (home and non-residential upgrades, active transportation – ebikes) • Engagement that is inclusive and incorporates diverse perspectives, including youth. Engagement that seeks to educate community members. • Develop environmental education programs

2.3. KEY STAKEHOLDER WORKSHOPS

Key stakeholders were invited to attend a workshop to share their environmental priorities and ideas about actions to include in the Plan update. Attendees represented school boards, environmental specialists, and community organizations. In total, 8 key stakeholders participated in two virtual workshop sessions held on October 12th and 23rd, 2023. Workshop questions and a response summary is outlined below.

1. Which of the topic areas were their top 1-2 priorities?
2. What the opportunities are for the City, and how can community organizations support environmental initiatives?

Topic	Priorities	Comments (If any)
WASTE 	**12%**	• Divert more waste • Recycling facilities are working well
WATER 	**19%**	• Encourage more x-scaping and education on water efficient lawn alternatives • Consider water efficient planting • Use grey water or captured rainwater for watering vegetation
AIR 	**6%**	• Control idling • Prioritize more density to reduce car dependency and air pollution
LAND 	**31%**	• Ensure there are sites reserved for new schools • Protect agricultural lands • Prioritize grey field development • Incentivize residential density • Build community around a 'town centre' to include transit, access to amenities, and greenspace • Maintain natural areas around Telford Lake • Incorporate more naturalization initiatives and include community members in program development • City growth should maintain natural areas • The trail system and Telford Lake are important features in the community

(Table Continued on next page)

Topic	Priorities	Comments (If any)
CLIMATE CHANGE AND ENERGY 	**19%**	• Solar can be integrated in industrial parks and public buildings • Incentivize developers to add solar • Recycling solar panels can be challenging • Wind energy is of interest in the community, and could be a regional partnership opportunity
LIGHT AND NOISE 	**12%**	• Continue dark sky initiatives through shielded LED lighting • Encourage an incentivize other organizations to make LED upgrades • Lighting is important for safety
OTHER	**N/A**	• Student leadership can participate in implementing environmental initiatives • Integrate recycling programs and gardening in schools through joint initiatives between the City and the school boards • Individuals can offer expertise and help direct initiatives; the City can facilitate future discussion to keep community members involved • More education about front yard gardens and at-home composting

3. STAFF WORKSHOP

On October 16th, 2023, the Project Team held a workshop with City of Leduc staff from various departments, including engineering & environmental, planning & development, cultural development, protective services, parks, and public services. The workshop provided staff with an overview of initial Environmental Plan, and the achievements the City was able to make over the past 10 years. Staff had the opportunity to vote on their priority topic areas and identify actions that the City could take in the next 10 years. Staff were put into groups based on the topics they voted on, and had conversations about actions, barriers, and opportunities.

The following table provides an overview of input gathered from the workshop.

Topic	Priorities	Comments (If any)
WASTE 	**17%**	• Having more waste management options for businesses • Having more items accepted into the residential services, including glass • Expand services to include mattress recycling • Keep waste management easily accessible • Promote knowledge of waste management through communication channels
WATER 	**17%**	• Stormwater quality is a priority for the City • Developing a beach and other water amenities • Installing low flow equipment is important • Regional collaboration is key • Protection of water quality • Increase public education campaigns about water use • Protect the quality of stormwater
AIR 	**0%**	• Support active transportation initiatives

(Table continued on next page)

Topic	Priorities	Comments (If any)
LAND	**50%**	• Placemaking and space making initiatives so people can have places to gather • Share information about medicinal plans • Connecting to our local heritage • Increasing food security • Incentives for people to retrofit their homes, beyond final benefits • Indigenous planting practices • Land consultations with indigenous communities • Social connectivity • Increased education about human and wildlife interactions • Work with developers to set naturalization expectations for green spaces • Increase education opportunities about naturalization • Create larger parks and boulevards to make it easier and safer to maintain • Implement forward thinking initiatives to project natural areas • Advocate for change to MGA for more MR to protect natural tree stands • Create a unified approach across departments to manage natural areas • Be more efficient with land designated for school sites (explore two story schools) • Create more education opportunities for council to learn about the benefits of parks (costs, long term impact, etc.) • Explore goat tending to manage invasive species • Plant more trees

(Table continued on next page)

CLIMATE CHANGE AND ENERGY 	**17%**	• Developing more solar panels • Expand renewable energy opportunities • Identify adaptation measures for the changing climate • Future develop EV charging locations • Identify feasibility of heat pumps • Implement anti-idling initiatives • Explore more grants for energy efficiency • Considering use used materials to support a circular economy • Explore requiring developers to install EV compatible electrical systems. • Create more opportunities for active transportation • Exploring passive building design • Create more opportunities for permeable surfaces and more trees • Safety codes to covered renewable energy
LIGHT AND NOISE 	**0%**	• Dark sky initiative, but need to be considerate that light is a cultural symbol in many cultures
OTHER	**N/A**	• Make the communications about these topics accessible and fun • Integrating systems thinking into how departments work together • Projects should be scoped out across departments, not in silos

We also asked the staff to identify what barriers they felt there were to implement the actions they identified above. The following is a word cloud of their responses.

We also empower the staff to highlight who they felt would help implement the actions that they brainstormed in their groups, the following word cloud demonstrates their input.

4. ONLINE SURVEY

An online survey was conducted to share information about the Environmental Plan update and seek community input on environmental priorities, programming, and initiatives.

The survey was active from September 7th – 28th, 2023 on the City of Leduc's website and included 13 questions.

THEME SUMMARY

Key themes that emerged from the survey responses are outlined below.

Protect + Expand Natural Areas

Natural areas are important to community members for recreational and ecological purposes. Responses referenced the Telford Lake area as a significant ecological site to protect. Naturalization was also noted by respondents. Tree planting and clean up programs were supported by respondents.

Develop Recycling Services

Community members indicated that expanded recycling services to include more recyclable materials through the curbside recycling program. Some community members indicated a preference for a blue bin program to replace blue bags. Recycling services for multi-family buildings was also mentioned.

Access to Educational Resources

Information was requested by community members to learn more about environmental topics like electric transportation, sustainable landscaping, and waste diversion. Programs for children and youth to learn and participated in environmental initiatives was requested.

Energy + Climate Change

Community members indicated interest in home energy programs, including solar, to reduce utility bills.

RESPONSE SUMMARY:

Over 175 participants toke part in the survey, Upon looking at the voluntary demographic distribution of who participated in the survey, 85% of the participants were over the age of 35, and 62% self-identified as female. Addionally, 82% participants indicated that they lived in single family homes.

When asked which environmental programs participants are aware of or have participated in, participants indicated high awareness and usage of the City's waste programs. 89% of participants indicated the Eco Station, and 83% indicated recycling and organics programs. Participants also indcated that they had used alternative transportation including transit or e-scooters, and had taken advantage of the annual Green and Gold Event for purchasing water conservation equipment.

Participants were asked to select which topics area were their priority. The topics that emerged were waste, land, as well as climate change and energy.

When asked which topics the community would like to learn more about, most of the participants selected and interest in learning more about home energy efficiency. Other topics of interest included naturalization efforts to reduce pesticide uses & incorporating native planting, environmental grants & rebate programs, natural area protection & restoration, and water conservation.

The word cloud below represents key words used to describe how community members envision contributing to environmental initiatives in Leduc. The size of each word indicates its frequency or importance. Many respondents referenced participating in waste diversion programs including recycling, composting, and community clean-up events. Others mentioned that they see themselves volunteering for environmental initiatives. Additional themes included choosing sustainable or active transportation options, making sustainable changes at home (planting alternative lawns, collecting rainwater, installing residential solar), and seeking and sharing environmental education opportunities.

When asked if there should be changes to any of the current services or programs, most participants did not have specific changes, however those that did shared the key themes outlined below.

Waste

Participants were keen to see the program moved from bagged recycling to a cart system, that would accept a wider range of materials. Furthermore, participants were keen to see recycling and organics programs in multi-family

buildings.

Naturalization of Green Spaces

Many participants were keen to see the City manage naturalized areas differently, including reducing moving, increasing native planting, and maintaining tree stands.

Maintaining Telford Lake

Several participants specially identified Telford Lake as a key area to protect, by creating a buffer zone around it to protect it from future development and encroachment.

Information Sharing

How information is distributed, is often as important as the information itself, and as such participants were asked how they wanted to learn about programs and services offered by the City as a result of this Plan. When asked how participants preferred hearing about programs through the City, they indicated the City of Leduc website (64%), social media (53%), email newsletters (45%), and road signs (36%) as their top preferences.

5. INTERACTIVE POSTERS

Key information about the initial Environmental Plan was prepared and placed in the Leduc Civic Centre for 2 weeks from October 2nd - 17th, 2023. To accompany the information were stickers which participants could apply to the posters about which topic area they felt were the most important.

The below table is a summary of the findings.

Topic	Priorities
WASTE 	**25%**
WATER 	**15%**
AIR 	**5%**

Topic	Priorities
LAND 	**25%**
CLIMATE CHANGE AND ENERGY 	**10%**
LIGHT AND NOISE 	**5%**

6. YOUTH ENGAGEMENT

On October 26th, 2023, a member of the City Environmental Team attended a meeting with the Leduc Scouts about the Environmental Plan. The meeting included scouts between ages of 9-12, and any troop leaders in attendance. This group had the opportunity to answer three (3) questions tailored to their age group.

The initial question asked: **"What current environmental programs that the City has do you like?"**

Some themes from their responses included:

- Organics program
- Tree planting days
- Naturalized areas, including Telford lake, forests, and hills
- Bike trails
- Available water in the river

The second questions asked: **"What is an environmental program you would like to see the City do?"**

Some themes from their responses included:

- Solar panels
- Bird watching programs
- Waste management throughout the City
- Protect biodiversity including frogs, birds,
- Protecting a healthy ecosystem
- Ways to prevent light and noise pollution, especially with industrial areas and the train

Topic	Priorities	Comments (If any)
WASTE 	**13%**	• Waste management should be more accessible throughout the City • If we manage our waste better, there is more room for animal habitat • There is still pollution around town • Finding alternatives to wasteful packaging
WATER 	**0%**	• No comments

(Table continued on next page)

Topic	Priorities	Comments (If any)
AIR 	**0%**	• No comments
LAND 	**25%**	• Trees are important in our City • Need to preserve areas for other species and their habitat needs
CLIMATE CHANGE AND ENERGY 	**38%**	• No comments
LIGHT AND NOISE 	**25%**	• Protecting species such as owls, frogs, and raccoons from light pollution disrupting their routines

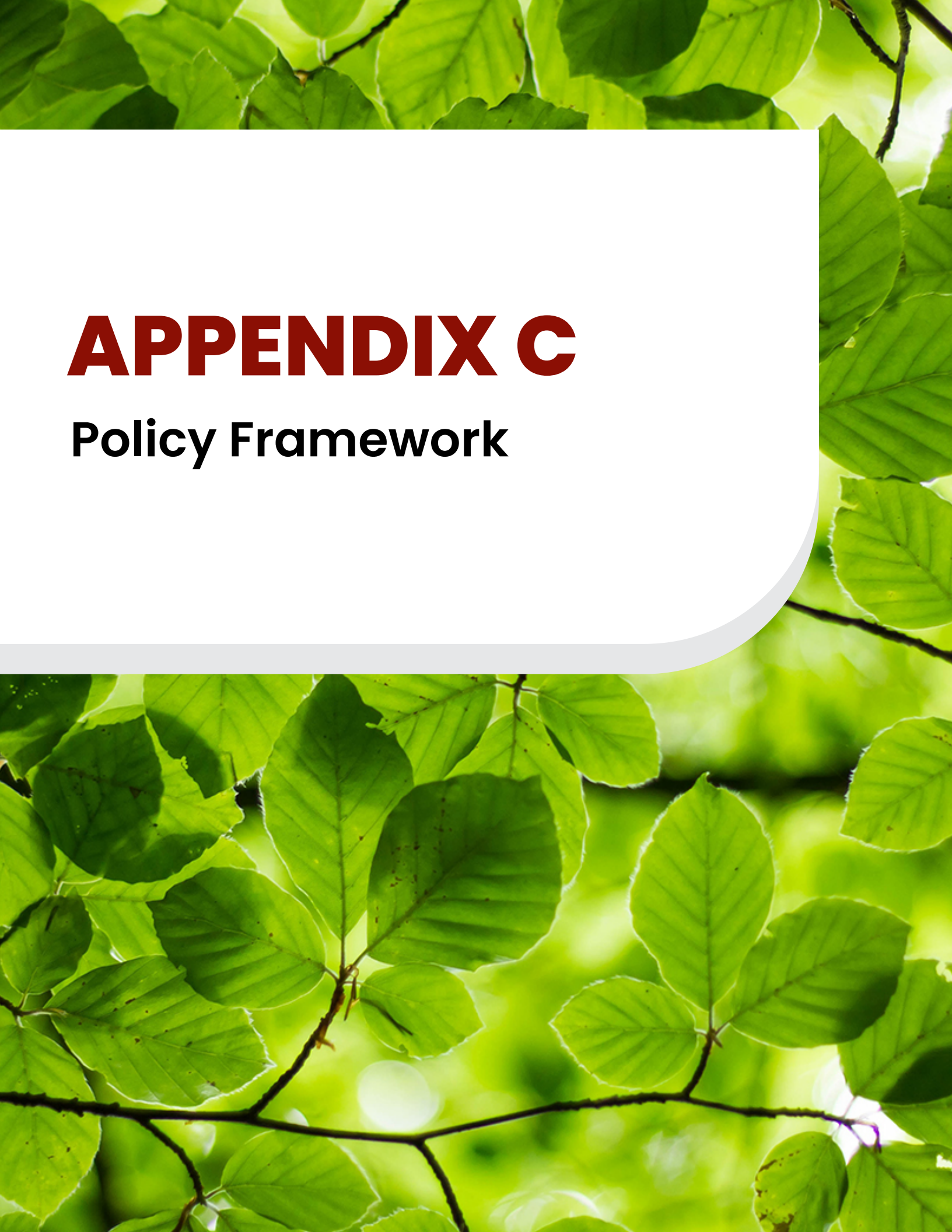
7. SOCIAL MEDIA

Social media was used to promote the Environmental Plan update and generate feedback on poll questions posted on Instagram. The activity was primarily driven by stories, polls, and quizzes. Participants were asked about their knowledge of the previous Plan, and what they felt should be the priority for the updated plan. Additionally, other posts were used to generate excitement about other engagement events such as VolunteerFest and completing the online survey. In total, the information reached over 8,100 participants and 236 individuals responded to at least one post or poll question.

In total, 236 individuals responded to the polls to provide feedback. Listed below is a summary of the key findings from the social media polls.

- When asked how community members wanted to keep Leduc healthy, the majority were interested in volunteer opportunities (50%) and environmental rebate programs (21%)
- Participants felt that land and natural areas preservation was an area that the City should work on in terms of environmental stewardship

Figure 1: Social media input results



APPENDIX C

Policy Framework

SUBJECT: City of Leduc Environmental Plan Policy Framework
DATE: February 1, 2024
FILE: 002931.0025.01

1.0 POLICY FRAMEWORK

The purpose of this framework is to summarize the applicable policies that inform and align with the Environmental Plan. This section is intended to provide context and highlight how the Environmental Plan complies and connects with existing provincial, regional, and municipal regulations and plans. The relevant policy documents are listed below in order of hierarchy, from the highest-level policy documents to the most detailed policy direction. During the update of the Environmental Plan, the City was also in the process of developing their Transportation Master Plan and Stormwater Master Plan, which are not referenced below, but have been coordinated with throughout the development of this Plan.

1.1 MUNICIPAL GOVERNMENT ACT AND NORTH SASKATCHEWAN REGIONAL PLAN

The Municipal Government Act (MGA) and the North Saskatchewan Regional Plan (NSRP) are essential documents that play a crucial role in governing municipalities in the Province of Alberta. The MGA serves as a legislative framework that guides the operations of all municipalities. The NSRP, which is currently under development, will ultimately provide a long-term vision to align policies within the North Saskatchewan Region. These documents establish governance structures and facilitate the coordination of provincial policies at the regional level. By doing so, they strive to balance Alberta's economic prosperity, environmental sustainability, and social well-being harmoniously.

The Environmental Plan will further support the NSRP's regional outcomes, including:

- Managing air quality to support human, and ecosystem needs through shared stewardship.
- Managing watersheds to support healthy ecosystems and human needs through shared stewardship.
- Sustaining biodiversity and ecosystem functions through shared stewardship.

1.2 ALBERTA LAND STEWARDSHIP ACT AND LAND USE FRAMEWORK

The Land Stewardship Act provides the legal basis for regional land use planning in Alberta and ensures the coordination of decisions concerning land, species, human settlement, natural resources, and the environment. The Land Use Framework sets out an approach to manage public and private lands as well as natural resources to achieve the province's long-term economic, environmental, and social goals.

The Environmental Plan will follow the provincial blueprint for land-use management and decision making to ensure the City of Leduc's goals complement the province's policies related to water, air, and climate change.

1.3 ALBERTA WATER ACT

The Alberta Water Act is provincial legislation that supports the conservation and management of water in Alberta. The Act requires the preparation of water management plans by Municipalities. An approval under the Act is required before undertaking construction and related activities within a water body.

The Environmental Plan will support water conservation and management through the following goals:

- Innovating to meet the demands of stormwater treatment and retention as the City grows.
- Supporting water conservation through landscaping techniques and recycling initiatives.
- Collaboratively working to improve and protect the watershed.

1.4 CITY OF LEDUC - MUNICIPAL DEVELOPMENT PLAN (BYLAW 1057) 2020

The Municipal Development Plan (MDP) is a high-level, long-range planning document developed by the City to guide land use, and prioritize community services and infrastructure investments. The MDP was last updated in 2020 and reflects many of the changes brought about by Leduc's significant population growth since that time. Overall, the MDP aims to influence how residents and businesses interact with Leduc's built and natural environments and includes the transportation network, amenities, and buildings.

The MDP speaks to the overarching goal for the City of Leduc to be a community leader in environmental sustainability and stewardship. The Environmental Plan will further support and promote the following MDP policy areas:

- Environmental Sustainability
- Climate Adaptation
- Clean Air, Greenhouse Gas Reduction and Energy Efficiency
- Solid Waste and Hazardous Materials Management
- Urban Forest and Natural Habitats

1.5 CITY OF LEDUC STRATEGIC PLAN 2023-2026

The Strategic Plan Highlights Council's desired strategic direction for the City of Leduc and highlights the importance of developing other plans, policies, and programs. The Plan notes that Council is committed to protecting and enhancing both the natural and built environments by leveraging best practices and innovative approaches to steward the environment and reduce the City's environmental footprint. The Environmental Plan aligns with the Strategic Plan's goal to protect the integrity of the environment and balance growth with environmental conservation.

1.6 CITY OF LEDUC GREENHOUSE GAS (GHG) REDUCTION ACTION PLAN 2018

The 2018 GHG Reduction Action Plan provides a roadmap for corporate and community-wide actions to reduce GHG emissions over the next decade. Leduc has chosen an overall target of reducing community-wide GHG emissions to 3 percent below business-as-usual (BAU) projections by 2030 and reducing corporate emissions to 20 percent below BAU projections by 2030. The Plan assigns departmental responsibilities, estimated cost profiles, and timelines to ensure accountability and help Leduc meet these GHG reduction targets.

The Environmental Plan will align with the GHG Reduction Action Plan through the following goals:

- Encouraging active transportation and minimizing personal vehicle use dependency.
- Improving accessibility of public transportation.
- Decreasing energy demand and increasing energy efficiency.
- Reducing GHG emissions.
- Improving climate resiliency.

1.7 CITY OF LEDUC PARKS AND OPEN SPACES AND TRAILS (POST) MASTER PLAN 2020

An update to the previous 2012 Parks, Open Space and Trails (POST) Master Plan was completed in 2020 and reflects updated community priorities, recent developments, and current Leduc strategies and policies. The objective of the updated Master Plan is to ensure that parks in Leduc are well-managed fiscally, ecologically sustainable, safe, and accessible to enrich the overall quality of life for everyone in the community. The document is intended to direct POST planning over the next decade and based within seven strategies, including:

- Access and connectivity
- Nature and environment
- Facilities
- Amenities
- Safety
- Management and Maintenance
- Programming

The Environmental Plan will align with these strategies through its focus on conservation and protection of the natural environment and sustainable land management.

1.8 CITY OF LEDUC WATER MASTER PLAN 2014 AND WATER CONSERVATION, EFFICIENCY AND PRODUCTIVITY PLAN 2015

The overall objective of the 2014 Water Master Plan was to review the existing system, propose improvements to address existing system deficiencies as well as to support future development, and propose future expansion of the water distribution system. Since the completion of the 2014 Plan, the City has experienced significant development, as well as the construction of a new reservoir and pumphouse. In addition, the City of Leduc is seeing a decreasing trend in water use as water reduction measures are applied.

The Environmental Plan will work alongside the Water Master Plan and Water Conservation Plan to support sustainable water management by including actions related to stormwater, water conservation, natural water systems, and watersheds.

1.9 CITY OF LEDUC WEATHER AND CLIMATE READINESS PLAN (WCRP) 2014

The Weather and Climate Readiness Plan stresses the importance of employing an iterative risk management process to manage changing weather and climate risks to Leduc's corporate services. Building on the City's existing risk management process, the WCRP identifies 21 priority risks to Leduc's corporate services resulting from weather and climate hazards. Eight of these risks were deemed "moderate" or "high-risk" events, thereby warranting immediate action, and acting as the focus of the WCRP. The WCRP acts as the preliminary document informing the development of a functional Climate Change Readiness Plan for Leduc.

The Environmental Plan builds on the WCRP Plan to manage priority risks and increase climate resiliency within the community.

1.10 CITY OF LEDUC TRANSPORTATION MASTER PLAN (TMP) 2018

The 2018 Transportation Master Plan was developed in response to the City's population and employment growth, which prompted the City's desire to prioritize its transportation needs over the long-term. The 2018 TMP encourages the development of a mix of transportation modes to create an accessible, sustainable system. The TMP is used to guide future developments and plan long-term infrastructure improvements.

The Environmental Plan will support the City in adopting a holistic approach to transportation planning. Actions included in the Plan focus on electric and low emissions vehicles, as well as active and the public transportation.