Holland Marsh Drainage System
Joint Municipal Services Board

2017 Business Plan

1. INTRODUCTION

The Holland Marsh Drainage System Joint Municipal Services Board (the Board) has been in existence since late 2007. It was established by the Town of Bradford West Gwillimbury (BWG) and the Township of King (TOK), created under the Municipal Act to perform specific functions and undertake prescribed works. Both municipalities passed bylaws to enter into a formal agreement for the creation of the Board.

The Board was created as a corporate entity separate from the two municipalities and has been delegated the duty of assuming the municipalities' responsibilities as they relate to the Holland Marsh and other municipal drains in BWG and TOK, under the Drainage Act R.S.O. 1990. This Board operates concurrently with the term of Council.

In accordance with the formal agreement entered into by the two municipalities, the Board is required to obtain the approval from BWG and TOK Councils for its annual business plan. This agreement entered into by the two municipalities provides that once its business plan is approved, the Board may proceed to implement the plan without further reference to the two municipal councils provided that it continues its work in accordance with the approved annual business plan.

This document is thus being prepared for submission to the two municipalities along with a request from the Board that approval be granted for the plan so that the business of the Board for 2017 may be executed.

The business plan is set out in five parts (in addition to this introduction) plus appendices. Part 2 is a summary of the objectives and total costs proposed in this business plan. Part 3 is a brief summary of the Board's accomplishments in 2015. Part 4 addresses the governance and administrative components of the plan while Part 5 describes the operating components of the plan. Part 6 describes the capital projects and investments. One appendix is provided. Appendix "1" contains details of the proposed expenditures and revenues for 2017.

2. SUMMARY OF 2017 PLANNED ACTIVITIES

The following is a summary of the activities planned by the Board in 2017.

The overall purpose and operation of the Bardawill Pumphouse has been evaluated and with the planned improvements, the intent is for the central portion of the Main Drain to be controlled independently for the purpose of inlet irrigation water and improved response to water levels, as a result of intensifying storm events. This station will see a variable frequency drive installed to improve its efficiency both in performance and power consumption.

Additionally, at Bardawill, the inlet pipe that accommodates irrigation within the Main Drain was in disrepair, requiring the pipe to be replaced. This took place early in the Fall of 2016; this improvement was unplanned but a necessary and reactive maintenance activity. To further improve the Bardawill pumping station operations, this station will be fitted with this variable frequency drive.

The benefit of this implement is twofold; as the soft start reduces the initial power draw, slowly increasing as needed. This will reduce energy consumption and related hydro expenses as well as act as a preventative maintenance protocol for the long term as it is far less taxing on the motor overall.

Generally, with all pumping stations under the Board's purview, a standardization process will be undertaken. This activity has a twofold effect as well, as it will ensure that each Pumping Station under the Board's purview operates alike, and the respective Standard Operating Procedure for each will ensure efficiency, regardless of the operator.

In 2014, the Charlie Davis Pumphouse underwent a structural evaluation. The engineer recommended that due to the structural integrity of the building, it should be decommissioned. This work is set to occur in 2017. In its place, options will be explored to provide a back-up power supply to the Bardawill Pumphouse.

There are some safety upgrades which remain to be undertaken but scheduled for 2017, which are required for each Pumphouse that includes installation of necessary work platforms and required guards, safety lighting and hand rails at the Professor Day, Peterman and the Art Janse Pumping Station.

An Electrical engineer will be retained to recommend an appropriately sized emergency power supply for the Bardawill and Art Janse Pumping Station, since the Report's adoption in 1993, the specifications called for a diesel generator to be provided for as emergency back-up power. The generator was to be sized in order for the duty pump as well as two of the large pumps to operate through power interruptions. An automatic switch gear had been installed to accommodate a generator through the original construction.

Morris Road Capital Project

The Board continues to oversee the Morris Road Drain Capital Project which is a branch of the Bradford Small Scheme. This report was provisionally adopted in accordance with the Drainage Act, in 2016, in which recommendations for re-alignment of the existing drain, and improved maintenance, in order to provide sufficient drainage have been set out.

The Morris Road Drain originally built in the 1920's, has had several storm water connections from the urban area and may be subject to an Ontario Water Resources Act approval.

The Board and its staff continue to work with the Town's engineering staff who are working on the southeast arterial road capital project as these two capital projects are in close proximity to one another in timing and location.

In late 2016, the Board carried out both a Prequalification process followed by an invitation-only Request for Proposal to carry out the construction of the work of the Morris Road Drain Report. At the time of preparing this Business Plan, the Board had awarded the work and ground has begun to break.

GOVERNANCE / ADMINISTRATION

The Board continues to fine tune its governance and administration by addressing and improving current health and safety policies and procedures. This includes safe operating procedures for the heavy equipment (dredger, barge, and excavator, etc.) as well as administrative policies and procedures.

Board staff continue to work with local groups to help educate elementary schools on the Holland Marsh. These collaborative efforts may continue in 2017; working with local groups to educate students on the agricultural and historical significance of the Holland Marsh.

MAINTENANCE AND OPERATIONS

The pumping stations, main drain and perimeter canal system are maintained on an ongoing basis.

Perimeter Canal Maintenance Program / Debris Removal

Main Drain Maintenance (main internal drainage channel)

Maintenance and operations of five Pumping Stations

There are approximately 53 drains inside the Holland Marsh drainage scheme. The Board has established for some time now, a rotational cycle of maintenance for these internal drains. In relation to these interior drain repairs, ongoing culvert assessments are occurring on existing crossings to replace deficient culverts. This work is being contracted out to enable as many repairs as possible in the year ahead. However, as

a result of more frequent and flashy weather patterns, including wind storms and rain events, Board staff are required to maintain and clean out drains that fall outside of the schedule, on an as needed basis.

At the Art Janse Pumping Station, design will be required for a "stop log" wall; as this was originally required, per the report but was never installed. Dimensions and existing conditions were noted during the sump area cleanout. This will aid in the design as the pumphouse will not require to be de-watered again for the design work.

Additionally, the Sheet piling at the outlet of the Art Janse Pumping Station requires cosmetic repair due to extensive rusting. These panels will be repainted to inhibit further rust formation.

The newest addition to the maintenance rotation is the Horlings Drain and respective Pumping Station. Thought will be required to determine an adequate fee when implementing the levy for this scheme, ongoing. Current options include 1) implement an annual levy with/or in addition to a debt retirement fee, or 2) implement an annual debt retirement fee and charge out maintenance as needed. As this capital project is close to completion, the debt retirement should commence forthwith.

Accordingly, the following drain maintenance works and operating activities are scheduled for 2017:

Bylaw 2009-042

Perimeter Canal Maintenance Program / Debris Removal / Dredging

Bylaw 595A

Main Drain Maintenance (main internal drainage channel)

Bradford Small Scheme

Horlings Drain

As well as maintenance and operations of the following Pumping Stations;

1. Professor Day;
2. Peterman;
3. Bardawill;
4. Horlings; and
5. Art Janse Pumping Station

Interior Drains include the following:

BRADFORD:

No drains scheduled.

KING TWP:

Bylaw 2001-161,

King Interior Drain 10

King Interior Drain 10(A)

King Interior Drain 10(B)

King Interior Drain 10(C)

King Interior Drain 10(D)

Bylaw 2000-118,

King Interior Drain 11

King Interior Drain 11(A)

King Interior Drain 11(B)

King Interior Drain 11(C)

King Interior Drain 11(D)

Bylaw 2000-150,

King Interior Drain 12

King Interior Drain 12(A)

King Interior Drain 12(B)

King Interior Drain 12(C)

King Interior Drain 12(D)

Bylaw 2000-10,

King Interior Drain 14

CAPITAL WORKS

HOLLAND MARSH DRAINAGE SYSTEM CANAL IMPROVEMENT PROJECT

The Holland Marsh Drainage System Canal Improvement Project which began in June 2010 was completed in 2016. There are a couple exceptions to this statement as remedial work continues to address berm and swale height, as well as engineering and grant preparation work, however, capital work has been completed.

Mandatory post-construction monitoring will be ongoing as required. to comply with the Dept of Fisheries and Oceans authorization permit.

The Board will continue to partner with local watershed groups to restore the perimeter berms with vegetation as funding allows.

HORLINGS DYKE REPAIR

Repairs have been underway since late 2014. The remaining remedial work includes implementing the offsetting measures required in accordance with the Fisheries Act permit through DFO. Continued work will be required at the North Channel due to highly unstable soil conditions, through 2017.

Again, the Board will need to determine a debt retirement fee for capital works as well as a levy for ongoing maintenance, for this drainage system.

MORRIS ROAD DRAIN REPAIR

The appointed Engineer filed the Final Engineering Report, and it has been adopted by BWG Council. The Board has undertaken the statutory requirements set out under the Drainage Act which includes landowner consultation and appeals before third reading took place before Council, in August 2016. Prequalification of contractors followed to invite prequalified proponents to submit a tender to undertake the works.

At the time of this draft Business Plan, the tendering process for construction was underway.

The Board is working closely with BWG's Development and Engineering Services dept. to ensure this drain reconstruction and the South East Arterial Road (SEAR) plan transition as smooth as possible.

HOLLAND MARSH RIPARIAN BUFFER PROJECT

The Board was approached by Ontario's Ministry of Agriculture and Food and Rural Affairs in 2014 with the intent of soil preservation of riparian lands which abut the Main Drain / Holland River. Through research and discussion, it has been determined that studies should be undertaken on the Main Drain to address documented soil loss due to bank stability, and the ripple effect of phosphorus loading and dredging activities.

The Board is still considering appointing an engineer to complete a report titled the 'Holland River Municipal Drain' which is contingent on funding and available grants. This project has received partial funding through various sources with the goal of implementing a buffer of riparian planting along the Main Drain. This work includes buffer and bank stabilization measures on either side of the river interface with the intent being to preserve the productive lands and potentially reduce dredging frequency.

The Lake Simcoe Region Conservation Authority is also partnering in this project, with its interests in improving erosion control and reducing phosphorus loading from the Holland Marsh.

The Holland Marsh contains valuable soil which is a finite resource that needs to be managed responsibly with its finite characteristics in mind. As a result of this unique characteristic, the Holland Marsh continues to experience soil loss and erosion as a result of wind and water.

While these issues directly impact the agricultural community the related drainage infrastructure is also impacted. The Board and its staff continue to face challenges in this regard, replacing pumps, pipe, and equipment in general to keep the system in optimal condition. A proactive nature is required to stay ahead of the issues that affect the system overall.

As the Holland Marsh is a unique area, it may require a unique approach. Accordingly, a different option may be to explore the current use and challenges of this system through a viable consultant, to establish a best management practice for this system.

Challenges include the method of maintenance, low lying areas at risk of flooding, current irrigation practices, riparian farming practices, all while complying with relative federal and provincial legislation.

SUMMARY OF EVENTS

2016 – A RECAP

- Bardawill Pumphouse experienced a pump failure in 2009 which was deemed beyond repair. In addition to the stainless knife-gate valve that was installed on the intake line and in order to accommodate irrigation requirements associated with this pumphouse, the structure is now commissioned for operation.

- Before its replacement, the existing inlet pipe at Bardawill was a gravity fed system. However, with the original design of the pipe (perched) to allow for draining and low canal levels, as water levels in the canal dropped lower than anticipated this summer the gravity system was no longer able to keep up with the irrigation draw to accommodate the main drain and the annual irrigation practices. The solution resulted in replacing the inlet pipe that runs beneath the road. This was completed in September 2016 and the system is now able to accommodate increased draws on the river as a result of drought-like conditions.

- The outlet pump required retrofitting the electrical to accommodate the new pump. This took place during the summer months and is considered complete. A soft start motor was installed to preserve the existing infrastructure. Variable frequency drives will further preserve the integrity of the infrastructure and will be pursued at a later date, in consultation with a qualified electrician.

- The Board hosted a Ribbon Cutting event to observe and celebrate the completion of the Holland Marsh Drainage System Canal Improvement Project (the Project) that concluded in 2016. The event was welcomed by local residents as well as members of the Board (both past and present) in addition to municipal and Board staff as well as upper tier agency delegates and MPP's. It was a catered event with a recognition presentation at the Springdale Christian Reformed Church documented by the local media groups.

- Also in late 2016, the Board was invited to participate in BWG's Open Government Week, where school groups were brought to BWG's Leisure Centre to meet staff and learn about their municipal services. Board staff were in attendance to educate groups on the agricultural community known as the Holland Mash nearby, demonstrating the benefit of tiled land in comparison to untiled land, in an effort to convey the concept of tile drainage to elementary school children. This same demo was provided in the past and continues to be well received.

- The sump area which houses the collected sediment from the pumping operations at the Art Janse Pumping Station was at its capacity and required a full cleanout. Contractors were on site for approximately one week excavating the material that had accumulated over the years. This resulted in the sump area being fully dredged and cleaned out.

- The Scotch Drain in BWG was scheduled for maintenance in 2016 as part of the 3 year maintenance schedule however, due to the Section 76/78 report that was prepared, this drain was been maintained ahead of schedule and required minimal attention in 2016.

- The Wanda Street culvert required resetting after the new report was adopted and it had been replaced by public works staff early in 2016. The Board's vendor of record for interior drain maintenance was directed to undertake work to ensure it was set at the correct elevation, this was completed in late 2016.

- The Board's permanent casual part time employee continues to do the routine and periodic inspection of the pumps and drainage related infrastructure.

- Furthermore, the Drainage Superintendent remains employed part-time, and the remainder of his timetable is occupied with BWG's Stormwater Management within the newly restructured department of Community Services.

- The Board continues to participate in the Electrical Safety Authority's Continuous Safety Services ("CSS") program. The CSS agreement was amended to include these sites as of November 2010, and the agreement will be renewed again in April of 2017.

- Tours of the Holland Marsh continue to be provided to various ministries and organizations including OMAFRA, MOE, OFA, DSAO, LICO, York Region and the LSRCA, upon request.

- Board staff completed a Request for Proposal (RFP) exercise for establishing a Vendor of Record for maintenance work required on the interior drains. RFP submissions resulted in a listed Vendor of Record (contractor) for all of the interior work that arises for a 3 year period. This contract is entering its 2nd year.

- Board staff completed a Request for Proposal (RFP) exercise for establishing a Vendor of Record for maintenance work required on the perimeter canals and main drainage channel. This RFP process resulted in a listed Vendor of Record (contractor) for all of the work required on these larger drainage systems and is valid for a 3 year period. This contract is entering its 2nd year.

HORLINGS DYKE REPAIR

- Upon the receipt of a Petition under the Drainage Act, among other requirements of the Ministry of Agriculture and Food, the Town appointed an engineer to undertake emergency repairs under Section 124 followed by a full report under Section 4 of the Drainage Act.

- Highly publicized by the media, the productive lands on the north side of Bridge Street, behind the GO Station were subjected to two separate incidences where

mass flooding took place due to poor dyke construction, poor dyke maintenance as well as high water levels and high winds over a prolonged period of time which finally caused undermining of the existing dyke.

- After extensive planning and preparation, including approval from the then Minister of Agriculture and Food for emergency repair work under the Drainage Act, the area is now in the process of being repaired to the standards of a professional engineer and is now considered and will be treated as a municipal drain going forward.

- This project is in its final stages of completion. Work for 2016 involved erecting a new pumping station and redirecting water by excavating and filling in an area at the north east portion of the dyke, where the berm originally breached.

- The pumphouse has been commissioned however the latter component is taking longer to complete than anticipated.

MORRIS ROAD DRAIN REPAIR

- An engineer was appointed to undertake Section 76 and 78 work on the Bradford Small Scheme, in particular the drain which runs along the west side of the lands, which outlets into the north perimeter canal of the large scheme.

- The engineer appointed, made a presentation to the Board and BWG Council in 2015, with options for repair, considering financial implications as well as estimated construction timelines for each.

  In September, the Town directed the appointed engineer to complete a Final Report based on these findings.

- The Final Report was filed with the Town of Bradford West Gwillimbury (the Town) and the Board in April of 2016. Board staff carried out its statutory requirements for notification to assessed landowners as is required pursuant to the Drainage Act. The Board carried out its duty to hold a Court of Revision wherein, 5 residents were in attendance but no appeals were filed.

- The Town gave the Final Report provisional bylaw shortly thereafter enabling the Board to undertake the process of procurement through a prequalified contractor and subsequent invitation based request for tender. The Board has since awarded the tender to a qualified contractor and construction has only recently commenced.

BWG INTERIOR DRAIN REPORTS

- An engineer was appointed by the Board under Section 76 and 78 of the Drainage Act to prepare drainage reports on the interior drains of BWG. One of the reasons for this exercise was due to the fact that over the years there had been a number

of crossings/culverts installed since the original construction that it was negatively affecting maintenance of the drains.

- Since then there have been two petitions for drainage. Both reports were filed on the same date, and recently received provisional reading by BWG Council. Accordingly, a Court of Revision date has been set for both, the initial stage of appeals.

HOLLAND MARSH RIPARIAN BUFFER PROJECT

- In an effort to preserve valuable farmland and soil from being lost due to erosion along the main drain channel, the provincial Ministry of Agriculture, Food and Rural Affairs, the Federal Department of Fisheries and Oceans and the Lake Simcoe Region Conservation Authority have partnered with the Board with the common goal of implementing a buffer of riparian planting along the interior channel/Main Drain of the Holland Marsh.

- This work was undertaken as maintenance of the channel on an ongoing basis while a small pilot area was funded through respective partner grant programs. Often times, the construction costs have been offset by the tipping fees collected by the contractor.

3. GOVERNANCE / ADMINISTRATION

The Board has now refined its business practices, and continues to set standard operating policies and procedures, as the need arises as well as establishing adequate health and safety protocols in relation to the maintenance of the Holland Marsh Drainage System.

The annual operating costs for the governance of the Board remains at approximately $165,000.

The Board's forecasted expenditures remain highly predictable and the governance portion of the budget is documented in the attached Budget, as "Appendix A". These costs which are included in the business plan for 2017 for the governance of the Board are contributed to, evenly from the general revenues of BWG and TOK.

Capital works items include Morris Road Drain, Horlings Dyke Repair. Any work to improve the interior channel or continuing with the Holland River Municipal Drain Buffer Project remains in the discussion and/or design stages.

4. MAINTENANCE AND OPERATIONS

Numerous drain maintenance activities are carried out each year, on a scheduled rotational basis within the Holland Marsh; with the objective being to keep the drainage system functioning in the manner prescribed by the original engineer's report for the

Holland Marsh Scheme which was originally adopted in 1924 and also the subsequent reports on interior drains. This work generally consists of sediment excavation, shaping of stream banks, removal of trees and debris, etc. throughout the internal drain system as well as the main drain, pumping station activities and perimeter channels.

Water levels within the Holland Marsh are managed with five pumping stations, three inlets and two sluice gates. These five pumping stations work to control the water levels inside the Holland Marsh by pumping water out in times of spring runoff and heavy rainfall. Two of the stations are also utilized as inlets to increase water levels from the perimeter canals which are supplemented by the west canal inlet and sluice gate when water levels inside the Holland Marsh are too low to provide adequate irrigation for crops.

The completed perimeter canals that have been relocated now require periodic maintenance in accordance with the adopted drainage report. This new report requires continued maintenance including obstruction removal, repairs and preservation of the berms, soundings and excavation of deep pools as well as monitoring of profiles and cross sections. This includes occasional cleanouts at crossing structures which contribute to accumulated sediment and result of reduced hydrologic flows.

There is also technical maintenance work carried out which is performed under the supervision of the Drainage Superintendent. The annual salary and operating expenses for the Drainage Superintendent are funded as part of the Holland Marsh's

annually planned maintenance and operations activities which is administered through the Ontario Ministry of Agriculture, Food and Rural Affairs' Agricultural Drainage Improvement Program.

The Ministry provides municipalities with a significant annual grant toward the costs of employing a drainage superintendent, pursuant to Section 4 of the Agricultural Drainage Infrastructure Program.

The Ministry's maintenance program, in the past, has provided a 33% grant on eligible lands that are actively farming, to offset drain maintenance assessments.

The following is a list of the drain maintenance and operating activities which are scheduled for 2017:

Bylaw 2009-042

Perimeter Canal Maintenance Program / Debris Removal

Bylaw 595A

Main Drain Maintenance (main internal drain channel)

Bradford Small Scheme

Horlings Drain (initial maintenance event, post-construction)

As well as maintenance and operations of five Pumping Stations;

1. Professor Day;
2. Peterman;

3. Bardawill;
4. Horlings Drain Pumphouse; and
5. Art Janse Pumping Station

Interior Drains include the following:

BRADFORD:

No Drains scheduled.

KING TWP:

Bylaw 2001-161,

King Interior Drain 10

King Interior Drain 10(A)

King Interior Drain 10(B)

King Interior Drain 10(C)

King Interior Drain 10(D)

Bylaw 2000-118,

King Interior Drain 11

King Interior Drain 11(A)

King Interior Drain 11(B)

King Interior Drain 11(C)

King Interior Drain 11(C1)

King Interior Drain 11(D)

Bylaw 2000-150,

King Interior Drain 12

King Interior Drain 12(A)

King Interior Drain 12(B)

King Interior Drain 12(C)

King Interior Drain 12(D)

Bylaw 2000-10,

King Interior Drain 14

The annual maintenance and operation costs for 2017 are estimated at $404,440. Revenue tallying this amount is derived from OMAFRA grants, landowner and municipal contributions.

5. CAPITAL WORKS

The following capital works are proposed for 2017.

HOLLAND MARSH DRAINAGE SYSTEM CANAL IMPROVEMENT PROJECT

Although the Project is officially complete, Board staff will continue to work with municipal staff to facilitate completion of the remaining municipal structures and related maintenance of the scheme in general.

HORLINGS DRAINAGE PROJECT

In 2013, the first breach occurred prompting a petition for the existing ditches to be converted to municipal drains. The contract was let in early 2014, and drainage works are close to nearing completion; with the final phase being the relocation of a pumphouse and realignment of a tributary which feeds into the West Holland River. All that remains is final approval from the Building Department for the pumps tation structure.

MORRIS ROAD DRAINAGE PROJECT

In 2013 the Board awarded a tender to K Smart Associates Ltd. (KSAL) to prepare a Preliminary Engineering Report on the options available to improve the existing drain. KSAL filed this report with the Board in July 2015, and BWG Council approved the recommendation to prepare a Section 78 Report in accordance with the Drainage Act, R.S.O. 1990, and this was filed in April 2016. The specifications for the Report include

the creation of a new bisectional channel, to address local flooding issues correlated to urban storm water runoff. This will also benefit interior landowners on the small scheme by providing improved access to water. The Report also includes specifications on repair and redirection of the existing channel to provide an improved outlet.

The Board plans to manage the following issues as its top priority and accordingly 2017 will require:

- Investigate options for improved management of the Main Drain, which is first and foremost a municipal drain but is also used as an irrigation source. While Board staff make every effort to accommodate the current use of the drain as an irrigation source, it is challenging to accommodate both the purpose of the drain and this ancillary use.

- This may require a strategic analysis of the Main Drain, its present conditions and future maintenance protocols as well as an assessment of the drain in relation to current riparian land use and may include retaining a specialist to determine best management practices for continued use of the drain as both a source and storage of water. A Request for Ideas may be pursued in an effort to consider innovations not yet discovered.

- A continued effort to acquire additional financial support for the capital items discussed for 2017 or which are already underway. Other organizations with funding capacity have already been in contact with the Board office. The success of these endeavours is contingent on the timing aspect of the works proposed and the scope of grant eligible.

- A continued effort on fostering positive relationships formed with various ministries (MNR, MOE, LSRCA, DFO etc.) that have a direct correlation to the Holland Marsh.

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