



**TAGGART-LOBLAWS
SUBDIVISION, KANATA WEST**

SERVICING REPORT

Resubmission June 11, 2013

November 06, 2012
August 13, 2012
April 26, 2012
November 11, 2011
September 2, 2011
December 12, 2007
June 29, 2007
December 20, 2006

Stantec Consulting Ltd.
1331 Clyde Avenue
Ottawa, ON K2C 3G4
t: (613)-722-4420
f: (613)-722-2799

Project # 1604-00402

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

TABLE OF CONTENTS

1	INTRODUCTION	1-3
2	BACKGROUND STUDIES	2-1
2.1	KANATA WEST MASTER SERVICING STUDY (KWMSS) – STANTEC / IBI	2-1
2.2	PRELIMINARY GEOTECHNICAL INVESTIGATION – PATERSON GROUP	2-1
2.3	GEOTECHNICAL REVIEW	2-2
2.4	CARP RIVER MODEL CALIBRATION EXERCISE	2-2
3	STORMWATER MANAGEMENT	3-1
3.1	INTRODUCTION	3-1
3.2	STORMWATER MANAGEMENT POND	3-1
3.3	STORM SEWER DESIGN	3-1
3.4	MAJOR SYSTEM DESIGN	3-3
3.5	WATER BALANCE	3-3
3.6	HYDRAULIC MODELING RESULTS	3-3
4	SANITARY SEWERS / PUMPING STATION	4-1
4.1	INTRODUCTION	4-1
4.2	PUMPING STATION	4-1
4.3	SANITARY SEWER DESIGN	4-1
4.4	SANITARY SEWER HYDRAULIC GRADE LINE	4-3
5	WATER DISTRIBUTION	5-1
5.1	MASTER SERVICING STUDY	5-1
5.2	HYDRAULIC ASSESSMENT AND WATER DISTRIBUTION SYSTEM DESIGN	5-1
6	TRANSPORTATION	6-1
6.1	TRANSPORTATION MASTER PLAN	6-1
6.2	TRAFFIC IMPACT STUDY	6-1
6.3	SUBDIVISION ROADWORKS	6-1
6.4	FUTURE TRANSITWAY	6-3
7	EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION	7-1
8	APPROVALS	8-1
9	CONCLUSION	9-1
9.1	WATER SERVICING	9-1
9.2	STORMWATER SERVICING	9-1
9.3	SANITARY SERVICING	9-1
9.4	EROSION AND SEDIMENT CONTROL	9-2
9.5	APPROVALS	9-2

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

LIST OF APPENDICES, TABLES AND FIGURES

LIST OF APPENDICES

FIGURES

Appendix A: Sewer Design Sheets / Calculations

Appendix B: Potable Water Servicing Analysis

Appendix C: Sanitary Sewer and Signature Ridge Pump Station Background Reports

Appendix C.1: Excerpts from *Preliminary Design for the Signature Ridge Pumping Station – Final Report*, R.V. Anderson, January 25, 2011

Appendix C.2: Excerpts from *Signature Ridge Pump Station Hydraulic Grade Line Analysis*, IBI Group, July 2011

Appendix C.3: Excerpts from *Kanata West Master Servicing Study*, Stantec Consulting Ltd and IBI Group, June 2006

Appendix C.4: Excerpts from *Kanata West Pumping Station Agreement*, Soloway Wright, May 18, 2007.

Appendix D: Geotechnical Reports

Appendix E: Road Cross Sections

Appendix F: Delcan Traffic Impact Assessment Addendum #1

Appendix G: Correspondence

LIST OF TABLES

Table 4-1: Design Peak Wastewater Flow 4-2

Table 4-2: Operational Peak Wastewater Flow 4-2

Table 4-3: Table 4-Ultimate Development Condition HGL Results from “Signature Ridge Pump Station Hydraulic Grade Line Analysis” prepared by IBI Group, July 2011 4-4

LIST OF DRAWINGS

OVERALL SERVICING PLAN (OSP-1)

DIDSBURY ROAD GRADING PLAN (GP-1)

DIDSBURY ROAD GRADING PLAN (GP-2)

ROGER NEILSON WAY AND ACCESS ROAD GRADING PLAN (GP-3)

EROSION CONTROL DETAILS AND NOTES (DS-1)

DETAILS AND NOTES (DS-2)

OVERALL SANITARY DRAINAGE PLAN (SAN-1)

OVERALL STORM DRAINAGE PLAN (SWM-1)

FLOODPLAIN COMPENSATION PLAN (DET-1)

FLOODPLAIN COMPENSATION PLAN (DET-2)

FLOODPLAIN COMPENSATION PLAN (DET-3)

CD

A CD is included in the back of this report, containing PDF copies of the report, appendices, project drawings, and model files.

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

1 INTRODUCTION

This servicing report has been prepared in support of Taggart Realty's application for subdivision approval for the proposed development area located north of the Queensway (Hwy 417), between the Carp River and Didsbury Road. The proposed subdivision is approximately 15 ha in size and is depicted in Figure 1 (see **Figures**).

The purpose of this report is to demonstrate that the subdivision infrastructure has been designed in accordance with the recommendations of applicable background studies and City of Ottawa design guidelines.

This report should be read in conjunction with the following design documentation:

- Taggart-Loblaws Subdivision Stormwater Management Facility Design Report
- Taggart-Loblaws Subdivision Servicing plans

The Kanata West Development area and the Carp River have been studied in detail over the past several years. From the City's website [URL: https://ottawa.ca/env_water/tlg/alw/brs/subwatershed/completed/carp/restoration/chronology_en.html], the following bullet point chronology shows the progress of studies related to the Carp River over the past 11 years (note: this list was prepared by City staff, not by Stantec):

The Carp River Restoration Plan has been under development for more than eleven years, beginning with the Carp River Watershed/Subwatershed Study in 2000:

- *August 2000 - Contract awarded for Carp Watershed/Subwatershed Study*
- *March 2003 – Council approves Kanata West Concept Plan*
- *January 2005 - Council approves the Carp Watershed/Subwatershed Study*
- *June 2006 - Kanata West Class Environmental Assessment (EA) Notices of Completion issued*
- *July 2006 – Part II Order requests received*
- *April 2007 - The Minister of Natural Resources stated that the objectives of the provincial natural hazards policy have been met in the Carp River Restoration Plan*
- *2007 - Auditor General conducts audit of Carp River watershed and related projects in response to call to Fraud and Waste Hotline*
- *January 15, 2008 – City staff member informs TSH Environmental and Engineering Services of concerns with modeling*
- *January 24, 2008 – TSH Environmental and Engineering Services confirm errors in model*
- *January 25, 2008 – City advises Ministry of the Environment (MOE)*

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

- *February to April 2008 – Consultants of record, TSH and CH2M Hill, correct models*
- *April 23, 2008 – Auditor General releases Audit of the Carp River Watershed and Related Projects at City Council*
- *Recommendations were referred to the Agriculture and Rural Affairs Committee meeting of May 8, 2008 and the Planning and Environment Committee (PEC) meeting of May 13, 2008. The issue of potential conflict of interest with respect to consultants and the community lands development recommendations was referred to the Corporate Services and Economic Development Committee meeting of May 6, 2008*
- *May 14, 2008 – Council directed staff to proceed with the Third Party Review.*
- *June 25, 2008 – Council approved the amended terms of reference for the Third Party Review.*
- *July 14, 2008 – Ministry of Transportation of Ontario (MTO) and MOE invited to participate on the Project Advisory Committee.*
- *July 21, 2008 – Minister of Environment issues an order under the Environmental Assessment Act imposing conditions with respect to the 22 projects within the Kanata West Development area.*
- *August 8, 2008 – Greenland International Consulting Ltd. was retained to conduct Third Party Review.*
- *February 13, 2009 – Project Advisory Committee received draft Third Party report.*
- *March 16, 2009 – Updated Existing Conditions model released*
- *April 9, 2009 – Technical Briefing on final draft of Third Party Review Report*
- *April 9, 2009 – Final draft of Third Party Report posted on City website for comment*
- *April 20, 2009 – Public comment period ends; comments forwarded to Greenland*
- *May 12, 2009 – PEC recommends approval of Third Party Review to Council*
- *May 27, 2009 – Council approves Third Party Review*
- *November 24, 2009 – Ministry of Environment advises that conditions 1 and 2 of the Minister's Order have been satisfied and that the City can proceed to put new notices of completion for the seven projects that are the subject of Part II Order requests in July 2006.*
- *July 30, 2010 – New Notices of Completion are posted July 30, 2010.*
- *August 29, 2010 – Part II Order requests received*
- *March 30, 2011 – Minister of Environment dismisses Part II Order requests and confirms that an individual Environmental Assessment is not required for the seven disputed projects. The Minister further directs that Stormwater Management Ponds 1, 2, and 5 not proceed until such time as the stormwater management models are calibrated and validated*

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

- *September 2011 – Model Validation Report completed and filed with Ministry. Models are validated and confirm the approach in the Environmental Assessments was valid. Stormwater Management Ponds 1, 2, and 5 may proceed to design and construction*

Because the models have now been validated, the EAs deemed valid, and all reports and models filed with the MOE, we are now submitting this report to propose proceeding with the development of the subject lands.

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

2 BACKGROUND STUDIES

The following documents were referenced in the preparation of this report:

- *Carp River Model Calibration Validation Exercise, Final Report*, Greenland International Consulting Ltd., July 13, 2011
- *Carp River, Poole Creek and Feedmill Creek Restoration – Class Environmental Assessment*, Totten Sims Hubicki Associates and Parish Geomorphic, June 2006
- *Carp River, Poole Creek and Feedmill Creek Restoration – Update and Amendment*, Delcan, July 2010
- *Carp River Watershed/Subwatershed Study*, Robinson Consultants, December 2004
- *Flow Characterization and Flood Level Analysis, Carp River, Feedmill Creek and Carp River*, CH2MHILL, July 2005
- *Kanata West Master Servicing Study*, Stantec Consulting Ltd and IBI. Group, June 2006
- *Implementation Plan Kanata West Development Area*, Delcan, July 2010
- *Third Party Review – Carp River Restoration Plan*, Greenland International Consulting Ltd., March 2009
- *Preliminary Design for the Signature Ridge Pumping Station – Final Report*, R.V. Anderson, January 25, 2011
- *Signature Ridge Pump Station Hydraulic Grade Line Analysis*, IBI Group, July 2011

2.1 Kanata West Master Servicing Study (KWMSS) – Stantec / IBI

In 2002 the City of Ottawa expanded the urban area to include the lands known as Kanata West. Since that time major developers have been consolidating the land ownership in Kanata West to a point where development is imminent. In recognition of this fact, the City of Ottawa commissioned a master servicing study to provide a comprehensive servicing strategy for the greater Kanata West development area. The study area is approximately 725 ha in size, and sits on the junction of three former Municipalities: the Township of Goulbourn, the Township of West Carleton and the City of Kanata.

2.2 Preliminary Geotechnical Investigation – Paterson Group

Paterson Group was commissioned by Taggart Realty to conduct a preliminary geotechnical investigation of the proposed development area to determine the subsoil and groundwater conditions. Fieldwork was carried out on September 4th and 5th, 2002. The following is a summary of the report's findings.

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

- The subject site is considered to be suitable for the proposed commercial development.
- Ground water levels vary between 1.2 and 3.6 m below existing grade.
- Due to the presence of soft soils and high groundwater conditions, only low allowable bearing pressures and small grade raises will be permissible.

2.3 Geotechnical Review

2.3.1 Proposed Stormwater Management Pond – Paterson Group, December 15, 2006

Paterson Group conducted a geotechnical review of available information for the stormwater management pond. The following is a summary of the review's findings.

- The subject site is considered to be suitable for the proposed stormwater management pond.
- The proposed normal water level for the proposed stormwater management pond (92.25m) is above the estimated long-term groundwater level (90.8m). As such, it is expected that the construction of the proposed stormwater management pond will not lower the long term groundwater table at the pond location.

2.3.2 Proposed Commercial Development – Retail 'A' Building, December 13, 2002

Paterson Group prepared a geotechnical investigation for the proposed commercial development at the site. This investigation found that settlement issues would provide some concerns with respect to the grade raise. Patterson reported that final grade raises at the buildings should be a maximum of 0.75 m. Any additional raise beyond that would require light weight fill to be used to accommodate the shallow footing foundation. The allowable pressures were calculated using this maximum grade raise of 0.75 m. Refer to geotechnical report for additional details; excerpts of the report have been included in **Appendix D**.

2.4 Carp River Model Calibration Exercise

Greenland was commissioned by the City of Ottawa to update hydrologic and hydraulic models for the Carp River that were created as part of the Carp River Restoration Plan (CRRP). The report also provides inflow and outflow "target hydrographs" in its Appendix E for each of the KW ponds. Section 9.7 "Target Hydrographs" of that report indicates that the peak flow and total runoff volumes exiting the pond should not be exceeded, otherwise it must be integrated into the current Carp River corridor model. Refer to the 'Taggart-Loblaws Subdivision Stormwater Management Facility Design Report', dated April 27, 2012, Stantec Consulting Ltd. for additional details on hydrograph comparisons.

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

3 STORMWATER MANAGEMENT

3.1 Introduction

The general approach to Stormwater Management (SWM) in the Kanata West area is to design according to the dual drainage principle. Under this principle, the engineered network of streets provides safe conveyance for runoff from rare storm events when peak rates of runoff are greater than the inlets (catchbasins) can intercept. This concept ensures that any future increase in runoff will not result in increased hydraulic grade lines (HGLs) from higher rates of flow through storm sewers, but rather will be conveyed by wide street segments with marginal increase in flow depth, which provides greater protection against basement flooding.

The minor system is designed according to either a 5 year (local roadways) or to a 10 year (arterial roadways) level of service without surcharge. The minor system is also designed to operate under limited surcharge in the 100 year event such that a minimum clearance of 0.3m exists between the HGL and building footings or floor slab (in commercial development areas with no basements).

For more details on the SWM design for the proposed site, see the '*Taggart-Loblaws Subdivision Stormwater Management Facility Design Report*', dated April 2, 2013, Stantec Consulting Ltd., which is being concurrently submitted with this report.

3.2 Stormwater Management Pond

The proposed subdivision is within the KWMSS Pond 3 drainage area. Pond 3, hereafter referred to as the Taggart-Loblaws SWM Facility or SWMF, will be constructed to service the proposed subdivision and associated roadways along with future development lands and the future Transitway within the drainage boundary limits. Refer to Figure 2 (**Figures**) for an illustration of the SWMF drainage area. The SWMF will provide an MOE 'enhanced' level of quality treatment, equivalent to a 80% removal of total suspended solids.

The SWM Pond is designed in accordance with the recommendations of the "Kanata West Master Servicing Study" (2006) and the "Carp River Watershed/ Subwatershed Study" (2004). Refer to the "Taggart-Loblaws Subdivision Stormwater Management Facility Design Report" by Stantec Consulting Ltd. (submitted concurrently with this document) for specific details related to the stormwater management facility design.

3.3 Storm Sewer Design

The City released the "Ottawa Sewer Design Guidelines" in November 2004, and these guidelines were used in the design of the storm sewer system. The design criteria used in sizing the storm sewers is summarized as follows, with reference to the corresponding section of the City of Ottawa Sewer Design Guidelines:

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

- Design Return Period as per Level of Service (Section 5.1.4)
 - 5 Year – Local and Collector Roads
 - 10 Year - Arterial Road and Transitway, or any depressed roadways
- Sewer sizing by Rational Method calculations.
- Intensity Equation (I) for 5 year Storm: $I = 998.071 \times (t_c \text{ in min} + 6.053)^{-0.814}$; (Section 5.4.2)
- Inlet Time - fixed inlet times (Section 5.4.5.1)
- Minimum velocity – 0.80 m/s (Section 6.1.2)
- Maximum velocity – 3.00 m/s (Section 6.1.2)
- Manning roughness coefficient for all smooth wall pipes – 0.013 (Section 6.1.8)
- Weighted runoff coefficients (C) were calculated based on the type of development as per Table 5.8 - *Runoff Coefficients for Various Land Uses and Zoning* in the 2004 City of Ottawa Sewer Design Guidelines:
 - Residential – High Density → C = 0.60
 - Commercial → C = 0.80 (However, the Kanata West Master Servicing Study provides C=0.9 for some areas, and will be applied as such for design of sewers.)
 - Collector Road/Transitway R.O.W. → C = 0.7
 - Parkland/Open Space/Hydro/Pipeline Corridor → C = 0.20
- Runoff coefficients will be increased by 25% during the 100-year storm event as per
- Minimum allowable slopes as listed below (Table 6.1 in Section 6.1.2.1)

Diameter (mm)	Slope (%)
250	0.432
300	0.340
375	0.250
450	0.195
525	0.160
600	0.132
675	0.113
750 and larger	0.100

- Minimum depth of cover of 2.0 m (Section 6.1.11)
- Inlet-control rate specific for each subcatchment such that 5-year flows for residential/commercial areas and 10-year flows for arterial roadways are captured by the minor system.
- Major system road-sag storage assumed at 50 m³/ha and 40m³/ha for local and arterial roadways respectively as per KWMSS. Road sag storage rates of 200m³/ha have been assumed for commercial areas B, C, D since experience indicates that upwards of 200m³/ha can be accommodated on similar commercial development lands (refer to **Drawing SWM-1**).
- The Rona properties will limit discharge to 150 L/s (19.8 L/s/ha) and provide sufficient storage to completely contain the 100 year event. The result of this increased storage is a reduction in overland flow.
- 100 yr Hydraulic Grade Line (HGL) separation to be greater than 0.30 m from the underside of footing (Section 5.1.4)

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

- Dual-Drainage analysis and hydraulic analysis performed with PCSWMM 2011 model software
(Section 3.5.1)

Storm sewer design sheets are presented in **Appendix A**. Refer to **Drawing SWM-1** for an illustration of the proposed storm sewer system and drainage areas.

Detailed plan and profile information for the proposed storm sewer system is illustrated in the Subdivision Servicing plans.

3.4 Major System Design

As defined in Section 5.8 of the KWMSS, major system storage will generally consist of 50m³/ha detained in commercial/residential area road-sags. 50m³/ha of storage can be provided in road sags with road grades of 1.0% and boulevard slopes of 2% at a depth of 300mm. Similarly, the value of 40 m³/ha for arterial roads is based on road grades of 1%, boulevard slopes of 2% at a maximum depth of 300mm. Arterial roads must provide one access lane for emergency vehicles that is not impacted by surface ponding water during major rainstorm events. Road sag storage rates of 200m³/ha have been assumed for commercial areas B, C, D since experience indicates that upwards of 200m³/ha can be accommodated on similar commercial development lands (refer to **Drawing SWM-1**). Additionally, the Rona properties A1 and A2 are assumed to store up to the 100 year storm within the property.

In principle, the major system will be designed with a minimum road grade of 0.5%, except for 'sawtooth' systems where a grade of 0.1% is acceptable from highpoint to highpoint with a maximum ponding depth of 0.3 m in the roadway. All major system flow routes will be directed towards the Carp River. Major system flow routes are illustrated on **Drawing SWM-1**.

3.5 Water Balance

The Carp River Watershed/Subwatershed Study (2004) and the Kanata West Master Servicing Study identify target infiltration rates to be maintained in post-development conditions. The Kanata West Master Servicing Study identifies the subject lands as an area of low recharge with an estimated infiltration rate in the range of 50-70 mm/year due to the dominant underlying silty-clay to clay soils. Refer to the "Taggart-Loblaws Subdivision Stormwater Management Facility Design Report" by Stantec Consulting Ltd. for specific details related to infiltration requirement calculations and infiltration basin design.

3.6 Hydraulic Modeling Results

Utilizing PCSWMM and various storm events, a hydraulic gradeline was computed for the trunk storm sewers. The proposed buildings on-site are slab on grade foundations and therefore do not have basements or foundations drains. As such flooding of basement levels is not a concern. A comparison of hydraulic grade line (HGL) results and proposed ground elevation indicate that the HGL is at least 0.3 m below grade in all locations except along a portion of the storm sewer in Didsbury road draining to

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

Broughton Pond. Analysis results shall be reviewed at the detailed design stage to ensure that a minimum clearance of 0.3m is provided at all footing connections. However, at present no future connections are proposed for this section of sewer. Detailed calculations and results are included in the Stormwater Management Report.

3.7 Carp River Floodplain Compensation

The Carp River Restoration Plan completed by TSH in 2009 included HEC-RAS modeling to determine the new floodplain limit of the Carp River. Model cross sections for the Carp River along the Taggart-Loblaws river frontage indicate that the property boundary of the Taggart-Loblaws lands would need to be offset by 3.8m to accommodate the new floodplain limit. It was agreed that alternatively the property lines could remain unchanged and the volume of floodplain that would be contained within the 3.8m offset could be compensated for elsewhere on the property. This alternative was preferred by Taggart and as such the volume of floodplain required to be compensated was calculated from the HEC-RAS cross sections shown on **Drawing DET-1** and was determined to be approximately 260m³. Note that this compensation volume is for the Taggart-Loblaws lands from the north side of Highway 417 to the south side of the Campeau Drive extension but does not include the area lost from the construction of the Transitway.

Floodplain compensation is proposed in three areas of the Taggart-Loblaws lands; on the north and south sides of the future transitway, and south of the proposed SWM pond, as shown on **Drawing DET-1**. The cross-sections for these areas are shown on **Drawings DET-2 and DET-3** and were used to calculate the available floodplain volume at a flood elevation of 93.55m as per the modeled river cross section near the compensation areas (RS = 41725.5). The volumes were calculated for the cut area within the existing property line, therefore although the drawings show cuts beyond the property line this has not been included in the additional floodplain volume totals. The cut area within the Carp River corridor is proposed only so that the grades may be lowered to allow water to flow to and drain from the compensation areas.

Floodplain compensation calculations have been reviewed and approved by Mississippi Valley Conservation, and a permit to remove fill within the regulation limit of the Carp River was issued on December 10, 2012.

Note that the compensation calculations do not include any compensation for the Rona property. Any compensation requirements for the Rona site shall be determined at the detailed site design stage.

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**
Resubmission June 11, 2013

4 SANITARY SEWERS / PUMPING STATION

4.1 Introduction

The subject site is tributary to the Signature Ridge Pumping Station (SRPS), along with the lands to the south of Hwy 417 currently draining to this pumping station via a 450mm dia sanitary sewer along Didsbury Road. The proposed outlet for the subject development area is identified in the KWMSS as the existing 450mm dia. sanitary sewer in Didsbury Road.

The KWMSS identifies the following major features for sanitary servicing upgrades necessary for the Kanata West Concept Plan (KWCP) area:

- (i.) An upgraded Signature Ridge Pumping Station (SRPS) to service all the Kanata West lands north of the Queensway; the existing urban area north of the Queensway currently proposed to drain to the SRPS; and the Broughton Richardson lands.
- (ii.) A single new pumping station and forcemain located south of Maple Grove Road and west of the Carp River. The new pumping station will ultimately intercept flow from south of Hwy 417 that is currently tributary to the SRPS, providing additional capacity within the SRPS for all the lands within the KWCP area to the north of Hwy 417.

4.2 Pumping Station

R.V. Anderson has prepared a report "Preliminary Design for the Signature Ridge Pumping Station" dated January 25, 2011. The report identifies the flow capacity threshold and scope of upgrades necessary to increase the pumping capacity of the SRPS to accommodate growth within the Kanata West Concept Plan Area. Upgrades of the SRPS were initially planned to be completed in 2016 however, conversation with the City of Ottawa has revealed that the upgrades have been scheduled for 2012. The City has indicated to Stantec that the SRPS design will be completed by the end of April 2012, Tendered by the end of summer 2012 and constructed by the end of 2012. The upgraded pump station will have full capacity for the "future service area lands" shown in Figure 2.2 which includes the full proposed development area (see the **Figures** section at the end of this report).

Additionally, a cost sharing agreement prepared by Novatech Engineering Consultants, indicates that 2.06L/s of the remaining SRPS capacity previously owned by the Kanata West Owners Group (KWOG) was allocated to Taggart. Table 1 from the agreement is included in **Appendix C**.

4.3 Sanitary Sewer Design

The Ottawa Sewer Design Guidelines provide guidance for the calculation of wastewater design flows on the basis of:

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June11, 2013

- 'Standard Peak Flow Design Parameters' – applied for establishing peak design capacity for the design of sewers and pumping stations.
- 'Operational Flow Parameters' – derived from monitoring data and used for establishing the range of operational flows for sewer analysis and pumping station design.

Estimated wastewater flows generated from the proposed Taggart-Loblaws subdivision are calculated and presented below for both of these scenarios in Tables 4.1 and 4.2 respectively. Note that the calculations are based on total land area and not building floor area since the building areas are unknown.

Table 4-1: Design Peak Wastewater Flow

Development Area ID	Area (ha)	Usage Type	Rate (L/d/ha)	Infiltration / Inflow (L/s)	Total Peak Flow (L/s)
E1 (McGarry)	1.394	Multi-Use	50,000	0.39	1.60
D (Mixed Use)	1.445	Commercial	50,000	0.41	1.24
Street #2	0.504	Municipal ROW	N/A	0.14	0.14
B (Loblaws)	6.425	Commercial	50,000	1.80	7.38
C (Taggart)	2.446	Commercial	50,000	0.68	2.80
Campeau Dr	1.548	Municipal ROW	N/A	0.43	0.43
Total Subdivision Design Peak Flow:					13.59
E2 (exist. Church)	2.891	Multi-Use	50,000	0.81	3.32

Fig 4.3 of the Ottawa Sewer Design Guidelines

Residential Average Flow Rate	350 L/P/Day
Residential Peak Factor	Modified Harmon Formula
Commercial/Employment Area Flow Rate	50,000 L/Ha/Day
Business Park/Commercial/Employment Peak Factor	1.5
Infiltration Rate	0.28 L/Sec/Ha

Table 4-2: Operational Peak Wastewater Flow

Development Area ID	Area (ha)	Usage Type	Rate (L/d/ha)	Infiltration / Inflow (L/s)	Total Peak Flow (L/s)
E1 (McGarry)	1.394	Multi-Use	17,000	0.39	0.66
D (Mixed Use)	1.445	Commercial	17,000	0.41	0.69
Street #2	0.504	Municipal ROW	N/A	0.14	0.14
B (Loblaws)	6.425	Commercial	17,000	1.80	3.06
C (Taggart)	2.446	Commercial	17,000	0.68	1.16
Campeau Dr	1.548	Municipal ROW	N/A	0.43	0.43
Total Subdivision Operational Peak Flow:					6.18
E2 (exist. Church)	2.891	Multi-Use	17,000	0.81	1.38

Fig 4.4 of the Ottawa Sewer Design Guidelines

Residential Average Flow Rate	300 L/P/Day
Residential Peak Factor	Harmon Formula (K=0.6)
Commercial/Employment Area Flow Rate	17,000 L/Ha/Day
Business Park/Commercial/Employment Peak Factor	1.0 (non-coincident)
Infiltration Rate	0.28 L/Sec/Ha

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

Sanitary sewer design sheets are presented in **Appendix A**. Refer to **Drawing SAN-1** for an illustration of the proposed sanitary sewer system and drainage areas.

Detailed plan and profile information for the proposed sanitary sewer system is illustrated in the Subdivision Servicing plans. It is noted that each development area is subject to separate site plan approvals and detailed sanitary flow calculations will be completed at the individual site plan approval stages.

4.4 Sanitary Sewer Hydraulic Grade Line

IBI Group prepared a report "Signature Ridge Pump Station Hydraulic Grade Line Analysis" in July 2011, in which they identify the hydraulic grade line results for sewers within the SRPS service area. IBI reports that the HGL near the intersection of Didsbury Road and Campeau Drive is approximately 94.12m. Preliminary site plans for the commercial lands in the area indicate that all commercial buildings will be slab on grade with no basements and a lowest finished floor of 95.30m (revised since IBI's analysis). Conversation on March 29, 2012 with staff at the existing The Bridge church confirmed that the church also has no basement. Table 4 – Ultimate Development Condition HGL Results from the IBI July 2011 report has been included below as well as in **Appendix C** along with other excerpts from the report. Note that while IBI has also reported interim condition HGLs, the ultimate condition HGL is higher and so has been used for the purposes of this report.

IBI has also reported that the HGL within Didsbury Road is at or near the proposed road grades at the time of analysis. The proposed grades for Didsbury Road have been raised since IBI's analysis. The proposed road grade at locations 5 and 5A are now 96.10 and 95.25. Therefore, the estimated HGL will be below the proposed road grade. It is recommended that sanitary manholes within Didsbury Road be sealed to prevent sewage losses during a pumping station overflow event. Additionally, sanitary services should be installed with backwater valves.

TAGGART-LOBLAWS SUBDIVISION, KANATA WEST SERVICING REPORT

Resubmission June11, 2013

Table 4-3: Table 4-Ultimate Development Condition HGL Results from "Signature Ridge Pump Station Hydraulic Grade Line Analysis" prepared by IBI Group, July 2011.

COMMUNITY	NODE	Proposed Ground (m)	Estimated U.S.F. (m)	Sanitary HGL (m)	Freeboard (m)
Campeau Dr Extension	1 (Palladium Dr.)	103.50	104.00	99.56	4.44
	2 (Huntmar Dr.)	100.21	96.49	95.73	0.76
	2B	97.82	95.14	94.70	0.44
	14	99.50	100.00	94.54	5.46
	14A	96.00	96.50	94.38	2.12
	3	94.88	94.70	94.27	0.43
	4	94.86	n/a	94.21	n/a
	5	96.00	93.65 (Stantec)	94.12	-0.47
	12465	95.70	95.70	94.12	1.58
South of 417	15	97.60	97.60	94.66	2.94
Didsbury	6E	94.20	94.70	94.05	
	5D	94.00	94.50	94.00	
	5C	94.50	95.00	93.94	
	5A	95.08	95.58	93.92	
Arcadia	S2	96.00	96.25	95.29	0.96
	S1	100.00	96.78	95.42	1.36
	S5	97.00	95.18	94.81	0.37
	S5B	96.82	95.16	94.79	0.37
	S8	97.24	95.14	94.77	0.37
	S4	96.40	94.40	93.92	0.48
	S3	96.88	94.88	94.14	0.74
Heritage Hills	20116	107.90	105.50	103.87	1.63
	20164	107.30	104.90	101.67	3.23
	12735	102.10	99.70	96.39	3.31
	12732	99.40	97.00	95.48	1.52
	20098	106.80	104.40	104.33	0.07
	20179	106.60	104.20	103.69	0.51
	20123	106.10	103.70	103.43	0.27
	20127	105.40	103.00	101.72	1.28
	20130	102.90	100.50	99.31	1.19
	13058	98.00	96.80 (RVA report)	95.33	1.47
	20161	98.00	96.80 (RVA report)	95.04	1.76
Terry Fox Drive	Baylis	97.15	95.24	94.88	0.36
	Rchrdsn N.	96.00	94.95	95.25	0.30
Richardson Ridge	L. Rchrdsn	95.57	94.90	94.60	0.30
	MH329A	97.00	94.68	94.31	0.37
	MH328A	98.77	94.74	94.32	0.42
	L. Rchrdsn Ea.	95.61	94.59	94.29	0.30
Broughton	N62	95.57	95.56	94.29	1.27
	Broughton	96.19	96.10	94.19	1.91

5 WATER DISTRIBUTION

5.1 Master Servicing Study

The proposed subdivision area is located within the City of Ottawa Pressure Zone 3W, and is currently serviced by the existing 406mm dia Campeau Drive watermain located east of Didsbury Road. The KWMSS identifies the following watermain improvements within the general development area:

- Construction of a new Campeau Drive pump station to supplement the existing Glen Cairn Pumping Station.
- Replacement of the existing 406mm dia Campeau Drive watermain to the east of Didsbury Road with a new 610mm dia watermain.
- Extension of a new 610mm dia watermain along Campeau Drive from Didsbury Road to Huntmar Drive.

5.2 Hydraulic Assessment and Water Distribution System Design

The proposed subdivision will be serviced by 200mm and 610mm diameter watermain as illustrated in Figure 3 (**Figures**). Note that the proposed 200mm watermain in Didsbury Road is proposed to connect to the existing 200mm watermain located near the intersection of Didsbury Road and Campeau Drive.

A detailed potable water servicing analysis for the proposed watermain distribution system is provided in **Appendix B**. A summary of the findings of the analysis is as follows:

- The proposed development is located in an area of the City's water distribution system that has sufficient capacity to provide both the required domestic flows and emergency fire flows.
- Fire flows greater than 15,000 Lpm will be available within the watermain servicing the proposed subdivision, however it is noted that in order to achieve these high flows, a combination of two or more fire hydrants would likely be required.
- The minimum observed pressure of 557 kPa (81 psi) is considered to be well within the acceptable pressure range.
- The maximum observed pressure of 609 kPa (88 psi) is within the allowable pressure range, however all services within the subdivision will require Pressure Reducing Valves to meet Ontario Building Code requirements.
- Due to the potential for aging water in the interim servicing condition, an automatic flushing valve is recommended until the 610mm diameter watermain is ultimately extended and connected to the Huntmar Road watermain in accordance with the Kanata West Master Servicing Study.

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

Detailed plan and profile information for the proposed watermain distribution system is illustrated in the Subdivision Servicing plans.

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

6 TRANSPORTATION

6.1 Transportation Master Plan

The “Kanata West Road Network Transportation Master Plan” (TMP) prepared by Delcan in June 2006 outlines the roadway infrastructure required to support the Kanata West Concept Plan development area. The TMP identifies the following roadways and transit corridors within the general development area:

- Extension of Campeau Drive from Didsbury Road to Palladium Drive.
- Extension of the West Rapid Transit corridor west of Kanata Centrum through the Kanata West Development Area to Hazeldean Road.

6.2 Traffic Impact Study

All development applications within Kanata West must include a Traffic Impact Study (TIS). Delcan prepared a TIS for the Taggart/Loblaws Concept Plan on February 28, 2007; and an Addendum #1, Response to City Comments on May 18, 2007. Delcan’s Addendum #1 is included in **Appendix F** of this report. The following is a summary of the Addendum #1 recommendations within the proposed subdivision area:

Campeau Drive:

- A two-lane cross-section (ie. one eastbound and one westbound lane) from the most westerly, shared Loblaws/Rona driveway (Access #1) easterly to the right-in/right-out driveways (Access #2).
- A three-lane cross-section (ie. two eastbound lanes and one westbound lane) from Loblaws Access #2 east to the Didsbury Road intersection.
- Signalization of the Campeau/Didsbury intersection is recommended from the Loblaws opening.

Didsbury Road:

- Didsbury Road be extended to connect with the existing Terry Fox/Signature Centre intersection, which is currently outfitted with appropriate signals and turn-lanes.

6.3 Subdivision Roadworks

The design and construction of Didsbury Road improvements and a new cul-de-sac (Roger Nielson Way) located south of the transitway corridor are currently proposed. Refer to Figure 4 for an illustration of the extent of the proposed road work.

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

Detailed plan and profile, road grading, and drainage information for the proposed Didsbury Road and Roger Nielson Way roadworks are illustrated in the Subdivision Servicing Plans.

6.3.1 Didsbury Road

Didsbury Road improvements are proposed from the south side of the transitway corridor extending northward to the existing Terry Fox signalized intersection.

- South of Campeau Drive – Didsbury Road will be upgraded to an 11.0m pavement width within a 21.12m wide right-of-way.
- North of Campeau Drive – Didsbury Road will be upgraded to an 11.0m pavement width within the existing 20.12m right-of-way.

Refer to **Appendix E** for sketches illustrating the proposed right-of-way cross sections for Didsbury Road to the north and south of Campeau Drive.

The existing roadside ditch system for Didsbury Road currently conveys surface runoff north towards an existing drainage swale and the existing Signature Centre stormwater management facility where the runoff currently outlets uncontrolled via the drainage swale to the Carp River. The proposed urbanized cross-section of Didsbury Road includes a storm sewer that will maintain the existing drainage pattern, but instead outlet Didsbury Road runoff into the existing Signature Ridge stormwater management facility for treatment prior to release to the Carp River.

6.3.2 Cul-de-sac (Roger Nielson Way)

The construction of a new cul-de-sac, referred to as Roger Neilson Way, is proposed to extend approximately 260m to the west of Didsbury Road on the south side of the transitway corridor. Roger Nielson Way will be designed using an 8.5m pavement width on a 15.5m right-of-way. Refer to **Drawing DS-2** for a cross section of the proposed Roger Neilson ROW.

6.3.3 Campeau Drive

The extension of Campeau Drive from Didsbury Road west towards the Carp River is also part of the proposed Taggart-Loblaws subdivision development plan, however at the writing of this report the City of Ottawa and Taggart Realty had yet to finalize the front-ending agreement necessary to facilitate Development Charge cost recovery for this work. The detailed design for the Campeau Drive roadworks and drainage will be prepared and submitted for approval once the front-ending agreement is in place.

Campeau Drive will be designed using a 23.5m pavement width on a 37.5m wide right-of-way. Since Campeau Drive has been identified for potential transit services, the roadway will be designed to TAC standards; a bus-stop passenger standing area location will be coordinated with OC Transpo; and an extension to the roadway on the west side of the main Taggart-Loblaws driveway will be provided to allow for temporary bus turn-around until Campeau Drive is extended beyond the Carp River crossing by others.

Refer to **Appendix E** for a sketch illustrating the proposed ultimate right-of-way cross section for Campeau Drive.

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

6.4 Future Transitway

While recognizing that the rapid transit corridor will require an individual Environmental Assessment, alternative alignments were evaluated as part of the TMP, and a preferred corridor was identified as part of the study to ensure that the best combination of road transit links were identified for long-term corridor protection. The corridor identified in the subdivision draft plan has been coordinated with Delcan and City of Ottawa staff for protection of future transitway alignment and grading requirements.

TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT
Resubmission June 11, 2013

7 EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION

Erosion and sediment controls must be in place during construction. The following recommendations to the contractor will be included in contract documents.

1. Limit the extent of exposed soils at any given time.
2. Revegetate exposed areas and slopes as soon as possible.
3. Install terrafix siltsack (or equivalent) in all proposed catch basins and catch basin manholes and on all existing catch basins that will receive run-off from the site.
4. Straw blankets to be pre-seeded otherwise slope to be seeded before placing blankets or as specified by manufacturer. Straw blankets to be equivalent to terrafix s31 or s32 blankets as indicated. All blankets to be installed as per manufacturers specifications.
5. Where hydroseeding with mulch and tackifier is used, the surface is to be first scarified with ridges perpendicular to the slope.
6. Bio stakes to be used to establish pond vegetation and applied after straw blanket installation.
7. Where possible silt fences are to be installed along the same elevation contour.
8. Long runs of silt fences on or near slopes to have cross barriers as indicated in details below. Cross barriers shall be a minimum of 1/3 and maximum of 1/2 the height of the linear barrier. Sandbag rows and layers shall be offset to eliminate gaps.
9. No refueling or cleaning of equipment is permitted near any existing waterway.
10. The contractor shall periodically, or when requested by the contract administrator, clean out accumulated sediments as required.
11. Pond forebay to be cleaned out once pond and sewer construction is complete.
12. A visual inspection shall be done daily on sediment control measures and cleaned of any accumulated silt as required. The deposits will be disposed off site as per the requirements of the contract.
13. Sediment control barriers may only be removed temporarily with approval of contract administrator to accommodate construction operations. All affected barriers must be reinstated at night when construction is completed. No removal will occur if there is a significant rainfall event anticipated (>10mm) unless a new device has been installed to protect the existing storm and sanitary sewer systems.
14. The contractor shall immediately report to the engineer any accidental discharges of sediment material into the watercourse. Appropriate response measures, including any repairs to existing control measures or the implementation of additional control measures, shall be carried out by the contractor without delay.
15. Contractor shall remove sediment control measures when, in the opinion of the contract administrator, the measure(s) is no longer required. No control measures shall be permanently removed without prior written authorization from the contract administrator.

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

16. Establish material stockpiles away from watercourses, so that barriers and filters may be installed.

The contractor will, at every rainfall, complete inspections and guarantee proper performance. The inspection is to include:

1. Verification that water is not flowing under silt barriers.
2. Clean and change filter cloth to catch at catch basins.

See **Drawing DS-1 and DS-3** for further erosion control details.

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

8 APPROVALS

Ontario Ministry of Environment Environmental Compliance Approval (formerly Certificates of Approval (CofA)) under the Ontario Water Resources Act will be required for the proposed stormwater management pond and the proposed storm and sanitary sewers.

The subject site is located next to the Carp River and requires approval from the Mississippi Valley Conservation (MVC) through an application for alteration of a watercourse under the Lakes and Rivers Improvement Act. On December 10, 2012, the MVC issued a permit to Taggart for the placement of fill and ultimate construction of a stormwater management pond and commercial development located within the regulatory limit but outside the 100-year flood limit. See **Appendix G** for correspondence from the MVC.

A Permit to Take Water (PTTW) may be required from the MOE as trenching works may require pumping of groundwater. The need for a PTTW should be determined by a geotechnical engineer.

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

9 CONCLUSION

9.1 Water Servicing

The proposed commercial developments are located in an area of the City's water distribution system that has sufficient capacity to provide both the required domestic and emergency fire flows. Based on the modeling results and the boundary conditions determined, fire flow demands in excess of 15,000 L/min will be available within the watermain network proposed for the development.

The minimum pressure observed under peak demand conditions is within the acceptable pressure range of 40 psi (275kPa) to 80 psi (552kPa). No additional measures are required to address minimum pressure conditions. The maximum observed pressure is within the allowable pressure range, however all services within the subdivision will require Pressure Reducing Valves to meet Ontario Building Code requirements.

Due to the potential for aging water in the interim servicing condition, an automatic flushing valve is recommended until the 610mm diameter watermain is ultimately extended and connected to the Huntmar Road watermain in accordance with the Kanata West Master Servicing Study.

9.2 Stormwater Servicing

The proposed storm sewers have been designed to convey site flows to the proposed stormwater management facility. Minor system flows from Didsbury Road are conveyed to the existing Broughton Pond and major system flows are captured to the south. The minor system is designed according to either a 5 year (local roadways) or to a 10 year (arterial roadways) level of service without surcharge. The SWM Pond is designed in accordance with the recommendations of the "Kanata West Master Servicing Study" (2006) and the "Carp River Watershed/ Subwatershed Study" (2004).

9.3 Sanitary Servicing

The proposed outlet for the subject development area is the existing 450mm dia. sanitary sewer in Didsbury Road. Discussions with the City of Ottawa indicate that upgrades to the Signature Ridge Pumping Station will be complete by the end of December, 2012 and sufficient capacity will be available for the proposed development. Additionally, a cost sharing agreement prepared by Novatech Engineering Consultants, indicates that 2.06L/s of the remaining SRPS capacity previously owned by the Kanata West Owners Group (KWOG) was allocated to Taggart.

A sanitary HGL analysis completed by IBI Group indicates that the sanitary HGL is well below grade at the proposed sewer connection at the intersection of Didsbury Road and Campeau Drive. Proposed buildings and existing buildings in the area are all slab on grade and therefore do not have basements at risk of flooding. The analysis also indicates an elevated HGL within Didsbury Road, therefore it is

**TAGGART-LOBLAWS SUBDIVISION, KANATA WEST
SERVICING REPORT**

Resubmission June 11, 2013

recommended that the manholes within Didsbury Road be sealed to prevent any flow losses during overflow events.

9.4 Erosion and sediment control

Erosion and sediment controls must be in place during construction. The contractor will, at every rainfall event, complete inspections and guarantee proper performance of all control measures.

9.5 Approvals

Ontario Ministry of Environment (MOE) Environmental Compliance Approval (formerly Certificates of Approval (CofA)) under the Ontario Water Resources Act will be required for the proposed storm and sanitary sewers as well as the stormwater management facility. Approval for alteration of a watercourse has been granted from Mississippi Valley Conservation (MVC) for the proposed work within the MVC regulatory limit. An MOE permit to take water (PTTW) may also be required for excavation pumping during site works. The need for a PTTW should be assessed by a geotechnical engineer prior to commencing site works.

All of which is respectfully submitted,

STANTEC CONSULTING LTD.



Amanda Lynch, EIT.
Water Resources Engineering Assistant
amanda.lynn@stantec.com



Peter Moroz, P.Eng.
Managing Principal, Urban Land Engineering
peter.moroz@stantec.com