# Tottenham Secondary Plan

## Water and Wastewater Servicing Municipal Class Environmental Assessment Report


MacViro

CORPORATION OF THE TOWN OF NEW TECUMSETH

January 2008

5226

January 30, 2008

Mr. Richard Vatri, C.E.T.
Manager of Engineering
The Town of New Tecumseth
P.O. Box 910
10 Wellington Street East
Alliston, ON  L9R 1A1

**Re: Environmental Assessment Report**
**Water and Wastewater Infrastructure Improvements for the**
**Tottenham Secondary Plan Area**
**Municipal Class Environmental Assessment**

Dear Sir:

We are pleased to present to the Town of New Tecumseth our Environmental Assessment Report for Water and Wastewater Infrastructure Improvements for the Tottenham Secondary Plan Area.

We trust that our report submission meets your requirements. Please do not hesitate to contact me at (905) 475-7270 ext. 277, should you have any comments or concerns.

Respectfully submitted,

**MacViro Consultants**

John Himanen, MBA, P.Eng.
Project Manager

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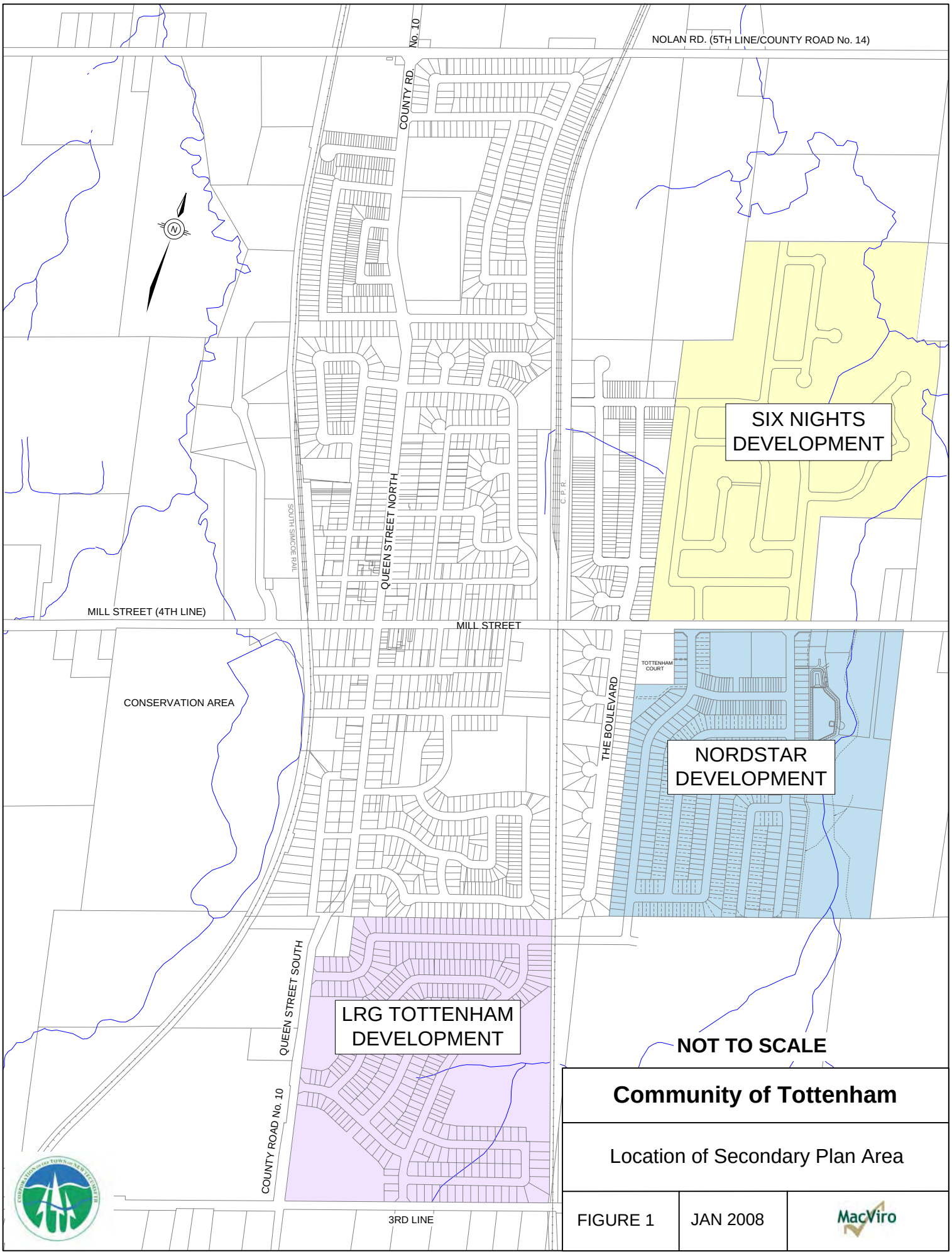
# Introduction and Background

## 1 Purpose of the Project

In January 1991, the Town of New Tecumseth was created incorporating Tottenham and other former municipalities including Alliston, Beeton, and Tecumseth Township. The Community of Tottenham is located at the southwest portion of the Town of New Tecumseth. The Tottenham Secondary Plan Areas is comprised of the three subdivision developments: Six Nights, NordStar and LRG Tottenham. The Secondary Plan Area is located in the east and southeast portion of the Community of Tottenham as shown in Figure 1.

The Water and Wastewater Servicing Master Plan was updated for long term planning of the water and wastewater servicing needs to meet the anticipated population and employment growth in the Town of New Tecumseth. While population and employment forecasts provide the guidelines to calculate water and wastewater capacity and servicing requirements, careful staging and phasing of the infrastructure program is required to accommodate growth in a timely manner while avoiding over-commitment of expensive capital works. In completing the Class EA process, the Town must be sensitive to the environment and must meet or exceed all relevant guidelines, policies and standards, including those pertaining to groundwater resources and the Oak Ridges Moraine.

The Town of New Tecumseth's Official Plan provides for growth in the Community of Tottenham that will require both expansion of the Town's water and wastewater systems and upgrades to the existing municipal services. The purpose of the Class EA Study is to evaluate and select the water and wastewater servicing solutions, which maintain cost stability throughout the implementation of the specific Schedule B projects that were identified in the Master Plan for the Community of Tottenham. A description of the specific projects is provided in Section 4.




# Community of Tottenham

Location of Secondary Plan Area

| FIGURE 1 | JAN 2008 | MacViro |
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# 2 Background

## 2.1 Tottenham Secondary Plan Water and Wastewater Servicing Master Plan Update

The Tottenham Secondary Plan Class Environmental Assessment, Stormwater Management and Municipal Servicing Master Plan was completed in July 1997 by Philips Planning and Engineering Limited. An update of this master plan, the Tottenham Secondary Plan Water and Wastewater Servicing Master Plan Update was prepared by MacViro Consultants. Both studies pertain to three blocks of land and adjacent areas, which collectively define the expansion of the Urban Boundary for the Community of Tottenham. These lands, which comprise the Secondary Plan Area (SPA), are generally located south and to the east of the existing limits of the Community of Tottenham as follows:

- Six Nights Developments, located north of Mill Street and east of the CPR railway line, consisting of approximately 45 ha;
- Nordstar Developments (previously identified as 976349 Ontario Inc.), located south of Mill Street and east of the CPR railway line, consisting of approximately 30 ha;
- LRG Tottenham Developments (previously identified as Mod-Aire Homes Limited & Inter Phase Developments Inc.), located north of Third Line and West of the CPR railway, consisting of approximately 38 ha.

This study provides a long-range plan that integrates municipal water and wastewater servicing requirements and infrastructure improvement needs for existing and future land uses in the Secondary Plan Area with environmental assessment planning principles.

## 2.2 Tottenham Secondary Plan Class Environmental Assessment, Stormwater Management and Municipal Servicing Master Plan

The Master Servicing Plan (completed in 1997) and the numerous supporting studies that were completed on the hydrogeolgic and geotechnical conditions present provided a long-range plan that integrated municipal water and wastewater servicing requirements and infrastructure improvement needs for existing and future land uses in the Secondary Plan Area. This Plan was updated in 2005.

## 2.3 Town of New Tecumseth, Community of Tottenham, Preliminary Servicing Study for Proposed Tottenham (East) Secondary Plan

This report (prepared by Urban Ecosystems Limited (undated)) illustrates the serviceability of lands to the east of the existing developed Community of Tottenham, immediately north and south of Mill Street.

# 3 Class EA Process

This project is being conducted in accordance with the requirements of the provincial Class Environmental Assessment process. The Class EA planning process requires the integration of sound engineering judgment, prudent long-term planning and protection of all aspects of the environment (natural, social, economic and cultural). This includes consultation with the public and affected agencies, to obtain comments and input, to ensure regulatory compliance and ultimately achieve acceptance for the preferred alternative.

The overall result of this Class EA process was the determination of a preferred solution to provide the water and wastewater infrastructure required to service anticipated growth in the Community of Tottenham. In developing the Class EA Study, the Town's objectives were to ensure sensitivity to the environment and meeting or exceeding all relevant guidelines, policies and standards, including those pertaining to groundwater resources and the Oak Ridges Moraine.

The Class EA process is a method of dealing with municipal infrastructure projects (including water and wastewater projects) which display the following important characteristics in common:

- recurring;
- usually similar in nature;
- generally limited in scale;
- have a predictable range of environmental effects; and
- responsive to mitigating measures.

The requirements for undertaking a Class EA are described in the document *Municipal Class Environmental Assessment*, June 2000, Municipal Engineers Association (MEA).

The Class EA document applies to a group of projects which are approved under the Environmental Assessment Act, as long as they are planned according to the requirements of the Class EA. The specific requirements of the document depend on the type of project, its complexity and the significance of potential environmental impacts. Three types of projects are identified in the document:

*Schedule "A"* projects are limited in scale and have minimal adverse environmental impacts. These projects generally include normal or emergency operational and maintenance activities. An example of a Schedule "A" wastewater project is the establishment of a sewage collection system and all necessary works to connect the system to an existing sewage outlet, provided all such facilities are in either an existing road allowance or a utility corridor. This type of project is pre-approved and may proceed to construction without further following the Class EA process.

*Schedule "B"* projects have the potential for some adverse environmental impacts and are approved provided they are "screened" by the public and government review agencies. These projects generally include improvements and minor revisions to existing facilities. An example of a Schedule "B" wastewater project is the establishment of a sewage

collection system and all necessary works to connect the system to an existing sewage outlet, where all such facilities are not in either an existing road allowance or a utility corridor. This type of project requires the completion of Phases 1 and 2 of the planning process.

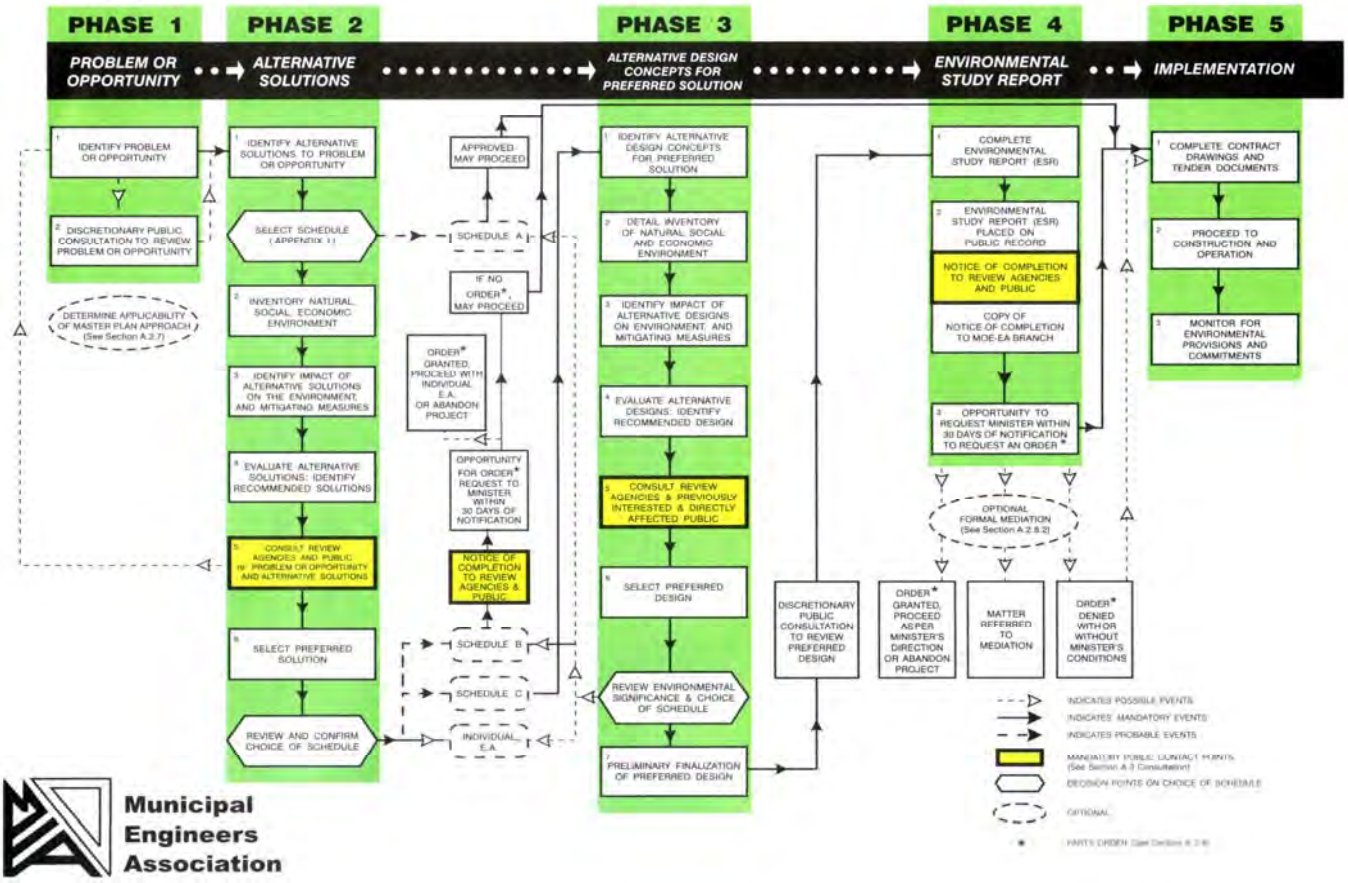
*Schedule "C"* projects are more complex and have the potential for significant environmental impacts. These projects generally include the construction of water and wastewater treatment facilities and major expansions to existing facilities. This type of project is subject to the full Class EA process and requires the preparation of an Environmental Study Report (ESR).

Agreements made or commitments given by the proponent to affected agencies or the public during the course of the screening process must be followed through and implemented, otherwise the EA approval will not be granted. If an affected agency or the public has a concern that cannot be resolved by discussion and negotiation with the proponent, then they can request a proponent to comply with Part II of the EA Act. Through issuance of a Part II Order, Schedule "B" and Schedule "C" projects may be elevated to an individual EA, requiring the proponent to comply with Part II of the EA Act. Schedule "B" projects could also be elevated to a Schedule "C".

The Class EA process in Ontario (refer to Figure 2) follows a logical decision-making process and incorporates all aspects of:

- Identifying the problem or need for the project (Phase 1);
- A thorough evaluation of the planning options or alternative solutions to the problem (Phase 2 – last phase for a Schedule "B");
- An assessment of design alternatives (pre-design for Schedule "B" or Phase 3 for a Schedule "C");
- The completion of documentation for the public record (Phase 4, Environmental Study Report (ESR) for Schedule "C" Projects); and
- The implementation of the project including design, with appropriate monitoring during construction (Phase 5).

**Figure 2 Municipal Class EA Process**




This Class EA study follows up on work completed under the Tottenham Secondary Plan Water and Wastewater Servicing Master Plan Update by MacViro Consultants. Master Plans typically recommend a set of works which are distributed geographically throughout the study area and which may be implemented over an extended period of time. The Master Plan Update therefore provides the context for the implementation of specific works identified by the Plan. It is necessary that the applicable schedule for each of these works be established and the related requirements of the Class EA process be met.

Based on the description of the works as detailed in the Master Plan Update, it was determined that the various works under this Class EA study would be classified as Schedule "A" or Schedule "B" projects since they entailed the provision of additional water and wastewater capacity that would be achieved through the following:

- Establish, extend or enlarge a water distribution system and all works necessary to connect the system to an existing system or water source, provided all such facilities are either in an existing road allowance or an existing utility corridor (Schedule "A");
- Establish, extend or enlarge a sewage collection system and all works necessary to connect the system to an existing sewage or natural drainage outlet, provided all such facilities are either in an existing road allowance or an existing utility corridor (Schedule "A");
- Establish, extend or enlarge a water distribution system and all works necessary to connect the system to an existing system or water source, where such facilities are not in an existing road allowance or an existing utility corridor (Schedule "B");
- Establish, extend or enlarge a sewage collection system and all works necessary to connect the system to an existing sewage outlet where such facilities are not in an existing road allowance or an existing utility corridor (Schedule "B");
- Retire a sewage facility which would have been subject to the EA Act for its establishment (Schedule "B").

Projects identified as Schedule "A" may proceed to construction without further following the Class EA process. For project identified as Schedule "B", Phases 1 and 2 of the Class EA process must be met which include:

- Addressing the issue of "need" (Phase 1);
- Evaluation of planning options (Phase 2).

Refer to Figure 2 above for an outline of the various steps involved for each of the phases. The Schedule "B" Class EA studies conclude with the Notice of Completion for a minimum 30-day public review period.

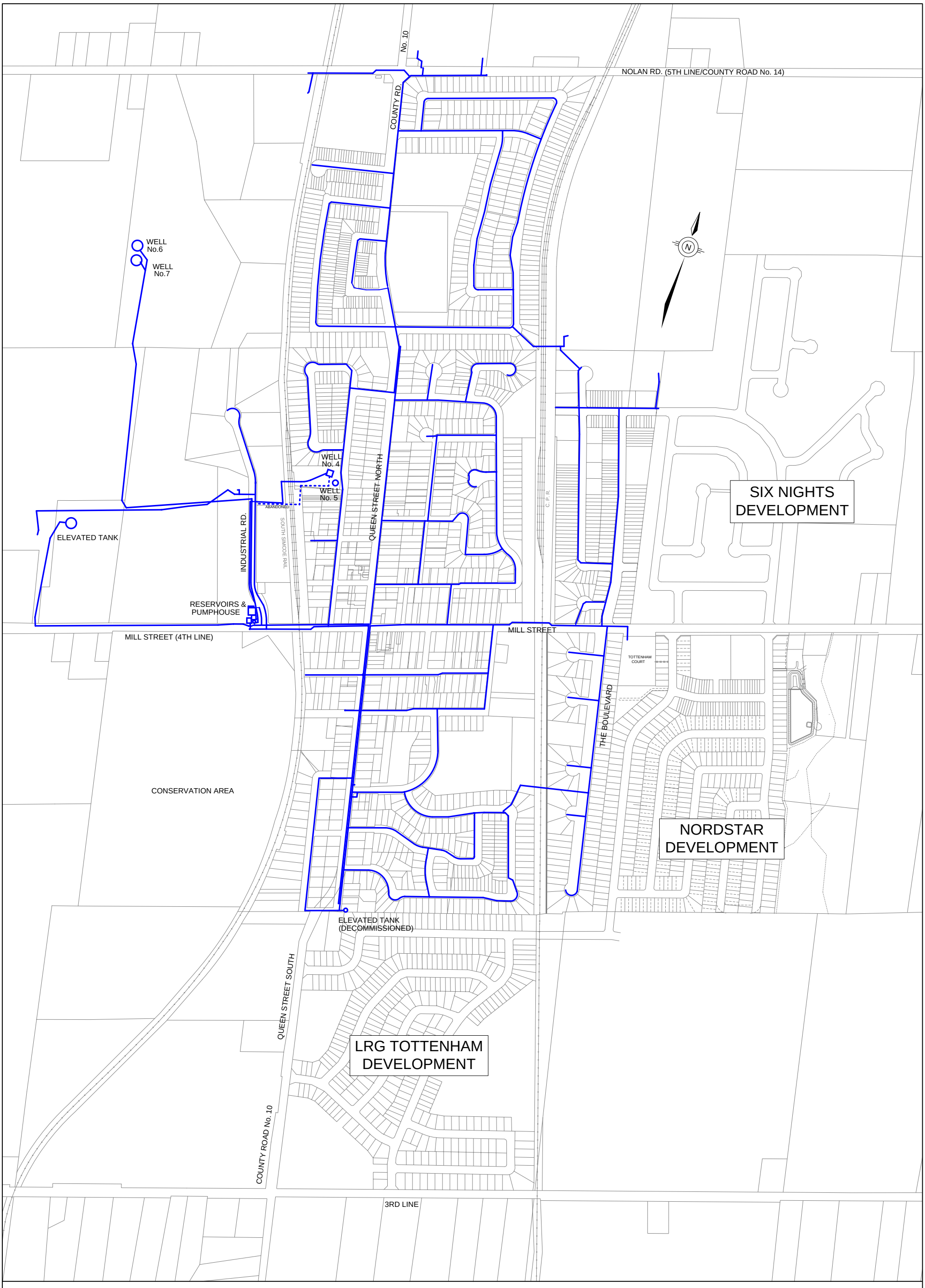
These steps are documented in the following sections of this Environmental Assessment Document. This report is intended to document the first two phases of the Class EA process. The report will be available for the mandatory 30-day public review by the public and agencies which may have an interest in this project.

# 4 Problem Statement and Description of the Project

### Water Distribution

The existing water distribution infrastructure adjacent to the Secondary Plan Area is indicated in Figure 3. Watermains have been constructed to the limits of the Community of Tottenham urban area, however, the Secondary Plan Area (study area) itself is currently not serviced.

Tottenham's current water supply system consists of four wells and four storage facilities. The 2004 flow data indicate that the wells produce a maximum daily output of approximately 3,907 cubic metres, while the storage facilities provide a storage volume of 5,814 cubic metres.




LEGEND

Existing Watermains

**NOT TO SCALE**

**Community of Tottenham**

Existing Water System

| FIGURE 3 | JAN 2008 | MacViro |
|---|---|---|

A new water tower was commissioned in June of 1997. The existing water supply system has sufficient capacity to service a population of approximately 9,600 people. the current population of the Community of Tottenham has been determined to be 5,900. Based on the Town of New Tecumseth Growth Management Study, 2002, this is expected to increase to 8,100 by the year 2016.

While there is sufficient water capacity to handle the increased water demands from the additional population growth, infrastructure modifications are required to improve the water quality and pressure for residents. The following project will be undertaken to provide the necessary water servicing infrastructure improvements:

1. A watermain connection be constructed between the existing watermains running along Mill Street, west of Queen Street and the future watermain connection between the LRG Development and Nordstar Development. The objective for installing this connection is to significantly improve water quality and pressure for local residents along The Boulevard.

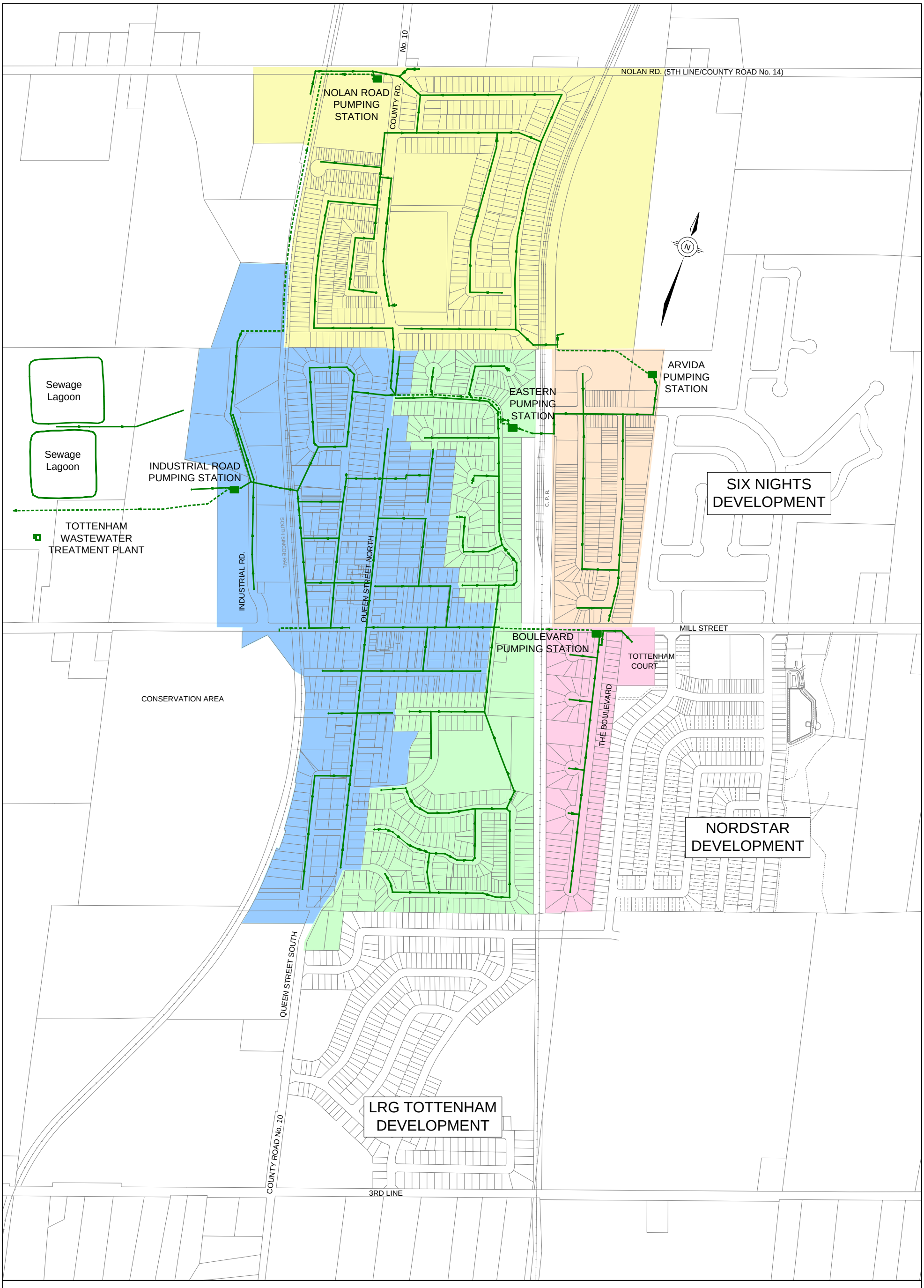
**Wastewater Collection**

The existing sanitary infrastructure within and adjacent to the Secondary Plan Area is indicated in Figure 4. Currently, there is no wastewater servicing within the Secondary Plan Area. Sanitary sewers have however been constructed to the existing limits of the Community of Tottenham urban boundary in anticipation of future connections being installed.

The entire sanitary sewer system eventually discharges to the Industrial Road Pumping Station located to the west side of the existing Tottenham urban area. Works are ongoing at the Tottenham WWTP to increase its rated capacity up to 4,082 $m^3$/day. A Certificate of Approval Amendment to allow growth up to the expanded capacity has however not yet been issued. The increase in plant capacity, once approved, will allow for the servicing of a population equivalent of approximately 5,000 additional persons. The upgraded plant will include effluent filtration and ultraviolet disinfection equipment. The existing Industrial Road Pumping Station is also being upgraded as part of the WWTP expansion. The Town of New Tecumseth's long-term planning for wastewater servicing however includes pumping of the Tottenham sewage flows north to the Regional WWTP. This would negate the requirement for sewage treatment capacity in the Community of Tottenham and therefore allow for the future decommissioning of the Tottenham WWTP.

The following wastewater projects will be undertaken to ensure infrastructure improvements are made for the Tottenham Secondary Plan Area to ensure that future population growth can be handled:

- As indicated in the Town of New Tecumseth's Master Plan Update for Water and Wastewater Servicing, a pumping station will be constructed adjacent to Mill Street to handle peak hour wastewater flows from existing service areas in the Community of Tottenham as well as future residential subdivisions including the Secondary Plan Area. Wastewater flows from the Secondary Plan Area Pumping Station would be conveyed to the Industrial Road pumping station and ultimately to the Tottenham Sewage Treatment Plant.




**NOT TO SCALE**

LEGEND

- Existing Gravity Sanitary Sewers
- Existing Sanitary Forcemains
- Nolan Road Pumping Station Drainage Area
- Industrial Rd. Pumping Station Drainage Area
- Arvida Pumping Station Drainage Area
- Boulevard Pumping Station Drainage Area
- Eastern Pumping Station Drainage Area

**Community of Tottenham**

Existing Wastewater System

| FIGURE 4 | JAN 2008 | MacViro |
|---|---|---|

1. Alternative forcemain alignments need to be identified and assessed.
2. The wastewater infrastructure improvements (including the construction of sewer bypasses) will result in the need to decommission the following existing wastewater pumping stations:

    a) The Boulevard Pumping Station can be decommissioned since it is a significant factor in causing surcharging of the sanitary sewer running along Eastern Avenue together with basement flooding during high rainfall events.

    b) The Eastern Pumping Station can be decommissioned following connection of the manhole immediately west of the CP Railway with the last manhole at Eastern Avenue with an approximately 120 metre long sewer to bypass the pumping station.

    c) The Arvida Pumping Station (as-constructed drawings indicate this is a temporary facility) can be decommissioned by connecting the sanitary sewer at the east end of McGahey Street to the future sanitary trunk sewer within the Six Nights Development.

**Water Supply**

The community of Tottenham is currently serviced by groundwater from four wells. Current water demand is approximately 3,907 $m^3$/day. Based on current operating output levels, additional water supply from the wells to service future growth and development, based on current operating output levels, is very limited. Additional water supply will therefore be required for Tottenham.

The long-term goal for the Tottenham water supply is to meet the 2031 maximum day demand, which is estimated at 11,413 $m^3$/day (Town of new Tecumseth Water Distribution and Storage Master Plan).

The following water supply projects will be undertaken to ensure Tottenham will have the capacity to support growth and development:

1. The existing well supply in Tottenham will be further studied to determine if upgrades to these wells will achieve an immediate increase in the water supply to Tottenham.
2. A water supply system will be constructed to bring surface water into Tottenham from Collingwood (through Alliston).

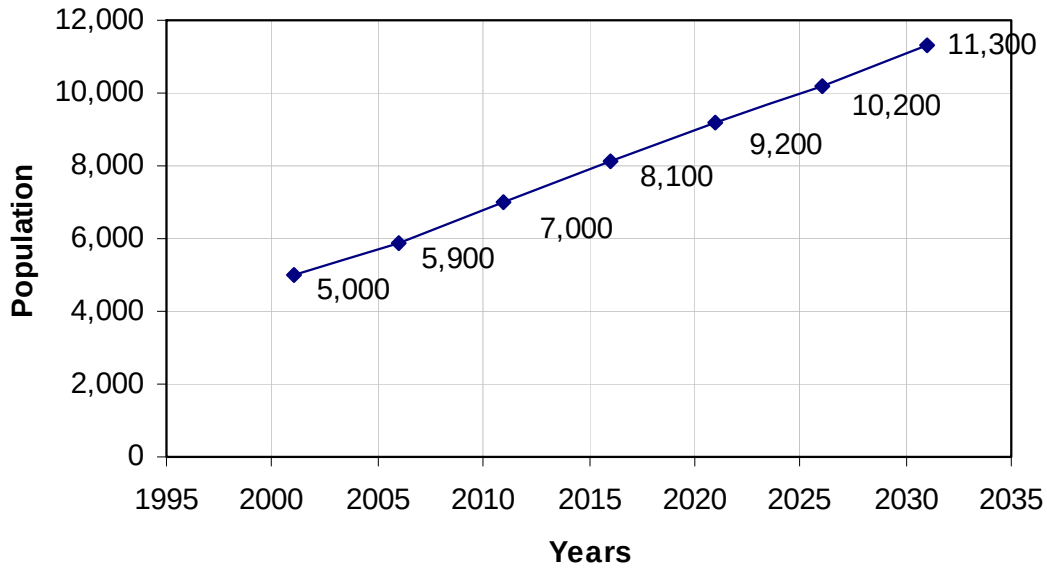
## 4.1 Existing Population Projections for Community of Tottenham

As indicated in Figure 5 below, the current population of the Community of Tottenham has been determined to be 5,900. Based on the Town of New Tecumseth Growth Management Study, 2002, this is expected to increase to 8,100 by the year 2016.

Figure 5 Projected Population for the Community of Tottenham

| Year | 2001 | 2006 | 2011 | 2016 | 2021 | 2026 | 2031 |
|---|---|---|---|---|---|---|---|
| Population | 5,000 | 5,900 | 7,000 | 8,100 | 9,200 | 10,200 | 11,300 |

Source: Town of New Tecumseth Growth Management Study, March 13, 2002




## 4.2 Projected Service Population

Actual lot counts (for the existing service areas) and servicing plans (for the future development areas) were utilized to establish population projections for the following drainage areas, as shown in Figure 6 below:

- Existing developed areas within the Community of Tottenham, including infill developments that will be discharging into the Secondary Plan Area Pumping Station;
- New developments within the Secondary Plan Area;
- Other future subdivisions (for example, the lands immediately south of the Nordstar Development).

As indicated below, a population of 10,792 is projected for full development of the existing Tottenham service areas, Secondary Plan Area and other future subdivisions. This forecasted population corresponds approximately to the years 2028-2029 based on growth projections indicated in Figure 5 above. The total population to be serviced by

the Secondary Plan Area Pumping Station is projected to be 8,350 persons. The estimated difference of 2,442 persons includes sanitary drainage service areas that will not be serviced by the Secondary Plan Area Pumping Station but rather will discharge directly into the Industrial Road Pumping Station.

Figure 6 Projected Service Populations

| No. | Service Area | Projected Population Serviced |
|---|---|---|
| | | |
| | **Existing Service Areas:** | |
| 1 | Eastern PS Drainage Area | 1,264 |
| 2 | Arvida Tottenham Subdivision | 829 |
| 3 | The Boulevard | 483 |
| | *Sub-total Existing Service Areas* | *2,576* |
| | | |
| | **Future Developments:** | |
| 4 | Six Nights Development | 1,659 |
| 5 | LRG Development | 1,802 |
| 6 | Nordstar Development | 1,789 |
| 7 | Undeveloped Area Immediately South of Nordstar | 525 |
| | *Sub-total Future Developments* | *5,775* |
| | | |
| **Projected Service Population for Secondary Plan Area Pumping Station** | | 8,350 |
| | | |
| 8 | Existing Area Directly Serviced by Industrial Road PS Including Nolan Road PS Drainage Area | 2,442 |
| | | |
| **Projected Service Population for Industrial Road Pumping Station** | | 10,792 |

The existing population serviced has been estimated at 5,018 for our analysis (Areas No. 1, 2, 3 and 8 in Figure 6). It is recognized however that that the actual figure may be marginally higher. As well, the current estimated population of 5,900 will include some homes, residences, facilities etc. currently serviced by private septic systems.

# 5 Need and Justification of the Project

A population of 10,792 is projected for full development of the existing Tottenham service areas, Secondary Plan Area and other future subdivisions. This forecasted population corresponds approximately to the years 2028-2029 based on growth projections.

Based on the results of previous work undertaken as part of the Tottenham Secondary Plan Water and Wastewater Servicing Master Plan Update, it was determined that sufficient capacity is available within the existing Town water supply and storage systems to accommodate growth within the Secondary Plan Area.

Water servicing projects identified under the Master Plan Update were therefore limited to expansion of the existing water distribution system including watermain twinning or extension of services to new development areas.

The preferred solution (under the Master Plan Update) for wastewater servicing of the Tottenham Secondary Plan Area would be the construction of two pumping stations; one station located along Mill Street and a second smaller pumping station located adjacent to the Six Nights stormwater management facility.

# 6 Public and Agency Consultation

Public consultation is a key feature of the Class EA process. Through an effective public consultation program, the Town can provide an opportunity for the exchange of ideas and information with the public and affected agencies. One of the principal aims of public consultation is to achieve resolution of different points of view thus reducing or averting controversy, and potentially avoiding the use of the "Part II Order" process. In addition, contact with government agencies will ensure compliance with all public policy and regulatory requirements.

There are two mandatory points of consultation for Schedule "B", Class EA projects. The first occurs during Phase 2, once the proponent has identified and evaluated alternative solutions to the problem and has made a general inventory of the natural, social, economic and cultural environments to determine the possible impacts each alternative solution may have on the environment. The purpose of this consultation activity is to provide the public an opportunity to assist in the selection of the preferred solution.

The contact was through a Public Review Notice issued in local newspapers which provided opportunities to inform the public of the nature of the problem and need for the project, the proposed alternative solutions and to invite public inquiries and/or comment. In addition, the Town contacted affected agencies requesting a meeting and/or comments regarding the proposed project.

The second mandatory point of contact with the public occurs upon the completion of Phase 2 for Schedule "B" projects. The "Notice of Completion" forms the point of contact to advise the public of the completion of the planning process. The Notice identifies the preferred solution, the review period and the date by which submissions and/or "Part II Order" requests are required and where comments are to be submitted. If no "Part II Order" requests are received during the specified period (a minimum 30 calendar days) then the Town of Tecumseth may proceed to design and construction of the project.

# 7 Existing Conditions

## 7.1 Study Area

In January 1991, The Town of New Tecumseth was created incorporating Tottenham and other former municipalities including Alliston, Beeton, and Tecumseth Township. The

Community of Tottenham is located at the southwest portion of the Town of New Tecumseth. The water and wastewater infrastructure improvements are related to the Tottenham Secondary Plan Area. The Secondary Plan Area is comprised of the Six Nights Development, NordStar Development and the LRG Tottenham Development located on the east and southeast side of the Community of Tottenham.

## 7.2 Population and Employment

Population and employment data from the May 15, 2001 Statistics Canada Census of Population are a key data source for estimating water and wastewater servicing requirements. The 2001 census indicated a population of 4,829 for the Community of Tottenham.

## 7.3 Existing Water and Wastewater Infrastructure

### 7.3.1 Water Infrastructure

The existing water distribution infrastructure adjacent to the Secondary Plan Area is shown on Figure 3. Watermains have been constructed to the limits of the Community of Tottenham urban area, however, the SPA (study area) itself is not serviced.

A 200 mm watermain has been constructed on Mill Street to service The Boulevard and the Tottenham Court. A 250 mm watermain has also been constructed along Queen Street, from the elevated reservoir at the south limit of the existing urban boundary.

Tottenham's current water supply system consists of four wells and four storage facilities. The 2004 flow data indicate that the wells produce a maximum daily output of approximately 3,907 cubic metres, while the storage facilities provide a storage volume of 5,814 cubic metres.

A new water tower was commissioned in June of 1997. The existing water supply system has sufficient capacity to service a population of approximately 9,600 people.

### 7.3.2 Wastewater Infrastructure

The existing sanitary infrastructure within and adjacent to the SPA is shown on Figure 4. Currently, there is no wastewater servicing of the Secondary Plan Area. Sanitary sewers have however been constructed to the existing limits of the Community of Tottenham urban boundary in anticipation of future connections being installed.

The Boulevard Pumping Station (previously identified as the Eastgate Pumping Station) is located at the intersection of The Boulevard and Mill Street, adjacent to the SixNights Developments and Nordstar Developments. Sanitary flows from homes constructed in The Boulevard subdivision, as well as from Tottenham Court, discharge into this facility. A 100 mm forcemain discharges sewage to a manhole located at the intersection of Mill and Keogh Streets, where it is then directed to the Industrial Road pumping station via a series of gravity sewers. The Boulevard Pumping Station is currently working at, or near, capacity. This is generally due to a large amount of inflow/infiltration into the sanitary sewer system in this area. During high rainfall events, surcharging of the sanitary sewer

running along Eastern Avenue, resulting in basement flooding, does periodically occur. Sanitary flows discharging into this sewer from the Boulevard Pumping Station have been identified to be a significant contributor to the surcharging events.

At the south limit of the existing residential area, adjacent to the LRG Tottenham Developments, sanitary sewers of 200 mm diameter have been constructed on Queen Street to Brown Street, and along Brown Street.

The entire sanitary sewer system eventually discharges to the Industrial Road Pumping Station. From this point, sewage is pumped west via a 350 mm diameter forcemain to the Tottenham Wastewater Treatment Plant (WWTP). As documented in the "Town of New Tecumseth Master Servicing Plan for Area Sewage Treatment Works – Environmental Study Report" (C.C. Tatham & Associates, December 1995), the WWTP is an extended aeration plant, which incorporates the existing lagoons as sludge storage and effluent polishing facilities. Treated effluent is ultimately discharged to the Beeton Creek.

Works are ongoing at the Tottenham WWTP to increase its rated capacity up to 4,082 $m^3$/day. A Certificate of Approval Amendment to allow growth up to the expanded capacity has however not yet been issued. The increase in plant capacity, once approved, will allow for the servicing of a population equivalent of approximately 5,000 additional persons. The upgraded plant will include effluent filtration and ultraviolet disinfection equipment. The existing Industrial Road sewage pumping station is also being upgraded as part of the WWTP expansion.

The Arvida Tottenham subdivision has also been developed. Sanitary flows from this subdivision are serviced by the temporary Arvida Pumping Station.

## 7.4 Natural Environment

A review of the existing condition of the natural environment was undertaken, based primarily on a review of existing data sources, to define what environmental features may be affected by the water supply and wastewater servicing alternatives, and to identify major constraint areas. Since the Master Plan addresses strategic water supply and wastewater servicing issues, site-specific environmental details are not provided. Further details on specific issues will be identified and assessed, where required, during the subsequent implementation of individual Class Environmental Assessments.

## 7.5 Physical Setting

The following summary of geologic and hydrogeologic information and analysis has been extracted from two reports (April, 1995 and March, 1996) prepared by Terraprobe Limited.

### 7.5.1 Physiography

The lands within the Secondary Plan Area generally exhibit relatively flat to gently rolling topography with slopes ranging from 0.5 to 5.0%. Topographic relief for the area is generally directed to the north and east towards the east branch of the Beeton Creek.

The LRG Tottenham lands, located at the north limit of the Oak Ridges Moraine, exhibit more steeply rolling terrain with maximum topographic relief of 15 metres.

### 7.5.2 Soils

Soils within the Six Nights and Nordstar Development lands are primarily Schomberg silty clay loam (Hydrologic Soil Group C - moderate runoff potential), with soils within the LRG Tottenham lands consisting of a mix of Schomberg silty clay loam, Smithfield silty clay loam (also Hydrologic Soil Group C) and Bondhead sandy loam (Hydrologic Soil Group AB - low runoff potential).

### 7.5.3 Quaternary Geology

The Community of Tottenham is underlain by glacial Lake Algonquin glaciolacustrine shallow and deep water deposits comprised of sand to silt and clay. The area to the south of the developed portion of the Community of Tottenham (LRG Tottenham lands) is underlain by Kettleby Till which consists primarily of silt to clayey silt till. The area to the east of the Community of Tottenham (Six Nights and Nordstar Development) is within the Schomberg Clay Plain. Schomberg sediments are typically varved clay with annual layers 50 mm to 100 mm thick. Mechanical analysis has indicated that the sediments are 50% clay and 40% silt however the behaviour of the soil is consistent with that of a silt rather than that of a clay.

### 7.5.4 Bedrock Geology

Bedrock under the study area is primarily shale of the Georgian Bay formation. Bedrock is found at depths of 100 m in this area based on available well records.

## 7.6 Terrestrial Resources

Terrestrial resources were documented on the basis of a review of background documents, agency contacts, and field studies. The study area consists of three parcels of land located north and south of Mill Street. Forest cover has been virtually eliminated by agricultural land uses, except within the valley of Beeton Creek where some natural cover has persisted. As indicated in the 1997 Master Plan, no environmentally sensitive areas, classified wetlands or other sensitivity issues were identified within the study area or its immediate vicinity.

The study area consists of a range of upland and valley features which were highly fragmented by past agricultural land uses. No terrestrial resources of particular significance were noted, although the valley of the east branch of Beeton Creek has the capability to support significant flora and fauna, which were not evident during the early winter field survey.

Primary sensitivity features identified are associated with the steep slopes and groundwater discharge zones along Beeton Creek and its tributaries. A wetland located on the LRG Tottenham lands was rated as a moderate constraint, and should be retained or integrated with the stormwater management facility for this area.

### 7.6.1 North of Mill Street

A total of 33 vegetation units have been identified north of Mill Street, with 86 plant species documented. Communities represented included forests associated with the Beeton Creek corridor, a wet meadow (fed by groundwater seepage), a small woodlot remnant, and hedgerow connections. No significant species were encountered.

### 7.6.2 South of Mill Street

The study area immediately south of Mill Street is actively cultivated with limited natural vegetation cover, including meadow, seasonal swales with marsh cover, and hedgerows. Of 55 plant species documented, none were of significant status. The floodplain area associated with Tributary A offers the potential for re-vegetation as a secondary habitat corridor.

The LRG Tottenham lands are also predominantly under cultivation. Small pockets of meadow, marsh, shrub thicket, and hedgerows were identified. A total of 58 plant species were documented; none are considered significant.

### 7.6.3 East Branch of Beeton Creek

The valley of the east branch of Beeton Creek is the only significant vegetated corridor in the study area. A habitat node of approximately 2.5 ha, made up of slope forest, shrub swamp and floodplain communities are located in the northeast corner of the overall study area.

## 7.7 Socio-economic and Cultural Environment

Tottenham is an agriculture and industry-based community with urban neighbourhoods both long established and new. The socio-economic and cultural environment has been reviewed to ensure community impacts are considered in a local context in the development and evaluation of alternatives.

### 7.7.1 Cultural Heritage

The Community of Tottenham has a rich cultural heritage. Initially settled by Irish immigrant farmers, Tottenham's history includes events such as the great fire of 1895 and arrivals of both the Canadian Pacific and Hamilton and Northwest railways to the area. The area's rich history is reflected in the heritage streetscape of the downtown area as well as other resources such as the Tottenham Pond (where the original 1865 Avoca Mill and dam are located) and the South Simcoe Railway (part of the original Hamilton and Northwest Railroad). Guidelines and criteria established by the Ministry of Culture, Tourism and Recreation are used to identify, interpret and preserve the features, structures, and archaeological resources relevant and significant to the area's cultural heritage.

### 7.7.2 Agricultural

Agriculture is an important part of the area economy, providing jobs and agricultural products. The SPA consists of previous agricultural lands. Although some of the existing farmland will be required to accommodate growth anticipated for this area, it is important

to protect the remaining farmland in the rural portions because of their importance to the local economy and as a source of food products.

### 7.7.3 Rural

The study area is originally rural in nature. However, as indicated in the 1997 Master Plan, no significant areas of environmental significance have been identified within the SPA. Small settlement areas are found throughout the surrounding area. In general, development is limited within the rural areas to avoid the loss of the Community's character.

### 7.7.4 Estate Residential Development

Estate residential development is generally intended to provide an alternative form of housing to what is typically found in more urbanized or built-up areas. Although these developments have high assessment yield, the total cost and concerns over the long term are also potentially high. It is intended that estate residential housing will constitute a limited portion of the total housing stock within this study area. Estate residential development is typically permitted only if it retains the rural character of the area, preserves the natural environment and minimizes the impact on existing or potential agricultural operations. Because of the large lot size, exclusivity of housing and the secluded nature of these types of developments, the number of this type of developments is typically limited, and it is usually preceded with private water and wastewater servicing.

# 8 Evaluation of Alternative Solutions

## 8.1 Evaluation Process

The Master Plan Update completed a preliminary evaluation of the alternatives (i.e., do nothing, limit growth, etc.) and determined that specific water and wastewater infrastructure improvements were required for the Tottenham Secondary Plan Area.

The Town's requirement for the decommissioning of the Boulevard Pumping Station, Eastern Pumping Station and the Arvida Pumping Station was established in the Master Plan Update. Therefore no further evaluation of alternatives was conducted as part of this Class EA. The Town will proceed with the decommissioning of the existing three pumping stations as part of the water and wastewater infrastructure improvements.

The evaluation process to be undertaken in the Class EA Study is related to determining the preferred location and/or alignment for the watermain connection, the SPA wastewater pumping station and the sanitary forcemain for the pumping station. The evaluation process to identify the preferred alternative (location and/or alignment) involved development of evaluation criteria, identification of potential alternatives and then undertaking the assessment of the alternatives through application of the criteria to determine the preferred alternative (location and/or alignment) for the watermain

connection, the SPA wastewater pumping station and the sanitary forcemain for the pumping station.

## 8.2 Evaluation Criteria

Evaluation criteria were developed to assess the relevant alternatives for each water and wastewater infrastructure improvement project (the watermain connection, the SPA wastewater pumping station and the sanitary forcemain for the pumping station). The evaluation criteria reflect all components of the environment in the study area, including natural, social and cultural environments, technical suitability and cost considerations. The criteria are listed and a description of the key considerations for each criterion are provided in Figure 7.

Figure 7 Evaluation Criteria

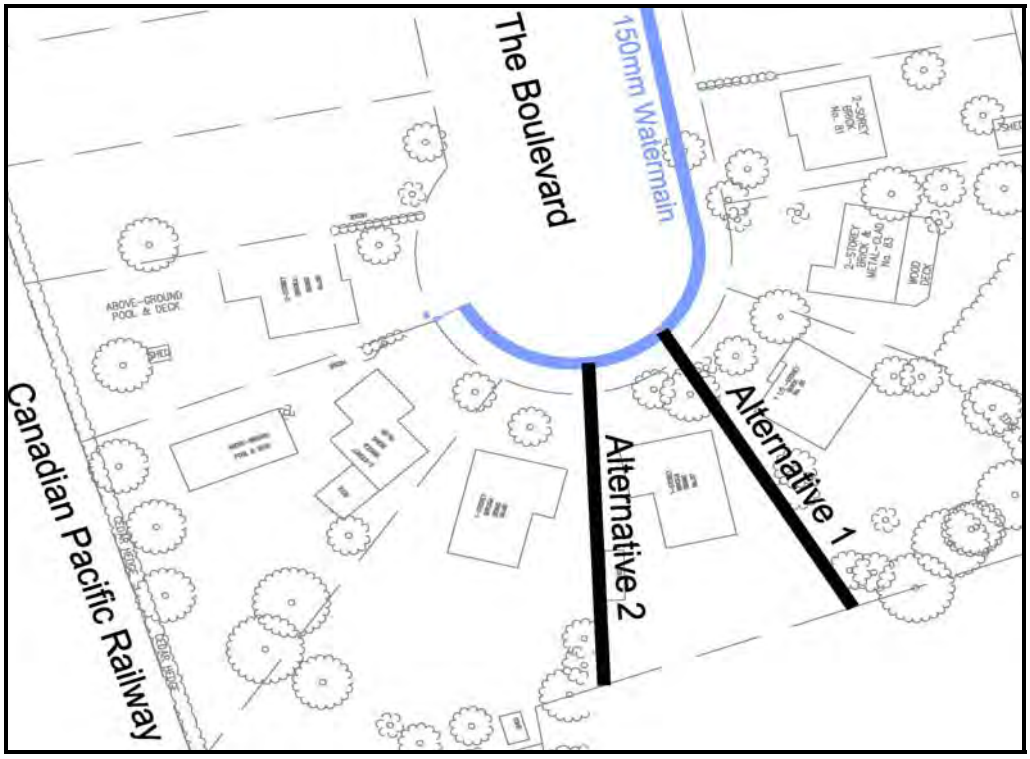
| Criteria | Key Considerations |
|---|---|
| **1. Minimize Impact on Natural Environment** | |
| VTE Species | The number of vulnerable, threatened and/or endangered (VTE) species as identified by the Ministry of Natural Resources (MNR) potentially affected by an alternative. |
| Designated Natural Heritage Areas | The area of land classified as an Environmentally Sensitive Area (ESA), Area of Natural and Scientific Interest (ANSI), or Provincially (Class 1-3) or locally significant wetlands by the MNR affected by an alternative (local, regional, provincially significant). |
| Vegetation | Amount of woodlands or hedgerows affected or removed by an alternative, as well as the degree of impact on the edge of a woodlot / hedgerow. |
| Watercourses and Fisheries | The amount and quality of aquatic habitat that may be harmfully alternated or disturbed (i.e., location of Type 1 fisheries) through the number of watercourse crossings. |
| **2. Minimize Impact on Social and Cultural Environments** | |
| Impacts on Residents | The number of adjacent or nearby residents affected (e.g., visual / aesthetic impact, construction impacts, noise, dust, etc.). |
| Recreational Areas | The number and type of recreational areas (e.g., parkland) surrounding the site. |
| Traffic Impacts | The amount of roadways affected that results in traffic impacts during construction. |
| Future Planning Policies | Consistency with land use designations, approved development plans, and proposed land use changes. |
| Archaeological Sites and Cultural Areas | The number and significance of known archaeological sites at the site or along the route. Potential for undiscovered archaeological resources at the site. The number of cultural areas and type of cultural area surrounding the site or route. |
| **3. Maximize Technical Suitability** | |
| Technical Feasibility | Construction, operation and maintenance issues related to the number and type of facilities, length of sewers and length of forcemains. |
| Compatibility with Existing or Planned Infrastructure System | Ease of connecting to the existing infrastructure, modifications to existing infrastructure and amount of additional works required to integrate with existing infrastructure. |
| **4. Minimize Costs (Economics)** | |
| Capital Costs | Total capital costs and land acquisition costs. |
| Operating and Maintenance Costs | Total operating and maintenance costs. |
| Decommissioning Costs | Total cost to decommission existing pumping station facilities. |

## 8.3 Evaluation of Water Connection Alternatives

There were two alternative alignments identified for the watermain connection on The Boulevard. These alternatives are shown in Figure 8.

The watermain connection alternatives were evaluated based on the evaluation criteria and the results of the evaluation are presented in Figure 12.

Figure 8 Alignment Alternatives for Watermain Connection on The Boulevard



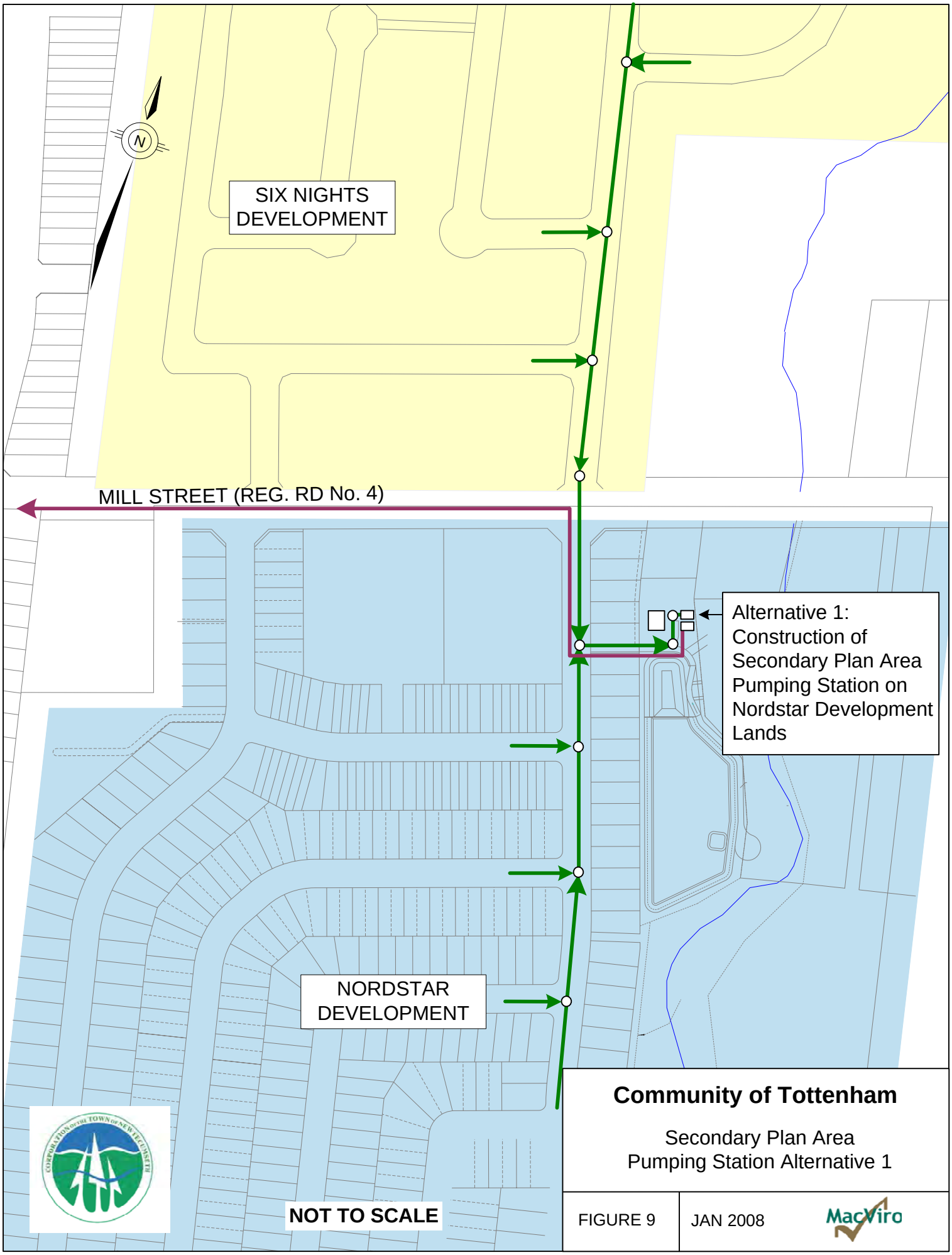

## 8.4 Evaluation of Wastewater Alternatives

Locating the pumping station along Mill Street provides for a facility centrally located within the Secondary Plan Area. This will also provide for easy access by the Town for operations and maintenance related work.

Two potential sites were identified for the Secondary Plan Area wastewater pumping station and are as follows:

Alternative 1: Northern portion of the Nordstar Development lands, south of Mill Street (see Figure 9).

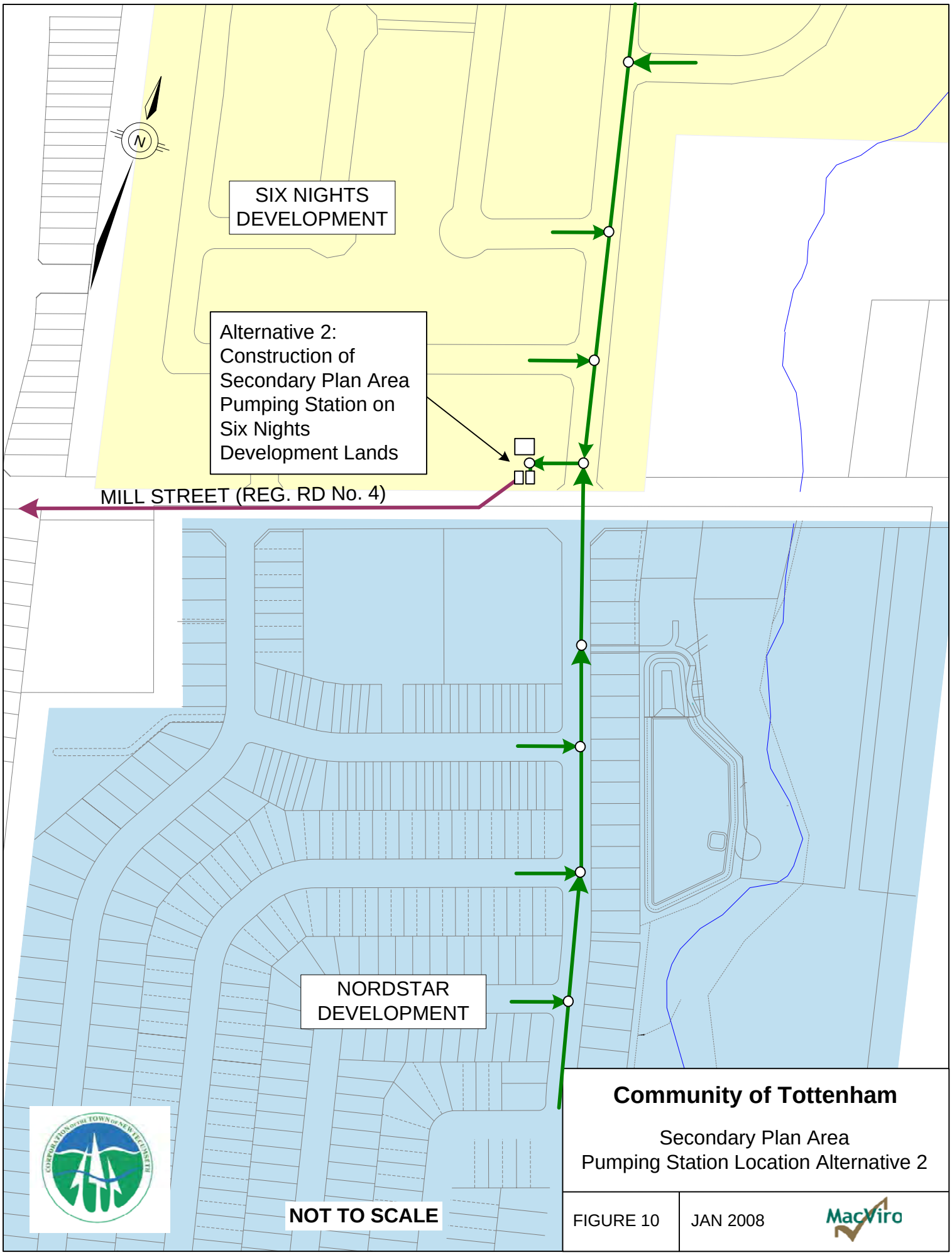
Alternative 2: Southern portion of the Six Nights Development lands, north of Mill Street and immediately west of Beeton Creek (see Figure 10).




**Community of Tottenham**

Secondary Plan Area
Pumping Station Alternative 1

| FIGURE 9 | JAN 2008 | MacViro |
|---|---|---|




**Community of Tottenham**

Secondary Plan Area
Pumping Station Location Alternative 2

| FIGURE 10 | JAN 2008 | MacViro |
|---|---|---|

It should be noted that it is also proposed that flows from approximately 39 units in the vicinity of the Six Nights stormwater management facility would be directed to a smaller pumping station located at the end of the adjacent cul-de-sac. The requirements for this pumping station would however be established under the draft plan of subdivision for the Six Nights Development. Design and construction of the smaller Six Nights Pumping Station will therefore not be included as part of this current Class EA Study.

Four alternatives were identified for the forcemain works for the pumping station. Each alternative was based on a different potential alignment and discharge point for the forcemain. The selected alternatives are indicated in Figure 11 and are as follows:

Alternative 1: West along Mill Street to Industrial Road to connect with the Industrial Pumping Station, with ultimate discharge to the Tottenham Wastewater Treatment Plant

Alternative 2: West along Mill Street to Industrial Road with ultimate discharge to the Industrial Road Pumping Station

Alternative 3: West along Mill Street and Richmond Street with ultimate discharge to the Industrial Road Pumping Station

Alternative 4: West along Mill Street and Wilson Street with ultimate discharge to the Industrial Road Pumping Station

The wastewater infrastructure improvement alternatives were evaluated based on the evaluation criteria and the results of the evaluation are presented in Figures 13 and 14.

## 8.5 Evaluation of Water Supply Alternatives

### 8.5.1 Groundwater Supply

The full implementation of the surface water supply feedermain from Alliston will take several years to complete. The immediate requirement to increase the water supply to Tottenham comes from new developments scheduled for construction in the Secondary Plan Area to the east of the existing community.

A summary of the physical characteristics of each of the four Tottenham wells is shown in Table 1 below:

# Figure 11
# Alignment Alternatives for the Secondary Plan Area Pumping Station Forcemain

N.T.S

Effluent Storage Cell No. 2

Effluent Storage Cell No. 3

Effluent Storage Cell No. 1

Sludge Storage Cell No. 1

Tottenham Wastewater Treatment Plant

Water Tower

Industrial Road Pumping Station

Alternative 1

Well Site

Existing South Simcoe Railway Easement

Greenaway Street

Industrial Road

Queen Street

Alexander Street

Eastern Avenue

Eastern Avenue Pumping Station

Alternative 4

Wilson Street

Mill Street

Alternative 1 & 2

Alternative 3

Richmond Street East

Keogh Street

Arivda Pumping Station

McCurdy Drive

EXISTING INDUSTRIAL

BLOCK 334 PARK

BLOCK 333 SCHOOL

STREET 'A'

STREET 'B'

STREET 'C'

STREET 'D'

STREET 'E'

STREET 'F'

STREET 'G'

STREET 'H'

Six Nights Development

BLOCK 335 COMMERCIAL

The Boulevard Pumping Station

The Boulevard

Nordstar Development

Secondary Plan Area SPS

Table 1 Tottenham Well Physical Characteristics

| Well | Diameter | Depth | Screen length | Screen Size |
|---|---|---|---|---|
| 4 | 381 mm | 88.4 m | 16.8 m (telescoping) | 25 slot SS |
| 5 | 304 mm | 88.9 m | 13.2 m (telescoping) | 30, 60 and 80 slot SS |
| 6 | 152 mm | 88.4 m | 3.05 m | 25 slot SS |
| 7 | 254 mm | 88.2 m | 10.7 m | 14 and 18 slot SS |

**Wells 4 and 5 (Walkem Drive)**

As indicated by Town of New Tecumseth operations staff, Wells 4 and 5 are currently not being operated simultaneously due to increased levels of sand and grit being extracted from the wells when both pumps are operating. Based on existing supporting studies and background information, in particular for the updated 2004 Permit To Take Water, there is however no indication that the aquifer cannot sustain well yields to the existing Permit To Take Water limits. There also are no restrictions in the current Permit with respect to operating Wells 4 and 5 simultaneously. It is therefore recommended that further investigation be conducted to determine the actual condition and design of the existing screens in Wells 4 and 5. If the sand and grit concerns can be resolved through upgrading of the well infrastructure, the water supply to the community could potentially increase by 1,633 $m^3$/day.

**Well 6 (Coventry Park)**

Well 6 has a limited pumping capacity due to the equipment that is currently installed (654 $m^3$/day). The supply from Well 6 is well below the limits of the Permit To Take Water (1,728 $m^3$/day) however. There are currently no restrictions on operating Wells 6 and 7 simultaneously.

Well drawdown and pump performance tests were conducted by International Water Supply Limited (IWS) on Wells 6 and 7 in December of 2005. Each well test was conducted with one well operating at a time however. A copy of the IWS test report is attached. Results of the testing are summarized as follows:

- There has been only a marginal decline in Well 6 performance since construction (1996).
- Well 6 was tested at a maximum of 984 $m^3$/day; step test results indicate drawdown of the well at approximately 31 m was sustainable and maintained during test.
- Sand production was within AWWA standards.
- Therefore it appears that the capacity of Well 6 is more a factor of the hydraulic pumping capacity of the well pump and related appurtenances rather than the aquifer supply.

Based on the above testing and other supporting studies and background information, it cannot be confirmed however that Wells 6 and 7 can be operated simultaneously without exceeding the limits of the aquifer or the maximum drawdown of the wells. Further step testing is required with both Wells 6 and 7 operating simultaneously to determine the actual potential capacity of Well 6. If it is shown that there are no limitations to the aquifer or drawdown of the well, then upgrades to the pumping equipment in Well 6 could potentially increase the water supply by 1,123 $m^3$/day while staying within limits of the current Permit To Take Water.

**Well 7 (Coventry Park)**

Well 7 is currently operating at the full capacity of the Permit To Take Water. Well drawdown and pump performance tests conducted by International Water Supply Limited (IWS) on Well 7 indicated the following:

- Well 7 performance is similar to that observed after its construction in 1997.
- The well was tested at a maximum of 2,626 $m^3$/day; step test results indicate drawdown of the well at approximately 61 m was sustainable and maintained during test.
- Sand production was slightly higher than AWWA standards (5 mg/L) at 5.5 mg/L.

There are concerns regarding the levels of sand in this well. This may indicate that either there is damage to the existing well screens or possibly problems with the initial design of Well 7 screen. The screens have much smaller slot openings than those in Wells 4, 5 and 6. It is not likely that rehabilitation of the existing screens would significantly reduce sand and grit uptake given their already relatively small slot openings. Well capacity could also be reduced with smaller screen openings.

**Conclusions**

1. It cannot be determined whether the above favourable step test results for Wells 6 and 7 could be achieved with both wells operating at the same time.
2. Testing conducted for Well 7 indicated strong aquifer recovery at a flowrate of 2,626 $m^3$/day. Recognizing the likelihood of interference between the two wells occurring, additional total aquifer capacity required would however only be 735 $m^3$/day (from Well 6) to achieve the Permit To Take Water limit.
3. CCTV inspection of the existing wells will require removal of the well pumps, installation of the CCTV camera and conducting of the inspection work, and replacement of the pumps. A typical budget for this work is approximately $7,000 to $10,000 per well.
4. In the case that no immediate remedial works are planned for Wells No. 4 and 5, it is recommended therefore that CCTV inspections will not provide information of value in a cost effective manner at this time for these wells.
5. Since the pump for Well No. 6 will be removed for the proposed well testing, the cost of CCTV inspection for this well will be significantly reduced, to the order of $2,000.

It is recommended therefore that this CCTV work be carried out at the time of the testing.

6. It is also recommended that a CCTV inspection of Well No. 7 be carried out, provisional upon the results of the proposed 72-hour well testing. The final decision to conduct the CCTV inspection of Well No. 7 will therefore be made following the 72-hour test. If during the well test it is determined that re-development of the well may potentially be beneficial in reducing sand production, a CCTV inspection will provide useful information on the key areas of the screen where the re-development work would need to be focused. The CCTV inspection work will however require removal of the existing well pump.
7. In the absence of further well test details/information (particularly for the updated 2004 Permit To Take Water), it appears that there is the potential for additional capacity in the existing wells No. 6 and 7 to supply some portion of the new development planned for the Secondary Plan Area.
8. Expansion of the groundwater well capacity in Tottenham would provide for additional water supply to the community at a lower cost and a significantly shorter implementation time than proceeding directly with the construction of a surface water supply watermain.
9. An accurate estimate of additional water supply capacity that could possibly be achieved from the existing wells will be difficult to determine. Based on the above evaluation however, it is expected that an ultimate well supply of 5,000 $m^3$/day is feasible.

### 8.5.2 Surface Water Supply

The Town of New Tecumseth is evaluating the possibility of bringing a groundwater supply from Collingwood via Alliston to meet increasing demands in Tottenham.

Three alternatives were identified for the provision of an additional water supply to Tottenham. Each alternative was based on a different alignment.

Alternative 1: Alternative 1 consists of the construction of a new watermain from Alliston to Beeton along the town's abandoned railway right-of way and from Beeton to Tottenham along the South Simcoe Railway right-of-way. The watermain would run from the existing Parsons Reservoir and Pumphouse in Alliston, through the Town of Beeton and connect to the Mill Street Reservoir and Pumphouse in Tottenham. The total length of watermain would be approximately 20.3 km, and would require a 300 mm diameter pipe.

Alternative 2: Alternative 2 consists of the construction of a new watermain from Alliston to Tottenham along Tottenham Road. The total length would be approximately 16.0 km, and would require a 300mm diameter pipe.

Alternative 3: Alternative 3 consists of the construction of a new watermain from Alliston to Tottenham along the Canadian Pacific Railway. The total length would be approximately 16.0 km, and would require a 300 mm diameter pipe.

An evaluation of the three alternative alignments is presented below in Figure 15.

Figure 12 Evaluation of Watermain Connection Alternatives on The Boulevard

| Environmental Impacts | Alternative 1 | Alternative 2 |
|---|---|---|
| **Natural Environment** | • No VTE species identified on site.<br>• Site not designated as Natural Heritage Area.<br>• No impact on woodlands and hedgerows. May require renewal of several trees however.<br>• Need for lawn removal during construction. | • No VTE species identified on site.<br>• Site not designated as Natural Heritage Area.<br>• No impact on woodlands and hedgerows.<br>• Need for lawn removal during construction. |
| **Social Environment** | • Construction through homeowner property. Therefore significant impact on local residents and possibly on homeowner structures/buildings.<br>• Somewhat less separation between houses for installation of watermain/easement than for Alternative 2.<br>• Improve water quality and pressure for Adeline Avenue and Brown Street residents. | • Construction through homeowner property. Therefore significant impact on local residents and possibly on homeowner structures/buildings.<br>• Improve water quality and pressure for Adeline Avenue and Brown Street residents. |
| **Cultural Environment** | • No known archaeological or cultural issues with site. | • No known archaeological or cultural issues with site. |
| **Technical Issues** | • Watermain and easement approximately 40m long.<br>• Actual alignment will be subject to negotiations with homeowners. | • Watermain and easement approximately 40m long.<br>• Actual alignment will be subject to negotiations with homeowners |
| **Economic Issues** | • Estimated capital cost $13,000 (does not include easement/property costs) | • Estimated capital cost $13,000 (does not include easement/property costs) |
| **Overall Preference & Ranking** | **☒ (2)** | **☑(1)** |

Figure 13 Evaluation of Pumping Station Alternatives

| Environmental Impacts | Nordstar Development Location (Alternative 1) | Six Nights Development Location (Alternative 2) |
|---|---|---|
| **Natural Environment** | • No VTE species identified on site.<br>• Site not designated as Natural Heritage Area.<br>• Typical impacts on natural environment will occur from development of new pumping station site in conjunction with development of Nordstar lands.<br>• Removal of vegetation will be required.<br>• Potential watercourse crossings required for sewer / forcemain construction. | • No VTE species identified on site.<br>• Site not designated as Natural Heritage Area.<br>• Site is adjacent to Beeton Creek watercourse. Potential impacts may occur (i.e. dewatering) from construction.<br>• Impacts on natural environment from development of new site.<br>• Removal of vegetation will be required.<br>• Potential watercourse crossings required for sewer construction. Forcemain crossing not likely to be required. |
| **Social Environment** | • Pumping station site is behind residential dwellings, resulting in less visual impact.<br>• New site for pumping station is surrounded by fewer residents, facility operation will impact a fewer number of residents.<br>• Will allow for growth in the Community of Tottenham.<br>• Land space currently available for construction of Secondary Plan Area SPS. | • Pumping station site in front of residential dwellings, resulting in a greater visual impact.<br>• New site for pumping station is surrounded by more residents; facility operation will impacts a greater number of residents.<br>• Will allow for growth in the Community of Tottenham.<br>• No allowance currently made for land/site for the Secondary Plan Area SPS. This will require review of the Six Nights Development draft plan of subdivision. |
| **Cultural Environment** | • No known archaeological or cultural issues with site. | • No known archaeological or cultural issues with site. |
| **Technical Issues** | • Requires forcemain crossing of sensitive watercourse (Beeton Creek).<br>• Will require a slightly deeper pumping station due to deeper sewers. | • Technical and construction issues increase due to close proximity to sensitive watercourse (Beeton Creek). The following potential risks need to be considered:<br>– dewatering issues during construction.<br>– affecting stream flow and quality.<br>– high water table. |
| **Economic Issues** | • Pumping station will be based on a efficient design with respect to capital and operation and maintenance costs.<br>• Estimated capital cost: | • Pumping station will be based on a efficient design with respect to capital and operation and maintenance costs.<br>• Estimated capital cost: |

| Environmental Impacts | Nordstar Development Location (Alternative 1) | Six Nights Development Location (Alternative 2) |
|---|---|---|
| | – $2,580,000 (includes approximately 120m of additional forcemain required) | – $2,450,000 |
| **Overall Preference & Ranking** | **☑ (1)** | **☒ (2)** |

Figure 14 Evaluation of Secondary Planning Area Forcemain Alternatives

| Environmental Impacts | Along Mill St. Connecting to Tottenham WWTP (Alternative 1) | Along Mill St. Connecting to Industrial Rd. PS (Alternative 2) | Along Mill St. & Richmond St. Connecting to Industrial Rd. PS (Alternative 3) | Along Mill St. & Wilson St. Connecting to Industrial Rd. PS (Alternative 4) |
|---|---|---|---|---|
| **Natural Environment** | • No VTE Species identified on site.<br>• Site not designated as Natural Heritage Area.<br>• No impact on woodlands and hedgerows.<br>• Impacts on natural environment between Industrial Rd PS and Tottenham WWTP due to construction.<br>• Crossing required of sensitive watercourse (Beeton Creek)<br>• Need for removal of natural vegetation. | • No VTE species identified on site.<br>• Site not designated as Natural Heritage Area.<br>• No impact on woodlands and hedgerows. | • No VTE species identified on site.<br>• Site not designated as Natural Heritage Area.<br>• No impact on woodlands and hedgerows. | • No VTE species identified on site.<br>• Site not designated as Natural Heritage Area.<br>• No impact on woodlands and hedgerows. |
| **Social Environment** | • Construction through Mill St. (core of Tottenham). Therefore significant impact on local traffic and area | • Construction through Mill St. (core of Tottenham). Therefore significant impact on local traffic and area businesses will occur. | • Will have less overall traffic impacts, but might block Richmond St. during construction. | • Will have less overall traffic impacts, but may block Wilson St. during construction. |

| Environmental Impacts | Along Mill St. Connecting to Tottenham WWTP (Alternative 1) | Along Mill St. Connecting to Industrial Rd. PS (Alternative 2) | Along Mill St. & Richmond St. Connecting to Industrial Rd. PS (Alternative 3) | Along Mill St. & Wilson St. Connecting to Industrial Rd. PS (Alternative 4) |
|---|---|---|---|---|
| | businesses will occur.<br>• Will allow for growth in the Community of Tottenham. | • Will allow for growth in the Community of Tottenham. | • Will have an impact on area residents during construction.<br>• Will allow for growth in the Community of Tottenham. | • Will have an impact on area residents during construction.<br>• Will allow for growth in the Community of Tottenham. |
| **Cultural Environment** | • No known archaeological or cultural issues with site. | • No known archaeological or cultural issues with site. | • No known archaeological or cultural issues with site. | • No known archaeological or cultural issues with site. |
| **Technical Issues** | • Technical and construction issues increase due crossing of sensitive watercourse (Beeton Creek) and as a result posses the following potential risks:<br>– dewatering issues during construction.<br>– affecting stream flow and quality.<br>• Tottenham WWTP could be decommissioned as soon as the year 2011. As a result the forcemain section between the Tottenham WWTP and Industrial Rd. PS would have to be abandoned or removed. | • Available capacity in existing Industrial Rd. PS and forcemain negate need for new forcemain construction between Industrial Rd. PS and Tottenham WWTP. | • More headloss in system due to longer forcemain.<br>• Less direct alignment<br>• Installation of forcemain will require excavation of newly refinished Richmond St.<br>• Available capacity in existing Industrial Rd. PS and forcemain negate need for new forcemain construction between Industrial Rd. PS and Tottenham WWTP. | • More headloss in system due to longer forcemain.<br>• Less direct alignment<br>• Wilson St. right-of-way is relatively narrow. Forcemain will be more difficult to install and face significantly greater conflicts with existing utilities.<br>• Crossing of South Simcoe Railway at existing easement (see Figure 12) will be significantly longer due to greater number of tracks and width of railway right-of-way.<br>• Available capacity in existing Industrial Rd. PS and forcemain negate need for new forcemain construction between Industrial Rd. PS and Tottenham WWTP. |

| Environmental Impacts | Along Mill St. Connecting to Tottenham WWTP (Alternative 1) | Along Mill St. Connecting to Industrial Rd. PS (Alternative 2) | Along Mill St. & Richmond St. Connecting to Industrial Rd. PS (Alternative 3) | Along Mill St. & Wilson St. Connecting to Industrial Rd. PS (Alternative 4) |
|---|---|---|---|---|
| **Economic Issues** | • Estimated capital cost:<br>– $1,660,000 (See Section 4 below) | • Estimated capital cost:<br>– $1,277,000 (approx. 1800m of forcemain) | • Estimated capital cost:<br>– $1,417,000 (approx. 2000m of forcemain) | • Estimated capital cost:<br>– $1,347,000 (approx 1900m of forcemain) |
| **Overall Preference & Ranking** | ☒ **(4)** | ☑ **(1)** | ☒ **(2)** | ☒ **(3)** |

Figure 15 Evaluation of Surface Water Supply Alternatives

| Environmental Impacts | Alternative 1<br>South Simcoe Railway Alignment (from Beeton) | Alternative 1<br>Tottenham Road Alignment (from Alliston) | Alternative 1<br>Canadian Pacific Railway Alignment (from Alliston) |
|---|---|---|---|
| 1. Minimize Impact on Natural Environment | | | |
| **VTE Species** | • No VTE species identified on site. | • No VTE species identified on site. | • No VTE species identified on site. |
| **Environmentally Sensitive Areas** | • No environmentally sensitive areas, classified wetlands or other sensitivity issues were identified within the Tottenham area or its immediate vicinity. | • No environmentally sensitive areas, classified wetlands or other sensitivity issues were identified within the Tottenham area or its immediate vicinity. | • No environmentally sensitive areas, classified wetlands or other sensitivity issues were identified within the Tottenham area or its immediate vicinity. |
| **Designated Natural Heritage Areas** | • Site is not designated as a Natural Heritage Area. | • Site is not designated as a Natural Heritage Area. | • Site is not designated as a Natural Heritage Area. |
| **Vegetation** | • A wooded area surrounds the Nottawasaga River along the proposed alignment. Because there is already an existing watermain through this area no further impact on vegetation is expected. Some areas of vegetation surround the railway right-of-way.<br>• No significant impact is expected on wooded areas or vegetation as the proposed alignment is in an existing railway right-of-way. | • A wooded area surrounds the Nottawasaga River for approximately 300m along the proposed alignment.<br>• Some areas of vegetation surround the County Road.<br>• No significant impact is expected on wooded areas or vegetation as the proposed alignment is along an existing County Road. | • A wooded area surrounds the Nottawasaga River for approximately 400m along the proposed alignment. This is the location of the Alliston Pinery.<br>• A wooded area surrounds the Railway right-of-way for approximately 300m between 10th Line and 11th Line. This area is also considered to be a Significant Wildlife Habitat.<br>• Some areas of vegetation surround the railway right-of-way.<br>• No significant impact is expected on wooded areas or vegetation as the proposed alignment is in an existing railway right-of-way. |
| **Watercourse and Fisheries** | • A watercourse crossing of the Nottawasaga River is required between 12th Line and 13th Line. | • A watercourse crossing of the Nottawasaga River is required between 12th Line and 13th Line. | • A watercourse crossing of the Nottawasaga River is required between 12th Line and 13th Line. |

| Environmental Impacts | Alternative 1<br>South Simcoe Railway Alignment (from Beeton) | Alternative 1<br>Tottenham Road Alignment (from Alliston) | Alternative 1<br>Canadian Pacific Railway Alignment (from Alliston) |
|---|---|---|---|
| | • Watercourse crossings of Beeton Creek, Bailey Creek and several small tributaries are required along the proposed alignment.<br>• The proposed alignment follows beside an existing watermain and will cross the Nottawasaga River in the same location. No further impact on the river is expected.<br>• Construction at these crossings may have some short-term mitigable impacts on the surrounding environment.<br>• Large-scale stream habitat rehabilitation programs are currently being undertaken in the surrounding area for both Beeton Creek and the Boyne River, which may be impacted. The South Simcoe Railway runs along side Beeton Creek therefore it is possible that work may affect the river or the local fish habitat.<br>• Any work around Beeton Creek requires approval by the Nottawasaga Valley Conservation Authority.<br>• Any work around the Nottawasaga River requires approval by Fisheries and Oceans Canada under the Federal Fisheries Act. | • Watercourse crossings of Beeton Creek, Bailey Creek and several small tributaries are required along the proposed alignment.<br>• Construction at these crossings may have some short-term mitigable impacts on the surrounding environment.<br>• The Nottawasaga Conservation Authority has recently been working on projects to monitor the Nottawasaga Walleye population, as well as harvest management options for the Nottawasaga Rainbow Trout.<br>• Large-scale stream habitat rehabilitation programs are currently being undertaken in the surrounding area for both Beeton Creek and the Boyne River, which may be impacted.<br>• Any work around the Nottawasaga River requires approval by Fisheries and Oceans Canada under the Federal Fisheries Act.<br>• Any work around Beeton Creek requires approval by the Nottawasaga Valley Conservation Authority. | • Watercourse crossings of Beeton Creek, Bailey Creek and several small tributaries are required along the proposed alignment.<br>• Construction at these crossings may have some short-term mitigable impacts on the surrounding environment.<br>• The Nottawasaga Conservation Authority has recently been working on projects to monitor the Nottawasaga Walleye population, as well as harvest management options for the Nottawasaga Rainbow Trout.<br>• Large-scale stream habitat rehabilitation programs are currently being undertaken in the surrounding area for both Beeton Creek and the Boyne River, which may be impacted.<br>• Any work around the Nottawasaga River requires approval by Fisheries and Oceans Canada under the Federal Fisheries Act.<br>• Any work around Beeton Creek requires approval by the Nottawasaga Valley Conservation Authority. |
| 2. Minimize Impact on Social and Cultural Environments | | | |

| Environmental Impacts | Alternative 1<br>South Simcoe Railway Alignment (from Beeton) | Alternative 1<br>Tottenham Road Alignment (from Alliston) | Alternative 1<br>Canadian Pacific Railway Alignment (from Alliston) |
|---|---|---|---|
| **Impacts on Residents** | • Increase the available water supply in Tottenham and improve system redundancy.<br>• Allow for new growth and development in Tottenham. | • Increase the available water supply in Tottenham and improve system redundancy.<br>• Allow for new growth and development in Tottenham. | • Increase the available water supply in Tottenham and improve system redundancy.<br>• Allow for new growth and development in Tottenham. |
| **Recreational Areas** | • The proposed alignment of the watermain is along an existing right-of-way therefore no recreational areas will be impacted.<br>• The Tottenham Conservation Area is located on the south side of Mill Street but is not within the proposed alignment therefore will not be impacted. | • The proposed alignment of the watermain is along an existing County Road therefore no recreational areas will be impacted.<br>• The Tottenham Conservation Area is located on the south side of Mill Street but is not within the proposed alignment therefore will not be impacted. | • The proposed alignment of the watermain is along an existing right-of-way therefore no recreational areas will be impacted.<br>• The Tottenham Conservation Area is located on the south side of Mill Street but is not within the proposed alignment therefore will not be impacted. |
| **Traffic Impacts** | • Construction will take place along major streets in Beeton therefore traffic control will be required during construction.<br>• Traffic impacts through Beeton will be mitigated by constructing the east/west portion of the watermain on a street running parallel to Main Street.<br>• Construction along railway right-of-way will require coordination with the South Simcoe Railway. | • Construction will take place along a County Road therefore traffic control will be required during construction.<br>• Traffic impacts will be significant for this alignment since Tottenham Road is the main route between Tottenham and Alliston. | • Traffic impacts for local residents will be minimal since the majority of construction is not taking place on local roadways.<br>• Construction along the railway right-of-way will require coordination with Canadian Pacific Railway. |
| **Archeological Sites and Cultural Areas** | • The South Simcoe Railway is part of the original Hamilton and Northwest Railroad and an important part of the cultural heritage in Tottenham. The South Simcoe Railway Heritage Corporation runs historic steam train | • No known archaeological or cultural issues along Tottenham Road.<br>• This alignment requires approximately 1,500 m of watermain to run along the South Simcoe Railway right-of-way in | • No known archaeological or cultural issues along the Canadian Pacific Railway right-of-way.<br>• This alignment requires approximately 1,500 m of watermain to run along the South |

| Environmental Impacts | Alternative 1<br>South Simcoe Railway Alignment (from Beeton) | Alternative 1<br>Tottenham Road Alignment (from Alliston) | Alternative 1<br>Canadian Pacific Railway Alignment (from Alliston) |
|---|---|---|---|
| | excursions between Tottenham and Beeton.<br>• Any impacts to the South Simcoe Railway may be subject to the guidelines established by the Ministry of Culture, Tourism and Recreation to preserve the features significant to the area's cultural heritage. | Tottenham.<br>• Any impacts to the South Simcoe Railway may be subject to the guidelines established by the Ministry of Culture, Tourism and Recreation to preserve the features significant to the area's cultural heritage. | Simcoe Railway right-of-way in Tottenham.<br>• Any impacts to the South Simcoe Railway may be subject to the guidelines established by the Ministry of Culture, Tourism and Recreation to preserve the features significant to the area's cultural heritage. |
| 3. Maximize Technical Suitability | | | |
| **Technical Feasibility**<br><br>**Proposed works Include** | • Construct a new 300 mm diameter watermain approximately 20,300 m long.<br>• Connect to existing system at the Parsons Reservoir and Pumphouse in Alliston. Watermain will run along the Canadian Pacific Railway to the South Simcoe Railway.<br>• Watermain will run along the South Simcoe Railway and connect to the existing McKelvey Reservoir and Pumphouse in Beeton.<br>• Crossing of the Nottawasaga River beside an existing watermain.<br>• Watermain will run south along Patterson Street in Beeton and west parallel to Main Street to the South Simcoe Railway.<br>• Watermain will run along the South Simcoe Railway and connect to the existing the Mill Street Reservoir and Pumphouse in Tottenham. | • Construct a new 300 mm diameter watermain approximately 16,000m long.<br>• Connect to existing system at the Parsons Reservoir and Pumphouse in Alliston. Watermain will run along the Canadian Pacific Railway to the South Simcoe Railway.<br>• Watermain will run along the South Simcoe Railway to Tottenham Road.<br>• Watermain will run along Tottenham road to Nolan Road in Tottenham.<br>• Watermain will run along Nolan Road to the South Simcoe Railway, then along the South Simcoe Railway and connect to the existing Mill Street Reservoir and Pumphouse in Tottenham.<br>• Open cut installation along an existing road. | • Construct a new 300 mm diameter watermain approximately 16,000m long.<br>• Connect to existing system at the Parsons Reservoir and Pumphouse in Alliston. Watermain will run along the Canadian Pacific Railway to Nolan Road in Tottenham.<br>• Watermain will run along Nolan Road to the South Simcoe Railway, then along the South Simcoe Railway and connect to the existing Mill Street Reservoir and Pumphouse in Tottenham.<br>• Open cut installation along an existing railway right-of-way.<br>• Crossing of the Nottawasaga River. All precautions must be taken not to damage or disturb the river or local fish habitat.<br>• Actual alignment will be subject to negotiations with the Canadian Pacific Railway. |

| Environmental Impacts | Alternative 1<br>South Simcoe Railway Alignment (from Beeton) | Alternative 1<br>Tottenham Road Alignment (from Alliston) | Alternative 1<br>Canadian Pacific Railway Alignment (from Alliston) |
|---|---|---|---|
| | • Open cut installation along an existing railway right-of-way and existing roadways.<br>• Actual alignment will be subject to negotiations with the Town of Beeton and the South Simcoe Railway. | • Crossing of the Nottawasaga River. All precautions must be taken not to damage or disturb the river or local fish habitat.<br>• Actual alignment will be subject to negotiations with Simcoe County. | |
| **Compatibility with Existing or Planned Infrastructure System** | • Upgrades will be required to the existing McKelvey Reservoir and Pumphouse in the Town of Beeton.<br>• Upgrades throughout the Town of Beeton will have to account for the future expansion of Tottenham as well as the future expansion of Beeton. | • Upgrades will be required to the existing Parsons Reservoir and Pumphouse in Alliston. | • Upgrades will be required to the existing Parsons Reservoir and Pumphouse in Alliston. |
| 4. Minimize Costs (Economics) | | | |
| **Capital Costs** | • Estimated capital cost $14,769,000. | • Estimated capital cost $12,453,750. | • Estimated capital cost $13,533,750. |
| **Deferment of Capital Expenditures** | • Project may be completed in stages to minimize the impact of “upfront” capital costs.<br>• Phase 1 to include the construction of a Beeton- Tottenham feedermain only.<br>• Phase 2 to include upgrades to the McKelvey Reservoir and Pumphouse and the construction of an Alliston-Beeton feedermain.<br>• Phase 2 can be deferred to approximately the year 2021. If additional well capacity is achieved from the existing Tottenham | • No surface water will be supplied to Tottenham until the completion of the project. | • No surface water will be supplied to Tottenham until the completion of the project. |

| Environmental Impacts | Alternative 1<br>South Simcoe Railway Alignment (from Beeton) | Alternative 1<br>Tottenham Road Alignment (from Alliston) | Alternative 1<br>Canadian Pacific Railway Alignment (from Alliston) |
|---|---|---|---|
| | groundwater supply, Phase 2 may be able to be deferred even longer. | | |
| **Operating and Maintenance/ Decommissioning Costs** | • Increased operational costs for the McKelvey Reservoir and Pumphouse in the Town of Beeton. | • Increased operational costs for the Parsons Reservoir and Pumphouse in Alliston. | • Increased operational costs for the Parsons Reservoir and Pumphouse in Alliston. |
| **Overall Preference & Ranking** | **☑(1)** | **☒ (2)** | **☒ (3)** |

# 9 Preferred Solutions

## 9.1 Preferred Water Connection Alternative

**Evaluation of Watermain Connection Alternatives on The Boulevard**

Based on the results of the above evaluation, Alternative 2 was selected as the preferred alignment for the watermain connection mainly due to less potential impact on existing structures and vegetation.
All preferred water servicing works for the Secondary Plan Area are indicated in Figure 16.

## 9.2 Preferred Wastewater Alternative

**Evaluation of Pumping Station Alternatives**

Following application of the evaluation criteria the recommended preferred solution for locating the Secondary Plan Area Wastewater Pumping Station is Alternative 1: Northern Portion of the Nordstar Development lands, south of Mill Street. Despite the slightly higher overall capital cost, this alternative was recommended due to the following issues identified during the evaluation process:

- Less potential impact on sensitive watercourse Beeton Creek;
- Pumping station site is behind residential dwellings and adjacent to undeveloped green space. This will potentially result in less visual, noise and emissions impact on local residents;

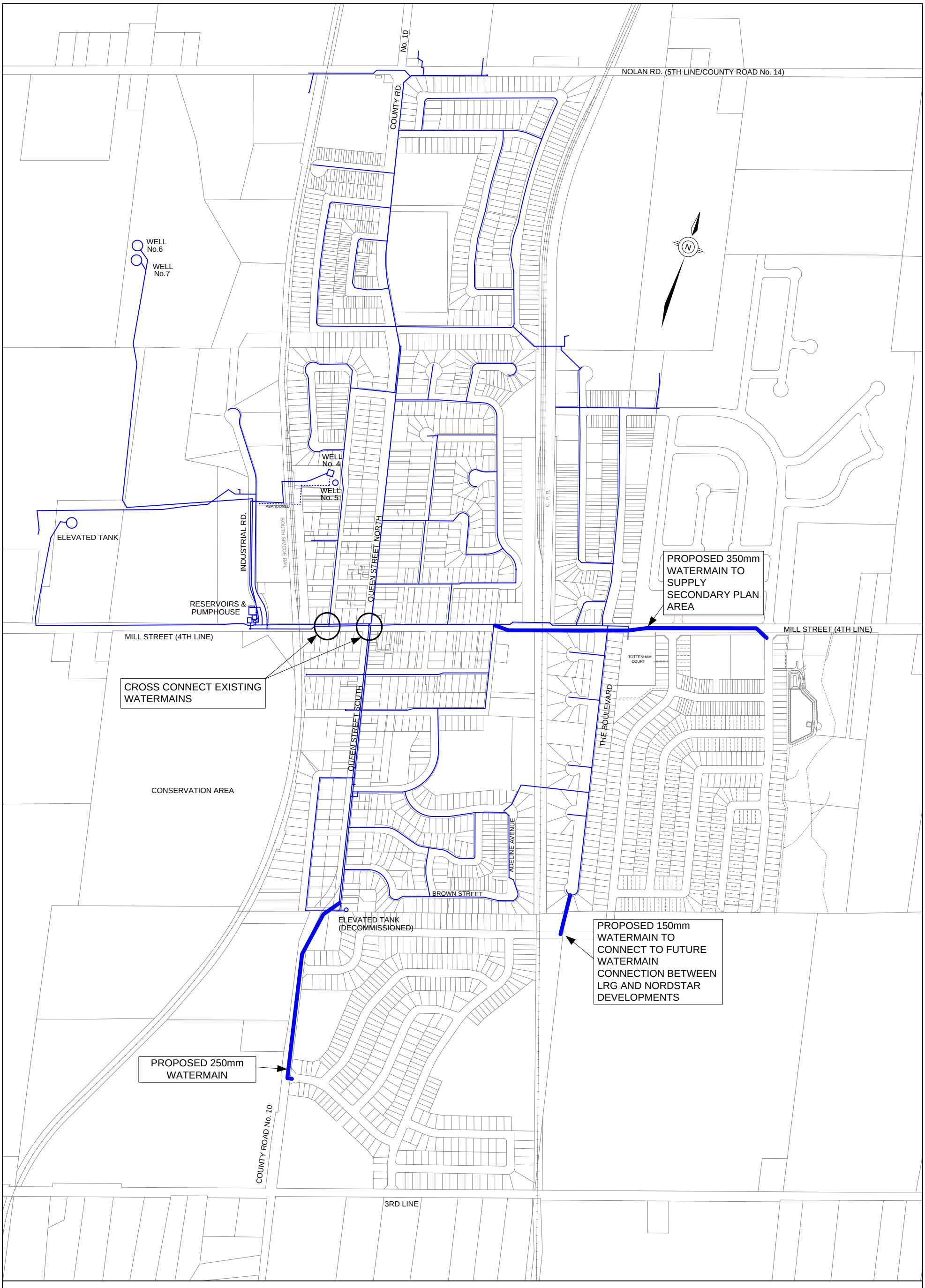
Land space is readily available for construction of the Secondary Plan Area wastewater pumping station on the Nordstar Development lands. It is proposed that the following existing developed areas and subdivisions be serviced by the Secondary Plan Area Pumping Station:

- Eastern Pumping Station Drainage Area
- Arvida-Tottenham Subdivision
- The Boulevard

The estimated service population for these areas is 2,576 persons. The forecasted peak flow is 58.6 L/s.

The proposed Secondary Plan Area Pumping Station will be designed to handle peak hour wastewater flows from existing service areas in the Community of Tottenham as well as future residential subdivisions within the Secondary Plan Area including:

- The Six Nights Development
- LRG Development
- Nordstar Development
- Currently Undeveloped Area Immediately South of Nordstar Development Lands




LEGEND

Existing Watermains

Proposed Watermains

**NOT TO SCALE**

**Community of Tottenham**

Proposed Water Servicing Works for Tottenham S.P.A.

| FIGURE 16 | JAN. 2008 | MacViro |
|---|---|---|

The estimated service population for these areas is 5,775 persons. The forecasted peak flow is 123.7 L/s.

**Evaluation of Secondary Plan Area Forcemain Alternatives**

During the evaluation process it was found that through application of the evaluation criteria there was an emphasis on a detailed review of existing underground utility information, available corridors within existing right-of-ways and the feasibility of obtaining easements was key factors in finalizing the forcemain alignment.

The preferred solution for the Secondary Plan Area Forcemain is Alternative 2, constructing the forcemain along Mill Street and Industrial Road and connecting into the existing Industrial Rd. Pumping Station.

This alternative was recommended due to the following issues identified during the evaluation process:

- Existing forcemain to the Tottenham WWTP has adequate capacity to handle flows from the Secondary Plan Area and existing Tottenham residential areas up to approximately 2016;
- The Town of New Tecumseth anticipates expansion of the existing Industrial Road Pumping Station and construction of a new forcemain to convey sewage flows north to the Regional Wastewater Treatment Plant by the year 2011;
- By connecting the proposed forcemain directly into the Industrial Rd. Pumping Station rather than the Tottenham WWTP, the Town will potentially achieve project lifecycle cost savings in the order of $383,000 and significantly minimize impacts on the crossing of the environmentally sensitive Beeton Creek; and
- By constructing the forcemain along Mill St. rather than the Richmond St. or Wilson St. alignments, will significantly reduce impacts on local residential areas. The Town will also save approximately $140,000 on the length of the forcemain.

## 9.3 Preferred Water Supply Alternatives

### 9.3.1 Groundwater Supply

**Wells 4 and 5**

Due to sand and grit production, it is recommended that wells No. 4 and No. 5 continue to operate under current conditions. However, it is also recommended that further investigations be conducted to determine the actual conditions of these wells.

**Well 6**

Further study is required. However it does appear that there is potential additional capacity in Well 6. Upgrades to the pumping equipment would allow for additional operating capacity of 1,123 $m^3$/day (while complying with limits under the existing Permit To Take Water).

It is recommended that pumping tests be performed on Wells 6 and 7 simultaneously to ensure that there are no limitations to aquifer capacity or maximum drawdown with both wells running. It is also recommended that pump upgrades be considered in Well 6 if it is determined that the aquifer can support the additional capacity. Upgrades to the pumping system may allow for increased well capacity within the limits of the current Permit To Take Water.

**Well 7**

Pending the results from the proposed 72-hour well testing, it is recommended that Well 7 be inspected by CCTV for any infrastructure problems or damage that is leading to sand infiltration, and repaired if possible.

### 9.3.2 Surface Water Supply

Based on the results of the above evaluation, Alternative 1 was selected as the preferred alternative for the watermain alignment.

Although this alignment has a capital cost approximately $2.3 Million higher that the least expensive alternative, a large portion of these capital costs may be deferred to the year 2031 or possibly later. Phase 1 of the project will only require approximately $6.5 Million in capital costs.

# 10 Additional Approval Requirements

## 10.1 Specific Environmental Impacts

The recommended alternatives were developed to avoid or mitigate environmentally sensitive areas. Therefore, environmental impacts will generally be limited to temporary impacts associated with construction activities of the watermain connection, pumping station and forcemain. Inconvenience to the public will be minimized as traffic restrictions will be limited and noise and dust control measures will be utilized. Stream crossings will be undertaken using techniques that minimize impacts related to erosion and sedimentation. Environmental inspection and monitoring will be carried out during construction. The timing of the construction activities will take into account local traffic patterns (including school activities) and other sensitive environmental issues identified during detailed design.

The environmental impacts of decommissioning each of the three pumping stations include the following:

1. Significant reduction in pumping station operating and maintenance costs, in particular, energy costs related to operation of pump, process and electromechancial equipment within the facility;
2. Reduced potential for pumping station overflows in the rare case that process equipment could malfunction;
3. Replacement of an aging facility; and

4. Cost savings which is based on an estimated present value of savings from the decommissioning.

### 10.2 Approvals

A Certificate of Approval (under the *Environmental Protection Act*) from the Ministry of the Environment will be required for the construction of the watermain connection, wastewater pumping station and the sanitary forcemain. All valley, stream and river crossings will require the approval of the Nottawasaga Valley Conservation Authority and perhaps the Ministry of Natural Resources. These approvals will be sought during detailed design of each portion of the project.

## 11 Monitoring and Mitigation Recommendations

### 11.1 Social, Economic and Cultural

#### 11.1.1 Noise, Dust and Vibration

Increased levels of truck traffic will occur in proximity to, and along the proposed access routes during construction. This means that during construction increased levels of noise, vibration and air pollution will be experienced. The potential sources of noise, dust and vibration are truck traffic and regular construction activities. These impacts can be mitigated as follows:

- All truck traffic, excavation equipment and other activity that potentially generates significant noise levels will be restricted to normal work hours;
- Excavated soil material will be used on-site as much as possible in order to minimize truck haulage to off-site disposal areas;
- Truck traffic and excavation equipment operation will be limited to daylight hours according to seasonal variation in day length;
- Construction activities will comply with Town of Tecumseth noise by-laws;
- Dust control agent will be applied as necessary; and
- Dry exposed soil will be sprayed with water to make it less susceptible to wind erosion.

#### 11.1.2 Public Notification

Public notification of the construction related activities would be provided through such mechanisms as newspaper ads, notices and/or signs. Keeping the public informed of the pending and ongoing work will be beneficial to good public relations. Notices will include traffic restrictions, lane closures, detour routes and description or status of work.

## 11.2 Environmental Impacts

### 11.2.1 Vegetation and Vegetation Communities

The alternative solutions can be designed to minimize the impact on vegetation and vegetation communities. There are no sensitive natural features (i.e., wetlands) in the nearby area. As well the properties affected by the construction have been previously disturbed as they are in an urban setting. Therefore there is minimal impact anticipated on the vegetation and vegetation communities in the area.

### 11.2.2 Wildlife and Wildlife Habitat

The plant and surrounding area are previously disturbed as the study area is within the urban setting, which would impact on the presence of potential wildlife and wildlife habitat. It is unlikely that this area would attract or support area sensitive or interior species, based on the previously disturbed state present. Wildlife habitat is limited to the riparian corridors, which may also provide linkages to higher quality habitat within the watershed itself, as well as cultural plantings, hedgerows, and the remaining woodlots. None of these are present on the plant property and thus there would be minimal impact on wildlife and wildlife habitat by this project. No rare, threatened or endangered species were noted, nor were listed in databases, to occur within the study area. It would be expected that typical human tolerant wildlife species would inhabit this area, and are common throughout Ontario's urbanized landscape.

# 12 Public and Agency Consultation

Consultation with the public (which includes stakeholders and interested parties) and government review agencies is a necessary and important component of the Class Environmental Assessment process. To meet the Class EA consultation requirements for these Schedule B projects, the Town ensured that the public and review agencies were informed of the study and given the opportunity to provide input (both written and verbal) on the assessment and evaluation process for the preferred solution and the alternative designs. Copies of specific documentation (notices, information bulletins, etc.) from the public and agency consultation program are provided in the Appendices. The following section provides a summary of the key points of contact that were undertaken throughout the course of the project, as well as a summary of comments received.

## 12.1 Project Notices

### 12.1.1 Notice of Public Review

A Notice of Public Review was sent to key project stakeholders and agencies. A copy of the Notice was mailed out to all applicable agencies (refer to Section 6). The Notice was also placed in the local newspapers.

This Notice was consistent with the requirements of a Schedule B and fulfilled the first point of mandatory contact. The purpose of this Notice was to inform the public of the nature of the problem and need for the project, the proposed alternative solutions and invite public inquires and/or comments. Contact information for the Town and MacViro Consultants Inc. was provided for interested parties to respond to the Notice and have their names added to the project mailing list or to ask questions related to the project. A copy of the Notice is included in Appendix B.

### 12.1.2 Notice of Completion

The Notice of Completion was placed in local newspapers. This notice is consistent with the requirements of a Class Environmental Assessment at the end of project and provides an opportunity for the public to be made aware and comment within 30 days on the recommendations identified in the study. A copy of the Notice is included in Appendix B.

Date of issue for Notice of Completion: immediately following Council Meeting of February 11, 2008.

# APPENDIX A

## Technical Memoranda

# Technical Memorandum 1.1
# Study Background

## 1. Review of Project Background

The previous Town of Tottenham was incorporated in 1884. In January 1991, The Town of New Tecumseth was created incorporating Tottenham and other former municipalities including Alliston, Beeton, and Tecumseth Township. The Community of Tottenham is located at the southwest portion of the Town of New Tecumseth.

The Town of New Tecumseth's Official Plan provides for growth in the Community of Tottenham that will require both expansion of the Town's water and wastewater systems and upgrades to existing municipal services. To outline a framework for future infrastructure works, the Tottenham Secondary Plan Class Environmental Assessment, Stormwater Management and Municipal Servicing Master Plan was completed in July 1997 by Philips Planning and Engineering Limited. An update of this master plan, the Tottenham Secondary Plan Water and Wastewater Servicing Master Plan Update was prepared by MacViro Consultants. Both studies pertain to three blocks of land and adjacent areas, which collectively define the expansion of the Urban Boundary for the Community of Tottenham. These lands, which comprise the Secondary Plan Area (SPA), are generally located south and to the east of the existing limits of the Community of Tottenham (refer to Figure 1.1) as follows:

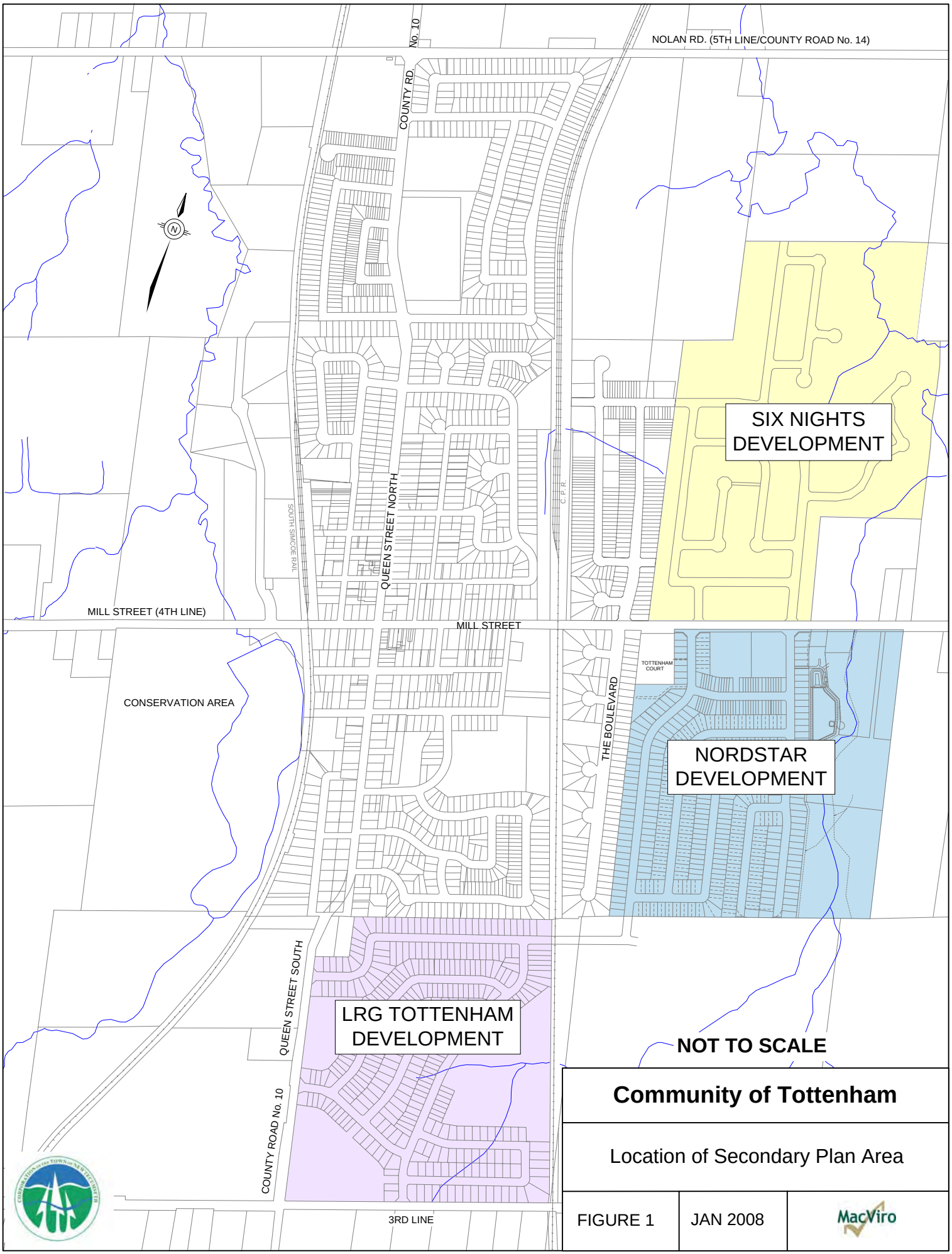
- Six Nights Developments, located north of Mill Street and east of the CPR railway line, consisting of approximately 45 ha;
- Nordstar Developments (previously identified as 976349 Ontario Inc.), located south of Mill Street and east of the CPR railway line, consisting of approximately 30 ha;
- LRG Tottenham Developments (previously identified as Mod-Aire Homes Limited & Inter Phase Developments Inc.), located north of Third Line and West of the CPR railway, consisting of approximately 38 ha.

## 2. Study Objectives

The objectives of this Class Environmental Assessment Study are as follows:

### Provide Water and Wastewater Systems to Support Growth Effectively

The Class Environmental Assessment Study will define the water and wastewater infrastructure required to service anticipated growth in the Community of Tottenham in an efficient and cost-effective manner. While population and employment forecasts provide the guidelines to calculate water and wastewater capacity and servicing requirements, careful staging and phasing of the infrastructure program is required to accommodate growth in a timely manner while avoiding over-commitment of expensive capital works.




# Community of Tottenham

Location of Secondary Plan Area

| FIGURE 1 | JAN 2008 | MacViro |
|---|---|---|

**Protect the Environment**

The Class Environmental Assessment Study will help ensure that the existing natural environment is capable of meeting the needs of the present without compromising the ability of future generations to meet their own needs. In developing the Class EA Study, the Town must be sensitive to the environment and must meet or exceed all relevant guidelines, policies and standards, including those pertaining to groundwater resources and the Oak Ridges Moraine.

**Provide Cost Stability and Minimization of Costs**

The Class EA Study must evaluate and select the servicing solutions, which maintain cost stability throughout the implementation of the projects. Minimizing cost and optimizing delivery of works to correspond to the anticipated population and employment growth will help to ensure this objective is achieved.

## 3. Reference Reports and Studies

This Class EA Study for Water and Wastewater Infrastructure Improvements for the Tottenham Secondary Plan Area has been based on a review of a number of previous reports and studies, including:

- Tottenham Secondary Plan Class Environmental Assessment, Stormwater Management and Municipal Servicing Master Plan completed in July 1997 by Philips Planning and Engineering Limited.
- Tottenham Secondary Plan Water and Wastewater Servicing Master Plan Update prepared by MacViro Consultants.

These studies provide a long-range plan that integrates municipal water and wastewater servicing requirements and infrastructure improvement needs for existing and future land uses in the Secondary Plan Area with environmental assessment planning principles.

- Preliminary Geotechnical and Hydrogeological Evaluation - East Tottenham Secondary Plan, Town of New Tecumseth (Community of Tottenham) prepared by Terraprobe Limited, March 1996.

This study, prepared for Six Nights Development Limited and Arvida Development Corporation (976349 Ontario Inc.) provided a baseline inventory of hydrogeologic and geotechnical conditions for the 90 ha area adjacent to the east boundary of the Community of Tottenham. The report provided the 1997 Master Plan with a preliminary assessment of the soil and groundwater conditions at the site, geotechnical constraints with respect to development of services and housing, and guidance with respect to development within the Oak Ridges Moraine area.

- Tottenham East Development, Town of Tottenham - Preliminary Environmental Impact Report prepared by Dougan & Associates and G Portt & Associates, December, 1995.

This study identified and evaluated environmental constraints related to fisheries and terrestrial resources within the study area. The constraints outlined in the foregoing study were implemented into the 1997 Master Plan as areas of protection/enhancement wherever possible.

- Amberglen Developments Inc. and Ellsbirch/Mountell Investment Lands Tottenham, Development Re: Oak Ridges Moraine Impact Assessment - Implementation Guidelines prepared by Gore and Storrie Limited, October 1995.

This study, prepared for Amberglen Developments Inc. and Ellsbirch/Mountell Investment, provided supporting documentation for the residential designation and development of lands south of the existing developed Community of Tottenham. The report provided the 1997 Master Plan with guidance as to how the development of the foregoing lands can proceed in compliance with the Oak Ridges Moraine Implementation.

- Stormwater Management Study for Amberglen and Ellsbirch/Mountell Development, Tottenham, Town of New Tecumseth prepared by A. M. Candaras Associates, May 1995.

This report provided some of the hydrologic parameters for the Amberglen and Ellsbirch/Mountell (Mod-Aire Homes et. al.) development area used in the regional hydrologic analysis in the 1997 Master Plan. One primary stormwater management constraint identified in this study was the limited capacity of an existing 900 mm diameter culvert passing under the CNR line east of the site. The limited culvert capacity creates potential for flooding within the development area, which led to a recommendation by Candaras for a water quantity control facility upstream of the railway.

- Hydrogeologic and Geotechnical Assessment Proposed Residential Subdivision, Part Lot 6, Conc. 3 Town of New Tecumseth prepared by Terraprobe Limited, April 1995.

This study, prepared for Mod-Aire et al (formerly Amberglen Developments Inc. and Ellisbirch/Mountell), provided a baseline inventory of geotechnical and hydrogeologic conditions, as well as management objectives for the 18 ha area immediately south of the existing developed Community of Tottenham.

- Preliminary Stormwater Management Report, Arvida-Tottenham Limited 43T-89042, Amalgamated Municipalities of Alliston, Beeton, Tecumseth and Tottenham, prepared by G. M. Sernas Associates Ltd., January, 1992.

This study provided some of the hydrologic parameters for the Arvida-Tottenham development area used in the regional hydrologic analysis for the 1997 Master Plan study. The area identified in this study is located in the Community of Tottenham, north of Mill Street and West of the Canadian Pacific Railway. Drainage from this area has been proposed to be treated as external drainage to the Six Nights Developments lands.

- Town of New Tecumseth, Community of Tottenham, Preliminary Servicing Study for Proposed Tottenham (East) Secondary Plan prepared by Urban Ecosystems Limited, (undated)

This report, prepared for Six Nights Developments Inc. and 976349 Ontario Inc., illustrates the serviceability of lands to the east of the existing developed Community of Tottenham, immediately north and south of Mill Street.

In addition to the foregoing studies, the following documents were also used in the 1997 study.

- Town of New Tecumseth Master Servicing Report for Area Sewage Works - Environmental Study Report prepared by CC Tatham and Associates, December 1995.

This study provided water quality and sanitary servicing baseline information, which has been used to guide the development of a stormwater management plan for the Secondary Planning Area.

- Nottawasaga Valley Watershed Management Plan, Nottawasaga Valley Conservation Authority (NVCA), January 1996.

This document provided by the NVCA during the course of the Master Plan consultation phase provided background on environmental goals and objectives.

- Stormwater Management Practices Planning and Design Manual, MOE, 1994.

This MOE publication was used as a technical resource and basis for water quality requirements for the Tottenham Secondary Plan Area.

- Watershed Hydrology Study for Nottawasaga, Pretty and Batteaux River, Black Ash, Silver, and Sturgeon Creeks prepared by MacLaren Plansearch for the Nottawasaga Valley Conservation Authority, 1988.

This study provided a base hydrologic model, which was further discretized and updated to represent the Tottenham Secondary Plan Area.

- Guidelines for the Design of: Sanitary Sewage Works; Water Distribution systems, MOE, 1994.

This MOE publication was used as a technical resource.

- Town of New Tecumseth Engineering Design Standard Specifications and Drawings, 1993.

This document was obtained from the Town and used as a technical and design reference.

- Town of New Tecumseth (Tottenham Area) Proposed Residential Development Water Servicing, prepared by Ainley & Associates Limited, 1997.

This report outlines the effects of the proposed developments on the existing water distribution system.

- Town of New Tecumseth Hydraulic Performance Analysis of the Tottenham Water Works System, prepared by Ainley & Associates, 1994.

This report was used as a basis for evaluating the 1997 Ainley water servicing report.

- Town of New Tecumseth (Tottenham) Municipal Assistance Program No. 53-0117-01 Water Works Expansion, February 1996 and Addendum to Design Brief, June 1996, prepared by Ainley & Associates.

These reports were used as a basis for evaluating the 1997 Ainley water servicing report.

- Town of New Tecumseth Master Servicing Plan for Area Sewage Treatment Works - Environmental Study Report; December 1995, prepared by C.C. Tatham & Associates.

This report was used to obtain information on the current sanitary sewer infrastructure, and proposed future enhancements.

# Technical Memorandum 1.2
# Existing Water and Wastewater Servicing

## 1. Existing Water Infrastructure

The existing water distribution infrastructure adjacent to the Secondary Plan Area is indicated on Figure 1. Watermains have been constructed to the limits of the Community of Tottenham urban area, however, the Secondary Plan Area (study area) itself is currently not serviced.

A 200 mm diameter watermain has been constructed along Mill Street to service The Boulevard and the Tottenham Court. A 250 mm diameter watermain has also been constructed along Queen Street South, from the elevated reservoir at the south limit of the existing urban boundary.

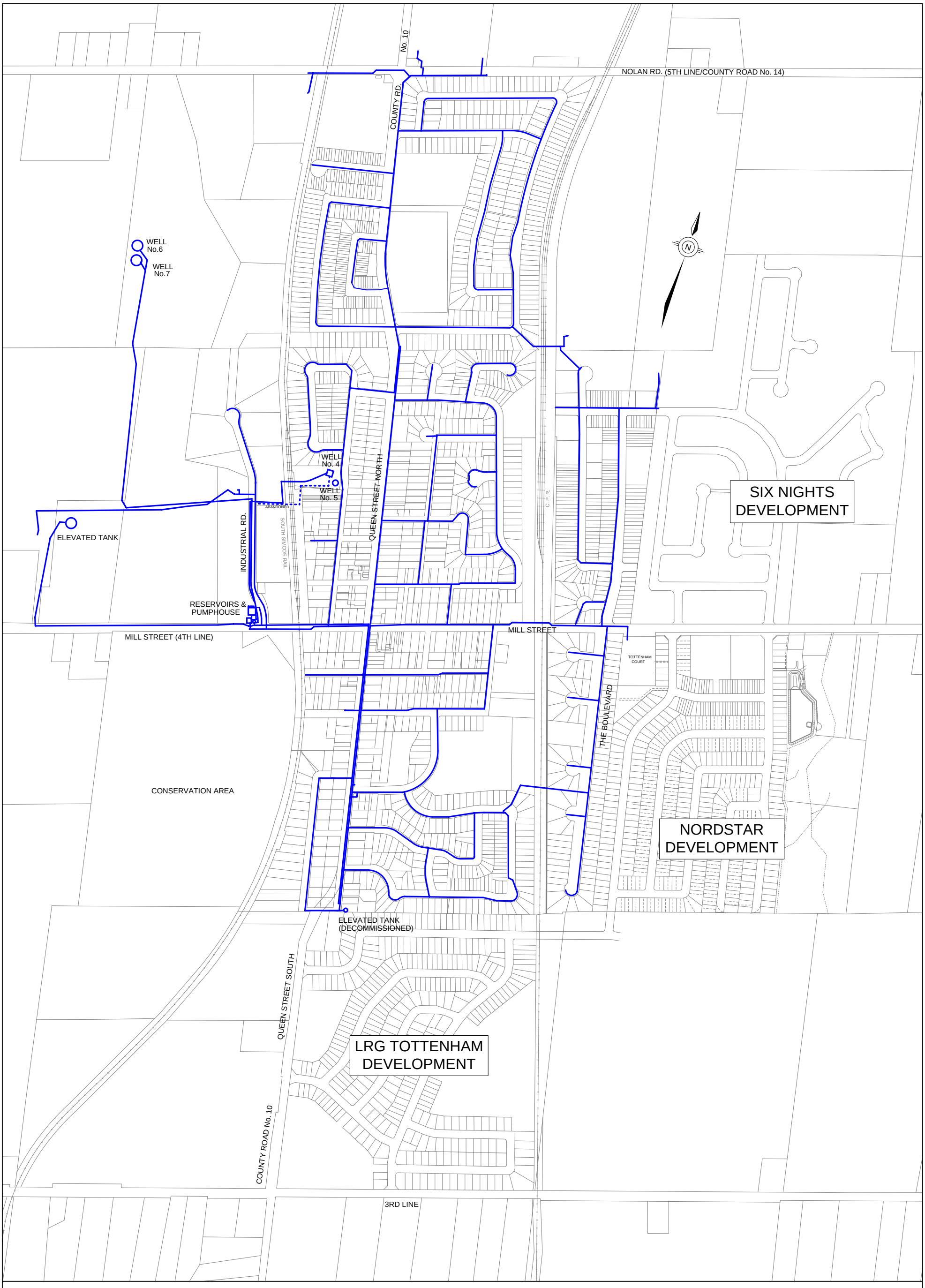
Tottenham's current water supply system consists of four wells and four storage facilities. The 2004 flow data indicate that the wells produce a maximum daily output of approximately 3,907 cubic metres, while the storage facilities provide a storage volume of 5,814 cubic metres.

A new water tower was commissioned in June of 1997. The existing water supply system has sufficient capacity to service a population of approximately 9,600 people.

## 2. Existing Wastewater Infrastructure

The existing sanitary infrastructure within and adjacent to the Secondary Plan Area is indicated in Figure 2. Currently, there is no wastewater servicing within the Secondary Plan Area. Sanitary sewers have however been constructed to the existing limits of the Community of Tottenham urban boundary in anticipation of future connections being installed.

The entire sanitary sewer system eventually discharges to the Industrial Road Pumping Station located to the west side of the existing Tottenham urban area. From this point, sewage is pumped west via a 350 mm diameter forcemain to the Tottenham Wastewater Treatment Plant (WWTP). As documented in the "Town of New Tecumseth Master Servicing Plan for Area Sewage Treatment Works - Environmental Study Report" (C.C. Tatham & Associates, December 1995), the WWTP is an extended aeration plant, which incorporates the existing lagoons as sludge storage and effluent polishing facilities. Treated effluent is ultimately discharged to Beeton Creek. Works are ongoing at the Tottenham WWTP to increase its rated capacity up to 4,082 $m^3$/day. A Certificate of Approval




LEGEND

Existing Watermains

**NOT TO SCALE**

**Community of Tottenham**

Existing Water System

| FIGURE 1 | JAN 2008 | MacViro |
|---|---|---|

NOLAN RD. (5TH LINE/COUNTY ROAD No. 14)

No. 10

COUNTY RD.

NOLAN ROAD PUMPING STATION

ARVIDA PUMPING STATION

EASTERN PUMPING STATION

SIX NIGHTS DEVELOPMENT

Sewage Lagoon

Sewage Lagoon

INDUSTRIAL ROAD PUMPING STATION

TOTTENHAM WASTEWATER TREATMENT PLANT

INDUSTRIAL RD.

SOUTH SIMCOE RAIL

QUEEN STREET NORTH

C.P.R.

MILL STREET

BOULEVARD PUMPING STATION

TOTTENHAM COURT

THE BOULEVARD

CONSERVATION AREA

NORDSTAR DEVELOPMENT

QUEEN STREET SOUTH

LRG TOTTENHAM DEVELOPMENT

COUNTY ROAD No. 10

3RD LINE

**NOT TO SCALE**

LEGEND

- Existing Gravity Sanitary Sewers
- Existing Sanitary Forcemains
- Nolan Road Pumping Station Drainage Area
- Industrial Rd. Pumping Station Drainage Area
- Arvida Pumping Station Drainage Area
- Boulevard Pumping Station Drainage Area
- Eastern Pumping Station Drainage Area

**Community of Tottenham**

Existing Wastewater System

| FIGURE 2 | JAN 2008 | MacViro |
|---|---|---|

Amendment to allow growth up to the expanded capacity has however not yet been issued. The increase in plant capacity, once approved, will allow for the servicing of a population equivalent of approximately 5,000 additional persons. The upgraded plant will include effluent filtration and ultraviolet disinfection equipment. The existing Industrial Road Pumping Station is also being upgraded as part of the WWTP expansion. The Town of New Techumseth's long-term planning for water and wastewater servicing however includes pumping of the Tottenham sewage flows north to the Regional WWTP. This would negate the requirement for sewage treatment capacity in the Community of Tottenham and therefore allow for the future decommissioning of the Tottenham WWTP.

The Boulevard Pumping Station (previously identified as the Eastgate Pumping Station) is located at the intersection of The Boulevard and Mill Street, adjacent to the Six Nights Developments and Nordstar Developments. Sanitary flows from homes constructed in The Boulevard subdivision, as well as from Tottenham Court, discharge into this facility. A 100 mm forcemain discharges sewage to a manhole located at the intersection of Mill and Keogh Streets, where it is then directed to the Industrial Road Pumping Station via a series of gravity sewers. The Boulevard Pumping Station is currently working at, or near, capacity. This is generally due to a large amount of inflow/infiltration into the sanitary sewer system in this area. During high rainfall events, surcharging of the sanitary sewer running along Eastern Avenue, resulting in basement flooding, does periodically occur. Sanitary flows discharging into this sewer from the Boulevard Pumping Station have been identified to be a significant contributor to the surcharging events.

The Eastern Pumping Station is located immediately west of the CPR right-of-way along Eastern Avenue. As indicated in Figure 2, the station services an area to the north and south of Mill Street. Flows from the station are pumped into the Industrial Road Pumping Station drainage area and are conveyed by gravity into the station. A 300 mm diameter sanitary sewer crosses underneath CPR tracks immediately adjacent to the Eastern Pumping Station. Discussions with Urban Ecosystems Limited have confirmed that the existing 300 mm sanitary sewer has been sized to handle flows from the Eastern Pumping Station. Town Operations staff have indicated that the 300 mm diameter sewer is currently being used as an overflow bypass during storm events and high flow conditions. A submersible pump had been installed in the manhole immediately upstream of the Eastern Pumping Station wet well, which pumps sewage to the manhole west of the CP Railway prior to discharge via the bypass sewer into the Arvida Tottenham subdivision collection system.

The Arvida Tottenham subdivision has also been fully developed. Sanitary flows from the subdivision are serviced by the Arvida Pumping Station and pumped into the Nolan Road Pumping Station collection system for eventual discharge into the Industrial Road Pumping Station. As-constructed drawings of the Arvida Tottenham subdivision indicate that the Arvida Pumping Station is a temporary facility. Discussions with Urban Ecosystems Limited, consultants for the Arvida Tottenham Development, indicate that the sanitary servicing for the development was designed to be directed to the Six Nights Development in the future.

# Technical Memorandum 1.3
# Class EA Process and Evaluation Criteria

## 1. Class EA Process

This project is being conducted in accordance with the requirements of the provincial Class Environmental Assessment process. The Class EA planning process requires the integration of sound engineering judgment, prudent long-term planning and protection of all aspects of the environment (natural, social, economic and cultural). This includes consultation with the public and affected agencies, to obtain comments and input, to ensure regulatory compliance and ultimately achieve acceptance for the preferred alternative.

The overall result of this Class EA process was the determination of a preferred solution to provide the water and wastewater infrastructure required to service anticipated growth in the Community of Tottenham. In developing the Class EA Study, the Town's objectives were to ensure sensitivity to the environment and meeting or exceeding all relevant guidelines, policies and standards, including those pertaining to groundwater resources and the Oak Ridges Moraine.

The Class EA process is a method of dealing with municipal infrastructure projects (including water and wastewater projects) which display the following important characteristics in common:

- recurring;
- usually similar in nature;
- generally limited in scale;
- have a predictable range of environmental effects; and
- responsive to mitigating measures.

The requirements for undertaking a Class EA are described in the document *Municipal Class Environmental Assessment*, June 2000, Municipal Engineers Association (MEA).

The Class EA document applies to a group of projects which are approved under the Environmental Assessment Act, as long as they are planned according to the requirements of the Class EA. The specific requirements of the document depend on the type of project, its complexity and the significance of potential environmental impacts. Three types of projects are identified in the document:

*Schedule "A"* projects are limited in scale and have minimal adverse environmental impacts. These projects generally include normal or emergency operational and maintenance activities. An example of a Schedule "A" wastewater project is the establishment of a sewage collection system and all necessary works to connect the system to an existing sewage outlet, provided all such facilities are in either an existing road allowance or a utility corridor. This type of project is pre-approved and may proceed to construction without further following the Class EA process.

*Schedule "B"* projects have the potential for some adverse environmental impacts and are approved provided they are "screened" by the public and government review agencies. These projects generally include improvements and minor revisions to existing facilities. An example of a Schedule "B" wastewater project is the establishment of a sewage collection system and all necessary works to connect the system to an existing sewage outlet, where all such facilities are not in either an existing road allowance or a utility corridor. This type of project requires the completion of Phases 1 and 2 of the planning process.

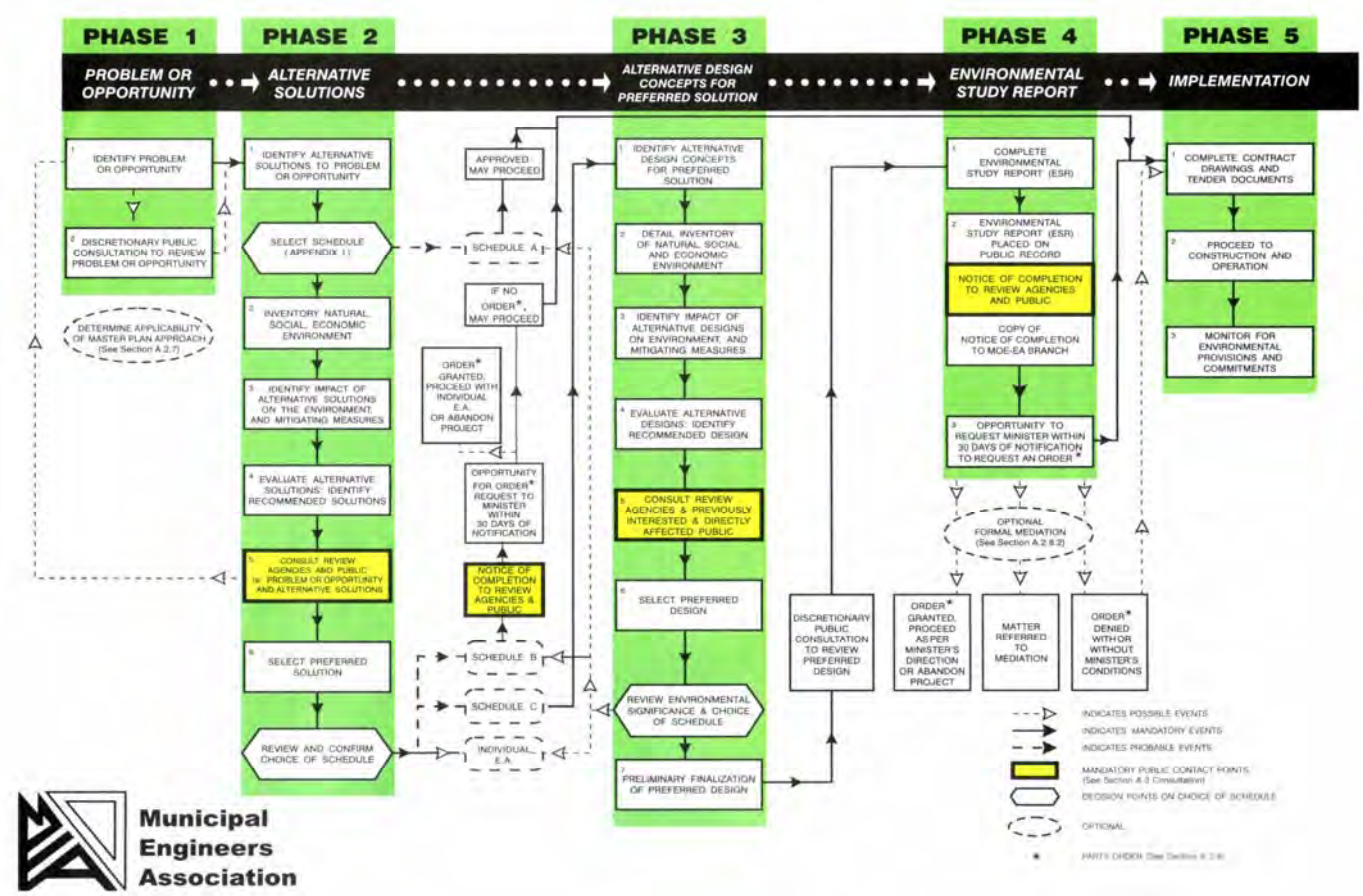
*Schedule "C"* projects are more complex and have the potential for significant environmental impacts. These projects generally include the construction of water and wastewater treatment facilities and major expansions to existing facilities. This type of project is subject to the full Class EA process and requires the preparation of an Environmental Study Report (ESR).

Agreements made or commitments given by the proponent to affected agencies or the public during the course of the screening process must be followed through and implemented, otherwise the EA approval will not be granted. If an affected agency or the public has a concern that cannot be resolved by discussion and negotiation with the proponent, then they can request a proponent to comply with Part II of the EA Act. Through issuance of a Part II Order, Schedule "B" and Schedule "C" projects may be elevated to an individual EA, requiring the proponent to comply with Part II of the EA Act. Schedule "B" projects could also be elevated to a Schedule "C".

The Class EA process in Ontario (refer to Figure 1) follows a logical decision-making process and incorporates all aspects of:

- Identifying the problem or need for the project (Phase 1);
- A thorough evaluation of the planning options or alternative solutions to the problem (Phase 2 – last phase for a Schedule "B");
- An assessment of design alternatives (pre-design for Schedule "B" or Phase 3 for a Schedule "C");
- The completion of documentation for the public record (Phase 4, Environmental Study Report (ESR) for Schedule "C" Projects); and
- The implementation of the project including design, with appropriate monitoring during construction (Phase 5).

**Figure 1 Municipal Class EA Process**




This Class EA study follows up on work completed under the Tottenham Secondary Plan Water and Wastewater Servicing Master Plan Update by MacViro Consultants. Master Plans typically recommend a set of works which are distributed geographically throughout the study area and which may be implemented over an extended period of time. The Master Plan Update therefore provides the context for the implementation of specific works identified by the Plan. It is necessary that the applicable schedule for each of these works be established and the related requirements of the Class EA process be met.

Based on the description of the works as detailed in the Master Plan Update, it was determined that the various works under this Class EA study would be classified as Schedule "A" or Schedule "B" projects since they entailed the provision of additional water and wastewater capacity that would be achieved through the following:

- Establish, extend or enlarge a water distribution system and all works necessary to connect the system to an existing system or water source, provided all such facilities are either in an existing road allowance or an existing utility corridor (Schedule“A”);
- Establish, extend or enlarge a sewage collection system and all works necessary to connect the system to an existing sewage or natural drainage outlet, provided all such facilities are either in an existing road allowance or an existing utility corridor (Schedule“A”);
- Establish, extend or enlarge a water distribution system and all works necessary to connect the system to an existing system or water source, where such facilities are not in an existing road allowance or an existing utility corridor (Schedule“B”);
- Establish, extend or enlarge a sewage collection system and all works necessary to connect the system to an existing sewage outlet where such facilities are not in an existing road allowance or an existing utility corridor (Schedule“B”);
- Retire a sewage facility which would have been subject to the EA Act for its establishment (Schedule“B”).

Projects identified as Schedule “A” may proceed to construction without further following the Class EA process. For project identified as Schedule “B”, Phases 1 and 2 of the Class EA process must be met which include:

- Addressing the issue of “need” (Phase 1);
- Evaluation of planning options (Phase 2).

Refer to Figure 1 above for an outline of the various steps involved for each of the phases. The Schedule “A” and “B” Class EA studies conclude with the Notice of Completion for a minimum 30-day public review period.

## 2. Evaluation Criteria

Evaluation criteria were developed to assess relevant alternatives for each project. The evaluation criteria reflect all components of the environment in the study area, including natural, social and cultural environments, technical suitability and cost considerations. The criteria are listed and a description of the key considerations for each criterion are provided in Figure 2.

Figure 2 Evaluation Criteria

| Criteria | Key Considerations |
|---|---|
| **1. Minimize Impact on Natural Environment** | |
| VTE Species | The number of vulnerable, threatened and/or endangered (VTE) species as identified by the Ministry of Natural Resources (MNR) potentially affected by an alternative. |
| Designated Natural Heritage Areas | The area of land classified as an Environmentally Sensitive Area (ESA), Area of Natural and Scientific Interest (ANSI), or Provincially (Class 1-3) or locally significant wetlands by the MNR affected by an alternative (local, regional, provincially significant). |

| Criteria | Key Considerations |
|---|---|
| Vegetation | Amount of woodlands or hedgerows affected or removed by an alternative, as well as the degree of impact on the edge of a woodlot / hedgerow. |
| Watercourses and Fisheries | The amount and quality of aquatic habitat that may be harmfully alternated or disturbed (i.e., location of Type 1 fisheries) through the number of watercourse crossings. |
| **2. Minimize Impact on Social and Cultural Environments** | |
| Impacts on Residents | The number of adjacent or nearby residents affected (e.g., visual / aesthetic impact, construction impacts, noise, dust, etc.). |
| Recreational Areas | The number and type of recreational areas (e.g., parkland) surrounding the site. |
| Traffic Impacts | The amount of roadways affected that results in traffic impacts during construction. |
| Future Planning Policies | Consistency with land use designations, approved development plans, and proposed land use changes. |
| Archaeological Sites and Cultural Areas | The number and significance of known archaeological sites at the site or along the route. Potential for undiscovered archaeological resources at the site. The number of cultural areas and type of cultural area surrounding the site or route. |
| **3. Maximize Technical Suitability** | |
| Technical Feasibility | Construction, operation and maintenance issues related to the number and type of facilities, length of sewers and length of forcemains. |
| Compatibility with Existing or Planned Infrastructure System | Ease of connecting to the existing infrastructure, modifications to existing infrastructure and amount of additional works required to integrate with existing infrastructure. |
| **4. Minimize Costs (Economics)** | |
| Capital Costs | Total capital costs and land acquisition costs. |
| Operating and Maintenance Costs | Total operating and maintenance costs. |
| Decommissioning Costs | Total cost to decommission existing pumping station facilities. |

# Technical Memorandum 1.4
# Evaluation of Water and Wastewater Servicing Projects

## 1. Water Servicing Projects Identified in the Master Plan Update

Based on the results of previous work undertaken as part of the Tottenham Secondary Plan Water and Wastewater Servicing Master Plan Update, it was determined that sufficient capacity is available within the existing Town water supply and storage systems to accommodate growth within the Secondary Plan Area. Water servicing projects identified under the Master Plan Update were therefore limited to expansion of the existing water distribution system including watermain twinning or extension of services to new development areas. These projects include the following:

### Project 1 Watermain Connection to the LRG Tottenham Lands

It is proposed that a 250 mm diameter watermain connection be constructed to the LRG Tottenham lands from the existing 250 mm watermain running along Queen Street South. This work is classified as a Schedule A project under the Municipal Class Environmental Assessment Process.

### Project 2 Watermain Connection to Six Nights and Nordstar Developments

It is proposed that a 350 mm diameter watermain connection to the Six Nights and Nordstar Developments be constructed from the existing 200 mm watermain running along on Mill Street. This work is classified as a Schedule A project under the Municipal Class Environmental Assessment Process.

### Project 3 Watermain Connection to Loop the Six Nights Development

It is proposed that a watermain connection be constructed that will provide a looped network for the Six Nights Development through the Arvida Tottenham subdivision. This work is classified as a Schedule A project under the Municipal Class Environmental Assessment Process.

### Project 4 Twinning of Mill Street West Watermains

It is proposed that full twinning of the watermains on Mill Street, west of Queen Street be provided through the construction of simple cross connections between existing watermains. This work is classified as a Schedule A project under the Municipal Class Environmental Assessment Process.

### Project 5 Construction of Watermain Connection between Adeline Avenue and the Future Watermain Connecting the LRG and Nordstar Developments

It is proposed that a 150 mm watermain connection be constructed between the existing water distribution system running along Adeline Avenue and the future watermain connection between the LRG Development and Nordstar Development. This work is

classified as a Schedule B project under the Municipal Class Environmental Assessment Process.

**Project 6 Construction of Watermain Connection between The Boulevard and the Future Watermain Connecting the LRG and Nordstar Developments**

It is proposed that a 150 mm watermain connection be constructed between the existing water distribution system running along The Boulevard and the future watermain connection between the LRG Development and Nordstar Development. This work is classified as a Schedule B project under the Municipal Class Environmental Assessment Process.

## 2. Wastewater Servicing Projects Identified in the Master Plan Update

Based on the results of the Tottenham Secondary Plan Water and Wastewater Servicing Master Plan Update, it was determined that the preferred alternative for wastewater servicing of the Tottenham Secondary Plan Area would be the construction of two pumping stations; one station located along Mill Street and a second smaller pumping station located adjacent to the Six Nights stormwater management facility. Wastewater servicing projects identified under the Master Plan Update include the following:

**Project 7 Construction of Secondary Plan Area Pumping Station at Mill Street**

It is proposed that a pumping station be constructed adjacent to Mill Street. The proposed Secondary Plan Area Pumping Station would be designed to handle peak hour wastewater flows from existing service areas in the Community of Tottenham as well as future residential subdivisions including the Secondary Plan Area. Alternative pumping station locations will be identified and assessed as part of the required Schedule B, Class EA for the pumping station works. Based on initial site inspections conducted in February 2005 and review of existing servicing maps and drawings, two preferred sites have been identified as follows:

- South of Mill Street along the eastern boundary of the Nordstar Development
- North of Mill Street along the eastern boundary of the Six Nights Development

It is also proposed that flows from approximately 39 units in the vicinity of the Six Nights stormwater management facility would be directed to a smaller pumping station located at the end of the adjacent cul-de-sac. The requirements for this pumping station would however be established under the draft plan of subdivision for the Six Nights Development. Design and construction of the smaller Six Nights Pumping Station will therefore not be included as part of this current Class EA Study.

**Project 8 Construction of the Secondary Plan Area Pumping Station Forcemain**

Alternative forcemain alignments will be identified and assessed as part of the required Schedule B, Class EA for the forcemain works. Initial investigation for the proposed forcemain alignment alternatives was carried out by a site inspection in February 2005

and review of existing servicing maps and drawings. Selected alternative alignments for the forcemain through the existing Tottenham development areas may include:

- West along Mill Street to Industrial Road to connect with the Industrial Pumping Station, with ultimate discharge to the Tottenham Wastewater Treatment Plant
- West along Mill Street to Industrial Road with ultimate discharge to the Industrial Road Pumping Station
- West along Mill Street and Richmond Street with ultimate discharge to the Industrial Road Pumping Station
- West along Mill Street and Wilson Street with ultimate discharge to the Industrial Road Pumping Station

Detailed review of existing underground utility information, available corridors within existing right-of-ways and the feasibility of obtaining easements will be key factors in finalizing the forcemain alignment.

**Project 9 Decommissioning of the Existing Boulevard Pumping Station**

The Town has determined that the Boulevard Pumping Station is a significant factor in causing surcharging of the sanitary sewer running along Eastern Avenue together with basement flooding during high rainfall events. Decommissioning of the Boulevard Pumping Station and construction of a sewer bypass for the existing station is proposed. This work is classified as a Schedule B project under the Municipal Class Environmental Assessment Process.

**Project 10 Decommissioning of the Existing Eastern Pumping Station**

The Town has determined that it will be possible to connect the manhole immediately west of the CP Railway with the last manhole at Eastern Avenue with an approximately 120 metre long sewer to bypass the pumping station. Decommissioning of the Eastern Pumping Station and construction of the related bypass sewers is proposed. This work is classified as a Schedule B project under the Municipal Class Environmental Assessment Process.

**Project 11 Decommissioning of the Existing Arvida Pumping Station**

Available as-constructed drawings of the Arvida Tottenham subdivision indicate that the Arvida Pumping Station has been planned as a temporary facility. It is proposed that the Arvida Pumping Station be decommissioned by connecting the sanitary sewer at the east end of McGahey Street to the future sanitary trunk sewer within the Six Nights Development. This work is classified as a Schedule B project under the Municipal Class Environmental Assessment Process.

**Project 12 Upgrades to Groundwater Supply System**

It is proposed that the existing wells in Tottenham be studied to determine if upgrades to these wells can immediately increase the water supply to Tottenham. This work is

classified as a Schedule A project, and therefore pre-approved, under the Municipal Class Environmental Assessment Process.

**Project 13 Construction of Surface Water Supply System from Alliston**

It is proposed that a water supply system be constructed to bring surface water into Tottenham from Collingwood (through Alliston). The objective for installing this feedermain is to increase the water supply to Tottenham to allow for planned growth. This work is classified as a Schedule B project under the Municipal Class Environmental Assessment Process.

## 3. Evaluation of Alternatives

This current Class EA report will therefore include an evaluation of the identified alternatives for each of the above projects in accordance with requirements under the Municipal Class EA Process. Projects identified as Schedule "A" may proceed to construction without further following the Class EA process. For projects identified as Schedule "B", Phases 1 and 2 of the Class EA process must be met which include:

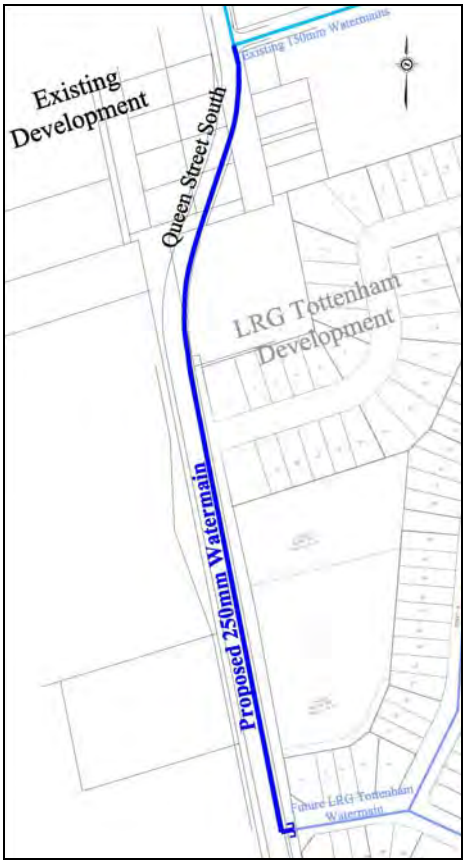
- Addressing the issue of "need" (Phase 1)
- Evaluation of planning options (Phase 2)

# Technical Memorandum 2.1
# Watermain Connection to the LRG Tottenham Lands

## 1. Problem Statement and Description of the Project

It is proposed that a 250 mm diameter watermain connection be constructed to the LRG Tottenham lands from the existing 250 mm watermain running along Queen Street South as indicated in Figure 1 below. This work is classified as a Schedule A project, and therefore pre-approved, under the Municipal Class Environmental Assessment Process. No further evaluation is required for Project 1: Watermain Connection to the LRG Tottenham Lands. The Town may proceed with this work without further requirements under the Class EA process.

Figure 1 Watermain Connection Along Queens Street South

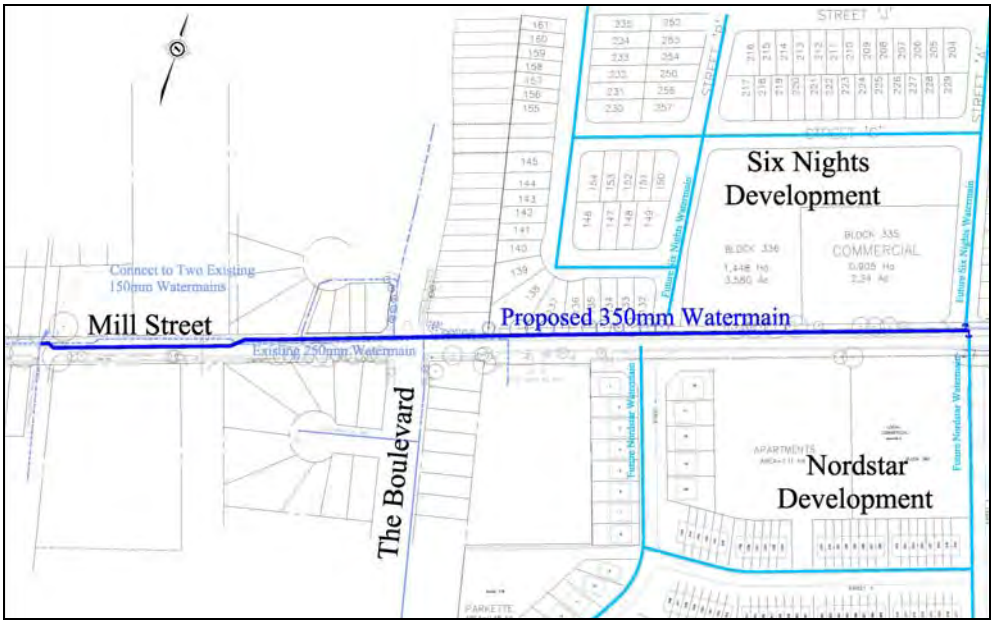


# Technical Memorandum 2.2
# Watermain Connection to Six Nights and Nordstar Developments

## 1. Problem Statement and Description of the Project

It is proposed that a 350 mm diameter watermain connection to the Six Nights and Nordstar Developments be constructed from the existing 200 mm watermain running along on Mill Street as indicated in Figure 1 below. This work is classified as a Schedule A project, and therefore pre-approved, under the Municipal Class Environmental Assessment Process. No further evaluation is required for Project 2: Watermain Connection to Six Nights and Nordstar Developments. The Town may proceed with this work without further requirements under the Class EA process.

Figure 1 Proposed 350mm Watermain Connection to Six Nights & Nordstar Development

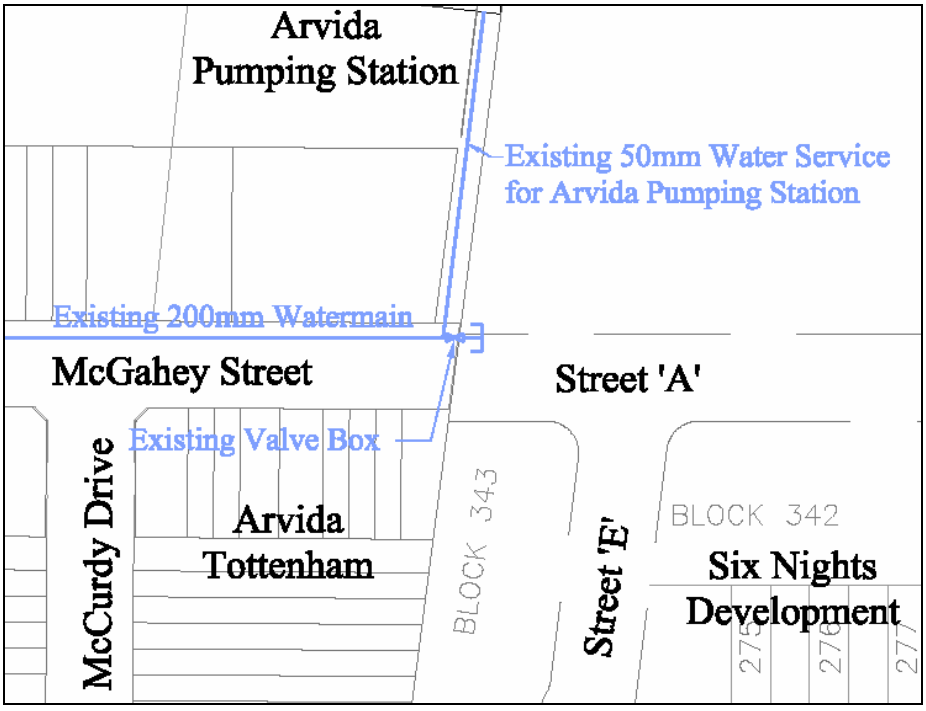


# Technical Memorandum 2.3
# Watermain Connection to Loop the Six Nights Development

## 1. Problem Statement and Description of the Project

It is proposed that a watermain connection be constructed that will provide a looped network for the Six Nights Development through the Arvida Tottenham subdivision as indicated in Figure 1 below. This work is classified as a Schedule A project, and therefore pre-approved, under the Municipal Class Environmental Assessment Process. The Town may proceed with this work without further requirements under the Class EA process.

Figure 1 Existing Water Infrastructure between Arvida Tottenham and Six nights Development




## 2. Alternatives for Water Connection

Two alternatives have been identified for these works as follows:

Alternative 1: Do nothing and examine existing infrastructure to ensure a connection to the future Six Nights Development infrastructure can be made;

Alternative 2: Install a new watermain and plug for future connection with Six Nights Development infrastructure.

## 3. Preferred Alternative

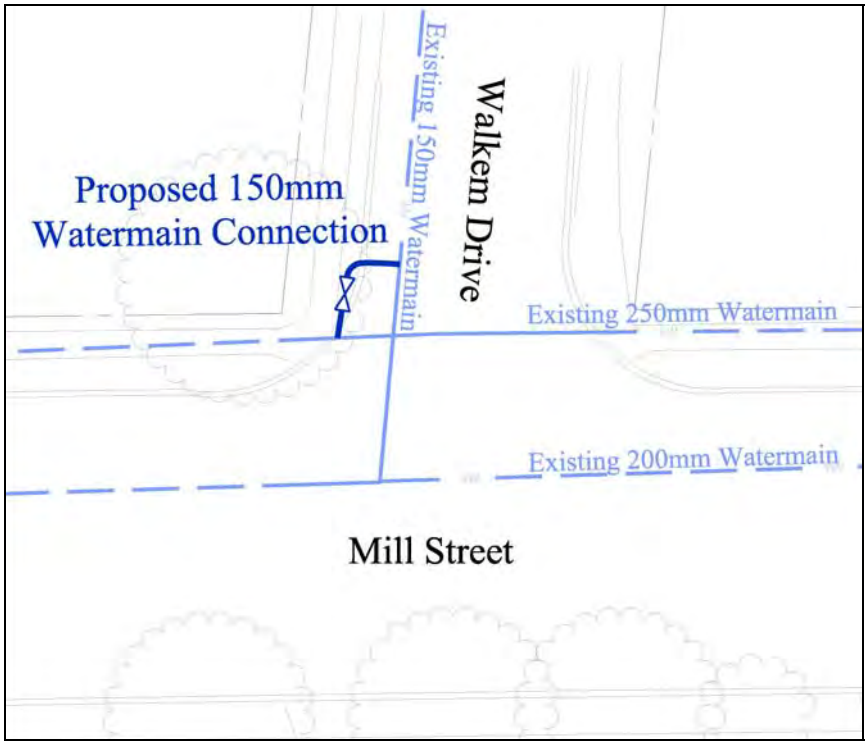
After an evaluation of the existing infrastructure, it has been decided that no new construction is required and that the existing watermain stub can be used to connect the Arvida Tottenham with the future Six Nights Development water infrastructure.

# Technical Memorandum 2.4
# Twinning of Mill Street West Watermains

## 1. Problem Statement and Description of the Project

It is proposed that full twinning of the watermains on Mill Street, west of Queen Street be provided through the construction of simple cross connections between existing watermains as indicated in Figure 1 below. This work is classified as a Schedule A project, and therefore pre-approved, under the Municipal Class Environmental Assessment Process. The Town may proceed with this work without further requirements under the Class EA process.

Figure 1 Proposed 150mm Watermain Connection at the intersection of Mill St. and Walkem Dr.




## 2. Evaluation

Existing connections between 250mm watermain running along the north side of Mill Street and the 200mm watermain running along the centreline of the same roadway are as follows:

1. Connection across Mill Street immediately west of Industrial Road;
2. Connection inside existing valve chamber located at intersection of Mill Street and Queen Street.

## 3. Preferred Solution

It is proposed therefore that one additional cross connection be installed between the 250mm watermain and the north-south 150mm watermain at the intersection of Walkem Drive and Mill Street as indicated on Figure 1 above.

# Technical Memorandum 2.5
# Review of Alternatives for Construction of Watermain Connection on Adeline Avenue/Brown Street

## 1. Problem Statement and Description of the Project

It has been proposed that a 150 mm watermain connection be constructed between the existing water distribution system running along Adeline Avenue and the future watermain connection between the LRG Development and Nordstar Development. The objective for installing this connection would be to significantly improve water quality and pressure for local residents along Adeline Avenue and Brown Street. This work is classified as a Schedule B project under the Municipal Class Environmental Assessment Process.

Further model work has been carried out under the Town of New Tecumseh Water Supply Master Plan Project, to establish specific requirements for the Brown Street/Adeline Avenue connection. It has been determined that a fireflow requirement of 66 L/s can be successfully achieved along Brown Street and Adeline Avenue with no connection provided into the LRG Development lands. Therefore, it is recommended that the connection works described under Project 5: Construction of Watermain Connection on Adeline/Brown Street not be conducted.

# Technical Memorandum 2.6
# Review of Alternatives for Construction of Watermain Connection on The Boulevard

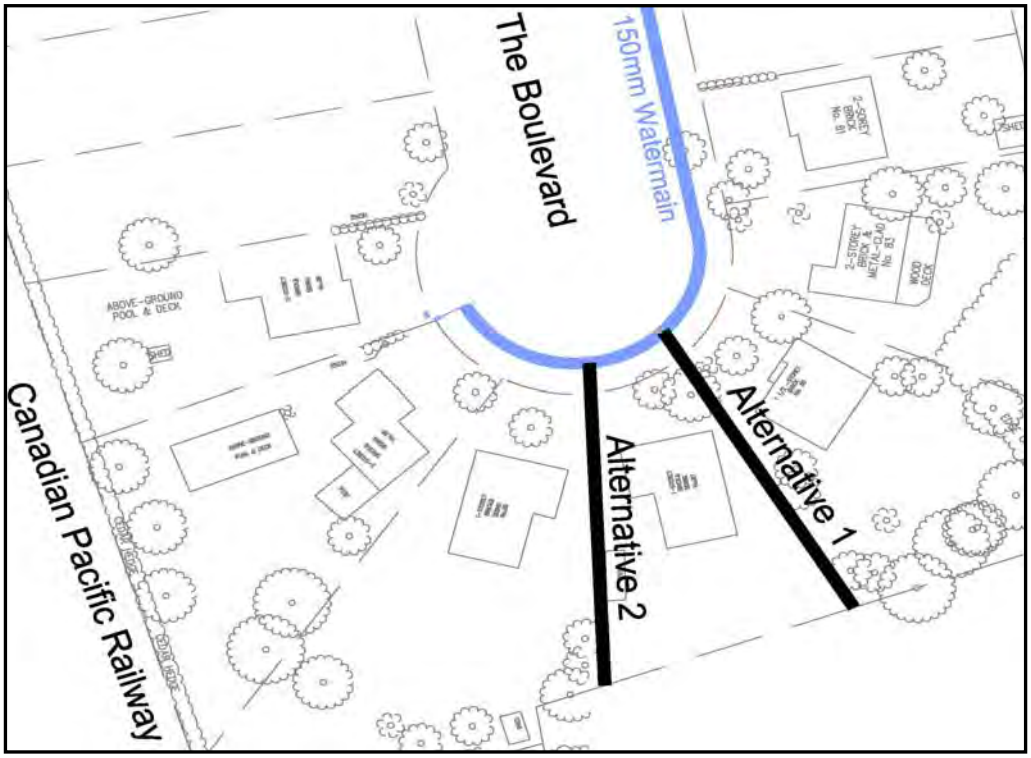
## 1. Problem Statement and Description of the Project

It is proposed that a 150 mm watermain connection be constructed between the existing water distribution system running along The Boulevard and the future watermain connection between the LRG Development and Nordstar Development. The objective for installing this connection is to significantly improve water quality and pressure for local residents along The Boulevard. This work is classified as a Schedule B project under the Municipal Class Environmental Assessment Process.

## 2. Alternatives for Watermain

Two alternatives were selected as part of the required Schedule B, Class EA for the watermain works. Each alternative was based on a different alignment and corresponding easement requirements. The selected alternatives can be seen in Figure 1 below:

Figure 1 Alignment Alternatives for Watermain Connection on The Boulevard




## 3. Evaluation of Alternatives 1 and 2

Evaluation criteria previously established in Technical Memo 1.3 were used to evaluate the alternative alignments and easements for the watermain. An evaluation of the alternatives is presented below in Figure 2.

Figure 2 Evaluation of Watermain Connection Alternatives on The Boulevard.

| Environmental Impacts | Alternative 1 | Alternative 2 |
|---|---|---|
| **Natural Environment** | • No VTE species identified on site.<br>• Site not designated as Natural Heritage Area.<br>• No impact on woodlands and hedgerows. May require renewal of several trees however.<br>• Need for lawn removal during construction. | • No VTE species identified on site.<br>• Site not designated as Natural Heritage Area.<br>• No impact on woodlands and hedgerows.<br>• Need for lawn removal during construction. |
| **Social Environment** | • Construction through homeowner property. Therefore significant impact on local residents and possibly on homeowner structures/buildings.<br>• Somewhat less separation between houses for installation of watermain/easement than for Alternative 2.<br>• Improve water quality and pressure for Adeline Avenue and Brown Street residents. | • Construction through homeowner property. Therefore significant impact on local residents and possibly on homeowner structures/buildings.<br>• Improve water quality and pressure for Adeline Avenue and Brown Street residents. |
| **Cultural Environment** | • No known archaeological or cultural issues with site. | • No known archaeological or cultural issues with site. |
| **Technical Issues** | • Watermain and easement approximately 40m long.<br>• Actual alignment will be subject to negotiations with homeowners. | • Watermain and easement approximately 40m long.<br>• Actual alignment will be subject to negotiations with homeowners |
| **Economic Issues** | • Estimated capital cost $13,000 (does not include easement/property costs) | • Estimated capital cost $13,000 (does not include easement/property costs) |
| **Overall Preference & Ranking** | **☒ (2)** | **☑(1)** |

## 4. Preferred Alternative

Based on the results of the above evaluation, Alternative 2 was selected as the preferred alignment for the watermain connection mainly due to less potential impact on existing structures and vegetation.

## 5. Public Consultation

The alternatives identified in the Schedule B, Class EA for the watermain connection on The Boulevard will be presented to the local area residents. The actual alignment and routing of the watermain connection will be subject to easement negotiations with local homeowners along The Boulevard.

# Technical Memorandum 3.1
# Projected Population for the Secondary Plan Area

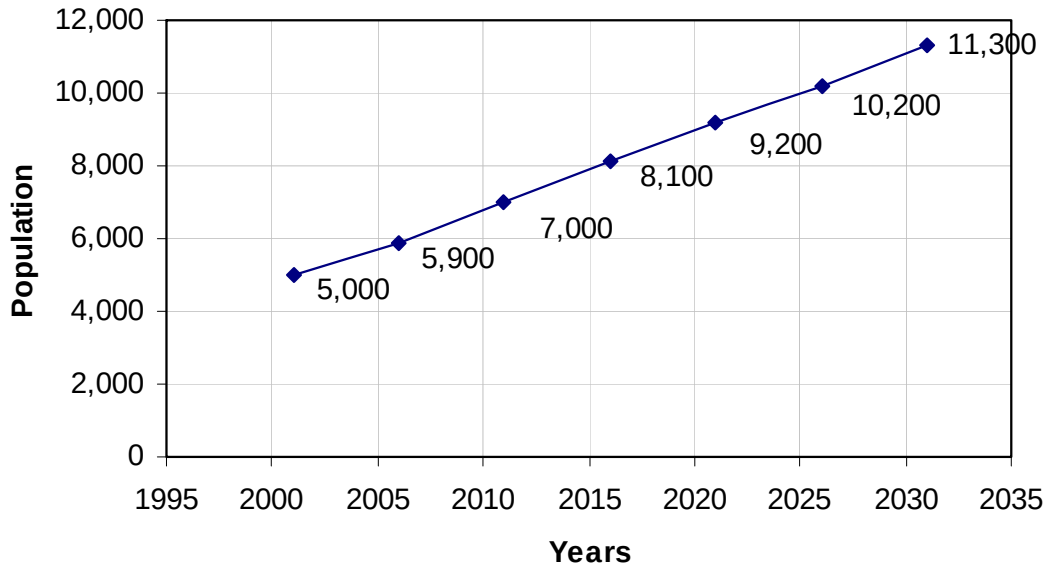
## 1. Population Projections of the Community of Tottenham

As indicated in Figure 1 below, the current population of the Community of Tottenham has been determined to be 5,900. Based on the Town of New Tecumseth Growth Management Study, 2002, this is expected to increase to 8,100 by the year 2016. By 2021, the projected Tottenham population is anticipated to rise up to approximately 9,200 persons.

Figure 1 Projected Population for the Community of Tottenham

| Year | 2001 | 2006 | 2011 | 2016 | 2021 | 2026 | 2031 |
|---|---|---|---|---|---|---|---|
| Population | 5,000 | 5,900 | 7,000 | 8,100 | 9,200 | 10,200 | 11,300 |

Source: Town of New Tecumseth Growth Management Study, March 13, 2002




## 2. Projected Service Population

Actual lot counts (for the existing service areas) and servicing plans (for the future development areas) were utilized to establish population projections for the following drainage areas, as shown in Figure 2 below:

- Existing developed areas within the Community of Tottenham, including infill developments that will be discharging into the Secondary Plan Area Pumping Station;
- New developments within the Secondary Plan Area;

- Other future subdivisions (for example, the lands immediately south of the Nordstar Development).

As indicated below, a population of 10,792 is projected for full development of the existing Tottenham service areas, Secondary Plan Area and other future subdivisions. This forecasted population corresponds approximately to the years 2028-2029 based on growth projections indicated in Figure 1 above. The total population to be serviced by the Secondary Plan Area Pumping Station is projected to be 8,350 persons. The estimated difference of 2,442 persons includes sanitary drainage service areas that will not be serviced by the Secondary Plan Area Pumping Station but rather will discharge directly into the Industrial Road Pumping Station.

Figure 2 Projected Service Populations

| No. | Service Area | Projected Population Serviced |
|---|---|---|
| | | |
| | **Existing Service Areas:** | |
| 1 | Eastern PS Drainage Area | 1,264 |
| 2 | Arvida Tottenham Subdivision | 829 |
| 3 | The Boulevard | 483 |
| | *Sub-total Existing Service Areas* | *2,576* |
| | | |
| | **Future Developments:** | |
| 4 | Six Nights Development | 1,659 |
| 5 | LRG Development | 1,802 |
| 6 | Nordstar Development | 1,789 |
| 7 | Undeveloped Area Immediately South of Nordstar | 525 |
| | *Sub-total Future Developments* | *5,775* |
| | | |
| **Projected Service Population for Secondary Plan Area Pumping Station** | | 8,350 |
| | | |
| 8 | Existing Area Directly Serviced by Industrial Road PS Including Nolan Road PS Drainage Area | 2,442 |
| | | |
| **Projected Service Population for Industrial Road Pumping Station** | | 10,792 |

The existing population serviced has been estimated at 5,018 for our analysis (Areas No. 1, 2, 3 and 8 in Figure 2). It is recognized however that that the actual figure may be marginally higher. As well, the current estimated population of 5,900 will include some homes, residences, facilities etc. currently serviced by private septic systems.

# Technical Memorandum 3.2
# Projected Sewage Flows for the Secondary Plan Area

## 1. Flow Projections for Existing Service Areas and Secondary Plan Area

Projected sewage flows for the full build-out of the existing Community of Tottenham service areas, the Secondary Plan Area and other future subdivisions (such as the lands immediately south of the Nordstar Development) have been determined as indicated in the following Figure 1:

Figure 1 Sewage Flows and Population Serviced

| No. | Service Area | Average Day Flow (L/s) | Allowance for Inflow & Infiltration (L/s) | Peak Hour Flow (L/s) | Serviced Population |
|---|---|---|---|---|---|
| | | | | | |
| | **Existing Service Areas:** | | | | |
| 1 | Eastern PS Drainage Area | 7.7 | 2.0 | 30.4 | 1,264 |
| 2 | Arvida-Tottenham Subdivision | 4.6 | 0.8 | 17.8* | 829 |
| 3 | The Boulevard | 2.6 | 0.5 | 10.5 | 483 |
| | *Sub-total Existing Service Areas* | *14.9* | *3.3* | *58.6* | *2,576* |
| | | | | | |
| | **Future Developments:** | | | | |
| 4 | Six Nights Development | 8.7 | 1.9 | 32.3 | 1,659 |
| 5 | LRG Development | 11.9 | 2.0 | 42.1 | 1,802 |
| 6 | Nordstar Development | 9.9 | 1.8 | 38.3 | 1,789 |
| 7 | Undeveloped Area Immediately South of Nordstar | 2.8 | 0.6 | 11.0 | 525 |
| | *Sub-total Future Developments* | *33.2* | *6.3* | *123.7* | *5,775* |
| | | | | | |
| **Estimated Sewage Flows for Secondary Plan Area SPS** | | 48.0 | 9.6 | **182.3** | 8,350 |
| | | | | | |
| 8 | Existing Area Serviced Directly by Industrial Road PS Including Nolan Road PS Drainage Area | 24.0 | 0.5 | 86.7 | 2,442 |
| | | | | | |
| **Estimated Sewage Flows for Full Servicing** | | 72.0 | 10.1 | **269.0** | 10,792 |

*As indicated in Figure 1, a projected peak hour flow of 17.8 L/s has been determined for the Arvida-Tottenham Subdivision. It should be noted, however, that Town operations staff have indicated that recorded flows in the Arvida Pumping Station have been in the order of 20 L/s. This could be attributed to excess inflow and infiltration during rainfall events. In any case, must be further investigated during detailed design.

## 2. Existing Areas to be Serviced by Secondary Plan Area Pumping Station

It is proposed that the following existing developed areas and subdivisions will be serviced by the Secondary Plan Area Pumping Station:

- Eastern Pumping Station Drainage Area
- Arvida-Tottenham Subdivision

- The Boulevard

The estimated service population for these areas is 2,576 persons. The forecasted peak flow is 58.6 L/s.

## 3. Future Developments to be Serviced by Secondary Plan Area Pumping Station

The proposed Secondary Plan Area Pumping Station will be designed to handle peak hour wastewater flows from existing service areas in the Community of Tottenham (as indicated above) as well as future residential subdivisions within the Secondary Plan Area including:

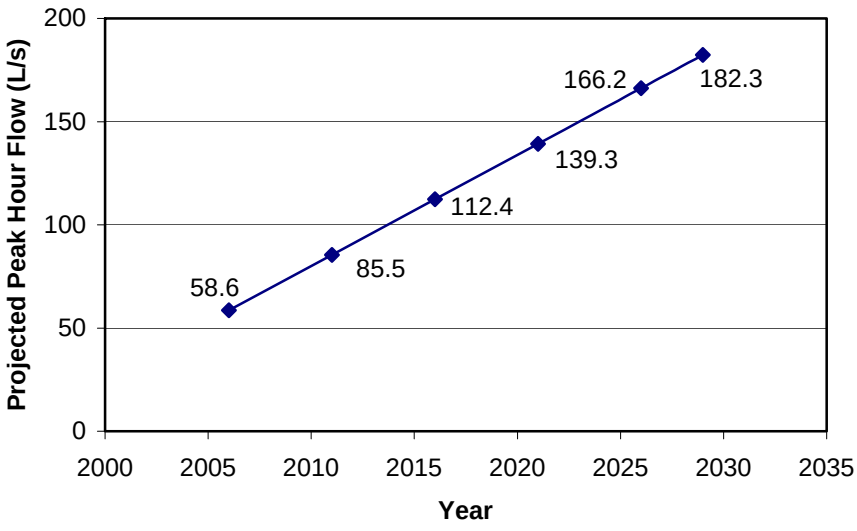
- The Six Nights Development
- LRG Development
- Nordstar Development
- Currently Undeveloped Area Immediately South of Nordstar Development Lands

The estimated service population for these areas is 5,775 persons. The forecasted peak flow is 123.7 L/s.

## 4. Proposed Rated Capacity for the Secondary Plan Area Pumping Station

Once the Secondary Plan Area SPS is commissioned (assumed to occur in the years 2008-2009), the station will initially be used to convey flows from the Eastern PS drainage area, Arvida-Tottenham subdivision, and The Boulevard existing service areas. This corresponds to a peak hour flow rate of 58.6 L/s. As the Six Nights, LRG and Nordstar lands are developed, sewage flows handled by the Secondary Plan Area SPS will accordingly increase. In matching the projected population growth for the pumping station's service area, it is anticipated that peak hour flows will increase annually as indicated in Figure 2 below. As indicated in Technical Memorandum 3.1, full build out of the existing Tottenham service areas, Secondary Plan Area, and other future subdivisions is anticipated to occur in approximately the year 2028 – 2029. As indicated in figure 2 below, full build out corresponds to a peak hour flow of 182.3 L/s.

Figure 2 Growth in Peak Hour Flows for the Secondary Plan Area SPS




It is proposed therefore that the Secondary Plan Area SPS be sized for a firm capacity of **185 L/s.** Installation of process equipment, including pumps, can be staged to allow expansion of the pumping station rated capacity to match population growth and sewage flow increases up to full build-out of the Secondary Plan Area SPS service area.

## 5. Additional Sewage Flows from the Community of Tottenham

As indicated in Figure 1 above, a population of 10,792 is projected for full build-out of the existing Tottenham service areas, Secondary Plan Area and other future subdivision developments. This forecasted population corresponds to a projected peak hour sewage flow of 269 L/s.

Flows from other existing service areas including the "downtown" core of Tottenham and the Nolan Road PS drainage area will continue to be discharged directly into the Industrial Road PS and will not be handled by the Secondary Plan Areas SPS.

# Technical Memorandum 3.3
# Evaluation of Alternatives for the Construction of Secondary Plan Area Pumping Station at Mill Street

## 1. Problem Statement and Description of the Project

As indicated in the Town of New Tecumseth's Master Plan Update for Water and Wastewater Servicing, it is proposed that a pumping station be constructed adjacent to Mill Street to handle peak hour wastewater flows from existing service areas in the Community of Tottenham as well as future residential subdivisions including the Secondary Plan Area. Alternative pumping station locations have been identified and assessed as part of the required Schedule B, Class EA for the pumping station works. Based on initial site inspections conducted in February 2005 and review of existing servicing maps and drawings, two preferred sites have been identified as follows:

- South of Mill Street along the eastern boundary of the Nordstar Development
- North of Mill Street along the eastern boundary of the Six Nights Development

Wastewater flows from the Secondary Plan Area Pumping Station would be conveyed to the Industrial Road pumping station and ultimately to the Tottenham Sewage Treatment Plant.

It is also proposed that flows from approximately 39 units in the vicinity of the Six Nights stormwater management facility would be directed to a smaller pumping station located at the end of the adjacent cul-de-sac. The requirements for this pumping station would however be established under the draft plan of subdivision for the Six Nights Development. Design and construction of the smaller Six Nights Pumping Station will therefore not be included as part of this current Class EA Study.

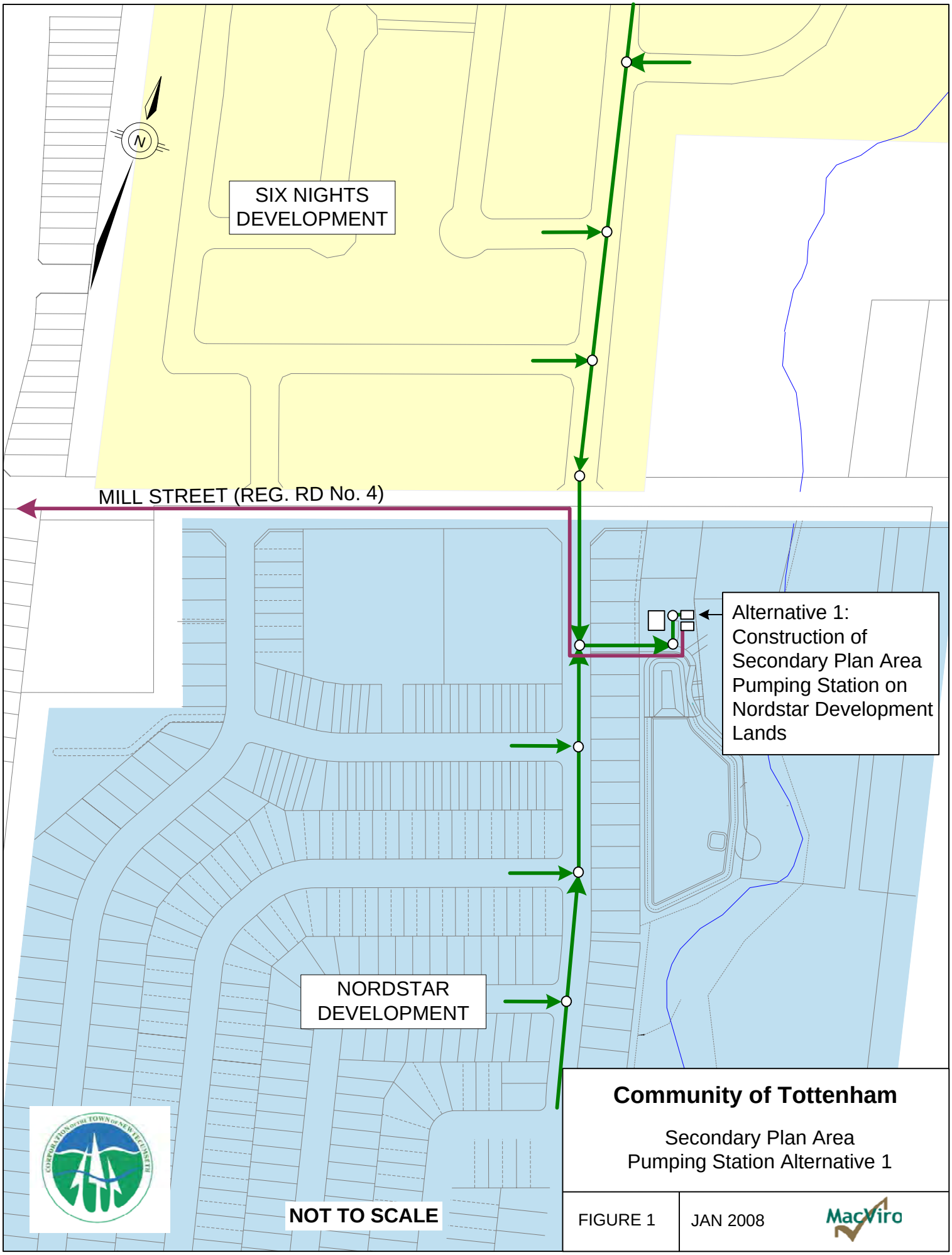
## 2. Alternatives for Secondary Plan Area Pumping Station

Locating the pumping station along Mill Street provides for a facility centrally located within the Secondary Plan Area. This will also provide for easy access by the Town for operations and maintenance related work.

Two potential sites were identified for the Secondary Plan Area SPS as follows:

Alternative 1: Northern portion of the Nordstar Development lands, south of Mill Street (see Figure 1).

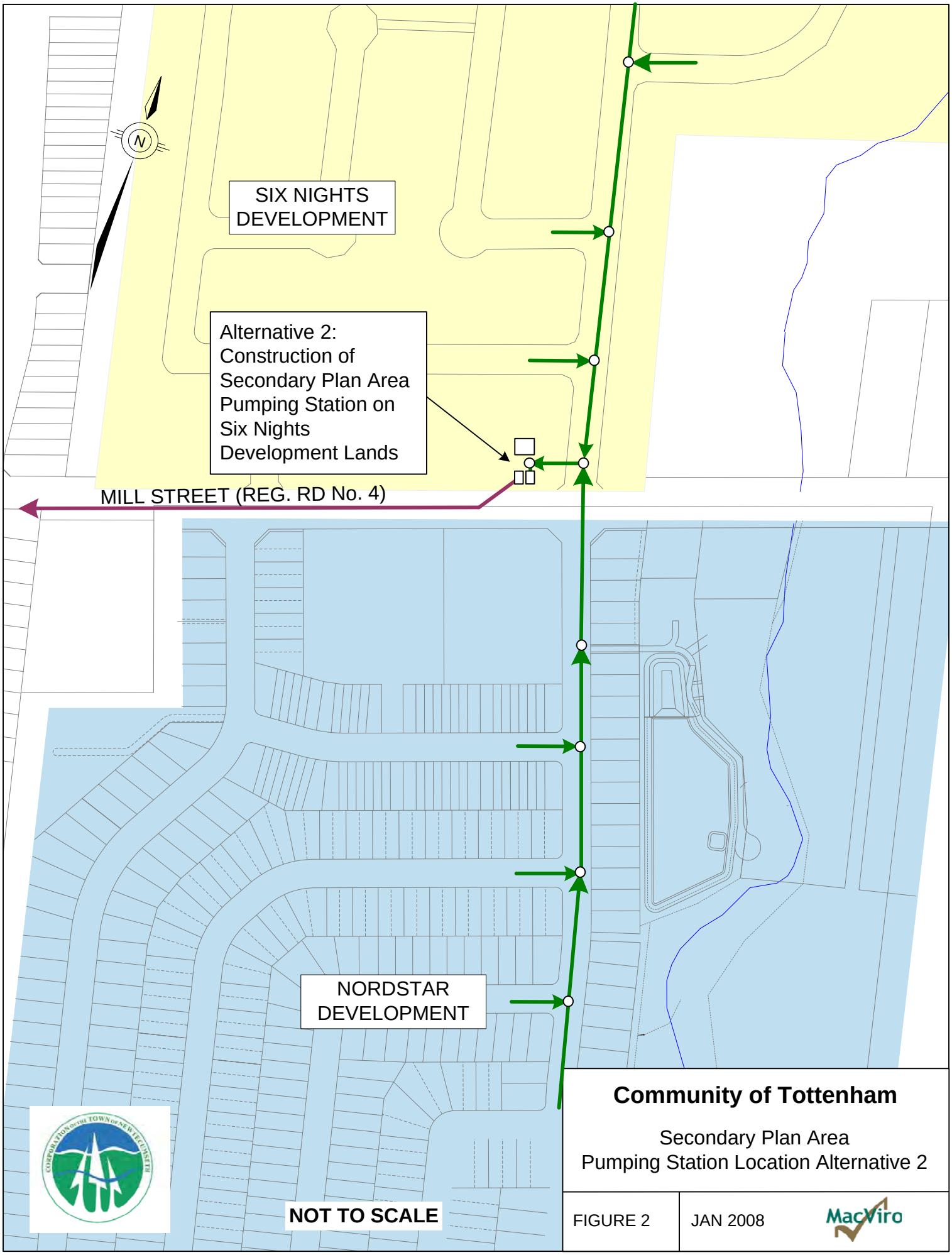
Alternative 2: Southern portion of the Six Nights Development lands, north of Mill Street and immediately west of Beeton Creek (see Figure 2).




**Community of Tottenham**

Secondary Plan Area
Pumping Station Alternative 1

| FIGURE 1 | JAN 2008 | MacViro |
|---|---|---|




**Community of Tottenham**

Secondary Plan Area
Pumping Station Location Alternative 2

| FIGURE 2 | JAN 2008 | MacViro |
|---|---|---|

## 3. Evaluation of the Alternatives

Evaluation criteria previously established in Technical Memo 1.3 were used to evaluate the alternative sits for the Secondary Plan Area SPS. An evaluation of the alternatives is presented in Table 1 below.

Table 1 Evaluation of Alternatives 1 and 2

| Environmental Impacts | Nordstar Development Location (Alternative 1) | Six Nights Development Location (Alternative 2) |
|---|---|---|
| **Natural Environment** | • No VTE species identified on site.<br>• Site not designated as Natural Heritage Area.<br>• Typical impacts on natural environment will occur from development of new pumping station site in conjunction with development of Nordstar lands.<br>• Removal of vegetation will be required.<br>• Potential watercourse crossings required for sewer / forcemain construction. | • No VTE species identified on site.<br>• Site not designated as Natural Heritage Area.<br>• Site is adjacent to Beeton Creek watercourse. Potential impacts may occur (i.e. dewatering) from construction.<br>• Impacts on natural environment from development of new site.<br>• Removal of vegetation will be required.<br>• Potential watercourse crossings required for sewer construction. Forcemain crossing not likely to be required. |
| **Social Environment** | • Pumping station site is behind residential dwellings, resulting in less visual impact.<br>• New site for pumping station is surrounded by fewer residents, facility operation will impact a fewer number of residents.<br>• Will allow for growth in the Community of Tottenham.<br>• Land space currently available for construction of Secondary Plan Area SPS. | • Pumping station site in front of residential dwellings, resulting in a greater visual impact.<br>• New site for pumping station is surrounded by more residents; facility operation will impacts a greater number of residents.<br>• Will allow for growth in the Community of Tottenham.<br>• No allowance currently made for land/site for the Secondary Plan Area SPS. This will require review of the Six Nights Development draft plan of |

| Environmental Impacts | Nordstar Development Location (Alternative 1) | Six Nights Development Location (Alternative 2) |
|---|---|---|
| | | subdivision. |
| **Cultural Environment** | • No known archaeological or cultural issues with site. | • No known archaeological or cultural issues with site. |
| **Technical Issues** | • Requires forcemain crossing of sensitive watercourse (Beeton Creek).<br>• Will require a slightly deeper pumping station due to deeper sewers. | • Technical and construction issues increase due to close proximity to sensitive watercourse (Beeton Creek). The following potential risks need to be considered:<br>– dewatering issues during construction.<br>– affecting stream flow and quality.<br>– high water table. |
| **Economic Issues** | • Pumping station will be based on a efficient design with respect to capital and operation and maintenance costs.<br>• Estimated capital cost:<br>– $2,580,000 (includes approximately 120m of additional forcemain required) | • Pumping station will be based on a efficient design with respect to capital and operation and maintenance costs.<br>• Estimated capital cost:<br>– $2,450,000 |
| **Overall Preference & Ranking** | **☑ (1)** | **☒ (2)** |

## 4. Preferred Solution

### Alternative 1

It is recommended that the preferred solution for locating the Secondary Plan Area Pumping Station is Alternative 1: Northern Portion of the Nordstar Development lands, south of Mill Street. Despite the slightly higher overall capital cost, this alternative was recommended due to the following issues identified during the evaluation process:

- Less potential impact on sensitive watercourse Beeton Creek;

- Pumping station site is behind residential dwellings and adjacent to undeveloped green space. This will potentially result in less visual, noise and emissions impact on local residents;
- Land space is readily available for construction of the Secondary Plan Area SPS on the Nordstar Development lands.

## 5. Secondary Plan Area Pumping Station Proposed Configuration

Key aspects of the proposed design for the Secondary Plan Area Pumping Station are as follows:

- The configuration of the pumping station will be based on achieving the most effective design approach while minimizing total lifecycle operating and maintenance costs;
- Based on the Town's population growth projections for the Community of Tottenham (as previously discussed in Technical Memorandum 2.2), it is anticipated that full build-out of the Secondary Plan Area and other future developments (for example, the lands immediately south of Nordstar Developments) will occur in stages over a period up to 25 years. It is recognized however that this development may be accelerated. Regardless of the actual timeframe, the design of the Secondary Plan Area SPS will allow for staged expansions such that its firm capacity will match development growth and increasing sewage flows;
- The pumping station configuration will include a concrete wet well with submersible pumps and an emergency generator set mounted inside new face-brick building. It is proposed that two pumps be installed initially (one duty and one standby) with a third pump being installed when required by service area population growth and increased sewage flows. It is proposed that the pumps be equipped with variable frequency drives (VFD's) to maximize pumping efficiency and reduce energy costs.

# Technical Memorandum 3.4
# Review of Alternatives for Construction of the Secondary Plan Area Pumping Station Forcemain

## 1. Problem Statement and Description of the Project

Alternative forcemain alignments will be identified and assessed as part of the required Schedule B, Class EA for the forcemain works. Initial investigation for the proposed forcemain alignment alternatives was carried out by a site inspection in February 2005 and review of existing servicing maps and drawings.

## 2. Alternatives for Forcemain

Four alternatives were selected as part of the required Schedule B, Class EA for the forcemain works. Each alternative was based on a different potential alignment and discharge point for the forcemain. The selected alternatives are indicated in Figure 1 and are as follows:

Alternative 1: West along Mill Street to Industrial Road to connect with the Industrial Pumping Station, with ultimate discharge to the Tottenham Wastewater Treatment Plant

Alternative 2: West along Mill Street to Industrial Road with ultimate discharge to the Industrial Road Pumping Station

Alternative 3: West along Mill Street and Richmond Street with ultimate discharge to the Industrial Road Pumping Station

Alternative 4: West along Mill Street and Wilson Street with ultimate discharge to the Industrial Road Pumping Station

Detailed review of existing underground utility information, available corridors within existing right-of-ways and the feasibility of obtaining easements will be key factors in finalizing the forcemain alignment.

## 3. Evaluation of Alternatives 1, 2, 3 and 4

Evaluation criteria previously established in Technical Memo 1.3 were used to evaluate the alternative alignments and connection points for the forcemain. An evaluation of the alternatives is presented below in Figure 2.

# Figure 1
# Alignment Alternatives for the Secondary Plan Area Pumping Station Forcemain

N.T.S

Effluent Storage Cell No. 2

Effluent Storage Cell No. 3

Effluent Storage Cell No. 1

Sludge Storage Cell No. 1

Industrial Road Pumping Station

Well Site

Existing South Simcoe Railway Easement

Alternative 1

Tottenham Wastewater Treatment Plant

Water Tower

Industrial Road

Greenaway Street

Queen Street

Alexander Street

Eastern Avenue

Alternative 4

Wilson Street

Mill Street

Alternative 1 & 2

EXISTING INDUSTRIAL

BLOCK 334 PARK

5.999 Ha
6.595 ac.

INCLUDING BERM
3.038 Ha
7.502 Ac

STREET 'I'

PARK

Arivda Pumping Station

BLOCK 333 SCHOOL

2.113 Ha
5.221 Ac.

INCLUDING BERM:
2.304 Ha
5.694 Ac.

STREET 'H'

STREET 'A'

BLOCK 342

BLOCK 343

McCurdy Drive

STREET 'E'

BLOCK 341

STREET 'D'

STREET 'F'

STREET 'B'

STREET 'C'

STREET 'G'

Six Nights Development

BLOCK 336
1.448 Ha
3.580 Ac

BLOCK 335
COMMERCIAL
0.900 Ha
2.24 Ac

Keogh Street

Alternative 3

Richmond Street East

The Boulevard Pumping Station

Secondary Plan Area SPS

Nordstar Development

The Boulevard

Figure 2 Evaluation of Secondary Planning Area Forcemain Alternatives

| Environmental Impacts | Along Mill St. Connecting to Tottenham WWTP (Alternative 1) | Along Mill St. Connecting to Industrial Rd. PS (Alternative 2) | Along Mill St. & Richmond St. Connecting to Industrial Rd. PS (Alternative 3) | Along Mill St. & Wilson St. Connecting to Industrial Rd. PS (Alternative 4) |
|---|---|---|---|---|
| **Natural Environment** | • No VTE species identified on site.<br>• Site not designated as Natural Heritage Area.<br>• No impact on woodlands and hedgerows.<br>• Impacts on natural environment between Industrial Rd PS and Tottenham WWTP due to construction.<br>• Crossing required of sensitive watercourse (Beeton Creek)<br>• Need for removal of natural vegetation. | • No VTE species identified on site.<br>• Site not designated as Natural Heritage Area.<br>• No impact on woodlands and hedgerows. | • No VTE species identified on site.<br>• Site not designated as Natural Heritage Area.<br>• No impact on woodlands and hedgerows. | • No VTE species identified on site.<br>• Site not designated as Natural Heritage Area.<br>• No impact on woodlands and hedgerows. |
| **Social Environment** | • Construction through Mill St. (core of Tottenham). Therefore significant impact on local traffic and area businesses will occur. | • Construction through Mill St. (core of Tottenham). Therefore significant impact on local traffic and area businesses will occur. | • Will have less overall traffic impacts, but might block Richmond St. during construction.<br>• Will have an impact on area | • Will have less overall traffic impacts, but may block Wilson St. during construction.<br>• Will have an impact on |

| Environmental Impacts | Along Mill St. Connecting to Tottenham WWTP (Alternative 1) | Along Mill St. Connecting to Industrial Rd. PS (Alternative 2) | Along Mill St. & Richmond St. Connecting to Industrial Rd. PS (Alternative 3) | Along Mill St. & Wilson St. Connecting to Industrial Rd. PS (Alternative 4) |
|---|---|---|---|---|
| | • Will allow for growth in the Community of Tottenham. | • Will allow for growth in the Community of Tottenham. | residents during construction.<br>• Will allow for growth in the Community of Tottenham. | area residents during construction.<br>• Will allow for growth in the Community of Tottenham. |
| **Cultural Environment** | • No known archaeological or cultural issues with site. | • No known archaeological or cultural issues with site. | • No known archaeological or cultural issues with site. | • No known archaeological or cultural issues with site. |
| **Technical Issues** | • Technical and construction issues increase due crossing of sensitive watercourse (Beeton Creek) and as a result posses the following potential risks:<br>– dewatering issues during construction.<br>– affecting stream flow and quality.<br>• Tottenham WWTP could be decommissioned as | • Available capacity in existing Industrial Rd. PS and forcemain negate need for new forcemain construction between Industrial Rd. PS and Tottenham WWTP (See Section 4 below). | • More headloss in system due to longer forcemain.<br>• Less direct alignment<br>• Installation of forcemain will require excavation of newly refinished Richmond St.<br>• Available capacity in existing Industrial Rd. PS and forcemain negate need for new forcemain construction between Industrial Rd. PS and Tottenham WWTP (See Section 4 below). | • More headloss in system due to longer forcemain.<br>• Less direct alignment<br>• Wilson St. right-of-way is relatively narrow. Forcemain will be more difficult to install and face significantly greater conflicts with existing utilities.<br>• Crossing of South Simcoe Railway at existing easement (see Figure 1) will be significantly longer due to greater |

| Environmental Impacts | Along Mill St. Connecting to Tottenham WWTP (Alternative 1) | Along Mill St. Connecting to Industrial Rd. PS (Alternative 2) | Along Mill St. & Richmond St. Connecting to Industrial Rd. PS (Alternative 3) | Along Mill St. & Wilson St. Connecting to Industrial Rd. PS (Alternative 4) |
|---|---|---|---|---|
| | soon as the year 2011. As a result the forcemain section between the Tottenham WWTP and Industrial Rd. PS would have to be abandoned or removed. (See Section 4 below) | | | number of tracks and width of railway right-of-way.<br>• Available capacity in existing Industrial Rd. PS and forcemain negate need for new forcemain construction between Industrial Rd. PS and Tottenham WWTP (See Section 4 below). |
| **Economic Issues** | • Estimated capital cost:<br>– $1,660,000 (See Section 4 below) | • Estimated capital cost:<br>– $1,277,000 (approx. 1800m of forcemain) | • Estimated capital cost:<br>– $1,417,000 (approx. 2000m of forcemain) | • Estimated capital cost:<br>– $1,347,000 (approx 1900m of forcemain) |
| **Overall Preference & Ranking** | **☒ (4)** | **☑ (1)** | **☒ (2)** | **☒ (3)** |

## 4. Connection to the Existing Industrial Road Pumping Station

It is proposed that sewage flows pumped from the Secondary Plan Area SPS be discharged into the existing Industrial Road Pumping Station rather than into the existing Tottenham Wastewater Treatment Plant. Key factors for this proposed alignment are as follows:

### Future Plans for Conveyance of Tottenham Sewage Flows to the Regional Wastewater Treatment Plant

The expansion of the existing Industrial Road Pumping Station and construction of a new forcemain to convey sewage flows north to the Regional Wastewater Treatment Plant is currently being planned. This will result in the future decommissioning of the Tottenham Wastewater Treatment Plant possibly by as soon as the year 2011.

### Present Value of Costs of New Forcemain Connection Between Industrial Rd PS and Tottenham WWTP

As indicated in the following Figure 3, by discharging the Secondary Plan Area SPS sewage flows into the Industrial Road Pumping Station and thereby eliminating the need to extend the forcemain to the Tottenham WWTP, the Town may potentially achieve project lifecycle cost savings in the order of $383,000 (2006 present value).

Figure 3 Present Value Cost of New Forcemain Connection between the Industrial Road Pumping Station and Tottenham WWTP

| | Alternative 1: Connect the Secondary Plan Area Forcemain to the Industrial Road Pumping Station | Alternative 2: Connect the Secondary Plan Area Forcemain to the Tottenham Wastewater Treatment Plant |
|---|---|---|
| **Industrial Road Pumping Station** | | |
| Upgrades to Industrial Road PS and Cost of Connection | $10,000 | $10,000 |
| Construction of Valve Chamber between SPA Forcemain and Industrial Rd. Pumping Station | | $25,000 |
| PV of Additional Operating & Maintenance Costs at Industrial Road PS until Approximately 2011 | $2,000 | |
| **Tottenham Wastewater Treatment Plant** | | |
| Construction of Additional 500 m of 350 mm Forcemain | | $250,000 |
| Permit & Approval for Beeton Creek Crossing | | $2,000 |
| Cost of Connection to Tottenham WWTP | | $50,000 |
| Dewatering & Special Construction for Beeton Creek | | $11,000 |
| **Secondary Plan Area Pumping Station** | | |
| PV of Additional Operating & Maintenance Costs at SPA Pumping Station until Approximately 2011 | | $2,000 |
| **Contingencies** | $5,000 | $2,000 |
| **PV Costs for Forcemain Connection** | **$17,000** | **$400,000** |

## Confirmation of Adequate Capacity in the Existing Industrial Road PS

Before the Secondary Plan Area SPS forcemain can be connected to the Industrial Road PS, confirmation is required that adequate capacity exists in the existing Industrial Road facility and forcemain to the Tottenham WWTP. Design criteria for the Industrial Road Pumping Station (as indicated below in Figure 4, Ainley & Associates, 1994) specify a peak hour design flowrate for the facility of 197 L/s.

Figure 4 Industrial Road Pumping Station Design Criteria

| Design Criteria | Value |
|---|---|
| Design Period | 20 Years |
| Design Year | 2010 |
| Design Population | 7,500 Persons |
| Industrial/Commercial Equivalent Population | 2,500 Persons |
| Total Equivalent Population | 10,000 Persons |
| Average Dry Weather Flow (L/s) | 47 |
| Peak Hour Flow (L/s) | 197 |

As indicated in Figure 5 below, the peak hour flow from the areas of Tottenham currently serviced by the Industrial Road PS has been estimated at 145.3 L/s for our analysis (Areas No. 1, 2, 3 and 8).

Figure 5 Sewage Flows and Population Serviced

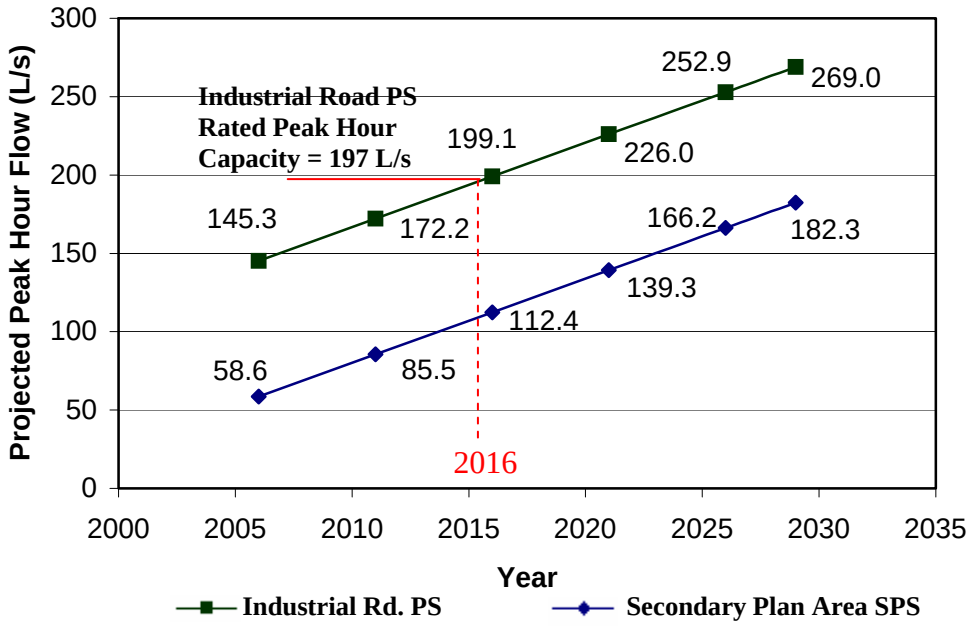
| No. | Service Area | Average Day Flow (L/s) | Allowance for Inflow & Infiltration (L/s) | Peak Hour Flow (L/s) | Serviced Population |
|---|---|---|---|---|---|
| | | | | | |
| | **Existing Service Areas:** | | | | |
| 1 | Eastern PS Drainage Area | 7.7 | 2.0 | 30.4 | 1,264 |
| 2 | Arvida-Tottenham Subdivision | 4.6 | 0.8 | 17.8* | 829 |
| 3 | The Boulevard | 2.6 | 0.5 | 10.5 | 483 |
| | *Sub-total Existing Service Areas* | *14.9* | *3.3* | *58.6* | *2,576* |
| | | | | | |
| | **Future Developments:** | | | | |
| 4 | Six Nights Development | 8.7 | 1.9 | 32.3 | 1,659 |
| 5 | LRG Development | 11.9 | 2.0 | 42.1 | 1,802 |
| 6 | Nordstar Development | 9.9 | 1.8 | 38.3 | 1,789 |
| 7 | Undeveloped Area Immediately South of Nordstar | 2.8 | 0.6 | 11.0 | 525 |
| | *Sub-total Future Developments* | *33.2* | *6.3* | *123.7* | *5,775* |
| | | | | | |
| **Estimated Sewage Flows for Secondary Plan Area SPS** | | 48.0 | 9.6 | **182.3** | 8,350 |
| | | | | | |
| 8 | Existing Area Serviced Directly by Industrial Road PS Including Nolan Road PS Drainage Area | 24.0 | 0.5 | 86.7 | 2,442 |
| | | | | | |
| **Estimated Sewage Flows for Full Servicing** | | 72.0 | 10.1 | **269.0** | 10,792 |

**See note in Technical Memorandum 3.2*

As indicated in Figure 6 below, as development of the Secondary Plan Area proceeds, sewage flows into the Secondary Plan Area SPS will increase in proportion to population growth. These flows will ultimately be conveyed and discharged into the Industrial Road PS. At a rated peak hour capacity of 197 L/s, sufficient capacity will be available in the Industrial Road PS to handle flows from the existing Tottenham service areas and the Secondary Plan Area SPS up to approximately the year 2016.

The Town of New Tecumseth is currently undertaking a study to determine the preferred approach for conveying sewage flows from the Community of Tottenham north to an expanded Regional Wastewater Treatment Plant. This would require the expansion and upgrading of the Industrial Road Pumping Station and construction of a forcemain north to the Regional Wastewater Treatment Plant. This would allow the Tottenham Wastewater Treatment Plant to be decommissioned. It is anticipated that these works will be completed by approximately the year 2011, well before the flows from the Community of Tottenham exceed the rated peak hour capacity of the Industrial Road Pumping Station.

Figure 6 Projected Growth in Peak Hour Flows to the Industrial Road Pumping Station




## Confirmation of Capacity of Sewer Connection into Industrial Road Pumping Station

As indicated in Figure 7 below, the existing 350 mm diameter ductile iron influent sewer into the Industrial Road Pumping Station has adequate capacity (approximately 282 L/s) to handle all additional flows from the Secondary Plan Area SPS. It is confirmed therefore that the forcemain can be connected directly into the existing 1200 mm diameter manhole located adjacent to the Industrial Road Pumping Station.

Figure 7 Capacity of Existing Influent Sewer into the Industrial Road PS

| Description | Pipe Length (m) | Pipe Diameter (mm) | | Roughness Coefficient (n) | Hydraulic Radius | Slope (%) | Full Flow Capacity (L/s) |
|---|---|---|---|---|---|---|---|
| | | Nominal | Inside | | | | |
| Industrial Road PS to Ex. MH | 4 | 350 | 365 | 0.013 | 0.09125 | 0.03 | 282.56 |

## 5. Preferred Solution

The preferred solution for the Secondary Plan Area Forcemain is Alternative 2, constructing the forcemain along Mill Street and Industrial Road and connecting into the existing Industrial Rd. Pumping Station.

This alternative was recommended due to the following issues identified during the evaluation process:

- Existing forcemain to the Tottenham WWTP has adequate capacity to handle flows from the Secondary Plan Area and existing Tottenham residential areas up to approximately 2016;
- The Town of New Tecumseth anticipates expansion of the existing Industrial Road Pumping Station and construction of a new forcemain to convey sewage flows north to the Regional Wastewater Treatment Plant by the year 2011;
- By connecting the proposed forcemain directly into the Industrial Rd. Pumping Station rather than the Tottenham WWTP, the Town will potentially achieve project lifecycle cost savings in the order of $383,000 and significantly minimize impacts on the crossing of the environmentally sensitive Beeton Creek;
- By constructing the forcemain along Mill St. rather than the Richmond St. or Wilson St. alignments, will significantly reduce impacts on local residential areas. The Town will also save approximately $140,000 on the length of the forcemain.

# Technical Memorandum 3.5
# Decommissioning of the Existing Boulevard Pumping Station

## 1. Problem Statement and Description of the Project

The Town has determined that the Boulevard Pumping Station is a significant factor in causing surcharging of the sanitary sewer running along Eastern Avenue together with basement flooding during high rainfall events. Decommissioning of the Boulevard Pumping Station and construction of a sewer bypass for the existing station is proposed. This work is classified as a Schedule B project under the Municipal Class Environmental Assessment Process.

## 2. Alternative for Decommissioning

Two alternatives have been identified for these works as follows:

Alternative 1: Do nothing;

Alternative 2: Decommission.

The Town's requirement for the decommissioning has already been established in the Master Plan Update. Therefore no further evaluation of alternatives will be conducted as part of this Class EA. The Town may proceed with the decommissioning of the existing Boulevard Pumping Station.

## 3. Impacts of Decommissioning

The environmental impacts of decommissioning the Boulevard Pumping Station include the following:

1. Significant reduction in pumping station operating and maintenance costs, in particular, energy costs related to operation of pump, process and electromechancial equipment within the facility;
2. Reduced potential for basement drain backups which results when local sanitary sewers surcharge due to high sewage flows being pumped into the sewers;
3. Reduced potential for pumping station overflows in the rare cases that process equipment could malfunction;
4. Replacement of aging facility;
5. Estimated present value of savings from decommissioning the Boulevard Pumping Station as identified in the Master Plan Update is $650,040.

# Technical Memorandum 3.6
# Decommissioning of the Existing Eastern Pumping Station

## 1. Problem Statement and Description of the Project

The Town has determined that it will be possible to connect the manhole immediately west of the CP Railway with the last manhole at Eastern Avenue with an approximately 120 metre long sewer to bypass the pumping station. Decommissioning of the Eastern Pumping Station and construction of the related bypass sewers is proposed. This work is classified as a Schedule B project under the Municipal Class Environmental Assessment Process.

## 2. Alternative for Decommissioning

Two alternatives have been identified for these works as follows:

Alternative 1: Do nothing;

Alternative 2: Decommission.

The Town's requirement for the decommissioning has already been established in the Master Plan Update. Therefore no further evaluation of alternatives will be conducted as part of this Class EA. The Town may proceed with the decommissioning of the existing Eastern Pumping Station.

## 3. Impacts of Decommissioning

The environmental impacts of decommissioning the Eastern Pumping Station include the following:

1. Significant reduction in pumping station operating and maintenance costs, in particular, energy costs related to operation of pump, process and electromechancial equipment within the facility;
2. Reduced potential for pumping station overflows in the rare case that process equipment could malfunction;
3. Replacement of aging facility;
4. Estimated present value of savings from decommissioning the Eastern Pumping Station as identified in the Master Plan Update is $812,540.

# Technical Memorandum 3.7
# Decommissioning of the Existing Arvida Pumping Station

## 1. Problem Statement and Description of the Project

Available as-constructed drawings of the Arvida Tottenham subdivision indicate that the Arvida Pumping Station has been planned as a temporary facility. It is proposed that the Arvida Pumping Station be decommissioned by connecting the sanitary sewer at the east end of McGahey Street to the future sanitary trunk sewer within the Six Nights Development. This work is classified as a Schedule B project under the Municipal Class Environmental Assessment Process.

## 2. Alternative for Decommissioning

Two alternatives have been identified for these works as follows:

Alternative 1: Do nothing;

Alternative 2: Decommission.

The Town's requirement for the decommissioning has already been established in the Master Plan Update. Therefore no further evaluation of alternatives will be conducted as part of this Class EA. The Town may proceed with the decommissioning of the existing Arvida Pumping Station.

## 3. Impacts of Decommissioning

The environmental impacts of decommissioning the Arvida Pumping Station include the following:

1. Significant reduction in pumping station operating and maintenance costs, in particular, energy costs related to operation of pump, process and electromechancial equipment within the facility;
2. Reduced potential for pumping station overflows in the rare case that process equipment could malfunction;
3. Pumping station was intended to operate as temporary facility;
4. Estimated present value of savings from decommissioning the Arvida Pumping Station as identified in the Master Plan Update is $295,859.

# Technical Memorandum 4.1
# Upgrades to Groundwater Supply System

## 1. Problem Statement and Description of the Project

Groundwater supply to the Community of Tottenham is provided from four wells. Wells 4 and 5 are located in a public park area along Walkem Drive. Wells 6 and 7 are located north of the Tottenham WPCP in Coventry Park.

Based on pump curves for the four existing wells, the current rated capacity of the Tottenham water supply is 6,538 $m^3$/day, as indicated in Table 1 below. It is also noted that the rated capacity of the treatment system at Mill Street is 6,566 $m^3$/day (as stated in Certificate of Approval Number 3718-69UKMY) and therefore this is not foreseen as a limiting factor to the Tottenham water supply.

Table 1 Tottenham Well Data

| Well Number | Existing Pumping Capacity ($m^3$/day) | Permit To Take Water 1997 ($m^3$/day) | Permit To Take Water 2004 ($m^3$/day) | Supply Based on Current Operations (m3/day) |
|---|---|---|---|---|
| 4 | 1,633 | 2,046 | 1,633 | 1,633 |
| 5 | 1,633 | 2,388 | 1,633 | 0 (Combined with Well 4) |
| 6 | 654 | 1,043 | 1,728 | 605 |
| 7 | 2,618 | 1,669 | 1,669 | 1,669 |
| Total | 6,538 | 7,146 | Total restricted to 6,000 | 3,907 |

Current water demand is approximately 3,907 $m^3$/day (maximum day). From the Town of New Tecumseth Water Distribution and Storage Master Plan (currently also being undertaken by MacViro), the maximum daily demand is projected to increase from 4,175 $m^3$/day in 2006 to 4,975 $m^3$/day in 2011 and 11,413 $m^3$/day in 2031. Based on current operating output levels, additional water supply from the wells to service future growth and development is very limited. Additional water supply will therefore be required for Tottenham.

Two main alternative supply sources have been identified for servicing Tottenham. These are:

1. Expansion of the existing groundwater well capacity.
2. Surface water supply to Tottenham through construction of a feedermain connecting to the Beeton and Alliston water supply systems.

It is recommended therefore that the existing well supply in Tottenham be further studied to determine if upgrades to these wells will achieve an immediate increase in the water supply to Tottenham.

This work is classified as a Schedule A project, and therefore pre-approved, under the Municipal Class Environmental Assessment Process. The Town may proceed with this work without further requirements under the Class EA process.

## 2. Evaluation

The Town of New Tecumseth is evaluating the possibility of bringing a groundwater supply from Collingwood via Alliston to meet increasing demands in Tottenham. However, the full implementation of this surface water supply feedermain will take several years to complete. The immediate requirement to increase the water supply to Tottenham comes from new developments scheduled for construction in the Secondary Plan Area to the east of the existing community.

As indicated in Table 1 above, the Permit To Take Water for the Tottenham wells was revised in 2004. A new limit of 6,000 $m^3$/day was established.

A summary of the physical characteristics of each well is shown in Table 2 below:

Table 2 Tottenham Well Physical Characteristics

| Well | Diameter | Depth | Screen length | Screen Size |
|---|---|---|---|---|
| 4 | 381 mm | 88.4 m | 16.8 m (telescoping) | 25 slot SS |
| 5 | 304 mm | 88.9 m | 13.2 m (telescoping) | 30, 60 and 80 slot SS |
| 6 | 152 mm | 88.4 m | 3.05 m | 25 slot SS |
| 7 | 254 mm | 88.2 m | 10.7 m | 14 and 18 slot SS |

### Wells 4 and 5 (Walkem Drive)

As indicated by Town of New Tecumseth operations staff, Wells 4 and 5 are currently not being operated simultaneously due to increased levels of sand and grit being extracted from the wells when both pumps are operating. Based on existing supporting studies and background information, in particular for the updated 2004 Permit To Take Water, there is however no indication that the aquifer cannot sustain well yields to the existing Permit To Take Water limits. There also are no restrictions in the current Permit with respect to operating Wells 4 and 5 simultaneously. It is therefore recommended that further investigation be conducted to determine the actual condition and design of the existing screens in Wells 4 and 5. If the sand and grit concerns can be resolved through upgrading of the well infrastructure, the water supply to the community could potentially increase by 1,633 $m^3$/day.

### Well 6 (Coventry Park)

Well 6 has a limited pumping capacity due to the equipment that is currently installed (654 $m^3$/day). The supply from Well 6 is well below the limits of the Permit To Take Water (1,728 $m^3$/day) however. There are currently no restrictions on operating Wells 6 and 7 simultaneously.

Well drawdown and pump performance tests were conducted by International Water Supply Limited (IWS) on Wells 6 and 7 in December of 2005. Each well test was conducted with one well operating at a time however. A copy of the IWS test report is attached. Results of the testing are summarized as follows:

- There has been only a marginal decline in Well 6 performance since construction (1996).
- Well 6 was tested at a maximum of 984 m3/day; step test results indicate drawdown of the well at approximately 31 m was sustainable and maintained during test.
- Sand production was within AWWA standards.
- Therefore it appears that the capacity of Well 6 is more a factor of the hydraulic pumping capacity of the well pump and related appurtenances rather than the aquifer supply.

Based on the above testing and other supporting studies and background information, it cannot be confirmed however that Wells 6 and 7 can be operated simultaneously without exceeding the limits of the aquifer or the maximum drawdown of the wells. Further step testing is required with both Wells 6 and 7 operating simultaneously to determine the actual potential capacity of Well 6. If it shown that there are no limitations to the aquifer or drawdown of the well, then upgrades to the pumping equipment in Well 6 could potentially increase the water supply by 1,123 $m^3$/day while staying within limits of the current Permit To Take Water.

### Well 7 (Coventry Park)

Well 7 is currently operating at the full capacity of the Permit To Take Water. Well drawdown and pump performance tests conducted by International Water Supply Limited (IWS) on Well 7 indicated the following:

- Well 7 performance is similar to that observed after its construction in 1997.
- The well was tested at a maximum of 2,626 $m^3$/day; step test results indicate drawdown of the well at approximately 61 m was sustainable and maintained during test.
- Sand production was slightly higher than AWWA standards (5 mg/L) at 5.5 mg/L.

There are concerns regarding the levels of sand in this well. This may indicate that either there is damage to the existing well screens or possibly problems with the initial design of Well 7 screen. The screens have much smaller slot openings than those in Wells 4, 5 and 6. It is not likely that rehabilitation of the existing screens would significantly reduce sand and grit uptake given their already relatively small slot openings. Well capacity could also be reduced with smaller screen openings.

## 3. Conclusions

1. It cannot be determined whether the above favourable step test results for Wells 6 and 7 could be achieved with both wells operating at the same time.
2. Testing conducted for Well 7 indicated strong aquifer recovery at a flowrate of 2,626 $m^3$/day. Recognizing the likelihood of interference between the two wells occurring, additional total aquifer capacity required would however only be 735 $m^3$/day (from Well 6) to achieve the Permit To Take Water limit.
3. CCTV inspection of the existing wells will require removal of the well pumps, installation of the CCTV camera and conducting of the inspection work, and replacement of the pumps. A typical budget for this work is approximately $7,000 to $10,000 per well.
4. As discussed above, in the case that no immediate remedial works are planned for Wells No. 4 and 5, it is recommended therefore that CCTV inspections will not provide information of value in a cost effective manner at this time for these wells.
5. Since the pump for Well No. 6 will be removed for the proposed well testing, the cost of CCTV inspection for this well will be significantly reduced, to the order of $2,000. It is recommended therefore that this CCTV work be carried out at the time of the testing.
6. It is also recommended that a CCTV inspection of Well No. 7 be carried out, provisional upon the results of the proposed 72-hour well testing. The final decision to conduct the CCTV inspection of Well No. 7 will therefore be made following the 72-hour test. If during the well test it is determined that re-development of the well may potentially be beneficial in reducing sand production, a CCTV inspection will provide useful information on the key areas of the screen where the re-development work would need to be focused. The CCTV inspection work will however require removal of the existing well pump.
7. In the absence of further well test details/information (particularly for the updated 2004 Permit To Take Water), it appears that there is the potential for additional capacity in the existing Wells No. 6 and 7 to supply some portion of the new development planned for the Secondary Plan Area.
8. Expansion of the groundwater well capacity in Tottenham would provide for additional water supply to the community at a lower cost and a significantly shorter implementation time than proceeding directly with the construction of a surface water supply watermain.
9. An accurate estimate of additional water supply capacity that could possibly be achieved from the existing wells will be difficult to determine. Based on the above evaluation however, it is expected that an ultimate well supply of 5,000 $m^3$/day is feasible.

# 4. Preferred Solution

## Wells 4 and 5

Due to sand and grit production, it is recommended that wells No. 4 and No. 5 continue to operate under current conditions. However, it is also recommended that further investigations be conducted to determine the actual condition of these wells.

## Well 6

Further study is required. However it does appear that there is potential additional capacity in Well 6. Upgrades to the pumping equipment would allow for additional operating capacity of 1,123 $m^3$/day (while complying with limits under the existing Permit To Take Water).

It is recommended that pumping tests be performed on Wells 6 and 7 simultaneously to ensure that there are no limitations to aquifer capacity or maximum drawdown with both wells running. It is also recommended that pump upgrades be considered in Well 6 if it is determined that the aquifer can support the additional capacity. Upgrades to the pumping system may allow for increased well capacity within the limits of the current Permit To Take Water.

## Well 7

It is recommended that Well 7 be inspected by CCTV for any infrastructure problems or damage that is leading to sand infiltration, and repaired if possible.

# Technical Memorandum 4.2
# Construction of Surface Water Supply System from Alliston

## 1. Problem Statement and Description of the Project

The community of Tottenham is currently serviced by groundwater from four wells with a total rated capacity of 6,542 $m^3$/day as determined by the Town of New Tecumseth Master Distribution and Storage Master Plan updated by MacViro Genivar in 2007. Tottenham is therefore currently at its supply limits, and new developments cannot be undertaken without an increase in water supply.

The long-term goal for the Tottenham water supply is to meet the 2031 maximum day demand, which is estimated at 11,413 $m^3$/day (Town of New Tecumseth Water Distribution and Storage Master Plan). The existing Permit to Take Water limit is 6,000 $m^3$/day. The existing supply based on current well output levels is approximately 3,907 $m^3$/day.

It is proposed therefore that a water supply system be constructed to bring surface water into Tottenham from Collingwood (through Alliston). The objective for installing this watermain is to increase the water supply to Tottenham to allow for planned growth. This work is classified as a Schedule B project under the Municipal Class Environmental Assessment Process.

## 2. Alternatives for Watermain

Three alternatives were identified for the provision of an additional water supply to Tottenham. Each alternative was based on a different alignment. The selected alternatives can be seen in Figure 1.

### Alternative 1

Alternative 1 consists of the construction of a new watermain from Alliston to Beeton along the town's abandoned railway right-of way and from Beeton to Tottenham along the South Simcoe Railway right-of-way. The watermain would run from the existing Parsons Reservoir and Pumphouse in Alliston, through the Town of Beeton and connect to the Mill Street Reservoir and Pumphouse in Tottenham (See Figure 2). The total length of watermain would be approximately 20.3 km, and would require a 300 mm diameter pipe. This alternative would involve construction through South Simcoe Railroad property.

There is currently a water supply from Alliston to Beeton. However, the existing infrastructure does not have the capacity to accommodate increased flow requirements to the year 2031. It will therefore be necessary to upgrade the McKelvey Reservoir and Pumphouse in Beeton to support this increased flow.

This alignment would also require an upgrade through the Town of Beeton from the McKelvey Reservoir and Pumphouse to the South Simcoe Railway right-of-way (see Figure 3).

Alliston

Alternative 3: Water supply from Alliston along the Canadian Pacific Railway

Alternative 2: Water supply from Alliston along Tottenham Road

Alliston

Beeton

Alternative 1: Water supply from Beeton along the South Simcoe Railway

Tottenham

LEGEND

Tottenham Supply Routes

Existing Watermains

**NOT TO SCALE**

**Tottenham**
**Municipal Class EA**

Tottenham Supply Routes

| FIGURE 1 | JAN 2008 | MacViro |
|---|---|---|

Alternative 1: Water supply from Beeton along the South Simcoe Railway

Alternative 3: Water supply from Alliston along the Canadian Pacific Railway

Alternative 2: Water supply from Alliston along Tottenham Road

NOLAN RD. (5TH LINE/COUNTY ROAD No. 14)

COUNTY RD.

QUEEN STREET NORTH

WELL No.6

WELL No.7

WELL No. 4

WELL No. 5

ABANDONED

SOUTH SIMCOE RAIL

C.P.R.

INDUSTRIAL RD.

ELEVATED TANK

MILL STREET RESERVOIRS & PUMPHOUSE

MILL STREET (4TH LINE)

All three alternative alignments connect to the Mill Street Reservoir and Pumphouse

CONSERVATION AREA

TOTTENHAM COURT

THE BOULEVARD

QUEEN STREET SOUTH

COUNTY ROAD No. 10

3RD LINE

LEGEND

Tottenham Supply Routes

Existing Watermains

**NOT TO SCALE**

**Tottenham Municipal Class EA**

Connection to Water System in Tottenham

FIGURE 2 | JAN 2008 | MacViro

Install new 300 mm watermain from Alliston parallel to existing Beeton water supply

McKELVEY RESERVOIR & PUMPHOUSE

Upgrades required to the existing McKelvey Reservoir and Pumphouse

LILLY STREET

DAYFOOT STREET

Install new 300 mm watermain through the Town of Beeton to provide an adequate water supply to Tottenham

Alternative 1: Water supply from Beeton along the South Simcoe Railway

MAIN STREET

Patterson Street

BEETON SPRINGS RESERVOIR

Install new 300 mm watermain along the South Simcoe Railway right of way

LEGEND

Tottenham Supply Routes

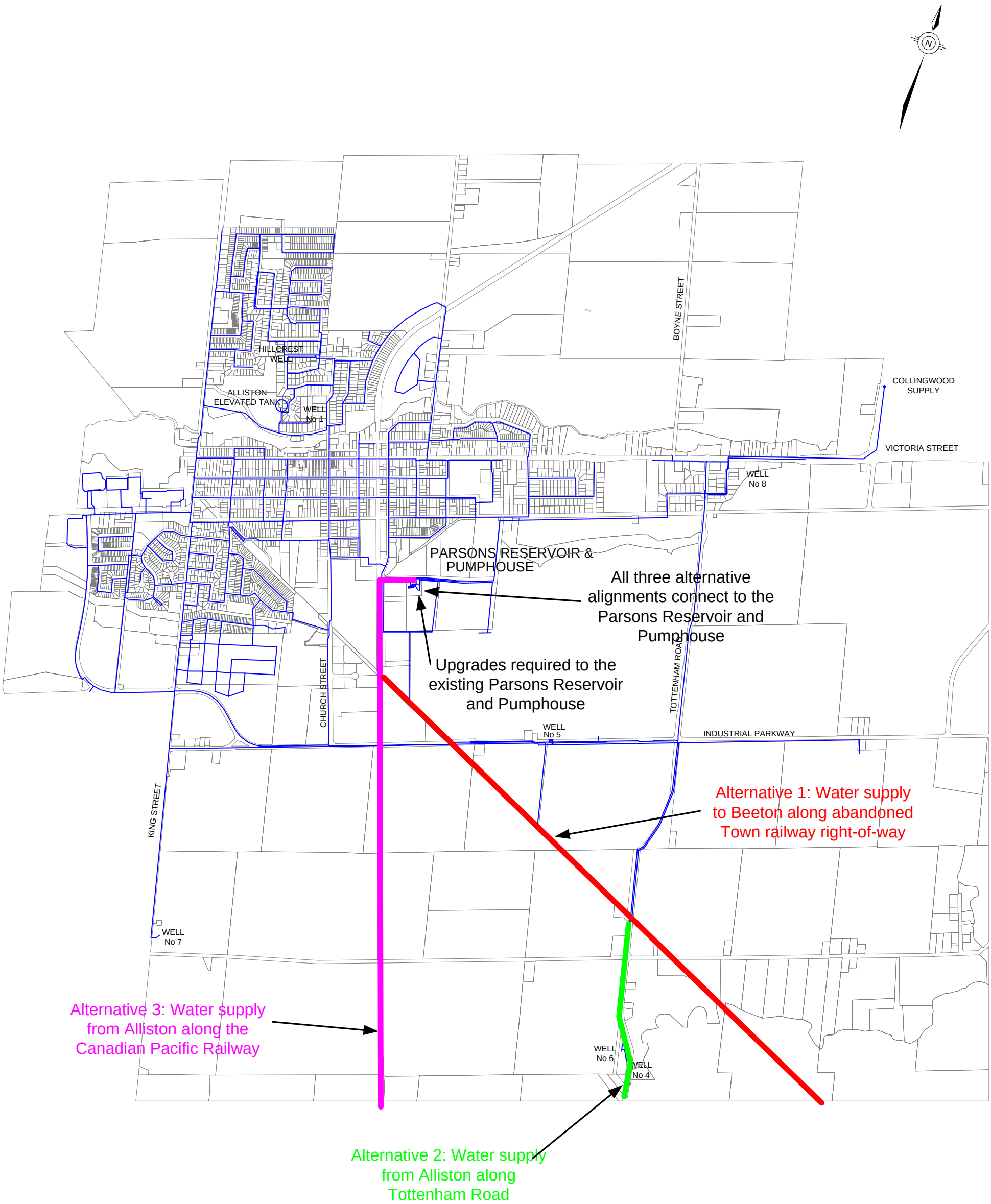
Existing Watermains

**NOT TO SCALE**

**Town of New Tecumseth Water Master Plan**

Connection to Water System in Beeton

FIGURE 3 | JAN 2008 | MacViro




LEGEND

Tottenham Supply Routes

Existing Watermains

**NOT TO SCALE**

| **Tottenham Municipal Class EA** | | |
|---|---|---|
| Connection to Water System in Alliston | | |
| FIGURE 4 | JAN 2008 | MacViro |

also a wooded area on either side of the railway right-of-way for 400m between 10th Line and 11th Line.

## 3. Evaluation of Alternatives

The evaluation criteria used to evaluate the alternative alignments for the watermain are outlined in Figure 5.

Figure 5 Evaluation Criteria

| Criteria | Key Considerations |
|---|---|
| **1. Minimize Impact on Natural Environment** | |
| VTE Species | The number of vulnerable, threatened and/or endangered (VTE) species as identified by the Ministry of Natural Resources (MNR) potentially affected by an alternative. |
| Designated Natural Heritage Areas | The area of land classified as an Environmentally Sensitive Area (ESA), Area of Natural and Scientific Interest (ANSI), or Provincially (Class 1-3) or locally significant wetlands by the MNR affected by an alternative (local, regional, provincially significant). |
| Vegetation | Amount of woodlands or hedgerows affected or removed by an alternative, as well as the degree of impact on the edge of a woodlot / hedgerow. |
| Watercourses and Fisheries | The amount and quality of aquatic habitat that may be harmfully alternated or disturbed (i.e., location of Type 1 fisheries) through the number of watercourse crossings. |
| **2. Minimize Impact on Social and Cultural Environments** | |
| Impacts on Residents | The number of adjacent or nearby residents affected (e.g., visual / aesthetic impact, construction impacts, noise, dust, etc.). |
| Recreational Areas | The number and type of recreational areas (e.g., parkland) surrounding the site. |
| Traffic Impacts | The amount of roadways affected that results in traffic impacts during construction. |
| Future Planning Policies | Consistency with land use designations, approved development plans, and proposed land use changes. |
| Archaeological Sites and Cultural Areas | The number and significance of known archaeological sites at the site or along the route. Potential for undiscovered archaeological resources at the site. The number of cultural areas and type of cultural area surrounding the site or route. |
| **3. Maximize Technical Suitability** | |
| Technical Feasibility | Construction, operation and maintenance issues related to the number and type of facilities, length of sewers and length of forcemains. |
| Compatibility with Existing or Planned Infrastructure System | Ease of connecting to the existing infrastructure, modifications to existing infrastructure and amount of additional works required to integrate with existing infrastructure. |
| **4. Minimize Costs (Economics)** | |
| Capital Costs | Total capital costs and land acquisition costs. |
| Operating and Maintenance Costs | Total operating and maintenance costs. |
| Decommissioning Costs | Total cost to decommission existing pumping station facilities. |

An evaluation of the three alternative alignments using these criteria is presented below in Figure 6.

Figure 6 Evaluation of Surface Water Supply Alternatives

| Environmental Impacts | Alternative 1<br>South Simcoe Railway Alignment (from Beeton) | Alternative 1<br>Tottenham Road Alignment (from Alliston) | Alternative 1<br>Canadian Pacific Railway Alignment (from Alliston) |
|---|---|---|---|
| 1. Minimize Impact on Natural Environment | | | |
| **VTE Species** | • No VTE species identified on site. | • No VTE species identified on site. | • No VTE species identified on site. |
| **Environmentally Sensitive Areas** | • No environmentally sensitive areas, classified wetlands or other sensitivity issues were identified within the Tottenham area or its immediate vicinity. | • No environmentally sensitive areas, classified wetlands or other sensitivity issues were identified within the Tottenham area or its immediate vicinity. | • No environmentally sensitive areas, classified wetlands or other sensitivity issues were identified within the Tottenham area or its immediate vicinity. |
| **Designated Natural Heritage Areas** | • Site is not designated as a Natural Heritage Area. | • Site is not designated as a Natural Heritage Area. | • Site is not designated as a Natural Heritage Area. |
| **Vegetation** | • A wooded area surrounds the Nottawasaga River along the proposed alignment. Because there is already an existing watermain through this area no further impact on vegetation is expected. Some areas of vegetation surround the railway right-of-way.<br>• No significant impact is expected on wooded areas or vegetation as the proposed alignment is in an existing railway right-of-way. | • A wooded area surrounds the Nottawasaga River for approximately 300m along the proposed alignment.<br>• Some areas of vegetation surround the County Road.<br>• No significant impact is expected on wooded areas or vegetation as the proposed alignment is along an existing County Road. | • A wooded area surrounds the Nottawasaga River for approximately 400m along the proposed alignment. This is the location of the Alliston Pinery.<br>• A wooded area surrounds the Railway right-of-way for approximately 300m between 10th Line and 11th Line. This area is also considered to be a Significant Wildlife Habitat.<br>• Some areas of vegetation surround the railway right-of-way.<br>• No significant impact is expected on wooded areas or |

| Environmental Impacts | Alternative 1<br>South Simcoe Railway Alignment (from Beeton) | Alternative 1<br>Tottenham Road Alignment (from Alliston) | Alternative 1<br>Canadian Pacific Railway Alignment (from Alliston) |
|---|---|---|---|
| | | | vegetation as the proposed alignment is in an existing railway right-of-way. |
| **Watercourse and Fisheries** | • A watercourse crossing of the Nottawasaga River is required between 12th Line and 13th Line.<br>• Watercourse crossings of Beeton Creek, Bailey Creek and several small tributaries are required along the proposed alignment.<br>• The proposed alignment follows beside an existing watermain and will cross the Nottawasaga River in the same location. No further impact on the river is expected.<br>• Construction at these crossings may have some short-term mitigable impacts on the surrounding environment.<br>• Large-scale stream habitat rehabilitation programs are currently being undertaken in the surrounding area for both Beeton Creek and the Boyne River, which may be impacted. The South Simcoe Railway runs along side Beeton Creek therefore it is possible that work may affect the river or the local fish habitat. | • A watercourse crossing of the Nottawasaga River is required between 12th Line and 13th Line.<br>• Watercourse crossings of Beeton Creek, Bailey Creek and several small tributaries are required along the proposed alignment.<br>• Construction at these crossings may have some short-term mitigable impacts on the surrounding environment.<br>• The Nottawasaga Conservation Authority has recently been working on projects to monitor the Nottawasaga Walleye population, as well as harvest management options for the Nottawasaga Rainbow Trout.<br>• Large-scale stream habitat rehabilitation programs are currently being undertaken in the surrounding area for both Beeton Creek and the Boyne River, which may be impacted.<br>• Any work around the Nottawasaga River requires | • A watercourse crossing of the Nottawasaga River is required between 12th Line and 13th Line.<br>• Watercourse crossings of Beeton Creek, Bailey Creek and several small tributaries are required along the proposed alignment.<br>• Construction at these crossings may have some short-term mitigable impacts on the surrounding environment.<br>• The Nottawasaga Conservation Authority has recently been working on projects to monitor the Nottawasaga Walleye population, as well as harvest management options for the Nottawasaga Rainbow Trout.<br>• Large-scale stream habitat rehabilitation programs are currently being undertaken in the surrounding area for both Beeton Creek and the Boyne River, which may be impacted.<br>• Any work around the Nottawasaga River requires |

| Environmental Impacts | Alternative 1<br>South Simcoe Railway Alignment (from Beeton) | Alternative 1<br>Tottenham Road Alignment (from Alliston) | Alternative 1<br>Canadian Pacific Railway Alignment (from Alliston) |
|---|---|---|---|
| | • Any work around Beeton Creek requires approval by the Nottawasaga Valley Conservation Authority.<br>• Any work around the Nottawasaga River requires approval by Fisheries and Oceans Canada under the Federal Fisheries Act. | approval by Fisheries and Oceans Canada under the Federal Fisheries Act.<br>• Any work around Beeton Creek requires approval by the Nottawasaga Valley Conservation Authority. | approval by Fisheries and Oceans Canada under the Federal Fisheries Act.<br>• Any work around Beeton Creek requires approval by the Nottawasaga Valley Conservation Authority. |
| 2. Minimize Impact on Social and Cultural Environments | | | |
| **Impacts on Residents** | • Increase the available water supply in Tottenham and improve system redundancy.<br>• Allow for new growth and development in Tottenham. | • Increase the available water supply in Tottenham and improve system redundancy.<br>• Allow for new growth and development in Tottenham. | • Increase the available water supply in Tottenham and improve system redundancy.<br>• Allow for new growth and development in Tottenham. |
| **Recreational Areas** | • The proposed alignment of the watermain is along an existing right-of-way therefore no recreational areas will be impacted.<br>• The Tottenham Conservation Area is located on the south side of Mill Street but is not within the proposed alignment therefore will not be impacted. | • The proposed alignment of the watermain is along an existing County Road therefore no recreational areas will be impacted.<br>• The Tottenham Conservation Area is located on the south side of Mill Street but is not within the proposed alignment therefore will not be impacted. | • The proposed alignment of the watermain is along an existing right-of-way therefore no recreational areas will be impacted.<br>• The Tottenham Conservation Area is located on the south side of Mill Street but is not within the proposed alignment therefore will not be impacted. |
| **Traffic Impacts** | • Construction will take place along major streets in Beeton therefore traffic control will be required during construction. | • Construction will take place along a County Road therefore traffic control will be required during construction. | • Traffic impacts for local residents will be minimal since the majority of construction is not taking place on local |

| Environmental Impacts | Alternative 1<br>South Simcoe Railway Alignment (from Beeton) | Alternative 1<br>Tottenham Road Alignment (from Alliston) | Alternative 1<br>Canadian Pacific Railway Alignment (from Alliston) |
|---|---|---|---|
| | • Traffic impacts through Beeton will be mitigated by constructing the east/west portion of the watermain on a street running parallel to Main Street.<br>• Construction along railway right-of-way will require coordination with the South Simcoe Railway. | • Traffic impacts will be significant for this alignment since Tottenham Road is the main route between Tottenham and Alliston. | roadways.<br>• Construction along the railway right-of-way will require coordination with Canadian Pacific Railway. |
| **Archeological Sites and Cultural Areas** | • The South Simcoe Railway is part of the original Hamilton and Northwest Railroad and an important part of the cultural heritage in Tottenham. The South Simcoe Railway Heritage Corporation runs historic steam train excursions between Tottenham and Beeton.<br>• Any impacts to the South Simcoe Railway may be subject to the guidelines established by the Ministry of Culture, Tourism and Recreation to preserve the features significant to the area's cultural heritage. | • No known archaeological or cultural issues along Tottenham Road.<br>• This alignment requires approximately 1,500 m of watermain to run along the South Simcoe Railway right-of-way in Tottenham.<br>• Any impacts to the South Simcoe Railway may be subject to the guidelines established by the Ministry of Culture, Tourism and Recreation to preserve the features significant to the area's cultural heritage. | • No known archaeological or cultural issues along the Canadian Pacific Railway right-of-way.<br>• This alignment requires approximately 1,500 m of watermain to run along the South Simcoe Railway right-of-way in Tottenham.<br>• Any impacts to the South Simcoe Railway may be subject to the guidelines established by the Ministry of Culture, Tourism and Recreation to preserve the features significant to the area's cultural heritage. |
| 3. Maximize Technical Suitability | | | |
| **Technical Feasibility** | • Construct a new 300 mm diameter watermain approximately 20,300 m long.<br>• Connect to existing system at the | • Construct a new 300 mm diameter watermain approximately 16,000m long.<br>• Connect to existing system at the | • Construct a new 300 mm diameter watermain approximately 16,000m long.<br>• Connect to existing system at the |

| Environmental Impacts | Alternative 1<br>South Simcoe Railway Alignment (from Beeton) | Alternative 1<br>Tottenham Road Alignment (from Alliston) | Alternative 1<br>Canadian Pacific Railway Alignment (from Alliston) |
|---|---|---|---|
| **Proposed works Include** | Parsons Reservoir and Pumphouse in Alliston. Watermain will run along the Canadian Pacific Railway to the South Simcoe Railway.<br>• Watermain will run along the South Simcoe Railway and connect to the existing McKelvey Reservoir and Pumphouse in Beeton.<br>• Crossing of the Nottawasaga River beside an existing watermain.<br>• Watermain will run south along Patterson Street in Beeton and west parallel to Main Street to the South Simcoe Railway.<br>• Watermain will run along the South Simcoe Railway and connect to the existing the Mill Street Reservoir and Pumphouse in Tottenham.<br>• Open cut installation along an existing railway right-of-way and existing roadways.<br>• Actual alignment will be subject to negotiations with the Town of Beeton and the South Simcoe Railway. | Parsons Reservoir and Pumphouse in Alliston. Watermain will run along the Canadian Pacific Railway to the South Simcoe Railway.<br>• Watermain will run along the South Simcoe Railway to Tottenham Road.<br>• Watermain will run along Tottenham road to Nolan Road in Tottenham.<br>• Watermain will run along Nolan Road to the South Simcoe Railway, then along the South Simcoe Railway and connect to the existing Mill Street Reservoir and Pumphouse in Tottenham.<br>• Open cut installation along an existing road.<br>• Crossing of the Nottawasaga River. All precautions must be taken not to damage or disturb the river or local fish habitat.<br>• Actual alignment will be subject to negotiations with Simcoe County. | Parsons Reservoir and Pumphouse in Alliston. Watermain will run along the Canadian Pacific Railway to Nolan Road in Tottenham.<br>• Watermain will run along Nolan Road to the South Simcoe Railway, then along the South Simcoe Railway and connect to the existing Mill Street Reservoir and Pumphouse in Tottenham.<br>• Open cut installation along an existing railway right-of-way.<br>• Crossing of the Nottawasaga River. All precautions must be taken not to damage or disturb the river or local fish habitat.<br>• Actual alignment will be subject to negotiations with the Canadian Pacific Railway. |

| Environmental Impacts | Alternative 1<br>South Simcoe Railway Alignment (from Beeton) | Alternative 1<br>Tottenham Road Alignment (from Alliston) | Alternative 1<br>Canadian Pacific Railway Alignment (from Alliston) |
|---|---|---|---|
| **Compatibility with Existing or Planned Infrastructure System** | • Upgrades will be required to the existing McKelvey Reservoir and Pumphouse in the Town of Beeton.<br>• Upgrades throughout the Town of Beeton will have to account for the future expansion of Tottenham as well as the future expansion of Beeton. | • Upgrades will be required to the existing Parsons Reservoir and Pumphouse in Alliston. | • Upgrades will be required to the existing Parsons Reservoir and Pumphouse in Alliston. |
| 4. Minimize Costs (Economics) | | | |
| **Capital Costs** | • Estimated capital cost $14,769,000 (See Figure 7). | • Estimated capital cost $12,453,750 (See Figure 7). | • Estimated capital cost $13,533,750 (See Figure 7). |
| **Deferment of Capital Expenditures** | • Project may be completed in stages to minimize the impact of "upfront" capital costs.<br>• Phase 1 to include the construction of a Beeton-Tottenham feedermain only.<br>• Phase 2 to include upgrades to the McKelvey Reservoir and Pumphouse and the construction of an Alliston-Beeton feedermain.<br>• Phase 2 can be deferred to approximately the year 2021. If additional well capacity is achieved from the existing Tottenham groundwater supply, | • No surface water will be supplied to Tottenham until the completion of the project. | • No surface water will be supplied to Tottenham until the completion of the project. |

| Environmental Impacts | Alternative 1<br>South Simcoe Railway Alignment (from Beeton) | Alternative 1<br>Tottenham Road Alignment (from Alliston) | Alternative 1<br>Canadian Pacific Railway Alignment (from Alliston) |
|---|---|---|---|
| | Phase 2 may be able to be deferred even longer. | | |
| **Operating and Maintenance/ Decommissioning Costs** | • Increased operational costs for the McKelvey Reservoir and Pumphouse in the Town of Beeton. | • Increased operational costs for the Parsons Reservoir and Pumphouse in Alliston. | • Increased operational costs for the Parsons Reservoir and Pumphouse in Alliston. |
| **Overall Preference & Ranking** | **☑(1)** | **☒ (2)** | **☒ (3)** |

## 4. Preferred Alternative

Based on the results of the above evaluation, Alternative 1 was selected as the preferred alternative for the watermain alignment.

Although this alignment has a capital cost approximately $2.3 Million higher that the least expensive alternative, a large portion of these capital costs may be deferred to the year 2031 or possibly later. Phase 1 of the project will only require approximately $6.5 Million in capital costs.

## 5. Public Consultation

The alternatives identified in the Schedule B, Class EA for the watermain construction will be presented to local area residents in compliance with the requirements of the municipal Class Environmental Assessment Process.

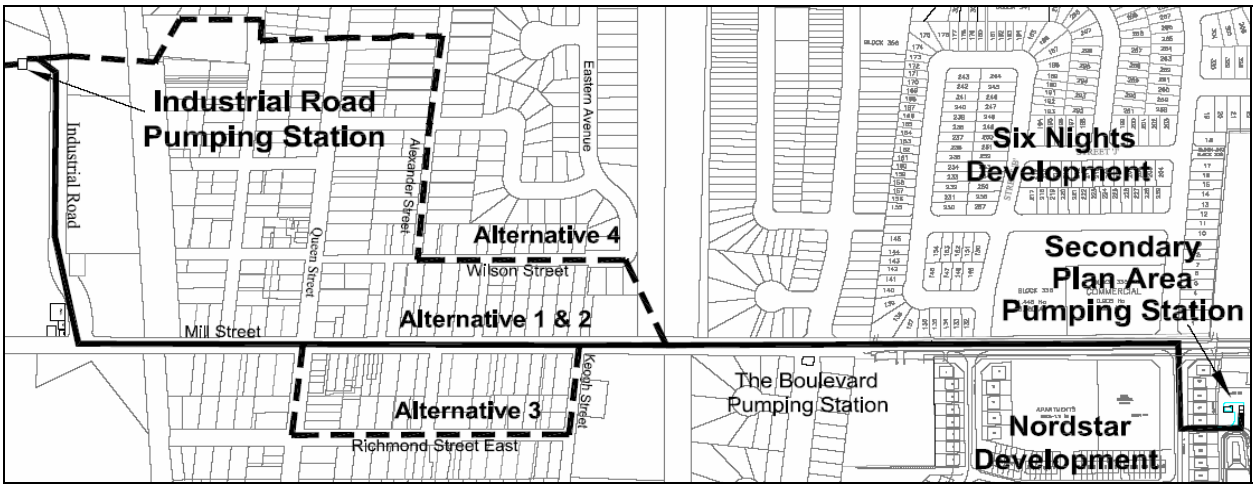
# APPENDIX B

## Public and Agency Consultation

# The Town of New Tecumseth
## Tottenham Secondary Plan Area
## Water and Wastewater Servicing
## Municipal Class Environmental Assessment

# NOTICE OF PUBLIC REVIEW

The Town of New Tecumseth has commenced work on a Municipal Water and Wastewater Servicing Class Environmental Assessment (EA) Study for the Tottenham Secondary Plan Area. The purpose of the Study is to evaluate the environmental impacts of various water and wastewater projects identified in the previously completed Master Plan and select the preferred servicing alternative. These works include various new watermain installations throughout the Tottenham Community, and construction of a new Secondary Plan Area sewage pumping station and forcemain.




In accordance with the Class Environmental process, the Town of New Tecumseth is now inviting input and comments from interested parties. The Class EA document will be available for review from October 31st to November 14th, 2007, online on the Town of New Tecumseth official website http://www.town.newtecumseth.on.ca and at the following locations:

The Town of New Tecumseth
Administration Centre
10 Wellington Street East
Alliston, Ontario

Tottenham Branch Library
18 Queen Street North
Tottenham, Ontario

Please forward any comments to Mr. John Himanen of GENIVAR by November 14th, 2007. Thereafter, the Class EA will be reviewed and revised taking into consideration the comments which are received from the public. The recommended Class EA will be presented to the Town Council for approval and final completion. For further information, please contact the following:

Mr. John Himanen, P.Eng.
Project Manager
MacViro Consultants Inc.
600 Cochrane Drive, Suite 500
Markham, Ontario L3R 5K3
Phone: (905) 475-7270 Ext. 277
Fax: (905) 475-5994
Email: john.himanen@genivar.com

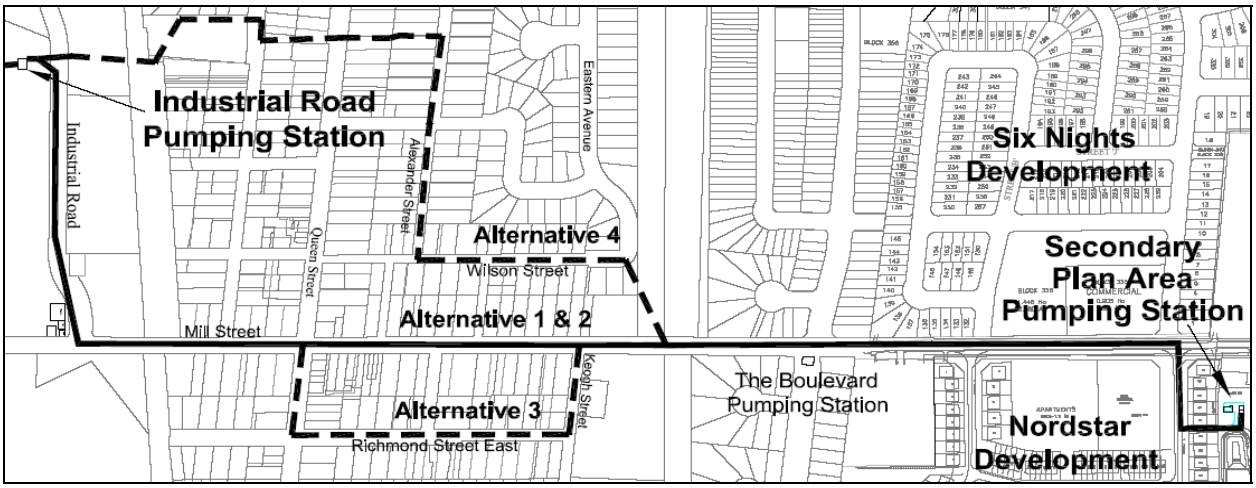
Mr. Richard Vatri, C.E.T.
Manager of Engineering
The Town of New Tecumseth
Administration Centre
10 Wellington Street East , P.O. Box 910
Alliston, Ontario L9R 1A1
Phone: (705) 435-3900 Ext. 253
Fax: (705) 435-0407
Email: rvatri@town.newtecumseth.on.ca

***Thank you for your participation in this study.***

This Notice was issued on October 31st, 2007.

# NOTICE OF COMPLETION

The Town of New Tecumseth has undertaken a Municipal Water and Wastewater Servicing Class Environmental Assessment (EA) Study for the Tottenham Secondary Plan Area. The purpose of the Study is to evaluate the environmental impacts of various water and wastewater projects identified in the previously completed Master Plan and select the preferred servicing alternative. These works include various new watermain installations throughout the Tottenham Community, and construction of a new Secondary Plan Area sewage pumping station and forcemain.




The Class EA document is available for review online on the Town of New Tecumseth official website http://www.town.newtecumseth.on.ca and at the following locations:

The Town of New Tecumseth
Administration Centre
10 Wellington Street East
Alliston, Ontario

Tottenham Branch Library
18 Queen Street North
Tottenham, Ontario

Please forward any comments to Mr. John Himanen of GENIVAR by _____, 2008. Thereafter, the Class EA will be reviewed and revised taking into consideration the comments which are received from the public. If no comments are received, the Town will proceed with the implementation of the preferred servicing alternatives.
For further information, please contact the following:

Mr. John Himanen, P.Eng.
Project Manager
MacViro Consultants Inc.
600 Cochrane Drive, Suite 500
Markham, Ontario L3R 5K3
Phone: (905) 475-7270 Ext. 277
Fax: (905) 475-5994
Email: john.himanen@genivar.com

Mr. Richard Vatri, C.E.T.
Manager of Engineering
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10 Wellington Street East , P.O. Box 910
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Email: rvatri@town.newtecumseth.on.ca

***Thank you for your participation in this study.***

This Notice was issued on _____, 2008.