

Damages Sustained from Rising Lake Water Levels and Restoration Plans for Waterfront Parks

Date: June 27, 2017

To: City Council

From: General Manager, Parks Forestry and Recreation

Wards: 6, 13, 14, 19, 20, 28, 30, 32, 36, 43, 44

SUMMARY

Water levels in Lake Ontario are at their highest recorded level in more than 100 years. The effect of this flooding has been felt along the entire length of Toronto's waterfront, and particularly at Toronto Island Park where over 800 residents, almost 30 businesses, and two schools have been forced to adapt to rising waters. Many waterfront parks in Toronto have suffered significant shoreline erosion, damage and debris accumulation over the past few months.

While a comprehensive inventory of the damage sustained and associated capital costs cannot be developed until the floodwaters recede, emergency work is being undertaken by both City staff and the Toronto and Region Conservation Authority (TRCA), both of whom have begun to estimate anticipated and realized costs.

The estimated cost to the end of July is approximately \$4.881 million. However, there are still uncertainties with the final costs, as work is ongoing, and there are known daily remedial costs which are being incurred and will not be completed until the water fully recedes.

The safety of the public and the preservation of the waterfront, including Toronto Island Park and the facilities is the first and highest priority. The longer term costing for repair, restoration and future preventive measures will be included in future reports through the budget process and to City Council.

RECOMMENDATIONS

The General Manager, Parks, Forestry and Recreation recommends that:

1. City Council direct the General Manager, Parks Forestry and Recreation, in consultation with Toronto and Region Conservation Authority, to report back to the November 29th meeting of Executive Committee with a comprehensive inventory of all operating costs, projected to year end associated with the spring flooding of 2017.

2, City Council direct the General Manager, Parks Forestry and Recreation, in consultation with TRCA, to report to Executive Committee in Q3 2018 with a comprehensive inventory of all capital costs associated with the Spring flooding of 2017, including repair of existing infrastructure and mitigation strategies.

3. City Council authorize the General Manager of Parks, Forestry and Recreation to temporarily suspend collection of rent and licence fees from Island tenants or licensees as deemed appropriate, until such time as the full financial impact of the flooding is known, and report to executive committee with recommendations on any proposed rent or licence fee forgiveness.

FINANCIAL IMPACT

Based on the assumption that Toronto Island Operations resume August 1, 2017, Parks, Forestry and Recreation is forecasting a 2017 net financial impact of \$4.881 million due to the flooding across the waterfront excluding costs incurred the Toronto and Region Conservation Authority (TRCA).

This is comprised of revenue losses of \$4.936 million from ferry operations and permit cancellations, unplanned expenses of \$0.429 million totalling \$5.365 million which can be partially offset by programming savings of \$0.483 million.

After the closure of the Park on May 4th, the ferry service access to the park was restricted to residents and authorized personnel, thus having a negative impact on ferry ridership revenue. In May of 2016 the Toronto Island Ferry Service transported almost 140,000 to Toronto Island Park; in 2017 this number was only approximately 14,000. Projected revenue loss due to the closure of the island between May 4th and July 31st is \$4.936 million.

If the Island remains closed through to the end of August, revenue loss from ferry operations is estimated at a further \$2.230 million. Ferry revenue loss estimates are dependent on the number of residents, authorized personnel and stakeholder paid fares.

Figure 1 - Estimated Loss

Expenses*	Savings	Revenue Loss
Actuals to 06/13/2017	Projected to 07/31/2017	Projected to 07/31/2017
\$428,601	\$482,879	\$4,935,619
Estimated Net Loss to July 31, 2017	\$4,881,341	

	Savings	Revenue Loss
	August 1 to August 31	August 1 to August 31
	\$153,652	2,383,195
Estimated Net Loss, excluding additional expenses August 1 to August 31, 2017	\$2,229,543	

* Parks, Forestry and Recreation incurs daily costs associated with the flood management. The total costs will not be known until the water recedes and mitigating actions cease.

At this time, it is still premature to estimate the total costs and revenue losses to the City.

Capital costs for remediation, mitigation and adaptation cannot be fully estimated at this time as the infrastructure is under water and cannot be inspected.

If high ground water persists through winter, frost will further exacerbate the infrastructure damage. A full asset evaluation to assess the damage and associated costs will occur when the ground water recedes.

It is expected that estimates for emergency capital restoration work will be included as part of the 2018-2027 Capital Submission and a subsequent staff report on the full capital impact of high water will come forward in the fall of 2018 for inclusion in the 2019-2028 Capital Plan.

The Deputy City Manager & Chief Financial Officer has reviewed this report and agree with the financial impact information.

DECISION HISTORY

At its meeting May 24, 25, 26, 2017, City Council requested the General Manager, Parks, Forestry and Recreation, in conjunction with the Office of Emergency

Management, the Toronto and Region Conservation Authority, to report directly to City Council at its July meeting on damages sustained by waterfront parks from increased water levels, as well as the plan and timeline for immediate repair, restoration and long-term preventative measures to prevent further damage.

Member Motion MM29.48

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2017.MM29.48>

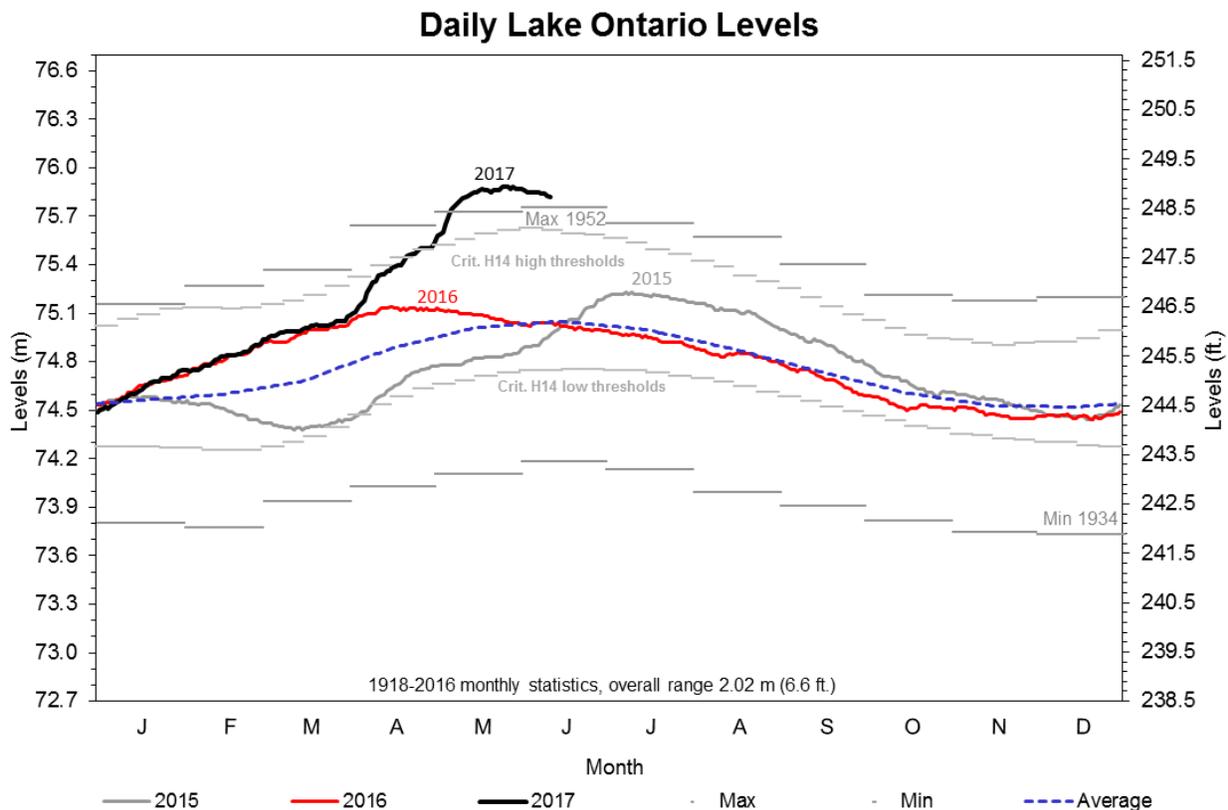
COMMENTS

Water Levels

Lake Ontario levels began rising to above average level in April as snowmelt and an exceptionally rainy spring have increased water supply to the basin. In late May and early June, Lake Ontario remained above the highest water levels recorded at any time since 1918. These high lake levels and wave uprush are continuing to cause erosion and flooding, threatening public infrastructure and private property along the Lake Ontario shoreline and Toronto Island Park. The International Joint Commission (a bi-national organization established by the governments of the United States and Canada in 1909) regulates the outflow from Lake Ontario to the St. Lawrence River and follows a prescribed plan (Plan 2014) balancing water levels upstream and downstream to minimize flood and erosion impacts to the extent possible. On June 14, the Lake Ontario outflows into the St. Lawrence River were increased to the highest outflow that has ever been released on a sustained basis, in an effort to provide additional relief to Lake Ontario shorelines. This action resulted in a reduction of approximately 1 cm per day in Lake Ontario.

As of early June, Lake Ontario's level is on a gradual decline. As of June 19, the Lake Ontario water levels in Toronto were at 75.82 m (above sea Level), down from a peak of 75.93m on May 27th. While water levels are receding, it is expected that they will not return to pre-flood levels (75.5 m) until well into the summer. It will take until the end of the year for the Lake to return to an average water level of 74.5 m. The graph below (prepared by the IJC, 2017) shows the lake levels in 2017 as compared to average and recent levels.

Figure 2- Average Monthly Lake Ontario Levels 2015 - June 2017



Once the water recedes, we can expect to see continued impacts that will last throughout the whole summer, including the reduction of some of Toronto's beaches by up to 90%. Staff continue to monitor the levels closely and are beginning to plan for the re-opening of certain sections of Toronto Island Park. However, it is likely that some portions of the park will remain closed to the public for the entirety of the summer of 2017. Timing to re-open the park is also contingent on how much damage has resulted from the high water levels, which cannot be assessed until the water substantially recedes.

Flood Timeline and Operational Response

With lake levels beginning to rise at a very accelerated rate during the first few weeks of April, the first impacts were to the Eastern Beaches. Some of the first work undertaken, with TRCA, was to ensure the structural integrity of the Leuty lifeguard station at Woodbine Beach as well as to preserve the boardwalk and beach. However, efforts quickly shifted to emergency operations at Toronto Island Park by May 4th when water levels reached 75.65 m and residents and assets on the Island began to be affected. Efforts to provide sandbags and labour were directed to priority areas, focusing on Wards Island. In an effort to proactively manage risks due to flooding at Toronto Island Park and along the shoreline, TRCA prepared inundation mapping. This mapping was prepared for various water level scenarios so sandbagging and pumping efforts could focus on protecting vulnerable areas in a timely manner.

The Toronto and Region Conservation Authority began referencing shoreline impacts in their Flood Forecasting and Warning messages from April 27th onwards, and posted a statement regarding Lake Ontario impacts on May 2nd. A complete inspection of the Toronto shoreline was completed by boat and on foot for the first two weeks in May, with preliminary results disseminated to Parks staff in late May. On May 5th TRCA issued a notice of caution at the Scarborough Bluffs due to landslides and erosion in the area, in addition to the then-active Flood Watch message. On May 17th The TDSB closed the Island Public school for the remainder of the school year and relocated students to the mainland. In the week of May 22-28, storm and rain activity dropped a further 49.8mm of rain on the region, compounding the flooding problems. On May 23rd the Harbour Master issued a notice to boaters in the Port and Harbour of Toronto to exercise caution with submerged obstacles and break walls. Navigational aids and lights were deployed to delineate where there were submerged obstacles.

On May 26th Toronto Public Health issued communications to Toronto Island residents to advise them to avoid contact floodwater due to potential risk of waterborne illnesses. Toronto Public Health began to monitor standing water at Toronto Island Park and began testing samples of larvae on June 8th.

May 27th saw the peak of the water level at 75.93 m (asl). On May 30 TRCA issued a further public notice restricting public access along the toe of the Scarborough Bluffs. The Bluffs remain heavily saturated and the area continues to be restricted at the time of writing. On May 31st, permit cancellations on Toronto Island Park were extended to July 31st, inclusive of Recreation summer camps. That week, Forestry staff inspected the integrity of trees which may have been compromised by the flooding and saturation of the Island.

By the end of May, over 45,000 sandbags, 1,000 meter bags and 27 industrial pumps had been deployed by City and TRCA staff to protect residents and assets on the Island. At its peak, the emergency operations saw dozens of staff from multiple City divisions and agencies working on a daily basis to mitigate the flood efforts.

Office of Emergency Management

The Office of Emergency Management activated the Emergency Operations Centre on May 4 to assist in monitoring and coordinating Divisional communications in support of the response efforts commencing on the Toronto Islands and the potential flooding in the Don Valley. Initially, the Emergency Operations Centre operated 24/7, monitoring the impacts on City Divisions and providing briefings for senior management. The Emergency Operations Centre also worked closely with Strategic Communications to provide timely information to Councillors and the public through media interviews, press releases and social media. The Emergency Operations Centre stood down its full activation on May 6th but continued to support, as needed, the Parks, Forestry and Recreation Division and Divisions having operational involvement in the ongoing flood response on the Toronto Islands. In the unlikely event that an evacuation of Island residents becomes necessary, the Office of Emergency Management has developed an Emergency Social Services response plan to ensure residents are safely accommodated on the mainland.

There were minor costs related to staff overtime at the Emergency Operations Centre, during the initial 24/7 operation, which lasted 45 hours. Currently, the Emergency Operations Centre is operating during business hours, in a monitoring capacity, and the associated costs are being managed within the approved budget for 2017.

Permit, Programs and Partners

Toronto Island Park is a unique environment with many variables including tourism levels, weather, special events, and ferry service all affecting businesses, both positively and negatively. The City meets with businesses and other stakeholders in the Park on a regular basis, these relationships and discussions are even more important during this difficult time. Additionally, there are over 800 people who live at the Park. Through an agreement with the Province, in December 1993, the Toronto Islands Residential Community Trust was established to manage the land and buildings associated with the Island community, on behalf of the Island residents and the general public. Under the legislation, Island residents own their homes and lease the publicly owned lots from the Toronto Island Land Trust.

All permits at Toronto Island Park until the end of July are cancelled. Staff are working with permit holders to relocate, and approximately 50% of special event permits to the end of June have been relocated. Those permits that cannot be relocated have been refunded.

Recreation programs have also been cancelled until July 31st. This has impacted over 400 registrants in 29 camps and specialty programs. Other community recreation run services such as the tram and boathouse operations will not begin until the Island has reopened to the public. Should recreation programs be cancelled to the end of August, that would impact a further 330 registrants.

Immediate Financial Implications of Flood

With Toronto Island Park projected to be closed until July 31st, 2017, only the financial implications to that date have been calculated. The projected revenue loss to the end of July is \$4.936M. As can be expected in extreme weather situations, unplanned expenses have been incurred which include staff overtime, supplies and contracted services. As of writing, these expenses total \$.429M. However it should be noted that these are preliminary numbers, and that the actual cost is projected to be higher once all flood related operations have concluded. With no ferry service, some savings have been realized from staffing reductions and decreased fuel expenses, approximately \$.483M. The net loss, provided the closure does not extend into August, is projected to be \$4.881M. This does not include capital repair costs to for any damage to assets or infrastructure across the City.

Should the flood waters not recede in time for the park to open by August 1st, 2017, further financial impacts will be seen. The full accounting of costs will be brought forward in the final report on the flood's impacts, once the water has receded and a thorough analysis of all impacts can be undertaken.

Island Tenants

There are a number of interests, both commercial and not-for-profit operated by third parties on Toronto Island Park. These interests include but are not limited to Centreville, the Toronto Island Marina and a number of not-for-profit boat clubs. The high water level of Lake Ontario has financially impacted these private interests to varying degrees depending on the nature of the operation. Tenants at other parks along Toronto's waterfront have also been impacted by the high water. Staff feel that it may be appropriate to consider forgiveness for partial or full rent for 2017 for certain tenants of the City. When a full evaluation of the impacts can be compiled, staff may request authorization in a future report to forgive lease and license payments from certain tenants for the period of the closure.

In the meantime, staff is seeking authorization to suspend the collection of any rent or licence fees from City's tenants or licensees as deemed appropriate by the General Manager, located on Toronto Island Park until such time as the park is opened and a full accounting of lost time can be made and a recommendation with respect to any forgiveness can be made. This suspension applies only to rent or licence fees payable to the City, and does not include other costs which the tenants are responsible for such as property taxes, hydro and water expenditures.

Major asset repair/Capital Budget implications

Attachment 1 shows the peak flood levels. At its height, 50% of buildings were affected by flooding and 50-60% of the Island parklands were affected by the flooding, including flooding related to rain events. Since many of the assets remain underwater and are difficult to assess at this time, a comprehensive analysis of costs cannot be undertaken.

To date there has been damage to assets across the whole of the City of Toronto's waterfront. Early analysis of the damage by TRCA includes a catalogue of 106 instances of damage to the waterfront including structural damage (damage to paths, boardwalks, major debris pile up), flooding (assets which are under water) as well as a catalogue of 18 separate landslides at the Bluffs. This analysis will continue to be refined as waters recede. As the remediation efforts progress, the City will work collaboratively with the TRCA. The repair and remediation of their shoreline structures is integral to the preservation of Park assets such as trail, boardwalks and beaches.

Once assets are no longer under water a comprehensive analysis and plan will be made for the repair and long term preventative measures.

Conclusion

The unprecedented flooding of spring 2017 has seen the water in Lake Ontario at its highest level since record keeping began. While impacts have been seen right across the whole of the City of Toronto's waterfront, the flood has impacted Toronto Island Park disproportionately, resulting the in the closure of the Park until at least the end of July.

While the Lake Ontario water levels are beginning to recede, the Lake level is still approximately 30cm above the pre-flood condition we saw in April. With the Lake

Ontario outflows being managed at the Moses Saunders dam in Cornwall, in an effort to balance water levels upstream and downstream to minimize flood and erosion impacts to the extent possible water levels have been receding at approximately 1cm a day. However, the rate of decline is dependent upon the amount of precipitation to the basin. This means that the water levels are not expected to return to seasonally high levels until well in to the summer. City staff and the TRCA are continually monitoring and assessing the Lake level to determine at what point the Toronto Island Park can reopen and island ferry service can resume. Once the lake level has receded, structural analysis of buildings and bridges as well as analysis of the integrity of the parkland must be completed prior to the Park reopening to the public.

Staff from both the City and the TRCA will continue to work across the shoreline, from Marie Curtis Park in the west, which is seeing a large volume of debris on shore daily, to the Bluffs in the east, which is seeing significant slope failures on the bluff face. As we move through this challenging time, staff has committed to working closely with all our stakeholders, and will continue to communicate regularly with residents and businesses on the situation and re-opening plans for when the water recedes.

Although it is premature to state what the total impact to the budget will be, as of writing, the operating impacts to the end of July 2017 are estimated to be a net loss of \$4.881M. This does not include costs which have yet to be invoiced, or costs which may be incurred in the reopening of the park, thus staff expects this may be a conservative estimate. If the closure extends through the end of summer, there could be further estimated financial impact of \$2.230M, with unknown expenses.

While staff has outlined some estimated operating impacts in this report, this report is a preliminary analysis undertaken during flood conditions. A more comprehensive impact to the operating budget will be brought forward in November. The longer term impact will take many months to quantify and potentially years to remediate. A full asset evaluation, to assess the damage and associated costs will occur when the ground water recedes. Staff will then report back in Q3 of 2018 with preliminary capital impacts to this flood.

The Office of Emergency Management and the Toronto and Region Conservation Authority have reviewed this report and agree with the information contained herein.

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SIGNATURE

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ATTACHMENTS

Attachment 1 - Aerial Map: Peak Flood Levels

Attachment 1: Peak Flood Levels

