Minutes of Meeting

Project Description: Lake Superior Coastal Resilience Management Plan	**Project No:** 25-3065-001
Purpose: Virtual Update Meeting	**Prepared By:** Claire Morrow
Meeting Date: June 10, 2026	**Location:** Virtual

Present:

- Melissa Haresign (KGS)
- Melissa Hughson (LRCA)
- Tammy Cook (LRCA)
- Peter Zuzek (Zuzek Inc)
- Gabriel Vieira de Carvalho (DHI)
- Claire Morrow (KGS)
- Donna Blunt
- Gary Davies
- Vic
- Walter Turek
- Katie Franken
- John Reynolds
- Iain Angus (Friends of Chippewa Park)
- Jean Hall-Armstrong
- Glenda Giroux

Issued Date: June 24, 2026	**Issued To:** Melissa Hughson and Posted to Project Website

Item	Details	Action By:
1.00	**Agenda**	
1.01	Melissa Hughson (MHu) opened the meeting by stating that the purpose was to present preliminary results and keep the community informed. The meeting was recorded and will be made available to the public.	
1.02	Melissa Haresign (MHa) reviewed the meeting agenda and introduced the project team.	
2.00	**Project Overview**	
2.01	MHa described the core objective of assessing flood and erosion hazards along the Lake Superior shoreline within the Lakehead Region Conservation Authority (LRCA) jurisdiction. The goal is to identify vulnerable shorelines,	

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	communities, and infrastructure. This work will support development of a coastal resilience management plan that incorporates community input, supports long-term climate adaptation, and reduces risk from future climate impacts.	
2.02	MHa explained how the coastal resilience management plan will be developed. The first phase involved field data collection, which informed the numerical models and technical analysis. The modelling and analysis will be combined for hazard mapping and vulnerability assessment to identify areas at risk. The purpose of the coastal resilience management plan is to reduce exposure to hazards and build climate resilience. MHa emphasized the importance of ongoing stakeholder engagement and input.	
2.03	MHa reviewed the project status and schedule. Field work began in April 2025, followed by a public open house in July 2025 where community members shared their lived experiences with erosion and flood hazards. Since then, the project team has been completing the technical analysis, and preliminary results were presented at this meeting. Another engagement meeting is planned for November 2026.	
3.00	**Field Work**	
3.01	Boat-based shoreline reconnaissance was completed from Thunder Bay to Black Bay, allowing first-hand observation of current shoreline conditions and hazards.	
3.02	Drone surveys were completed to collect high-resolution aerial imagery, focused primarily on the Municipality of Shuniah. This imagery was used to classify shoreline types and identify existing shoreline protection measures.	
3.03	Bathymetric surveys were completed in higher-risk or developed areas, including Black Bay. These surveys involved collecting lakebed elevations, which are a critical input for wave and flood modelling.	
4.00	**100-Year Flood Level and Flood Hazard Mapping**	
4.01	Peter Zuzek (PZ) explained that the flood hazard limit is developed by combining two main components: the 100-year flood level and an allowance for wave effects. The 100-year flood level represents a water level with a 1% chance of occurring in any given year. Both existing climate conditions and future climate change conditions are being considered.	

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4.02	PZ noted that available water level gauges, including the Thunder Bay gauge, are used to support the statistical analysis. At the Thunder Bay gauge, the static 100-year flood level presented for the climate change condition was 184.32 m IGLD’85. **Note:** The draft updated existing conditions 100-year flood level for the study area is between 184.1 m and 184.3 m IGLD’85 and the previously adopted level for LRCA is 184.21 m IGLD’85. The draft climate change 100-year flood level for the study area is between 184.3 m and 184.5 m IGLD’85.	
4.03	Because water level gauges are not available everywhere along the study area, modelling is used to estimate flood levels between gauged locations and in areas such as Black Bay. Storm events from different directions are simulated to understand how wind, waves, shoreline orientation, and lakebed slope influence flood levels along different parts of the shoreline.	
5.00	**Wave Modelling**	
5.01	Gabriel Vieira de Carvalho (GVD) discussed the wave-effect component of the flood hazard in greater detail. The extreme wave runup condition is based on 25-year extreme wave conditions occurring on top of the 100-year lake level. Different methodologies are used to estimate wave effects in different shoreline areas, including advanced 3D numerical modelling and 1D transects.	
5.02	GVD explained how waves change as they interact with islands, shorelines, and engineered coastal structures. The simulated wave conditions provide wave height, period, and direction along the nearshore areas of the LRCA region.	
5.03	GVD showed examples of advanced 3D wave modelling in the Thunder Bay area. This modelling approach is most appropriate in highly populated areas with many piers, structures, and breakwaters.	
5.04	For reaches assessed using 1D transects, DHI defined areas with similar characteristics and slopes so that wave energy on approach would be comparable. A representative transect was defined for each profile, and wave runup was estimated using the CSHORE model. CSHORE is a phase-averaged cross-shore numerical wave model used to estimate wave runup for irregular waves.	

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5.05	Once wave runup is determined throughout the study reach, it is used to develop a continuous wave-driven flood line. This line is shown on the flood maps alongside the current climate and climate change 100-year water levels.	
6.00	**Erosion Assessment**	
6.01	Claire Morrow (CM) described the general methodology for the erosion hazard assessment. Reaches are defined based on similar morphology and geology, and historical air photos are used to calculate historical erosion rates. The historical erosion rate is then used to calculate the expected 100-year recession rate. The erosion hazard limit ultimately mapped is the 100-year recession rate plus the stable slope allowance.	
6.02	CM showed the erosion reaches defined for the study area.	
6.03	A historical photo from 1986 in the Municipality of Shuniah was shown to illustrate a georeferenced historical air photo and its delineated edge of water.	
6.04	The historical edge of water was then shown over the present-day photo. The historical erosion rate is calculated as the difference between the historical edge of water and the current edge of water. Areas with existing shoreline protection and engineered structures are omitted from the analysis.	
6.05	CM showed another example of the historical erosion rate, this time in a more stable area north of the Thunder Bay ports. This example also showed a limitation of using historical photos to estimate recession rates: if the amount of erosion is within the accuracy limits of the georeferenced image, a conclusive rate cannot be determined.	
6.06	An example of the erosion hazard limit on Lake Ontario was shown to illustrate what the final product will be.	
7.00	**Next Steps**	
7.01	PZ noted that the dynamic beach assessment, which evaluations how beaches change over time, has not yet been completed for the study area but will be completed if any areas meet the dynamic beach assessment criteria. A beach must have a fetch of at least 5 km, a length of at least	

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	100 m, a width of at least 10 m at low water, and a sand depth of at least 0.3 m.	
7.02	An example of a dynamic beach hazard map was shown.	
7.03	PZ explained that once hazards from floods and erosion (including dynamic beaches) were established, a vulnerability assessment would be undertaken to identify buildings and infrastructure at risk.	
7.04	PZ reviewed examples of what the future management plan may include, such as emergency preparedness, floodproofing, nature-based solutions, hybrid solutions, and engineered solutions.	
7.05	MHa discussed the next public information session, planned for November 2026. The session will present draft hazard maps and vulnerability assessment and introduce climate change projections and resilience concepts.	
8.00	**Q&As**	
8.01	Iain Angus (IA) asked whether the analysis accounted for movement of ice sheets in Thunder Bay, noting that ice movement may affect erosion by grinding against shorelines. PZ explained that winter ice can protect the shoreline from waves and winter flooding by reducing wave exposure, and that this is factored into the wave modelling. Ice scour is not assessed directly in the erosion analysis; however, its effects are reflected in the historical rates of change because they are captured in the change between historical and present-day shorelines.	
8.02	IA asked a follow-up question about how Lake Superior levels are controlled through the Sault Ste. Marie outlet and the Long Lake Diversion, and whether this was factored into the analysis. PZ explained that releases at Sault Ste. Marie are based on the International Joint Commission’s water regulation plan. When statistical analysis is completed, including analysis of historical conditions, the regulation plan and its influence on historical water levels are included. PZ also noted that the erosion and flood hazard analyses will account for climate change, including the influence of a warming atmosphere on extreme water levels.	

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8.03	IA referred to a recent event where the Kaministiquia River was flooding due to extreme rainfall while water was being released into Lake Superior from the diversion. IA asked whether anomalies like this were considered in the analysis. PZ noted that the scope of this study focuses on the coastline and does not factor in rainfall events, which are typically covered by other mapping studies. IA stated that extreme rainfall events can affect coastal erosion by increasing water levels. PZ noted that this issue would be flagged for further review.	**PZ**
8.04	IA noted that he was not certain the stated dynamic beach hazard criteria would be appropriate for this study area. He stated that beaches on Lake Superior within Thunder Bay, such as Sandy Beach, may not meet those criteria but are still important and highly used community assets. PZ acknowledged the comment and noted that it was a good point.	**PZ**
8.05	Walter Turek (WT) asked PZ about the 100-year flood level in Thunder Bay and what the previously used level had been. PZ clarified that the value presented was the climate change level. He was not certain, but did not think the historic flood level had changed. Tammy Cook (TC) noted that, for regulatory purposes, LRCA uses the 1985 M&R guidelines, which identify a 100-year flood elevation of approximately 183.9 m. PZ clarified that the value he presented was the climate change level and noted that the 1985 level is almost 40 years old. In general, the climate change level is approximately 20 to 30 cm higher.	

It is believed that these minutes accurately reflect the discussion held in the meeting. Please advise if there are errors or omissions.

Prepared By:

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Water Resources Analyst

Approved By:

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Water Resources Department Head