

# Municipality of Middlesex Centre Komoka Drainage Works, Union Avenue Branch Council Update

March 10, 2021

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# Introduction

- Request for Drain Improvement signed by seven landowners situated North of Union Road in Komoka under Section 78 of the Drainage Act.
- Request formally submitted to the Municipality of Middlesex Centre; GM BluePlan Engineering subsequently appointed as the Engineer to review this request.
- Current drainage system was constructed in the late 2000's.
- Current drainage system generally consists of the following;
  - Open ditch (swale)
  - Closed pipes
  - Catch basins
  - Clear stone infiltration galleries



Existing Conditions



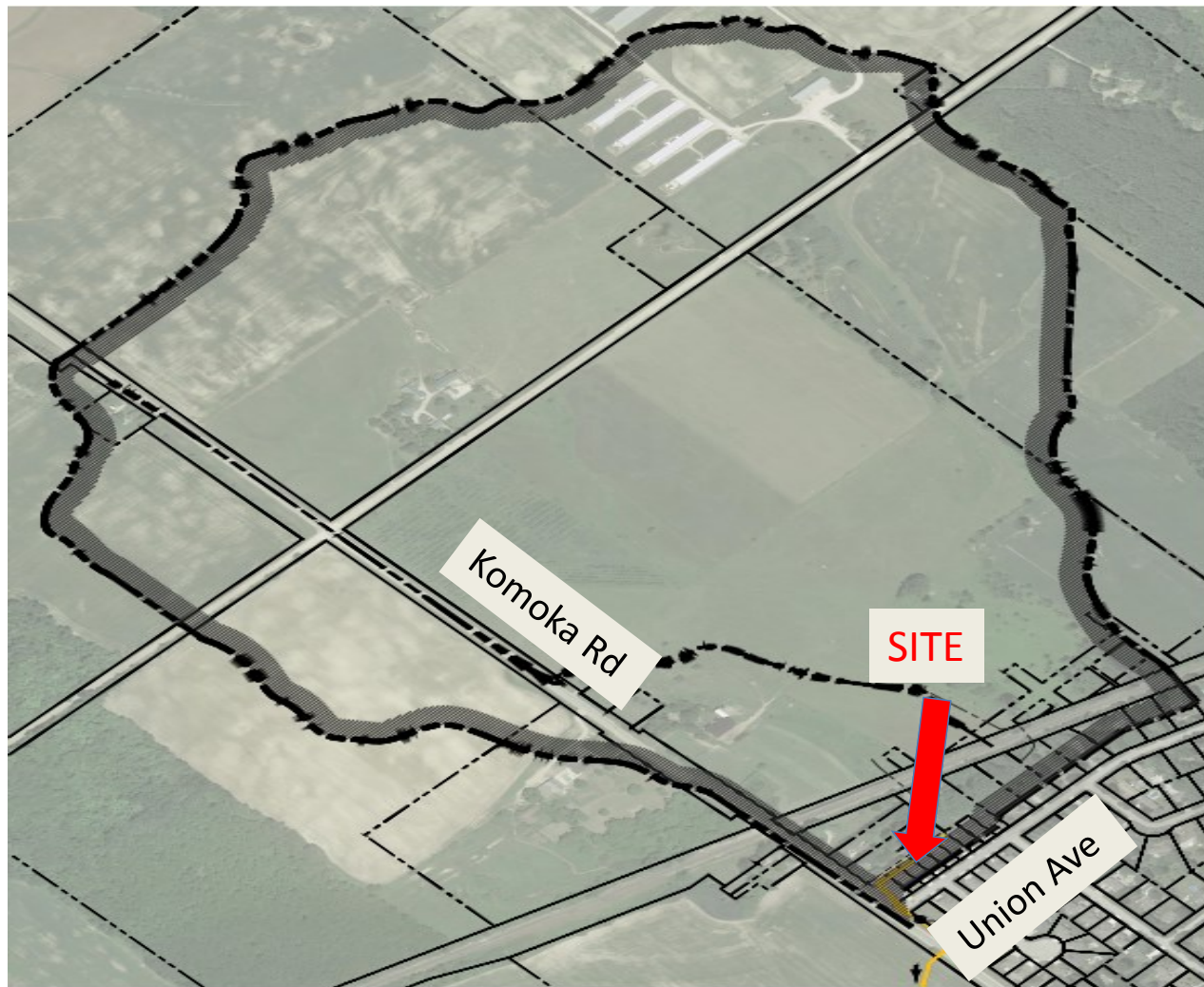
- Concern with volume, velocity and depth of water present in the swale during rain events.
- Flooding concerns; sheds, outdoor structures and approaching homes.
- Debris build-up following storms (branches, logs, weeds etc.).
- Underground pipe system contains little amount of water during rain events.
- Desire to convey the water underground.
- Misconception that water will only be present within the swale in a 1-100 year storm.



## Steps Taken to Date

- GM BluePlan formally accepted the Municipality's appointment under the Act.
- On-site meeting held on July 4<sup>th</sup>, 2019.
- As directed, GM BluePlan reviewed a series of preliminary rehabilitation options. Technical Memo prepared.
  - Topographic Survey Work
  - Hydraulic Analysis
  - Preliminary Design/Drawings
  - Estimated Construction Costs
  - Assessment Tables
- Coordination and meeting with Renwick Estates Subdivision Engineer (AGM).
- October 20<sup>th</sup>, 2020 Design Review Meeting.
- November 1<sup>st</sup>, 2020 design package delivered to seven landowners backing onto drain – requesting input.

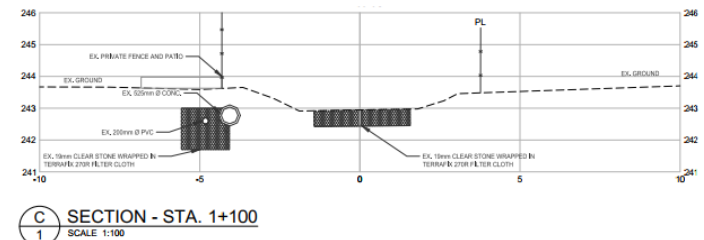
## Existing Conditions



Watershed Plan



- [illegible]



- Option 1 – Do Nothing (maintain Existing Conditions)
- Option 2 – Drain Maintenance – Restore Design Report Conditions
- Option 3 – Improve Closed System

- Option 4 – Improve Open System
- Option 5 – Enclosure of Open System

Options not carried further  
following October 2020  
Design Review Meeting



## Option 1 – Do Nothing

– Do Nothing –

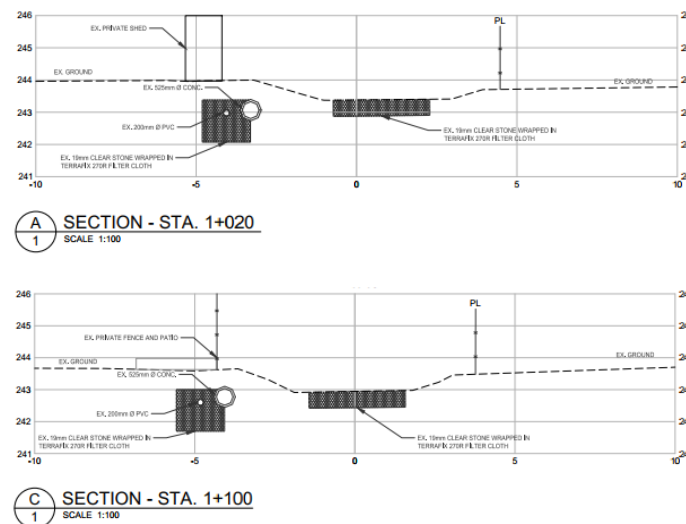
- Open ditch
- 525mm – 750mm Ø concrete pipe + 200mm PVC pipe + infiltration gallery
- Latest 2007 Engineer's Report states the system was designed to accommodate the 100-year storm flows through a combined low flow pipe and swale

Level of Service (Piped System): 15mm-18mm in 24 hours.

Level of Service (Overall): Less than 1-In-100 year storm event

Upstream inlet concerns raised (catch basin) remains unchanged.

- [illegible]



"90% of regular maintenance costs shall be pro-rated as benefit against those properties on which work is being completed and the remaining 10% pro-rated over upstream outlet assessments....."

- [illegible]

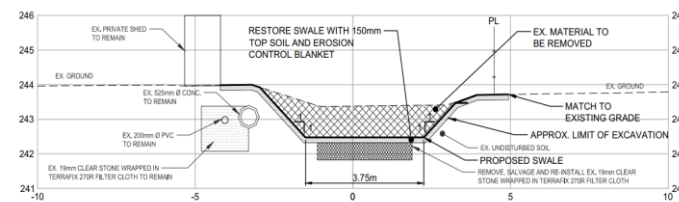
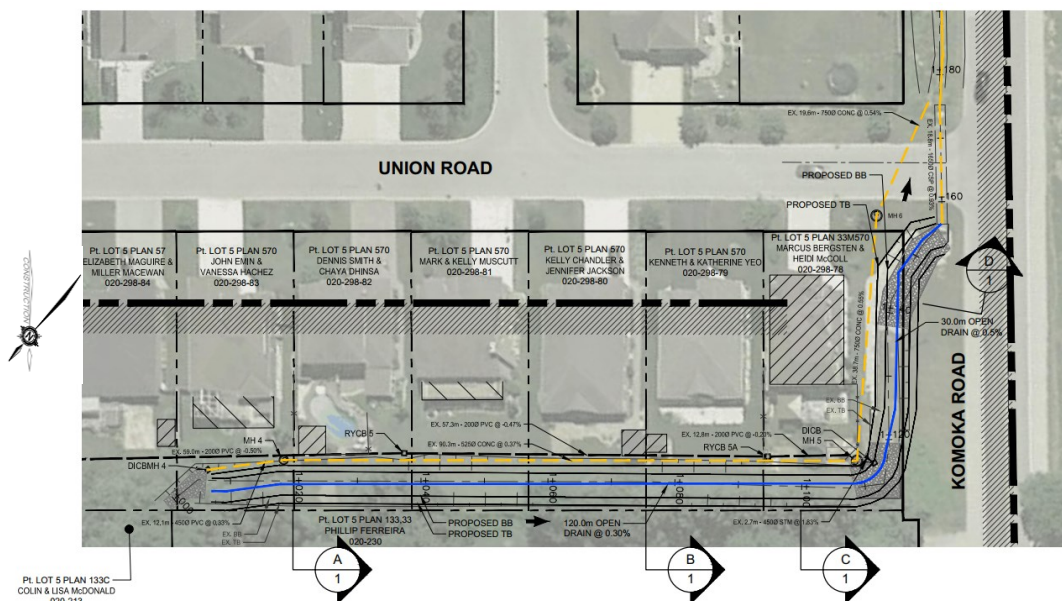


- \$45,000 (Option "3A")
- \$32,000 (Option "3B")

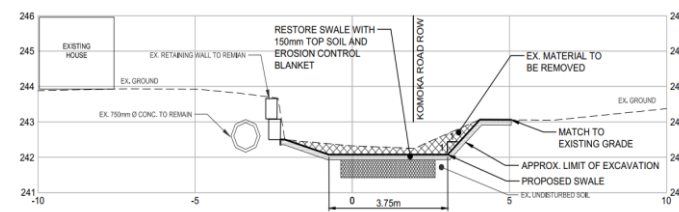
# Option 4 – Improve Open System

– Not carried further following October 2020 Design Review Meeting –

- Widening and deepening the existing swale
- No work on the existing closed system (maintained)
- Erosion control additions
- Property restoration



**A** SECTION - STA. 1+020  
1 SCALE 1:100



**D** SECTION - STA. 1+142  
1 SCALE 1:100

Level of Service (Piped System): 15mm-18mm in 24 hours.

Level of Service (Overall): 1-In-250 year storm event.

Preliminary estimated cost: \$180,000

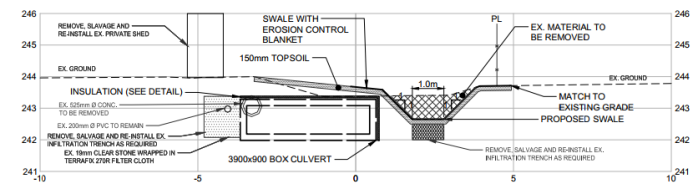
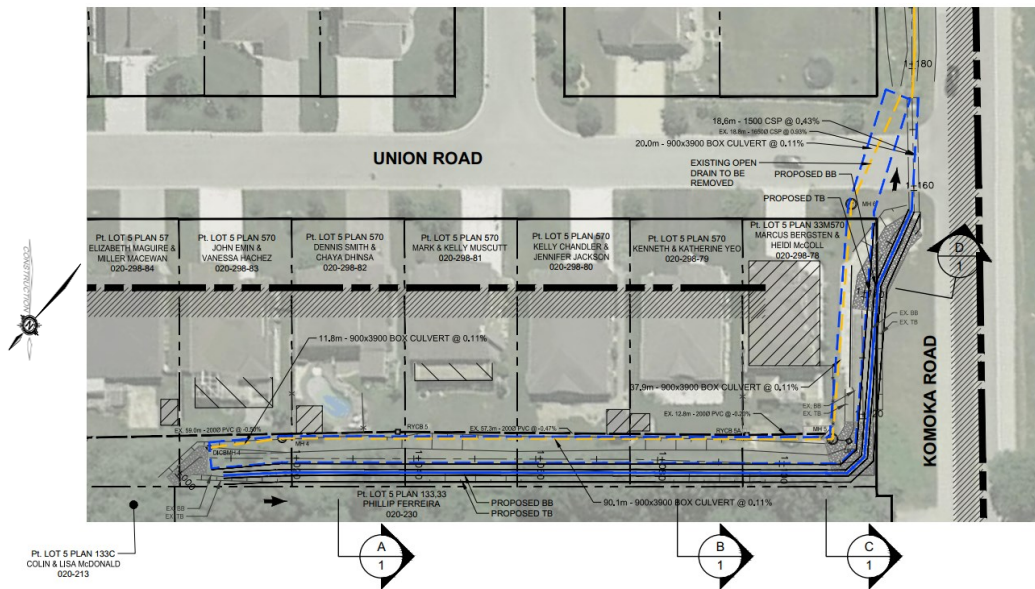
Approximate assessments to seven landowners backing onto drain: \$25,000



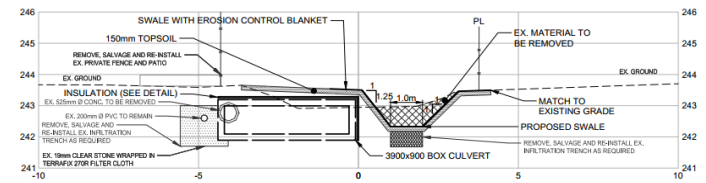
# Option 5 – Enclosure of Open System

– Not carried further following October 2020 Design Review Meeting –

- Replace existing swale with 3.9m x 0.9m concrete box culvert
- Smaller overland swale constructed adjacent to box culvert
- Insulation over new culvert
- Erosion control additions
- Property Restoration



**A SECTION - STA. 1+020**  
SCALE 1:100



**C SECTION - STA. 1+100**  
SCALE 1:100

Level of Service (Box Culvert) : 1-In-100 year storm event.

Level of Service (Overall): 1-In-250 year storm event.

Preliminary estimated cost: \$2,200,000

Approximate assessments to seven landowners backing onto drain: \$275,000 - \$325,000

# Rehabilitation Options Summary

Option No.	Option Name	Resulting Overall Level of Service	Preliminary Cost	Approximate Assessments to Seven Landowners
1	Do Nothing (existing conditions)	Less than 1-In-100 year	Engineering costs to date	To be determined
2	Drain Maintenance	1-In-100 year	\$100,000	As per Latest Engineer's report
3A	Improve Closed System	1-In-100 year	\$320,000	\$45,000
3B	Improve Closed System	1-In-100 year	\$225,000	\$32,000
4	Improve Open System	1-In-250 year	\$180,000	\$25,000
5	Enclosure of Open System	1-In-250 year	\$2,200,000	\$275,000 - \$325,000

- October Design Review Meeting lightly attended decision to deliver design package with cover letter to seven landowners directly. Requested input by December 1<sup>st</sup>, 2020.
- Cover letter highlights;
  - Requesting landowner input on preferred rehabilitation option.
  - Funds from the Municipal stormwater levy can be applied for drain upkeep / maintenance. Option 2 (clean-out, inlet improvements) would be covered with no additional cost to landowners. “Maintenance” portion would be similarly covered under other rehabilitation options.
  - Resulting theoretical frequency of water in ditch?
    - Option 1 – rainfall greater than 18mm in 24 hours.
    - Option 2 – rainfall greater than 18mm in 24 hours.
    - Option 3 – rainfall greater than 70mm in 34 hours (1-in-2 year storm).
- Two of seven landowners responded.
  - General support for Option 2.

- Currently have an “active” request for improvements to address within a report.
- Without expressed desire to proceed with larger rehabilitation option by the landowners, recommendation to proceed with “Option 2” in the report.
- Option 2 – Restore Design Report Conditions.
  - Ditch work to restore to last report conditions.
  - Review / re-position upstream catch basin / inlet.
  - Existing overall level of service unchanged.
- Costs for the work to be covered by Municipal stormwater levy.
- GM BluePlan to complete detailed design.
- Completion of Municipal Drain Report and file with the Municipality.



# Discussion/ Questions/ Concerns

