

Municipality of Chatham-Kent

Infrastructure and Engineering Services

Engineering Services

To: Mayor and Members of Council

From: Brigán Barlow
Manager, Drainage

Date: September 12, 2023

Subject: Preliminary Report for the Burk Drainage Works

Recommendations

It is recommended that:

1. Council consider the Preliminary Report for the Burk Drainage Works and instruct the Drainage Engineer to proceed with the preparation of a final report for the recommended Option 1A under section 78 of the Drainage Act.
2. Council initiate abandonment, under section 84(2) of the Drainage Act, of all groynes and seawalls that are part of the Burk Drainage Works.

Background

History of Burk Drainage Works

The area known as the Burk Drainage Works is located in the Community of Harwich between the Communities of Erie Beach and Erieau. There are approximately 726 hectares of land comprised of 75 agricultural properties, roads and McGeachy's Pond located within this drainage scheme. The area is served by a series of dykes and a number of internal gravity drainage systems with a mechanically pumped outlet into Lake Erie. Immediately south of the area of the Burk Drainage Works are approximately 153 year-round and seasonal residential properties located along the shore of Lake Erie.

A critical part of the Burk Drainage Works is a system of dykes. The most critical dyke section that provides protection to the Burk Drainage Area is the Erie Shore Drive (ESD) section, which is currently the most vulnerable component of the drainage scheme due to soil saturation and overtopping. Wave attacks and flooding are a recurring situation along this shoreline. The rising lake levels and wave attacks have also posed a real flood threat to the Burk Drainage Works as lake water has overtopped Erie Shore Drive in several locations, on many occasions. In February 2020, following significant flooding

in the area, work was undertaken on an urgent basis to improve dyke stability in the area. At that time, Golder Associates completed a geotechnical report concerning the stability of the dyke and advised that current rehabilitative measures are short-term solutions only and that further long-term mitigative measures are necessary.

Previous studies referencing this area include:

- 'Chatham-Kent Lake Erie Shoreline Study' prepared by Peter Zuzek, P.Geo., dated May 25, 2020 (Zuzek Report)
- 'Flood Protection Study for Erie Shore Drive in the Former Township of Harwich' prepared by Ed Dries, P.Eng., dated May 15, 1998 (Dries Study).

Initiation of Preliminary Report

In February 2021, Council approved initiation of an Engineer's Report under Section 78 of the Drainage Act to "consider the better use, maintenance or repair of any drainage works within the Burke Drainage Scheme in the Community of Harwich". Council appointed an Engineer to prepare a "Preliminary Report" under Section 10 of the Act for that purpose. Section 10 allows for a "Preliminary Report" to be produced before Council determines whether to proceed with a final report to carry out a drainage project.

In June 2021, Council appointed RC Spencer Associates Inc. to prepare the Preliminary Report. The Preliminary Report, dated June 18, 2023, has now been completed and makes two recommendations: (1) dyke reinforcement with added drainage (Option 1A of the Preliminary Report); and (2) abandonment of all groynes and seawalls within the Burk Drainage Works under the Drainage Act.

In August 2023, in accordance with Drainage Act procedure, Council directed a public meeting to occur on September 21, 2023 for the purpose of Council receiving and considering the Preliminary Report. Consistent with the requirements of the Drainage Act, notice of the September 21, 2023 meeting was sent to applicable landowners and stakeholders.

Preliminary Report Options and Procedure

As Section 10 allows for a preliminary report before Council decides whether to proceed with a given drainage project, the Preliminary Report produced by RC Spencer Associates is a higher-level engineering study which outlines options that could be undertaken to improve drainage, cost estimates, and an engineering analysis of the options.

If Council elects to do so, it may instruct the Engineer to proceed with a final report under Section 78 of the Drainage Act, based on the options set out in the Preliminary Report. The final report would be prepared by the Engineer and would set out the specific design details to complete the drainage project, including a schedule for each

property's respective costs. Once complete, the final report would be considered by the Municipality's Drainage Board through the Drainage Act process. There would also be a further opportunity for property owners to appeal any assessed costs. Finally, the Engineer's Report would return to Council for third and final reading, to be adopted through by-law, before the project proceeds to construction.

Comments

The Preliminary Report for the Burk Drainage Works contains descriptions of three options for improvements, with Option 1 further considered as Options 1A and 1B.

Table 1 provides a brief summary of the options and associated estimated costs for each of these technical solutions. These technical options for improvements to the dyke system are described in further detail in the Preliminary Report included as **Appendix A**.

Table 1: Summary of Options

Option	Summary	Total Cost (\$ +HST)
1A	Relocate the Lakeshore Drain and construct a new dyke to the farm side, to improve structural integrity and prevent flows from overtopping the surface. Drainage features installed including storm sewers and a pump to discharge floodwater on the ESD directly to the lake.	8,948,000
1B	Same as 1A with a reservoir and second pump for added drainage.	9,870,500
2	Rock and groyne features installed on the lakebed to promote beach formation along the shore.	61,600,000
3	Armour rock revetment installed along shoreline as proposed in the Zuzek Report.	83,325,000

Preferred Option

The first option (1A) entails relocating the Lakeshore Drain and construction of a new dyke along Erie Shore Drive to prevent flows from the lake from overtopping the dyke system. The Engineer has determined that Option 1A is the recommended option and preferred alternative to all of the options considered. The Engineer has recommended this option, including on the basis that:

- The estimated cost of Option 1A (\$8,948,000) is much lower than Option 2 (\$61,600,000) and Option 3 (\$83,325,000).

- Option 1A provides increased flood protection for the lands within the limits of the Burk Drainage Works to a level similar to that provided by the ARDA Dyke Systems A-1 and A-2 to the east and the west of the study area.
- The proposed work would minimize the duration of flooding.
- Option 1A will also provide front yard drainage for the residential lands south of Erie Shore Drive.

The Engineer has also recommended, in addition to Option 1A, that groynes and seawalls forming part of the Burk Drainage Works be abandoned under the Drainage Act process. The term 'abandonment' refers to the Drainage Act process to take drains out of a municipality's formal Drainage Act infrastructure, including for the purpose of maintenance and repair under the Drainage Act. This recommendation is based on the Engineer's conclusions that "the existing groynes and seawalls have greatly deteriorated and serve no useful purpose" and "repairing the groynes and seawalls to the standard set out in the current by-laws would not provide the degree of flood protection desired by the lakefront owners". The 2020 Zuzek Study and previous reports from 1985 and 1998 prepared by Todgham & Case likewise did not recommend the repair or maintenance of existing seawalls and groynes.

Proceeding with abandonment would require administration to send notices to all assessed owners. Owners would have 10 days to request an Engineer's Report concerning the proposed abandonment. If such a request is received, an engineer would be appointed to produce an abandonment report. If no request was submitted within 10 days, a Report to Council would be brought forward to pass a by-law for abandonment.

Administration is supportive of the Engineer's recommendations concerning the preferred Option 1A and abandonment of those in-water works referred to in the Preliminary Report.

Other Options in Preliminary Report

Option 1B involves relocating the Lakeshore Drain and construction of a new dyke, as well as construction of a reservoir and pump for overflow drainage. The Engineer's Report concludes that Option 1B is not required for improved protection from Lake Erie, but rather could be considered by ratepayers if additional pumped drainage capacity is desired.

Options 2 and 3 are considered works of new drain construction and not works of a Section 78 improvement to the existing drainage system. The drainage features considered in Options 2 and 3 are considered to protect the lakefront properties specifically, which was not the intent of the previous reports and studies to address the drainage performance concerns for the existing dyke system. As such, these options cannot be initiated by Council at this time and would require a valid Section 4 petition signed by a majority of the lakefront property owners along Erie Shore Drive in order to

confirm that the majority of the assessed landowners are in favour of implementing this solution and accordingly proceeding with the establishment of these new drainage features and the associated cost assessments to these properties for these new features.

It should be noted that while the Preliminary Report does not recommend proceeding with Options 2 or 3, if Council decided to request a final report based on Option 1A, property owners would continue to be able to proceed with a petition under Section 4 of the Drainage Act for Options 2 or 3 at any point in time should they wish to do so.

Take No Further Action

Council may decide to take no further action in response to the Preliminary Report, which will cease the current process under the Drainage Act. This option is not recommended. As noted above, the integrity of the dyke underlying Erie Shore Drive is threatened. Current mitigation strategies are temporary only and additional measures for protection of the Burk Drainage scheme are warranted.

Areas of Strategic Focus

The recommendations in this report support the following areas of strategic focus:

			
Economic Prosperity	Healthy & Safe Community	People & Culture	Environmental Sustainability
1.1			

Consultation

Legal Services has been consulted in respect of the recommendation and procedural issues contained within this report.

Communication

Communication is proposed to be through the inclusion of this report on the Council agenda and related communications.

Diversity, Equity, Inclusion and Justice (DEIJ)

This report does not have implications related to diversity, equity, inclusion, or justice.

Financial Implications

The Drainage Act is long-standing provincial legislation that provides rights of drainage to lands and utilities. It prescribes responsibilities for municipalities to partake in the processes under the Act and uphold duties of maintenance. Costs associated with creation, improvement and maintenance of drainage works are assessed to lands and utilities affected by the drainage works on the basis of 'Benefit' and 'Outlet' as defined by the Act.

The Preliminary Report was brought forward to Council under the auspices of the Act. If a final report is prepared, a detailed schedule of assessment will be completed that indicates costs assessed to each individual parcel of land and utility. That level of detail is unknown at this time, however, the Preliminary Report has provided an estimate of the project costs with an approximate distribution of those costs. A potential assessment rationale for Option 1A is as should on Table 2 (all figures exclude HST):

Table 2: Potential Assessment Rational (Option 1A)

Lakefront Lots	6%	\$ 536,880
Erie Shore Drive (Municipality of Chatham-Kent)	15%	\$ 1,342,200
Utilities	6%	\$ 536,880
Access to Erieau (Municipality of Chatham-Kent)	4%	\$ 357,920
Lands in the Burk Drainage Works	69%	\$ 6,174,120
Total Project Cost		\$ 8,948,000

For reference, the potential gross assessment against the agricultural lands would be in the order of \$3,706 per acre. Therefore, on this basis, a 100-acre parcel could anticipate a gross assessment of approximately \$370,600.

Assessments to lakefront lots will vary depending on length of frontage but would be approximately \$5,180 on average.

The Municipality would receive cost assessments for the roads affected by the drainage work. For Option 1A, this amount is a combination of road access to Erieau and Erie Shore Drive totaling \$1,700,120 (excl. HST).

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Consulted and confirmed the content of the consultation section of the report by:

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Attachment: Appendix A – Preliminary Report for the Burk Drainage Works, RC
Spencer Associates, June 18, 2023