

# Rural Municipality of East St. Paul Climate Change Implementation Strategy

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March 2021



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### Definitions

**Climate:** how the atmosphere behaves over relatively long periods of time.

**Climate Change:** A change in global or regional climate patterns, attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels

**Climate Change Plan:** The overall process encompassing the approach that the Rural Municipality of East Saint Paul has taken in identifying, planning, and responding to climate change. The Climate Change Plan is composed of the *Climate Change Risk and Vulnerability Assessment* (September 2020), the *Climate Change Resiliency Plan* (March 2021), and the *Climate Change Implementation Strategy* (March 2021).

**Climate Hazards:** Weather and climate events expected to become more frequent and/or severe within the Rural Municipality of East St. Paul through 2050, as identified in the *Climate Change Risk and Vulnerability Assessment*.

**Drought:** A period of abnormally dry weather long enough to cause a serious hydrological imbalance.<sup>2</sup>

**Extreme Weather Event:** an event that is rare at a particular place and time of year.<sup>2</sup>

**Freeze-thaw cycles:** A freeze-thaw cycle occurs when the daily maximum temperature is higher than 0 °C and the daily minimum temperature is less than or equal to -1 °C. The minimum temperature of -1 °C (rather than 0 °C) is used as the threshold for freezing to raise the likelihood that water actually froze at the surface.<sup>1</sup>

**Greenhouse Gases (GHGs):** Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the Earth's surface, the atmosphere itself, and by clouds. Water vapor (H<sub>2</sub>O), carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), methane (CH<sub>4</sub>) and ozone (O<sub>3</sub>) are the primary greenhouse gases in the Earth's atmosphere.<sup>1</sup>

**Precipitation:** The total amount of precipitation (rain, drizzle, snow, sleet, etc.) Frozen precipitation is measured according to its liquid equivalent.<sup>1</sup>

**Risk:** The potential for consequences where something of value is at stake and where the outcome is uncertain, recognizing the diversity of values. The term risk is often used to refer to the potential, when the outcome is uncertain, for adverse consequences on lives, livelihoods, health, ecosystems and species, economic, social and cultural assets, services (including environmental services) and infrastructure.<sup>2</sup>

**RM:** Rural Municipality, in this report, when use don its own, it will always refer to the Rural Municipality of East St. Paul.

**Resiliency Actions:** actions identified by the Advisory and Steering Committees which address the risks and vulnerabilities outlined in the *Climate Change Risk and Vulnerability Assessment*.

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<sup>1</sup> IPCC. 2014. Annex II: Glossary. In: *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. IPCC, Geneva, Switzerland, pp. 117-130

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**Resiliency Visions and Goals:** Three visions/goals outlining the desired future state of the Rural Municipality of East St. Paul from a climate change resiliency perspective. The visions/goals were developed through community consultation, and introduced in the *Climate Change Risk and Vulnerability Assessment*.

**Rural Municipality of East Saint Paul Climate Change Adaptation Steering Committee:** A body comprised of a cross-section of Rural Municipality of East Saint Paul staff members from both Administration and Operations, as well as a Council Representative.

**Rural Municipality of East Saint Paul Climate Change Advisory Committee:** A nonpolitical body of residents and business owners residing in the Rural Municipality of East Saint Paul. The advisory committee was consulted at every phase of the development of the Climate Change Plan. The Advisory Committee represents a cross-section of the community (residential, rural residential, commercial/industrial, agricultural, recreation, and youth).

**RVA:** Rural Municipality of East St. Paul Climate Change Risk and Vulnerability Assessment (September, 2020)

**Vulnerability:** With respect to climate change, refers to the degree to which a system is susceptible to, and unable to cope with, adverse effects resulting from climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its capacity to adapt.<sup>2</sup>

**Weather** - conditions of the atmosphere (temperature, humidity, precipitation, cloudiness, brightness, visibility, wind, and atmospheric pressure) over a short period of time.

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<sup>2</sup> Pacific Climate Impacts Consortium. 2020. Glossary. <https://www.pacificclimate.org/resources/glossary>

# Climate Change Resiliency Plan

## 1 Executive Summary

The RM of East St. Paul is undergoing a process of developing a Climate Change Plan made up of three main reports. The September 2020 *Climate Change Risk and Vulnerability Assessment* (RVA) was an important first step in identifying the risks and challenges that the RM will face due to climate change through 2050. The risks were identified through consultation with community members, RM staff, the Council of the RM, and through evaluation of peer-reviewed climate science. RM staff and Council were engaged through the Climate Change Steering Committee (Steering Committee), while the community was engaged through the Climate Change Advisory Committee (Advisory Committee).

The subsequent March 2021 *Climate Change Resiliency Plan* (Resiliency Plan) was the second of the three reports, and introduced a series of short and long-term actions, termed Resiliency Actions, which sought to mitigate the risks identified in the RVA, and bring the RM closer to its Resiliency Visions and Goals (Appendix 2 of the RVA). Resiliency Actions were developed through workshops with the Steering Committee, and approved by the community through consultation with the Advisory Committee. Further consultation was conducted with the community through a survey, which sought to assess the resiliency of the community, and determine the community priorities for addressing climate hazards. Based on this, the Resiliency Actions were ranked.

Identifying a path to completion of the Resiliency Actions introduced in the Resiliency Plan was the basis of this report, the *Climate Change Implementation Strategy* (Implementation Strategy). The Implementation Strategy is the third and final report forming the Climate Change Plan. This report proposes timelines, responsible parties, and possible funding avenues for the completion of the Resiliency Actions. A seven-year timeline was proposed for addressing the Resiliency Actions. The placement of actions within this timeline took into consideration the ranked climate hazard priorities established in the Resiliency Plan, as well as projected staff time and budgets, and the evolutionary nature of many of the actions (i.e. some short term actions were required to be completed before other proposed long term actions).

Alongside the schedule for implementation, responsibility for the completion of each Resiliency Action was assigned to an appropriate RM staff member, based on their area of expertise. The Implementation Team was formed as the group of all staff members assigned responsibility for one or more Resiliency Actions. The position of Team Lead was also assigned, with the added responsibility of convening regular meetings of the Implementation Team to review and monitor progress and challenges, and to coordinate preparation of budget items for Council consideration.

Finally, avenues for funding of the Resiliency Actions were identified where applicable. The completed Climate Change Plan directly addresses the RM's Strategic Plan item #12 – Exemplified Climate Change Resiliency, and is an important leveraging tool for the RM in applying for project funding. Another way in which the RM could apply more leverage over funding would be to join the North-East Red Watershed District. The Watershed Districts are a Provincially-mandated organization of municipalities within 14 identified major watersheds of Southern Manitoba. The Districts have the goal of sharing resources to tackle watershed-scale water management problems. Water quantity and quality are two identified major vulnerabilities in the Resiliency Plan, and can only be partially addressed through actions within the RM.

## 2 Background

The RM has framed its approach to the development of the Climate Change Plan as a three-staged activity. The first report *Climate Change Risk and Vulnerability Assessment* (September 2020) (RVA) provided a detailed overview of the risks and vulnerability assessment approach and findings. The second report *Climate Change Resiliency Plan* (March 2021) (Resiliency Plan) proposed short and long term actions to help mitigate the risks presented in the RVA.



*Figure 1: Stages of the RM's planning for climate adaptation and resiliency*

To frame each stage, the Resiliency Vision and Goals were developed. This process established the guiding principles and ultimate vision of the RM with input from the community, RM staff, and Council. The community of the RM was represented by the Rural Municipality of East Saint Paul Climate Change Advisory Committee (Advisory Committee), while RM staff and Council were represented by the Rural Municipality of East Saint Paul Climate Change Adaptation Steering Committee (Steering Committee). Both committees were consulted for input in the RVA, the Resiliency Plan, and this document, the *Climate Change Implementation Strategy* (Implementation Strategy). Consultation with the general public was intended to be a cornerstone of data collection for all stages, but the COVID-19 pandemic and funding timelines impeded this, and an alternative, digital, engagement approach were taken.

It is important to note that the Climate Change Plan addresses Climate Adaptation, or a set of measures which aim to reduce the vulnerability of the RM to hazards associated with climate change. Greenhouse gas (GHG) emissions reduction is addressed in an ongoing separate plan, the *Climate Change Local Action Plan* (2017). The Climate Change Plan directly addresses the RM's Strategic Plan item #12 – Exemplified Climate Change Resiliency.

### 2.1 Objective of Each Stage

#### 1. Risk and Vulnerability Assessment

This stage is defined by the following activities:

- Understanding and contextualizing likely trends in climate conditions over a 10 to 30-year time horizon;
- Assessing the potential impacts of changes in climate conditions on the RM; and
- Identifying risks and vulnerabilities that these changes may have on the RM and the larger region.

#### 2. Resiliency Plan

This stage is defined by the following activities:

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- Reflecting on the community risks and vulnerabilities in relation to climate change; and
- Identifying actions to mitigate identified risks and vulnerabilities.

These actions may include the development of policy, capital undertakings, operational measures, adjusting or developing plans or training of RM staff. It will also include raising awareness and educating residents, institutions and businesses in the community as well as developing partnerships with surrounding communities and other levels of government.

### **3. Implementation Strategy**

This stage is defined by the following activities:

- Prioritizing actions; and
- Identifying how resiliency and adaptation measures can be implemented, including responsible parties, timelines and budgets.

## **2.2 East St. Paul's Resiliency Vision and Goals**

The Resiliency Vision and Goals framework was co-developed with the RM's Steering Committee and Advisory Committee, with input from Council. They draw inference from our partners, our network, and global frameworks. In doing so they help anchor the RM's actions with those of others building a broader framework of resiliency that reflects back on us, making our community even stronger. The goals acknowledge that choices today have long-term impacts on our quality of life, the environment, and the economy. The needs and interests of the residents, businesses, and institutions of the RM were a core element in their framing. These goals also recognize our interdependencies with the natural environment and neighboring municipalities and reflect that the RM is a member of a broader provincial, national, and world community.

The Resiliency Vision and Goals provide a frame of reference to plan for the future of our community within the context of a changing climate. They provide a context from which to consider and evaluate climate risks for the community.

## **2.3 Risk and Vulnerability Assessment**

The RM's RVA identified potential climate changes based on peer-reviewed scientific information sources, and engaged the Steering Committee and Advisory Committee to identify interactions between potential changes and aspects and assets of the RM. The list of risks and vulnerabilities remains open for further additions based on new knowledge. Council adopted the September 2020 RVA by resolution on December 15<sup>th</sup>, 2020. The RVA considered potential effects of a changing climate on the ecological, social, and economic aspects of the RM. A risk assessment table was generated to consistently display and summarize the duration, magnitude, extent, and likelihood of the events. The socio-ecological context was also evaluated. The risks are to be used as informative tools for future decisions on public works and policies. They were also used to evaluate the actions defined in the Resiliency Plan.

## **2.4 Resiliency Plan**

The Resiliency Plan focused on presenting climate change adaptation actions developed through consultation with the Advisory and Steering Committees. The actions were described in detail, and categorized according to an estimate of their implementation time, short and long-term. The actions

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were further categorized by the Resiliency Vision/Goal which they most strongly addressed, and which climate hazards they would help to mitigate. A community survey evaluated the perceived risk of climate hazards, with the ranking of the hazards forming the basis of prioritization of actions. The survey found that residents were most concerned about damage and risks to safety caused by extreme wind events, snow and ice storms, and flooding, in that order. The list of actions remains open for future consideration as new risks associated with climate change are identified. Council adopted the March 2021 Resiliency Plan by resolution on March 23<sup>rd</sup>, 2021.

### 3 Method

The Implementation Strategy has been developed with regards to the milestones and requirements as established by the funding agency, the Federation of Canadian Municipalities (FCM) as well as applicable government and industry policies, standards, and guidance. The development of the Implementation Strategy is intended to address the following objectives:

- Prioritizing actions identified in the Resiliency Plan; and
- Identifying how resiliency and adaptation measures can be implemented, including responsible parties, timelines and budgets.

Prioritization of actions was partly conducted in the Resiliency Plan, based on the community survey, however, prioritization was also partly considered in the Implementation Strategy, based on the realities of staff time and budget constraints.

The construction of the Implementation strategy included the following tasks:

- Conceptual organization of actions;
- Assigning responsible parties through a RACI framework, and defining the Implementation Team;
- Identifying an approach to each action by defining sub-tasks;
- Identifying a timeline to complete all actions and placement of actions within that schedule;
- Providing estimates of staff time and budget amounts for tasks; and
- Identifying possible funding sources.

Further, actions were placed within the established timeline based on their assigned priority from the Resiliency Plan, and a practical evaluation of the budget and staff time available to complete the actions.

#### 3.1 Engagement

The Steering Committee was the primary contact for staff engagement. The committee is comprised of a cross-section of RM staff members from both Administration and Operations, as well as a Council Representative. Staff engagement also occurred with select RM individuals who are not members of the Steering Committee but who would be part of the Implementation Team (see Section 4.1). Individual working sessions were conducted with all RM staff who would be responsible for one or more Resiliency Actions. The goal of these sessions was to assess the proposed timeline, staff time requirements, and budget amounts.



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Community engagement involved the Advisory Committee. The committee aided the process by providing a community view on actions and their practicality and desirability for residents. The original engagement strategy was to provide the community an opportunity to participate through in-person workshops and open houses, but this was set aside due to the pandemic and funding timelines. A schedule of all engagement sessions is provided in Table 1.

*Table 1 - Steering and advisory committee engagement schedule*

Steering Committee and Staff Working Groups		Advisory Committee	
Emergency Coordinator	2021-03-11	Meeting #8	2021-03-02
Communications Coordinator, Planner	2021-03-12	Meeting #9	2021-03-16
Municipal Engineer	2021-03-15	Meeting #10	2021-03-30
Operations Manager, Assistant Operations Manager	2021-03-17		
Utilities Manager	2021-03-19		
Steering Committee Meeting #7	2021-03-30		

## 4 Implementation Strategy

The Implementation Strategy proposes a method for completing the Resiliency Actions meant to further the established Resiliency Visions and Goals and help mitigate the identified climate change risks and vulnerabilities. Six “action streams” were identified, which serve to group actions in broad categories based on the general risk area that the actions seek to address. Risk areas were derived from risks identified in the RVA. The six streams are identified in Table 2 below.

*Table 2 - Action streams*

Stream	Description
Public Health	Mental and physical well-being of the residents of the RM
Water Quantity	Management of issues related to too much and too little water
Private Property	Improving the resilience of property and assets of residents of the RM
RM Property	Improving the resilience of property and assets owned by the RM
Vegetation	All manner of flora within the RM, e.g. grasses, flowers, bushes, trees
Water Quality	The condition of stored natural water within the RM, including its effects of human, animal, and plant health

The action streams were useful in grouping actions in an evolutionary manner. Many “long-term” actions depend heavily, or were logical extensions of “short-term” actions. Actions were organized in a general flow chart, illustrated in Figure 2. The intent of this figure was to provide a “map” for the Resiliency Actions, showing how actions were connected, by intent or through knowledge transfer. The

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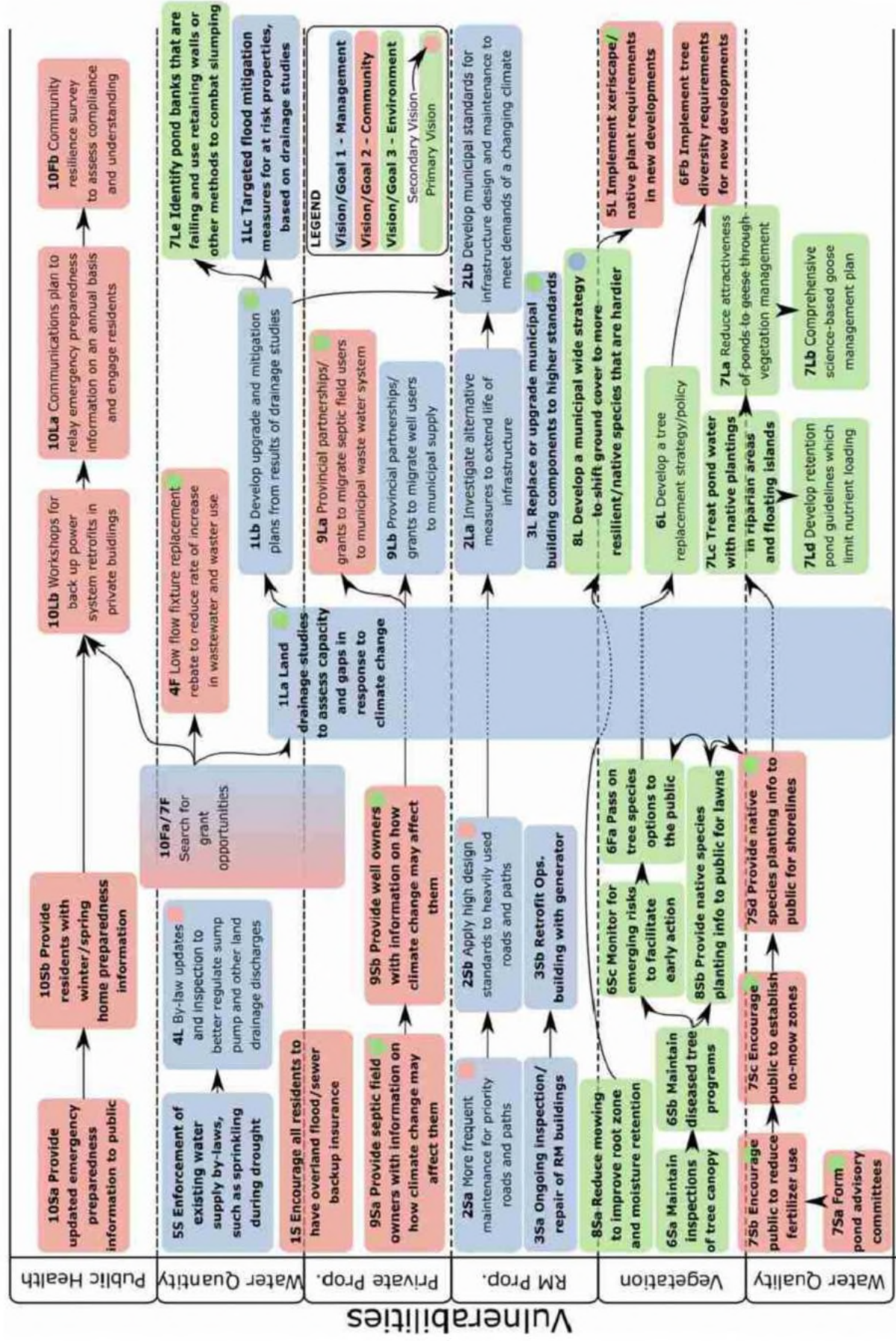


Figure 2 Resiliency actions flow chart, bold text indicates actions which have been at least started by RM staff

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placement of actions in this diagram was based on a qualitative assessment of action sequence, and was meant as a general guide to the progression of actions in the identified streams. The actions in the flow chart are colour-coded in the same manner as in the Resiliency Plan; based on the Resiliency Vision and Goal which they primarily address, with a small circle added in the upper right-hand corner of the box indicating the colour of the secondary action. The legend illustrates which colour corresponds to which Resiliency Vision and Goal. Arrows mark the direction of flow between actions, and actions which are dependent on previous actions. Some arrows cross the boundaries between streams or feed into multiple actions across several streams, indicating actions which are highly connected. Arrows which turn into dashed lines, such as those passing through Action 1La - land drainage study, indicate a transfer of knowledge, that is, information gathered during the study should be applied to the action which the arrow leads. Some actions address the intersection of two streams, meaning they would have benefits for both streams. For example, Action 8Sa - reducing mowing on RM property, would benefit both the quality of vegetation in the RM, as well as the state of RM property, since reducing mowing also helps keep moisture in the soil. Of course, there are more interactions than could be portrayed, but an effort was made to portray the strongest connections. The “Vulnerabilities” listed on the left axis were ordered in such a way to best visualize highly connected actions, and were not ranked based on priority. The bottom axis (Timeline) is for general reference, and to show the temporal progression of actions, and is not an absolute reference for the exact timing of actions.

### 4.1 Climate Change Plan Implementation Team

Through consideration of the RM’s organizational structure and current staff expertise, Resiliency Actions were assigned to appropriate staff members. Sub-tasks were identified for each action through consultation with the identified staff. Appendix A outlines all Resiliency Actions, their sub-tasks, and the staff positions associated with each in a RACI (Responsible, Accountable, Consulted, Informed) matrix format. Accountability for all actions rests on the RM’s Chief Administrative Officer and the RM Council as the ultimate decision makers.

The Climate Change Plan Implementation Team (Implementation Team) was defined as the group of all RM staff who had been assigned responsibility over one or more Resiliency Action. The members of the Implementation Team are listed in Table 3.

*Table 3 – Climate Change Plan Implementation Team*

Position	Abbreviation	Name
Team Lead	TL	Jennifer Rohl
Assistant Chief Administrative Officer	ACAO	Jennifer Rohl
Municipal Engineer	ME	Dave Wardrop
Operations Manager	OM	Andrew Toews
Assistant Operations Manager	AOM	Kurtis Johnson
Utilities Manager	UM	Don Winsor
Emergency Coordinator	EC	Dennis Wiwcharyk
Communications Coordinator	CC	TBD
Planner	P	Cara Nichols
Finance Manager	FM	Dane Pischke

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The Team Lead will be responsible for monitoring the progress of the Implementation Strategy, and suggesting and justifying changes to the schedule and scope of actions based on budgets, timelines, staff time, or other eventualities. The Team Lead will be in regular contact with other members of the Implementation Team to remain informed on the progress of actions and maintain the momentum of the Implementation Strategy. The RM may also consider hiring a summer student position to help address some of the identified actions.

### 4.2 Implementation Schedule

The schedule of implementation of the actions was set to occur over seven years. This timeframe was chosen based on the evolutionary nature of many of the actions, that is, many actions are in fact steps towards longer-term actions. The realities of budget constraints for large projects such as the land drainage studies, and the infrastructure improvements that will likely be recommended from these studies also played a role in the schedule length. The seven-year timeframe also coordinates well with a general recommendation for a re-assessment of municipal climate change plans on a five to ten-year timeframe. The timeframe was further broken down into the immediate future (2021, 2022) and “mid-term” (2023-2025) and “long-term” (2026-2028) categories. This further reflects the uncertainty associated with planning large-scale asset management studies and implementing corrective construction projects.

Many of the proposed actions are inter-related and exploratory in nature. These actions will yield greater knowledge on the scope of issues facing the RM. As such, only very rough estimates of both staff time and budget requirements can be made. These factors were grouped into five categories, as described in Table 4. The budget categories, excluding the “Nil” and “Unknown” options, correspond to limits set in the RM’s Tender and Procurement Policy (ACC-104). Budget estimates exclude the cost of staff time required for completion of the action. Tasks labeled with an “Unknown” estimated staff time or budget are heavily dependent on other actions to define their scopes. An example of this is Action 1Lb – drainage system upgrades. This action relies entirely on the findings of Action 1La – land drainage study, as such it is impossible for the RM to commit to a timeline and budget for these actions.

*Table 4 - Staff time and budget estimation categories*

<b>Category</b>	<b>Staff Time (hours)</b>	<b>Budget (\$)</b>
Nil	Approximately 0, or a savings of time	Approximately 0, or a savings of budget
Low	<40	Less than 10,000
Mid	40-100	Greater than 10,000 but less than 75,000
High	100+	Greater than 75,000
Unknown	Dependent on other actions	Dependent on other actions

While Figure 2 shows a general map of action sequencing, Appendix B Appendix A provides a much more detailed accounting of the implementation schedule for all identified actions, and staff time and budget estimates, broken down by each identified Implementation Team member.

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### 4.3 Funding Sources

#### 4.3.1 Summer Student Programs

Many of the Resiliency Actions included a communications plan. While the RM has active and effective communications channels, some actions may benefit from a more involved campaign than is currently possible given staff time. There are several avenues which the RM could pursue for funding of communications plans. Perhaps the most cost-efficient way would be through the hiring of a summer co-op student. ECO Canada and BioTalent both offer funding and grants to support summer co-op student salaries related to environmental projects. The summer student would also be available to work on other Resiliency Actions concurrently. Many of the actions assigned to the ACAO are relatively singular projects for which a co-op student would be able to make significant progress.

#### 4.3.2 FCM Funding

The Federation of Canadian Municipalities (FCM) offers many grants for rebate programs, infrastructure programs, and studies. Table 5 outlines some possible FCM grant opportunities available at the time of writing for specific Resiliency Actions.

*Table 5 - FCM grant programs related to community rebate programs*

<b>Resiliency Action</b>	<b>FCM Grant Program</b>
4F - Low flow fixture replacement rebate	FCM Pilot project: Water conservation, community project
7Le - Identify and repair failing pond banks	FCM Pilot projects: Stormwater quality, community project; Conservation Trust Fund
3L - Replace or upgrade municipal building components to higher standards	FCM Study: Water conservation, municipal project

#### 4.3.3 Conservation Grant Programs

Several Resilience Actions relate to the conservation of natural resources, such as water quality and ecosystems. There are many large grants available for studies and capital projects related to natural resource conservation. Table 6 outlines possible funding sources for Resiliency Actions related to natural resource conservation.

*Table 6 - Grant programs for natural resource conservation*

<b>Resiliency Action</b>	<b>Grant Programs</b>
1La – Land drainage study	Conservation and Climate Fund, Manitoba Habitat Heritage Corporation
7La – Reduce attractiveness of ponds to geese through vegetation management	Lake Winnipeg Basin Grant
7Ld - Develop retention pond design guidelines to limit nutrient loading	Conservation and Climate Fund, Watershed District, Lake Winnipeg Basin Program

Another strategy the RM should consider is joining a Watershed District. Manitoba's Watershed Districts have grown from the older Conservation District model, and are Provincially supported. Similar to the RM's choice to join the Red River Planning District, joining a Watershed District would allow the RM to access pooled resources, and funding for water management projects. Water doesn't follow municipal boundaries, and the RM is downstream of many other municipalities. Improvements to the drainage and water control infrastructure upstream of the RM would help address flooding concerns within the RM in

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a much more cost effective way than simply dealing with the water once it reaches the RM. The financial commitment to the District is negotiated on a case-by-case basis, but in general, for every three dollars of provincial funding received, the municipality must levy one dollar. Being part of a Watershed District would provide powerful leverage for the RM in applying for Provincial and Federal. For further information on the process, RM staff should contact Andrea McLean ([Andrea.McLean@gov.mb.ca](mailto:Andrea.McLean@gov.mb.ca)).

### 4.3.4 Project Specific Funding

For the specific communications program proposed in Action 10Lb - webinar/workshop development funding may be available for government-industry partnerships through the Manitoba Environmental Industries Association and the World Trade Center Winnipeg (specifically contact Derek Earl, [dearl@wtcwinnipeg.com](mailto:dearl@wtcwinnipeg.com)).

## 4.4 Review, Monitoring, and Communication

Monitoring of progress on the Implementation Strategy is critical to completing the Resiliency Actions. The Team Lead identified in Section 4.1 will be responsible for organizing regular meetings of the Implementation Team, evaluating the annual progress of the Implementation Strategy, and reporting on the successes and challenges to the community through the Communications Coordinator. To best coordinate the Resiliency Actions with the municipal budget, an official Annual Review is suggested to occur in October of each year. A further coordination meeting is suggested for June or July of each year, following the successful adoption of the RM's annual budget. Table 7 outlines to suggested meeting dates and topics. A template for the Annual Review Report is provided in Appendix C.

*Table 7 – Framework for review, monitoring, and communication of Climate Change Plan progress*

Meeting	Time frame	Topics	Outcomes
Annual Progress Review	Late October	<ul style="list-style-type: none"> <li>• Review of progress on Resiliency Actions</li> <li>• Sharing successes/challenges</li> <li>• Adjustments to scope and scheduling as needed</li> <li>• Planning of actions for coming year, based on Implementation Schedules</li> <li>• Development of budget items to be put forward to council</li> </ul>	<ul style="list-style-type: none"> <li>• Annual Review Report clearly outlining the Resiliency Actions worked on in the last year, the proposed actions to be taken on in the next year, and an explanation of required changes in scope/timelines</li> <li>• Newsletter article summarizing the Annual Review Report</li> <li>• Budget packages to be presented to council</li> </ul>
Review of Adopted Budget	June/July	<ul style="list-style-type: none"> <li>• Review of budget which has been adopted by council</li> <li>• Assessment of budget items which were successful/unsuccessful</li> </ul>	<ul style="list-style-type: none"> <li>• Strategy to modify or re-submit required budget items</li> </ul>

### 5 Conclusions and Recommendations

The Implementation Strategy has proposed a seven-year timeline for the completion of the Resiliency Actions outlined in the Resiliency Plan. The priority of each action, as determined through community consultation (outlined in the Resiliency Plan), projected budgets, and staff time were all considered in the sequencing of actions within the timeline. Notes on the approach to be taken in completion of each action have been identified through consultation with staff and local experts. Further, each action has been assigned a responsible party and a working group through a RACI matrix. An Implementation Team has been identified, and it is composed of all the parties responsible for the completion of one or more Resiliency Actions. A Team Lead has been identified amongst the Implementation Team, whose additional responsibility is the monitoring and coordination of the Implementation Team regular meetings. Annual reports are recommended, and an annual summary should be shared with residents through the community newsletter. Some Resiliency Actions require the commission of studies, capital projects, or the development of educational resources. While RM staff may be able to complete some of these tasks, it is likely many would be best addressed through external contractors. Potential funding sources have been identified for many of these projects.

Water quantity and quality, two of the identified “action streams” are very much related, and fall under the purview of watershed management. The Province of Manitoba has recently mandated the creation of Watershed Districts, based on the older system of Conservation Districts. The RM of East St. Paul is not currently an active member of its Watershed District, the North-East Red, but it could greatly benefit from involvement. Water does not respect municipal boundaries, thus the RM must cooperate with other municipalities within its watershed to truly address water quality and quantity issues. Membership in a Watershed District would provide further leverage for grant funding applications.

The recommendations of this report are as follows:

- Formally establish the Climate Change Plan Implementation Team, as outlined in Table 3
- Adoption of the review, monitoring, and communication schedule as outlined in Table 7
- That the RM consider joining the North-East Red Watershed District

### 6 Afterword

The Implementation Strategy represents the last component of the RM’s overall Climate Change Plan. Risks have been identified, actions have been proposed to address those risks, and a strategy to complete those actions has been prepared. The most critical component moving forward is the consistent and honest assessment of progress made by the Implementation Team. Mistakes will be made, opportunities will be missed, but it is important that the team not let perfect be the enemy of good. Taking on the risks of climate change is no small feat, but we are lucky to have the help of many resources, organizations, incentives, and programs related to climate change adaptation. These resources have been hard-won and represent decades of concerted effort in science, advocacy, and governance. Residents want to see efforts made to address climate change. Higher levels of government are empowering municipalities to make these efforts. East St. Paul is well-positioned to take advantage of this environment and become a climate leader.

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**Appendix A**  
**Implementation Approach**

Action Approach and RACI Matrix - Public Health					
ID	Action	Affiliated with	Status	Approach	Informed
10Sa	Provide updated emergency preparedness information to public, including community news stories, social media updates, and how to prepare an emergency kit and plan	-	In Progress	<ul style="list-style-type: none"> <li>Continue to release emergency information as news stories through all digital accounts, and digital/physical newsletter</li> <li>Prepare household general emergency preparedness plans for each climate hazard (flood, heatwave, etc...)</li> <li>Make plans available on website and distribute across all digital channels</li> </ul>	EC CC
10Sb	Provide residents with winter/spring home preparedness information	-	In Progress	<ul style="list-style-type: none"> <li>Regularly update and re-distribute information (1-2 times/year)</li> </ul>	EC CC
10La	Communications plan to relay emergency preparedness information on an annual basis and engage residents (i.e. – submit your plans for a chance to win)	-		<ul style="list-style-type: none"> <li>Develop and distribute survey of emergency preparedness measures undertaken by residents</li> <li>Combine feedback and improve existing emergency preparedness plans and winter/spring preparedness plans</li> </ul>	EC CC
10Fa	Grant opportunities for homeowner retrofits	-		<ul style="list-style-type: none"> <li>Consult with funding agencies such as FCM, Winnipeg Metro Region, Gov. of Manitoba, Gov. of Canada on possible funding avenues</li> <li>Some for-profit agencies such as InnoVantage and EcoWest may have information on this as well</li> <li>Apply to those funding opportunities that are relevant</li> <li>Advertise and administer program</li> </ul>	FM
10Lb	Webinar series/workshop – back up power system retrofits for private residents and commercial buildings	10Fa		<ul style="list-style-type: none"> <li>Consult internally with EMC committee to see if series is feasible, what are the risks/liabilities</li> <li>Consult with industry experts on power system retrofits</li> <li>Determine if workshops can be produced in-house, or with input from industry, or through third-party education experts</li> <li>Develop and administer program based on findings</li> </ul>	EC CC
10Fb	Community resilience survey to assess compliance and understanding	10Sa, 10Sb, 10La, 10Lb		<ul style="list-style-type: none"> <li>Update resiliency survey based on past efforts and lessons learned</li> <li>Distribute through all digital channels and digital/physical newsletter</li> <li>Analyze results</li> </ul>	EC CC

Action Approach and RACI Matrix - Water Quantity						
ID	Action	Dependent on	Status	Approach	Responsible	Informed
5S	Enforcement of existing water supply by-laws, such as sprinkling during drought	-	In Progress		UM	By-Law Officer
4F	Low flow fixture replacement rebate to reduce rate of increase in water use and wastewater generation	10Fa		<ul style="list-style-type: none"> <li>Consulting with FCM and local experts to advise</li> <li>Develop rebate plan</li> <li>Apply for FCM pilot project funding</li> </ul>	ACAO	ME
4L	By-law updates and inspection to better regulate sump pump and other land drainage discharges	-			ACAO	By-Law Officer
1La	Land drainage study to assess capacity and gaps in response to climate change	7F	1 Phase Completed	<ul style="list-style-type: none"> <li>Develop and distribute RFP for study of land drainage capacity of all sub-catchments in the RM.</li> <li>Assess proposals and hire consultant.</li> <li>Perform project management tasks as needed.</li> <li>Finalization of report</li> <li>The studies may have to be done on each sub-catchment individually, rather than through the entire RM.</li> <li>Steps strongly dependent on results of 1La</li> <li>But generally would involve the following:</li> <li>Sorting of tasks which could be performed by RM staff versus those which would require, or be done more efficiently through external consultants</li> <li>Developing a plan to address all identified deficiencies, with the highest priority areas identified</li> <li>Planning and budgeting for actions 1Lc</li> </ul>	ME	AOM
1Lb	Develop drainage systems upgrade and mitigation plans based on results of land drainage studies	7F, 1La			ME	AOM
7Le	Identify pond banks that are failing and use retaining walls or other methods to combat slumping	1La	1 Phase Completed	<ul style="list-style-type: none"> <li>Field program to investigate each pond to identify banks that are failing</li> <li>Repair banks in-house or with contractors depending on scale</li> <li>Repeat monitoring exercise every 2-4 years</li> </ul>	AOM	ME
1Lc	Targeted flood mitigation measures for at risk properties, based on watershed studies	1La, 1Lb	1 Phase Completed	<ul style="list-style-type: none"> <li>Steps totally dependant on results of 1Lb</li> </ul>	OM	ME
						EC

Action Approach and RACI Matrix - Private Property						
ID	Action	Dependent on	Status	Approach	Responsible	Informed
15	Encourage all residents to have overland flood/sewer backup insurance	-	In Progress	<ul style="list-style-type: none"> <li>Annually update information and research existing insurance plans</li> </ul>	EC	CC
95a	Provide septic field owners with information on how climate change may affect them	-	In Progress	<ul style="list-style-type: none"> <li>Develop Regularly re-distribute information (1-2 times/year)</li> </ul>	EC	CC
95b	Provide well owners with information on how climate change may affect them	-	In Progress	<ul style="list-style-type: none"> <li>Regularly re-distribute information (1-2 times/year)</li> </ul>	EC	CC
9La	Provincial partnerships/grants to migrate septic field users to municipal waste water system	95a, 10Fa		<ul style="list-style-type: none"> <li>*CONCURRENT WITH 9Lb*</li> <li>Consult with local government/local professionals on avenues for partnerships and grants to subsidize septic system conversions</li> <li>Ensure that WWTP is currently operating with room for increased demand</li> <li>Create and distribute information regarding funding opportunities, re-distribute each year</li> </ul>	ACAO	ME UM
9Lb	Provincial partnerships/grants to migrate well users to municipal supply	95b, 10Fa		<ul style="list-style-type: none"> <li>*CONCURRENT WITH 9La*</li> <li>Consult with local government/local professionals on avenues for partnerships and grants to subsidize septic system conversions</li> <li>Ensure that WTP is currently operating with room for increased demand</li> <li>Create and distribute information regarding funding opportunities, re-distribute each year</li> </ul>	ACAO	ME UM

Action Approach and RACI Matrix - RM Property						
ID	Action	Dependent on	Status	Approach	Responsible	Informed
25a	More frequent maintenance for priority areas to maintain roads and paths	-		<ul style="list-style-type: none"> <li>Review maintenance notes and records, and performs full review of current state of roads and paths</li> <li>Develop maintenance schedule for priority areas, including areas which see frequent maintenance issues, those critical to emergency transportation, and areas at risk to flooding</li> </ul>	OM/AOM	ME
25b	Apply high design standards to heavily used roads and paths	25a		<ul style="list-style-type: none"> <li>Investigate new design standards for roads and paths based on extreme weather events (flooding, increased freeze/thaw cycles, extreme heat, etc...)</li> <li>Apply new standards to new roads and paths, and incorporate into major maintenance as budget allows</li> </ul>	ME	OM AOM
2La	Investigate alternative measures to extend life of infrastructure (i.e. micro-resurfacing)	25a, 25b		<ul style="list-style-type: none"> <li>Delegate operations personnel to conduct research and attend webinars/learning sessions regarding</li> <li>Conduct feasibility assessments for each measure</li> <li>Present feasible alternatives for decision and integration into maintenance plans</li> </ul>	ME	OM AOM
2Lb	Develop municipal standards for infrastructure design and maintenance to meet demands of a changing climate*	25b, 2La, 1La, 5L, 6Fb, 7Ld, 8L, 6L		<ul style="list-style-type: none"> <li>Depends on results of Action 1La - Land Drainage Study, and investigations into road maintenance</li> <li>Based on the above investigations and the practicalities of implementing them, municipal standards should be developed to be applied to all future relevant projects</li> <li>Main goal of this action is to avoid "one-off" projects, and instead roll lessons learned forward</li> </ul>	ME	AOM
35a	Ongoing inspection and repair of municipal buildings	-		<ul style="list-style-type: none"> <li>Continue regular inspection and repair of municipal buildings</li> <li>Consider upgrading frequency and depth of inspections based on climate hazards</li> </ul>	OM	AOM
35b	System retrofit to Operations building to be able to use generator	-	COMPLETE			
3L	Replace or upgrade municipal building components to higher standards	35a	In Progress	<ul style="list-style-type: none"> <li>As maintenance and budget dictate, investigate higher-efficiency replacements for RM building components</li> </ul>	AOM	

Action Approach and RACI Matrix - Vegetation						
ID	Action	Dependent on	Status	Approach	Responsible	Informed
85a	Reduce mowing to improve root zone and moisture retention	-	In Progress	<ul style="list-style-type: none"> <li>Review areas currently mown by the RM</li> <li>Create short list of sites feasible for reduction of mowing</li> <li>Conduct public survey to determine public by-in on transformation of areas from mown to no-mow</li> </ul>	AOM	
65a	Maintain inspections of tree canopy	-	In Progress	Concurrent with 65c, time and budget shared between the two (Mid together)	AOM	
65b	Maintain diseased tree removal and replacement programs	65a	In Progress		AOM	
65c	Monitor for emerging risks to trees to facilitate early action	65a, 65b	In Progress	Concurrent with 65a, time and budget shared between the two (Mid together)	AOM	
85b	Provide planting information to the public to shift vegetation to more resilient native species on lawns	6Fa	In Progress	consult local experts each year to update	CC	
6Fa	Communicate tree species options to the public	65a, 65b, 65c, 85b	In Progress		CC	AON
6L	Develop a tree replacement strategy/policy	65a, 65b, 65c, 8L, 5L		<ul style="list-style-type: none"> <li>Consult with local naturalists, arborists, governments, and/or consultants to determine best tree species to be used in tree replacement and replacement ratios</li> </ul>	AOM	AOM
8L	Develop a municipal wide strategy to shift ground cover to more resilient/native species that require less water and are hardier	6L, 5L	In Progress	<ul style="list-style-type: none"> <li>Review lessons learned from pilot naturalization projects (such as in Swistun Park)</li> <li>Consult with local naturalists, governments, and/or consultants to address outstanding issues</li> <li>Improve strategy for application into policy</li> </ul>	AOM	ME
5L	Implement xeriscape/native plant requirements in new developments	8L, 6L	In Progress	<ul style="list-style-type: none"> <li>Consult with local naturalists, governments, and/or consultants</li> <li>Formulate fair vegetation requirements for new developments</li> <li>Review lessons learned from RM-led native plant initiatives such as 8L</li> </ul>	P	AOM
6Fb	Work with developers to ensure a diversity of trees are planted in new developments	6L	COMPLETE	<ul style="list-style-type: none"> <li>Consult with local naturalists, governments, and/or consultants</li> <li>Review lessons learned from 6L</li> <li>Formulate fair tree diversity requirements, included suggested or required tree species</li> </ul>	P	AOM



Action Approach and RACI Matrix - Water Quality						
ID	Action	Dependent on	Status	Approach	Informed	
7Sa	Form pond advisory committees to educate and encourage transformative behaviours	-	COMPLETE		Responsible	Consulted
7Sb	Encourage public to reduce outdoor chemical fertilizer use through targeted communications	7Sa	In Progress	consult local experts each year to update	CC	Consulted
7Sc	Encourage public to establish no-mow zones on private property	7Sa	In Progress	consult local experts each year to update	CC	Consulted
7Sd	Provide planting information to the public to support changing shoreline vegetation to native species	7Sa	In Progress	consult local experts each year to update	CC	AOM
7La	Reduce attractiveness of ponds to geese through vegetation management	7Sa, 7Lc		<ul style="list-style-type: none"> <li>Consult with naturalists, wildlife experts, local governments, and/or consultants to determine what vegetation changes may help reduce attractiveness of ponds to geese</li> <li>Investigate synergies with actions 8L, 5L, 7sd</li> <li>Consult with naturalists, wildlife experts, local governments, and/or consultants to determine what measures may be taken to control migratory geese populations</li> </ul>	AOM	ME
7Lb	Comprehensive goose management plan	7Sa, 7La		<ul style="list-style-type: none"> <li>Investigate synergies with 8L, 5L, 7sd, and 7La</li> <li>Deploy and maintain floating island treatments</li> <li>Work with local consultants to develop plans for replanting problem areas with native vegetation</li> </ul>	AOM	P
7Lc	Draw nutrients out of pond systems by planting native vegetation in riparian zones and installing floating islands	7Sa, 7La	In Progress	<ul style="list-style-type: none"> <li>Consult with local governments, and/or consultants to determine best practices of retention pond design</li> <li>Ensure design guidelines meet safety and flood detention requirements (partly informed by 1La)</li> <li>Formalize guidelines as policy and ensure they are included in new development agreements</li> </ul>	AOM	ME
7Ld	Develop retention pond design guidelines so that new ponds are designed to reduce nutrient loading and ensure bank stability	7La, 7Lc			P	AOM ME

**Appendix B**  
**Implementation Schedule**

Implementation Strategy - Assistant Chief Administrative Officer

ID	Action	Program Year				Staff Time Required (start up/one-time actions)	Staff Time Required (ongoing)	Approximate Budget
		2021	2022	2023-2025	2026-2028			
4F	Low flow fixture replacement rebate to reduce rate of increase in water use and wastewater generation					Mid	Mid	Mid
4L	By-law updates and inspection to better regulate sump pump and other land drainage discharges					Mid		Nil
9La	Provincial partnerships/grants to migrate septic field users to municipal waste water system					Mid		High
9Lb	Provincial partnerships/grants to migrate well users to municipal supply					Mid		High
6L	Develop a tree replacement strategy/policy					Mid		Low

Category	Staff Time (hrs)	Budget (\$)
Nil	0, or a savings	0, or a savings
Low	<40	< 10,000
Mid	40-100	10,000 - 75,000
High	100+	> 75,000
Unknown	Dependent on other actions	Dependent on other actions

Implementation Strategy - Municipal Engineer

ID	Action	Program Year				Staff Time Required (start up/one-time actions)	Staff Time Required (ongoing)	Approximate Budget
		2021	2022	2023-2025	2026-2028			
1La	Land drainage study to assess capacity and gaps in response to climate change					High		High
1Lb	Develop drainage systems upgrade and mitigation plans based on results of land drainage studies					High		High
25b	Apply high design standards to heavily used roads and paths		Coordinate with asset management plan.	Re-evaluate based in asset management plan			Mid	Nil
2La	Investigate alternative measures to extend life of infrastructure (i.e. micro-resurfacing)		Coordinate with asset management plan				Mid	Nil
2Lb	Develop municipal standards for infrastructure design and maintenance to meet demands of a changing climate*			Consider information gathered from 1La, 25b, 2La, and asset management plan		Mid		Unknown

Category	Staff Time (hrs)	Budget (\$)
Nil	0, or a savings	0, or a savings
Low	<40	< 10,000
Mid	40-100	10,000 - 75,000
High	100+	> 75,000
Unknown	Dependent on other actions	Dependent on other actions

Implementation Strategy - Operations Manager

ID	Action	Program Year			Staff Time Required (start up/one-time actions)	Staff Time Required (ongoing)	Approximate Budget
		2021	2022	2023-2025			
1Lc	Targeted flood mitigation measures for at risk properties, based on watershed studies				High	High	High
2Sa	More frequent maintenance for priority areas to maintain roads and paths	Maintenance on current schedule		Finalize asset management plan	High	High	High
				works may extend beyond 2028, depending on results of 1La			
				Conduct maintenance on new schedule			

ID	Affiliated Actions	Responsible	Category	Staff Time (hrs)	Budget (\$)
1La	Land drainage study to assess capacity and gaps in response to climate change	Municipal Engineer	Nil	0, or a savings	0, or a savings
			Low	<40	< 10,000
			Mid	40-100	10,000 - 75,000
			High	100+	> 75,000
			Unknown	Dependent on other actions	Dependent on other actions

Implementation Strategy - Assistant Operations Manager

ID	Action	Program Year				Staff Time		Approximate Budget
		2021	2022	2023-2025	2026-2028	Required (start up/one-time actions)	Required (ongoing)	
7Le	Identify pond banks that are failing and use retaining walls or other methods to combat slumping	Complete		Re-evaluate		High	High	High
25a	More frequent maintenance for priority areas to maintain roads and paths	Maintenance on current schedule		Finalize asset management plan	Conduct maintenance on new schedule	High	High	High
35a	Ongoing inspection and repair of municipal buildings	Maintenance on current schedule		Finalize asset management plan	Conduct maintenance on new schedule	High	High	High
3L	Replace or upgrade municipal building components to higher standards	Replacements on current schedule		Finalize asset management plan	Conduct replacements and upgrades on new schedule	High	High	High
85a	Reduce mowing to improve root zone and moisture retention	Complete		Re-evaluate		Low	Low	Low
65a	Maintain inspections of tree canopy					Mid	Mid	Low
65b	Maintain diseased tree removal and replacement programs			Update based on 6L		High	High	High
65c	Monitor for emerging risks to trees to facilitate early action					Mid	Mid	Low
8L	Develop a municipal wide strategy to shift ground cover to more resilient/native species that require less water and are harder			Coordinate with 7Ld, 5L		Mid	Mid	Mid

ID	Action	Program Year				Staff Time Required (start up/one-time actions)	Staff Time Required (ongoing)	Approximate Budget
		2021	2022	2023-2025	2026-2028			
7La	Reduce attractiveness of ponds to geese through vegetation management	Ongoing	Ongoing	Re-evaluate		Mid	Mid	
7Lb	Comprehensive science-based goose management plan					High	Mid	
7Lc	Draw nutrients out of pond systems by planting native vegetation in riparian zones and installing floating islands	Complete testing programs		Re-evaluate		Mid	Mid	

ID	Affiliated Actions	Responsible
6L	Develop a tree replacement strategy/policy	Assistant Chief Administrative Officer
7Ld	Develop retention pond design guidelines so that new ponds are designed to reduce nutrient loading and ensure bank stability	Planner
5L	Implement xeriscape/native plant requirements in new developments	Planner

Category	Staff Time (hrs)	Budget (\$)
Nil	0, or a savings	0, or a savings
Low	<40	< 10,000
Mid	40-100	10,000 - 75,000
High	100+	> 75,000
Unknown	Dependent on other actions	Dependent on other actions

Implementation Strategy - Utilities Manager

ID	Action	2021	2022	2023-2025	2026-2028	Staff Time Required (start up/one-time actions)	Staff Time Required (ongoing)	Approximate Budget
55	Enforcement of existing water supply by-laws, such as sprinkling during drought	Utilities Manager reports to Municipal Engineer, who reports to the CAO, and Council for decisions on By-Law enforcement. Ultimately enforcement is then assigned to the By-Law officer by Council.					Low	Nil

Category	Staff Time (hrs)	Budget (\$)
Nil	0, or a savings	0, or a savings
Low	<40	< 10,000
Mid	40-100	10,000 - 75,000
High	100+	> 75,000
Unknown	Dependent on other actions	Dependent on other actions



Implementation Strategy - Emergency Coordinator

ID	Action	Program Year				Staff Time Required (start up/one-time actions)	Staff Time Required (ongoing)	Approximate Budget
		2021	2022	2023-2025	2026-2028			
10Sa	Provide updated emergency preparedness information to public, including community news stories, social media updates, and how to prepare an emergency kit and plan					Low	Nil	
10Sb	Provide residents with winter/spring home preparedness information					Low	Nil	
10La	Communications plan to relay emergency preparedness information on a annual basis and engage residents (i.e. – submit your plans for a chance to win)					Low	Nil	
10Lb	Webinar series/workshop – back up power system retrofits for private residents and commercial buildings					Mid	Mid	
10Fb	Community resilience survey to assess compliance and understanding					Low	Nil	
1S	Encourage all residents to have overland flood/sewer backup insurance			Targeted communications based on 1La		Low	Nil	
9Sa	Provide septic field owners with information on how climate change may affect them			Re-evaluate, based on 9La		Low	Nil	
9Sb	Provide well owners with information on how climate change may affect them			Re-evaluate, based on 9Lb		Low	Nil	

ID	Affiliated Actions		Responsible
	Action		
1La	Land drainage study to assess capacity and gaps in response to climate change		Municipal Engineer
9La	Provincial partnerships/grants to migrate septic field users to municipal waste water system		Assistant Chief Administrative Officer
9Lb	Provincial partnerships/grants to migrate well users to municipal supply		Assistant Chief Administrative Officer

Category	Staff Time (hrs) 0, or a savings	Budget (\$) 0, or a savings
Nil		
Low	<40	< 10,000
Mid	40-100	10,000 - 75,000
High	100+	> 75,000
Unknown	Dependent on other actions	Dependent on other actions

Implementation Strategy - Communications Coordinator

ID	Action	Program Year			Staff Time Required (start up/one-time actions)	Staff Time Required (ongoing)	Approximate Budget
		2021	2022	2023-2025			
8Sb	Provide planting information to the public to shift vegetation to more resilient native species on lawns			Update based on 8L	Low	Nil	
6Fa	Communicate tree species options to the public			Update based on 6L	Low	Nil	
7Sb	Encourage public to reduce outdoor chemical fertilizer use through targeted communications				Low	Nil	
7Sc	Encourage public to establish no-mow zones on private property				Low	Nil	
7Sd	Provide planting information to the public to support changing shoreline vegetation to native species			Update based on 8L	Low	Nil	

ID	Affiliated Actions	Responsible
6L	Develop a tree replacement strategy/policy	Assistant Chief Administrative Officer
8L	Develop a municipal wide strategy to shift ground cover to more resilient/native species that require less water and are harder	Assistant Operations Manager

Category	Staff Time (hrs)	Budget (\$)
Nil	0, or a savings	0, or a savings
Low	<40	< 10,000
Mid	40-100	10,000 - 75,000
High	100+	> 75,000
Unknown	Dependent on other actions	Dependent on other actions

Implementation Strategy - Planner

ID	Action	Program Year			Staff Time Required (start up/one-time actions)	Staff Time Required (ongoing)	Approximate Budget
		2021	2022	2023-2025			
5L	Implement xeriscape/native plant requirements in new developments			Coordinate with 8L	Mid	Nil	
6Fb	Work with developers to ensure a diversity of trees are planted in new developments			Use 6L	Mid	Nil	
7Ld	Develop retention pond design guidelines so that new ponds are designed to reduce nutrient loading and ensure bank stability			Coordinate with 8L	Mid	Mid	

ID	Affiliated Actions	Responsible	Category	Staff Time (hrs)	Budget (\$)
6L	Develop a tree replacement strategy/policy	Assistant Chief Administrative Officer	Nil	0, or a savings	0, or a savings
8L	Develop a municipal wide strategy to shift ground cover to more resilient/native species that require less water and are hardier	Assistant Operations Manager	Low	<40	< 10,000
			Mid	40-100	10,000 - 75,000
			High	100+	> 75,000
			Unknown	Dependent on other actions	Dependent on other actions

Implementation Strategy - Finance Manager

ID	Action	2021	2022	2023-2025	2026-2028	Staff Time Required (start up/one-time actions)	Staff Time Required (ongoing)	Approximate Budget
10Fa	Grant opportunities for homeowner retrofits					Mid		Nil

Category	Staff Time (hrs)	Budget (\$)
Nil	0, or a savings	0, or a savings
Low	<40	< 10,000
Mid	40-100	10,000 - 75,000
High	100+	> 75,000
Unknown	Dependent on other actions	Dependent on other actions

**Appendix C**  
Template Annual Review Report

Reporting Year:  
Date of Annual Review:  
Reporting Member:

ID	Resiliency Action	Status at Last Annual Review	Current Status	Schedule Adjustment? Is so, explain	Plan for Next Reporting Year