

FLEMMING DRAIN
Municipality of West Elgin



**SPRIET
ASSOCIATES**
ENGINEERS & ARCHITECTS

155 York Street
London, Ontario N6A 1A8
Tel. (519) 672-4100
Fax (519) 433-9351
E-mail MAIL@SPRIET.ON.CA

Our Job No. 221334

March 29, 2022

London, Ontario
March 29, 2022

FLEMMING DRAIN

Municipality of West Elgin

To the Mayor and Council of
the Municipality of West Elgin

Mayor and Council:

We are pleased to present our report on the reconstruction of the Flemming Municipal Drain serving parts of Lots 3 and 4, Concession 6, in the Municipality of West Elgin. The total watershed area contains approximately 54 hectares.

AUTHORIZATION

This report was prepared pursuant to Section 78 of the Drainage Act. Instructions were received from your Municipality with respect to a motion of Council. The work was initiated by a request signed by one of the affected landowners.

HISTORY

The Flemming Drain was originally constructed pursuant to a report submitted by H.H. Todgham, P. Eng., dated May 31, 1966, and consisted of the installation of a closed drain commencing at the Morden Drain and travelling northerly through the lands in Lot 3 and Lot 4, Concession 6, to its head one property south of Highway No. 401. The total length of the drain was approximately 695 lineal meters with tile ranging in size from 200mm (8") to 450mm (18") diameter.

EXISTING DRAINAGE CONDITIONS

A site meeting held with respect to the project and through later discussions, the owners reported the following:

- that the landowner, M. & B. Fleuren (Roll No. 20-052 and Roll No. 20-051-01), indicated their intention to systematically tile the farm and, as such, they require a sufficient outlet. They indicated that the existing drain is in poor condition with the existing tile having settled due to poor soil conditions.
- that the landowner, R. & F. Downie (Roll No. 20-056), indicated his possible intention to tile a portion of his lands as well



EXISTING DRAINAGE CONDITIONS (cont'd)

A field investigation and survey were completed. Upon reviewing our findings, we note the following:

- that the existing drain does not provide a sufficient outlet or adequate depth to drain the lands in the watershed area
- that a portion of the lands owned by M. & B. Fleuren (Roll No. 20-052) naturally drain north to the Highway 401 road allowance but could be drained for sub-surface drainage towards the Flemming Drain
- there is an existing 200mm Enbridge gasmain located on the south side of Hoskins Line. To avoid requiring an offset of the gasmain the Morden Drain would have to be deepened downstream and PVC pipes would have to be installed adjacent the gasmain to reduce the required clearance

Preliminary design, cost estimates, and assessments were prepared and an informal public meeting was held to review the findings and preliminary proposals. Further input and requests were provided by the affected owners and Enbridge Gas Pipelines at that time and at later dates. Based on the proposed design it was decided to proceed with the request.

DESIGN CONSIDERATIONS

The Drainage Coefficient method contained in the "DRAINAGE GUIDE FOR ONTARIO", Publication 29 by the Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA) is typically used to design municipal drains. The Drainage Coefficient defines a depth of water that can be removed in a 24-hour period and is expressed in millimetres per 24 hours. The coefficient used to design this drain with respect to capacity was 38mm per 24 hrs.

We would like to point out that there have been indications of sandy and unstable soil conditions. It should be noted that no formal soil investigation has been made, with this information being provided by the owners.

The proposed design and report have been generally completed using the "GUIDE FOR ENGINEERS WORKING UNDER THE DRAINAGE ACT IN ONTARIO" OMAFRA Publication 852.

RECOMMENDATIONS

We are therefore recommending the following:

- that the Flemming Drain be reconstructed commencing at its outlet on the south side of Downie Line in Lot 3, Concession 7, and travel northerly through the lands of M. & B. Fleuren (Roll No. 20-052) and R. & F. Downie (Roll No. 20-056) to its head just within the lands of M. & B. Fleuren (Roll No. 20-051-01), for a total length of 298 meters
- that the Morden Drain be cleaned out and deepened downstream of the Flemming Drain to Downie Line, for a length of 760 meters to avoid offsetting the gasmain



RECOMMENDATIONS (cont'd)

- that the road crossing under Hoskins Line be done by open cut to minimize costs and ensure the exact grades are obtained
- that catchbasins be installed along the course of the drain to alleviate surface ponding and provide access points to the drain
- that the existing Flemming Drain, upstream of Sta. 0+298, be officially abandoned from municipal status pursuant to Section 19 of the Drainage Act

ENVIRONMENTAL CONSIDERATIONS AND MITIGATION MEASURES

There are no significant wetlands or sensitive areas within the affected watershed area or along the route of the drains. The proposed construction of the Flemming Drain includes quarry stone outlet protection, surface inlets, and grassed waterway which greatly help reduce the overland surface flows and any subsequent erosion. A temporary flow check of silt fencing is to be installed in the ditch downstream of the tile outlet for the duration of the construction.

SUMMARY OF PROPOSED WORK

The proposed work consists of approximately 760 lineal meters or open ditch cleanout of the Morden Drain and 314 lineal meters of 450mm (18") to 525mm (21") diameter concrete field tile and sewer pipe, including related appurtenances.

SCHEDULES

Four schedules are attached hereto and form part of this report, being Schedule 'A' - Allowances, Schedule 'B' - Cost Estimate, Schedule 'C' - Assessment for Construction, and Schedule 'D' - Assessment for Maintenance.

Schedule 'A' - Allowances. In accordance with Sections 29 and 30 of the Drainage Act, allowances are provided for right-of-way and damages to lands and crops along the route of the drain as defined below.

Schedule 'B' - Cost Estimate. This schedule provides for a detailed cost estimate of the proposed work which is in the amount of \$94,000.00. This estimate includes engineering and administrative costs associated with this project.

Schedule 'C' - Assessment for Construction. This schedule outlines the distribution of the total estimated cost of construction over the roads and lands which are involved.

Schedule 'D' - Assessment for Maintenance. In accordance with Section 38 of the Drainage Act, this schedule outlines the distribution of future repair and/or maintenance costs for portions of, or the entire drainage works.

Drawing No. 1, Job No. 221334, and specifications form part of this report. They show and describe in detail the location and extent of the work to be done and the lands which are affected.



ALLOWANCES

DAMAGES: Section 30 of the Drainage Act provides for the compensation to landowners along the drain for damages to lands and crops caused by the construction of the drain. The amount granted is based on \$3,613.00/ha. for closed drain installed with wheel machine, and \$4,647.00/ha for open ditch work with excavated material levelled adjacent the drain. These base rates are multiplied by the hectares derived from the working widths shown on the plans and the applicable lengths.

RIGHT-OF-WAY Section 29 of the Drainage Act provides for an allowance to the owners whose land must be used for the construction, repair, or future maintenance of a drainage works.

For tile drains where the owners will be able to continue to use the land, the allowance provides for the right to enter upon such lands, and at various times for the purpose of inspecting such drain, removing obstructions, and making repairs. Also, the allowance provides for the restrictions imposed on those lands to protect the right-of-way from obstruction or derogation. The amounts granted for right-of-way on tile drains is based on a percentage of the value of the land designated for future maintenance. Therefore, the amounts granted are based on \$6,670.00/ha. through cropped lands. This value is multiplied by the hectares derived from the width granted for future maintenance and the applicable lengths.

ASSESSMENT DEFINITIONS

In accordance with the Drainage Act, lands that make use of a drainage works are liable for assessment for part of the cost of constructing and maintaining the system. These liabilities are known as benefit, outlet liability and special benefit liability as set out under Sections 22, 23, 24 and 26 of the Act.

BENEFIT as defined in the Drainage Act means the advantages to any lands, roads, buildings or other structures from the construction, improvement, repair or maintenance of a drainage works such as will result in a higher market value or increased crop production or improved appearance or better control of surface or sub-surface water, or any other advantages relating to the betterment of lands, roads, buildings or other structures.

OUTLET liability is assessed to lands or roads that may make use of a drainage works as an outlet either directly or indirectly through the medium of any other drainage works or of a swale, ravine, creek or watercourse.

In addition, a Public Utility or Road Authority shall be assessed for and pay all the increased cost to a drainage works due to the construction and operation of the Public Utility or Road Authority. This may be shown as either benefit or special assessment.

ASSESSMENT

A modified "Todgham Method" was used to calculate the assessments shown on Schedule 'C'- Assessment for Construction. This entailed breaking down the costs of the drain into sections along its route. Special Assessments were then extracted from each section.



ASSESSMENT (cont'd)

The remainder is then separated into Benefit and Outlet costs. The Benefit cost is distributed to those properties receiving benefit as defined under "Assessment Definitions", with such properties usually being located along or close to the route of the drain. The Outlet Costs are distributed to all properties within the watershed area of that section on an adjusted basis. The areas are adjusted for location along that section, and relative run-off rates. Due to their different relative run-off rates, forested lands have been assessed for outlet at lower rates than cleared lands. Also, roads and residential properties have been assessed for outlet at higher rates than cleared farmlands.

The actual cost of the work involving this report, with the exception of Special Assessments, is to be assessed on a pro-rata basis against the lands and roads liable for assessment for benefit, outlet, and for special assessments as shown in detail below and on Schedule 'C' - Assessment for Construction. The Special Assessments shall be levied as noted in the Section "Special Assessment".

SPECIAL ASSESSMENT

In accordance with Section 26 of the Drainage Act, a Special Assessments has been made against the Municipality of West Elgin and Enbridge Gas Pipelines for the increased cost to the drainage works for installing two 450mm diameter PVC pipes across their road allowance on the Main Drain due to the construction and operation of Hoskins Line as well as avoiding conflict with the 200mm dia. steel gas main located on the south side of the road allowance. The Special Assessment shall be made up of the actual cost of this work and both the final and estimated values of the Special Assessment are to be calculated as follows:

Main Drain	Cost of Work	Less Equivalent Drain Cost (Fixed)	Plus Administration Cost	Plus Interest & Net H.S.T.	Special Assessment
450mm PVC Pipes	\$13,500.00	\$1,790.00	\$3,900.00	\$390.00	\$16,000.00

The above special assessment will then be divided as follows

- 60% - Assessed to the Municipality of West Elgin
- 40% - Assessed to Enbridge Gas Pipelines

The above special assessments shall not apply for future maintenance purposes.

In accordance with Section 26 of the Drainage Act, a Special Assessments has been made against the Enbridge Gas Pipelines for the increased cost to the drainage works for deepening the downstream Morden Drain due to their 200mm gas main located along Hoskins Line and avoiding their gas main from being off-set due to its elevation. The Special Assessment shall be made up of the actual cost of this work and both the final and estimated values of the Special Assessment are to be calculated as follows:



SPECIAL ASSESSMENT (cont'd)

Morden Drain	Cost of Work	Allowances	Plus Administration Cost	Plus Interest & Net H.S.T.	Special Assessment
760m of Ditch Cleanout, Levelling and Allowances	\$5,800.00	\$2,650.00	\$2,900.00	\$280.00	\$11,630.00

The above special assessments shall not apply for future maintenance purposes.

If any additional work is required to the drainage works due to the existence of buried utilities such as gas pipelines, communications cables, etc. or if any of the utilities require relocation or repair, then, the extra costs incurred shall be borne by the utility involved in accordance with the provisions of Section 26 of the Drainage Act.

GRANTS

In accordance with the provisions of Section 85 of the Drainage Act, a grant **may** be available for assessments against privately owned parcels of land which are used for agricultural purposes and eligible for the Farm Property Class Tax rate. Section 88 of the Drainage Act directs the Municipality to make application for this grant upon certification of completion of this drain. The Municipality will then deduct the grant from the assessments prior to collecting the final assessments.

MAINTENANCE

Upon completion of construction, all owners are hereby made aware of Sections 80 and 82 of the Drainage Act which forbid the obstruction of or damage or injury to a municipal drain.

After completion, the entire Flemming Drain shall be maintained by the Municipality of West Elgin at the expense of all upstream lands and roads assessed in Schedule 'D' - Assessment for Maintenance and in the same relative proportions until such time as the assessment is changed under the Drainage Act.

Special Assessments shall **not** be pro-rated for future maintenance purposes.

Repairs or improvements to any road culvert or sub-surface road crossing required by the performance of this work and for future repair and/or replacement, shall be the responsibility of the applicable Road Authority, entirely at their cost.

Respectfully submitted,

SPRIET ASSOCIATES LONDON LIMITED

JMS:



J.M. Spriet, P.Eng.



SPRIET ASSOCIATES
engineers & architects

SCHEDULE 'A' - ALLOWANCES

FLEMMING DRAIN

Municipality of West Elgin

In accordance with Sections 29 and 30 of the Drainage Act, we determine the allowances payable to owners entitled thereto as follows:

CONCESSION	LOT	ROLL NUMBER (Owner)	Section 29 Right-of-Way	Section 30 Damages	TOTALS
MAIN DRAIN					
6	S½ 3 & 4	20-052 (M. & B. Fleuren)	\$ 1,410.00	\$ 1,140.00	\$ 2,550.00
6	S¾ 4	20-051-01 (M. & B. Fleuren)	150.00	120.00	270.00
6	S¾ 4	20-056 (R. & F. Downie)	340.00	280.00	620.00
7	3	20-090 (P. Downie)		2,650.00	2,650.00
Total Allowances			\$ 1,900.00	\$ 4,190.00	\$ 6,090.00
TOTAL ALLOWANCES ON THE MAIN DRAIN					\$ 6,090.00
TOTAL ALLOWANCES ON THE FLEMMING DRAIN					\$ 6,090.00

FLEMMING DRAIN**Municipality of West Elgin**

We have made an estimate of the cost of the proposed work which is outlined in detail as follows:

MAIN DRAIN

760m of open ditch cleanout (Morden Drain)	\$ 3,900.00
Levelling of excavated material (Morden Drain)	\$ 1,900.00
Supply and Installation of rodent gates in end of 450mm dia., P.V.C. pipes including quarry stone rip-rap protection around pipe and end of ditch (Approximately 8m³ quarry stone req'd)	
Supply	\$ 300.00
Installation	\$ 1,200.00
Installation of the following concrete field tile and stone bedding wrapped in geotextile including supply and installation of geotextile around tile joints (approx. 500m req'd)	
266 meters of 525mm dia. concrete tile (2000-D)	\$ 13,300.00
Supply of the above listed tile	\$ 10,600.00
Supply & delivery of 19mm crushed stone (Approx. 110 tonnes req'd)	\$ 3,900.00
Strip, stockpile and releve topsoil from tile trench and adjacent working area (4m wide) specified on drawings (approx. 266m)	\$ 1,600.00
Supply and install one 900mm x 1200mm ditch inlet catchbasin, and one 900mm x 1200mm catchbasin including berms, leads, tees, ditching, ext. and removal and disposal of existing catchbasins	\$ 5,000.00
36 meters of 450 mm dia., S.D.R. 35 P.V.C. pipe	
Supply	\$ 5,400.00
Installation under Hoskins Line by Open Cut	\$ 8,100.00
12 meters of 525 mm dia., H.D.P.E. pipe	
Supply	\$ 1,500.00
Installation under Laneway by Open Cut	\$ 2,900.00
Destroy existing tile in place	\$ 2,000.00
Exposing and locating existing tile drains and utilities	\$ 1,500.00
Tile connections and contingencies	\$ 5,100.00
Allowances under Sections 29 & 30 of the Drainage Act	\$ 6,090.00

FLEMMING DRAIN
Municipality of West Elgin**ADMINISTRATION**

Interest and Net Harmonized Sales Tax	\$ 2,140.00
Survey, Plan and Final Report	\$ 11,900.00
Expenses	\$ 810.00
Supervision and Final Inspection	\$ <u>4,860.00</u>
TOTAL ESTIMATED COST	\$ <u><u>94,000.00</u></u>

CON.	LOT	HECTARES AFFECTED	ROLL No. (OWNER)	BENEFIT	OUTLET	TOTAL
MAIN DRAIN						
6	S½ Pt.	3	0.8	20-053 (A. Perry & S. Shewan)	\$ 59.00	\$ 59.00
6	S½ 3 &	4	35.4	20-052 (M. & B. Fleuren)	24,180.00	35,697.00
6	S¾	4	11.4	20-051-01 (M. & B. Fleuren)	2,910.00	14,650.00
6	S¾	4	5.8	20-056 (R. & F. Downie)	6,090.00	10,587.00
TOTAL ASSESSMENT ON LANDS				\$ 33,180.00	\$ 27,813.00	\$ 60,993.00
Blacks Road				\$ 23.00	\$ 23.00	
Hoskins Line				5,260.00	94.00	5,354.00
TOTAL ASSESSMENT ON ROADS				\$ 5,260.00	\$ 117.00	\$ 5,377.00
SPECIAL ASSESSMENT against Municipality of West Elgin for the increased cost to the drainage works for their share of installing two 450mm PVC pipes under Hoskins Line by open cut						\$ 9,600.00
SPECIAL ASSESSMENT against Enbridge Gas Pipelines for the increased cost to the drainage works for their share of installing PVC pipe under their gasmain on Hoskins Line by open cut.						\$ 6,400.00
SPECIAL ASSESSMENT against Enbridge Gas Pipelines for the increased cost to the drainage works for deepening the downstream Morden Drain to avoid a gasmain offset on Hoskins Line						\$ 11,630.00
TOTAL ASSESSMENT ON THE MAIN DRAIN						\$ 94,000.00
TOTAL ASSESSMENT ON THE FLEMMING DRAIN						\$ 94,000.00

SCHEDULE 'D' - ASSESSMENT FOR MAINTENANCE

FLEMMING DRAIN

Municipality of West Elgin

Job No. 221334

March 29, 2022

CON.	LOT	HECTARES AFFECTED		ROLL No. (OWNER)	PERCENTAGE OF MAINTENANCE COST
MAIN DRAIN					
6	S½ Pt.	3	0.8	20-053 (A. Perry & S. Shewan)	0.1 %
6	S½ 3 &	4	35.4	20-052 (M. & B. Fleuren)	50.1
6	S¾	4	11.4	20-051-01 (M. & B. Fleuren)	28.0
6	S¾	4	5.8	20-056 (R. & F. Downie)	16.0
					=====
TOTAL ASSESSMENT ON LANDS					94.2 %
					=====
Blacks Road		0.2		Municipality of West Elgin	0.1 %
Hoskins Line		0.5		Municipality of West Elgin	5.7
					=====
TOTAL ASSESSMENT ON ROADS					5.8 %
					=====
TOTAL ASSESSMENT FOR MAINTENANCE OF THE MAIN DRAIN					100.0 %

SCHEDULE OF NET ASSESSMENT

FLEMMING DRAIN

Municipality of West Elgin

(FOR INFORMATION PURPOSES ONLY)

Job No. 221334

March 29, 2022

* = Non-agricultural

	ROLL NUMBER (OWNER)	TOTAL ASSESSMENT	GRANT	ALLOWANCES	APPROX. NET
*	20-053 (A. Perry & S. Shewan)	59.00			59.00
	20-052 (M. & B. Fleuren)	35,697.00	11,899.00	2,550.00	21,248.00
	20-051-01 (M. & B. Fleuren)	14,650.00	4,883.00	270.00	9,497.00
	20-056 (R. & F. Downie)	10,587.00	3,529.00	620.00	6,438.00
	20-090 (P. Downie)			2,650.00	-2,650.00
	Blacks Road	23.00			23.00
	Hoskins Line	5,354.00			5,354.00
	Special Assessment	9,600.00			9,600.00
	Special Assessment Enbridge	18,030.00			18,030.00
TOTALS		\$ 94,000.00	\$ 20,311.00	\$ 6,090.00	\$ 67,599.00