Port Darlington Flood Risk Assessment

Public Information Session

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Central Lake Ontario Conservation

Port Darlington Flood Risk Assessment

Recap from PIC#1:

Lake Ontario Flooding

* **2017 record water level: 75.8m**
* **100 year flood level: 76.3m (EC, MNR, CLOCA, 1990) water level, surge, and wave uprush**

Bowmanville/Soper Creek Flooding

* **Regional (Hurricane Hazel) storm: 78.1m**
* **100 year storm: 76.4m**

Westside Creek Flooding

* **Regional (Hurricane Hazel) storm: 76.7m**
* **100 year storm: 76.4m**

https://camaps.maps.arcgis.com/apps/MapSeries/index.html?appid=46de993ad0ff43afa983bff1c1ab3df0

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Table 2.0: Flood related hazards

Flood		Hazard
Depth	Depth x Velocity	
d>0.1m	n/a	Interior property damage, electrical hazards
d>0.3m	n/a	no access or egress by personal vehicles
d>0.8m	n/a	structural damage to homes
d>1.0m	d x v >0.4m2/s	personal safety

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* *The management of flood susceptible lands involves a combination of three main program components:*
  * *Prevention of harm through land use planning and regulation of development*
  * *Protection by applying structural and non-structural measures and acquisition, and*
  * *Emergency response by flood forecasting/warning and flood/erosion disaster relief*
* Ontario technical Guide for River and Stream Systems: Flooding Hazard Limit (OMNR 2002):

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* Flood Risk:
  * Vulnerability
  * Frequency/Likelihood
  * Social Impacts
  * Economic Impacts
  * Environmental Impacts

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* Flood Mitigation – Lake Ontario Flooding
  * Wave disruption and reduction of wave run-up
  * Berming

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* Bowmanville/Soper Creek Flooding: Mitigation
  * Berming or Raising the profile of West Beach Road

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Bowmanville/Soper Creeks Flood Mitigation: West Beach Road Modification

	West Beach Road - Minimum Elevation (m)		
Flood Event	**Existing (75.8m)**	**76.0m**	**76.2**
2 year	75.2	75.2	75.2
5 year	75.5	75.5	75.5
10 year	75.7	75.7	75.7
25 year	76.0	76.0	76.0
50 year	76.2	76.2	76.2
100 year	76.5	76.5	76.5
Regional	78.1	78.1	78.1

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* Westside Creek Flooding:
  * Berming or Raising the profile of Cedar Crest Beach Road

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Westside Creek Flood Mitigation: Cedar Crest Beach Road Modifications

	Cedar Crest Beach Road - Minimum Elevation (m)			
Flood Event	**Existing (75.9m)**	**76.0m**	**76.15**	
2 year	75.9	75.9	75.9	
5 year	76	76	76	
10 year	76	76	76.1	
25 year	76.1	76.1	76.2	
50 year	76.1	76.1	76.2	
100 year	76.4	76.4	76.4	
Regional	76.7	76.7	76.7	

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* Flood Mitigation Measures Next Steps:
  * Surveys, Conceptual Design, Cost Estimate and Feasibility Assessment for West Beach Road and Cedar Crest Beach Road Improvements
  * Detailed floodplain modelling
  * Review of potential impacts to upstream landowners (West Beach Rd only)

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* Emergency Planning
* Clarington Emergency Plan – Flood Response Plan
* Cached tools and equipment
* Installation of automated water level monitoring equipment – Westside Marsh (St Marys Cement)
* Overflow Channel Monitoring and Maintenance Plan

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- Emergency Planning
- An assessment of Westside Marsh barrier beach
  - Analysed 17 “break” events between 2006 and 2015
  - Determined max difference in water level prior to “break”
  - Reviewed weather/precipitation prior to “break” events

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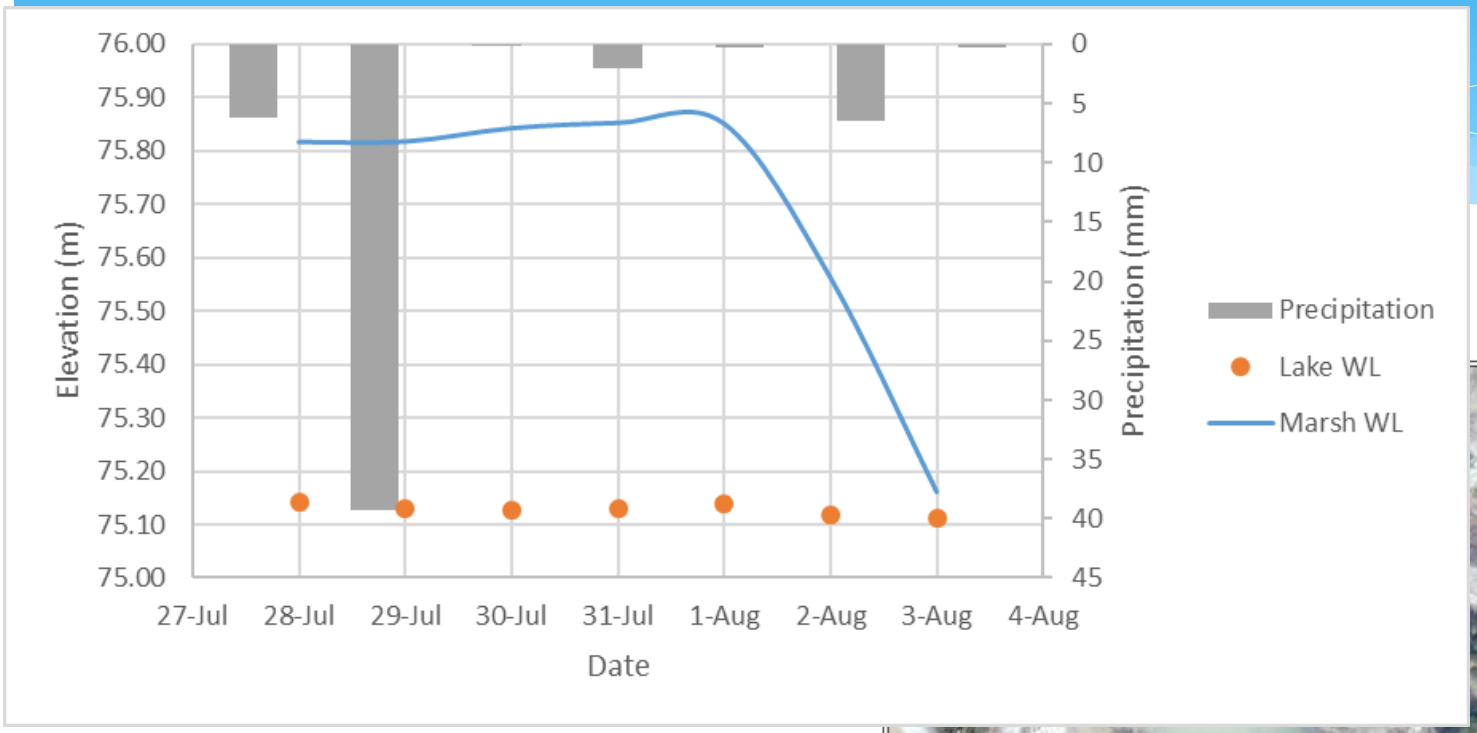

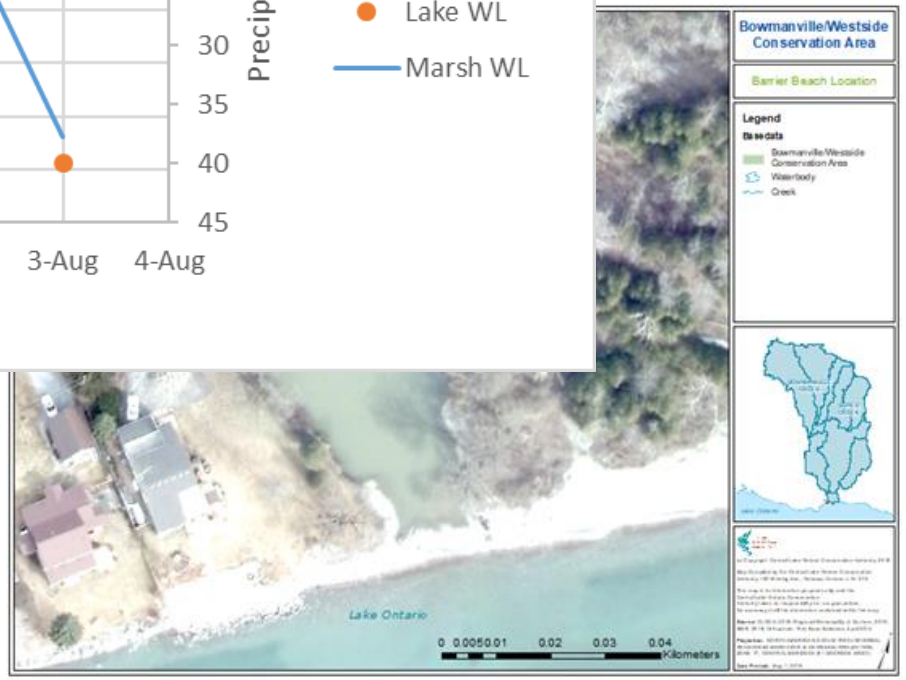

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- Emergency Planning
- An assessment of Westside Marsh barrier beach
  - 0.2m to 0.7m range of water level (ave: 0.4m)
  - usually preceded by rain event

Conclusion: When Lake Ontario water level exceeds 75.1m, barrier beach should be monitored as a possible flood impediment for Cedar Crest Beach Road

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Conclusions:

* Mitigation of Lake based flooding is not feasible (some wave uprush protection may be possible)
* Riverine Flood Risk can be improved (frequency) with raising West Beach Road and Cedar Crest Beach Road
* Unsafe flood conditions will continue to exist
* Continue Flood Emergency Preparedness