



## **2024 Budget Request**

**Request: Balmy Beach Drainage Improvements**

**Department: Development and Infrastructure Services**

**Request ID: DEV2024BUDGET-C-10**

**Financial Ask: \$2,250,000**

**Funding Source: Capital – Funding Options to be Determined**

This document and its attachments are public and available in an accessible format upon request.

### **Background and Strategic Priority**

Demonstrate and Enhance Environmental Stewardship

Deliver Effective and Cost-Efficient Services

Drainage along Balmy Beach Road has been a point of concern for some time. Residents from locations along the length of Balmy Beach have raised concerns in respect to flooding and unmanaged water flows which at times have caused damage to property. Other residents have shared concerns in respect to failing below grade stormwater infrastructure, and other residents, particular at the north end of the road, have raised concerns in respect to the adequacy of roadside ditching and culverts to manage stormwater flows.

In addition to existing concerns, the area between Balmy Beach Road and Grey Road 1, south of Church Sideroad East is identified for future development with two draft plans of subdivision currently approved. Residents have raised concerns in respect to future stormwater management impacts of these developments, and the sufficiency of downstream systems to convey these flows.

Lastly, Climate Change is already exacerbating stormwater system challenges in so far as the patterns of weather are changing; increased intense precipitation events on a



more frequent basis are placing demands on the existing system that are resulting in its service level being exceeded on a more frequent basis than previously.

Council have directed staff to investigate drainage on Balmy Beach Road and propose solutions if there are challenges identified.

## Analysis

In 2021/22 a new stormwater conveyance roadside ditch was constructed along the south side of Church Sideroad East. This ditch, including a new box culvert under Balmy Beach Road has been designed to help convey flows and accommodate increased flows due to some of the upstream development, working in tandem with yet to be implemented stormwater management controls associated with that future development.

In early summer 2023, staff and members of Council attended a site visit with residents who noted a range of concerns in respect to stormwater management which included:

- Concerns about private discharge of water onto private properties
- Capacity of the west side road ditch and entry culverts to convey flows.
- The design of the Church Sideroad East ditch/culvert connections
- Changes to flow in natural channels which convey seasonal and flood flows.

In addition to these concerns, staff have met with residents further south on Balmy Beach Road who:

- Have noted sinkholes on their properties related to failing culverts beneath
- Have had to take extreme measures to divert stormwater during rainfall events to prevent property damage due to no roadside ditches.

Balmy Beach Road receives uphill flows which need to be collected and conveyed under the road to the bay. The system is designed with a ditch on the west side of the road, with periodic culverts beneath the road to convey flows to Georgian Bay.

The system was designed and laid out in the 1970's and 1980's. No stormwater system is designed to prevent all flooding; rather they are designed to reduce the frequency of flooding and, when flooding does occur, mitigate the impact of that flooding. Two significant changes have occurred since the system was installed that have impacted the perception or reality of its performance:

- 1) Climate has changed. Storm frequency has changed, and intensity of precipitation has changed. Events that were once 1 in 100-year storms, now occur more frequently, as do 1 in 5, 1 in 10 and 1 in 25 year events. This means that even if the system was performing 'as designed' (say to convey 1 in 10-year



events) the frequency of those events beyond its capacity (that result in flooding) are more frequent – the Service Level provided by the system may not have changed, but the nature of the inputs to the system mean that the frequency of its 'failure' have become more common.

- 2) Development has changed. When the system was designed, Balmy Beach and wider East Linton area were not as developed as they are today. Houses tended to be smaller, tended to have unfinished basements, and yards tended to be more naturally vegetated. Today, new houses have been built and existing homes substantially re-developed; basements are now finished, and imperviousness of property has substantially increased. The result of this is that even if flooding events were similar in frequency to when the system was developed, the human impacts are greater – the landscape less able to 'soften' the impacts, and the properties more susceptible to damage of a higher value.

In addition to changes beyond the control of the Township, the system today has been compromised leading to an existing condition where flows cannot be accommodated as might be expected/designed for.

Over time, owners of property on the west side (inland) of Balmy Beach have extended their yards to the municipal roadway, frequently filling in the roadside ditch and burying their entry way culverts. This has eliminated any stormwater storage and drainage leading to flows onto private property between the road and bay in an unmanaged way.

In addition, where ditches do exist, capacity issues are common where the ditches no longer have capacity to convey the as designed for flows, and where existing driveway and entry culverts have become less effective – these are prone to becoming partially or fully blocked by debris or have partially or fully collapsed.

Finally, staff are aware that the cross culverts, the larger culverts that receive the ditch flows, convey them under the road and toward Georgian Bay, are likewise compromised, being partially blocked by debris, and in an aging condition resulting the partial failures of the culverts. The reduced capacity of these culverts mean that they may be compromised in their ability to receive and convey flows from the ditch.

It is believed that the existing system can sustain the proposed uphill development, but in order to do so, the existing stormwater system needs to be in a good state of repair.

Comprehensively addressing the full system will take time and will require several phases of work.

The Balmy Beach Catchment Area contains approximately 45 culverts mostly located within the municipal Right of Way; however, some culverts extend beyond the limits of the Right of Way. It is important that all the culverts are properly maintained to allow for unimpeded flow into and out of the culverts.



The works that are recommended to be addressed in this first phase are projects located within the Right of Way and where the Township holds legal easements. The projects should be completed as it is believed that these will have an immediate impact on the functionality of the system.

It is proposed that the ditch along the west side of the road, between the unopened section of East Linton Sideroad and Church Sideroad East be brought back to its as designed capacity, and, where needed, re-established. It is likely that a significant number of driveway access culverts will need to be replaced to ensure these do not impede ditch functionality.

Further, four extensive culverts installed in the 1980's, that convey flows from the ditch to the bay require replacements. It is recommended that these culverts are upsized; they are designed for a 1 in 100-year flood event, but the requirements for this have changed and these should now be upsized to accommodate these flows. It is also noted that these culverts are partially blocked with materials and are in advanced age and in places are known to be failing.

These are large culverts, between 900 mm and 1000 mm in diameter and they are long extending below ground within road allowances or easements over private property between the west side ditch and the shore allowance, between 100 m and 200 m in length. Removal and replacement of these is between \$450,000 and \$550,000 each.

## **Financial Impact**

It is estimated that \$2.25M is required to complete ditching and culvert removal, although staff note that this is subject to tendering and detailed design works yet to be completed.

Staff also note that this should be considered a first phase of work and will largely restore the as designed capabilities of the system. A review of the stormwater needs is ongoing and further recommendations and phases may be brought forward in subsequent years.



### Report Approval Details

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Attachments:	
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This report and all of its attachments were approved and signed as outlined below:

Samantha Buchanan, Treasurer

Niall Loble, Director of Community Services