TATHAM ENGINEERING

Hedge Road Bank Stabilization – Public Information Centre

Town of Georgina

November 4, 2021

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Presentation Agenda

1 Project Understanding

2 Project Process

3 Alternative Solutions & Recommendations

4 Next Steps


1 PROJECT UNDERSTANDING

Project Understanding

- Hedge Road between the Black River and 200 m east of Seaward Drive has a steeply sloped bank to Lake Simcoe

- In recent years, the bank has experienced erosion events that put the integrity of road infrastructure at risk and needed localized repair

What is the Study Area?

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Total shoreline/road length of 1100 m.

What is the Purpose of the Study?

- Protection of Town's infrastructure (road, utilities, etc.) to ensure a high level of safety and service for residents and users of Hedge Road

How Will We Protect Town's Infrastructure?

- Identify and determine extent of erosion for Hedge Road in Study Area
- Identify available slope stabilization alternatives to ensure that road infrastructure is protected
- Assess the alternatives
- Identify preferred alternative(s) for slope stabilization
- Consult with local residents and public


Why Are We Here Today ?

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- Seek input and comments from local residents and members of the public for consideration in the selection of the preferred alternative
- Detail the study area, study purpose and objectives
- Present the need and justification for the study
- Identify protection alternatives considered for the study area

What are the Existing Conditions?

Significant erosion along east end of study area near Seaward Drive (across from 363 Hedge Road), where bank is highest.

What are the Existing Conditions?

Potential for erosion to affect road if left unprotected

What are the Existing Conditions?

Moving west from Seaward Drive, extent of active erosion is smaller but areas of erosion at the toe of the slope are evident

What are the Existing Conditions?

Moving westerly towards the horn, there are several areas where erosion repairs have been necessary. Repair works include large boulder revetments (installation across from 317 Hedge Road shown) and a section of sheet pile wall.

What are the Existing Conditions?

Continuing west from the horn to Maple Ave, slopes are less steep and only localized minor erosion was seen (near 299 Hedge Road).

What are the Existing Conditions?

Towards the west end, the edge of the road is very close to the top of bank and there are areas that have been cleared of vegetation, making them more prone to erosion (photo approx. 20 m west of Dunkirk Ave)

What are the Existing Conditions?

Throughout the study area there are a number of structures that landowners have constructed. These include stairs to access the shoreline, decks, docks & retaining walls

2 PROJECT PROCESS

What We Have Done To Date

- Field investigations
- Design analysis
- Consultation with residents and direct communication with impacted landowners

Project Process – Field Investigations

- Legal and topographic survey
- Utility investigation
- Geotechnical investigation
- Environmental review
- Site visits to review bank slope conditions
- Onsite discussions with residents

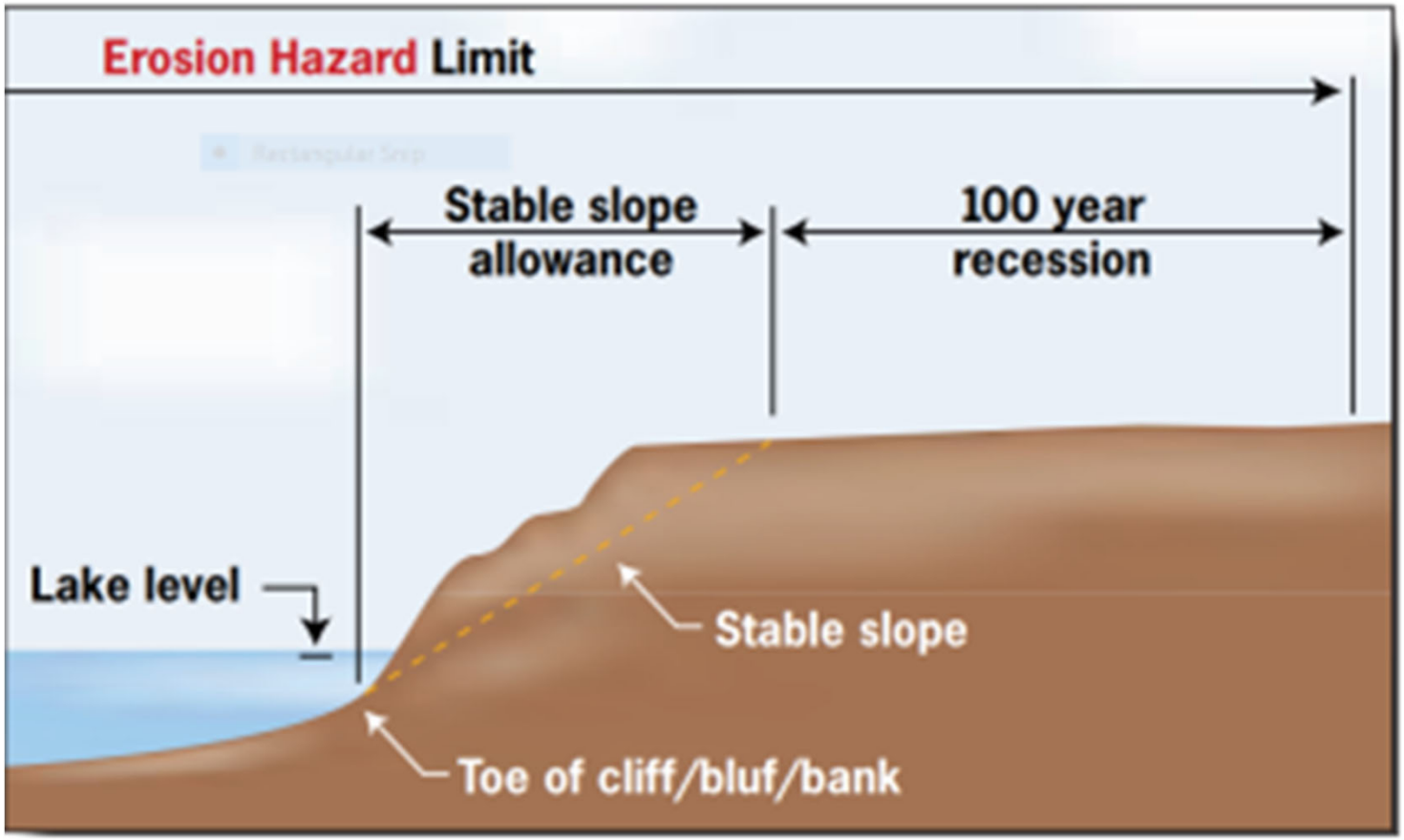
Project Process – Design Analysis

Existing conditions were assessed in the following ways:

- 33 sections were analyzed
- Coastal modelling to predict wave conditions and flood hazard
- Geotechnical study to determine slope stability
- Calculation of erosion hazard – how far could the bank erode if left unprotected
- Results show road requires protection through most of the study area

Design Analysis – Erosion Hazard

Erosion hazard limit considers how far erosion could progress over time



Project Process – Public Consultation

- Notice of project delivered to directly affected residents
- Phone calls with residents
- Project Newsletter circulated
- Project webpage on Town's website
- PIC advertised through Town's social media accounts

3 ALTERNATIVE SOLUTIONS & RECOMMENDATIONS

Alternatives Considered to Manage Slope Erosion

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A range of potential design alternatives were considered:

- Do Nothing
- Sheet Pile Wall
- Erosion Control Blanket
- Vegetation Enhancement
- Green Retaining Wall
- Slope Regrading
- Boulder Revetment

Alternatives - Sheet Pile Wall

- Sheet pile walls are made using metal sheets that are driven into the ground, creating a vertical retaining wall
- The Lake Simcoe Region Conservation Authority generally discourages use of hardened vertical walls, as they alter the shoreline significantly from its natural state

Alternatives – Erosion Control Blanket

- For areas with limited vegetation, erosion control blankets, which are laid on the ground and staked in place can provide erosion protection to bare soil while vegetation is being established
- Erosion control blankets can be made of biodegradable natural materials or synthetic material

Alternatives – Vegetation Enhancement

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For areas with insufficient vegetation, enhancement though seeding (left), live stake plantings (right) and other planting strategies can improve slope stability

Alternative – Green Retaining Wall

Green retaining wall systems use synthetic soil containment cells (usually grids or soil bags) to stabilize the slope and promote vegetation growth.

Photo Source: Presto Geosystems

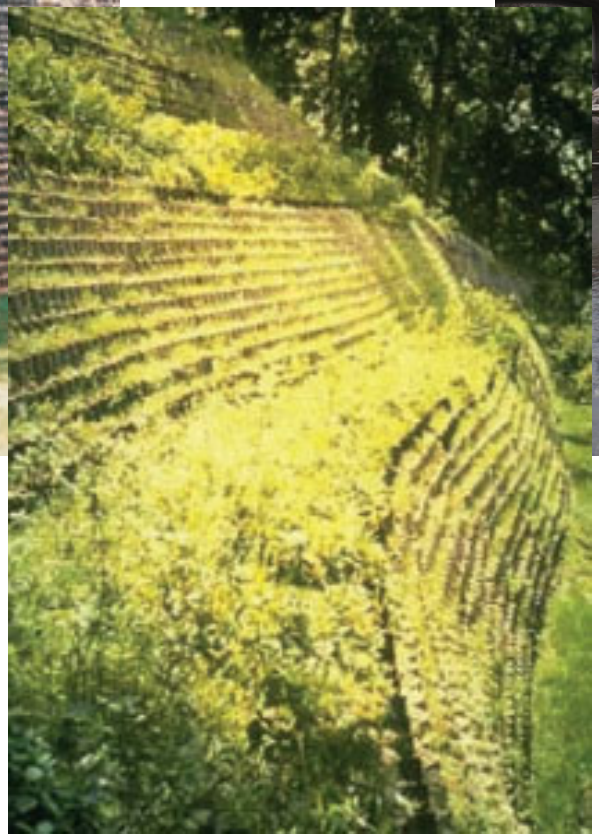

Photo Source: Envirolok

Alternatives – Slope Regrading

Photo Source: Salix

- If the slope can be extended at the toe or top of bank, the slope can be made flatter, and therefore more stable, through grading works
- This requires clearing all vegetation for construction purposes
- Hedge Road does not have space available for this alternative to be feasible

Alternatives – Boulder Revetment

- Boulder revetments involve placement of stone against a slope to protect against erosion from waves
- They are preferred over vertical retaining walls as they absorb wave energy and provide more habitat opportunity than hardened walls

How Have the Alternatives Been Evaluated?

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Evaluations of the alternatives considered:

- Ability to protect against erosion
- Natural environment (i.e. impact to vegetation, fish habitat)
- Social suitability (i.e. use of shoreline by public, use of roadway)
- Economic factors (i.e. up front costs, maintenance cost)

Recommended Alternative – Boulder Revetment

Boulder revetments are recommended to provide toe protection at the base of slope where needed

Recommended Alternative – Upslope Protection

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Erosion control blanket and/or vegetation enhancement for localized areas with active erosion or sparse vegetation

Recommended Alternative – Green Retaining Wall

For the slope failure area at the eastern project limit, more extensive measures are required given the bank height and extent of erosion. A green retaining wall, using soil bags, is recommended

Project Implementation

3 Projects were defined (Projects A, B and C) based on erosion risk

Project Implementation

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PROJECT	APPROX. LENGTH OF SHORELINE PROTECTED	RECOMMENDED TIMELINE FOR CONSTRUCTION	DESCRIPTION OF WORKS
A	105 m	Near Term	Green Retaining Wall and Boulder Revetment
B	335 m	Mid Term	Boulder Revetment, Erosion Control Blanket and Revegetation in Selected Areas
C	240 m	Longer Term	Boulder Revetment, Erosion Control Blanket and Revegetation in Selected Areas


4
NEXT STEPS

What are the Next Steps?

Field Investigation

Design Analysis

Develop & Evaluate Alternatives

Complete

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Public Information Centre

Detailed Design

Additional Landowner Consultation

Permitting & Approvals

Construction

How to Provide Input

Participate in discussion after the presentation, or

Follow up with comments by telephone or e-mail:

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Thank you!

We welcome your comments and questions

Reminder of Discussion Period Protocol

Raise your hand and you will be called on

When it's your turn to speak, unmute your audio and turn on your video (if you wish)

Limit time to 3-5 minutes to allow others to comment