Information Package
EA Documentation

City of Kitchener
Municipal Class Environmental Assessment – Schedule ‘B’
South Strasburg Gravity Trunk Sanitary Sewer
INFORMATION PACKAGE: PIC No.1 – November 29, 2007

1.0  Project Overview

This document provides information with respect to the provisions of trunk sanitary
gravity trunk sewer servicing for future development lands in south-west Kitchener. The
general study area encompasses lands generally west of Strasburg Road, and
extending beyond Fisher Hallman Road to the west, as shown on Figure 1.0.

Stantec Consulting Ltd (Stantec) has been retained by the City of Kitchener to complete
a Class Environmental Assessment (EA) for the sanitary servicing in this future
development area.

1.2  Class Environmental Assessment Process

The project is being completed in accordance with the Class Environmental
Assessment process. The EA process presented in Figure 2.0 includes a number of
distinct phases:

- Phase 1: Identification of the problem and justification for the undertaking
- Phase 2: Identification of alternative solutions and methods of resolving the
  problem
- Phase 3: Identification of alternative methods of implementing a preferred solution
  considering environmental effects and methods of mitigation
- Phase 4: Preparation of an environmental study report documenting the rationale
  for the project and the study process
- Phase 5: Monitor construction to ensure adherence to environmental provisions
  and provide specifications to reflect the concerns raised during the planning and
  design process

The Class EA process provides for three levels of evaluation – Schedule “A”, Schedule
“B” and Schedule “C”. Schedule “A” projects are considered exempt from the Class EA
process, while Schedule “B” projects are approved, subject to agency screening after
completion of Phases 1 and 2. Schedule “C” projects require the completion of all five
phases of the Class Environmental Assessment including the filing of an Environmental
Study Report (ESR) documenting the findings.

Based on the preliminary identification of alternative solutions, this project is expected
to be a Schedule “B” project and therefore will require completion of Phases 1 and 2
only. The Final Report (Phase 2 Summary Report) will be placed on public review for a

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30 day review period, following the completion of the Public Information Process. Once the review period has lapsed and Council of the City of Kitchener have approved the document, the project would proceed to the implementation phase including design and construction.

1.3 Previous Studies

In June of 1994, The City of Kitchener approved a Class EA study report entitled *Middle and South Branches, Strasburg Creek Trunk Sanitary Sewer Alignment Study* (MTE Consultants Inc.). This document identified the preferred alignment for the trunk sanitary gravity trunk sewer extending from Blehn Drive westerly through Plan of Subdivision 30T-88015 (Aberdeen Estates, Registered Plan’s 1836-1837) to Strasburg Road. The trunk gravity trunk sewer was ultimately constructed (concurrent with development of Draft Plan 30T-88015) to the limit of said plan in January of 2001.

As part of ongoing EA work necessary for upstream development lands, Stanley Consulting Ltd. was retained to complete the *Middle Strasburg Creek Trunk Sanitary Sewer Route Alignment Study* (approved July 1998), which services development lands generally north-west of Huron Road (Fischer-Hallman/Bleams Road area). Due to mandatory review requirements of the EA process, this study was updated by Stantec Consulting Ltd. in 2003 (*Middle Strasburg Creek Trunk Sanitary Sewer Route Alignment Study Addendum*). Physical construction of the initial phase of this trunk gravity trunk sewer was completed in October of 2003, which included the crossing of Strasburg Creek, and the extension of the gravity trunk sewer northerly across Huron Road.

1.4 Project Organization

The Study Team approach was established for this project to provide adequate guidance in the decision making process as the study proceeded. The following were members of the Study Team:

**City of Kitchener**
- Mr. Nick Gollan (Project Manager)
- Mr. Binu Korah, P. Eng. (Development Manager)
- Ms. Katie Anderl (Planning)
- Mr. Peter Wetherup (Community Services)
- Ms. Barbara Steiner / Mr. Sandro Bassanese (Environmental Planners)

**Grand River Conservation Authority**
- Ms. Samantha Lawson, Resource Planner
- Ms. Jennifer Wright, Aquatic Biologist

**Stantec Consulting Ltd.**
- Mr. George MacDuff, CET (Project Manager)
- Mr. Chris Powell, M.A. (Environmental Planner)
2.0 EXISTING CONDITIONS

An inventory of the existing conditions within the study area was completed to facilitate an evaluation of relative impacts of sanitary servicing alternatives on the existing natural and social environment. Existing conditions within the study area were identified in the following general categories:

- Natural Environment
- Topography and Soils
- Groundwater
- Social Environment
- Sanitary Servicing

Detailed evaluations of the existing natural environment and geotechnical conditions were completed as part of the consultant assignment, and are summarized in the following subsections.

2.1 Natural Environment

Stantec ecological staff completed a background review and detailed field investigations within the study area to identify and characterize the natural features and associated ecological functions.

A number of area sensitive bird species, including the Pileated woodpecker, Pine warbler, White-breasted nuthatch, Hairy woodpecker and Wood thrush, were identified within the study area. Amphibian breeding habitat was identified within the swamp community along Strasburg Creek, within the central woodland/wetland feature and within the cultural plantation along Huron Road for a variety of frog species. No endangered, threatened or special concern species were identified during the field investigations.

2.1.1 Topography and Soils

The study area can be characterized by three distinct regions including the rolling hills to the south and west, tableland throughout the central and north regions, and the defined valley lands of the South Branch of Strasburg Creek extending to the west. Proposed development extends away from the existing central wooded natural area, and occupies the tableland and hilly regions while avoiding the valley slope. Topographic relief ranges from 10 – 25 m from the southwest hills to the tableland. Existing overland slopes, not including the valley slope, average approximately 10% with general drainage in an easterly direction to the Main Branch of Strasburg Creek (towards Wards Pond).
2.1.2 Groundwater

Groundwater information has been derived from a number of boreholes and test pits completed onsite during geotechnical work by Naylor Engineering Associates Ltd. (November 2007). Since this work was recently completed, detailed soils and groundwater information will be provided at a subsequent PIC for review/discussion.

Groundwater seepage areas were identified (see Figure 3.0), located along the middle reaches of the South Branch of Strasburg Creek provide permanent, coldwater flows to the downstream wetland, watercourse and fish habitat features (see Figure 3.0).

2.2 Surface Water and Aquatic Resources

The prominent surface water feature in the study area is the South Branch of Strasburg Creek that flows west to east through the study area, outletting through a portion of the Strasburg Creek Provincially Significant Wetland Complex (PSW) to Ward’s Pond on the Main Branch of Strasburg Creek. This watercourse is known to support brook trout populations and spawning areas within the downstream reaches, as confirmed through an aquatic habitat assessment and electrofishing survey for this study.

The upper reaches of this watercourse originate in a deciduous woodland, swamp and meadow marsh community near the centre of the study area. Intermittent flows drain eastward through an agricultural field and cultural thicket prior to entering the large deciduous forest. Seepage areas within the forest provide permanent coldwater flows to the downstream wetland and watercourse features, which support brook trout populations.

Other small watercourses were identified within the woodland/wetland feature along Strasburg Creek, but none exists outside of the natural features. A portion of the study area is also subject to flooding during a Regional Storm Event and is located within the Regulatory Floodplain.

2.3 SOCIAL ENVIRONMENT

The existing social environment is described below through existing land use and the existing land use policies that govern future land use within the Brigadoon Community.

2.3.1 Existing Land Use

The Brigadoon Community area currently includes a mix of single lot rural and residential development (including schools, parks, and places of worship) and farm use. Land use immediately adjacent to the general study area is planned for future residential/commercial/employment land use.
2.3.2 Future Land Use

Future land use will be determined though land use planning under Section 51 of the Planning Act. It is anticipated that the forms of development likely to occur are a mix of residential, commercial, recreational, and potentially employment lands uses.

The following policies govern sanitary servicing for new growth areas:

2.3.2.1 Ministry of Municipal Affairs and Housing – Provincial Policy Statement

The relevant policy (1.6.4) states:

'1.6.4.1 Planning for sewage and water services shall:

a) direct and accommodate expected growth in a manner that promotes the efficient use of existing:

1. municipal sewage services and municipal water services, and
2. private communal sewage services and private communal water services, where municipal sewage services and municipal water services are not available.'

2.3.2.2 Ministry of Environment and Energy

The following objectives of the Ministry of the Environment and Energy "Guideline on Planning for Sewage and Water Services", dated July 1992, are relevant:

- To ensure that municipal infrastructure is planned for and utilized to the fullest to accommodate development
- To discourage the use of individual on-site sewage and water services for multi-unit/lot development

Further, Page 3 of the Guideline contains a provision which states that "The Ministry of the Environment and Energy [shall] not recommend approval for development proposed within a municipally serviced area unless adequate municipal sewage and water capacity are available".

2.3.2.3 Regional Municipality of Waterloo

The Regional Municipality of Waterloo Official Policies Plan (December 1998 Consolidation) contains the following provision:

"10.2.1.1 Notwithstanding any servicing designations in Area Municipal Official Plans, the following hierarchy of wastewater servicing options will be used to evaluate any development applications within the Region, except
where specific exclusions are made through this Plan. The feasibility of the options will be considered in the following order of priority:

a) Extension of servicing from a centralized wastewater treatment facility

b) Extension of servicing from an existing communal wastewater treatment facility

c) The development of a new communal wastewater treatment system

d) Individual wastewater treatment systems"

2.3.2.4 City of Kitchener

The servicing and utilities policies of the City of Kitchener Municipal Plan contain provisions which include the following:

"3. The City shall support the Regional Municipality of Waterloo, other agencies and levels of Government in their efforts to ensure there is an adequate water supply, sewage and solid waste disposal system for all existing and new development".

"6. Unless otherwise provided for in this Plan, all development with the exception of the following shall be on municipal water and full sanitary services:

i) Development shall be permitted on individual septic systems when associated with severances and existing legal lots in agricultural zones where it can be demonstrated to the satisfaction of the Ministry of the Environment and Energy or the Health Unit that individual septic services will not result in an unacceptable level of environmental impact.

ii) Development shall be permitted on communal sewage system and full municipal water in areas where full municipal sanitary sewage services are impractical and where it can be demonstrated to the satisfaction of the Ministry of the Environment and Energy that the provision of full municipal services is not feasible and that the proposed method of servicing will not result in an unacceptable level of environmental impact.

2.3.2.5 Grand River Conservation Authority

Any development within an area regulated by the GRCA requires the prior issuance of a Permit in accordance with the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses, Ontario Regulation 150/06. Development includes:
- the construction, reconstruction, erection or placing of a building or structure of any kind;
- any change to a building or structure that would have the effect of altering the use or potential use of the building or structure, increasing the size of the building or structure or increasing the number of dwelling units in the building or structure;
- site grading; or
- the temporary or permanent placing, dumping or removal of any material, originating on the site or elsewhere (Conservation Authorities Act, R.S.O. 1990, c. 27, s. 28 (25)).

In addition, the GRCA also reviews proposals on behalf of the Department of Fisheries and Oceans through their Level 3 Agreement to ensure compliance with Section 35 of the Fisheries Act.

### 2.3.3 Existing Sanitary Sewage Servicing

At present, a 900mm diameter gravity trunk sanitary sewer outlet has been constructed within the Strasburg Road right-of-way, to a point approximately 100m beyond the crossing of the Main Branch of Strasburg Creek. This gravity trunk sanitary sewer then extends northerly (as a 875mm diameter sewer), servicing the Middle Strasburg sewershed area. The existing 900mm diameter gravity trunk sanitary sewer is sized to accommodate flows from both the Middle and South Branch sewershed areas.

### 3.0 Sanitary Servicing Requirements

The proposed gravity trunk sanitary sewer will service future development generally west and south of its current terminus at Strasburg Road. Detailed sewer-sizing calculations will be addressed at the detailed design stage, however, the gravity trunk sanitary sewer has capacity based on the ultimate serviceable area defined in Figure 5.0, subject to zoning and the extent of developable lands. Future capacity analysis would need to assess any known downstream sewer constraints, to provide for the ultimate servicing of this sewershed area. For clarification purposes, the catchment boundary limits shown on Figure 5.0 are based on providing a minimum depth of sanitary sewer of 3.0m. This linework is conceptual (based on OBM mapping), and may be subject to change/revision as further information becomes available.
4.0 Identification and Evaluation of Sanitary Servicing Alternatives

The Class Environmental Assessment process represents an approved planning procedure to ensure that the potential effects of the project on social, economic and natural environments are considered in the evaluation of sanitary servicing alternatives. Background technical reports and other public information relating to the project were collected and reviewed as part of establishing the alternative design options.

The following sanitary servicing alternatives have been evaluated:

1. Do nothing
2. Construct a waste water pumping station and forcemain outletting to Strasburg Road.
3. Upgrade the existing gravity trunk sanitary sewer from its current terminus at Strasburg Road (adjacent to Draft Plan of Subdivision 30T-98201), and extend a gravity trunk sanitary sewer within the alignment of Huron Road to the limit of the "Becker Estates" lands.
4. Install a gravity trunk sanitary sewer extending southerly within the future Strasburg Road alignment, then westerly (within the valley lands of the South Branch of Strasburg Creek) to Fischer Hallman Road.
5. Install a gravity trunk sanitary sewer extending southerly within the future Strasburg Road alignment, then south-westerly (within the valley lands of the South Branch of Strasburg Creek) to a localized topographical draw extending to the mid-point of the "Becker Estates" lands.

4.1 “Do Nothing” Alternative

It is important in the environmental review process that all planning alternatives are adequately considered. Before developing and analyzing various servicing alternatives, the “Do Nothing” alternative was evaluated.

The Official Plans of the Regional Municipality of Waterloo and the City of Kitchener include provisions for development within and adjacent to the general study boundary area. The provision of a sanitary sewage system is a pre-requisite for development. It is therefore suggested that the “do nothing” alternative is not viable.

4.2 Sewage Pumping Station and Forcemain Alternatives

Given that there is sufficient area topographical relief to drain the majority of this gravity trunk sewershed via gravity to the existing sanitary sewage collection system, the consideration of any sewage pumping facilities was deemed unsupportable as a design alternative. It is important in all aspects of the EA process to consider/evaluate ALL potential design solutions, even those that appear at first glance to be unsupportable.
4.3 Upgrade of Existing Gravity trunk sewer; Extension of gravity trunk sanitary sewer along Huron Road.

- Gravity Alternative A – see Figure 4.0

While it is technically possible to replace the existing 675mm diameter gravity trunk sanitary sewer with a larger diameter 900mm diameter gravity trunk sanitary sewer, this work would require significant intrusion/disturbance to environmentally sensitive lands. A potential also exists for significant disruption to residential lands uses during any proposed upgrade works (temporary servicing interruptions). Furthermore, open-cut excavation would be required through the existing municipally owned storm water management (SWM) facility, as concrete-encasement was used to protect the existing gravity trunk sanitary sewer through the SWM block area.

The physical construction of a gravity trunk sanitary sewer (at a maximum depth of 14.0 metres) within the Huron Road profile can be accommodated, however, sewer construction at that depth is problematic in narrow rights-of-way. Significant project integration (ie the City is undertaking a detailed EA for the realignment /improvement of Huron Road) would be necessary to physically construct this reach of sewer, and significant impact to traffic flow in the Huron/Brigadoon area can be expected.

Due to the topographic elevation of Huron Road, a gravity trunk sanitary sewer would not service significant portions of future development lands (see Figure 4.0). This is problematic, as this particular type of infrastructure is funded directly through Development Charges. Furthermore, lands already under Draft Plan Approval (30T-95018, Stages 4/5/6) require an outlet to the existing gravity trunk sewer system; this option, although technically possible, would require the extension of additional infrastructure to meet growth needs. Accordingly, it is suggested that the Huron Road option is difficult to support as a long-term design alternative.

4.4 Gravity trunk sanitary sewer, Strasburg Alignment Alternatives

For this alternative, two (2) gravity trunk sewer alignment locations were established, as shown on Figure 4.0.

A description of the alternatives is as follows:

- Gravity Alternative B
  A deep gravity trunk sanitary sewer extending south along future Strasburg Road, then westerly within the valley lands of the South Branch of Strasburg Creek, extending to Fischer-Hallman Road on the north side of the central deciduous woodland/wetland feature.

- Gravity Alternative C
  A gravity trunk sanitary sewer extending south along future Strasburg Road, then westerly within the valley lands of the South Branch of Strasburg Creek, extending to Fischer-Hallman Road on the south side of the central deciduous woodland/wetland feature.
These design alternatives allow a gravity trunk sanitary sewer outlet for all lands within and adjacent to the study area, however, the lands containing the proposed alignment of future Strasburg Road are at this time privately held. Land acquisition may be necessary to construct the proposed gravity trunk sanitary sewer alignments, however, it is anticipated this would be addressed through applicable planning/development processes. Based on ongoing environmental work and analysis completed thus far, these options represent supportable alternatives.

4.5 Evaluation of Alternatives

Each alternative was evaluated against a full range of criteria including:

- Serviceable Area
- Social Environment
- Natural Environment
- Financial Requirements

The evaluations have been summarized in Table 1, with a brief overview provided in the following sections. It is important to note that the exact final location and configuration of the gravity trunk sanitary sewer would be determined by the developer’s consultants as part of their final detailed engineering design to satisfy applicable Draft Plan Approval Conditions with respect to plans of subdivision that require the subject sanitary gravity trunk sewer.

Potential environmental impacts may result through the replacement of the existing sanitary gravity trunk sewer located under a portion of the Strasburg Creek Provincially Significant Wetland (PSW). Extensive mitigation measures will be required during construction to manage groundwater within the construction area and to protect the adjacent wetland, watercourse and fish habitat from suspended sediment during dewatering. Site restoration of this wetland area would be required.

4.5.2 Alternative B – North of Central Woodland / Wetland Feature

Alternative B deviates marginally from that of Alternative C, in that it skirts the north edge of the deciduous forest community associated with the central woodland / wetland feature. This gravity trunk sanitary sewer alignment is entirely contained within the road rights-of-way (ROW) proposed in Stage 4 of Draft Plan 30T-98201. With regard to the alignment shown in the ROW, depths throughout same would be in the order of 10.0-12.0m, which is in keeping with City standards relative to construction of gravity trunk sanitary sewer facilities. Cost to construct becomes a factor in establishing a preferred alignment for this option.

Potential environmental impacts may result from the construction of a portion of the gravity trunk sewer within the floodplain of the South Branch of Strasburg Creek and adjacent to the woodland, wetland and seepage areas. Appropriate setbacks should be maintained from the wetland and woodland features to avoid impacts during construction. Mitigation measures will be required to minimize potential impacts on
flood levels and to avoid interference with groundwater that may affect the seepage areas and corresponding fish habitat.

4.5.3 Alternative C – South of Central Woodland / Wetland Feature

The alignment for Alternative C skirts the southerly edge of the meadow marsh community associated with the central woodland / wetland feature, and would involve sewer depth excavations in the order of 4.0-6.0m. As much of the area proposed for this alignment consists of a gentle cross slope (4-5%) over a large area, it is anticipated that gravity trunk sanitary sewer construction could be completed within a minimal amount of time (minimal impact). This alignment closely follows that of the schematic shown for this project in the City of Kitchener’s Development Charges Study. It is important to note that this alignment is located in a future staging area, and land acquisition may be necessary to construct the gravity trunk sanitary sewer.

Potential environmental impacts may result from the construction of a portion of the gravity trunk sanitary sewer across an intermittent reach of the South Branch of Strasburg Creek and adjacent to the woodland and wetland features. Appropriate setbacks should be maintained from the wetland and woodland features to avoid impacts during construction. Mitigation measures will be required to minimize potential impacts during the crossing of the watercourse and to avoid interference with groundwater that may affect the seepage areas and corresponding fish habitat.

5.0 Preliminary Preferred Alternative

The preliminary preferred alternative will be formally established after compilation/review of comments received from this PIC. Public input is essential in establishing the preferred alignment, and although the design alternatives have been rated and commented on in this text, it is our intention to listen to all interested parties prior to recommending a preliminary alternative. The preferred alternative will be established and presented at a subsequent PIC (Date/Time to be confirmed); meeting attendees will be notified of the preferred alternative in advance of the meeting date, and will be provided opportunity for further comment at this meeting.

We trust the attached information, and the detailed information/discussion presented during the PIC will help define/establish the preferred alternative.