

## Briefing Note

### Structures Within the 3:1 Stable Slope Allowance

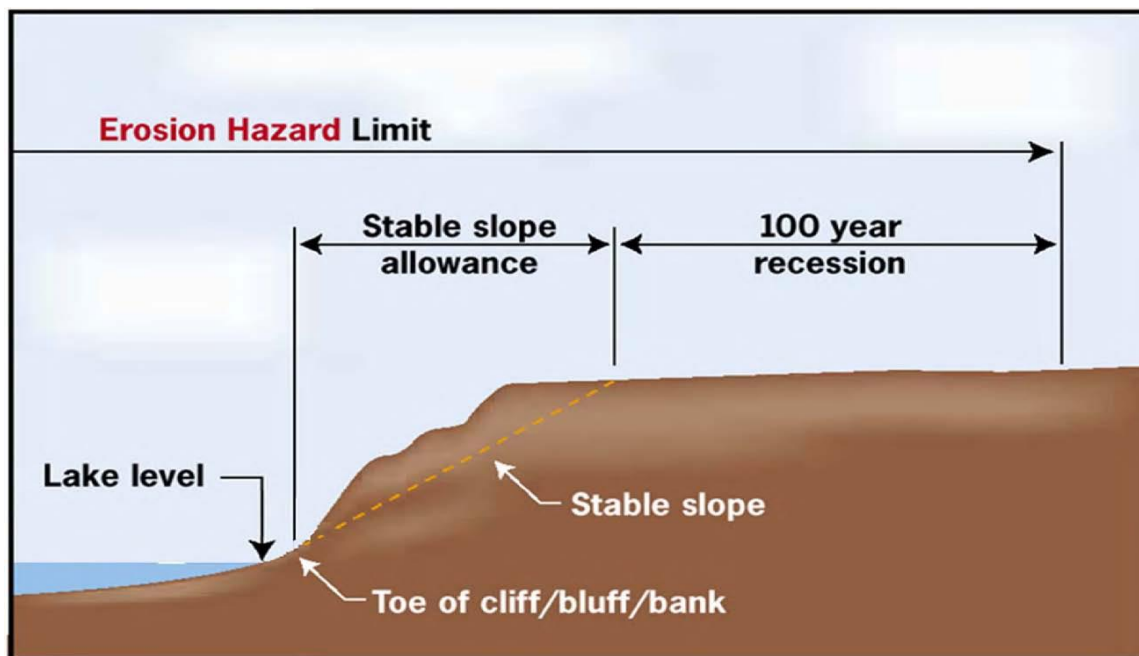
#### **STEERING COMMITTEE DIRECTION REQUIRED**

##### The Issue:

Whether and how to address potential significant concerns about the number of structures currently located in the Lakeshore Area 1, north of Grand Bend. **A recommendation by the Steering Committee to the ABCA Board of Directors is required.**

##### Background:

After a field review of the ABCA shoreline, the consulting team has expressed significant concern about the number of dwellings that were within Lakeshore Area 1 in the bluff area north of Grand Bend. Lakeshore Area 1 was defined in the 2000 SMP as the area lying within a 3 to 1 stable slope allowance and the 100 year flood hazard. The following schematic provides a visual representation of the Erosion Hazard limit.



The extent of Lakeshore Area 1 was defined more than 20 years ago. Since that time, the nature of development along the Lake Huron shoreline has changed dramatically with increasing demand for shoreline property. Changes to the average annual temperatures in the region as a result of climate instability have impacted lake temperatures, lake effect snowfall, winter ice cover and fish habitat. A longer ice-free season will increase the number of storms associated with large waves and storm surges and this in turn will drive larger volumes of longshore sediment transport and an increase in the downcutting of the nearshore and erosion of the bluff toe along cohesive shorelines. An increase in the erosion of the toe of slope areas is evident and as a result of this evidence, members of our consulting team have recommended that further investigation be carried out to assess the level of risk that these buildings may be exposed to.

A detailed investigation of the degree of risk was not part of the scope of work assigned to the consulting team who are continuing their efforts to update the Shoreline Management Plan. The original submission from our consulting team did indicate however that if this issue arose in the context of their work, that a sub-consultant would be retained and Terraprobe was identified in the original Proposal submission.

ABCA requested an unsolicited proposal from Terraprobe in order to secure a better understanding of the additional cost involved. **A copy of the unsolicited proposal is attached.** The unsolicited proposal from Terraprobe was submitted to ABCA in March 2016 and recommends a two-phase approach as follows:

*Phase 1: A desktop review of the available information (topographic maps provided by the client, aerial photographic data and published geological subsurface information comprising shoreline slopes) and consultation with Aqua Solutions 5 Inc. to identify the Areas of Concern within the study limits requiring further assessment.*

*Phase 2: A higher level review of the available information for the Areas of Concern in conjunction with site visit, slope mapping, site measurements of the setbacks of selected structures from the existing crest, and consultation with Aqua Solutions 5 Inc., to categorize zone of Significant (Zone of Pending Failure) and Zone of Higher Slope Instability Risks.*

In order to follow up on the concerns raised by our consulting team, ABCA completed an initial GIS review of the structures that are lake ward of the 3:1 stable slope. **Please note – this consisted of a mapping exercise only and has not been validated with on-site field work.** This work was carried out in April 2016 and the following general findings have emerged from this initial review:

- There are approximately 1000 structures within Lakeshore Area 1 in Bluewater and Central Huron in the ABCA watershed. Approximately 400 of these are accessory buildings and approximately 600 are dwellings.
- Details about the approximate number of dwelling units and accessory buildings that encroach within 5 metres, 10 metres and 15 metres of the top of bank are summarized in the following table:

Distance to Top of Bank	Total Number of Dwelling Units	Total Number of Accessory Buildings/ Structures	Total Buildings	Additional Comments
5 m	108	126	234	Structures within 5 metres of the top of bank are <i>generally scattered along the shoreline</i> rather than being clustered in specific subdivisions.
10 m	153	55	208	Structures within 10 and 15 metres of the top of bank are <i>generally clustered in specific subdivisions</i> rather than being scattered along the shoreline.
15 m	274	83	357	

Moving forward, there are several options that the Steering Committee needs to consider. These include:

1. Doing nothing to address the slope stability issue;
2. Doing something to address the slope stability issue (e.g. communicate to landowners or begin some initial investigation of areas of concern or a combination of the two); or
3. Doing everything to address the slope stability issue (e.g. retain Terraprobe to complete a detailed investigation of areas of concern as well as specific structures that are at risk).

More information about each of the options follows.

**Options:**

**1. Do nothing – Take no action to investigate the degree of risk and carry on with the SMP Update.**

Pros	Cons
No additional cost to ABCA.	Does not provide ABCA or landowners with required information about the level of risk.
Allows the SMP to proceed as proposed.	

**2. Do something (either 2A, 2B or a combination of A & B):**

**A. *Communication & Awareness:*** As part of the SMP project, communicate the slope stability risks to shoreline property owners and educate property owners and municipalities. This would include a press release on the current erosion and slope stability risks along the shoreline as well as the development of an “Early Warning” Fact Sheet for shoreline bluff property owners. The Fact Sheet will be developed by Terraprobe and will provide information about the early warning signs that property owners should be looking for that may indicate slope stability issues and concerns. Please note: a Press Release has already been issued by ABCA. In addition, ABCA provided direction to PSI on May 4<sup>th</sup> confirming that Terraprobe is to be retained to complete the Landowner Fact Sheet. Estimated cost for the Fact Sheet = \$1200.00 - \$1500.00. Work will commence immediately to develop the Fact Sheet.

**B. *Initial Investigation:*** Carry out an initial assessment of the degree of risk based on the scope of work define in Phase 1 of the Terraprobe proposal. Estimated cost = \$10,000.00 plus applicable taxes.

Pros	Cons
Would enable ABCA to provide important but generalized risk-based information to landowners and community members.	Does not provide specific details or information regarding the degree of risk on a property specific or area wide basis. Would not define the limits of any areas currently at immediate risk.
The initial investigation option would provide additional insight and information for ABCA, municipalities and landowners regarding the degree of risk.	Does not provide a detailed assessment of areas of concern.
	Requires additional funds to be allocated either for the development of the Fact Sheet or the Phase 1 assessment.
	May impact timing for delivery of updated SMP.

3. **Do everything** – increase the scope of the current consulting contract to include the detailed assessment (Phase 1 and Phase 2) by Terraprobe. Additional cost = \$29,000.00 plus applicable taxes.

Pros	Cons
Would provide ABCA, municipal partners and landowners with comprehensive information about the degree of risk.	Requires additional funding.
Would provide solid evidence to support an updated policy platform.	
Would ensure that all parties (including community leaders, landowners and regulators) have the same updated information.	May impact the timing for delivery of the updated SMP.

**Action Required:**

The SMP Steering Committee needs to make a recommendation to the ABCA Board of Directors regarding the most appropriate option.

Prepared by: Alec Scott

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