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Phase 1 Discussion Paper

Hazard Land



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Prepared for:



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ABSTRACT

As one of the background discussion papers for the Town of Innisfil Official Plan Review: Our Place, this paper examines hazard areas, with a focus on areas subject to flooding and the policies respecting flood hazard areas. This paper provides background on the policy structure used to regulate or restrict development in flood hazard areas and considers how these can be applied within the Town of Innisfil.

EXECUTIVE SUMMARY

As part of the background work for Our Place, the Town of Innisfil Official Plan Review, this discussion paper examines hazard areas, with a focus on flooding and flooding related hazards.

Subject to specific conditions, the Provincial Policy Statement and Conservation Authorities permit flood hazard areas to be addressed under three policy approaches: the One Zone approach, the Two Zone approach and the Special Policy Area approach. The appropriateness of these three approaches is addressed in this report. The One Zone approach is likely the most appropriate approach for Innisfil, although the Two Zone approach may be considered in certain locations, subject to future discussion with the Conservation Authorities.

Comparison of the existing Official Plan hazard mapping and the Conservation Authorities' mapping of regulated areas is addressed in this report and identifies a need for an update of the hazard mapping in the Official Plan.

1 INTRODUCTION

As part of the background work for Our Place, the Town of Innisfil Official Plan Review, this discussion paper examines policy options to address development in hazard areas.

Through the Provincial Policy Statement (PPS), the province directs development away from both natural and human-made hazards. While human-made hazards include things such as a mine hazard or contaminated lands, natural hazards include flooding hazards, erosion hazards and dynamic beach hazards.

Flooding hazards are those areas subject to flooding. Erosion hazards include areas where a loss of land would be dangerous or threaten property. With regards to rivers and streams, two types of erosion landforms may occur. These include an “*apparent (confined) river or stream valley*” and a “*not apparent (unconfined) river and stream valley*” (NVCA 2009). The first type of erosion landform would be a typical valley with a river or stream (whether water is present or not), where there is a sloping landform, the stream corridor is discernible from the surrounding landscape and any water would generally be contained within the system. The second type of erosion landform would be where there is no slope and the water flow is not contained in the same manner and likely meanders. These different types of landforms are relevant to defining the erosion hazard and how development is regulated in these systems by Conservation Authorities.

It is important to note that erosion hazards are not exclusively related to streams and valleys or even a water feature; they may be related to lakes, or simply a steeped or sloped landform.

The dynamic beach hazard includes a shoreline, or areas near the shoreline, where the ground is unstable as a result of the waves and other water related hazards.

In addition to these hazardous land examples, natural hazards also include hazardous sites, which are sites that may be dangerous, because the ground may not be stable enough for certain types of development. This could include soils that are not stable, such as certain clays or organic soils, or unstable bedrock, such as karst topography.

In Innisfil, the natural hazards, including flooding hazards, erosion hazards and hazards associated with the Lake Simcoe shoreline are of primary concern. The Town of Innisfil has a history of flooding and erosion along the Lake Simcoe shoreline and along streams flowing into the lake. This paper explores policy options that can be considered for natural hazards in the new Official Plan.

2 POLICY REVIEW

PROVINCIAL POLICY STATEMENT (PPS)

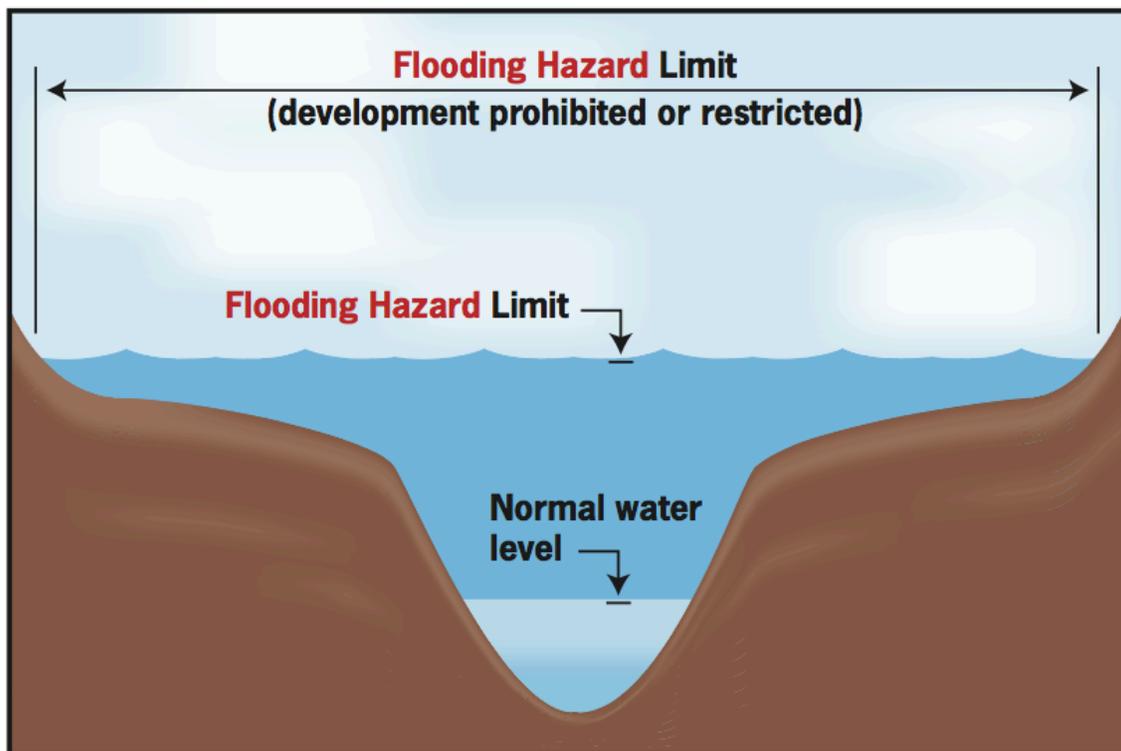
The Provincial Policy Statement (PPS) provides policy direction on development and natural hazards. Specifically, it states [Section 3]:

“Development shall be directed away from areas of natural or human-made hazards where there is unacceptable risk to public health or safety or of property damage, and not create new or aggravate existing hazards.”

In Innisfil, the primary concern is development in relation to natural hazards, particularly flooding.

In terms of the policy approach for addressing flooding hazards, for development in the floodplains, the general approach is the One Zone approach. In the One Zone approach, uniform policies prohibiting development apply within the flooding hazard area. This approach is described in the figure below (Figure 1).

Figure 1: Depiction of One Zone approach

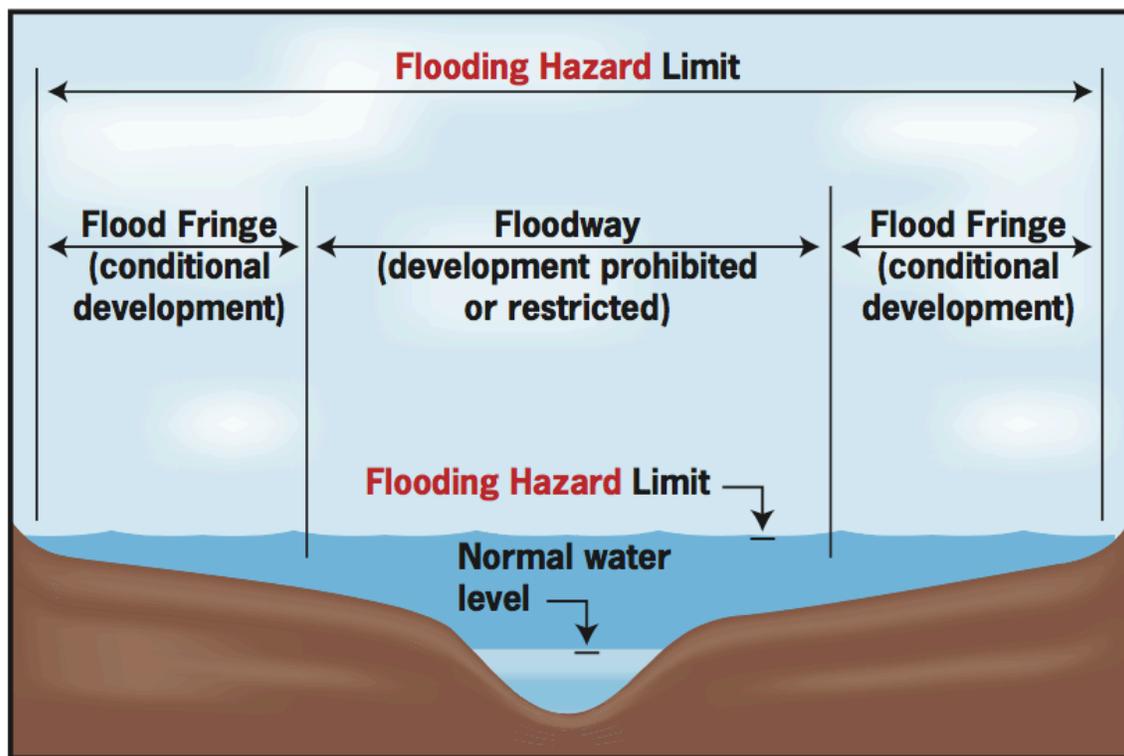


(NOT TO SCALE)

Two other policy approaches are permitted under the PPS, which allow development within a flooding hazard area under specific circumstances. These are the Two Zone approach and Special Policy Area approach.

The Two Zone approach occurs where the flooding hazard is considered in two distinct parts: the flood fringe and the floodway (**Figure 2**). Generally, the potential for danger and damage is worse in the floodway than in the flood fringe due to greater water volumes and speeds. Thus, this policy structure permits different forms and levels of development in the distinct parts of the area subject to flood hazard, with greater development restrictions, or outright prohibition, within the floodway as compared to in the flood fringe. Under this regime, flood proofing is often required for development in the flood fringe.

Figure 2: Depiction of Two Zone approach



(NOT TO SCALE)

(ORM 2002, p. 13)

The other policy approach is the Special Policy Area approach. A Special Policy Area is,

“an area within a community that has historically existed in the flood plain and where site-specific policies approved by both the Ministers of Natural Resources and Municipal Affairs and Housing, are intended to provide for continued viability

of existing uses (which are generally on a small scale) and address the significant social and economic hardships to the community that would result from strict adherence to provincial policies concerning development.”

Implementing Special Policy Areas requires specific approval from the Province and is only implemented under special conditions where a community is already within a hazardous area, development could not meet the typical provincial standards and there is no feasible alternative for growth outside of the Special Policy Area. Usually this is applied in areas such as downtowns where further development is warranted. Part of the community of Schomberg in King Township, for example, is an example of a Special Policy Area.

According to the River and Stream Systems: Flooding Hazard Limit Technical Guide produced by the Ministry of Natural Resources (2002), Special Policy Areas only apply to rivers, streams and small lakes (less than 100 square kilometers).

LAKE SIMCOE REGION CONSERVATION AUTHORITY

The Lake Simcoe Conservation Authority (LSRCA) is the conservation regulatory body for the eastern portion of the Town of Innisfil. The LSRCA is currently in the process of updating their watershed development policies. Under the existing regime, the Conservation Authority (in consultation with the municipality) has the option to implement the Two Zone approach and a municipality may also apply for the Special Policy Area approach, which the Ministry of Natural Resources and Municipal Affairs, in consultation with Conservation Authority, would have to approve.

Under the draft Watershed Development Guidelines which go into effect on June 1st, 2015, the LSRCA acknowledges the One Zone approach, Two Zone approach and Special Policy Area approach. The One Zone concept is the preferred approach, and the Two Zone approach is intended to be applied in limited select locations and not an entire watershed.

NOTTAWASAGA VALLEY CONSERVATION AUTHORITY

The Nottawasaga Valley Conservation Authority (NVCA) Planning Guidelines and Regulations also discuss the three approaches (One Zone, Two Zone and Special Policy Area) to flood risk areas. Within the area in the Town of Innisfil regulated by the NVCA, only the One Zone approach is applied.

SIMCOE COUNTY OFFICIAL PLAN

The Simcoe County Official Plan also contains policies for hazardous areas, including the following policies on One and Two Zone Concepts:

“Where there is a One Zone Concept in place, uses which may be permitted in the flood plain subject to the approval of the regulatory agencies include:

- a) open space for public or private recreation and related structures;
- b) agricultural uses and related structures;

- c) structural works for flood and erosion-sediment control;
- d) additions to existing structures;
- e) replacement structures on existing lots subject to local official plan policies, and satisfactory engineering studies; and
- f) Aggregate development provided all requirements of the Aggregate Resources Act and the relevant conservation authority are met.
(Section 4.5.10)

Generally, subject to the approval of the appropriate regulatory agencies, agricultural structures in the flood plain may be rebuilt where destroyed by fire or other event.” (Section 4.5.14)

and

“Where there is a Two Zone Concept in place, a flood fringe means an area where flood depths and velocities would be less severe than those experienced in the floodway. Development and site alteration may be permitted within the flood fringe of a river, stream, and inland lake systems subject to appropriate flood proofing to the flooding hazard elevation or another flooding hazard standard approved by the Minister of Natural Resources if the following criteria can be achieved:

- a) the hazards can be safely addressed, and the development and site alteration is carried out in accordance with established standards and procedures for flood fringe development;
- b) new hazards will not be created and existing hazards aggravated;
- c) no adverse environmental impacts will result;
- d) vehicles and people have a way of safely entering and exiting the area during times of flooding, erosion, and other emergencies; and
- e) the development does not include institutional uses, essential emergency services, or the disposal, manufacture, treatment, or storage of hazardous substances.

Generally, subject to the approval of the appropriate regulatory agencies, agricultural structures in the flood fringe may be rebuilt where destroyed by fire or other event.” (Section 4.5.13)

Note, the Ontario Municipal Board has not yet approved these policies.

INNISFIL OFFICIAL PLAN

Hazardous areas are addressed within the Innisfil Official Plan and with additional policy direction in some of the Secondary Plans.

Hazard Land Areas are addressed under section 3.7 of the Official Plan. The Hazard Lands Area is an overlay designation that applies in addition to the other identified designations. The hazard lands currently shown in the Official Plan include lands that are potentially unsafe for development due to flood hazard, erosion hazard, hazardous sites or steep slopes. Under the existing Official Plan, development is generally not permitted in hazardous areas and permitted land uses are limited to uses such as

agricultural uses (excluding new buildings), open spaces, existing uses, flood and/or erosion control uses. There are exceptions that permit development when it comes to expansion and redevelopment of existing uses, subject to approval of the Conservation Authority.

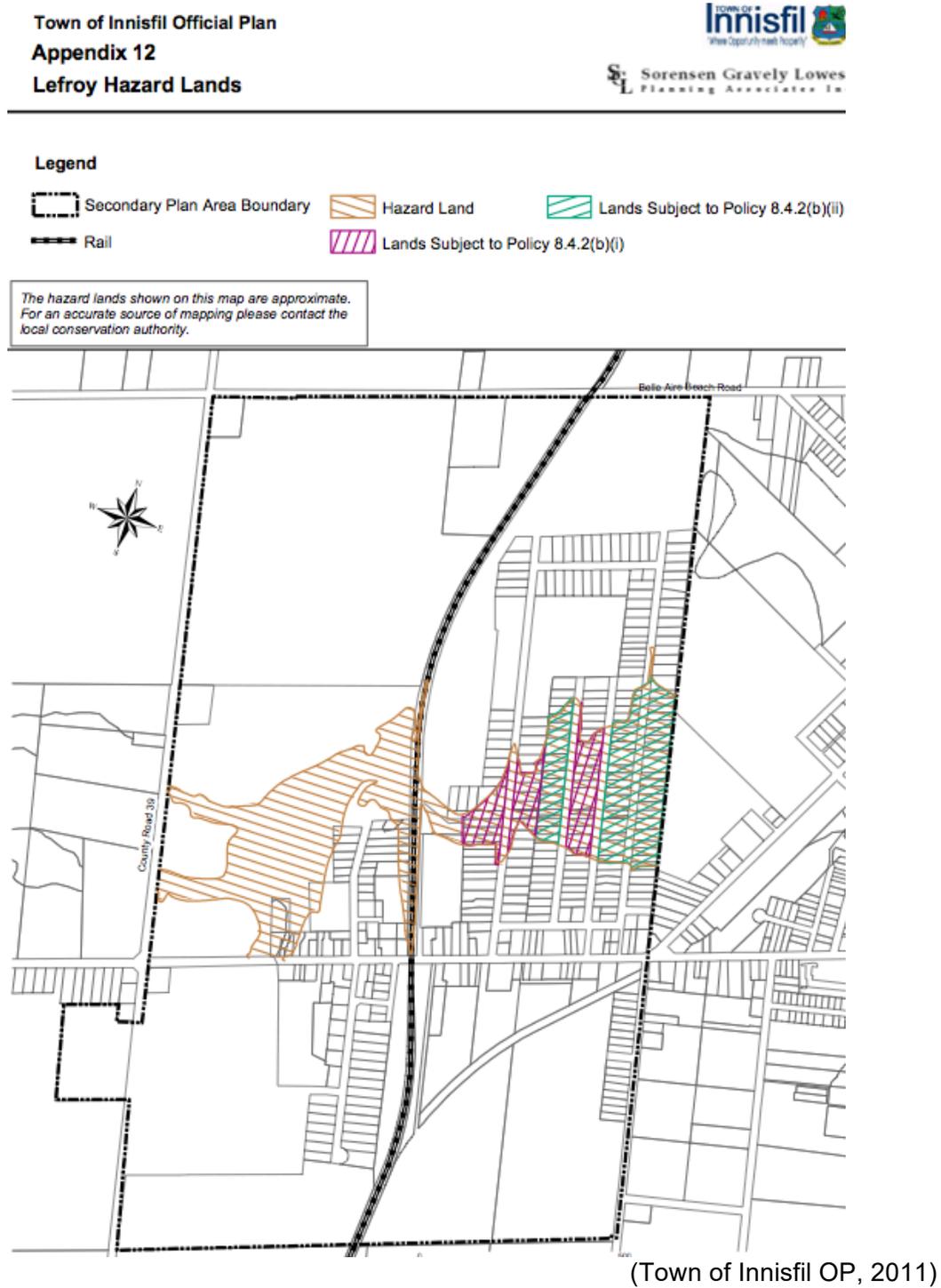
River and stream systems are addressed in section 3.7.11, where policies generally do not permit development in areas subject to erosion or flooding hazards. This is an example of a One Zone approach where the same restrictions apply to the entirety of the floodway.

Within the Lefroy Secondary Plan in Section 13 of the Official Plan, a variant of the Two Zone approach is applied. This is not a typical Two Zone approach but rather two different areas within the flood plain are recognized with differing policies. In some areas of hazard “no new development or additions to existing buildings are permitted” and in others, “new buildings or expansions of existing buildings may be permitted provided certain conditions are met and approvals are obtained from the Lake Simcoe Region Conservation Authority”. [Section 13.4.2b)]. See **Figure 3**.

Steep slopes are addressed in section 3.7.9, which requires that slopes greater than 15% be identified through Secondary Plan studies and that a geotechnical analysis show that the slope is stable and that development is safe, prior to development being permitted.

The hazards associated with Lake Simcoe are addressed in 3.7.12, requiring a determination of the flooding hazard, considering the high water mark, wave uprush and other water-related hazards (e.g. ice piling and jamming), as well as the determination of erosion limit and dynamic beach hazard. The policy also states that a hazard land study may be required for development next to Lake Simcoe.

Figure 3: Lefroy Hazard Lands,



Note: The policy reference on this schedule should have been updated to reflect that what was section 8.24b)i) and ii) is now section 13.4.2. b).

MAPPING

The existing Official Plan contains hazard mapping, which includes flood hazard, erosion hazard, hazardous sites, wetlands and steep slopes. The following maps (**Figures 4 to 11**) show the existing hazard mapping in the Official Plan and the regulated area provided by the Conservation Authorities. The areas regulated by the Conservations Authorities are much broader than just hazard areas and include floodplains, areas subject to erosion, and steep slopes as well as provincial significant wetlands and fish habitat.

As is expected, since the Regulated Areas include a broader range of mapped items than the Official Plan Hazard Mapping, there are regulated areas outside of the hazard mapping from the Official Plan. Some of this may be, for example, a natural feature or buffer to a natural feature. There are however, some areas, for example, that appear to be a stream corridor, in the Regulated area mapping, which may have a hazard associated with it, and the Hazard mapping should be updated to reflect this. Conversely, there are areas outside of the Regulated Areas, which are shown as hazard, such as the southern portion of Churchill. These areas should be re-examined, as no hazard may be present, as in the Conservation Authorities' mapping.

Figure 4: Overlay of Hazard Areas in the Existing Official Plan and Regulated Area under the Conservation Authority in the Town of Innisfil

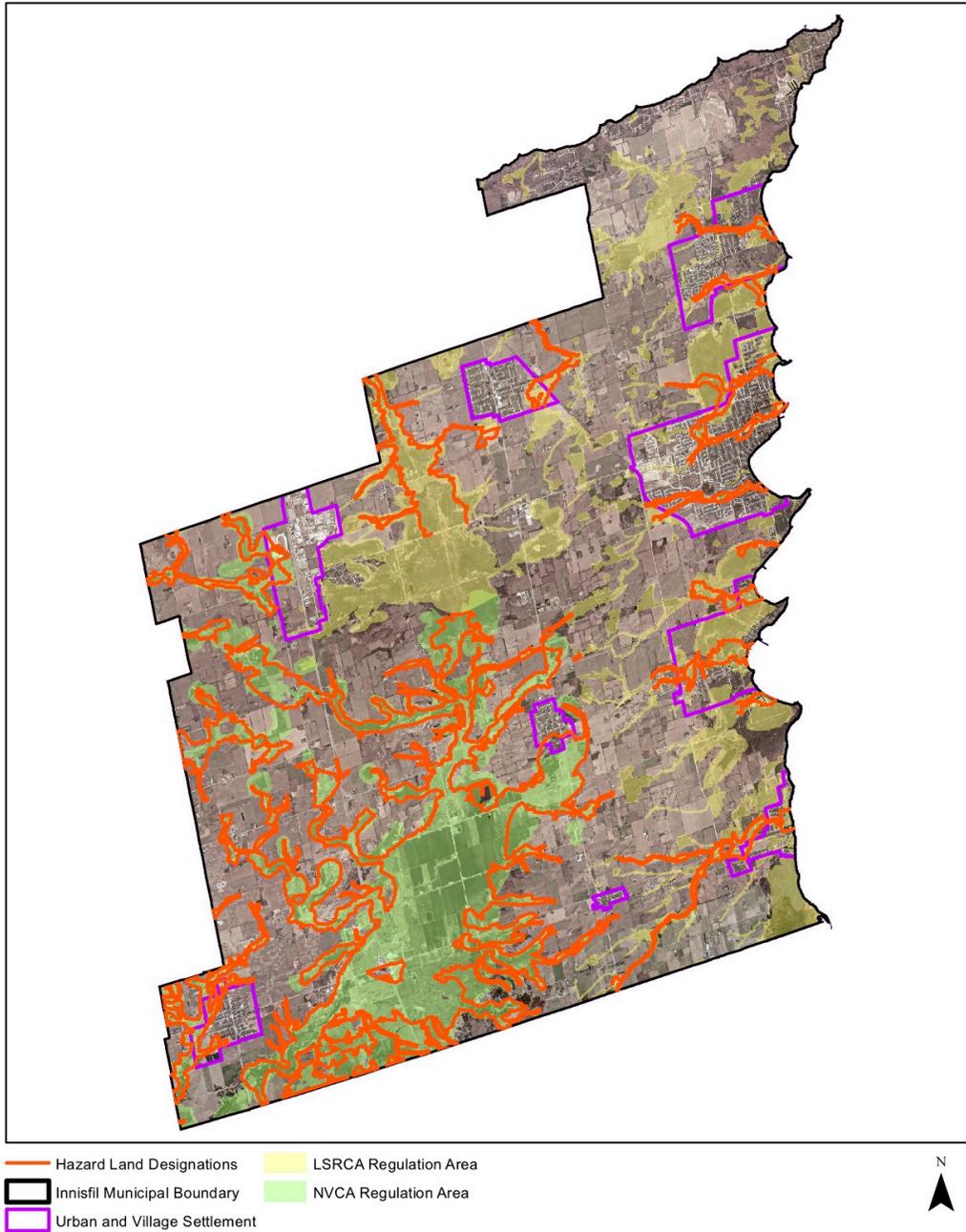


Figure 5: Overlay of Hazard Areas in the Existing Official Plan and Regulated Area under the Conservation Authority in Alcona

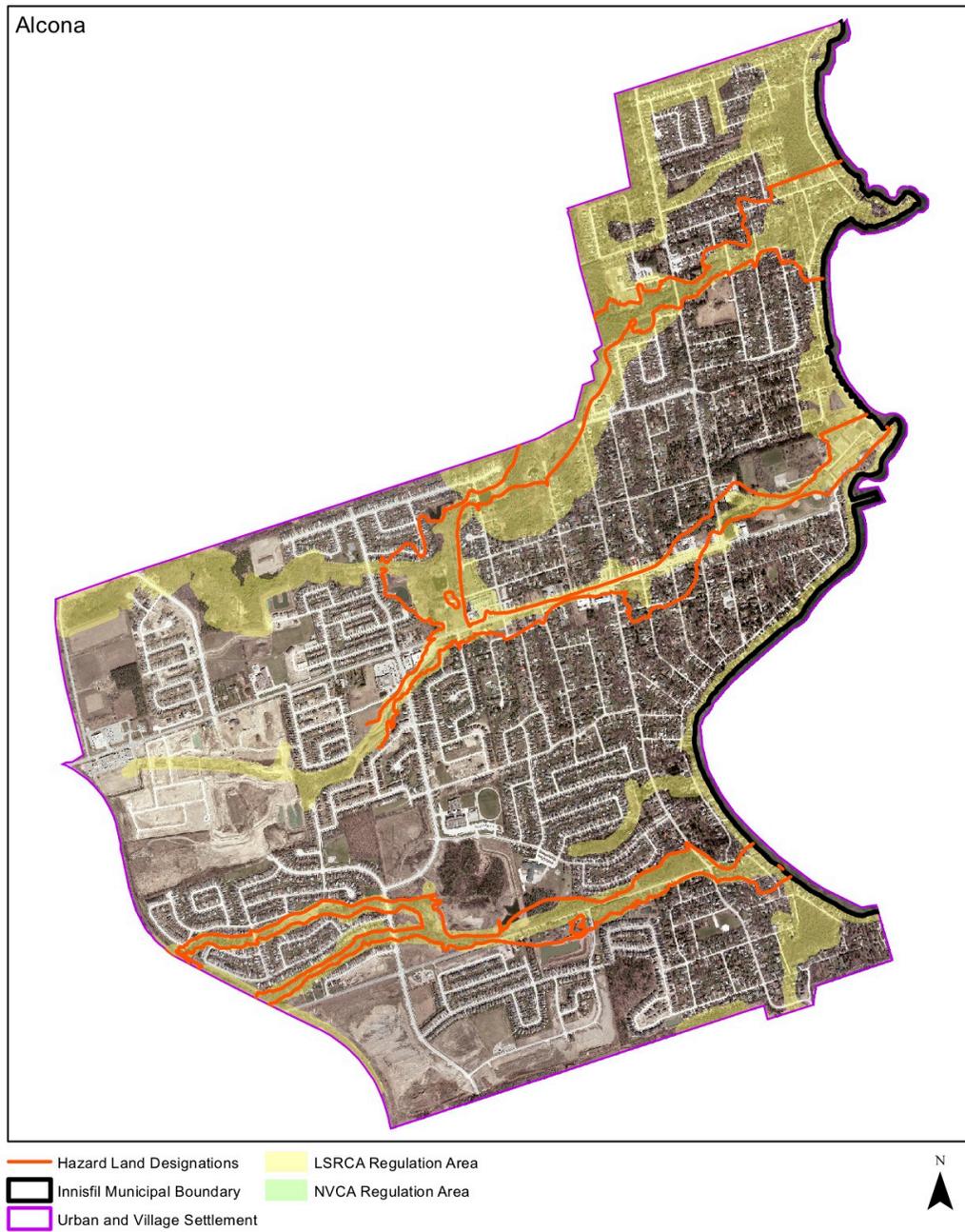


Figure 6: Overlay of Hazard Areas in the Existing Official Plan and Regulated Area under the Conservation Authority in Cookstown



Figure 7: Overlay of Hazard Areas in the Existing Official Plan and Regulated Area under the Conservation Authority in Innisfil Heights



**Figure 8: Overlay of Hazard Areas in the Existing Official Plan
and Regulated Area under the Conservation Authority in Lefroy – Belle Ewart**

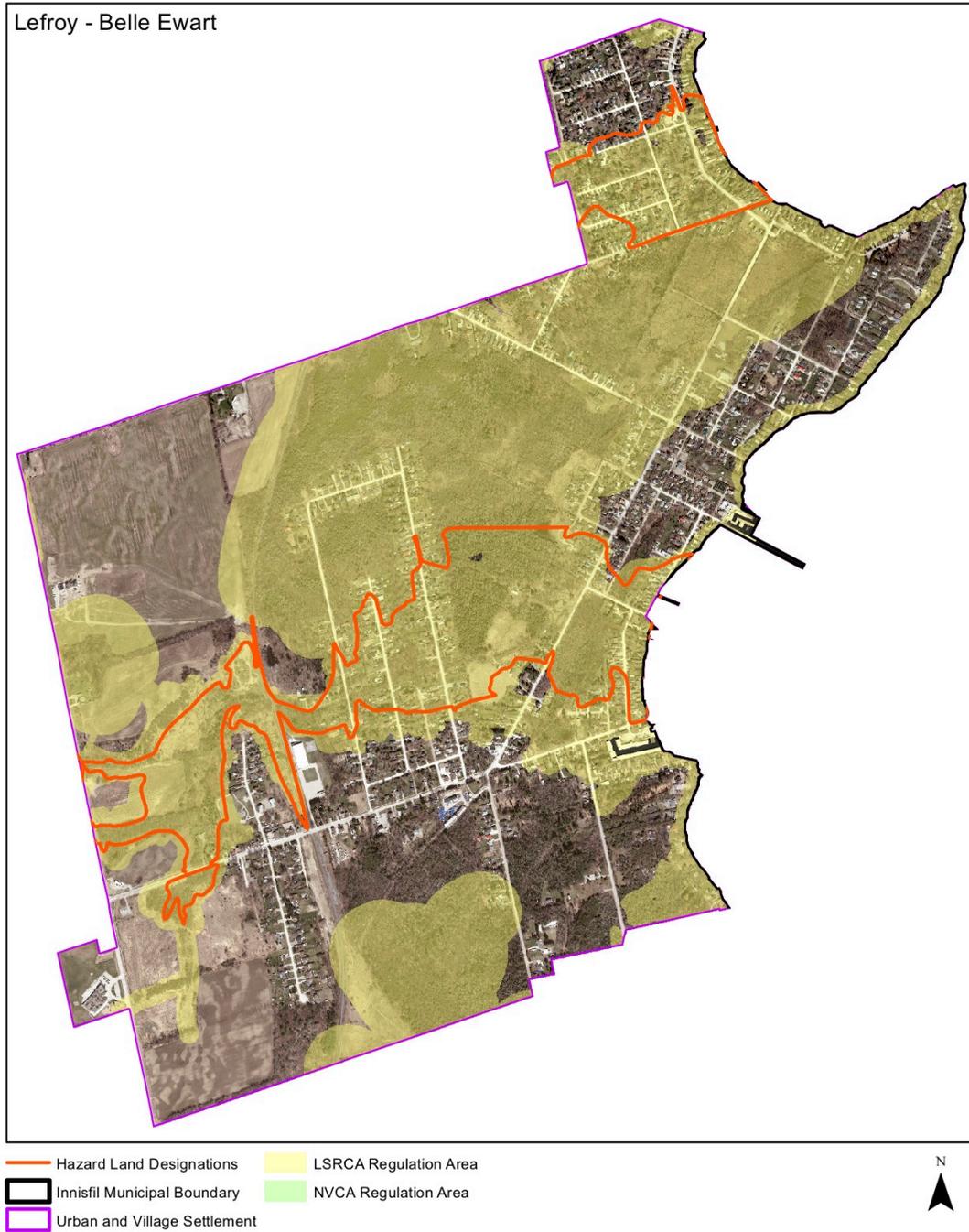


Figure 9: Overlay of Hazard Areas in the Existing Official Plan and Regulated Area under the Conservation Authority in Stroud



Figure 10: Overlay of Hazard Areas in the Existing Official Plan and Regulated Area under the Conservation Authority in Stroud



Figure 11: Overlay of Hazard Areas in the Existing Official Plan and Regulated Area under the Conservation Authority in Fennell's Corners



Figure 12: Overlay of Hazard Areas in the Existing Official Plan and Regulated Area under the Conservation Authority in Gilford



Figure 13: Overlay of Hazard Areas in the Existing Official Plan and Regulated Area under the Conservation Authority in Sandy Cove



3 DISCUSSION

The purpose of this discussion paper is to review the policy structure for addressing natural hazards as part of the Official Plan Review. Policy structures for addressing flooding in Innisfil are considered separately for the rural and settlement areas.

Rural areas

A significant portion of area regulated by the Conservation Authority is within the rural countryside area. The Two Zone approach and Special Policy Area approach are only intended for urban areas and thus the One Zone approach should be maintained for flooding hazards in the rural countryside areas. It is noted that within the agricultural area to the northeast of the intersection of Highways 89 and 400, severe flooding is common. Specific policy options will need to be further investigated for this area.

Settlement areas

Special Policy Areas are intended as a special policy structure where it is not possible to meet the Provincial standards for flood protection, or doing so would cause “significant social and economic hardship” and remedial works to address flooding and Two Zone approach are not possible. Implementing this approach is an onerous process along with requirements for Provincial approval. It is mostly used in areas where further development or redevelopment is desired, such as in downtowns. Therefore, it is an unlikely approach for Innisfil at this time.

The One Zone approach is generally the preferred approach to flooding. Likely this will be the predominant approach in the Town of Innisfil. The Two Zone approach is not intended to be applied across entire watersheds but only specific areas.

The Ministry of Natural Resources provides direction on the application of the Two Zone Approach in their report: “Technical Guide: River & Stream Systems: Flooding Hazard Limit” ((OMNR, 2002). Appendix IV to this technical guide (“Application of the Two-Zone Concept – Factors to be Considered”) includes considerations in applying the Two Zone approach, including:

- how often flooding occurs;
- the topography, particularly if development in the flood fringe is feasible;
- land needs and whether development can occur elsewhere as opposed to within the flood fringe;
- how the proposed development may impact flooding risk (up and downstream);
- whether flood proofing of the development in flood fringe is possible;
- feasibility of servicing the development in the flood fringe;
- the access to the flood fringe during flooding events; and
- implementation considerations such as how onerous implementing the policy will be for the Township.

In order to address vacant lots of record that are subject to flooding, three options are proposed for further discussion with the Town and with the Conservation Authorities.

The first option is to leave the existing zoning as is, and continue to have development applications within Conservation Authority regulated areas processed by the Conservation Authority which will establish site specific development permissions and restrictions.

The second option is to down-zone the properties to restrict development within flooding hazard areas.

The third option is to institute a Two Zone approach, where down-zoning and prohibition of development only occurs on the lots, or portion thereof in the floodway. We note that any application of the Two Zone approach would need to be considered in consultation with the Conservation Authorities and no specific location for application of the Two Zone approach is being recommended at this time.

In addition to these options, remedial works can and should be considered to reduce flooding risks and hazardous areas as an alternative to the Two Zone approach. In settlements near the lake, riverine flooding appears to be more frequent or severe. Consideration such as on-line storm control, oversizing of stormwater management ponds and other potential options would need to be discussed with the LSCRA. The Official Plan can then provide the policy direction on the possible implementation options to control downstream flooding during the development approval process. However, in some of the built up areas of the shoreline settlement areas, remedial works are not possible or may not fully resolve the flooding issue.

Climate Change

The current Official Plan does not directly address climate change. As part of the Official Plan review, climate change policies should be introduced to be consistent with the 2014 PPS. Some of the impacts of climate change are closely related to hazards, particularly in terms of increased frequency and severity of storm events, which can have impact on flooding, erosion and dynamic beach hazards. Policies to mitigate negative impacts of climate change should be considered in concert with the impact that climate change may have on hazards.

Mapping of Hazards

The mapping of Hazardous areas in the Official Plan needs to be updated to better reflect the floodplain and erosion hazard component of the generic regulations.

REFERENCES

Lake Simcoe Region Conservation Authority (2014) Draft Guidelines for the Implementation of Ontario Regulation 179/06

Lake Simcoe Region Conservation Authority (2014) Lake Simcoe Region Conservation Authority Watershed Development Policies

Official Plan of the County of Simcoe (2013)

Ontario Ministry of Municipal Affairs and Housing. 2014. Provincial Policy Statement – Under the *Planning Act*,

Ontario Ministry of Natural Resources (2002) River and Stream Systems: Flooding Hazard Limit Technical Guide

Town of Innisfil Official Plan (2011)

Nottawasaga Valley Conservation Authority (2009) Planning and Regional Guidelines