1130397 Ontario Limited
Northwest Paris

Functional Servicing Report

September 2014

Submitted by:

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SUBMISSION HISTORY

Submission	Date	In Support Of	Distributed To
1st	September 2014	Draft Plan Approval	GSP

1.0 INTRODUCTION

SCS Consulting Group Ltd. has been retained by 1130397 Ontario Ltd. to prepare a Functional Servicing Report for a proposed development within the Northwest Paris Secondary Plan, located in the County of Brant.

1.1 Purpose of the Functional Servicing Report

The Functional Servicing Report (FSR) has been prepared in support of the Draft Plan Approval for the proposed development. The Draft Plan of Subdivision is provided in **Appendix A**. The proposed development consists of the following land uses:

- low density residential (single detached);
- medium density residential (townhomes);
- park/open space;
- proposed roads;
- emergency access;
- stormwater management (SWM) pond; and
- sanitary pumping station.

The purpose of this report is to demonstrate that the development can be graded and serviced in accordance with the County of Brant, Grand River Conservation Authority (GRCA) and the Ministry of Environment and Climate Change (MOE) design criteria.

1.2 Study Area

The site is located within the NW Paris Area Plan (part of the Charlie Creek watershed) in the Town of Paris and is approximately 39.68 ha in size. The proposed land use is divided as follows:

- 10.97 ha of Single Detached Residential;
- 1.54 ha of Street Townhomes;
- 21.76 ha of Park/Open Space;
- 4.62 ha of Roads;
- 0.10 ha of Emergency Access;
- 0.66 ha of Stormwater Management; and
- 0.03 ha of Sanitary Pumping Station Block.

The site is bound by Charlie Creek and Watt's Pond Road to the north, Charlie Creek to the west, O'Neals Pond and existing residential to the south, and future residential to the east (see **Figure 1.1**). The existing subject lands are comprised of agricultural land, open space areas, and wetland areas.

1.3 Background Servicing Information

In preparation of the site servicing and SWM strategies, the following design guidelines and standards were used:

- Development and Engineering Standards, County of Brant (March 2013);

- Policies for the Administration of the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation, Grand River Conservation Authority (January 25, 2013);
- Ministry of Environment (MOE) Stormwater Management Planning and Design Manual (March 2003); and
- Ministry of Transportation (MTO) Drainage Management Manual (1997).

The site servicing and SWM strategies in this report are based on the following reports:

- *"Northwest Paris County of Brant – Master Servicing Study"*, prepared by SCS Consulting Group Ltd., dated March 2012 (revised March 2014);
- *"Functional Grading, Servicing and SWM Report – Watt's Pond Subdivision – County of Brant"*, prepared by IBI Group, dated December 2, 2013;
- *"Brookfield Homes (Ontario) Limited Northwest Paris – Functional Servicing Report"*, prepared by SCS Consulting Group Ltd., dated March 2012;
- *"Preliminary Geotechnical Investigation - Proposed Residential Subdivision Development"*, prepared by SPL Consultants Limited dated July 3, 2014;
- *"Preliminary Water Balance Report – Proposed Development"*, prepared by Azimuth Environmental Consulting Inc., dated July 2014;
- *"Nischal Property Sewage Pumping Station – Memorandum"*, prepared by The Municipal Infrastructure Group, dated June 4, 2014; and
- *"Hydraulic Analysis for NW Paris Area Plan Development – Revised Analysis"*, prepared by AECOM (revised January 2014).

Based on these documents, the following servicing approach and criteria has been established. Further details are provided within the following report:

Storm Sewer

- Major and minor systems are to convey stormwater runoff to a SWM facility within the subject site; and
- Stormwater runoff from a small portion of the Watt's Pond Subdivision (Gusenbauer site) to the east is to be conveyed via the major and minor systems of the subject site.

Sanitary Servicing

- Sanitary flows are to be conveyed via gravity sewer to a sanitary pumping station within the subject site; and
- The sanitary pumping station is to pump sanitary flows via forcemain to a highpoint along Street Six, located at the property boundary of the subject site/Watt's Pond Subdivision, where flows will continue to flow via gravity to the proposed Brookfield sanitary pumping station.

Water Supply and Distribution

- The subject site is to be serviced by connecting into the proposed watermain for the Watt's Pond Subdivision.

Grading

- The site is to have high points along the east side of the property boundary and at the west end of Street Six. The low point of the site will be located along the front of the SWM pond block.

2.0 STORMWATER MANAGEMENT

2.1 Regional Floodline and Floodplain Modifications

Per the most recent version of the Master Servicing Study (March 2014), hydraulic modelling of Charlie Creek from Watt's Pond Road to Keg Lane and the corresponding mapping of the existing 100 year and Regional floodlines was completed by SCS and subsequently approved by the GRCA (see Master Servicing Study (March 2014) for approval from GRCA). Subsequent to the March 2014 Master Servicing Study revision, draft plan changes were made for the proposed development of the subject lands, and corresponding updates to the hydraulic model were completed to accommodate the proposed draft plan. Refer to **Appendix B** for the updated floodplain modifications and supporting calculations. A cut/fill drawing (**Drawing 1001** in **Appendix B**) was prepared in support of the proposed floodplain modifications. Prior to the detailed design stage, the proposed floodplain modifications will require approval by the GRCA.

2.2 Existing Drainage

The subject lands are located within the Charlie Creek Watershed. As illustrated by **Figure 2.1**, the site generally has a horizontal drainage split dividing drainage to the north and south, with the southeast corner initially draining west before joining other south draining catchments. Drainage to the north enters Charlie Creek and flows southbound into O'Neals Pond where it joins with the south draining portions of the subject lands.

Catchment 1016 (approximately 7.63 ha consisting of internal and external lands) drains to an existing depression area which spills west into catchment 1019. Catchment 1020 (approximately 3.70 ha) drains into an existing depression area which also spills into catchment 1019, to the south. Catchment 1019 collects drainage from catchments 1016, 1020, and external catchment 108, and drains south into O'Neals pond. Catchment 1022 (approximately 2.28 ha) drains to an existing depression area which spills south into catchment 1025 which also drains south into O'Neals Pond.

All remaining catchments border the study area boundary and drain outward, ultimately collecting into O'Neals Pond.

The drainage areas and ponding depths of the depression areas are summarized in **Table 2.1**.

Table 2.1 – Existing Depression Areas

Catchment ID	Drainage Area (ha)	Ponding Depth (m)	Spill Elevation (m)
1016	7.63	0.64	263.50
1020	3.70	0.28	260.52
1022	2.28	1.12	260.90

2.2.1 Pre-development Hydrologic Modelling

Hydrologic Modelling was undertaken using the Visual Otthymo Version 2.0 (VO2) software to determine the existing peak flows to O'Neals Pond. The 24 hour SCS Type II and the 4 hour Chicago design storms, with County of Brant Intensity-Duration-Frequency (IDF) data, were used to model the existing conditions.

Supporting calculations for the modelling parameters of the drainage areas are provided in **Appendix C**. As per the County of Brant Development and Engineering Standards, the Airport Method was used to calculate the time of concentration. Curve number (CN) values were determined based on the County of Brant Soil Map and land uses visible in recent aerial photography.

A summary of modelling parameters and a pre-development VO2 schematic are provided in **Appendix C**. A CD containing the VO2 hydrology model is also provided in **Appendix C**.

The existing peak flows from the site are summarized in **Table 2.2**.

Table 2.2 - Summary of Existing Peak Flows to O'Neals Pond

Return Period Storm	4hr Chicago (m^3/s)	24hr SCS Type II (m^3/s)
2 Year	**0.188**	0.331
5 Year	**0.412**	0.506
10 Year	**0.607**	0.623
25 Year	0.900	**0.844**
50 Year	1.200	**1.072**
100 Year	1.517	**1.244**

Note: Bold values indicate the more conservative peak flow.

As shown in **Table 2.2**, the 4 hour Chicago design storm produced lower peak flows for the 2, 5, and 10 year return period storm events and the 24 hour SCS design storm produced lower peak flows for the 25, 50, and 100 year return period storm events. The design storm with the lower pre-development peak flow has been chosen as it is a more strict target to meet under post-development conditions.

2.3 Stormwater Runoff Control Criteria

The following stormwater runoff control criteria have been established based on the MOE Stormwater Management Planning and Design Manual and guidelines set out in the Master Servicing Study (March 2014). The stormwater runoff criteria are summarized below in **Table 2.3**:

Table 2.3 – Stormwater Runoff Control Criteria

Criteria	Control Measure
Quantity Control	Control post-development to pre-development peak flows for the 2 through 100 year storm events.
Quality Control	MOE Enhanced (Level 1) Protection.
Erosion Control	Detention of the 25 mm rainfall runoff for a minimum of 24 hours.
Water Balance	Where feasible, measures to minimize development impacts on the water balance to be incorporated into the development design (i.e. infiltration measures).

2.4 Proposed Drainage

As illustrated by **Figure 2.2**, approximately 14.78 ha will drain to a proposed stormwater management pond, located in the southwest corner of the subject lands. The remainder of the subject lands (rear yards), approximately 4.02 ha will drain uncontrolled to the Charlie Creek watershed. Minor system flows (up to the 5 year storm event) will be conveyed via storm sewers. Major system flows (greater than 5 year up to the 100 year storm event) will be conveyed overland within the public right-of-way (ROW). All flows will drain to the proposed SWM pond.

2.5 Stormwater Management Pond C2

In accordance with the Master Servicing Study (March 2014), a stormwater management wet pond (SWM Pond C2) is proposed to service the subject lands. As illustrated by **Figure 2.2**, SWM Pond C2 will be located in the southwest corner of the subject lands, and will outlet to O'Neals Pond. Preliminary grading of the proposed SWM pond block is shown on **Figure 2.3**.

2.5.1 Permanent Pool

The function of the permanent pool is to provide sediment removal from the storm runoff conveyed to the pond. SWM Pond C2 will be designed to provide permanent pool storage of 157 m^3/ha based on MOE's Enhanced Level Protection for a wet pond having a 58% impervious drainage area (see Table 3.2, 2003 MOE Guidelines). The required permanent pool volume is 2313 m^3 based on a total developed area draining to the pond

of 14.78 ha. The available permanent pool storage is 2813 m^3 (see **Figure 2.3** and calculations in **Appendix D**).

2.5.2 Extended Detention

The attenuation of the extended detention volume in the pond will provide erosion protection for the downstream watercourse as well as promote sediment removal for water quality. The extended detention volume for the proposed stormwater management facility will be sized based on the detention of the 25 mm - 4 hour Chicago rainfall event. The volume calculated for the extended detention will be attenuated for a minimum of 24 hours. The required extended detention volume for SWM Pond C2 is 2064 m^3 (see **Appendix D**). This volume is greater than the 2003 MOE guidelines minimum extended detention volume of 40 m^3/ha or 591 m^3 based on the 14.78 ha drainage area.

The calculations for the extended detention component of the proposed stormwater management facility are provided in **Appendix D**.

2.5.3 Quantity Control

The proposed pond will control post-development flows from the site to pre-development flow rates for the 2 to 100 year storm events. Post-development hydrology modelling was completed using a VO2 model to determine the required pond volume. Refer to the attached CD in **Appendix C** containing VO2 hydrology modelling and output.

The 24 hour SCS Type II and the 4 hour Chicago design storms, with County of Brant IDF data, were used to model the post-development conditions. To the extent possible, the site was designed to control post-development runoff to the pre-development levels. **Table 2.4** provides a comparison of pre-development and post-development flows at O'Neals Pond.

Table 2.4: Comparison of Pre-Development Targets and Post-Development Flows

Return Period Storm	Target Flow Rate at O'Neals Pond (m^3/s)	Proposed Flow Rate at O'Neals Pond (m^3/s)	
		4 Hour Chicago	24 Hour SCS
2 Year	0.188	0.256	**0.282***
5 Year	0.412	0.370	**0.381**
10 Year	0.607	**0.481**	0.451
25 Year	0.844	**0.594**	0.580
50 Year	1.072	**0.807**	0.740
100 Year	1.244	**1.071**	0.878

* The 2 year post development peak flow cannot match the 2 year pre-development peak flow as the runoff from the uncontrolled site areas alone exceeds this target.

The stage-storage-discharge characteristics of SWM Pond C2 are provided below in **Table 2.5**.

Table 2.5: SWM Pond C2 Stage-Storage-Discharge Characteristics

Return Period Storm	Governing Design Storm	4 Hour Chicago			24 hour SCS		
		Stage (m)	Storage (m^3)	Discharge (m^3/s)	Stage (m)	Storage (m^3)	Discharge (m^3/s)
25 mm	4 hour Chicago	259.25	1970	0.009	-	-	-
2 Year	24 Hour SCS	259.56	3178	0.012	259.70	**3725**	0.019
5 Year	24 Hour SCS	259.85	4356	0.065	259.90	**4578**	0.087
10 Year	24 Hour SCS	259.99	4976	0.140	259.99	**5002**	0.144
25 Year	4 hour Chicago	260.19	**5887**	0.270	260.15	5719	0.245
50 Year	4 hour Chicago	260.35	**6637**	0.393	260.29	6326	0.340
100 Year	4 hour Chicago	260.52	**7421**	0.532	260.38	6788	0.419

2.5.4 General Pond Design Criteria

Preliminary pond grading is provided on **Figure 2.3**. The pond block size was established based on the following general criteria:

- A 4 m wide maintenance access road will be provided from the proposed municipal road (Street Six) with a maximum longitudinal slope of 10% and a crossfall of 2% (max). It will be used to facilitate machinery to access the forebay during scheduled maintenance as well as to access the outlet structure for maintenance purposes,
- A maximum slope of 4:1 from the pond bottom to 0.5 m below the normal water level will be provided,
- A maximum slope of 6:1 from 0.5 m below and above the normal water level will be provided, and
- A maximum slope of 3:1 will be provided from 0.5 m above the normal water level to the pond grading limits.

It is noted that the majority of the subject lands are within the Wellhead Protection Area associated with the Gilbert Wells. The Lake Erie Source Protection Committee has released a draft Source Protection Plan for the Grand River Watershed, which is currently being reviewed by the MOE. Detailed design of the proposed stormwater management facility shall have regard for the policies, once this document has been finalized.

As outlined in SPL Consultants Limited "Preliminary Geotechnical Investigation - Proposed Residential Subdivision Development", prepared July 2014, the SWM pond will require a Geosynthetic Clay Liner (GLC) or a pond liner constructed using clayey soils to maintain the permanent pond level. The preliminary geotechnical report prepared by SPL is provided in **Appendix E**.

2.6 Infiltration Measures

Recognizing that the existing depression areas within the Charlie Creek watershed promote infiltration under existing conditions, infiltration facilities are proposed within the development area.

As per the Master Servicing Study (March 2014), in order to minimize the development impact on the water budget, clean storm runoff from roof areas is proposed to be directed to grassed areas, where feasible. For lots backing onto opens space blocks, rear lot drainage will be directed to infiltration trenches installed within the open space areas.

Additionally, sump pumps will be directed to grassed areas. Lot grades will be reduced from a maximum of 5% to a minimum of 2% and a topsoil depth of 0.3 m will be used wherever possible to maximize lot level infiltration.

All run-off from paved areas shall be collected and receive treatment prior to discharge to either a surface watercourse or a sub-surface infiltration feature.

As part of the Northwest Paris Master Servicing Study, Golder Associates has undertaken a "Review of Water Balance Opportunities and Constraints", (January 2012). Based on results from previous preliminary geotechnical investigations, they report that, subject to a detailed hydrogeological investigation, it is expected that the hydraulic conductivity of the native soils (~1 x 10^{-4} cm/s) and depth to the water table at many areas of the site will be amenable to the use of sub-grade infiltration structures to enhance post-development infiltration.

Building upon the water balance evaluation completed by Golder, a site specific Water Balance Report was prepared by Azimuth Environmental Consulting (July 2014). This report found that if mitigation measures are implemented on residential lots, there should not be an impact to the volume of infiltration for the site area. The water balance evaluation predicts that there will be a post-construction infiltration loss of approximately 31,130 m^3/year if no mitigation techniques are used. However, this volume can be equated with the use of rooftop diversion and infiltration galleries. The site soils are coarse-grained with high permeability and are therefore ideal for infiltration inducing measures. Refer to **Appendix F** for the full Water Balance Report.

Therefore, in addition to roof leaders directed to grassed areas, infiltration trenches are proposed to infiltrate clean roof runoff from a 25 mm storm event in order to balance the post-development infiltration deficit (**Appendix F**).

2.7 Storm Servicing

The storm sewer system (minor system) will be designed for the 5 year return storm as per the County of Brant standards.

The major system flow drainage (up to the 100 year storm event) will generally be conveyed overland along the road right-of-ways and easements. A maximum flow depth of 150 mm above the crown will be permitted on local roads during the 100 year storm event. Right-of-way (ROW) capacity calculations were completed to ensure this criteria is satisfied. Calculations are provided in **Appendix C**.

The storm sewer system will typically be designed with grades between 0.5% and 2%. Throughout the site, the storm sewer will be constructed at a minimum depth of 1.2 m to provide frost protection. The preliminary layout for the proposed storm sewer within the subject lands is provided on **Figure 3.1**.

The storm drainage system will be designed in accordance with the County of Brant and MOE guidelines, including the following:

- Pipes to be sized to accommodate runoff from a 5 year storm event,
- Minimum Pipe Size: 300 mm diameter,
- Maximum Flow Velocity: 6.0 m/s,
- Minimum Flow Velocity: 0.8 m/s,
- Minimum Pipe Depth: 1.2 m to obvert, and
- All basements to have sump pumps.

A, B, C values used to calculate rainfall intensity for purposes of sizing the storm sewer are outlined in **Table 2.6**:

Table 2.6: Rainfall Intensity Parameters

Return Period Storm	A	B	C
2 Year	743	6.0	0.7989
5 Year	1593	11.0	0.8789
10 Year	2221	12.0	0.9080
25 Year	3158	15.0	0.9355
50 Year	3886	16.0	0.9495
100 Year	4688	17.0	0.9624

As per County of Brant Standard Design Criteria, foundation drains will be discharged via sump pumps to splash pads.

3.0 SANITARY SERVICING

3.1 Existing System

The existing sanitary sewer system surrounding the subject lands is discussed in detail in the Master Servicing Study (March 2014). Per the Master Servicing Study, the subject lands are proposed to outlet via forcemain into the Watt's Pond Subdivision gravity sewer and drain to the proposed Northwest Paris Sanitary Pumping Station (SPS) located at the southwest corner of Watt's Pond Road and Pinehurst Road. As outlined in the Master Servicing Study, the gravity sewer and Northwest Paris SPS have been design to accommodate flows from the subject lands. For further information regarding the sanitary sewer system downstream of the subject lands please refer to the Master Servicing Study.

3.2 Proposed System

The preliminary layout for the proposed sanitary sewer within the subject lands is illustrated by **Figure 3.1**. Per the Northwest Paris Master Servicing Study (March 2014), the subject lands will drain into the Watt's Pond Subdivision gravity sewer on Woodslee Avenue via a pumping station and forcemain. The proposed pumping station will be located in the south-west corner of the study area (within the SWM Block) and the subject lands will drain via gravity sewer to the pumping station.

Out client, 1130397 Ontario Ltd., retained The Municipal Infrastructure Group (TMIG) to complete a preliminary pumping station block sizing for the purposes of draft plan approval (see **Appendix G** for the sanitary pumping station preliminary design memo prepared by TMIG). The proposed sanitary pumping station block is 28.3 m x 11.3 m (0.03 ha) in size and will be designed as a wet well type station with two submersible pumps (one duty and one standby). The components of the pumping station block will be housed in a building consisting of two (2) rooms. One (1) room will house the pump and standby pump and another room will house the standby generator and electrical controls. TMIG anticipates that a 150 mm diameter forcemain will be required to convey flows east from the pumping station along Street Six to its discharge location at the property boundary of the subject site/Watt's Pond Subdivision, where flows will then drain via gravity along Woodslee Avenue.

The sanitary sewers within the site will have slopes ranging between 0.5% and 2% (typically) and will be provided at 3 m to 5 m deep.

The sanitary sewer system will be designed in accordance with the County of Brant and MOE criteria, including but not limited to:

- Residential Sanitary Generation Rate: 350 l/c/d,
- Population Density:
  - 2.89 people/unit for low density,
  - 1.94 people/unit for medium density,
  - 1.29 people/unit for high density,
- Peaking Factor: Harmon (Max. 5.0),

- Infiltration Rate: 0.23 L/s/ha,
- Minimum Pipe Size: 200 mm,
- Minimum Pipe Cover: 2.4 m,
- Minimum Actual Velocity: 0.50 m/s, and
- Maximum Full Flow Velocity: 3.0 m/s.

4.0 WATER SUPPLY AND DISTRIBUTION

4.1 Existing System

The existing water supply and distribution system surrounding the subject lands is discussed in detail in the Master Servicing Study (March 2014). Per the Master Servicing Study, the subject lands are to connect into the proposed Watt's Pond Subdivision watermain at four (4) locations along the property boundary of the subject site/Watt's Pond Subdivision. As outlined in the Master Servicing Study, the *"Hydraulic Analysis for NW Paris Area Plan Development - Revised Analysis"*, prepared by AECOM (revised January 2014) included the subject lands. Since the last update to the Hydraulic Analysis, draft plan changes of the proposed development have occurred and the hydraulic model will require updating at the detailed design stage.

4.2 Proposed System

The watermain system proposed to service the subject lands is illustrated on **Figure 3.1.** As shown, the watermains internal to the site will connect to an external system proposed for the Watt's Pond Subdivision at Street One through Three and Six at the eastern boundary of the site. Per the January 2014 revised hydraulic model completed by AECOM, pipe sizes will be 150 mm – 200 mm in diameter. The proposed pipe size configuration is shown on **Figure 4.1**.

The watermain system will be designed in accordance with the County of Brant and MOE criteria including:

- Residential water usage rate: 350 l/c/d,
- Population Density:
  - 2.89 people/unit for low density,
  - 1.94 people/unit for medium density,
  - 1.29 people/unit for high density,
- Minimum Pipe Size: 150 mm diameter,
- Minimum Pipe Depth: 1.8 m, and
- Maximum Hydrant Spacing: 150 m.

5.0 SITE GRADING

5.1 Existing Grading Conditions

The existing drainage patterns for the study area are illustrated by **Figure 2.1**. As explained in **Section 2.2**, the existing site generally drains from the center outward to the north and south. The existing site topography has slopes in the range of 0.4% to 10%. The ground surface elevations throughout the study area range from 258.50 m to 265.50 m. Depression areas exist within catchments 1016, 1020, & 1022 which detain runoff until ponding to the respective spill point of each catchment.

5.2 Proposed Grading Concept

In general, the site will be graded in a manner which will satisfy the following goals:

- Satisfy the County of Brant lot and road grading criteria including:
  - Minimum Road Grade: 0.5%
  - Maximum Local Road Grade: 8.0%
  - Maximum Collector Road Grade: 5.0%
  - Minimum Lot Grade: 2%
  - Maximum Rear Yard Grade: 6% (not to exceed 15% including retaining walls and 3:1 sloping)
  - Minimum Driveway Grade: 2%
  - Maximum Driveway Grade: 5%
- 0.6 m strip left undisturbed along subdivision boundaries abutting adjacent properties;
- Provide continuous road grades for overland flow conveyance;
- Minimize the need for retaining walls;
- Minimize the volume of earth to be moved and minimize cut/fill differential;
- Minimize the need for rear lot catchbasins; and,
- Achieve the stormwater management objectives required for the site.

A preliminary grading plan is provided by **Figure 5.1**. The proposed grading is governed primarily by stormwater flow conveyance requirements. Road and lot grading will be completed to direct the majority of the overland flow (i.e. the major system) to the site stormwater management facility. Typical road grades will range between 0.5% and 2%. There are localized areas consisting of rear yard and rooftop areas that drain directly into Charlie Creek and O'Neals Pond.

Where feasible, the site will be graded to match the existing elevations along the boundaries on all sides. The need for retaining walls will be minimized by incorporating walkout lots around the perimeter, as required.

At the detailed design stage, the preliminary grading shown on **Figure 5.1** will be subject to a more in-depth analysis in an attempt to balance the cut and fill volumes.

5.3 Sidewalk Locations

The proposed sidewalk location plan is provided on **Figure 5.2**. For the areas where sidewalk will be provided along one side of the street, sidewalks will be placed on the boulevard side where the larger number of frontages can be serviced.

6.0 SILTATION AND EROSION CONTROL DURING CONSTRUCTION

During the detailed design stage, standard erosion and sediment control measures will be designed, including sediment fencing, mud mats, catchbasin sediment control devices, and rock check dams. These measures will be designed and constructed as per the "Erosion and Sediment Control Guideline for Urban Construction" document (December 2006). A detailed erosion and sediment control plan will be prepared for review and approved by the County and Conservation Authority prior to any site grading being undertaken. This plan will address phasing, inspection and monitoring aspects of erosion and sediment control. All reasonable measures will be taken to ensure sediment loading to the adjacent watercourses is minimized both during and following construction.

7.0 UTILITY CONSIDERATIONS

The internal hydro, gas, Bell and cable services will be serviced in a common utility trench located in the roadside grassed boulevard and the gas main will be serviced in a separate alignment below the sidewalk.

7.1 Hydro

Electrical service in the community is provided by Brant County Power. Brant County service boundary includes a small portion of the Northwest Paris study area. Due to the location of the service boundary, an Offer to Connect must be made to Hydro One for the remainder of the site. Should Hydro One choose not to serve the remaining property outside of the Brant County jurisdiction, Brant County Power will be requested to feed the remaining development. Brant County Power would then be required to present the property to the Ontario Energy Board to add it to their jurisdiction.

When the development plan is in a position for detailed design, Hydro One and Brant County Power will review the property in greater detail.

7.2 Gas

Natural gas service is to be provided to the development by Union Gas. At this time, Union gas foresees no restrictions with servicing the development. Upon completion of the Draft Plan of Subdivision, the drawings will be recirculated for detailed design analysis.

7.3 Bell

Bell Canada is the provider of telephone service within the community and has existing infrastructure surrounding the development area on Watt's Pond Road, Grand River Street North and Woodslee Avenue. Bell has indicated that improvements to the telephone service network may be required. The extent of improvements will be confirmed at such time that the Draft Plan of Subdivision is complete.

7.4 Cable

Rogers Cable is the cable provider within the community. At this time Rogers foresees no restrictions with servicing the proposed development.

8.0 SUMMARY

The report has outlined the means by which:

- All required elements for the provision of full municipal services to the site can be achieved;
- The Draft Plan supports the stormwater management requirements;

The results of the analysis determined that the site design for Draft Plan can be completed in accordance with the municipal servicing requirements and therefore processing of the plan for approval is appropriate.

If you have any questions, please do not hesitate to contact the undersigned.

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