



Erie Shore Drive Flooding/Erosion Update

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Infrastructure and Engineering Services (IES)
February 28, 2020

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Erie Shore Drive Background

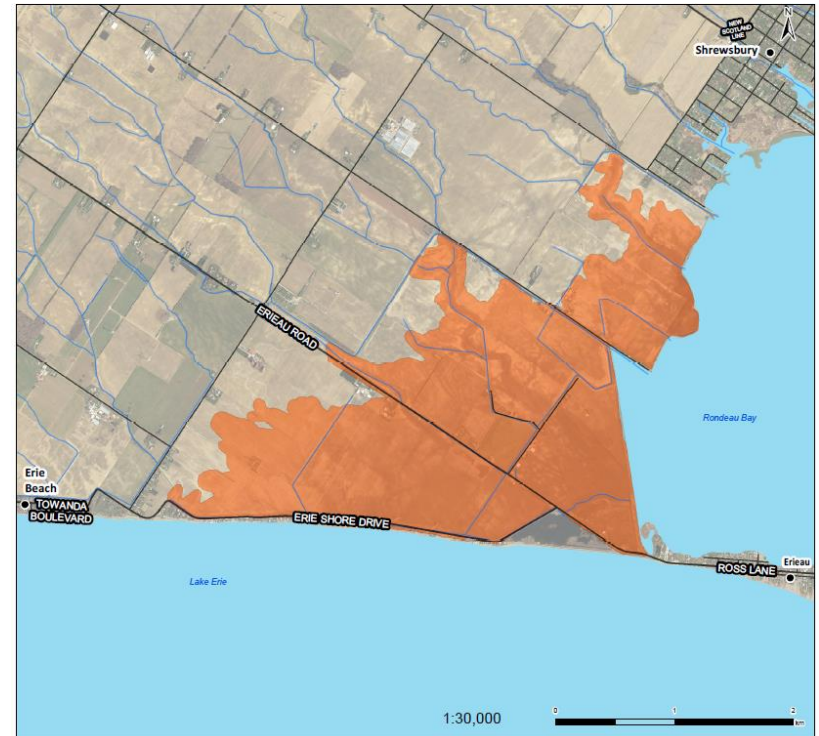
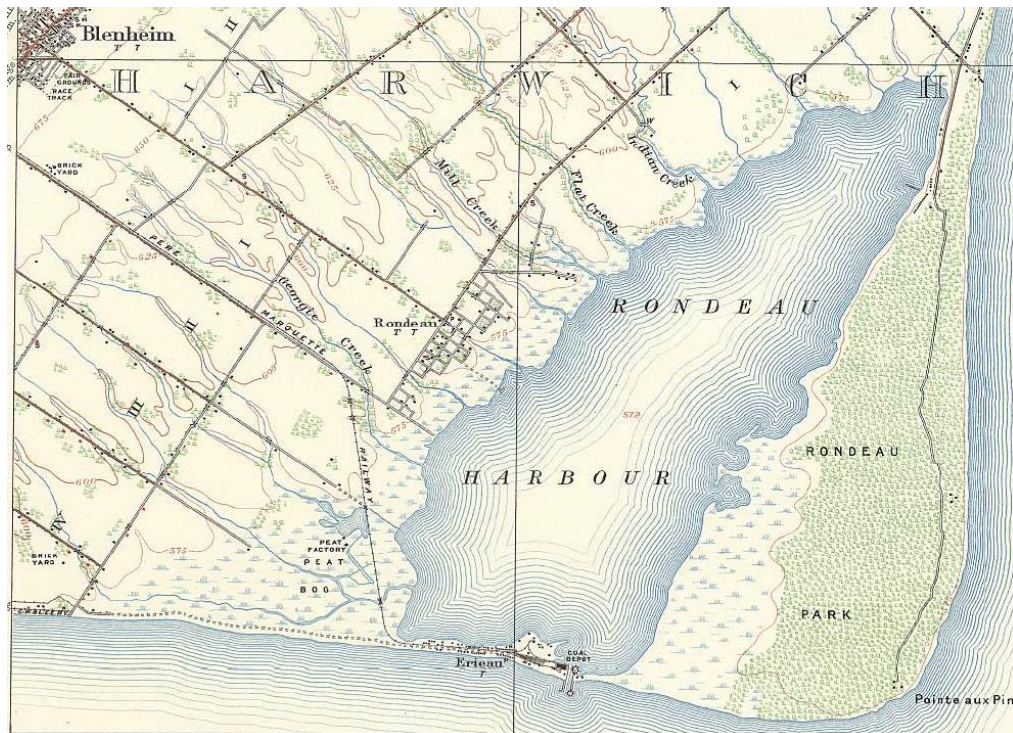
- Erie Shore Drive (ESD) dike originally constructed in 1914
 - McGeachy's Pond dike constructed in 1973
- Total of 123 homes located along the dike; 43 are permanent residents (per the tax roll)
- A 1998 preliminary report provided Engineering recommendations to reduce flooding / erosion at a cost of \$11M
 - The proposal was not supported.
- Due to recent high water levels, lake water overtopping the road first witnessed March/2016
 - Infrastructure & Engineering Services (IES) has been regularly monitoring road/dike stability
 - Frequency of events became concerning in 2018
 - Engineering Consultant (Golder) hired to –
 - Conduct geotechnical exploration
 - Provide opinion on associated risks
- State of Emergency declared August 27/19 and February 28/20 (today)
 - \$500k spent in 2019

Dike Functionality

- Originally developed as a flood control structure to create farm land and safe access to the Village of Erieau via Erieau Road

1910

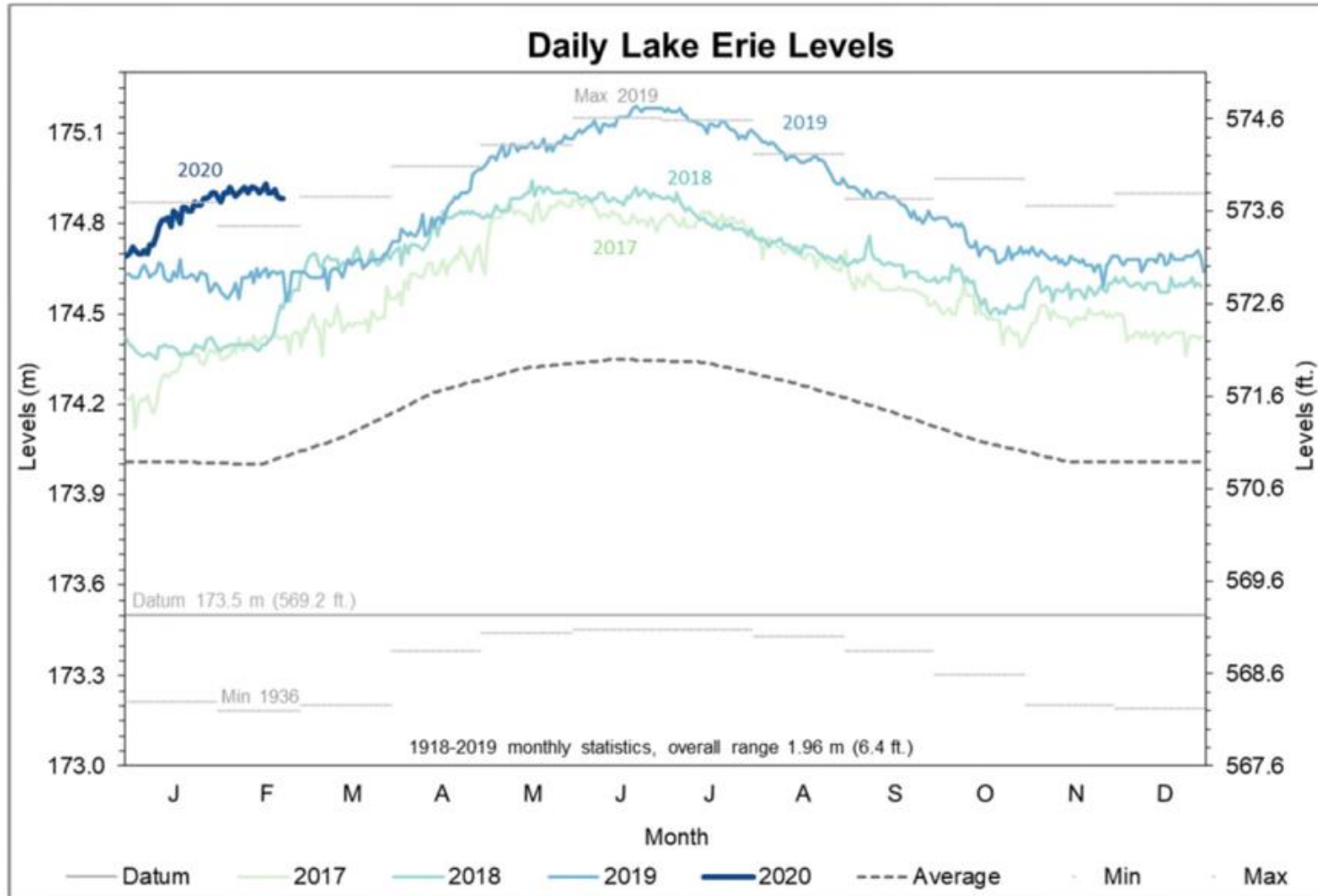
2020



Engineering Challenges

- Per the Sep. 23/19 presentation to Council, technical challenges include:
 1. Lake / dike elevation differential: 10” on June 22/19 (under static lake conditions)
 2. Minimal amount of physical space available due to close proximity of abutting private properties and municipal drain
 3. Shoreline is eroding at an accelerated rate; increase in depth doubling wave energy
 4. Municipal drain was not designed to manage Lake Erie flooding
 5. Weather events and climate change

Historical Lake Erie Water Levels



Environment and Climate Change Canada, February 24th, 2020.

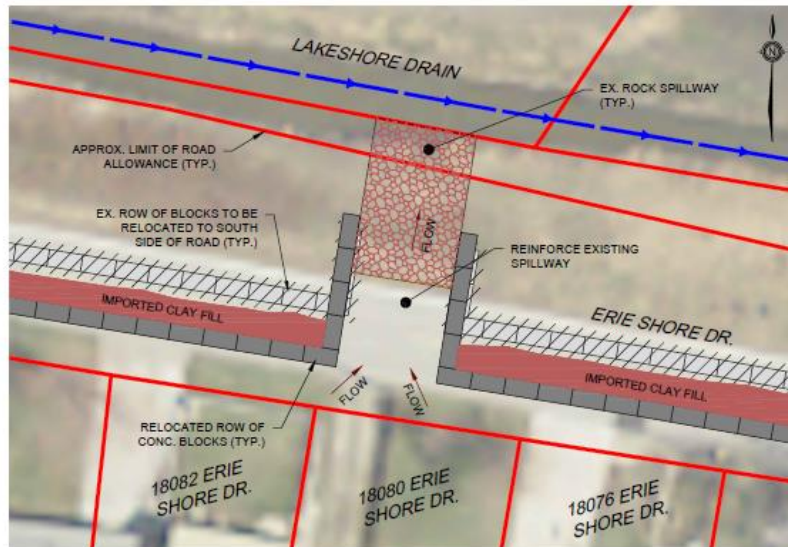
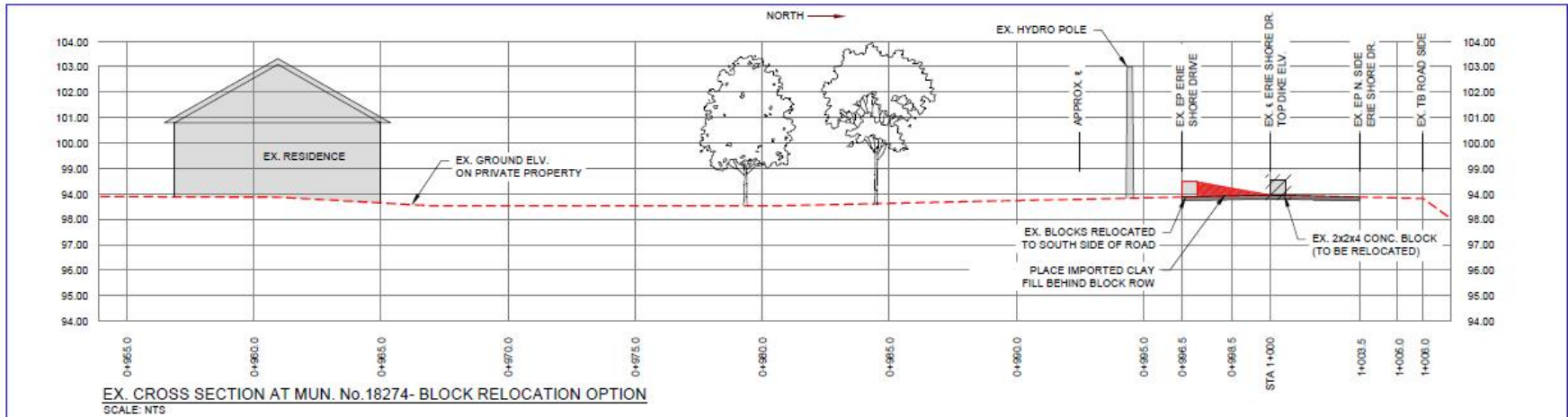
Key Variables Monitored

- Lake Levels
 - Current level equals levels just prior to Aug/19 Emergency
 - Record levels set in January and February/20
 - 5% probability of increasing by 33 cm (13”) through to June; worst case modeling reflects 48 cm (19”) increase from today’s levels
- Lake ice coverage
 - Minimal to date; ice build-up serves to protect the shoreline
- Rainfall forecast
 - 50% probability of above normal rainfall during March and April
- Wind / Storms
 - Speed (> 25 kph), duration (+3 hours) and direction (South or Southwest)
- Road / dike / slope stability
 - Increase in tension cracks witnessed; increase in width of cracks and evidence of slope failing
 - Soil moisture content (saturation level)

Consultant Observations / Recommendations (1 / 2)

- Based on visual assessment, stability analysis, lake level predictions and historical storm frequency –
 - There is a 5% to 40% chance that conditions will render the dike unstable leading to a significant breach
- Short Term
 - Urgency* to complete the following as soon as possible:
 - Raise embankment grade to prevent uncontrolled overtopping
 - Move concrete blocks / earth fill to the south edge of roadway from addresses 17982 to 18416
 - Eliminate use of dike as a transportation corridor (close public access to the road)

Short Term Actions



TYPICAL BLOCK RELOCATION & SPILLWAY EXTENSION DETAIL
SCALE: NTS

ERIE SHORE DRIVE COMMUNITY OF HARWICH FEB. 2020- OPTIONS	Drainage Services 315 King St. W., PO Box 840 Chatham, ON N7M 5K8 okdrainage@chatham-kent.ca Ph: 519-360-1998	DESIGNED BY: N/A	SCALE: N/A
		DRAWN BY: J.J. GRAY- DRAINAGE	1 of 4
		DATE: FEBRUARY 2020	

Consultant Observations / Recommendations (2 / 2)

- Longer Term Considerations –
 - Protect embankment from saturation during flood events
 - Reinforce / flatten north slope to enhance stability
 - Further reduce flow velocities in discharge spillways; reduce the number of discharge spillways
 - Potentially move municipal drain to the north or, develop new seawall and armouring system along Lake Erie shoreline
- IES will bring forward proposals to Council at a later date

Next Steps

- Close the section of Erie Shore Drive where current blocks exist (approx. address 18416), effective March 9, 2020, pending reasonable interim weather
 - Closure may occur at any time if conditions warrant
- For safety reasons, evacuate residents east of address 18416 up to 17982
 - Municipal support services in place for those who need it (next slide)
- Initiate procurement of necessary services to immediately improve stability of dike; estimated cost = \$450,000
- Develop mid term plan, with input from Zuzek study, for Council review and decision
- Establish public information centre for March 3/20 at Erieau Firehall
 - Two sessions:
 - 2:00 p.m. to 3:30 p.m.
 - 5:00 p.m. to 6:30 p.m.
 - One on one question and answer opportunity

Municipal Support Services

After regular business hours or over the weekend

Residents who feel they cannot shelter in place, and require emergency accommodation, can call the Chatham-Kent Homeless Response Line at **519-354-6628**. They should advise that they live on Erie Shore Drive.

During regular business hours

Residents requiring emergency assistance with basic needs or shelter can call Chatham-Kent Employment and Social Services **519-351-8573**. They should advise that they live on Erie Shore Drive.

Pet/Animal Care

Pet and Wildlife Rescue (PAWR) can assist any residents that require emergency assistance with pet and/or animal care. PAWR can be reached at **226-996-9969** during regular business hours or at **519-784-6146** (after-hours emergency contact number).

Case managers are available to assist with general inquiries regarding moving, storage, financial assistance, and shelter. Residents from Erie Shore Drive can access case managers over this coming weekend by calling **519-360-1998**.