

STAFF REPORT

To: His Worship the Mayor and Members of Council

From: Jeff Carswell, Chief Administrative Officer

Re: Master Drainage Plan for Village of Tavistock

Date: July 14, 2006

Background:

As directed by Council at the June 21st meeting, staff have obtained a proposal from RJ Burnside to provide a Master Drainage Plan for the Village of Tavistock. The proposal document is attached for Council's consideration. Paul McIntyre will be at the meeting to review the proposal and answer any questions.

Discussion:

The proposal sets out a clear work plan, broken into various stages that appear to be quite logical. In my discussions with John Burns and Paul McIntyre, they indicated they have completed Master Drainage Plans in the past and this format worked well for all parties involved. It created clear deliverables throughout the process and did not commit the municipality for work that an earlier stage indicates may not be required.

It is proposed the Master Drainage Plan will be undertaken in accordance with the Municipal Class Environmental Assessment. This will streamline construction if the project to be completed is an urban style storm system rather than a municipal drain. I anticipate the Master Drainage Plan will also outline the options to construct specific works and whether the work should proceed under the Drainage Act or as an urban storm drain system. In my discussions with John Burns and Paul McIntyre, it was suggested that it may be more appropriate to construct drains as urban storm drains rather than using the provisions of the Drainage Act.

It appears to me, the proposal is well thought out and if completed in its entirety will provide the Township with a clear plan to lessen public and private property damage due to severe storms. It should be noted, this will only provide the overall plan. It will not actually construct drains or systems. This construction will also need to be paid for in some manner and may require additional detailed engineering prior to construction.

Normally obtaining services such as a Master Drainage Plan is tendered for Request for Proposals are solicited from a select number of firms. In this case, Council authorized staff to obtain a proposal from RJ Burnside only. Council needs to be aware that the normal purchasing procedures have been suspended for this proposal.

The Township has several options to pay for this project which is not included in the 2006 Budget. They include borrowing, utilizing reserves, financing through a 2006 deficit, use of funds from the Boundary Adjustment Agreement or a combination of the above. Staff would suggest that the exact method of paying for this project be determined closer to year end. At that time, there will be a much better understanding of how the Township's general operations fared and what the exact costs incurred for 2006 will be.

Recommendation:

1. That Council engage RJ Burnside to complete a Master Drainage Plan for the Village of Tavistock as setout in their proposal dated July 12, 2006
2. That Council instruct the CAO to propose options for the exact method of paying for this project closer to year end when more financial information for 2006 is known.

Report prepared
and submitted by:



Jeff Carswell, AMCT
Chief Administrative Officer



BURNSIDE

Master Drainage Plan Township of East Zorra - Tavistock

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July 12, 2006

File No: MSZ 11487

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1.0 Introduction

1.1 Background

The Village of Tavistock and surrounding areas have experienced rainfall events of significant magnitude over the past 15 years. As a result, substantial flooding on both public and private property has caused extensive damage. The largest recorded events have occurred in the following years: 1992, 2002, 2005 and more recently May 2006.

The intense rainfalls resulted in numerous residences experiencing, various levels of flooding in their basements. In addition to the basement flooding, both public right-of-ways and private property experienced substantial surface flooding.

Improvements to infrastructure systems have been ongoing since the flooding in 1992, which has reduced and in many cases minimized flooding damage in various parts of the community.

The need for comprehensive Master Drainage Plan (MDP) has been discussed in the past and again more recently. A MDP will undertake a complete investigation of the drainage infrastructure within the Village of Tavistock. The intent of the MDP is to minimize and/or eliminate damage to public and private properties by storm water flooding to a level that is practically and economically acceptable.

1.2 Purpose and Approach

A Drainage Master Plan is intended to:

- Provide a clear definition and inventory of the existing subsurface and surface infrastructure components within the Village of Tavistock (i.e. storm sewer system, overland flow system, grading and Municipal drains);
- Identify all external areas contributing runoff to the Village;
- Record attributes such as location, condition, capacity, and type for each of the drainage components. Infrastructure components operability will be assessed;
- Identify deficiencies in the surface and subsurface drainage components and determine solutions and/or upgrades for deficient components;
- Identify the preferred solution for upgrading, prioritize each individual component's need and complete preliminary cost estimates; and
- Identify and present a staged Implementation Program coordinated with the Township Road Management program.

It is proposed to undertake the MDP in accordance with the guidelines and approach outlined in the Municipal Class Environmental Assessment Document, June 2000 (EA). The Municipal Class Environmental Assessment not only allows for the planning and design processes by which Municipalities can plan and implement works on a project-by-project basis, however, it also recognizes the benefits of beginning the

planning process by considering a group of related projects (i.e. community storm drainage components). By including the MDP Municipal Class into the EA process the needs and justification for individual projects and their association in the broader context are better designed and included under the EA.

Section A2.7 of the Municipal Class EA document states that,

“Master Plans are long range plans which integrate infrastructure requirements for existing and future land use with Environmental Assessment planning principals. These plans examine an infrastructure system or group of related projects in order to outline a framework for planning the subsequent projects and/or developments. At a minimum Master Plans address Phases One and Two of the Municipal Class EA process.”

For your reference, The Municipal Class EA Planning and Design Process is included at the end of this work plan.

Under the Municipal Class EA process, Master Plan such as this can follow a Schedule “B” level of Municipal Class EA complexity. As such, The MDP will comply with Phases 1 and 2 of the Municipal Class EA process, and will also involve the public and relevant approving agencies. Public Information Centres (PICs) are not required under the scheduled B approach, however a series of concurrent public meetings will be held that will provide the opportunity for shareholder input to the Municipal Class EA process.

Including the MDP under the Municipal EA process will not add extensive additional work and complexity to the project. However, after completion, the process to obtain Ministry of the Environment (MOE) approval to construct works, will be streamlined if the MDP has been completed in accordance with the Municipal Class EA process.

2.0 Work Plan

2.1 General

The work plan has been phased into six separate segments. It is anticipated that each segment will take four to six weeks to complete. At the end of each phase, the study team will consult with the appropriate Township committee and/or staff prior to proceeding with the next phase of the MDP.

A budget range is shown for each of the phases of the study. It should be noted that the tasks in a particular phase of the study maybe substantially impacted by the findings and outcome of a previous phase. Therefore it is advisable to revisit estimates before each phase. The Township may deem it prudent and/or appropriate to focus on one key component that is found to be critical and dismiss pursuing a

particular component that is not found to extensively impact the drainage within the Village. For example it may be found that all the storm sewers within the Village have adequate capacity therefore the focus would need to be only on overland flow routes, grading and/or outlet drainage channels.

At the end of each phase an amended budget will be provided to the Township prior to commencing with each subsequent phase of the study. This will enable the Township to control expenditures and if necessary stage the MDP to meet Township budgetary restraints, (i.e. defer the project for a period of time).

2.2 Existing Municipal Data

It is assumed that all existing “*as built*” and record drawings for subdivision grading and storm sewer systems will be made available for use during the generation of the MDP. Making use of existing record drawings can substantially reduce topographical survey and fieldwork. It is hoped that at least half of the Village will have accurate record drawings available. Only site verification as opposed to a complete topographical survey of those areas will be required.

It is also anticipated that electronic base drawings in an AutoCAD format showing the road network and lot fabric of the Village can be provided by either the Township or the County of Oxford. Again, the availability of this information greatly reduces the overall costs.

Local knowledge and recorded information by senior Township staff will be used to fill information voids throughout the Village.

2.3 Work Plan Stage

A. Infrastructure Data Collection

This the initial phase of the Master Drainage Plan will involve accumulating background information and include the following:

- Obtaining, amending and updating a Village Base Plan (obtained either from the Township or the County);
- Review all subdivision “*as built*” drawings;
- Verify on site survey spot checks;
- Complete a topographical survey for those areas that “*as built*” information is not readily available (storm sewer systems, overland flow routes and outlet channels) will be considered;
- Any road reconstruction programs;
- Large parcels of publicly owned lands (i.e. parks, open space, etc.); and
- Any flood plain mapping.

At the end of Phase One it is anticipated that a complete drawing and database of the existing drainage infrastructure and major external areas will be completed

Stage A Budget Range: \$20,000-\$40,000

***Note:** The Municipal Class Environmental Assessment Process will commence at this point of the study. The notices of commencement will be placed in local papers and circulated to various agencies and adjacent Municipalities outlining the general intent of the MDP study and soliciting comments from the various parties.*

B. Assessment of Existing Drainage System Capacity

This phase of the study will look at the drainage infrastructure in the Village and determine its capacity to accommodate anticipated runoff flows.

The following tasks will be completed:

- Capacity of existing sewers, catch basins, and overland flow routes will be calculated;
- Flows will be calculated for sub-catchments areas including all contributing external areas, and major water sheds (Municipal drains);
- Compilation of “storm sewer design sheets; and
- cursory evaluation of sewer system levels of service including obvious sewer and overland flow bottlenecks.

At the end of this phase of the study the base plan of the Village will now include the capacity of various storm drainage infrastructure works and databases. Information will be compiled indicating the level of storm sewer capacity, macro and micro drainage routes and existing water shed and sub water shed areas.

Stage B. Budget Range: \$15,000 - \$20,000

C. Identify High Risk Community Zones

Stage Three of the MDP study will expand upon the information generated in Stage B to identify comparative risk zones within the community. The level of risk for areas within the community will be based on an assessment of:

- Residential grading;
- Storm sewer capacity;
- Overland flow routes; and
- External drainage impact (up stream and downstream).

A database and plan of the Village outlining areas of higher flooding risk within the Village will be compiled. This information will be the opportunities and constraints that will subsequently form the basis to determine appropriate means of decreasing vulnerability to flooding.

Stage C Budget Range: \$3,000-\$5,000

D. Alternative Drainage Improvement Concepts

Drainage concepts and schemes to reduce flooding potential within and protect the higher risk areas of the Village will be determined relative to the vulnerability of areas determined in Phase C of the study. The solutions may include all or part of the drainage works listed subsequently:

- Concept designs for local sewers and drainage systems;
- Concept design route for trunk storm sewers and channels;
- Concept routes for major overland flow;
- Design concepts for micro flow routes and local grading; and
- Integrating storm water management facilities into concepts.

Alternative drainage concepts will be generated during this stage of the study and will be displayed on the base and AutoCAD drawing. The alternative solutions will be shown in chart and drawing format.

Stage D Budget Range: \$12,000-\$15,000

E. Preferred Drainage Concept

The individual merits of each drainage infrastructure upgrade suggested in the previous stage of the study will be analyzed. They will be compared from cost/benefit perspective. Specific improvements will be identified for each of the infrastructure components.

The preferred alternative for upgrading each infrastructure component will be identified and illustrated on the overall Village drawing. Preliminary cost estimates will be determined for each component of the proposed drainage improvements.

Stage E Budget Range: \$7,000-\$10,000

F. Implementation Program

It is not expected that the Township will undertake a single program to upgrade all of the works needed within the Village at one time. Rather it is expected that the overall program will be implemented over a number of years. The final stage of the study will

compile an implementation program in conjunction with the Townships guidance and anticipated available budgets.

The phase of the MDP will:

- Identify Municipal Class EA schedule associated with each report.
- Estimate the individual upgrading component budget range;
- Prioritize proposed upgrading works (WRT. costs/benefit and compatibility with road management program);
- Identify a long-term program to upgrade all deficient components of the Village of Tavistock drainage system; and
- Prepare a specific timeline.

An overall plan for the Village of Tavistock identifying all of the proposed drainage system upgrades along with a suggested order of completion will be the result from the final stage of the study. The plan will be accompanied by a detailed database of the proposed works and their associated costs, along with the projected year of construction.

Stage F Budget Range: \$8,000-\$10,000

Note:

- 1) As part of the final stage of the study, a design criteria for future drainage works for Tavistock will be generated. This can be adopted by the Township as a standard and subsequently require all growth and re-development areas within the Village to adhere to it.
- 2) A Notice of Completion will be placed in local papers in accordance with the Municipal Class EA Process. Information generated through the study will be maintained at the Township Municipal Office and available for viewing by the general public, in accordance with Municipal Class EA procedures.

3.0 Summary

The foregoing stages of the Tavistock Master Drainage Study will develop a program of works to be undertaken to provide added protection to areas within the Village vulnerable to flooding. It will include an implementation program.

The next stage is to implement each project beginning with the completion of the Municipal Class EA Process. Many of these project will be Schedule "A" (pre – approved), however some may be more complex. Following this will be the design of specific drainage upgrades, preparation of construction, specifications and drawings, tendering, and construction of the drainage upgrading works. The design and construction of the individual components can be phased or can be undertaken all at one time.

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