

Municipality of Chatham-Kent
Infrastructure and Engineering Services
Engineering Division

To: Mayor and Members of Council

From: Mark McFadden, P.Eng.
Manager, Engineering

Date: May 27, 2024

Subject: Contract Amendment – Contract T23-228 – Thames River Slope Stability,
Longwoods Road

Recommendations

It is recommended that:

1. A Contract Amendment in the amount of \$1,299,500.00 (including HST) for the Thames River Slope Stability, Longwoods Road be approved to Birnam Excavating Ltd.
2. A Contract Amendment in the amount of \$237,300.00 (including HST) for additional Contract Administration and Inspection Services, and Species at Risk management be approved to Matrix Solutions Inc.
3. The project be funded by a transfer of \$1,383,936.00 from the DMAF Reserve to the Thames River Slope Stability, Longwoods Road project account (21ENG2041).
4. The Mayor and Clerk be authorized to sign the necessary agreements.

Background

A Municipal Class Environmental Assessment (MCEA) for the Thames River Slope Stabilization – Longwoods Road was finalized in May 2023 by Matrix Solutions Inc. When originally constructed, Longwoods Road was sufficiently offset from the top of the riverbank to ensure that it was not at risk. However, the natural meander of the Thames River has caused a significant amount of erosion over time, thus reducing that offset and creating slope stability concerns directly adjacent to the road at several locations. The subject site is one such location that covers approximately 280 metres of riverbank near 14239 Longwoods Road, in the Community of Zone.

Early in 2019, the Federal Government, through Infrastructure Canada, awarded Chatham-Kent funding as part of the Disaster Mitigation and Adaptation Fund (DMAF)

program. This award is to fund a project which is broken down into four sub-projects targeted to structurally reinforce dikes, slopes, upgrade dams, pumping stations, and floodgates to mitigate flooding during peak flows and sustained high water levels within the Municipality, engineer structural changes and enhancements to meet municipal and provincial climate change initiatives, increase the resilience of flood protection assets, and reduce adverse impacts on critical infrastructure including interruptions in essential services. Shoreline stabilization along the Thames River was identified as one of the four sub-projects, and this site along Longwoods Road is one of the sites included in this sub-project.

Through this program, Chatham-Kent was awarded \$16,575,200 in funding over 10 years with 2019 being the first year. The grant program is a cost sharing program with the local Municipality required to contribute 60% (\$28,926,800) of the funding and the Federal Government contributing the remaining 40% (\$16,575,200) for eligible project expenditures.

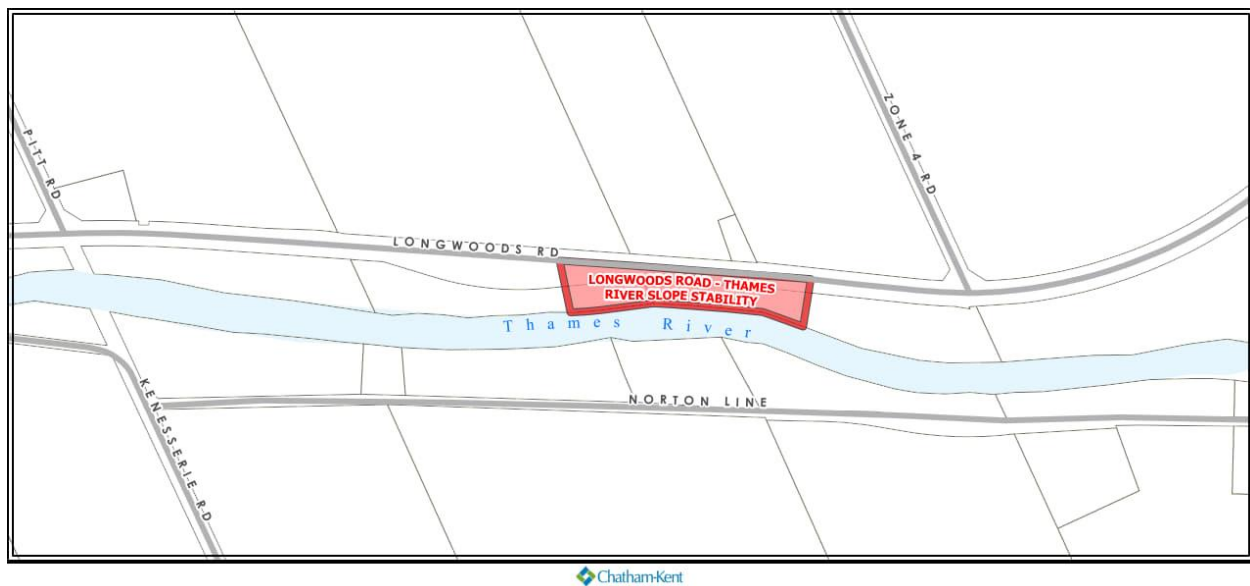


Figure 1 – Thames River Slope Stability, Longwoods Road Project Limits

The Longwoods Road project consisted of slope regrading, surface water and groundwater collection improvements, rock revetment toe protection, and restoration of stable vegetation on the embankment. The Thames River, including at this particular site, is a known habitat for several Species At Risk (SAR) under the Species at Risk Act. During the design phase, all necessary permits were received from the Department of Fisheries and Oceans (DFO) based on the submitted design, which detailed that all work would be completed from the river embankment, with no work taking place within the water, thus protecting the habitat of the SAR.

The engineering design and contract administration for the project was awarded to Matrix Solutions Inc. (formerly Ecosystem Recovery Inc) on January 17, 2022, for \$233,181.15 (including HST). The construction of the project was subsequently

awarded to Birnam Excavating Ltd. on September 11, 2023, for \$2,394,220.56 (including HST).

Comments

Construction commenced in October 2023, with the clearing of the site. Most of the existing trees were removed from within the work zone and the embankment was cleared of all vegetation to allow for the slope protection works. The Contractor then began working on the drainage improvements, including installation of a new storm outlet to the Thames River, complete with a concrete headwall. In January 2024, work proceeded with regrading of the slope and construction of an access road.

Work was delayed through January due to high river levels because of significant rainfall events. The construction of the rock revetment toe protection finally commenced in early February. After only a few days of placing the rock, the slope experienced a failure, causing the newly placed rock to slump into the Thames River. Construction was immediately halted, and a geotechnical engineer (Pinchin Ltd.) was called to the site to assess the slope conditions, determine the cause of the failure, and assess whether it was safe to continue working.

While Pinchin was conducting further tests, a bathymetric survey, which is a type of survey that maps underwater features, was performed by Matrix Solutions Inc. The results of the bathymetric survey showed that there were several existing pockets near the toe of the embankment that were significantly deeper (up to 1.5 m) than the surrounding toe. It was further determined that the slumping occurred at one of these “pockets.” Working closely with Pinchin, Matrix Solutions revised their original design to address these concerns and confirm that it was safe to return to work. The new design included additional rock protection installed along the river’s edge below the waterline.

Due to the potential impacts to SAR habitat, the DFO was immediately notified of the material slumping into the Thames River, as this was in violation of the original permit. Due to the unpredictable nature of slope stability issues and the proximity to Longwoods Road, it was agreed that the work to stabilize the slope should continue as soon as possible and the DFO issued an Emergency Works Permit, approving the in-water works and authorizing the placement of rock below the waterline. The DFO stipulated several additional items required to satisfy the requirements of the permit. One condition stipulated by the DFO was temporarily stabilizing the slope, which was completed in early April by hydro-seeding the entire site.

Due to the impacts the in-water works will have on mussel habitat, a mussel salvage and relocation, ahead of the in-water works, was also required by the DFO. Under the direction of a freshwater mussel expert, commercial divers will locate mussels within the work zone, remove them for cataloging and relocate them upstream, to a new habitat near the site. Mussel salvage and relocation work can often be completed by wading into the watercourse, but due to the depth of the Thames River and the geography of the bank at this location, the mussel salvage and relocation will need to be completed by scuba divers.

Upon completion of the mussel salvage, annual monitoring and reporting will also be required. The monitoring and subsequent reporting will take place after 1-month, 1-year, and 2-years. A final report will also be provided to the DFO after the 2-year monitoring that will detail all activities authorized by the permit. This will demonstrate that all measures and standards to avoid and mitigate impacts of the permitted activities were implemented according to the conditions of the permit, and that they were successful at avoiding and mitigating impacts due to the permitted activities.

In addition to the required mitigation measures outlined above, and as per the Emergency Permit, DFO may also require additional offsetting measures to be undertaken due to the potential impacts to fish and fish habitat, including impacts to aquatic species at risk, their critical habitat and/or the residences of their individuals likely to result from the authorized Emergency work. Mitigation measures could be in the form of a Letter of Credit issued to DFO, and/or offsetting measures undertaken by the Municipality to counterbalance the unavoidable harmful alteration, disruption and/or destruction to fish and fish habitat. The offsetting measures will be determined upon completion of the works approved under this permit.

As a result of these unanticipated conditions and due to the nature of immediate work required under the Emergency Works Permit, the construction and consulting contracts will exceed the approved contract amounts as identified in Table 1 below. In accordance with [Purchasing By-Law #205-2023](#) section 155, Council approval is required for a contract amendment where the amended purchase price is greater than the lesser of 10% of the original purchase price or \$250,000.

The construction contract amendment covers the costs of the divers for the mussel salvage and relocation, the annual monitoring and reporting, and the material and labor costs for the additional rock.

The engineering contract amendment covers the costs of the bathymetric survey, the additional geotechnical investigative work, the re-design of the slope protection works, coordination with DFO, mussel salvage and relocation in conjunction with the divers and the mussel expert, mussel monitoring and reporting as required by the DFO, and additional contract administration and inspection required as a result of the change in scope.

Value engineering was undertaken by the project team, including the consultant and contractor, to review the design alternatives and ensure the most efficient and effective solution was selected, that still met the regulatory requirements. This included evaluating material options based on availability, effectiveness, and cost, and evaluating alternatives to placement of material. The chosen alternative was the most cost effective based on timing, impacts to surrounding natural environment, and integration with existing above-water design.

It should be noted that as the contract is ongoing, the project team has worked to forecast the final amounts and have included this in the projected contract amendments

for the Contractor and Consultant and includes additional contingency. The amount paid to the Contractor will be based on actual final quantities for work completed.

Council Term Priorities

This report supports the following Council Term Priorities:

			
Deliver Excellent Service	Promote Safety & Well-Being	Grow Our Community	Ensure Environmental Sustainability
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Consultation

The Legal Services and Purchasing Divisions were consulted during the preparation of 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

Funding for the Thames River Slope Stability, Longwoods Road has been previously approved by Council. Table 1 below summarizes the costs and funding sources for the contract amendment.

Table 1: Project Cost and Funding Summary

Approval is requested herein for the transfer of funds from the DMAF Reserve to the Thames River Slope Stability, Longwoods Road Project account (21ENG2041).

Description	Total
A) Recommended Costs	
Recommended Construction Contract Amendment	\$1,150,000.00
Recommended Consulting Contract Amendment	\$210,000.00
Plus HST 13%	\$176,800.00
Total Costs (with HST)	\$1,536,800.00
Less 11.24% HST	(\$152,864.00)
Total Recommended Costs	\$1,383,936.00
B) Recommended Additional Funding	
DMAF Reserve (100%)	\$1,383,936.00
Total Recommended Funding	\$1,383,936.00
C) Total Project Costs (including HST)	
Total Consulting Engineering Services including Contract Amendment	\$470,481.15
Total Construction Tender including Contract Amendment	\$3,693,720.56
Total Project Costs	\$4,164,201.71

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

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