

A GUIDANCE REPORT FOR CONSERVATION SUDBURY

EXECUTIVE SUMMARY
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LAND USE PLANNING AND FLOOD RISK MANAGEMENT: A GUIDANCE REPORT FOR CONSERVATION SUDBURY

Ву

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Introduction

The flooding of cities and communities has historically caused unforeseen and significant impacts to people, land, and infrastructure. Flooding often occurs during events such as storms, spring ice melts, and other natural disasters. A flooding event caused by spring snow melt in Sudbury, Ontario, is seen in Figure 1. The history of flooding in Canada and across the world has been exacerbated in recent years due to climate change and rapid urbanization. More now than ever, Canadian communities need economically and environmentally viable methods to combat the increased frequency and associated cumulative impacts of flood events.

Land use planning has been identified as one of the most effective local level tools to address flooding and the associated impacts of climate change in communities. Land use tools such as development restrictions and action plans which address flood risk management and climate change are some of the critical methods used in flood risk management and land use planning.



Figure 1: Van driving through slush and ice flood areas in Sudbury on April 15th, 2014 (White, 2014).

Vision

The vision of this document is to aid in mitigating the effects of future flood events exacerbated by climate change in the watersheds regulated by Conservation Sudbury through collaboration with community stakeholders and by applying the most effective, evidence-based land use practices.

Background Information

Conservation Sudbury (CS) is one of 36 conservation authorities (CA) in Ontario. The CA covers three major watersheds, as seen in Figure 2,

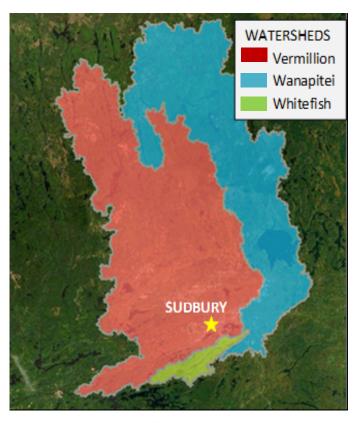


Figure 2: Conservation Sudbury Watersheds and Context Map (Conservation Sudbury, 2020).

which encompass the City of Greater Sudbury and extend into private and government held lands beyond the borders of the City. Within each of the three watersheds there are various waterways and waterbodies in surrounded by a mixture of land uses, ranging from an urban city core to rural farmlands.

Conservation Sudbury has an ongoing issue regarding development on floodplains throughout their jurisdiction. An example of development built on regulated floodplains is seen in Figure 3, in the Flourmill neighbourhood. Development on regulated floodplain lands has resulted in multiple reoccurrences of flooding events in many communities.

Conservation Sudbury is one of many conservation authorities lacking updated policy and plans that reflect current day flood risk management and land use planning techniques and tools. This has contributed significantly to these flooding impacts.



Figure 3: Regulated area of the floodplain, floodplain buffer, Ponderosa PSW, and Junction Creek. (Conservation Sudbury, 2020).

Project Methods

Figure 4 below outlines the research methods utilized to produce the final recommendations.

Research current practices and planning tools

 Identification of current challenges and selection of appropriate theoretical framework

Current Sudbury context analysis

 Analysis of strengths, weaknesses, opportunities, and threats (SWOT)

Review of policy and guiding legislation

 Review of municipal, provincial, and federal land use planning and flood risk management policy

Criteria-based case study analysis

 Evaluation of 21 case studies using a specific set of flood risk management-related criteria

Figure 4: Overview of project methods.

Consideration of climate change, current local and provincial policy, and the guiding framework of Integrated Flood Management were used to develop the evaluation criteria for the case study analysis. This evidence-based approach resulted in conclusions that were grounded in previously justified policies and theory as well as demonstrated in current day practice.

Case Study Analysis

The case study analysis includes the review of 19 conservation authorities and two case studies outside of Ontario. An evaluation matrix was utilized to score the case studies based on how well they met multiple criteria in the areas of climate change, participation, engagement and education, integrated flood risk management approaches, and policy delivery and evaluation. The major categories and subcategories can be seen in Figure 5 below.

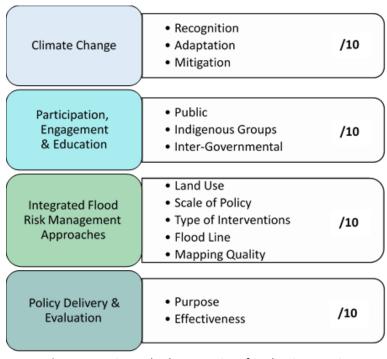


Figure 5: Major and sub-categories of evaluation matrix.

Each of these case studies were given a score out of 10 for each of the four categories. These were then summed to a total score out of 40 for comparison. The scores for Conservation Sudbury as well as three other CAs are shown in Table 1 to illustrate this comparative process.

Following this, an in-depth analysis of each case study was performed to determine key takeaways, which were then used to identify best practices and formulate recommendations for Conservation Sudbury.

Table 1: Scores for Conservation Sudbury and three other CAs demonstrating the comparative evaluation process.

	Conservation Sudbury	North Bay- Mattawa	Kawartha Conservation	Grand River Conservation
Context Score	-	8.5 / 10	9.2 / 10	6.6 / 10
Overall Case Score	19.1 / 40	24 / 40	30.9 / 40	34.2 / 40
Climate Change Score	5.5 / 10	5 / 10	7.7 / 10	7.7 / 10
Participation, Engagement & Education Score	2.8 / 10	4.4 / 10	4.4 / 10	8.3 / 10
Integrated Flood Risk Management Approaches Score	5.8 / 10	5.8 / 10	8.8 / 10	9.4 / 10
Policy Delivery & Evaluation Score	5.0 / 10	8.4 / 10	10.0 / 10	8.8 / 10

The results of this case study analysis revealed that Conservation Sudbury has room for improvement across all four major categories.

Final Recommendations

The final recommendations of this report fall under four major categories including an Integrated Watershed Management Plan, a Stakeholder Engagement Framework, Website Design and Public Engagement, and Monitoring and Evaluation.

To enhance Conservation Sudbury's ability to protect people and property from flood hazards, it is suggested that the following recommendations be implemented:

A. Integrated Watershed Management Plan

- A-1 Create an Integrated Watershed Management Plan or equivalent document that includes all flooding policies
- A-2 Incorporate Low Impact Development (LID) into the comprehensive flood management document
- A-3 Recognize the importance of wetlands in protecting people and property from flooding in policy
- A-4 Adopt a climate change lens in policy to link stewardship and other activities to flood impacts
- A-5 Prioritize stewardship programs that relate to core mandate
- A-6 Provide evidence to justify new policy changes to the public
- A-7 Investigate funding opportunities and new technologies (LIDAR) that make updating regulatory mapping possible
- A-8 Require that an agreement be placed on the title of a property for any approvals under Ontario Regulation 156/06 so that future property owners know there are restrictions in place

B. Stakeholder Engagement Framework

- **B-1** Identify stakeholders for potential partnerships, identify strengths, communicate roles, and collaborate
- B-2 Consider forming a watershed subcommittee with representation from all affected stakeholders within the watershed for the purpose of information sharing and collaboration on water-related issues such as flooding
- B-3 Use Conservation Sudbury's commenting role and relationship with the City of Greater Sudbury to make local flood policies more robust by ensuring that the Official Plan and Zoning By-Law are consistent with future Conservation Sudbury policies
- B-4 Collaborate with the City of Sudbury and recommend adopting a climate change strategy/ action plan to coordinate land use policies

C. Website Design and Public Engagement

- C-1 Make all non-confidential flood management policies/documents publicly available through an online resource library on the Conservation Sudbury website
- C-2 Document activities and make these documents accessible and understandable to the public
- C-3 Use local examples in policy communication
- C-4 Improve publicly available mapping on website
- C-5 Make the application process clear and transparent for the public using resources explaining how development applications are processed and evaluated
- C-6 Provide information on Conservation Sudbury's website for utilizing on-site stormwater management techniques such as rain barrels, raingardens, and permeable driveways
- C-7 Include a section on Conservation Sudbury's website that explicitly makes the connection between land use planning and flooding and provides all the resources the public would need

D. Monitoring and Evaluation

- D-1 Publish an annual program review that covers
 what the Authority has accomplished in the previous
 year as well as what the goals are for the coming year
- D-2 Include measurable deliverables and specific timelines in future strategic plans to track progress towards action items