



# **Preliminary Engineer's Report Proposed Municipal Drain 2016**

**Township of North Huron**

**R.J. Burnside & Associates Limited  
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**June 23, 2016  
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**R.J. Burnside & Associates Limited**

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JRD/CM:js



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## 1.0 Introduction

In accordance with a letter of appointment received from the Township of North Huron (Township) dated October 7, 2014, we are pleased to submit a Preliminary Engineer's Report for a proposed municipal drain project involving a tributary of the Belgrave Creek. A "Petition for Drainage Works by Owners" Form 1 was endorsed and submitted by owners of property in the geographic Township of East Wawanosh, Township of North Huron, County of Huron. This Report is being prepared in accordance with Sections 4 and 10(1) of the Drainage Act R.S.O., 1990, Chapter D.17 (Act).

## 2.0 History

Although this Report is for a "new" Municipal Drain, documentation and reports are on file at the Township for other portions of this watershed.

This upstream portion of the watershed was originally served by two Award Drains in the geographic Township of East Wawanosh; both reports were authored by James Marshall. The first was dated October 29, 1894 covering a section from the westerly limit of the road allowance at the south half Lot 39, Concession 10 to the easterly limit of Lot 38, Concession 11, slightly north of the line between the north and the south halves of Lot 38. The second was dated July 2, 1903 covering the same course but with an 8 chain (approximately 160 m) extension on the upper end into the south half Lot 40, Concession 10.

Many years later and pursuant to a report prepared by G.D. Gamsby, P.Eng., of Gamsby and Mannerow Limited, dated December 5, 1969, a Requisition Drain was created under Section 4 of The Drainage Act, RSO 1962-63. It included a portion of the Award Drain in Lots 38 and 39, Concession 11 and was constructed in approximately 1970; this drain is known as the Jaretzke Drainage Works. It commenced approximately 226 feet west of the centerline of Sideroad 39-40 (now Currie Line), was approximately 2,400 lineal feet in length and ended at Station 18+00, approximately 370 feet west of the line between Lots 38 and 39, Concession 11, just north of the midpoint of Concession 11.

A Preliminary Engineer's Report was prepared and filed by E.W. Shifflett, P.Eng., of Gamsby and Mannerow Limited dated March 9, 1981. At the meeting to consider the Preliminary Report on April 10, 1981, the Council of the Township of East Wawanosh instructed the engineer to prepare a final report. Subsequently, Mr. Shifflett filed a Final Engineer's Report for the Thacker-Jaretzke Drainage Works, dated September 4, 1981. In the final report, the proposed drainage solution selected was Proposal No. 2A, as identified in the Preliminary Report; the total estimated cost of the project was \$214,811.

According to the Petition, the "area requiring drainage" was described as approximately 75 acres, most of which lies on the south half of Lot 40, Concession 10, Township of



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East Wawanosh. The natural direction of drainage of the area was described by the engineer to be into the low lying part of Lot 40 adjacent to the Sideroad 39-40 (now Currie Line). The drain commenced in Lot 40, Concession 10, west across the Sideroad into the bush on Lot 39, then north through said Lot, across Concession Road 10-11 (now Belfast Road), through the south-west corner of Lot 39, Concession 11, into Lot 38 and back into Lot 39 at approximately the center of the Lot, east across Sideroad 39-40 continuing through Lots 40 and 41 and into Lot 42, then south across Concession Road 10-11 continuing south through Lot 42, Concession 10 to Station 52+00 and the proposed "start of construction".

In the Final Report as a result of signatures added to the Petition at the Meeting to Consider the Preliminary Report it was stated:

*The "area requiring drainage" could now be considered to be lands along the course of the Drain, i.e. Parts of the North Half Lot 39 and 40 in Concession 10, Parts of Lots 38, 39, 40, 41, and 42 in Concession 11 and Parts of Lot 42 in Concession 10.*

It is noted that the proposed 1981 drain was to include a new drain along the course of the 1894 Award with an open and a closed section commencing in the south half of Lot 40, Concession 10. The open and closed sections were to combine in the north half of Lot 39, Concession 10 and to continue as an open drain to the north until the point where it was to connect to the Jaretzke Drainage Works. The new drain was to incorporate the requisition drain with only minor deepening upstream of Sideroad 39-40. It was also proposed to install a total of 8 new private crossings and a total of 5 new public road culverts including one through Highway No. 4 (now London Road).

The profile in the Final Report showed a continuation of the channel downstream of Station 52+00 thru the south half of Lot 42, Concession 10 and the twining of an existing private concrete culvert through a private entrance. Then a portion of channel was to be within the right-of-way, as well as a crossing of Highway No. 4 near the south-east corner of Lot 42; continue south into Lot 1, Concession 4, geographic Township of Morris, to its confluence with the Belgrave Creek at Station 70+80.

According to the available documentation, there were owners who withdrew their names from the petition at (or after) the Meeting to Consider the Final Engineer's Report such that it no longer complied with Section 4; accordingly, the project did not proceed further.

### **3.0 Location**

The downstream end of the proposed municipal drain commences north and east of the Village of Belgrave, on the east side of London Road in the Municipality of Morris-Turnberry (geographic Township of Morris). The drain commences at the Belgrave Creek, is to be considered a tributary of it, and follows the alignment of the existing



channel from its outlet to the north and west for approximately 3,580 m upstream into the Township of North Huron (geographic Township of East Wawanosh). The upper 380 m of the drain are proposed to be a closed system.

The "approximate" watershed boundary and the location of the drain are shown on the enclosed Preliminary Watershed Plan (refer to Appendix A). The watershed consists of lands and roads in the geographic Townships of East Wawanosh and Morris and is approximately 1,000 hectares in size. The boundary is based on the one established by Shifflett in 1981 for the Thacker-Jaretzke Drainage Works and is supported by field investigations by Burnside staff. The final extents of the watershed boundary will need to be confirmed prior to the preparation of any subsequent Report.

#### **4.0 Existing Conditions**

The Belgrave Creek has its origin in the area of Lot 31, Concession 7, geographic Township of East Wawanosh where it outlets into the Maitland River; this is several kilometers west and south of the Village of Belgrave and the outlet of the proposed municipal drain. The creek continues upstream to and through the Village of Belgrave and then in an easterly direction through Lots 1 to 5 inclusive and beyond, in Concession 4, in the geographic Township of Morris to the north and east of the Village.

The downstream end of the existing drain and the outlet into the Belgrave Creek are at Station 0+000 in the west part of Lot 1, south half of Concession 4, to the east of London Road. The drain is an open system running generally in a northerly direction, in Lot 1 until it turns to the west and crosses London Road through a large culvert at approximately Station 1+000. There are approximately 277 m of channel within the London Road right-of-way from Station 0+850 to 1+127.

There is total of approximately 850 m of channel in the geographic Township of Morris and the majority of this length is bordered by low-lying land that is similar to wetland and is currently either in its natural environment state or used as pasture land.

The existing drain then enters lands in the geographic Township of East Wawanosh in the south east corner of Lot 42, Concession 10 and continues upstream to the north from approximately Station 1+127 to 2+478 and the Belfast Road. The drain crosses the road to Station 2+498 through an 1,800 mm diameter corrugated steel pipe. There is a lane crossing in the south part of Lot 42 at approximately Station 1+145.

Except for the upper 350 to 400 m of the channel that has cleared, worked agricultural land adjacent to it, approximately 950 m of it in Concession 10 is through a low-lying area, which has some degree of tree cover and is considered significant wetland by the Maitland Valley Conservation Authority (MVCA).



The existing drain continues as an open system upstream to the north and west into the east half of Lot 41, in Concession 11 to approximately Station 3+200. At this location the drain becomes a combined open and closed system and runs north and east to the line between Lot 41 and 42 in Concession 11 between approximately Stations BR0+000 and BR0+380. The open portion is approximately 100 m in length and the closed portion provides an existing private outlet for one of the petitioners; namely, the owner of the north half of Lot 42, Concession 11.

The majority of the land adjacent to the open portions of the existing drain in Concession 11 is low-lying and similar to the lands in the downstream reach. The majority of the closed portion of the drain is through cleared worked agricultural land.

Upstream of Station 3+200 in Lot 41, Concession 11, the existing drain continues to the west for approximately 1,400 m through the balance of Lot 41, all of Lot 40 and Currie Line and serves as the outlet for the 1981 Thacker-Jaretzke Drainage Works.

There is also another open channel that provides outlet to the northwest from Lot 41, Concession 10, then to the north through Lot 40, Concession 10, north through the Belfast Road and into the above continuation of the open drain near the midpoint of Lot 40, Concession 11 at approximately Station 4+000.

## **5.0 On-Site Meeting**

The On-Site Meeting was held on November 13, 2014 with one of the petitioning landowners, as well as other stakeholders in attendance. The engineer provided the stakeholders with an explanation which included but was not necessarily limited to the following major items:

- A brief outline of the various procedures and possible timelines for a drainage project under the auspices of the Act.
- The requirement to send written notice to the MVCA, as well as the potential involvement of the Department of Fisheries and Oceans Canada (DFO) and the Ministry of Natural Resources and Forestry (MNR).
- The validity of a petition and the engineer's duty to determine its compliance in accordance with Section 4 of the Act.
- The purpose of an On-Site Meeting (a Fact Sheet was distributed).
- Typical coefficients used to design a municipal drain.
- The purpose of the Meeting to Consider the Report and the notice required.
- The next opportunity to add/remove names to/from the original petition, as well as the opportunity to have another petition considered as part of this project.



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- Who is responsible for the costs to date if the project stops, which depends on whether process is stopped at the Meeting to Consider a Preliminary Report or a Final Report – both were explained.
- The requirements for joint owners of a property to each sign the petition.
- Some basic assessment logic and the types of assessment under the Act; namely, benefit and outlet, as well as the definitions in the Act and equivalent areas.
- The various avenues of appeal under the Act.
- The future maintenance of a municipal drain.
- The grants available for agricultural lands only.
- A discussion that the engineer had been instructed by the Council to prepare a Preliminary Report and the potential cost savings compared to a Final Report; however, a Preliminary Report would not include Assessment Schedules.
- Convening another meeting before the Preliminary Report is prepared.

Stakeholders were given an opportunity to bring forward drainage concerns and ask questions that were replied to by the engineer or the Municipality's representatives. The discussions included, but were not necessarily limited to the following:

- The owner of the north 1/2 Lot 42, Concession 10, indicated there was significant ponding in the channel on his property which runs through this farm from north to south with the well-defined channel ending near the south property line.
- The owner of the north 1/2 Lot 42, Concession 10, indicated there has been flooding of the workable land on his property and that he believed that three upstream properties have recently been under-drained which has increased the incidents of flooding and ponding after significant rainfall events.
- The owner of the north 1/2 Lot 42, Concession 10, indicated that the south part of the property is under-drained; however, the tile outlets were normally under water.
- Previous requests for channel cleanout on Lot 42, Concession 10.
- Where the downstream limit of the drain would need to be to obtain a "sufficient" outlet and how far upstream would the drain extend?
- What properties are within the "drainage area" versus the properties that are within the "area requiring drainage"?
- The current habitat classification for the existing channel.
- That the concerns of the MVCA and DFO will be matters related to protection of the wetlands and the existing habitat, sediment transport and erosion control in the open drain and that permits will likely be required from each of these approval agencies.



After discussing the above, the stakeholders were informed that a further examination of the drainage area and the watershed would be undertaken. It would also include an investigation of the channel on and downstream of the petitioning owners to determine the location of a "sufficient" outlet. Based upon the data collected and some preliminary design and estimated costs by the engineer, a second meeting would be convened. After the next meeting and in accordance with the instructions from the Council, a Preliminary Report would be prepared and filed. This report would include at least one drainage solution, a plan and an estimate of the cost.

## **6.0 Meetings with Petitioners**

Following the On-Site Meeting, Burnside arranged and met with the two petitioning landowners that could not attend the On-Site Meeting. On November 20, 2014, a meeting was held with the owners of the very west part of Lot 41 and the majority of the south 1/2 Lot 42, Concession 10. A meeting was held with the owner of the north 1/2 Lot 42, Concession 11 on December 8, 2014.

During each meeting, the Engineer provided the stakeholder(s) with a Municipal Drain factsheet and a summary of what was discussed at the On-Site Meeting. The stakeholder(s) then discussed their reasoning for signing the petition, their existing drainage conditions on their property and their expectations regarding a drainage solution for their respective property. The area requiring drainage and the watershed area were also discussed with these petitioners similar to that at the On-Site Meeting.

Subsequent to the meeting with the owner of the north 1/2 Lot 42, Concession 11, a drainage map was provided detailing the portions of that property that have been systematically under-drained. In addition, each petitioning landowner fully supported the preparation of a Preliminary Report for the project as per the appointment.

## **7.0 Area Requiring Drainage**

The "Petition for Drainage Works by Owners" was endorsed and submitted by the owner(s) of the following properties in the Township:

- the very west part of Lot 41 and the majority of the south 1/2 Lot 42, Concession 10;
- the majority of the north 1/2 Lot 42, Concession 10; and
- the majority of the north 1/2 Lot 42, Concession 11.

The area requiring drainage described on the Petition was the entirety of these three properties and each is in excess of 39 ha in area; however, and as indicated on the Watershed Plan, there is only approximately 10 ha of the north 1/2 of Lot 42, Concession 11, within the watershed boundary. This is supported by an investigation of the property, as well as the drainage map provided by the owner.



Based on an examination of the watershed, the "area requiring drainage" could be considered to include the lands and roads from the north limit of Lot 42, Concession 11 to the south limit of Lot 42 Concession 10 and from the centerline of London Road to the west limit of Lot 42 in Concessions 10 and 11.

## **8.0 The Drainage Act**

This Report is being prepared in accordance with Sections 4 and 10(1) of the Act.

As indicated in Section 7, and upon completion of the On-Site Meeting and the Meetings with Other Petitioners, the petition was declared valid in accordance with Section 4(1)(b) of the Drainage Act. It is important to note that at the On-Site Meeting no other landowner indicated they had an area requiring drainage.

## **9.0 Second Meeting**

A second meeting (or information meeting) was held on October 1, 2015 with all of the petitioning landowners, as well as other stakeholders within the watershed. The engineer provided the stakeholders with a summary of the On-Site Meeting held in 2014, an overview of the work completed to date on the project and an indication of the approximate costs of the project.

Landowners were given the opportunity to bring forward concerns and ask questions that were replied to by either the engineer or the Municipality's representatives. The discussions included, but were not necessarily limited to the following matters:

- The elevation difference measured during the survey.
- Who receives allowances?
- Area factors for the different types of land use.
- Who pays within the watershed?
- How the final costs are assessed.
- The OMAFRA grant available for agricultural lands.

Other than the petitioners, no other landowner indicated that they had an area requiring drainage at the Second Meeting.

The stakeholders were reminded of the process to be followed under the Act once the Preliminary Report has been prepared and filed with the Clerk; all stakeholders will receive a "notice" of the Meeting to Consider that Report.

## 10.0 Proposed Drainage Solution

It is known that the MVCA has significant interest in parts of this watershed and especially the existing channel which is an upstream tributary of Belgrave Creek; any proposed drainage project will be closely examined for several reasons. One is due to the significant wetland areas within the watershed and primarily the one identified adjacent to the proposed municipal drain in Concession 10. Another is the favorable habitat created by the existing channel. It is also important to understand that DFO will have a similar interest and approval from both agencies will be required to authorize any work proposed in this Report.

Due to the sensitive nature of the existing channel, it is very unlikely that an enclosure would be acceptable to either MVCA or DFO; accordingly, this has not been investigated as an option or an alternative.

The proposal is for a main drain approximately 3,200 m in length and the work would consist of an improved channel between Stations 0+000 and 3+200. In addition, we are proposing a branch drain approximately 380 m in length between Stations BR 0+000 and BR 0+380 which would consist of a downstream 100 m open portion and an upstream 280 m closed portion.

Accordingly, the work is proposed at this time to include but may not necessarily be limited to the following major items:

- Undertake approx. 3,200 m of bottom cleanout and channel improvements, minor deepening and widening of the open portions of the main and the branch drain;
- Establish setbacks or buffers along both sides of the open portions of the main and the branch drain;
- Undertake the necessary clearing and brushing of the working space through wooded areas affecting the open portions of the main and the branch drain;
- Perform various habitat improvements on all open portions of the main and the branch drain under the direction of the Burnside Aquatic Resource Specialist to satisfy DFO and MVCA and procure the necessary permits;
- Level all of the resulting spoil;
- Reinforce and deepen the existing London Road culvert and footings;
- Replace, upgrade or twin the lane crossing and entrance to the south 1/2 of Lot 42, Concession 10, geographic Township of East Wawanosh; and
- Either assume the existing tile outlet for the north 1/2 of Lot 42, Concession 11 and if not, install approx. 280 m of new tile complete with a structure on the line between Lots 41 and 42 as a new outlet.



At the Second Meeting in October 2015, the stakeholders were informed of the estimated total cost for this proposed municipal drain; which included construction, allowances, engineering and administration. However, it was realized after the October meeting that the estimated total cost did not contain any work on Lot 41, Concession 10 upstream of Station 3+058. The work on this property is proposed to include approximately 142 m of open main drain and the combined 380 m of the open and closed branch drain.

Since the October 2015 meeting there has been an increase in the cost of municipal drainage work on other local projects; that has been reflected in the revised estimated total cost. Also to be taken into consideration is an increase in the estimated cost of the work on the London Road culvert; however, this will have little impact on the agricultural lands within the watershed and, if the project proceeds, will be part of a Section 26 assessment to the road authority.

Accordingly, the estimated project cost has been revised to reflect this work that is currently part of this proposed municipal drain.

Taking all of the above into consideration, the revised total cost for the proposed drainage solution is estimated to be at least \$375,000; this includes construction, allowances, engineering and administration.

## **11.0 Optional Drainage Work**

In addition to the work listed in Section 10, the proposed municipal drain could be extended further upstream to incorporate more of the existing channel to the west of Station 3+200. There is approximately 1,400 m of existing channel upstream of this point and it may be possible to extend the proposed municipal drain to and through Currie Line to the downstream end of the Jaretzke Drainage Works. If there was adequate interest to extend the main drain upstream, the scope of the project could be expanded to consider incorporating an additional 1,400 m of the existing channel.

The additional cost (construction, allowances, engineering and administration) for such work is estimated to be up to \$75,000. However, in order to incorporate this optional work (or any other work upstream of the proposed municipal drain) additional signatures are needed on the current petition or a new petition would be required.

## **12.0 Withdrawal From and Additions to Petition**

If at the end of the meeting to consider this Report the project does not proceed, due to insufficient number of names on the Petition to comply with Section 4 of the Act, "*... the original petitioners are chargeable in equal shares with and liable to the Municipality for the expenses incurred by the municipality in connection with the petition and preliminary*

*report, excluding the amount of any grants ...*" in accordance with Section 10(4) of the Act.

### **13.0 Design Criteria**

The applicable sections of the "Design and Construction Guidelines for Work Under the Drainage Act", as prepared by the Government of Ontario, and the applicable sections of the "Drainage Guide for Ontario", as published by the Ontario Ministry of Agriculture and Food, will be used for the final design and the construction of the drain if the project proceeds. In addition, the services of the Burnside Aquatic Resource Specialist will be employed to attend to various habitat improvements to satisfy DFO and MVCA requirements.

### **14.0 Conclusions**

The content of this Preliminary Report is the result of the On-Site Meeting, site investigations, a preliminary survey of the existing channel, the Second Meeting with the stakeholders and numerous discussions and telephone conversations with the various stakeholders and agencies.

There are a number of details relating to this proposed municipal drain that have yet to be determined and which will require further consultation with the various stakeholders. The details to be resolved include, but are not necessarily limited to the following items:

- If the petition remains valid after the consideration of the Preliminary Report, obtain formal instructions from the Council to prepare a "final" Engineer's Report for the proposed municipal drain.
- Collect additional detailed on-site survey data to better understand all of the existing conditions in and along the route of the proposed municipal drain and to facilitate an acceptable final design.
- Determine and verify the correct limit and extent of the watershed boundary.
- Investigate, where necessary, the existing soil conditions along the route of the proposed municipal drain prior to any construction.
- Engage in consultation with the MVCA, DFO and MNRF to address any issues and concerns such that if a final report is completed and filed with the Municipality, the necessary permits can be procured for the construction of the proposed drain.

We submit this Preliminary Report for review and consideration by the Council of the Township of North Huron and the affected stakeholders and await further instructions.





BURNSIDE

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## Appendix A

### Preliminary Watershed Plan





**LEGEND**

0+000 STATION  
N. LANDS LANDOWNER  
003-00400 ASSESSMENT ROLL NUMBER  
20.20 AFFECTED AREA (ha.)  
40.00 TOTAL AREA (HA.)

EXTERIOR WATERSHED BOUNDARY  
INTERIOR WATERSHED BOUNDARY  
OTHER DRAINAGE - OPEN / CLOSED  
NEW MUNICIPAL DRAIN, WITH DIRECTION  
ASSUMED ROW &/OR PROPERTY LINE

THE PROPERTY LINES SHOWN ON THIS PLAN ARE APPROXIMATE AND FOR GENERAL INFORMATION ONLY.

NOT FOR CONSTRUCTION

No.	Issue / Revision	Date	Auth.
1	PRELIMINARY INFER REPORT	JUNE 17, 2016	JRD

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PROPOSED MUNICIPAL DRAIN  
PRELIMINARY WATERSHED PLAN

Drawn: GAG/SBC	Checked: JRD	Designed: JRD	Checked: JRD	Date: 2015/03/01	Drawn No: 300035408	Checked No: 1	Revision No: 1	Drawn No: 1
Scale: 1:10,000								1 OF 1

THE PROPERTY LINES SHOWN ON THIS PLAN ARE APPROXIMATE AND FOR GENERAL INFORMATION ONLY.  
AERIAL PHOTOGRAPHY PROVIDED BY: HURON CTY PARCELS PROVIDED BY: HURON CTY. DATED: JAN 2015