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FUNCTIONAL SERVICING REPORT

FOR

2325483 ONTARIO INC.
195 HUNTMAR DRIVE

CITY OF OTTAWA

PROJECT NO.: 12-624

JULY 2016 – REV 0

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FOR
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2325483 ONTARIO INC.

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1.0 INTRODUCTION

David Schaeffer Engineering Limited (DSEL) has been retained to prepare a Functional Servicing Report in support of Official Plan Amendment, Zoning By-law Amendment, and Plan of Subdivision applications for 195 Huntmar Drive.

The subject property is located within the City of Ottawa urban boundary, in the Stittsville ward. As illustrated in ***Figure 1***, the subject property is located south of the Highway 417 interchange with Palladium Drive and west of Huntmar Drive. The subject property is one unique parcel (PIN 044870339) that measures approximately 54.6 ha. The property is currently zoned Development Reserve (DR) Zone.

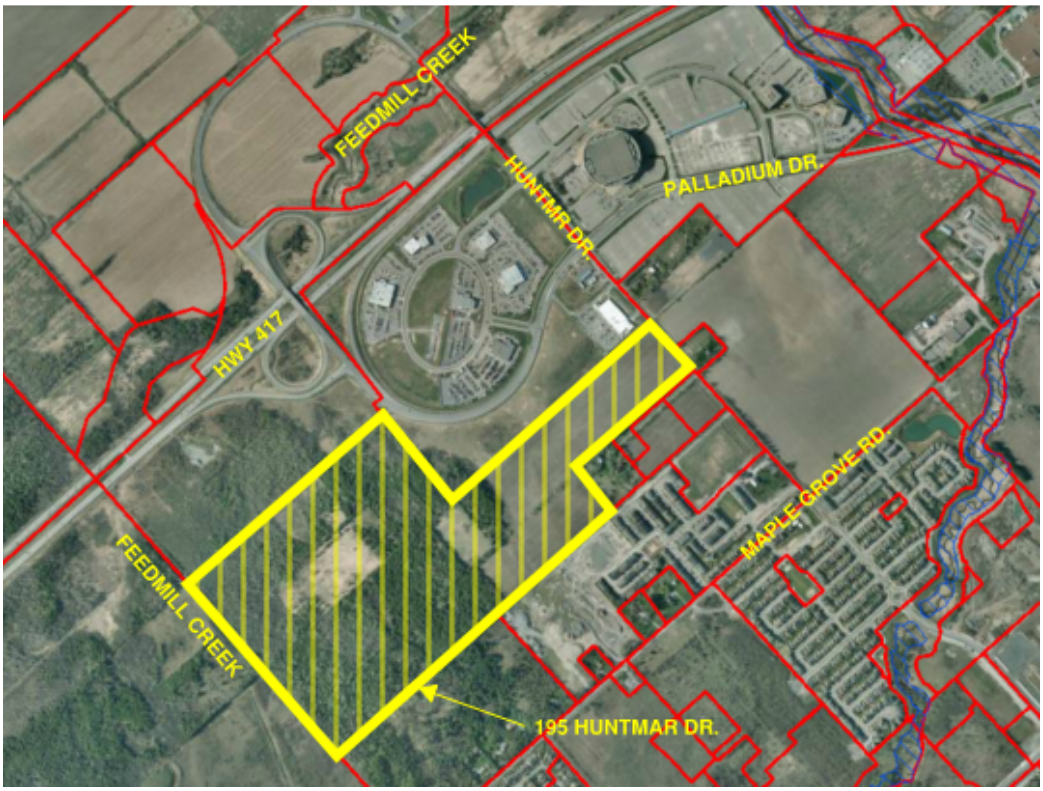


Figure 1: Site Location

The proposed concept plan would allow for the development of four commercial blocks, one apartment block, five blocks of stacked townhomes, 345 townhome lots, 182 single-family home lots, and an 11.1 ha. district park. The proposed concept plan shows the proposed layout of these land uses on a network of local (18m right-of-way), collector (26m right-of-way), and arterial (43m right-of-way) road segments. The subject lands are expected to be developed in distinct phases according to the landowner's preferred timing.

The lands subject to the planning applications are within the Kanata West Concept Plan (KWCP) area and within the associated Kanata West Master Servicing Study (KWMSS) (Stantec, CCL, IBI, June 2006) area. The KWMSS was completed in order to provide a conceptual servicing strategy and cohesive development approach for an overall development area of 725 ha. west of the Carp River and north of Hazeldean Road at the intersection of the former municipalities of Goulbourn, West Carleton, and Kanata. The KWMSS identifies existing infrastructure and environmental constraints, describes the neighbourhood-level trunk services that will service all properties within the study area, establishes quantity and quality control targets for future site-specific stormwater management plans, and identifies required infrastructure upgrades to support the proposed development of the KWMSS area. Since completion of the KWMSS, many of the identified neighbourhood-level infrastructure projects have been completed or are underway, including stormwater management ponds, trunk sewers, and the Kanata West pumpstation. The proposed concept plan differs from the 'prestige business park' and 'extensive employment' land use contemplated in the KWCP and the KWMSS. The approximately 8.3 ha district park identified in the KWCP and KWMSS is proposed to be relocated and re-sized to 11.1 ha under the current concept plan.

The objectives of this report are to:

- Provide sufficient detail to demonstrate that development of the subject lands will be adequately supported by municipal services, as set out in the Kanata West Master Servicing Study (Stantec, CCL, IBI, June 2006) and as refined during the planning, detailed design, and buildout of the various municipal infrastructure projects within the KWMSS area;
- Define the course of subsequent detailed design, review, and acceptance of the proposed municipal services;
- Demonstrate how the proposed municipal services will conform with current Ministry of the Environment servicing design criteria and other applicable agency guidelines; and,
- Demonstrate good engineering practice for the protection of public safety, the environment, and sustainable operation.

1.1 Existing Conditions

Under existing conditions, the east portion of the subject lands is cultivated for agricultural use and the remainder of the subject lands is a natural wooded area. The existing elevations range between 101m – 107m.

The existing drainage is depicted in ***Drawing STM-EX*****.** The subject lands are within Carp River watershed, and are under the jurisdiction of the Mississippi Valley Conservation Authority (MVCA).

- Part of the lands (23.29 ha.) naturally drain to Feedmill Creek via the Northwest Swale, as identified in the Environmental Impact Statement (Muncaster, July 2016). Feedmill Creek then discharges to the Carp River.
- The remaining 31.28 ha. drain through the East Swale – as identified in the Environmental Impact Statement (Muncaster, July 2016) – to the Huntmar Drive roadside ditch which is within the Carp River watershed per the Carp River Watershed/Subwatershed Study (Robinson Consultants, December 2004).

Paterson Group's geotechnical investigations (July 2015) for the subject lands explain that the long-term groundwater table is estimated to be between 2 to 3 m below existing ground surface. The geotechnical investigations (Paterson Group, July 2015) suggest that the east and north portions of the subject lands consists of a topsoil layer overlying a silty clay layer and glacial till deposit: a permissible grade raise restriction will be required in these portions of the site. The west and south portions of the site consists of topsoil underlain by a silty sand and/or a glacial till deposit (Paterson Group, July 2015). The inferred bedrock surface is between 0.3 and 3.7 m depth from existing surface (Paterson Group, July 2015).

South of the subject lands, there are existing residential developments and planned residential/mixed use developments, including a development proposal at 173 Huntmar Drive for 104 apartment units, 102 townhouse units and approximately 6,035m^2 of commercial space complete with surface parking and associated private streets.

West of the subject lands, there is natural vegetated land that is currently zoned Rural Countryside Zone (RU) but is partially identified as a 69.5 ha Developing Community in the City's Official Plan. It is understood that development applications are underway for these lands, and as such, the detailed design of municipal services through the subject lands ought to be coordinated to ensure that sufficient municipal infrastructure capacity is provided.

1.2 Limit of Development

The current concept plan shows a 30 m development setback from the identified top of bank of Feedmill Creek. As part of the development application for the subject lands, the limits of the Feedmill Creek corridor are expected to be refined, using the greatest setback from the watercourse based on the following parameters:

- Regulatory 1:100 year floodplain, source: MVCA regulations mapping;
- Slope hazards lands setback, source: MVCA regulations mapping & site-specific Paterson Group Geotechnical Study (using MNR & City of Ottawa guidelines) (underway);
- Meanderbelt allowance, source: MVCA regulations mapping, Carp River Watershed/Subwatershed Study (CRWSS) (Robinson Consultants Inc., December 2004) & site-specific Geomorphix Erosion and Meanderbelt Analysis (underway);
- Aquatic buffer, 30 metre setback from water, source: CRWSS & site-specific Environmental Impact Statement (Muncaster Environmental Planning, July 2016);
- Aquatic Buffer, 15 metre setback from top of valley slope; source: site-specific Paterson Group Geotechnical Study & site-specific Environmental Impact Statement (Muncaster Environmental Planning, July 2016);
- Abutting tree retention area, source: site-specific Environmental Impact Statement (Muncaster Environmental Planning, July 2016); and.
- 5 metre development/environmental protection setback from top of slope, source: Carp River, Poole Creek and Feedmill Creek Corridor Width Limits Rationale (City of Ottawa, 2009) & site-specific Paterson Group Geotechnical Study (underway).

As detailed development concepts are prepared for any pathway systems adjacent to Feedmill Creek, applicable pathway setback requirements are expected to be addressed through consultation with City of Ottawa and MVCA staff.

1.3 Required Permits / Approvals

The City of Ottawa must approve detailed engineering design drawings and reports prior to construction of the municipal infrastructure identified in this report. This is expected to occur as part of the Plan of Subdivision application process, and potentially through block-specific Site Plan Control approval processes.

The municipal infrastructure proposed herein deviates from the KWMSS and may form part of a future KWMSS addendum, potentially in concert with other changes currently being proposed by other landowners in the community.

Based on pre-consultation with City staff, the following additional approvals and permits are expected to be required prior to construction of the municipal infrastructure detailed herein.

Table 1: Required Permits/Approvals

Agency	Potential Permit/Approval Required	Potential Trigger	Remarks
MNRF	Butternut removal permit.	Vegetation requiring removal due to development/grading.	MNRF permitting required per Environmental Impact Statement (Muncaster Environmental Planning, July 2016).
MVCA	Permit under Ontario Regulation 153/06, MVCA's Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation	Ditch requiring closure due to development/grading, and potential changes to existing downstream culverts/ditches outletting to Feedmill Creek.	Proposed land uses & municipal infrastructure require grading within the subject lands and result in the closure of existing ditches. May also require modifications to downstream drainage features.
MVCA	Permit under Ontario Regulation 153/06, MVCA's Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation	Grading within the subject lands & new definition of regulatory floodplain.	Existing grades in the subject lands are below the 100-year floodplain elevation as reported by Mississippi Valley Conservation Authority (MVCA), based on their Feedmill Creek watershed study that is currently underway.
MOECC	Environmental Compliance Approval	Construction of new stormwater management pond (Pond 7), amendment to existing stormwater management pond (Pond 4), construction of sanitary & storm sewers.	The MOECC is expected to review all stormwater collection system, stormwater management, and wastewater collection system by direct submission (since in KWMSS area).
MOECC	Permit to Take Water	Construction of proposed land uses (e.g. basements for residential homes) and services.	Pumping of groundwater may be required during construction, given groundwater conditions and proposed land uses and on-site/off-site municipal infrastructure.
City of Ottawa	Tree Cut Permit per City of Ottawa Urban Tree Conservation By-law No. 2009-200.	Trees requiring removal due to development/grading.	The subject property contains trees, and re-grading the site to accommodate the proposed development (including municipal services and drainage) may impact or require removal of existing trees. See Tree Conservation Report (Muncaster Environmental Planning, July 2016).
City of Ottawa	MOE Form 1 – Record of Watermains	Construction of watermains.	The City of Ottawa is expected to review the

	Authorized as a Future Alteration.		watermains on behalf of the MOE through the Form 1 – Record of Watermains Authorized as a Future Alteration.
DFO	Request for Review Application	Ditch requiring closure due to development/grading, and potential changes to existing downstream culverts/ditches outletting to Feedmill Creek.	Per the Environmental Impact Statement (Muncaster Environmental Planning, July 2016), DFO Request for Review may be required for removal/modifications of existing drainage features. To be detailed further in Headwater Assessment (underway).
MTO	Land agreements & development permits	Stormwater management facility to be constructed on Provincial Lands.	Note that because the proposed development is within 395m of Highway 417 Interchange, additional development permits may be required – permit requirements to be determined through consultation.

1.4 Pre-consultation

Pre-application consultation was conducted with interested parties at the City of Ottawa on March 30, 2016. The municipal servicing approach was discussed, including proposed deviations from the KWMSS. Pre-consultation correspondence, along with the City of Ottawa servicing guidelines checklist, is located in ***Appendix A***.

The MVCA have provided preliminary comments on the development application, including requirements for setting the limit of development/municipal infrastructure and for stormwater management criteria. Correspondence is provided in ***Appendix A***.

Subsequent to the pre-consultation meeting, the City of Ottawa provided a suggested 100-year release rate of 8 L/s/ha for the proposed Pond 7 stormwater pond that discharges to Feedmill Creek. A copy of the information is provided in ***Appendix A.***

2.0 GUIDELINES, PREVIOUS STUDIES, AND REPORTS

2.1 Existing Studies, Guidelines, and Reports

The following studies were utilized in the preparation of this report.

- **Ottawa Sewer Design Guidelines**,
  City of Ottawa, *SDG002,* October 2012
  (City Standards)

  - **Technical Bulletin ISDTB-2014-01, Revisions to Ottawa Design Guidelines - Sewer**
    City of Ottawa, February 5, 2014.
    (ISDTB-2014-01)

- **Ottawa Design Guidelines – Water Distribution**
  City of Ottawa, July 2010.
  (Water Supply Guidelines)

  - **Technical Bulletin ISD-2010-2**
    City of Ottawa, December 15, 2010.
    (*ISDTB-2010-2*)

  - **Technical Bulletin ISDTB-2014-02**
    City of Ottawa, May 27, 2014.
    (*ISDTB-2014-02*)

- **Design Guidelines for Sewage Works,**
  Ministry of the Environment, 2008.
  (MOE* Design Guidelines*)

- **Stormwater Planning and Design Manual,**
  Ministry of the Environment, March 2003.
  (SWMP Design Manual)

- **Ontario Building Code Compendium**
  Ministry of Municipal Affairs and Housing Building Development Branch, January 1, 2010 Update
  (OBC)

- **Kanata West Master Servicing Study**
  Stantec, CCL, IBI, June 2006.
  (KWMSS)

- **Carp River Watershed/Subwatershed Study**
  Robinson Consultants, December 2004.
  (CRWSS)

- **Mississippi-Rideau Source Water Protection Plan**
  MVCA & RVCA, August 2014.

2.2 Report Integration

Table 2 summarizes the studies that are being completed in support of the development application for 195 Huntmar Drive, and their relationship to this Functional Servicing Report.

Table 2: Report Integration

Report	Author	Relationship to Functional Servicing Study
Planning Rationale	Fotenn, July 2016	Delineates the study area and explains the development context. Provides spatial information on land uses, development densities, and projected populations to be serviced.
Environmental Impact Statement	Muncaster Environmental Planning, July 2016	Delineates the natural heritage system. Defines fish habitat within watercourses in the subject lands and adjacent to the subject lands, which influences stormwater management recommendations for the development. Considers impacts of on-site and off-site municipal infrastructure and details any additional studies required prior to construction. Assesses the existing ditches that are proposed to be closed due to proposed concept plan and site grading.
Geotechnical Investigations	Paterson Group, July 2015 & July 2016	Determines development setback requirements (limit of hazard lands), provides grade-raise recommendations, provides bedrock contours, and other subsurface information to inform the detailed design of on-site and off-site municipal infrastructure and grading within the subject lands.
Feedmill Creek Study	MVCA, underway	Can be used in next steps in development application, to confirm stormwater management targets for Pond 7 that is to discharge to Feedmill Creek and to confirm flow regime information to be used in the erosion assessment of Feedmill Creek (as requested by MVCA).
Meanderbelt and Erosion Assessment of Feedmill Creek	Geomorphix, July 2016	Determines the erosion threshold and meanderbelt width for the branch of Feedmill Creek adjacent to the development, to inform the development setback limit.
Community Transportation Study	Parsons, July 2016	Identifies required ROW widths and alignments.

3.0 WATER SUPPLY SERVICING

3.1 Existing Water Supply Services

The subject property lies adjacent to the existing City of Ottawa 3W pressure zone. Existing watermain infrastructure is shown on ***Drawing WTR*****.**

An existing 600mm diameter trunk watermain extends on Huntmar Drive from north of Highway 417 to Cyclone Taylor Boulevard.

Existing 300mm diameter trunk watermains are located along Palladium Drive, within the Palladium Autopark, along Maple Grove Road, and along the portion of Huntmar Drive north of the subject lands. Two 300mm diameter watermain stubs are provided in close proximity to the subject lands, as depicted on ***Drawing WTR*****.**

The 3W pressure zone network is operational within the existing residential neighbourhood (Mattamy Fairwinds) south of the subject lands, and a 200mm diameter watermain stub is available for connection at the limit of the subject lands, as depicted on ***Drawing WTR*****.**

3.2 Water Supply Servicing Design

The proposed alignment of the trunk watermain network is depicted in ***Drawing WTR***. Per the KWMSS, in support of full buildout of the KWMSS area:

- the existing 600mm diameter watermain on Huntmar Drive at Highway 417 is to be extended south to the North-South Arterial Road;
- a 400mm watermain will be required on Huntmar Drive from the North-South Arterial Road to Maple Grove Road; and
- 300mm diameter watermains will be required along the arterial and collector road network within and adjacent to the site.

Potential alignments of local watermains are also depicted in ***Drawing WTR***, to illustrate that a redundant looped network is achievable to support the development of the site, extending from existing and planned infrastructure. A conceptual watermain extension is shown through the property at 173 Huntmar Road, and consultation with the affected landowner will be pursued as part of the development application process. At this time, proposed watermains are shown in road right-of-ways. Servicing easements may be required as detailed designs progress, which may trigger minor amendments to the proposed lot fabric in the concept plan.

As detailed designs progress, timing, alignment, and sizing of trunk and local watermains will be confirmed. Specifically, the timing of the 600mm diameter trunk watermain on Huntmar Drive is expected to be determined based on phased development demands for the site and for the surrounding properties.

Table 3: Water Supply Design Criteria

Design Parameter	Value
Residential - Single Family	3.4 p/unit
Residential – Townhome/ Semi	2.7 p/unit
Residential – Apartment	1.8 p/unit
Residential Average Daily Demand	350 L/d/p
Residential - Maximum Daily Demand	2.5 x Average Daily Demand
Residential - Maximum Hourly Demand	2.2 x Maximum Daily Demand
Residential – Minimum Hourly Demand	0.5 x Average Daily Demand
Commercial/Institutional Average Daily Demand	50,000 L/gross ha/day
District Park Average Daily Demand	28,000 L/gross ha/day
Commercial/Institutional Maximum Daily Demand	1.5 x Average Daily Demand
Commercial/Institutional Maximum Hour Demand	1.8 x Maximum Daily Demand
Commercial/Institutional Minimum Hourly Demand	0.5 x Average Daily Demand
Minimum Watermain Size	150mm diameter
Minimum Depth of Cover	2.4m from top of watermain to finished grade
During normal operating conditions desired operating pressure is within	350kPa and 480kPa
During normal operating conditions pressure must not drop below	275kPa
During normal operating conditions pressure must not exceed	552kPa
During fire flow operating pressure must not drop below	140kPa

Notes:

- *Extracted from Section 4: Ottawa Design Guidelines, Water Distribution (July 2010), Table 4.1 - Per Unit Populations and Table 4.2 - Consumption Rates for Subdivisions of 501 to 3,000 Persons. Note that the area being considered for this development has a proposed population greater than the 3,000 population identified in Table 4.2. Use of these population and demand factors represent a conservative method of analysis for an area of this size and are greater than the general community level demands outlined in the KWMSS.*
- *No Outdoor Water Demand considered for residential uses.*
- *Park water demand assumed as Commercial/Institutional Use, since potential for community facilities, etc. Apply 'other commercial' rate of 28,000 L/gross ha/day per Table 4.2 & per MOE Design Guidelines: for other Institutional and Commercial flows and tourist-commercial areas, an allowance of 28 m3/(ha·d) average flow should be used in the absence of reliable flow data.*

The subdivision's watermain network will be sized to meet maximum hour and maximum day plus fire flow demands. ***Table 3*** summarizes the Water Supply Guidelines employed in the preparation of the preliminary water demand estimate (***Appendix C*** and ***Table 4***) and that will be applied in future watermain network hydraulic modelling and design. Boundary conditions are expected to be provided by the City of Ottawa for the preliminary water demand estimate presented in ***Table 4***.

Fire flow requirements are to be confirmed in accordance with Local Guidelines (Fire Underwriters Survey), City of Ottawa Water Supply Guidelines, and the Ontario Building

Code, upon development of detailed concepts for the single family homes, townhouses, stacked towns, apartment blocks, commercial blocks, and the district park. For planning purposes, fire flow estimates are provided in the preliminary water demand estimate (***Appendix C*** and ***Table 4***) based on the information available in the preliminary concept plan and comparable recent developments in the City of Ottawa. Additional details are provided in ***Appendix C.***

Table 4: Water Demand Estimate

Land Use	Approx Area (ha.)	Units	Pop.	Res Average Water Demand (L/s)	Com Average Water Demand (L/s)	Inst Average Water Demand (L/s)	Total Average Water Demand (L/s)	Fire Flow Requirement (L/s)
Singles	6.25	182	618.8	2.507	-	-	2.507	166.667
Towns	6.75	345	931.5	3.773	-	-	3.773	166.667
Stacked Towns	8.51	520	1404	5.688	-	-	5.688	283.33
Apartments	1.34	190	342	1.385	-	-	1.385	283.33
District Park	11.14	-	-	-	-	3.611	3.611	250.00
Commercial	8.71	-	-	-	5.041	-	5.041	250.00
Roads	11.87	-	-	-	-	-	0.000	-
Total	**54.57**	**1237**	**3296.3**	**13.353**	**5.041**	**3.611**	**22.005**	

Notes:

- *Stacked Towns will be 4 storey building with surface parking (each unit is approx 1,100 sq. ft.) – assume 4 unit footprint for purpose of preliminary water demand calculations.*
- *Apartments to include underground parking (each unit is approx 800 sq. ft.)*
- *District Park calls for a variety of active and passive recreation opportunities which may include a community centre, pool /arena complex, indoor / outdoor rinks, splash pads, children's play areas, pedestrian walkways, seating areas, and shelters, as determined by the City.*

The KWMSS average water demand allowance for the subject lands is inferred to be approximately 4.9 L/s - using the rate of 152 l/d/p and an estimate of 60 employees/ha. for 46.27 ha of 'prestige business park' and 'extensive employment' land uses (total site area less KWMSS district park area of 8.3 ha.) - whereas now residential demands of 22.0 L/s are to be accommodated. The KWMSS fire flow allowance for the subject lands is 216 L/s, whereas now 283 L/s is to be accommodated.

The proposed alignment of the trunk watermain infrastructure differs from the KWMSS because of changes to the proposed road network. The adequacy of trunk infrastructure sizing and required timing of construction will be confirmed through detailed hydraulic modelling of the site as the development application progresses.

3.3 Water Supply Conclusion

The City's 3W pressurized water supply network will be expanded to meet the water demands of the proposed concept plan. Detailed modelling is required to confirm phasing of the extensions of trunk watermains per the KWMSS. The proposed water supply design is expected to conform to all relevant City and MOE Guidelines and Policies. The trunk watermain network has shifted from the alignments proposed in the KWMSS, in order to follow the proposed arterial and collector road network.

4.0 WASTEWATER SERVICING

4.1 Existing Wastewater Services

The subject lands are within the Kanata West Pump Station (KWPS) catchment area, as originally defined in the KWMSS.

An existing sanitary trunk sewer runs along Maple Grove Road (MGR) from John Woods Street to the west side of Poole Creek**.** Sewage from the MGR trunk sewer is currently directed to a privately owned temporary pump station located on the south side of MGR between Huntmar Drive and Poole Creek. Construction of the extension of the MGR trunk sewer under Poole Creek to the KWPS is currently underway. Both the KWPS and the MGR trunk sewer extension are scheduled to be operational in 2017.

Based on the KWMSS design information included in ***Appendix D***, there is 55% residual capacity (301 L/s) remaining in the Maple Grove Road 825mm dia. sanitary trunk sewer to the KWPS. Per ECA No. 7443-9Y8Q8R (***Appendix D***), the design of the KWPS will accommodate 528 L/s firm capacity upon completion in 2017, and 1250 L/s in 2031 ultimate conditions.

4.2 Wastewater Design

The subject lands are expected to be serviced by an internal gravity sanitary sewer system that is to follow the local road network. As detailed designs progress, alignment and sizing of local sanitary sewers will be confirmed and servicing easements may be required, which may trigger minor amendments to the proposed lot fabric in the concept plan. The proposed alignment of the trunk sanitary sewer infrastructure within the subject lands differs from the KWMSS because of the changes to the proposed road network.

The KWMSS contemplates that the subject lands will be serviced by a 625mm trunk sanitary sewer draining through servicing easements and/or future road rights-of-way eastwards towards the Palladium Drive crossing of the Carp River, to the north of Pond 4, and finally south to the KWPS. The KWMSS alignment is illustrated in ***Drawing SAN.***

The land owners affected by this KWMSS trunk sanitary sewer alignment have discussed re-aligning the sewer to take advantage of residual capacity within the MGR trunk sewer and to avoid the requirement to cross undeveloped lands owned by others. Alternative sanitary sewer alignment Options 2 and 3 are illustrated in ***Drawing SAN.***

- **Option 2** illustrates an alignment that follows Huntmar Drive and the future North South Arterial to outlet to the existing MGR trunk east of Huntmar Drive.
- **Option 3** illustrates an alignment that follows Huntmar Drive directly to the MGR trunk sewer (KWMSS MH 10).

Option 3 is the preferred sanitary trunk sewer alignment to service the subject lands, as this option avoids the requirement to access undefined road alignments on adjacent private property between the site and the KWPS.

Aligning the trunk sanitary sewer along Huntmar Drive to outlet into the MGR sewer (Option 3) would direct KWMSS sanitary drainage areas 32 and 34 into the MGR sewer at KWMSS MH10. Area 33 (Palladium Autopark) is already developed and wastewater is conveyed through sewers on Cyclone Taylor Boulevard. Area 37 is assumed to be serviced per the KWMSS. See KWMSS "Preferred Wastewater Option" drawing S-1, accompanying sanitary sewer design sheet, and as-built sewershed maps in ***Appendix D*** for details.

Applying the wastewater parameters in ***Table 5*** to the development concept described in ***Section 1.0***, the estimated peak sanitary flow from the 54.57 subject lands and the remaining 20.62 ha business park lands north of the site (part of KWMSS Area 32) is expected to be 98.21 L/s. See ***Appendix D*** for detailed calculations.

This represents a 28% increase from the KWMSS sanitary outflow of 76.79 L/s from these lands, based on a total contributing area of 68.89 ha. (54.57 ha. subject site, plus 20.62 ha. north business park, less 8.3 ha. KWMSS park area at 0 L/s).

According to the KWMSS sanitary sewer design sheet, a peak wastewater flow rate of 368.56 L/s was proposed to be directed to the MGR trunk sanitary sewer east of Huntmar Drive, with a full flowing capacity of 669.89 L/s within the 825 mm sewer. The proposed Option 3 trunk sewer alignment would direct an additional 97.4 L/s to the MGR sewer. The total proposed flowrate in the MGR trunk sanitary sewer is 465.98 L/s, which results in 27% (176.0 L/s) remaining residual capacity within the MGR trunk sewer.

Table 5 summarizes the City standards applied in the preliminary sanitary design information above (detailed in ***Appendix D)***. The same ***Table 5*** parameters are to be employed in the detailed design of the proposed wastewater sewer system.

Table 5: Wastewater Design Criteria

Design Parameter	Value
Residential - Single Family	3.4p/unit
Residential – Townhome/ Semi	2.7p/unit
Residential – Apartment	1.8p/unit
Average Daily Demand	350 L/d/per
Peaking Factor	Harmon's Peaking Factor. Max 4.0, Min 2.0
Commercial / Institutional Flows	50,000 L/ha/day
Commercial / Institutional Peak Factor	1.5
Industrial Flows	35,000 L/ha/day
Industrial Peaking Factor	Per Figure in Appendix 4-B
Infiltration and Inflow Allowance	0.28L/s/ha
Park Flows	9,300 L/ha/d (75 p/acre per Sewer Guidelines Appendix 4-A)
Additional Park Flow	5 L/s/park (fixed flow allowance per park for splash pad)
Park Peaking Factor	1.0
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{2/3} S^{1/2}$
Minimum Sewer Size	200mm diameter
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	2.5m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6m/s
Maximum Full Flowing Velocity	3.0m/s
Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, October 2012, and recent residential subdivision in City of Ottawa.	

4.3 Wastewater Servicing Conclusions

The proposed wastewater design for the subject lands is to be designed to conform to all relevant City Standards and MOE Guidelines, including the design parameters for the Kanata West Pump Station.

The subject lands will be serviced by off-site trunk sanitary sewer(s) delivering collected wastewater to the Kanata West Pump Station. The preferred offsite trunk sanitary sewer alignment to service the subject lands is an extension of a trunk sewer along Huntmar Drive from the existing Maple Grove Road trunk sewer (Option 3 in ***Drawing SAN***). The preferred alignment is a deviation from the proposed alignment in the KWMSS. Sufficient residual capacity exists within the Maple Grove Road trunk sanitary sewer to accommodate the preferred alignment.

5.0 STORMWATER MANAGEMENT

5.1 Existing Stormwater Drainage

The subject lands are within Carp River watershed - under the jurisdiction of the Mississippi Valley Conservation Authority (MVCA) - and drain as follows:

- Part of the lands (23.29 ha.) naturally drain to Feedmill Creek via the Northwest Swale, as identified in the Environmental Impact Statement (Muncaster, July 2016). The Northwest Swale outlets to a series of downstream ditches and culverts associated with the Highway 417/Palladium Drive interchange. A culvert brings flows under Highway 417 to Feedmill Creek, which then discharges to the Carp River.
- The remaining 31.28 ha. of the subject lands drain through the East Swale – as identified in the Environmental Impact Statement (Muncaster, July 2016) – to the Huntmar Drive roadside ditch which is within the Carp River watershed per the Carp River Watershed/Subwatershed Study (Robinson Consultants, December 2004). A culvert under Huntmar Drive, just north of the site, conveys flows from the western roadside ditch to an east-west ditch that eventually drains through a culvert under Palladium Drive and flows directly into the Carp River (just north of Palladium Drive).

The existing drainage features are illustrated on ***Drawing STM-EX*****.**

The drainage split between Feedmill Creek and Carp River is consistent with City of Ottawa base mapping and with the drainage boundaries set out in the Carp River PCSWMM Model Documentation, Draft Report (City of Ottawa, July 2015).

5.2 Post-Development Stormwater Management Targets

Stormwater management requirements for the proposed development have been adopted from the KWMSS, and refined based on consultation with City of Ottawa staff.

The KWMSS proposes that stormwater runoff from the subject lands be treated for quantity control and quality control by two stormwater management wet ponds. Refer to ***Drawing STM-MSS*** and ***Appendix B*** for details. In general:

- The northern 6.6 ha of the subject lands was planned to be treated by Pond 7 (total drainage area approximately 34 ha., Runoff Coefficient C=0.7), which was to be located within the Palladium Drive/ Highway 417 interchange and outlet to Feedmill Creek.
- The remaining 48 ha of the subject lands was planned to be treated by Pond 4 (total drainage area 278 ha., Runoff Coefficient C=0.63), which is located beside and outlets to the Carp River.

For stormwater runoff destined to Feedmill Creek, all stormwater runoff up to and including that generated in a City of Ottawa 100-year design event is to be attenuated. City of Ottawa staff have provided a suggested 8 L/s/ha. release rate for the 100-year design storm event for Pond 7, to respect the flow regime of Feedmill Creek (the receiving watercourse). An Enhanced Level of quality control is expected to be required, given the aquatic habitat in Feedmill Creek.

Pond 4 has been partially constructed under ECA No. 4298-9Q6HQ3 and is sized to receive site drainage in accordance with the KWMSS (***Appendix E***). Pond 4 provides Normal Level water quality control, provides erosion protection, and attenuates post-development peak flows to pre-development levels for all storm events up to and including the 10-year storm event for the KWMSS drainage area.

The following City standards will be required for stormwater management within the subject lands and conveyance to the proposed stormwater management ponds:

- Storm sewers on local roads are to be designed to provide a 5-year level of service. On arterial roads, the level of service is to be increased to a 10-year level.
- The 100-year hydraulic grade line (HGL) within the minor system must be maintained at least 0.3 m below the underside of footing elevation where gravity house connections are installed.
- For less frequent storms (i.e. larger than 1:5 year), the minor system shall, if required, be limited with the use of inlet control devices to prevent excessive hydraulic surcharges.
- Under full flow conditions, the allowable velocity in storm sewers is to be no less than 0.80 m/s and no greater than 6.0 m/s.
- The major system shall be designed with sufficient capacity to allow the excess runoff of a 100-year storm to be conveyed within the public ROW.
- Flow across road intersections shall not be permitted for minor storms (generally 5-year or less).
- Flow across arterial roads shall not be permitted up to a 100-year return period.
- Arterial roads must maintain at least one open travel lane in each direction at all times up to a 100-year return period.
- Collector roads must leave at least one lane free of water at all times up to a 100-year return period.
- For the 100-year storm and for all roads, the maximum depth of water (static and/or dynamic) on streets, rearyards, public space and parking areas shall not exceed 0.30 m at the gutter and should be retained within the right-of-way.
- A minimum of 0.30 m freeboard is to be provided to building openings.
- When catchbasins are installed in rear yards, safe overland flow routes are to be provided to allow the release of excess flows from such areas.

- The product of the maximum flow depths on streets and maximum flow velocity must be less than 0.60 m^2/s on all roads.

5.3 Proposed Stormwater Management System

Consistent with the KWMSS, it is proposed that Pond 7 be constructed within lands currently owned by the Province (represented by Ministry of Transportation) and outlet to Feedmill Creek via a series of existing ditches and culverts under Highway 417 and its interchange with Palladium Drive. The proposed facility footprint is proposed to shift and expand from that shown in the KWMSS, to achieve orderly and cost-effective development of the subject lands. The expanded Pond 7 is proposed to receive all stormwater runoff within the part of the subject lands that is west of the North-South arterial road, allowing that portion of development to proceed in one phase. Pond 7 will also receive flows from development north of the subject lands, as per the KWMSS. Refer to ***Drawing STM-PRF*** for the preferred storm management system for the subject lands.

The remaining subject lands that are east of the North-South arterial road are to drain to Pond 4, via an off-site 'North Trunk' storm sewer, as planned in the KWMSS (***Appendix B & E***). East of Huntmar Drive, the off-site 'North Trunk' storm sewer is to be aligned through servicing easements and/or future road rights-of-way eastwards to the Pond 4 north forebay. Note the proposed trunk has been realigned west of Huntmar Drive from the KWMSS alignment, in order to follow the proposed road network.

The proposed stormwater drainage areas for the subject lands differ from the existing drainage split and the drainage pattern proposed in the KWMSS, as detailed in ***Table 6***, and as shown in ***Drawings STM-EX, STM-MSS, and STM-PRF*****.**

Table 6: Comparison of Subject Land Drainage to Feedmill Creek and Carp River

	Existing Drainage (ha.)	MSS Drainage (ha.)	Proposed Drainage (ha.)
Feedmill Creek (Pond 7)	23.3	6.6	40.8
Carp River (Pond 4)	31.3	48	13.8
Total Subject Land Area	**54.6**	**54.6**	**54.6**

Using the pre-development drainage area of 38.22 ha to Feedmill Creek (23.29 ha of the subject lands plus 14.93 ha north of the subject lands, per ***Drawing STM-EX***), the 8 L/s/ha release rate translates to an allowable outflow of ***305.76 L/s*** for the proposed Pond 7 (under the condition that all post-development flows from this area are controlled by the proposed Pond 7). Key differences in the proposed and KWMSS stormwater management design for Pond 7 are described in ***Table 7*****.** The existing drainage associated with the Highway 417 interchange at Palladium Drive has not been included in the calculation of the allowable outflow rate or in the pond catchment area for Pond 7.

Table 7: Comparison of Proposed and KWMSS Pond 7 Design

	Pond 7 KWMSS	Pond 7 Proposed
Drainage Area	34.08 ha.	57.30 ha
Average Imperviousness	70%	70% (To be confirmed at detailed design)
Required Permanent Pool Volume	6305 m^3 (185 m^3/ha)	10,601 m^3 (185 m^3/ha)
Permanent Pool Elevation	102.20	To be confirmed at detailed design
Required Quality Control Volume	1363 m^3 (40m^3/ha)	2292 m^3 (40m^3/ha)
100-year Release Rate	3654 L/s (Carp River Restoration Plan – Greenland International Consulting Engineers, Feb 2014)	305.76 L/s (8 L/s/ha, **Appendix A**)

It is anticipated that approximately ***40,000 m^3*** (35,000 m^3 plus contingency) of storage will be required in Pond 7 to attenuate stormwater runoff to Feedmill Creek to the established release rate of ***305.76 L/s***. Cursory storage calculations are contained within ***Appendix E*** using City of Ottawa 100-year IDF curve information. Actual required storage volumes will vary, and need to be confirmed as the development application progresses based on a number of factors including grading constraints and detailed modelling of the stormwater management plan.

Detailed pond design will be completed according to KWMSS, the City of Ottawa Stormwater Management Facility Guidelines (underway), and the MOE SWMP Design Manual, detailing storage requirements and operating characteristics, inlet and outlet structures, orifice sizing, and pond block design including amenity space and pathways. Pond side slopes are to vary and designs are to be approved by a licensed Geotechnical Engineer prior to construction. Detailed grading, outlet orifices and weirs, and operational characteristics will be developed using modelling at the detailed design level, with input from other professionals (e.g. geomorphologists) where required. The detailed design of the stormwater outlet will be required to illustrate that there are no negative erosion, thermal, or water level impacts caused by the introduction of pond discharge to Feedmill Creek and the existing ditches and culverts between Pond 7 and Feedmill Creek.

As detailed designs progress for the Pond 7 stormwater management facility, land agreements are expected to be completed with the Ministry of Transportation and MVCA agreement on release rates is expected to be resolved. MOE Environmental Compliance Approval (ECA) will be required. Specific MNR, DFO, and/or MVCA permits may be required prior to construction.

Under the proposed stormwater plan, the inflows through the Pond 4 ‘North Trunk’ will be reduced from the KWMSS, providing an opportunity to potentially reduce pipe sizes and reduce capital costs for installation. The change is not expected to have a negative impact

to the operation of the pond, and is not associated with negative environmental impacts (Muncaster Environmental Planning, July 2016). Regardless of the change in the 'North Trunk' stormwater sewer size, ECA No. 4298-9Q6HQ3 for ongoing construction of Pond 4 (***Appendix E***) did not include the 'North Trunk' sewer, so a Pond 4 ECA amendment is expected to be required to support development of the subject lands.

5.3.1 Minor System

The subject lands are expected to be serviced by an internal gravity storm sewer system that is to follow the local road network. As detailed designs progress, alignment and sizing of local storm sewers will be confirmed and servicing easements may be required, which may trigger minor amendments to the proposed lot fabric in the concept plan. The proposed alignment of the trunk storm sewer infrastructure within the subject lands differs from the KWMSS because of the changes to the proposed road network.

Table 8 summarizes the standards that will be employed in the detailed design of the storm sewer network, meeting the requirements in ***Section 5.2*****.**

The minor system will capture drainage for storm events up to and including the 5-year event (10-year event for arterial roads) through the use of inlet control devices (ICD). The drainage will be conveyed within an underground piped sewer system that will discharge to the proposed stormwater trunk sewers and stormwater management facilities according to ***Drawing STM-PRF*****.**

Rear yard catchbasins will capture drainage from backyards. Perforated catch basin leads will be provided, except the last segment with connection to the right-of-way will be constructed with solid pipe.

5.3.2 Hydraulic Grade Line

A detailed hydraulic gradeline (HGL) analysis will be completed for the proposed system at the detailed design level, based on the 100-year 4-hour Chicago, 12-hour SCS, and 24-hour SCS design storms. Other design storms and/or historical events may be considered at detailed design, as required. Detailed grading design and storm sewer design will be modified as required to achieve a 0.3 m freeboard between the 100-year HGL and all underside of footing elevations.

Table 8: Storm Sewer Design Criteria

Design Parameter	Value
Minor System Design Return Period	1:5 year
Major System Design Return Period	1:100 year
Intensity Duration Frequency Curve (IDF) 5-year storm event. A = 998.071 B = 6.053 C = 0.814	$i = \frac{A}{(t_c + B)^C}$
Minimum Time of Concentration	10 minutes
Rational Method	$Q = CiA$
Storm sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{2/3} S^{1/2}$
Runoff coefficient for paved and roof areas	0.9
Runoff coefficient for landscaped areas	0.2
Minimum Sewer Size	250 mm diameter
Minimum Manning's 'n' for pipe flow	0.013
Minimum Depth of Cover	2.0 m from crown of sewer to grade
Minimum Full Flowing Velocity	0.8 m/s
Maximum Full Flowing Velocity	6.0 m/s
Clearance from 100-Year Hydraulic Grade Line to Underside of Footing	0.30 m
Freeboard in Hydraulic Grade Line analysis	0.3 m between USF and 100-year hydraulic gradeline
Max. Allowable Flow Depth on Municipal Roads	30 cm above gutter
Extent of Major System	To be contained within the municipal right-of-way.
Stormwater Management Model	DDSWMM (release 2.1), SWMHYMO (v. 5.02) and XPSWMM (v. 10)
Model Parameters	Fo = 76.2 mm/hr, Fc = 13.2 mm/hr, DCAY = 4.14/hr, D.Stor.Imp. = 1.57 mm, D.Stor.Per. = 4.67 mm
Imperviousness	Based on runoff coefficient (C) where Percent Imperviousness = (C - 0.2) / 0.7 x 100%.
Design Storms	Chicago 3-hour Design Storms and 24-hour SCS Type II Design Storms. Maximum intensity averaged over 10 minutes.
Historical Events	July 1st, 1979, August 4th, 1988 and August 8th, 1996
Climate Change Street Test	20% increase in the 100-year, 3-hour Chicago storm
Extracted from City of Ottawa Sewer Design Guidelines, October 2012, and KWMSS.	

5.3.3 Major System

Major system conveyance, or overland flow (OLF), will be provided to accommodate flows in excess of the minor system capacity. OLF is accommodated by generally routing surface flow along the road network and service easements to the stormwater management facilities, per the drainage boundaries shown in ***Drawing STM-PRF.***

If the detailed design results in total (e.g. static + dynamic) depths greater than 30 cm or violations of the flow spread parameters in ***Section 5.2***, excess flows may be redirected

to a different overland flow route, attenuated in surface storage, or captured within the minor system in order to reduce flow depths/spread, if necessary.

Therefore, the proposed drainage systems are expected to safely capture and convey all storms up to and including the 100-year event in accordance with the requirements of the KWMSS and City standards.

5.4 Grading and Drainage

The proposed concept plan for the subject lands and associated fill requires closure of the Northwest Swale and Eastern Swale that are characterized in the Environmental Impact Statement (Muncaster Environmental Planning, July 2016). The Environmental Impact Statement concludes that sensitivity of the tributaries is low. Written authorization from MVCA pursuant to Ontario Regulation 153/06, MVCA's *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* regulation is required to fill the two swales, and is being addressed through a separate Headwater Assessment study. Additional permits from DFO may also be required.

Existing grades in the subject lands are below the 100-year floodplain elevation as reported by Mississippi Valley Conservation Authority (MVCA), based on their Feedmill Creek watershed study that is currently underway. Written authorization from MVCA pursuant to Ontario Regulation 153/06, MVCA's *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* regulation is required to fill site areas below the 100-year floodplain elevation and outside of the identified Feedmill Creek corridor. Based on preliminary consultation with the MVCA, it is understood that the proposed fill outside of the Feedmill Creek corridor is not expected to have a negative impact on the function of Feedmill Creek.

A detailed site grading scheme will be developed to minimize earthworks, to respect grade raise restrictions detailed in the geotechnical investigations (Paterson Group, July 2016), and provide major system conveyance to the receiving watercourses, as shown in ***Drawing STM–PRF.*** To achieve the planned stormwater drainage program and meet City of Ottawa guidelines pertaining to road and lot grading, final road grades in the subject lands are planned to be set at least to 106.5m – 107.5m, which requires about 2m of fill above existing ground.

The following additional grading criteria and guidelines will be applied to detailed design, per ***City of Ottawa Guidelines***:

- Driveway slopes will have a maximum slope of 5%;
- Slope in grassed areas will be between 2% and 5%;
- Grades in excess of 7% will require terracing to a maximum of a 3:1 slope;
- Rear house grades will be at least 0.30m above the spillover point in the swale;
- Front terrace grade will be at least 0.30m above overland spillover point on road;

- Swales are to be 0.15m deep with 3:1 side slopes unless otherwise indicated on the drawings; and,
- Perforated pipe will be required for drainage swales if they are less than 1.5% in slope.

5.5 Infiltration

The following Low Impact Development techniques should be considered for implementation as part of detailed design:

- Rear-yard swales should be designed with minimum grades where possible, to promote infiltration;
- Rear-yard catchbasin leads should be perforated (except for the last segment connecting to the storm sewer within the right-of-way), to promote infiltration;
- Surface ditches could be implemented within the district park (as opposed to storm sewers) to promote infiltration; and,
- Where evestroughs are provided on residential units, they are to be directed to landscaped surfaces, to promote infiltration.

Furthermore, the following techniques can be examined as part of detailed landscaping design of the stormwater pond block and the district park block:

- Amended topsoil (minimum 300mm thick) can be considered for use; and,
- Micro-grading can be considered to promote infiltration.

As detailed designs progress, a detailed site-specific water budget is to be undertaken to characterize pre-development and post-development infiltration for the subject lands.

The KWMSS calls for an increase of 25% in infiltration rates from pre-development levels for all areas subject to the KWMSS: for the subject lands, the KWMSS suggests pre-development infiltration rate is 70-100mm/yr. The existing subsurface conditions in the area and the amount of impervious surfaces - among other factors - have made it difficult to achieve this target for development applications to date within the KWMSS area. As such, soil and groundwater conditions will require further site-specific evaluation through the detailed design process, to determine the feasibility of achieving the post-development 25% increase in infiltration. Regardless, because the subject lands are not identified as a Significant Groundwater Recharge area in the Mississippi-Rideau Source Water Protection Plan, Schedule M (MVCA & RVCA, August 2014) (***Appendix F***), an infiltration deficit in the post-development scenario for the subject lands is not considered to have a significant negative impact on the natural heritage system (Muncaster Environmental Planning, July 2016).

5.6 Stormwater Servicing Conclusions

The proposed alignment of storm sewers differs from the KWMSS due to modifications to the street network and block layout under the planning application, and due to a proposed change in catchment area for the proposed stormwater management facilities. Whereas the KWMSS proposed drainage from the subject lands to be mainly treated by Pond 4, the current proposal is for Pond 7 to provide 100-year release rate of 8 l/s/ha and Enhanced Level quality treatment for a greater drainage area (all lands west of the North-South arterial road).

The remaining subject lands that are east of the North-South Arterial are to drain to Pond 4, via an off-site trunk storm sewer, as planned in the KWMSS. Pond 4 has been partially constructed under ECA No. 4298-9Q6HQ3, and is to provide Normal Level water quality control, erosion protection, and attenuate post-development peak flows to pre-development levels for all storm events up to and including the 10-year storm event.

The storm sewers will be sized by the Rational Method and inlet control devices (ICDs) will be used to restrict the capture rates to 5-year flow (10-year flow for arterial roads). Storm sewers sizing will be confirmed at the detailed design level, in conformance with MOE and City standards.

The major overland flows from the subject lands will be conveyed by public right-of-ways and servicing easements to the proposed stormwater management facilities for treatment. Low Impact Development techniques will be implemented, to promote infiltration of stormwater.

6.0 UTILITIES

Overhead hydro lines run along the Huntmar Drive right-of-way adjacent to the site. Clearances in accordance with the local authority will need to be observed. It is expected that Hydro One would provide service to the subject lands, however additional consultation is required.

The closest Enbridge gas infrastructure is believed to be located at the intersections of Huntmar Drive-Palladium Drive and Huntmar Drive-Maple Grove Road and within the existing residential neighbourhoods to the south of the subject lands. Service extending to the site may require connections to multiple existing infrastructure points: consultation with Enbridge gas is required to confirm the servicing plan for the subject lands.

Rogers Communications has service adjacent to the subject lands via pole-mounted utilities on Huntmar Road and within the existing residential neighbourhoods to the south of the subject lands. Consultation is required to confirm servicing plan for the subject lands. Similarly, Bell infrastructure is provided within the existing residential neighbourhoods to the south of the subject lands, and consultation is required to confirm the servicing plan for the subject lands.

7.0 EROSION AND SEDIMENT CONTROL

Soil erosion occurs naturally and is a function of soil type, climate and topography. The extent of erosion losses is exaggerated during construction where vegetation has been removed and the top layer of soil becomes agitated.

Prior to topsoil stripping, earthworks or underground construction, erosion and sediment controls will be implemented and will be maintained throughout construction.

Silt fence will be installed around the perimeter of the active part of the site and will be cleaned and maintained throughout construction. Silt fence will remain in place until the working areas have been stabilized and re-vegetated. Material stockpiles shall not be permitted within the Feedmill Creek corridor.

Catchbasins will have catchbasin inserts installed during construction to protect from silt entering the storm sewer system.

A mud mat will be installed at the construction access in order to prevent mud tracking onto adjacent roads.

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

- Limit extent of exposed soils at any given time.
- Re-vegetate exposed areas as soon as possible.
- Minimize the area to be cleared and grubbed.
- Protect exposed slopes with plastic or synthetic mulches.
- Install silt fence to prevent sediment from entering existing ditches.
- No refueling or cleaning of equipment near existing watercourses.
- Provide sediment traps and basins during dewatering.
- Install catchbasin inserts.
- Plan construction at proper time to avoid flooding.

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

- Verification that water is not flowing under silt barriers.
- Clean and change inserts at catch basins.

8.0 CONCLUSION AND RECOMMENDATIONS

The overall municipal servicing strategy for the 54.6 ha. subject lands was approved as part of the Kanata West Master Servicing Study (KWMSS) (Stantec, CCL, IBI, June 2006) and can be described as follows:

- Water supply is to be provided through extensions of the existing pressurized trunk watermain system.
- Waste water is to be conveyed through sanitary trunk gravity sewers to the Kanata West Pumping Station, which is currently being constructed.
- Stormwater runoff is to be conveyed via storm trunk gravity sewers (minor system) and overland flow routes (major system) to designated off-site stormwater management facilities: one new stormwater management pond outletting to Feedmill Creek (Pond 7) and one existing stormwater management pond outletting to the Carp River (Pond 4).

This Functional Servicing Study (FSR) (DSEL, July 2016) provides details on the planned on-site and off-site municipal services for the subject lands, highlights proposed deviations from the KWMSS, and explains that adequate municipal infrastructure capacity is expected to be available for the planned development of the subject lands.

- This FSR proposes alternative alignments for trunk sewer and watermain infrastructure as compared to the KWMSS, to achieve orderly and cost-effective development given the proposed phasing of the subject lands and having regard for how the MSS area has built out since the original 2006 study. Proposed sewer and watermain alignments are within the urban area and within planned municipal road right-of-ways or planned servicing easements. Sanitary flows from the subject lands are proposed to be conveyed in a new wastewater trunk sewer along Huntmar Drive to the existing Maple Grove Road Trunk Sewer and Kanata West Pump Station. There is sufficient capacity in the existing Maple Grove Road Trunk Sewer to accommodate this realignment.
- This FSR details the planned location and sizing of Pond 7, which is a new stormwater management wet pond that is to be constructed within lands currently owned by the Province (represented by Ministry of Transportation). Pond 7 is to outlet to Feedmill Creek via a series of existing ditches and culverts under Highway 417 and its interchange with Palladium Drive. Pond 7 was identified in the approved KWMSS, but the proposed facility footprint is proposed to shift and expand in order to achieve orderly and cost-effective development of the subject lands. The expanded Pond 7 is proposed to receive all stormwater runoff within the part of the subject lands that is west of the arterial road (40.8 ha), allowing that portion of development to proceed in one phase. The Pond 7 stormwater management system is to be designed to meet MOE Enhanced Level of suspended solid removal before stormwater is discharged to Feedmill Creek. A maximum 100-year storm event 8 L/s/ha release rate is to be applied to the Pond

7 design, per City of Ottawa direction, to respect the flow regime of Feedmill Creek. As such, Pond 7 is expected to require 40,000 m^3 of storage.

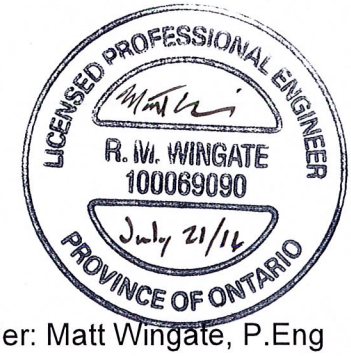
- The remaining subject lands that are east of the arterial (13.8 ha.) are to drain to Pond 4, via an off-site trunk storm sewer, as planned in the KWMSS. Pond 4 is partially constructed under ECA No. 4298-9Q6HQ3, and is to: provide Normal Level water quality control; provide erosion protection; and attenuate post-development peak flows to pre-development levels for all storm events up to and including the 10-year storm event. To convey flows to Pond 4, a new stormwater trunk sewer will be required through easements and future road right-of-ways, per the KWMSS.
- To achieve the planned stormwater drainage program and meet City of Ottawa guidelines pertaining to road and lot grading, final road grades in the subject lands are planned to be set at least to 106.5m – 107.5m, which requires about 2m of fill above existing ground.
- Low Impact Development (LID) techniques are to be implemented where possible, as part of detailed design.

Prior to detailed design of the infrastructure presented in this report, this FSR will require approval under the Planning Act as supporting information for the Official Plan Amendment, Zoning By-law Amendment, and Plan of Subdivision applications. Project-specific approvals are also expected to be required from the City of Ottawa, Ministry of Environment and Climate Change, Ministry of Transportation, Department of Fisheries and Oceans, Ministry of Natural Resources and Forestry, and Mississippi Valley Conservation Authority.

Prepared by,
David Schaeffer Engineering Ltd.

Per: Laura Maxwell, B.Sc.(Civil Eng)

Reviewed by,
David Schaeffer Engineering Ltd.



Per: Matt Wingate, P.Eng

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APPENDIX A

- Pre-Consultation Notes, City of Ottawa
- MVCA Comment Letter
- Pond 7 Release Rate Correspondence
- Servicing Guidelines Checklist

MEETING NOTES

Pre-Application Consultation Meeting
Cavanagh/Shenkman Subdivision – Kanata West
March 30, 2016 - Councillors' Lounge, City Hall

Attendees: **City Staff:**
David Wise (Program Manager, City of Ottawa)
Louise Sweet-Lindsay (Planner, City of Ottawa)
Chris Ogilvie (Project Manager, City of Ottawa)
Riley Carter (Transportation Project Manager, City of Ottawa)
Mark Young (Urban Design Planner, City of Ottawa)
Matthew Hayley (Environmental Planner, City of Ottawa)
Diane Emmerson (Parks Planner, City of Ottawa)
Tracy Tang (Planning Student, City of Ottawa)
Royce Fu (Policy Development and Urban Design Branch, City of Ottawa)
Max Walker (OC Transpo)
MVC Staff – Victoria Hard and Craig Cunningham
Applicant:
Kevin McCrann, Shenkman
Peter Hume, HP Urban
Miguel Tremblay, Fotenn Consultants
Doug Kelly, Soloway Wright
Chris Collins, Cavanagh
Chris Gordon, Parsons
Bernie Muncaster

Subject: Pre-Application Consultation Meeting- Official Plan Amendment, Plan of Subdivision and Zoning By-law Amendment Applications– Proposing:
Enterprise Designation - Proposing 50% residential and 50% employment in conjunction with MTO lands to the north. Plan of Subdivision to permit a total of 600-1000 residential units (single detached dwellings, stacked townhouses), 1 block for District Park, 3 blocks for auto dealerships.
Mixed Use Centre – Proposing mixed use including lands for medium density residential (towns, stacked, apartment) and 1-2 blocks for commercial use.

APPLICANT PROPOSAL AND OVERVIEW:

The development is part of the Kanata West Concept Plan. Two concept plans are presented: Concept 3, with a north-south arterial road that forms a t-intersection, and Concept 4, with an alignment which matches the TMP for north-south arterial road. The district park is proposed to be located in the far north-west corner of the Enterprise designation, with a size of 27.5 acres.

- Transportation Comments (Chris Gordon): The June 2006 EA is outdated, and road layouts and functions have changed since it was completed. A rationale has been prepared for the proposed road realignments with the goal of maximizing land uses. Both of the concept plans proposed aim to achieve the same capacity, but the applicant has a preference for Plan 3, which has an orderly grid layout, better connectivity and access points, and a strong combination of transportation and land use.
- Planning Comments (Miguel Tremblay) : For the residential areas, 600-1000 units are proposed, depending on the mixed use. These blocks may be low apartments, townhouses, or stacked townhouses. The "yellow blocks" are proposed to be single detached residential zones. A blended approach is taken based off of the OPA 150, with diversity in the types and height of residential dwellings. The applicant is willing to be flexible with the plan, as long as there is sensitivity to the larger roadways.
- Servicing Comments: The stormwater pond would be located on MTO lands near the on/off ramp to Highway 417. In following the site's natural drainage, the parcel would be squared off and stormwater would drain into Pond 7. Stormwater on the eastern portion of the site would drain into Pond 4, while stormwater on the western portion would drain into Pond 7. In terms of grading, there is a layer of silty clay present in the north-west corner of the property, as well as a 2m grade raise restriction. In this area, the park and auto dealership use are proposed. The development will be served by Kanata West pump station. Trunk sewers will be extended with new sewers going east, which is under the control of Urbandale. Although water servicing in the area is straightforward, a hydraulic study will be conducted.

MVC PRELININARY COMMENTS: - Comments will be provided under separate cover

STAFF PRELMINARY COMMENTS:

Policy (Royce Fu):

- Royce Fu provided an update on the timing of the Employment Lands Study. The draft report will be available in April with a report to Council in the fall of 2016. City initiated OPA will follow in 2017.
- The applicant will need to submit a private Official Plan Amendment for this development if they wish to receive approval of the subdivision and zoning prior to the ELS and implementing OPA being approved by the City. Consideration must be put into how the OPA will impact MTO lands, the stormwater pond, and the road network. It is important to demonstrate that lands for 50% employment uses will be maintained and developed at appropriate density. Staff will have a further meeting with the applicant to discuss the OP policy framework in further detail.

Environmental (Matthew Hayley):

- Matthew Hayley advised that the site is within an area of habitat for a threatened or endangered species and a detailed Environmental Impact Statement (EIS) will be required. Blanding's turtles habitat is present as they were located within 2 km of an observation. Matthew advised that they contact Kemptville District MNRF identify what species at risk need to be addressed in addition to the Butternut trees and Blanding's turtles. EIS must also assess the wetlands on the site and any potential impact to them. **Please contact Laura Melvin** and/or a Management Biologist at MNRF Kemptville and request for additional information. Although we didn't discuss this at the pre-application consultation, working collaboratively with

neighbouring landowners on the Blanding's turtle habitat permitting under the ESA may be advisable.

- Although the wetlands are not Provincially Significant, they maybe MVC Regulated in addition to being regulated under the Endangered Species Act.
- In addition to the species at risk, the EIS will need to address all components of the natural heritage system as described by the OP Section 2.4.2. This would include significant woodlands and significant wildlife habitats among other aspects described in the above referenced policies.
- A tree conservation report (TCR) will be required as well. Matthew suggests that the applicants survey the site for existing trees that can be potentially integrated into the final design. He reiterated the importance of conserving as many healthy existing trees as possible. Please contact Mark Richardson, Planning Forester, for additional details on tree conservation and tree removal permits.
- Feedmill Creek – the watercourse setback for Feedmill Creek may encroach onto part of this property. The setback for Feedmill Creek is the 30 m from normal highwater mark, floodplain or geotechnical hazard (e.g., meander belt and/or unstable slope) whichever is greater. There is also a minimum corridor width.
- The proposal will also require an Integrated Environmental Review (OP Section 4.7.1). We are requesting that the applicant include a draft version of the IER as part of their planning rationale. The intent of this request is to better integrate environmental issues into each of the supporting studies and the proposal's design. As the OP states, "[environmental] design components will be considered basic inputs...and must be assessed and considered prior to establishing an initial design or lot pattern." This will help inform the proposal's design and expedite the registration process. While we understand each study will not be complete at the time of drafting the IER, we request the draft IER to demonstrate that each supporting study has considered the subject property and surrounding environment, and identified potential environmental concerns and constraints, all recommendations and analyses of relevant policies, watershed and sub watershed studies (Feedmill Creek) and federal or provincial assessment documents, and the potential implications of these constraints on each aspect of the proposal and the associated supporting studies and the interactions between these studies and their potential recommendations and how the principles of design with nature have been applied. Full details of the IER requirements are available in OP Section 4.7.1.

Parks (Diane Emmerson):

- Diane Emmerson commented that the vision for the district park is for a fully developed active park with various recreation facilities including: four full size soccer fields, and one mini field (possible on full sized CFL football in lieu of one soccer field), four tennis courts with lighting, a fully board rink with lights, a field house and parking for these facilities and a neighborhood park components for adjacent residential neighborhood. Diane noted that the numerous constraints (environmental, wetland, grade raise restriction, etc.) which have been identified, may make parts of the park non-developable, for active park facilities. Any portion of the park that is constrained and cannot be fully developed will not be acceptable as parkland. She advised that the constraints need to be fully identified and defined (exact shapes and sizes) before locating the park and defining the size of the park block . Any identified constraints located on the proposed District Park will not count towards the required parkland dedication. Consideration could be given to transferring the constraint lands at no cost to the City but it would outside the boundary of the park.

- Following completion of detailed studies in support of the Plan of Subdivision application (i.e. EIS and servicing reports), which better define the type of constraints that exist; it may be staffs' recommendation to not locate the District park in the proposed N-W corner and to locate it as per the KWCP.

Transportation (Riley Carter):

- Riley Carter advised that a Noise Feasibility Study will be required as part of the application package. A detailed study will be required prior to registration.
- If major revisions are proposed to the road network, it will require a revision to KWCP Master Transportation Study. It is recommended that it be done on a comprehensive basis in conjunction with other adjacent landowners who may also be proposing revisions to determine effects on adjacent communities, not just what is on the site. Amendments may be required for any EAs that have been completed and OP Schedules (Schedule E -Urban Road Network) for any major road changes. Do not want the studies to be completed on a piece-meal basis. Please contact Riley Carter at extension 14304 to discuss further (if needed).
- Expiration dates for KWCP completed EAs will need to be investigated.
- If no major changes are made to the already approved KWCP Master Transportation Study then a CTS will be needed for draft plan submission, if changes are made to the approved plan then the updated KWCP Master Transportation Study will be sufficient for the draft plan submission. A TIS will be required at time of subdivision registration.
- Roundabouts must be considered at all intersections before selecting traffic signals.
- OC Transpo (Max Walker): There are plans to have OC Transpo transit service through the proposed subdivision, but because Stittsville Main Street is not yet completed, it is difficult to map transportation routes and predict modal splits. Additionally, the communities to the south of the proposed subdivision will be difficult to get to (Maple Grove Road from Stittsville Main Street) with the layout of the road network. The applicant may be required to front-end Stittsville Main Street.

Servicing and Stormwater Management (Chris Ogilvie):

- Chris commented that given that the proposed land use is different from the KWCP and given the revisions to the transportation network and the routing of the network, a revision to the Master Servicing study will be required.
- JF. Saborin is currently completing a criteria study for feedmill Creek which will give further direction for swm criteria. This study is planned to go to Committee and Council for approval Q4 of 2016.
- The stormwater pond on MTO lands will need to be in City Ownership and possible option is to include on the M-plan for the Plan of Subdivision and transferred to the City at the time of registration.
- There are significant trunk sewers to be constructed for these lands to proceed and any revision to the servicing must be examined to determine impact on adjacent landowners and Master Servicing Study.
- There are no concerns with water services as there is sufficient supply and good access. There may be a requirement for looping down Stittsville Main Street.
- City could not support approval of the OPA to permit single detached housing without first approving the revision to the MSS.

Urban Design (Mark Young):

- A modified grid layout with lower density on the western portion of the lands is the most preferable design. The density should increase as the blocks get closer to the Mixed Use Centre in accordance with the Kanata West Concept Plan, while keeping the single detached dwellings on the western portion of the lands. Please consider fronting units along the collector roads to avoid the use of noise walls. In terms of design and layout, adjustments could be made based on either one of the proposed north-south arterial road concepts (3 or 4).
- Detached Dwellings are not permitted within the Mixed Use Centre designation.
- A design brief (high level) will be required with the application submission package.
- UDRP review is required for the Mixed Use Centre lands.

Other Planning Matters and Closing

- David Wise commented that he was concerned the proposed auto dealerships did not conform to the OP. Miguel Tremblay commented they were given Section 3.6.5 Policy 2 b.
- It was confirmed that a meeting to discuss just the OP and possible amendments will be arranged in the near future.
- Staff encouraged the applicant to forward any revised concepts prior to formally submitting the applications. Staff would also be willing to meet again to discuss any new proposals.
- Show proposed lotting for single detached on the Plan of Subdivision versus large Blocks only.
- The City Staff would appreciate the applicant organizing a site tour in the spring.
- It is recommended that the Ward Councillor be contacted and advised of the proposed applications.
- List of Required Studies and Plans – attached.

Conservation Partners
Partenaires de conservation

Mississippi Valley Conservation Authority / Office de protection de la nature de la vallée Mississippi

OFFICE DE PROTECTION DE LA NATURE DE LA VALLÉE RIDEAU / RIDEAU VALLEY CONSERVATION AUTHORITY

SOUTH NATION CONSERVATION / DE LA NATION SUD

April 19, 2016

City of Ottawa
Planning and Growth Management Department
110 Laurier Avenue West, 4th Floor
Ottawa, Ontario K1P 1J1

Attention: Louise Sweet-Lindsay

Subject: **Pre-Application Consultation Comments**
Cavanagh/Shenkman Lands – Kanata West
Palladium Drive at Huntmar Drive
City of Ottawa (Kanata)

Dear Ms. Sweet-Lindsay:

The Mississippi Valley Conservation Authority (MVCA) has compiled comments with regards to possible future development on the lands located in Kanata West, City of Ottawa. The site has a total land area of 55.85 hectares (138 acres), east of Palladium Drive and north of Maple Grove Road. We have considered this pre-application relative mainly to MVCA's regulatory requirements under Section 28 of the *Conservation Authorities Act*. The proposal has also been reviewed in association with the Carp River Watershed/Subwatershed Study (CRWSS), 2005, Kanata West Concept Plan (Corridor Width Limits Rationale), 2009, and the Provincial Policy Statement (PPS), 2014. The following is for your consideration.

Development Constraints/Hazards:

Natural Hazards (Meander Belt)

Feedmill Creek is the main natural heritage feature on the subject lands and the focus of MVCA's comments.

1. The Corridor Width Limits Rationale that was prepared for Kanata West describes the Feedmill Creek corridor width to be 70 meters for this section of the watercourse. These corridor calculations precede the flood plain mapping that was completed for Feedmill Creek by MVCA. The new flood plain information supersedes the corridor limits and erosion hazard. The corridor limit for Feedmill Creek is the greater of the following criteria:
    a. Floodplain limit
    b. Setback from normal highwater mark (30 meters)
    c. Meanderbelt allowance
    d. 5 meter setback from top of defined bank or 13 meters from top of defined bank to include pathway requirements (pathway/private lands/development).
2. The Corridor Rationale outlines that an erosion hazard in the form of a meander belt applies along Feedmill Creek.
3. The hazard extends onto the property; therefore the development boundary will need to consider the extent of the meander belt hazard in addition to providing a safe access allowance measured from the edge of the meander belt.

Natural Hazards (Spill/Flood Plain)

1. MVCA floodplain mapping for Feedmill Creek has been completed and approved by MVCA's Board of Directors, however the existing mapping is subject to change as a result of development to the north of the subject lands.
2. A spill area covers the entire property which extends all the way east until it meets the Carp River. The spill hazard must be addressed in order for the subject lands to be developed.
3. A permit from the MVCA is required to develop within the regulation area surrounding Feedmill Creek and the spill hazard.

Setback from Water

1. According to the CRWSS, the current condition of the stream channel for Feedmill Creek within the subject site is Very Good. By maintaining the existing shoreline within the flood plain and a vegetated buffer, it will serve an important function for maintaining water quality of Feedmill Creek and the Carp River.

Wetlands

MVCA's GIS mapping, which is based on the provincial Ministry of Natural Resources and Forestry (MNRF) Natural Resource Values Information System data, shows that a significant portion of the western section of the subject lands contains wetlands.

1. We understand that the aforementioned wetlands have not been evaluated; therefore, they are not currently deemed to be a *significant* natural heritage feature as defined in the Provincial Policy Statement (PPS). However, given the numerous benefits of all wetlands, MVCA strongly encourages their preservation. These benefits include: attenuation of flood water; serving as a groundwater recharge/discharge area and providing a more stable source of water during low water conditions; filtering our drinking water; and providing habitat to many species of flora and fauna (often including fish). They may also provide connectivity and function to *Natural Heritage Systems*, as defined in the PPS (2014). Therefore, a development setback of a minimum 30 m from any wetland is recommended. In absence of a more thorough analysis of the wetland boundary by a professional on site, MVCA will defer to existing GIS mapping for the boundary of the wetlands.
2. MVCA provided comments on February 5, 2016, relating to MVCA's wetland policy updates and how it pertains to the subject lands. It was determined that the wetlands on the subject lands will not be included in any future revisions or subject to any future policies with the update.
3. Wetlands inherently consist of organic soils. Due to the poor drainage and unstable characteristics of these soils, they are not suitable for development. Therefore, development should be directed outside of these areas or the applicant will need to demonstrate how the hazard will be addressed. MVCA's available mapping shows the potential extent of the hazard.
4. The geotechnical investigation that is to be conducted should include a focus on determining the presence and location of organic soils.

Watercourses and Fish Habitat

1. Feedmill Creek flows along the western edge of the property and encompasses the subject lands in its entirety as floodplain. As a result, the property is not currently developable. This hazard will need to be addressed prior to moving forward with this application.
2. Feedmill Creek is classified as a cold water fish community that provides permanent fish habitat. The CRWSS designates the benthic community of the Feedmill Creek to be Good Water Quality.
3. In accordance with the City's planning documents, as well as guidelines prepared in support of the PPS, CRWSS and Kanata West Corridor Rationale, a minimum 30 m development setback is recommended from any watercourse. In addition, we recommend a minimum 15 m vegetated buffer be maintained.

4. If the tributaries on the site are proposed to be realigned, a permit from MVCA will be required. In addition, we require that a natural channel design and enhanced channel conditions be incorporated.
5. The applicant will need to contact the Department of Fisheries and Oceans (DFO) if any fish habitat is to be disturbed or removed due to development.

Storm Water Management:

MVCA engineering staff have provided the following with regards to stormwater quantity and quality management and with reference to the CRWSS.

1. Per the CRWSS, Feedmill Creek supports a Type 1 and 2 fish community and the study includes infiltration and temperature targets. MVCA recommends measures to maintain infiltration and reduce water temperatures be considered and implemented where possible at the site.
2. Per the CRWSS, quality treatment corresponding to an enhanced level of protection is recommended.
3. If the site is proposed to outlet directly to Feedmill Creek, MVCA can provide additional stormwater management recommendations and as well as permit requirements.

Conclusion / Recommendations:

Considering the aforementioned information, please consider the following additional recommendations:

1. Under Ontario Regulation 153/06, written permission from MVCA is required prior to any development within MVCA's regulation limit.
2. MNRF needs to be consulted regarding possible Species at Risk (SAR) and associated habitat on this site.
3. Our opinion is that the vegetated area surrounding Feedmill Creek serves as an important natural buffer. The protecting forest cover helps meet City objectives for tree cover; the forested area is a natural buffer to the watercourse and an important linkage for wildlife; and, the forested area serves an important function for maintaining water quality of Feedmill Creek and the Carp River.
4. We advise that a constraints map be provided outlining all natural heritage features and natural hazards on the subject lands.
5. The MVCA will also review the EIS that the applicant submits to the City. MVCA strongly recommends that the applicant address the EIS/natural heritage feature concerns prior to conducting Geotechnical studies or any other work due to the challenges they will present.
6. DFO may need to be contacted if fish habitat is to be disturbed. It should also be determined in the EIS whether the watercourses and wetland contains/constitutes as fish habitat.

Please note that areas subject to MVCA's Regulation Policies include the following lands identified adjacent to natural heritage features and hazards. The extent of this Regulation Limit is measured from the boundary of the following:

- 15 meters flood plain
- 15 meters meander belt

MVCA's Regulation Limit will extend beyond the greatest hazard, whether it is the meander belt or the spill/flood plain. Under Ontario Regulation 153/06, written permission from MVCA is required prior to any development within the adjacent lands, interference with wetlands and any alterations to shorelines and watercourses. Additional restrictions and limitations will apply to development within the Regulation Limit of natural heritage features and natural hazards.

Thank you for providing the opportunity to the Conservation Authority to provide comments during the pre-consultation period. We trust these comments will meet your requirements at this stage in the review process. Please advise us of any developments with this file. Any questions may be directed to the undersigned.

Yours truly,

Victoria Hard.

Victoria Hard, EPt
Assistant Planner

Steve Pichette

From: Ogilvie, Chris [Chris.Ogilvie@ottawa.ca]
Sent: June-13-16 10:52 AM
To: spichette@dsel.ca
Subject: Pond 7

Hey Steve,

At this time for preliminary sizing a maximum release rate of 8 l/s/ha should be used into Feedmill Creek for pond 7

Thanks
Chris

DEVELOPMENT SERVICING STUDY CHECKLIST

4.1 General Content		
☒	Executive Summary (for larger reports only).	N/A
☒	Date and revision number of the report.	Title Page & Header
☒	Location map and plan showing municipal address, boundary, and layout of proposed development.	Figure 1
☒	Plan showing the site and location of all existing services.	Drawings STM, SAN, WTR
☒	Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	Section 1, Section 3-5
☒	Summary of Pre-consultation Meetings with City and other approval agencies.	Appendix A
☒	Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.	Section 1, Sections 3-5
☒	Statement of objectives and servicing criteria.	Section 1, Sections 3-5
☒	Identification of existing and proposed infrastructure available in the immediate area.	Sections 3-6
☒	Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	Sections 1, 2, 5
☒	Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	Section 5
☒	Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	Addressed in KWMSS, reference to EIS (Muncaster Environmental Planning, July 2016) in Section 2
☒	Proposed phasing of the development, if applicable.	Landowner preference, referenced in Section 1 & 5
☒	Reference to geotechnical studies and recommendations concerning servicing.	Section 1, 2 & 5
☒	All preliminary and formal site plan submissions should have the following information: -Metric scale -North arrow (including construction North) -Key plan -Name and contact information of applicant and property owner -Property limits including bearings and dimensions -Existing and proposed structures and parking areas -Easements, road widening and rights-of-way -Adjacent street names	Bearings, dimensions, easements and ROWs provided in Draft Plan of Subdivision (Stantec, July 2016). All other provided in Drawings STM, SAN, WTR.

4.2 Development Servicing Report: Water		
☒	Confirm consistency with Master Servicing Study, if available	Sections 3
☒	Availability of public infrastructure to service proposed development	Sections 3
☒	Identification of system constraints	Sections 3
☒	Identify boundary conditions	Table 4 to be used by City to provide boundary conditions.

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	Confirmation of adequate domestic supply and pressure	Reference to future hydraulic model using City boundary conditions.
☒	Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	Reference to future hydraulic model using City boundary conditions.
☒	Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	Reference to future hydraulic model using City boundary conditions.
☒	Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	Reference to future hydraulic model using City boundary conditions. No phasing identified at this time.
☒	Address reliability requirements such as appropriate location of shut-off valves	Reference to future hydraulic model using City boundary conditions and future detailed design of watermain network.
☐	Check on the necessity of a pressure zone boundary modification	N/A – to be serviced by Pressure Zone 3W per KWMSS
☒	Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range	To be serviced by Pressure Zone 3W per KWMSS. Reference to future hydraulic model using City boundary conditions.
☒	Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	Section 3, Drawing WTR, & reference to future hydraulic model using City boundary conditions.
☒	Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	Section 3, Drawing WTR, & reference to future hydraulic model using City boundary conditions.
☒	Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Table 3 & 4
☒	Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	Drawing WTR & reference to future hydraulic model using City boundary conditions.

4.3 Development Servicing Report: Wastewater

☒	Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	Table 5
☒	Confirm consistency with Master Servicing Study and/or justifications for deviations.	Section 4
☒	Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.	No special constraints identified to date.
☒	Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 4

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)	Section 4 & Appendix D
☒	Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	Section 4 & Appendix D
☒	Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 4 & Drawing SAN
☒	Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	Section 1 & 2
☒	Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	Section 4 – treated by KWPS per KWMSS
☐	Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
☐	Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	N/A
☐	Special considerations such as contamination, corrosive environment etc.	N/A

4.4 Development Servicing Report: Stormwater Checklist

☒	Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 5
☒	Analysis of available capacity in existing public infrastructure.	Section 5
☒	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Drawings STM-EX, STM-MSS & STM-PRF
☒	Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	Section 5.2, Appendix A
☒	Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 5.2
☒	Description of the stormwater management concept with facility locations and descriptions with references and supporting information	Section 5 & Appendix E
☐	Set-back from private sewage disposal systems.	N/A
☒	Watercourse and hazard lands setbacks.	Section 1
☐	Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	To be addressed as development application proceeds.
☒	Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	Section 5
☒	Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).	Section 5 & Appendix E for Pond 7 storage requirements.

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	Sections 1, 2 & 5
☒	Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	Section 5
☒	Any proposed diversion of drainage catchment areas from one outlet to another.	Section 5, Drawings STM-EX, STM-MSS & STM-PRF
☒	Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	Section 5, Drawings STM-EX, STM-MSS & STM-PRF
☐	If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	N/A
☒	Identification of potential impacts to receiving watercourses	Section 5, Drawings STM-EX, STM-MSS & STM-PRF
☐	Identification of municipal drains and related approval requirements.	N/A
☒	Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 5
☒	100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	Section 5
☒	Inclusion of hydraulic analysis including hydraulic grade line elevations.	Reference in Section 5
☒	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Section 7
☒	Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	Section 5
☒	Identification of fill constraints related to floodplain and geotechnical investigation.	Sections 1 & 5

4.5 Approval and Permit Requirements: Checklist

☒	Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement ct. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.	Table 1
☒	Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	Table 1
☐	Changes to Municipal Drains.	N/A
☒	Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	Table 1

4.6 Conclusion Checklist

☒	Clearly stated conclusions and recommendations	Section 8
☐	Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	N/A – First Submission

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	Section 8

APPENDIX B

Excerpts from Kanata West Master Servicing Study (Stantec, CCL, IBI, June 2006)

Stantec Consulting Ltd.
1505 Laperriere Avenue
Ottawa ON Canada
K1Z 7T1
Tel. 613.722.4420
Fax. 613.722.2799
www.stantec.com

Legend

- KANATA–WEST CONCEPT PLAN BOUNDARY
- EXISTING WATERMAIN
- EXISTING 610mm WATERMAIN TO BE UPGRADED TO 914mm
- EXISTING 610mm WATERMAIN TO BE UPGRADED TO 762mm
- PROPOSED 610mm DIA. WATERMAIN
- PROPOSED 406mm DIA. WATERMAIN
- PROPOSED 305mm DIA. WATERMAIN
- PROPOSED 203mm DIA. WATERMAIN

Notes

INTERNAL WATERMAIN SIZE ARE EXPECTED TO VARY FROM 152mm TO 305mm.

CCL/IBI

	Revision	By	Appd.	Date
5	REVISED FOR DEC.21/05 SUBMISSION	GBU	SJP	DEC.21/05
4	REVISED AS PER CITY COMMENTS (Sept.16/05)	GBU	MAF	OCT.28/05
3	REVISED WATER DISTRIBUTION NETWORK	GBU	S.J.P.	AUG 09/05
2	REVISED POND 1 AREA	NI	MAF	JUNE 09/05
1	REVISED LOTTING FOR TARTAN AND MATTAMY	BCB	SJP	JAN.18/05

File Name: Dwn. Chkd. Dsgn. Date

Seals

Client/Project

Kanata West Concept Plan
Master Servicing Study

Ottawa, Ontario

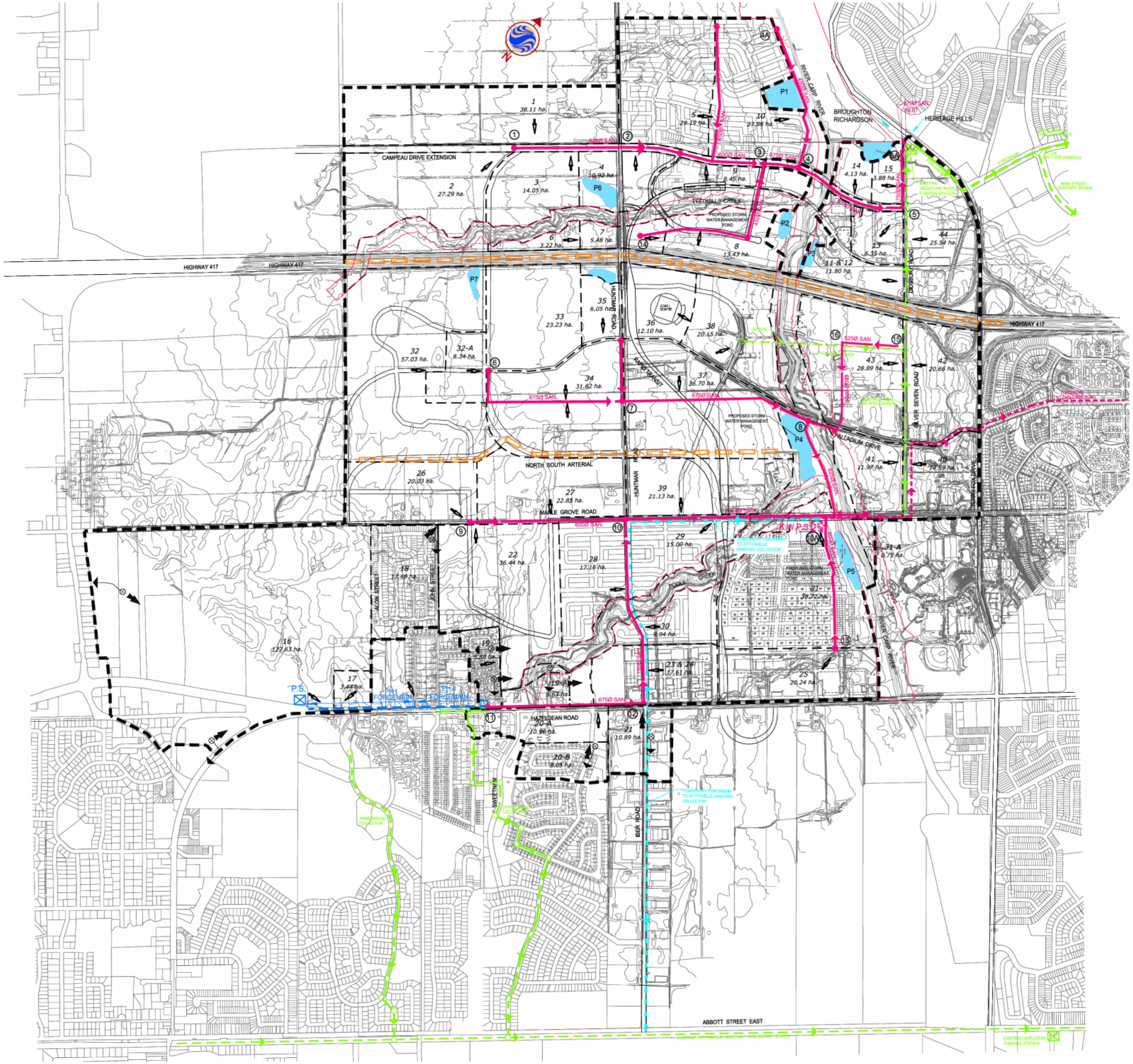
Title

Watermain
Final Concept

Project No. 60400406 — Scale 1:7500 (0 75 225 375m)

Drawing No. WM-1 — Sheet 2 of 7 — Revision 5

W:\active\160400406\design\drawing\160400406-Servicing (Final C).dwg 2005-12-19 01:00PM By: gulsk



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CCL/IBI
Cumming Cockburn Limited
1770 WOODWARD DR., OTTAWA (613)225-1311

Legend

- ULTIMATE MAJOR DRAINAGE LIMIT
- SUBCATCHMENT AREAS
- PROPOSED TRUNK SEWER
- PROPOSED FORCEMAIN
- TEMPORARY FORCEMAIN
- PROPOSED STITTSVILLE PUMPING STATION AND FORCEMAIN
- EXISTING TRUNK SEWER
- MAJOR DRAINAGE SPLIT
- NODES
- EXISTING PUMPING STATION AND FORCEMAIN (TO BE DECOMMISSIONED)
- 44 25.54 ha. INPUT POINT AND AREA IN HECTARES
- EXISTING PUMPING STATION GRAVITY OUTLET

	Revision	By	Appd.	Date
5	REVISED FOR DEC.21/05 SUBMISSION	G.B.U.	S.J.P.	05:12:21
4	REVISED TRUNK SEWER FROM 16 TO KWPS	R.W.W.	R.W.W.	05:10:05
3	ARROWS FOR EXIST. PUMP STATIONS ADDED	R.W.W.	R.W.W.	05:08:09
2	REPORT JUNE 2005	R.W.W.	R.W.W.	05:06:07
1	REPORT APR. 2005	R.W.W.	R.W.W.	05:04:20

File Name: Dwn. Chkd. Dsgn. Date

Seals

Client/Project

Kanata West Concept Plan
Master Servicing Study

Ottawa, Ontario

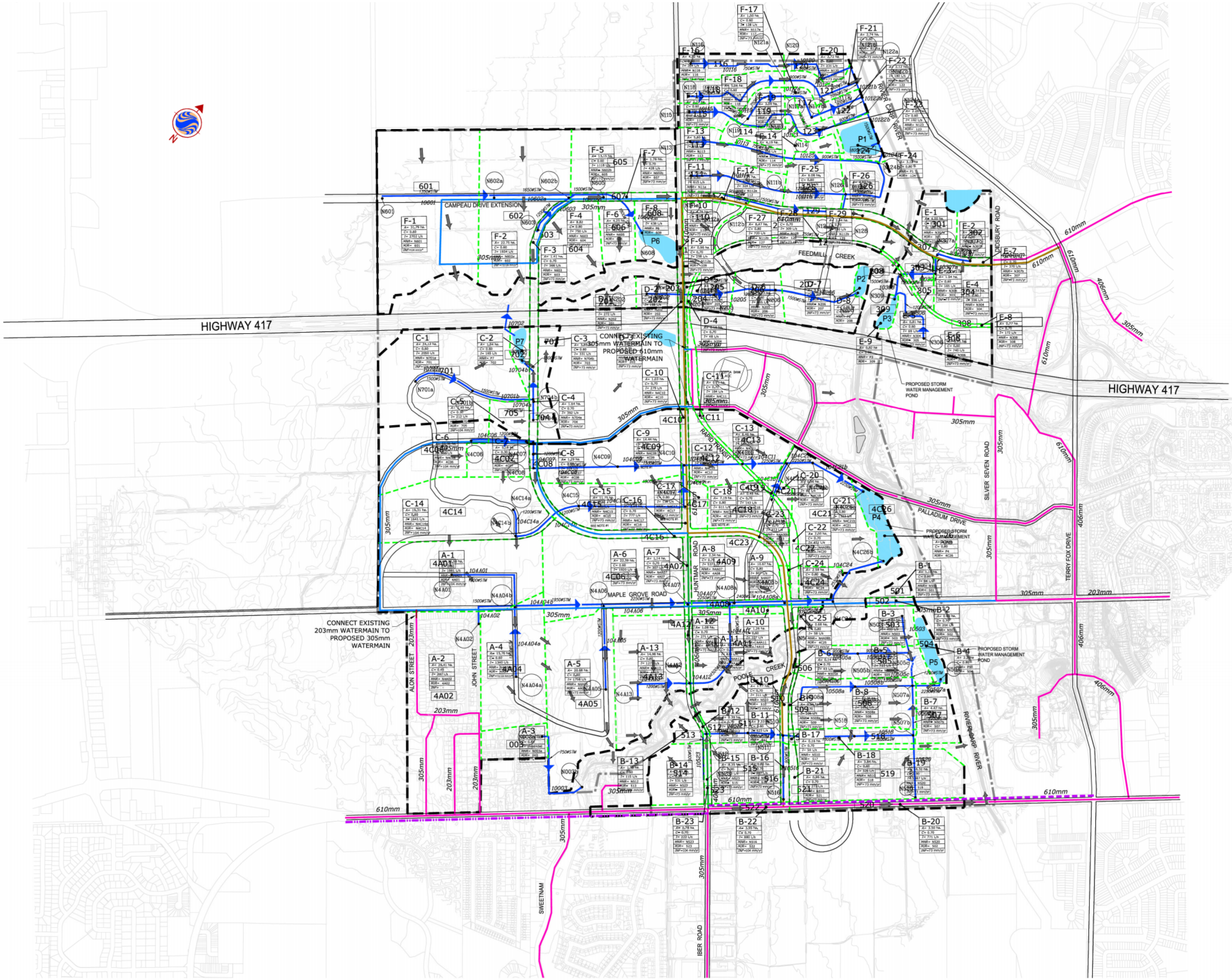
Title

Preferred Waste-Water Option

Project No. 60400406
Scale 1:7500 (0 75 225 375m)

Drawing No. S-I
Sheet 7 of 7
Revision 5

V:\01-604\active\160400406\design\drawing\CD\2006-09-27\West Kanata Dwg S-1-Dec_05.dwg
Layout Name: S-I
Last Saved By: skokear Sep 27, 2006 – 3:17pm



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2006-09-27 04:28PM By: skolesar

Stantec

Stantec Consulting Ltd.
1505 Laperriere Avenue
Ottawa ON Canada
K1Z 7T1
Tel. 613.722.4420
Fax. 613.722.2799
www.stantec.com

Legend

— · — · —	KANATA–WEST CONCEPT PLAN BOUNDARY
1500ØSTM	PROPOSED STORM SEWER & SIZE
N100	STORM NODE
10304	STORM SEWER IDENTIFICATION

CCL/IBI
Cumming Cockburn Limited
1770 WOODWARD DR., OTTAWA (613)225–1311

2	REVISED FOR DEC.21/05 SUBMISSION	GBU	SJP	DEC.21/05
1	REVISED AS PER CITY COMMENTS (Sept.16/05)	GBU	MAF	OCT.28/05
Revision		By	Appd.	Date

File Name: 160400406	LM	MAF	MAF	AUG./05
	Dwn.	Chkd.	Dsgn.	Date

Seals

Client/Project

Kanata West Concept Plan
Master Servicing Study

Ottawa, Ontario

Title

MODEL SCHEMATIC
STORM SEWER MINOR SYSTEM

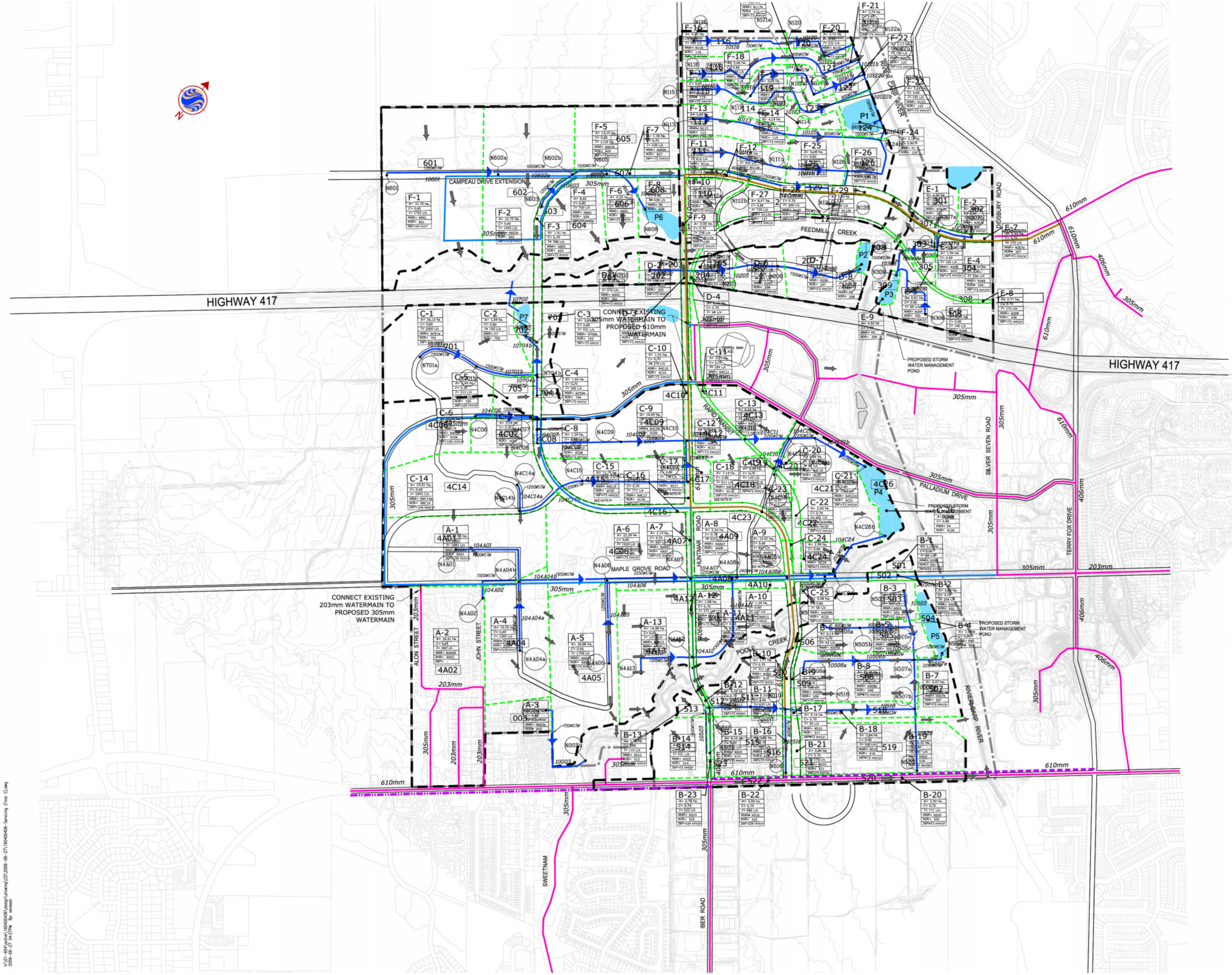
Project No. 60400406

Scale 1:7500 (0 75 225 375m)

Drawing No. ST-MN

Sheet 6 of 7

Revision 2



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Legend

- KANATA–WEST CONCEPT PLAN BOUNDARY
- POND DRAINAGE BOUNDARY
- STORM SEWER DRAINAGE LIMIT
- OVERLAND FLOW DIRECTION
- 207 OVERLAND FLOW SEGMENT NUMBER

CCL/IBI
Cumming Cockburn Limited
1770 WOODWARD DR., OTTAWA (613)225–1311

2	REVISED FOR DEC.21/05 SUBMISSION	GBU	SJP	DEC.21/05
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	Dwn.	Chkd.	Dsgn.	Date

Seals

Client/Project

Kanata West Concept Plan
Master Servicing Study

Ottawa, Ontario

Title

MODEL SCHEMATIC
STORM DRAINAGE MAJOR SYSTEM

Project No. 60400406

Scale 1:7500 (0 75 225 375m)

Drawing No. ST-MJ

Sheet 5 of 7

Revision 2

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2006-09-27 04:27PM By: skolesar

APPENDIX C

- Water Demand Calculations (DSEL, July 2016)
- As-Built Watermain Mapping (City of Ottawa, 2016)

Job: 12-624
195 Huntmar Drive
Water Demand Analysis

Land Use	Approx Area (ha.)	Units	Population	Residential Water Demand (L/s)	Commercial Water Demand (L/s)	Institutional Water Demand (L/s)	Total Water Demand (L/s)	Fire Flow (L/s)
Singles	6.25	182	618.8	2.507	-	-	2.507	166.667
Towns	6.75	345	931.5	3.773	-	-	3.773	166.667
Stacked Towns	8.51	520	1404	5.688	-	-	5.688	283.33
Apartments	1.34	190	342	1.385	-	-	1.385	283.33
District Park	11.14	-	-	-	-	3.611	3.611	250.00
Commercial	8.71	-	-	-	5.041	-	5.041	250.00
Roads	11.87	-	-	-	-	-	0.000	-
Total	**54.57**	**1237**	**3296.3**	**13.353**	**5.041**	**3.611**	**22.005**	

Notes:
** Towns: Lots 6m x 30m*
** Singles: Lots 10m x 30m*
** Stacked Towns: 4 storey building with surface parking (each unit is approx 1,100 sq. ft.,*
** Apartments: underground parking (each unit is approx 800 sq. ft.,*
** District Park: calls for a variety of active and passive recreation opportunities which may include a community centre, pool /arena complex, indoor / outdoor rinks, splash pads, children's play areas, pedestrian walkways, seating areas, and shelters, as determined by the City.*

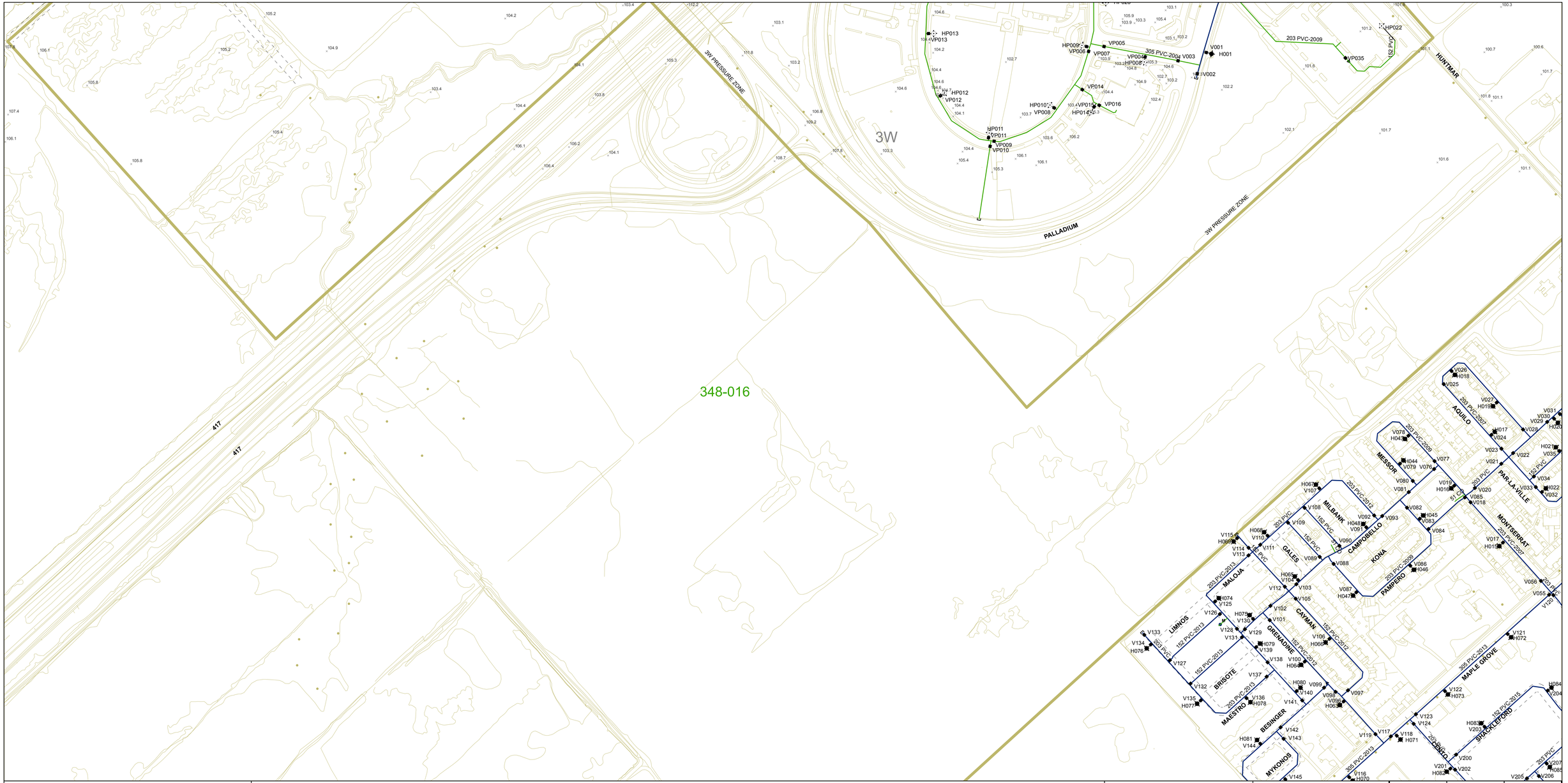
Water Demand Parameters	Value	Unit
Residential - Single Family	3.4	p/unit
Residential – Townhome/ Semi	2.7	p/unit
Residential – Apartment	1.8	p/unit
Residential Average Daily Demand	350	L/d/p
Residential - Maximum Daily Demand	2.5	x Average Daily Demand
Residential - Maximum Hourly Demand	2.2	x Maximum Daily Demand
Residential – Minimum Hourly Demand	0.5	x Average Daily Demand
Commercial/Institutional Average Daily Demand	50,000	L/gross ha/day
District Park Average Daily Demand	28,000	L/gross ha/day
Commercial/Institutional Maximum Daily Demand	1.5	x Average Daily Demand
Commercial/Institutional Maximum Hour Demand	1.8	x Maximum Daily Demand
Commercial/Institutional Minimum Hourly Demand	0.5	x Average Daily Demand

Notes:
** Extracted from Section 4: Ottawa Design Guidelines, Water Distribution (July 2010), Table 4.1 - Per Unit Populations and Table 4.2 - Consumption Rates for Subdivisions of 501 to 3,000 Persons. Note that, the areas being considered for this development has a proposed population of approximately greater than the 3,000 population identified in Table 4.2. Use of these population and demand factors represent a conservative method of analysis for an area of this size and are greater than the general community level demands outlined in the KWMSS.*

** No Outdoor Water Demand considered for residential uses.*
** Park water demand assumed as Commercial/Institutional Use, since potential for community facilities, etc. Apply 'other commercial' rate of 28,000 L/gross ha/day per Table 4.2 & per MOE Design Guidelines: for other Institutional and Commercial flows and tourist-commercial areas, an allowance of 28 m3/(had) average flow should be used in the absence of reliable flow data.*

Fire Flow Demand Parameters	Value	Unit	Source
Singles	166.67	L/s	City of Ottawa, ISDTB-2014-02
Towns	166.67	L/s	City of Ottawa, ISDTB-2014-02
Stacked Towns	283.33	L/s	150 L/s per OBC, 2012, Section A-3.2.5.7.3. 283 L/s for similar developments: Mattamy Back-to-Back Towns 283 L/s (e.g. FSR Summerside West PH2), Minto stacked 4 storey units 283 L/s (e.g. FSR Ampersand). 283 L/s for sample FUS calc - >10m separation three sides, >20m separation on road side, wood construction, no sprinkler, 4 unit footprint, 102 sq.m. per unit x 4 storeys high. Assume firewall separation required to maintain Fire Flow demand at 283 L/s.
Apartments	283.33	L/s	150 L/s per OBC, 2012, Section A-3.2.5.7.3. 283 L/s for sample FUS calc - >20m separation three sides, >30m separation on road side, non-combustible construction, sprinklered, 190 units, 75 sq.m. per unit + assumed 20% increase for common areas. Assume firewall separation required to maintain Fire Flow demand at 283 L/s.
District Park	250.00	L/s	District park calls for a variety of active and passive recreation opportunities which may include a community centre, pool / arena complex, indoor / outdoor rinks, splash pads, children's play areas, pedestrian walkways, seating areas, and shelters, as determined by the City. 250 L/s estimate considered adequate for most types of structures and occupancies, but is to be confirmed at the detailed design level.
Commercial	250.00	L/s	Per Arcadia FSR PH 1,2, 5 & 8. 250 L/s estimate considered adequate for most types of structures and occupancies, but is to be confirmed at the detailed design level.

WEST



2016 Water Distribution System

Department of Infrastructure Services

Scale 1:2500

Ottawa

Legend

- Public Hydrant
- Private Hydrant
- Summer only Flusher Hydrant
- Flusher Hydrant
- Acoustic Fibre Optic
- Gate Valve
- Tapping Valve
- Butterfly Valve (B)
- Buried Valve (BU)
- Drain Pipe
- Check Valve (CV)
- Closed Valve (CL)
- Drain-Out Valve (D)
- Left Hand Valve (L)
- Spot Elevation (X 84.9)
- Pressure Reducing Valve (P)
- Air Relief Valve (A)
- Bypass Valve (Y)
- Feedermain Valve (F000)
- Inspection Plate (IP 363)
- Cap
- Reducer
- Jump
- Water Meter (M)
- Water Service
- Backbone Pipe
- 203 PVC-1981 Watermain with Pipe Diameter, Material and Install Year
- Pipe Casing
- 2W Pressure Zone Delineation and Identifier
- Well (W)
- Elevated Tank (T)
- Water Pumping Station (PS)
- Water Reservoir
- Water Treatment Plant (WTP)

Pipe Equivalents

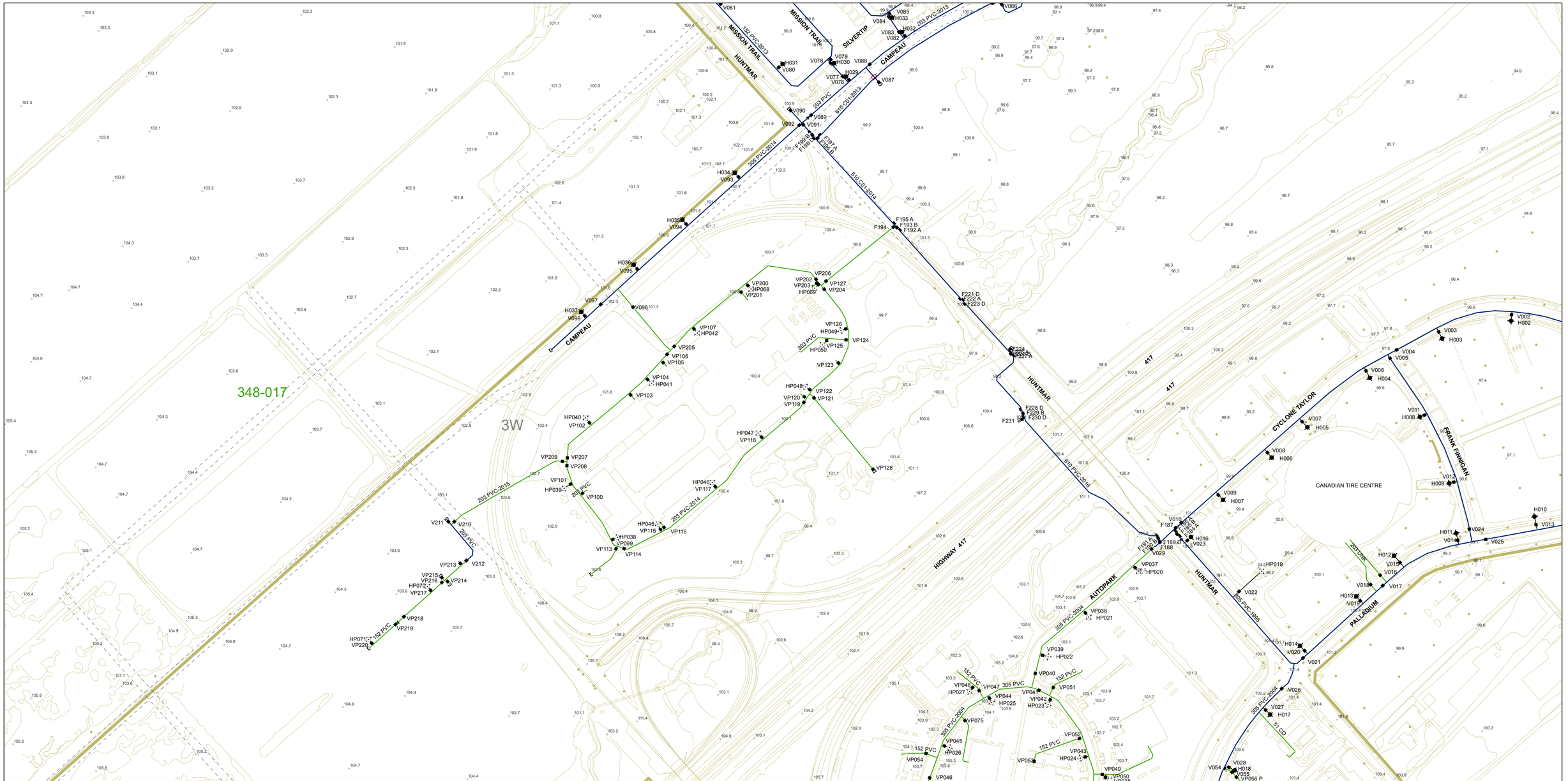
nominal (mm)	actual (inches)	nominal (mm)	actual (inches)	nominal (mm)	actual (inches)
100	4	675	27	1800	72
150	6	750	30	1950	78
200	8	825	33	2025	80
250	10	900	36	2100	84
300	12	975	39	2250	90
375	15	1050	42	2400	96
400	16	1200	48	2550	102
450	18	1350	54	2700	108
525	21	1500	60	2850	114
600	24	1650	66	3000	120

Pipe Materials

A - ASBESTOS
CI - CAST IRON
CO - COPPER
CO0 - AWWA C300
CO1 - AWWA C301
CO2 - AWWA C302
CO3 - AWWA C303
DI - DUCTILE IRON
PE - POLYETHYLENE (DR11 TO DR21)
PVC - POLYVINYL CHLORIDE
STC - CONCRETE LINED STEEL PIPE
UCI - UNLINED CAST IRON
UNK - UNKNOWN MATERIAL

346-017	348-017	350-017
346-016	348-016	350-016
346-015	348-015	350-015

WEST



2016 Water Distribution System

Department of Infrastructure Services

This map was compiled from existing & collected engineering Information from the City of Ottawa Geographic Information System and is protected by copyright. The location of Infrastructure is approximate and should not be used for construction purposes.

Scale 1:2500

Ottawa

Legend

- Public Hydrant
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- Flusher Hydrant
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- Backbone Pipe
- Watermain with Pipe Diameter, Material and Install Year
- Pipe Casing
- Pressure Zone Delineation and Identifier
- Well
- Elevated Tank
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- Water Reservoir
- Water Treatment Plant

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CO3 - AWWA C303
DI - DUCTILE IRON
PE - POLYETHYLENE (DR11 TO DR21)
PVC - POLYVINYL CHLORIDE
STC - CONCRETE LINED STEEL PIPE
UCI - UNLINED CAST IRON
UNK - UNKNOWN MATERIAL

346-018	348-018	350-018
346-017	348-017	350-017
346-016	348-016	350-016

APPENDIX D

- Wastewater Collection Calculations (DSEL, July 2016)
- Excerpt from Maple Grove Trunk Sanitary Sewer Design Sheet (Stantec, CCL, IBI, June 2006)
- As-Built Sewershed Mapping (City of Ottawa, 2016)
- Kanata West Pumpstation ECA (MOECC, September 2015)

SANITARY SEWER CALCULATION SHEET

PROJECT: **195 Huntmar Drive**
LOCATION: **Kanata West**
FILE REF: **12-624**
DATE: **19-Jul-16**

DESIGN PARAMETERS

Avg. Daily Flow Res.	350	L/p/d		Peak Fact Res. Per Harmons: Min = 2.0, Max =4.0		Infiltration / Inflow	0.28 L/s/ha
Avg. Daily Flow Comn	50,000	L/ha/d		Peak Fact. Comm.	1.5	Min. Pipe Velocity	0.60 m/s full flowing
Avg. Daily Flow Park	9,300	L/ha/d	Plus 5l/s	Peak Fact. Park	1	Max. Pipe Velocity	3.00 m/s full flowing
Avg. Daily Flow Indust	35,000	L/ha/d		Peak Fact. Indust. per MOE graph		Mannings N	0.013

Location			Residential Area and Population									Commercial		Park		Industrial			Infiltration				Pipe Data							
Area ID			**Area**	**Number of Units by type**				**Pop.**	**Cumulative Area**	**Cumulative Pop.**	**Peak. Fact.**	**Q_{res}**	**Area**	**Accu. Area**	**Area**	**Accu. Area**	**Area**	**Accu. Area**	**Q_{C+I+I}**	**Total Area**	**Accu. Area**	**Infiltration Flow**	**Total Flow**	**DIA**	**Slope**	**Length**	**$A_{hydraulic}$**	**R**	**Velocity**	**Q_{cap}**	**Q / Q full**
			(ha)	**Singles**	**Semi's**	**Town's**	**Apt's**		**(ha)**		**(-)**	**(L/s)**	**(ha)**	**(ha)**	**(ha)**	**(ha)**	**(ha)**	**(ha)**	**(L/s)**	**(ha)**	**(ha)**	**(L/s)**	**(L/s)**	**(mm)**	**(%)**	**(m)**	**(m^2)**	**(m)**	**(m/s)**	**(L/s)**	**(-)**
MTO property (north of site)	(part of KWMSS Area 32 Prestige Business Pa							0.0			4.00	0.00	20.62	20.62	0.00	0.00	0.00	0.00	17.9	20.620	20.620	5.774	23.67	300	0.14		0.071	0.075	0.51	36.2	0.65
195 Huntmar Drive (the site)	(part of KWMSS Area 32 Prestige Business Pa		**34.720**	**182**	**-**	**865**	**190**	**3296.3**	**34.720**	**3296.3**	**3.41**	**45.50**	**8.71**	**29.33**	**11.14**	**11.14**	**0.00**	**0.00**	**31.7**	**54.570**	**75.190**	**21.053**	**98.21**	**675**	**0.11**		**0.358**	**0.169**	**0.78**	**278.8**	**0.35**
Remaining parts of KWMSS Areas 32 & 34									34.720	3296.3	3.41	45.50	13.46	42.79	0.00	11.14	0.00	0.00	43.3	13.460	88.650	24.822	113.66	675	0.11		0.358	0.169	0.78	278.8	0.41
Maple Grove Trunk Sewer - MSS	(KWMSS sewer segment 10 - 10A)									19627.0	2.66	211.54							58.7	351.100	351.100	98.308	368.56	825	0.20		0.535	0.206	1.20	641.9	0.57
Maple Grove Trunk Sewer - Proposed	(KWMSS sewer segment 10 - 10A)									22923.3	2.59	240.80							102.1	439.750	439.750	123.130	465.98	825	0.20		0.535	0.206	1.20	641.9	0.73

SANITARY SEWER DESIGN SHEET
PROJECT : Kanata West Servicibility Study
LOCATION : CITY OF OTTAWA

PROJECT: 3598-LD-03
DATE: April 2005
DESIGN: JIM
FILE: 3598LD.sewers.XLS

MODEL 1 ULTIMATE (population based criteria..ICI simultaneous peaking)

LOCATION				TOTAL AREA	RESIDENTIAL							EMPLOYMENT/RETAIL/BUSINESS PARK/OPEN SPACES							INFILTRATION			TOTAL FLOW	PROPOSED SEWER						HARMON PF	ACTUAL q/Q	va/Vf	ACTUAL VELOCITY
STREET	FROM MH	TO MH			APPLIC AREA	UNIT/Ha	TOTAL UNITS	POPULATION INDIV	POPULATION ACCUM	PEAK FACTOR	PEAK FLOW	APPLIC AREA	ACCUM AREA	TOTAL AREA	FLOW RATE	PEAK FLOW INDIV	PEAK FLOW ACCUM	PEAK FLOW TOTAL	AREA (Ha) INDIV	AREA (Ha) CUMUL	TOTAL CUMUL	PEAK FLOW		CAPACITY	VELOCITY (full)	LGTH.	PIPE	GRADE	AVAIL. CAP.				
				(Ha)	(Ha)						(l/s)	(Ha)	(Ha)	(Ha)	(l/Ha/d)	(l/s)	(l/s)	(l/s)				(l/s)	(l/s)	l/s	m/s	(m)	(mm)	%	(%)				(m/s)
Campeau Drive Trunk Sewer	1	2	Area 1 (PBP)	38.11								38.11	38.11		35000	23.16	23.16		38.11	38.11												
			Area 2 (PBP)	27.29								27.29	65.40		35000	16.58	39.74		27.29	65.40												
			Area 3 Ext Employment	14.05								14.05	79.45		50000	12.20	51.94		14.05	79.45												
			Area 4 HP Employment	10.93								10.93	90.38	90.38	50000	9.49	61.42	61.42	10.93	90.38	90.38	25.31	86.73	283.79	1.27	525.0	525	0.40	69.44%				
	2	3	Area 5 Residential	29.19	29.19	19	555	1664	1664	3.65	24.58			90.38				61.42	29.19	29.19									3.65			
			Area 9 Ext Employment	8.45							24.58	8.45	8.45	98.83	50000	7.34	7.34	68.76	8.45	128.02	128.02	35.85	129.18	286.61	0.98	700.0	600	0.20	54.93%		0.451	0.830	0.815
	14	3	Area 6/8 Ext Employment	16.65								16.65	16.65		50000	14.45	14.45		16.65	16.65												
			Area 7 HP Employment	5.48								5.48	22.13	22.13	50000	4.76	19.21	19.21	5.48	22.13	22.13	6.20	25.41	148.74	0.91	910.0	450	0.25	82.92%		0.171	0.630	0.571
	3	4							1664	3.65	24.58	0.00	0.00	120.96		0.00	0.00	87.97	0.00	0.00	150.15	42.04	154.59	392.29	1.06	300.0	675	0.20	60.59%	3.65	0.394	0.790	0.839
	4A	4	Area 10 Residential	27.86	27.86	19	529	1588	1588	3.66	23.55								27.86	27.86	27.86	7.80	31.36	148.74	0.91	750.0	450	0.25	78.92%	3.66	0.211	0.660	0.598
	4	5	14 Mixed Use	4.13	1.76	50	88	263	3515	3.38	48.17	2.37	2.37	123.33	35000	1.44	1.44	89.41	4.13	4.13	182.14	51.00	188.58	392.29	1.06	450.0	675	0.20	51.93%	3.38	0.481	0.840	0.892
	Queensway	5	Area 13 Community Retail	6.35								6.35	6.35	6.35	35000	3.86	3.86	3.86	6.35													
			Area 11/12 Mixed Use	11.80	5.02	50	251	752	752	3.88	11.81	6.79	13.14	13.14	35000	4.12	7.98	7.98	11.80	18.15	18.15	5.08	24.88	43.88	0.87	420.0	250	0.50	43.31%	3.88	0.567	0.880	0.762
	5	5A	Area 15 Community Retail	3.88				0	4267	3.31	57.19	3.88			35000	2.36			3.88											3.31			
First Line Road Sewer			Area 44	25.54							57.19	25.54	29.42	165.89	35000	15.52	17.88	115.27	25.54	29.42	229.71	64.32	236.77	519.43	1.14	300.0	750	*0.20*	54.42%		0.456	0.830	0.945
				229.71							57.19							115.27				64.32	236.77									
Signature Ridge		5A	Area 100 Residential	90.20	90.20	19	1714	5141	5141	3.23	67.35	0.00											65.00							3.23			
Signature Ridge		5A	Area 100 Non-Residential	4.88							67.35	4.88	4.88	4.88	50000	4.24	4.24	4.24	95.08	95.08	95.08	26.62	98.21										
Interstitial Lands & Broughton/Richardson		5A																														
Total To SRPS	**5A**	**SRPS**		**324.79**	**154.02**		**3136**		**9409**		**124.54**	**170.77**						**119.51**			**324.79**	**90.94**	**399.98**	**580.53**	**1.27**	**30.0**	**750**	**0.25**	**31.10%**	2.98	0.689	0.940	1.197
Palladium Drive Trunk Sewer	6	7	Area 32 (PBP)	57.03								57.03	57.03		50000	49.51	49.51		57.03	57.03												
			Area 32A Park	8.34								8.34	65.37		0	0.00	49.51		8.34	65.37												
			Area 33/34 Ext Employment	54.85								54.85	120.22	120.22	50000	47.61	97.12	97.12	54.85	120.22	120.22												
	7	8	Area 37 Mixed Use	36.70	15.60	50	780	2340	2340	3.53	33.47	21.10	21.10	141.32	50000	18.32	18.32	115.44	36.70	36.70	156.92	43.94	192.85	455.83	1.23	925.0	675	0.27	57.69%	3.53	0.423	0.810	1.000
				156.92	15.60		780		2340		33.47	141.32						115.44	156.92		156.92	43.94	192.85							3.53			
Corel Centre Etc. (Existing Sewer) *		16	Area 35 HP Employment	6.05								6.05	6.05		30000	3.15	3.15		6.05													
		16	Area 36 (Corel Centre)																			30.00										
		16	Area 38 Exten Employment	20.15								20.15	26.20	26.20	14400	5.04	8.19	8.19	20.15	26.20	26.20	7.34	45.52				*Existing*						
First Line Road Sewer	15	16	Area 40 Employment	14.59								14.59	14.59		35000	8.87	8.87		14.59	14.59												
			Area 41 Employment	11.97								11.97	26.56		35000	7.27	16.14		11.97	26.56												
			Area 42 Employment	20.66								20.66	47.22		35000	12.55	28.69		20.66	47.22												
			Area 43 Employment	28.89								28.89	76.11	76.11	35000	17.55	46.25	46.25	28.89	76.11	76.11	21.31	67.56	224.35	1.00	525.0	525	0.25	69.89%		0.301	0.730	0.733
Carp River Trunk	16	8	Nothing To Add	102.31	15.60		780		2340	3.53	33.47	102.31	102.31	102.31	0	0.00	54.44	54.44	0.00	102.31	102.31	28.65	113.08	286.61	0.98	400.0	600	0.20	60.54%	3.53	0.395	0.790	0.776
Carp River Trunk	8	10A	Nothing To Add	259.23	15.60		780		2340		33.47	0.00	0.00	243.63		0.00	0.00	169.87	0.00	139.01	259.23	109.92	305.93	579.95	1.05	550.0	825	0.15	47.25%	3.53	0.528	0.860	0.904
																														3.72			
Marie Grove Road Trunk Sewer	9	10	Area 18/19 Exist. Residential	23.34	23.34	19	443	1330	1330										23.34	23.34										3.03	0.327	0.740	1.027
			Area 22/26/27 Residential	79.32	79.32	30	2380	7139	8469	3.03	103.82								79.32	102.66	102.66	28.74	132.56	405.11	1.39	775.0	600	0.40	67.28%				
																														3.20			
Hazeldean/Huntmar Trunk Sewer	11	12	Area 16/20 Residential	99.01	99.01	19	1881	5644	5644	3.20	73.06								99.01	99.01													
			Area 16/20 Commercial	33.50								33.50	33.50	33.50	50000	29.08	29.08	29.08	33.50	132.51													
			Area 16/20 Open Space	14.13								14.13							14.13	146.64													
			Area 17 Ex. Commercial	3.44							73.06	3.44	36.94	36.94	35000	2.09	31.17	31.17	3.44	150.08	150.08	42.02	146.26	554.82	1.50	775.0	675	0.40	73.64%		0.264	0.700	1.051
	12	10	Area 21 Exist. Employment	10.89								10.89	10.89	10.89	50000	9.45	9.45		10.89	10.89													
			Area 19A Exist Residential	6.63	6.63	19	126	378									9.45		6.63	17.52													
			Area 23/24 Community Retail	17.61								17.61	28.50	28.50	35000	10.70	20.15	51.32	17.61	35.13													
			Area 28/30 Residential	27.10	27.10	30	813	2439	8460	3.03	103.72	0.00	0.00	65.44				51.32	27.10	62.23	212.31	59.45	214.49	519.43	1.14	950.0	750	0.20	58.71%	3.03	0.413	0.800	0.911
Marie Grove Road Trunk Sewer	10	10A	Area 39 Mixed Use	21.13	8.98	50	449	1347				12.15	12.15	77.59	35000	7.38	7.38	58.71	21.13											2.66	0.550	0.870	1.056
			Area 29 Residential	15.00	15.00	30	450	1350	10627	2.66	211.54							58.71	15.00	36.13	351.10	98.31	368.56	669.89	1.21	1000.0	825	0.20	44.98%				
Carp River Trunk Sewer	13	10A	Area 25 Community Retail	20.24								20.24	20.24	20.24	35000	12.30	12.30	12.30	20.24											3.39	0.239	0.680	0.746
			Area 31 residential	38.72	38.72	30	1162	3485	3485	3.39	47.80							12.30	38.72	58.96	58.96	16.51	76.61	320.17	1.10	1000.0	600	0.25	76.07%		0.023	0.340	0.246
		10A	Area 31A (PBP)	0.75								0.75	0.75	0.75	50000	0.65	0.65	0.65	0.75	0.75	0.75	0.21	0.86	36.69	0.72	100.0	250	0.35	97.65%				
Pumping Station 2 to KWPS	**10A**	**KWPS**		**670.04**	**313.70**		**8484**		**25451**		**292.82**	**356.34**						**241.53**			**670.04**	**224.95**	**759.29**	**1273.71**	**1.43**	**30.0**	**1050**	**0.20**	**40.39%**	2.55	0.596	0.900	1.283
																														2.41			
STUDY TOTALS				994.83	467.72		11620		34860			527.11																				

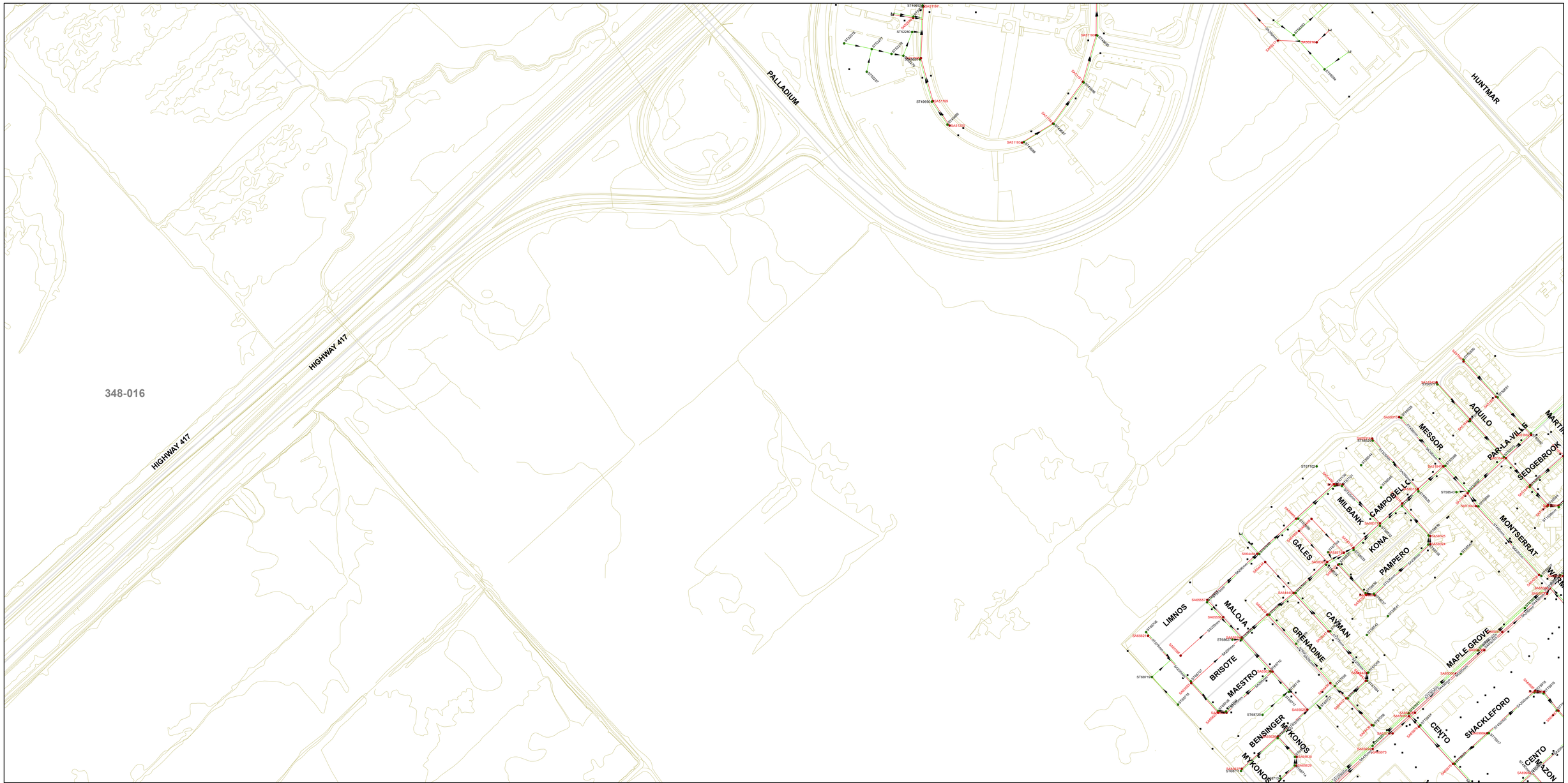
Average Daily Per capita Flow Rate =	350 l/cap/d
Infiltration Allowance Flow Rate =	0.28 l/sec/Ha
Residential Peaking Factor = 1+(14/(4+(P^0.5))), P=Pop. in 1000's, Max of 4	
Population density per unit =	3.00
Peak Fof Employment/Retail/Business Park =	1.50

Mixed Uses Assumes: 15% Community Retail, 42.5% Business Park and 42.5% Residential

Revision No. 1: April 01, 2005
Revision No. 2: April 11, 2005
Revision No. 3: April 21, 2005
Revision No. 4: June 07, 2005
Revision No. 5: August 10, 2005
Revision No. 6: Oct. 14, 2005
Revision No. 7: Nov. 10, 2005
Revision No. 8: Nov. 11, 2005
Revision No. 9: Apr. 19, 2006

Stantec
CCL/IBI

FIG. 4.2-1



2016 Sewer Collection System

Department of Infrastructure Services

Scale 1:2500

Ottawa

Legend

- Storm Inlet
- Storm Outlet
- Storm Manhole
- Sanitary Manhole
- Combined Manhole
- Combined Pipe
- Sanitary Pipe
- Storm Pipe
- Pipe Cap
- Combined Trunk Sewer
- Sanitary Trunk Sewer
- Storm Trunk Sewer
- Regulator
- Storm Pumping Station
- Storm Water Management Pond
- Sanitary Pumping Station
- Treatment Plant

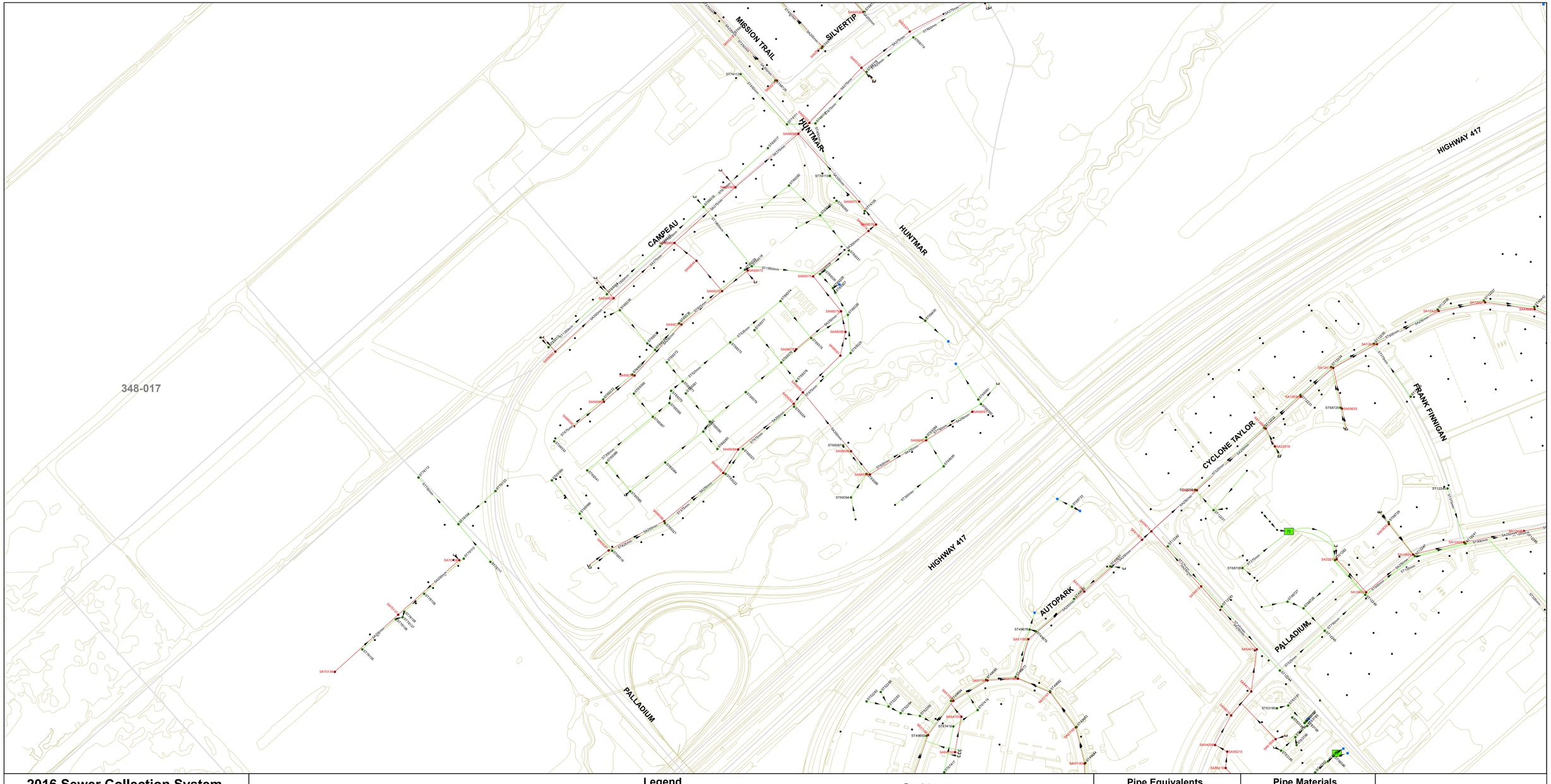
Pipe Equivalents

nominal (mm)	actual (inches)	nominal (mm)	actual (inches)	nominal (mm)	actual (inches)
100	4	675	27	1800	72
150	6	750	30	1950	78
200	8	825	33	2025	80
250	10	900	36	2100	84
300	12	975	39	2250	90
375	15	1050	42	2400	96
400	16	1200	48	2550	102
450	18	1350	54	2700	108
525	21	1500	60	2850	114
600	24	1650	66	3000	120

Pipe Materials

A - ASBESTOS
CI - CAST IRON
CO - COPPER
CO0 - AWWA C300
CO1 - AWWA C301
CO2 - AWWA C302
CO3 - AWWA C303
DI - DUCTILE IRON
PE - POLYETHYLENE (DR11 TO DR21)
PVC - POLYVINYL CHLORIDE
STC - CONCRETE LINED STEEL PIPE
UCI - UNLINED CAST IRON
UNK - UNKNOWN MATERIAL

348-016



2016 Sewer Collection System

Department of Infrastructure Services

This map was compiled from existing & collected engineering Information from the City of Ottawa Geographic Information System and is protected by copyright. The location of Infrastructure is approximate and should not be used for construction purposes.

Scale 1:2500

Ottawa

Legend

- Storm Inlet
- Storm Outlet
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- Sanitary Manhole
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375	15	1050	42	2400	96
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348-017

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 7443-9Y8Q8R
Issue Date: September 9, 2015

City of Ottawa
100 Constellation Dr
Nepean, Ontario
K2G 6J8

Site Location: 1590 Maple Grove Road
Ottawa City, Ontario

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

construction of the proposed Kanata West sanitary sewage Pumping Station and dual forcemains, located on Maple Grove Road to service the Kanata West community development area south of Highway 417 and adjacent areas in Stittsville for a sanitary drainage area consisting of about 6,300 residences and commercial space for about 24,000 employees, as part of the Kanata West Concept Plan development, in the City of Ottawa, Ontario.

SANITARY SEWAGE PUMP STATION

- one (1) sanitary sewage pump station (Kanata West Pumping Station) to service both residential and commercial land use; initially the Kanata West Pumping Station will have a firm capacity at a firm peak flow of 528 L/s, with a TDH of 41.2 metres; with an ultimate firm peak flow of 1250 L/s (anticipated by 2031) with a TDH of 48.2 metres; the pump station will convey wastewater from the pumping station to the existing Glen Cairn Trunk Sewer on Eagleson Road; pump station has a submersible dry pit and consists of the following:
  - = bypass chamber upstream of the pump station (to directly bypass sewage flows to the forcemain downstream of the pump station for maintenance or emergency purposes);
  - = two (2) wet wells each with two pumps (1 duty and 1 standby); only one wet well to be in operation at the initial stage; the other can be used during emergency situations or for maintenance requirements;
  - = two (2) variable speed frequency pumps (one duty and one standby) for each wet well;
  - = inlet sanitary sewer (1200 mm diameter, with an invert elevation of approximately 87.64 metres);
  - = mechanical bar screens, inlet isolation gates, forcemain plug valves, weir gates for level control, swab launchers, HVAC system and heating boilers, and liquid and vapour phase odour control systems;
  - = level transducers to allow for differential level control of the mechanical screen and pump cycling; and

monitoring equipment for methane and hydrogen sulphide gas;

= emergency overflow elevation at about 94.80 metres, with level meter for overflow monitoring, the pumping station overflow is sized for the ultimate station capacity of 1,250 L/s;
= overflow will discharge to the Carp River under initial conditions and subsequently, to the adjacent proposed stormwater management pond under the ultimate conditions;
= SCADA communications monitors pump station with a backup communications system;
= forcemain discharge chamber, controlled and monitored remotely through fibre optic telecommunications connection to the City SCADA network, discharge chamber includes a UPS with 4 hours of power backup; and
= 1763 kW emergency standby generator (separate Environmental Compliance Approval Number 7754-9YAKHB, Issued August 20, 2015) on site to provide 24 hour standby power at peak demand during power failure;

FORCEMAIN

- twin 600 mm (inside diameter) HDPE forcemains that are each 3.7 kilometres in length and run east, from the pump station, along Maple Grove, north on Terry Fox, and west on Katimavik and discharges to the existing sanitary Glen Cairn Trunk Sewer on Eagleson Road; each forcemain outlet is controlled by an electrically actuated plug valve in the discharge chamber preventing the forcemains from partially draining between pumping cycles;
- two forcemain by-passes in the event of blockage:
  = one (1) by-pass at the pump station in a bypass chamber with a manually installed bypass, and
  = one (1) by-pass at approximately the halfway point on the length of the twin forcemains with manually operated valves.

all in accordance with:

1. the application dated December 15, 2014 and received on December 30, 2014;
2. all correspondences with the consultant Colin Goodwin, Stantec Consulting Ltd.
3. Memo titled, 'mem_kwps_MOE ECA Summary', dated August 10, 2015, by Colin Goodwin / Andrew Bernius / Gerald Bauer, Stantec Consulting Ltd.
4. final specifications and drawings provided by Colin Goodwin, Stantec Consulting Ltd.

For the purpose of this environmental compliance approval, the following definitions apply:

"Act" means the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended;

"Approval" means this entire document and any schedules attached to it, and the application;

"BOD5" (also known as TBOD5) means five day biochemical oxygen demand measured in an unfiltered sample and includes carbonaceous and nitrogenous oxygen demand;

"Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA;

"EPA" means the *Environmental Protection Act,* R.S.O. 1990, c.E.19, as amended;

"E. Coli" refers to the thermally tolerant forms of Escherichia that can survive at 44.5 degrees Celsius;

"Emergency Situation" means a structural, mechanical or electrical failure that causes a temporary reduction in the capacity of the Sewage Pumping Station or an unforeseen flow condition that may result in:

a) danger to the health or safety of any person; or
b) injury or damage to any property, or serious risk of injury or damage to any property.

"Equivalent equipment" means a substituted equipment or like-for-like equipment that meets the required quality and performance standards of a named equipment;

"Event" in the context the Sewage Pumping Station located outside the Sewage Treatment Plant, means an action or occurrence, at the Sewage Pumping Station that causes a Sewage Pumping Station Overflow. An Event ends when there is no recurrence of a Sewage Pumping Station Overflow in the 12-hour period following the last Sewage Pumping Station Overflow. Two Events are separated by at least 12 hours during which there has been no recurrence of a Sewage Pumping Station Overflow;

"Limited Operational Flexibility" (LOF)) means any modifications that the Owner is permitted to make to the Works under this Approval;

"Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;

"Notice of Modifications" means the form entitled "Notice of Modifications to Sewage Works";

"Owner" means The City of Ottawa and includes its successors and assignees;

"Previous Works" means those portions of the sewage works previously constructed and approved under an Approval;

"Professional Engineer" means a person entitled to practise as a Professional Engineer in the Province of Ontario under a licence issued under the Professional Engineers Act;

"Proposed Works" means the sewage works described in the Owner's application, this Approval, to the extent approved by this Approval;

"Sewage Pumping Station Overflow" means any discharge from a Sewage Pumping Station located outside the Sewage Treatment Plant that does not undergo any treatment or only receives partial treatment before it is discharged to the environment;

"Substantial Completion" has the same meaning as "substantial performance" in the Construction Lien Act; and

"Water Supervisor" means the Water Supervisor for the local safe drinking water branch office of the Ministry;

"Works" means the sewage works described in the Owner's application, and this Approval, and includes Proposed Works, Previous Works, and modifications made under Limited Operational Flexibility.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL PROVISIONS

1.1 The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

1.2 Except as otherwise provided by these Conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with the description given in this Approval, the application for approval of the works and the submitted supporting documents and plans and specifications as listed in this Approval.

1.3 Where there is a conflict between a provision of any submitted document referred to in this Approval and the Conditions of this Approval, the Conditions in this Approval shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.

1.4 Where there is a conflict between the listed submitted documents, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

1.5 The requirements of this Approval are severable. If any requirement of this Approval, or the application of any requirement of this Approval to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this Approval shall not be affected thereby.

1.6 The issuance of, and compliance with the Conditions of this Approval does not:

(a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including, but not limited to, the obligation to obtain approval from the local conservation authority necessary to construct or operate the sewage Works; or

(b) limit in any way the authority of the Ministry to require certain steps be taken to require the Owner to furnish any further information related to compliance with this Approval.

2. EXPIRY OF APPROVAL

2.1 The approval issued by this Approval will cease to apply to those parts of the Works which have not been constructed within **five (5) years** of the date of this Approval.

3. CHANGE OF OWNER

3.1 The Owner shall notify the Water Supervisor and the Director, in writing, of any of the following changes within thirty (30) days of the change occurring:

(a) change of Owner.

(b) change of address of the Owner.

(c) change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act,* R.S.O. 1990, c.B17 shall be included in the notification to the Water Supervisor.

(d) change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the *Corporations Informations Act,* R.S.O. 1990, c. C39 shall be included in the notification to the Water Supervisor.

3.2 In the event of any change in ownership of the Works, other than a change to a successor municipality, the Owner shall notify in writing the succeeding owner of the existence of this Approval, and a copy of such notice shall be forwarded to the Water Supervisor and the Director.

4. UPON THE SUBSTANTIAL COMPLETION OF THE WORKS

4.1 Upon the Substantial Completion of the Works, the Owner shall prepare a statement, certified by a Professional Engineer, that the Works are constructed in accordance with this Approval, and upon request, shall make the written statement available for inspection by Ministry personnel.

4.2 Within **one (1) year** of the Substantial Completion of the Works, a set of as-built drawings showing the Works "as constructed" shall be prepared. These drawings shall be kept up to date through revisions undertaken from time to time and a copy shall be retained at the Works for the operational life of the Works.

5. SEWAGE PUMPING STATION OVERFLOW

5.1 Any Sewage Pumping Station Overflow is prohibited, except:

(a) in an Emergency Situation;

(b) where the Sewage Pumping Station Overflow is a direct and unavoidable result of a planned maintenance procedure, the Owner notified the Water Supervisor **fifteen (15) days** prior to the Sewage Pumping Station Overflow and the Water Supervisor has given written consent of the Sewage Pumping Station Overflow; or,

(c) where the Sewage Pumping Station Overflow is planned for research or training purposes, the discharger notified the Water Supervisor **fifteen (15) days** prior to the Sewage Pumping Station Overflow and the Water Supervisor has given written consent of the Sewage Pumping Station Overflow.

5.2 The Owner shall forthwith notify the Spills Action Centre (SAC) at 1-800-268-6060 or e-mail at moe.sac.moe@ontario.ca and the Medical Officer of Health of every Sewage Pumping Station Overflow Events. This notice shall include, at a minimum, the following information:

(a) the date and time at which the Event(s) started,

(b) duration of the Event(s);

(c) the location of the Event**(s)**;

(d) the measured or estimated volume of the Event(s) (unless the Event(s) is/are ongoing);

(e) the reason for the Event (s), and

(f) the date and time of contact along with the names of all persons who were contacted and informed by the Owner about the Event(s) in order for such persons to make decisions regarding the occupational health and safety of the workers they supervise, in the case of a contractor working in the Carp River corridor between the pump station and Richardson Side Road.;

5.3 The Owner shall submit Sewage Pumping Station Overflow Event Reports to the Ministry's local office on an annual basis, no later than forty-five (45) days following the end of the calendar year covered by the Event Report. Event Reports maybe in an electronic format as acceptable to the Ministry. In each Event Report the Owner shall include, at a minimum, the following information on every Event(s) that occurred:

(a) the date and time at which the Event(s) started,

(b) duration of the Event(s);

(c) the location of the Event**(s)**;

(d) the measured or estimated volume of the Event(s) (unless the Event(s) is/are ongoing);

(e) the reason for the Event(s), and

(f) the date and time of contact along with the names of all persons who were contacted and informed by the Owner about the Event(s) in order for such persons to make decisions regarding the occupational health and safety of the workers they supervise, in the case of a contractor working in the Carp River corridor between the pump station and Richardson Side Road.;

(5.4) Within one (1) year from the date of issuance of this Approval, the Owner shall provide to the Director and the Water Supervisor a risk communication plan that will have been endorsed in writing by the Medical Officer of Health of the City of Ottawa. This risk communication plan shall address how the Owner will communicate the hazards, created by an Event, to those persons who use, for recreational purposes, the Carp River corridor between the pump station and Richardson Side Road.

5.5 The Owner shall use best efforts to collect a representative sample consisting of a minimum of two (2) grab samples of the Sewage Pumping Station Overflow and have it analysed for parameters outlined in Table 1 of Condition 7.2 using the protocols specified in Condition 7.3, one at the beginning of the Event and the second approximately near the end of the Event, to best reflect the effluent quality of such Sewage Pumping Station Overflow.

5.6 The Owner shall maintain a logbook of all Sewage Pumping Station Overflow(s), which shall contain, at a minimum, the types of information set out in Condition 5.2(a) to 5.2(f) in respect of each Sewage Pumping Station Overflow.

5.7 In the event the Overflow outlet pipe from the Kanata West sanitary sewage pump station needs to be altered, resulting in the Overflow effluent discharging along a different route, the Owner shall submit an application to amend this Approval, no less than six (6) months before the date of alteration;

6. OPERATION AND MAINTENANCE

6.1 The Owner shall exercise due diligence in ensuring that, at all times, the Works and the related equipment and appurtenances used to achieve compliance with this Approval are properly operated and maintained. Proper operation and maintenance shall include

effective performance, adequate funding, adequate operator staffing and training, including training in all procedures and other requirements of this Approval and the Act and regulations, adequate laboratory facilities, process controls and alarms and the use of process chemicals and other substances used in the Works.

6.2 The Owner shall prepare an operations manual within **six (6) months** of Substantial Completion of the Works, that includes, but not necessarily limited to, the following information:

(a) operating procedures for routine operation of the Works;

(b) inspection programs, including frequency of inspection, for the Works and the methods or tests employed to detect when maintenance is necessary;

(c) repair and maintenance programs, including the frequency of repair and maintenance for the Works;

(d) procedures for the inspection and calibration of monitoring equipment;

(e) a spill prevention control and countermeasures plan, consisting of contingency plans and procedures for dealing with equipment breakdowns, potential spills and any other abnormal situations, including notification of the Water Supervisor; and

(f) procedures for receiving, responding and recording public complaints, including recording any follow-up actions taken.

6.3 The Owner shall maintain the operations manual current and retain a copy at the location of the Works for the operational life of the Works. Upon request, the Owner shall make the manual available to Ministry staff.

6.4 The Owner shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to Ministry staff.

7. MONITORING AND RECORDING

The Owner shall, upon the issuance of this Approval, carry out the following monitoring program:

7.1 All samples and measurements taken for the purposes of this Approval are to be taken at a time and in a location characteristic of the quality and quantity of the effluent stream over the time period being monitored.

7.2 Samples shall be collected at the following sampling points, at the frequency specified, by means of the specified sample type and analysed for each parameter listed and all results recorded:

Table 1 - Monitoring during a Sewage Pumping Station Overflow Event (Samples to be collected from the Sewage Pumping Station Overflow stream at the Sewage Pumping Station)	
Sample Type	Grab
Parameters	BOD5, Total Suspended Solids, Total Phosphorus, E. Coli

7.3 The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following:

(a) the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only), as amended from time to time by more recently published editions;

(b) the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (January 1999), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions; and

(c) the publication "Standard Methods for the Examination of Water and Wastewater" (21st edition), as amended from time to time by more recently published editions.

8. REPORTING

8.1 **Fifteen (15) days** prior to the date of a planned Sewage Pumping Station Overflow being conducted pursuant to Condition 5 and as soon as possible for an unplanned Sewage Pumping Station Overflow, the Owner shall notify the Water Supervisor in writing of the pending start date, in addition to an assessment of the potential adverse effects on the environment and the duration of the Sewage Pumping Station Overflow.

8.2 In addition to the obligations under Part X of the Environmental Protection Act, (which includes contacting the Spills Action Centre (SAC) at 1-800-268-6060 or e-mail at moe.sac.moe@ontario.ca), the Owner shall, within **ten (10) working days** of the occurrence of any reportable spill as defined in Ontario Regulation 675/98, Bypass or loss of any product, by-product, intermediate product, oil, solvent, waste material or any other polluting substance into the environment, (with the exception of a sanitary sewage discharged during an Event), submit a full written report of the occurrence to the Water Supervisor describing the cause and discovery of the spill or loss, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation.

8.3 The Owner shall prepare and submit a report to the District Manager on an annual basis. The reports shall contain the following information:

(a) a copy of all Notice of Modifications submitted to the District Manager as a result of Schedule A, Section 1 (Limited Operational Flexibility) with a status report on the implementation of each modification;

(b) a report summarizing all modifications completed as a result of Schedule A, Section 3; and

9. LIMITED OPERATIONAL FLEXIBILITY

9.1 The Owner may make modifications to the Works in accordance with the Terms and Conditions of this Approval and subject to the Ministry's "Limited Operational Flexibility Criteria for Modifications to Sewage Works", included under Schedule B of this Approval, as amended.

9.2 Sewage works proposed under Limited Operational Flexibility shall adhere to the design guidelines contained within the Ministry's publication "Design Guidelines for Sewage Works 2008", as amended.

9.3 The Owner shall ensure at all times, that the Works, related equipment and appurtenances which are installed or used to achieve compliance are operated in accordance with all Terms and Conditions of this Approval.

9.4 For greater certainty, the following are not permitted as part of Limited Operational Flexibility:

(a) Modifications to the Works that result in an increase of the approved Rated Capacity of the Works;

(b) Modifications to the Works that may adversely affect the approved effluent quality criteria or the location of the discharge/outfall;

(c) Modifications to the treatment process technology of the Works, or modifications that involve construction of new reactors (tanks) or alter the treatment train process design;

(c) Modifications to the Works approved under s.9 of the EPA, and

(d) Modifications to the Works pursuant to an order issued by the Ministry.

9.5 Implementation of Limited Operational Flexibility is not intended to be used for piecemeal measures that result in major alterations or expansions.

9.6 If the implementation of Limited Operational Flexibility requires changes to be made to the Emergency Response, Spill Reporting and Contingency Plan, the Owner shall, as deemed necessary in consultation with the Water Supervisor, provide a revised copy of this plan for approval to the local fire services authority prior to implementing Limited Operational Flexibility.

9.7 For greater certainty, any alteration made under the Limited Operational Flexibility may only be carried out after other legal obligations have been complied with including those arising from the *Environmental Protection Act, Niagara Escarpment Planning and Development Act, Oak Ridges Moraine Conservation Act, Lake Simcoe Protection Act* and *Greenbelt Act.*

9.8 Prior to implementing Limited Operational Flexibility, the Owner shall complete a Notice of Modifications describing any proposed modifications to the Works and submit it to the Water Supervisor.

SCHEDULE 'A'

Limited Operational Flexibility Criteria for Modifications to Sewage Works

1. The modifications to sewage works approved under an Environmental Compliance Approval (Approval) that are permitted under the Limited Operational Flexibility (LOF), are outlined below and are subject to the LOF conditions in the Approval, and require the submission of the Notice of Modifications. If there is a conflict between the sewage works listed below and the Terms and Conditions in the Approval, the Terms and Conditions in the Approval shall take precedence.

   1.1 Sewage Pumping Stations

   a. Adding or replacing equipment where new equipment is located within the existing sewage pumping station site, provided that the facility approved Rated Capacity is not exceeded and the existing flow process and/or treatment train, if any, are maintained.

   b. Forcemain relining and replacement with similar pipe size within the pumping station site, where the nominal diameter is not greater than 1,200 mm.

   1.2 Pilot Systems

   a. Installation of pilot systems for new or existing technologies provided that:

      i. any effluent from the pilot system is discharged to the inlet of the sewage pumping station or hauled off-site for proper disposal,
      ii. any effluent from the pilot system discharged to the inlet of the sewage pumping station or sewage conveyance system does not significantly alter the composition/concentration of the influent sewage to be treated in the downstream process; and that it does not add any inhibiting substances to the downstream process, and
      iii. the pilot system's duration does not exceed a maximum of two years; and a report with results is submitted to the Director and Water Supervisor three months after completion of the pilot project.

2. Sewage works that are exempt from section 53 of the OWRA by O. Reg. 525/98 continue to be exempt and are not required to follow the notification process under this Limited Operational Flexibility.

3. Normal or emergency operational modifications, such as repairs, reconstructions, or other improvements that are part of maintenance activities, including cleaning, renovations to existing approved sewage works equipment, provided that the modification is made with Equivalent Equipment, are considered pre-approved.

4. The modifications noted in section (3) above are not required to follow the notification protocols

under Limited Operational Flexibility, provided that the number of pieces and description of the equipment as described in the Approval does not change.

Ontario
Ministry of
the Environment

Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA AND SEND A COPY TO THE WATER SUPERVISOR (FOR MUNICIPAL) OR DISTRICT MANAGER (FOR NON-MUNICIPAL SYSTEMS)

Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility

(Insert the ECA's owner, number, issuance date and notice number, which should start with "01" and consecutive numbers thereafter)

ECA Number	Issuance Date (mm/dd/yy)	Notice number (if applicable)

ECA Owner	Municipality

Part 2: Description of the modifications as part of the Limited Operational Flexibility

(Attach a detailed description of the sewage works)

Description shall include:
1. A detail description of the modifications and/or operations to the sewage works (e.g. sewage work component, location, size, equipment type/model, material, process name, etc.)
2. Confirmation that the anticipated environmental effects are negligible.
3. List of updated versions of, or amendments to, all relevant technical documents that are affected by the modifications as applicable, i.e. submission of documentation is not required, but the listing of updated documents is (design brief, drawings, emergency plan, etc.)

Part 3 – Declaration by Professional Engineer

I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:
1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario;
2. Conforms with the Limited Operational Flexibility as per the ECA;
3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate.

Name (Print)	PEO License Number

Signature	Date (mm/dd/yy)

Name of Employer

Part 4 – Declaration by Owner

I hereby declare that:
1. I am authorized by the Owner to complete this Declaration;
2. The Owner consents to the modification; and
3. These modifications to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA.
4. The Owner has fulfilled all applicable requirements of the *Environmental Assessment Act.*

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate.

Name of Owner Representative (Print)	Owner representative's title (Print)

Owner Representative's Signature	Date (mm/dd/yy)

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is imposed to ensure that the Works are built and operated in the manner in which they were described for review and upon which approval was granted. This condition is also included to emphasize the precedence of Conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review. The condition also advises the Owners their responsibility to notify any person they authorized to carry out work pursuant to this Approval the existence of this Approval. Condition 1.6 is included to emphasize that the issuance of this Approval does not diminish any other statutory and regulatory obligations to which the Owner is subject in the construction, maintenance and operation of the Works. The condition specifically highlights the need to obtain any necessary conservation authority approvals. The condition also emphasizes the fact that this Approval doesn't limit the authority of the Ministry to require further information.

2. Condition 2 is included to ensure that, when the Works are constructed, the Works will meet the standards that apply at the time of construction to ensure the ongoing protection of the environment.

3. Condition 3 is included to ensure that the Ministry records are kept accurate and current with respect to the approved works and to ensure that subsequent owners of the Works are made aware of the Approval and continue to operate the Works in compliance with it.

4. Condition 4 is included to ensure that the Works are constructed in accordance with the Approval and that record drawings of the Works "as constructed" are maintained for future references.

5. Conditions 5 and 7 are included to indicate that Sewage Pumping Station Overflow of untreated and/or partially treated sewage to the environment is prohibited, save in certain limited circumstances where the failure to do so could result in greater injury to the public interest than the Sewage Pumping Station Overflow itself, or where the Sewage Pumping Station Overflow can be limited or otherwise mitigated by handling it in accordance with an approved contingency plan. The notification and documentation requirements allow the Ministry to take action in an informed manner and will ensure the Owner is aware of the extent and frequency of Sewage Pumping Station Overflow Event(s). Furthermore, conditions 5.4 and 5.7 are intended to ensure that the Owner has an effective risk communications plan to inform the public of the potential risks of recreational areas of the Carp River recreational corridor between the pump station and Richardson Side Road and to ensure that when the overflow pipe is redirected to discharge any Overflows from the Carp River to the future stormwater management facility (Kanata West Pond No. 5), the Approval will be amended to reflect that change in Overflow piping;

6. Condition 6 is included to require that the Works be properly operated, maintained, funded, staffed and equipped such that the environment is protected and deterioration, loss, injury or damage to any person or property is prevented. As well, the inclusion of a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the Owner and

made available to the Ministry. Such a manual is an integral part of the operation of the Works. Its compilation and use should assist the Owner in staff training, in proper plant operation and in identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for Ministry staff when reviewing the Owner's operation of the Works.

7. Condition 8 is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, so that the Ministry can work with the Owner in resolving any problems in a timely manner.

8. Condition 9 is included to ensure that the Works are operated in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider. These Conditions are also included to ensure that a Professional Engineer has reviewed the proposed modifications and attests that the modifications are in line with that of Limited Operational Flexibility, and provide assurance that the proposed modifications comply with the Ministry's requirements stipulated in the Terms and Conditions of this Approval, MOECC policies, guidelines, and industry engineering standards and best management practices.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection Act
Ministry of the Environment and
Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 9th day of September, 2015

Gregory Zimmer, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

RS/
c: DWMD Supervisor, MOECC Ottawa
Colin Goodwin, Stantec Consulting Ltd.

APPENDIX E

- Preliminary Pond 7 Storage Calculations (DSEL, July 2016)
- Excerpt from Pond 4 Design Drawings (DSEL, December 2014)
- Pond 4 ECA (MOE, October 2014)

Stormwater - Proposed Development
City of Ottawa Sewer Design Guidelines, 2012

Pre-Development Flow Rate (Feedmill Creek)

Area 38.22 ha
C 0.20 Rational Method runoff coefficient
t_c 10.0 min

5-year			**100-year**	
i	104.2	mm/hr	**i**	178.6 mm/hr
Q	2212.4	L/s	**Q**	3791.4 L/s

Estimated Post Development Peak Flow from Attenuated Areas

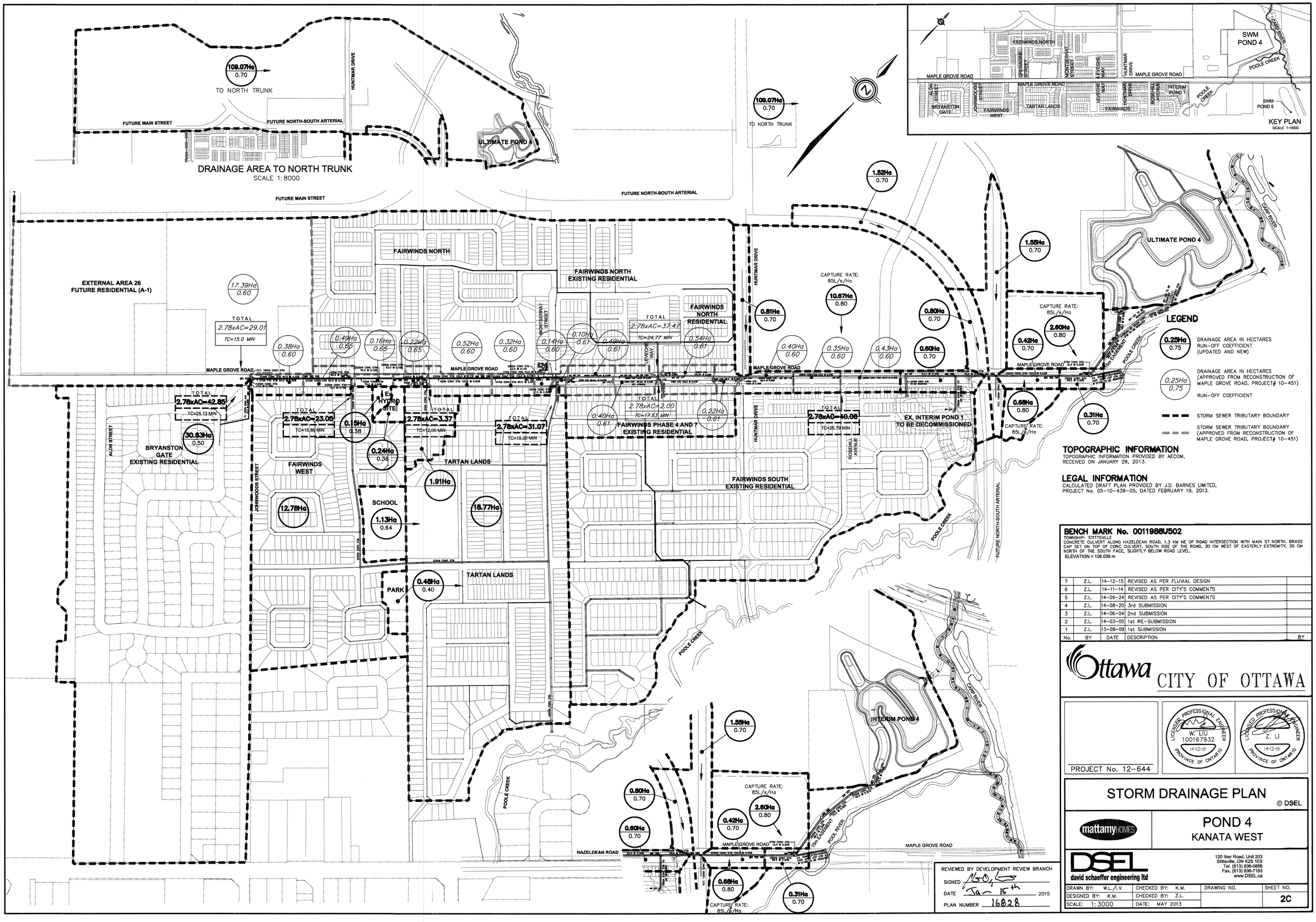
Total Area 57.30 ha
C 0.70 Rational Method runoff coefficient

	5-year					100-year				
t_c	i	Q_{actual}	$Q_{release}$	Q_{stored}	V_{stored}	i	Q_{actual}	$Q_{release}$	Q_{stored}	V_{stored}
(min)	(mm/hr)	(L/s)	(L/s)	(L/s)	(m^3)	(mm/hr)	(L/s)	(L/s)	(L/s)	(m^3)
10	104.2	11608.8				178.6	24868.1	305.8	24562.3	14737.4
15	83.6	9309.7				142.9	19901.0	305.8	19595.2	17635.7
20	70.3	7827.1				120.0	16705.6	305.8	16399.8	19679.8
25	60.9	6784.8				103.8	14462.9	305.8	14157.1	21235.7
30	53.9	6008.4				91.9	12794.6	305.8	12488.8	22479.8
35	48.5	5405.7				82.6	11500.8	305.8	11195.0	23509.6
40	44.2	4922.9				75.1	10465.5	305.8	10159.8	24383.5
45	40.6	4526.7				69.1	9616.7	305.8	9311.0	25139.6
50	37.7	4195.2				64.0	8906.9	305.8	8601.2	25803.5
55	35.1	3913.3				59.6	8303.9	305.8	7998.1	26393.7
60	32.9	3670.4				55.9	7784.5	305.8	7478.7	26923.4
65	31.0	3458.8				52.6	7332.1	305.8	7026.4	27402.8
70	29.4	3272.5				49.8	6934.2	305.8	6628.5	27839.6
75	27.9	3107.2				47.3	6581.3	305.8	6275.6	28240.0
80	26.6	2959.5				45.0	6265.9	305.8	5960.2	28608.8
85	25.4	2826.5				43.0	5982.2	305.8	5676.5	28950.0
90	24.3	2706.1				41.1	5725.6	305.8	5419.8	29266.9
95	23.3	2596.6				39.4	5492.1	305.8	5186.3	29562.2
100	22.4	2496.5				37.9	5278.8	305.8	4973.0	29838.2
105	21.6	2404.6				36.5	5083.0	305.8	4777.3	30096.8
110	20.8	2320.0				35.2	4902.7	305.8	4596.9	30339.7
115	20.1	2241.7				34.0	4735.9	305.8	4430.2	30568.3
120	19.5	2169.0				32.9	4581.3	305.8	4275.5	30783.9
125	18.9	2101.4				31.9	4437.4	305.8	4131.7	30987.5
130	18.3	2038.3				30.9	4303.2	305.8	3997.5	31180.2
135	17.8	1979.3				30.0	4177.7	305.8	3871.9	31362.7
140	17.3	1924.0				29.2	4060.0	305.8	3754.3	31535.8
145	16.8	1872.0				28.4	3949.5	305.8	3643.7	31700.2
150	16.4	1823.0				27.6	3845.4	305.8	3539.6	31856.5
155	15.9	1776.8				26.9	3747.2	305.8	3441.4	32005.1
160	15.6	1733.1				26.2	3654.4	305.8	3348.6	32146.7
165	15.2	1691.8				25.6	3566.5	305.8	3260.8	32281.6
170	14.8	1652.6				25.0	3483.2	305.8	3177.5	32410.3
175	14.5	1615.3				24.4	3404.1	305.8	3098.4	32533.0
180	14.2	1579.9				23.9	3328.9	305.8	3023.2	32650.2
185	13.9	1546.2				23.4	3257.3	305.8	2951.5	32762.1
190	13.6	1514.0				22.9	3189.0	305.8	2883.3	32869.1
195	13.3	1483.3				22.4	3123.8	305.8	2818.1	32971.3
200	13.0	1453.9				22.0	3061.5	305.8	2755.8	33069.1
205	12.8	1425.8				21.6	3001.9	305.8	2696.1	33162.6
210	12.6	1398.9				21.1	2944.8	305.8	2639.0	33252.0
215	12.3	1373.1				20.8	2890.1	305.8	2584.3	33337.5
220	12.1	1348.3				20.4	2837.5	305.8	2531.8	33419.4
225	11.9	1324.5				20.0	2787.1	305.8	2481.3	33497.7
230	11.7	1301.6				19.7	2738.6	305.8	2432.8	33572.7
235	11.5	1279.6				19.3	2691.9	305.8	2386.1	33644.4
240	11.3	1258.4				19.0	2646.9	305.8	2341.2	33713.1
245	11.1	1237.9				18.7	2603.6	305.8	2297.9	33778.7
250	10.9	1218.2				18.4	2561.9	305.8	2256.1	33841.5
255	10.8	1199.2				18.1	2521.5	305.8	2215.8	33901.6
260	10.6	1180.8				17.8	2482.6	305.8	2176.9	33959.0

265	10.4	1163.1				17.6	2445.0	305.8	2139.2	34013.9
270	10.3	1145.9				17.3	2408.6	305.8	2102.9	34066.3
275	10.1	1129.3				17.0	2373.4	305.8	2067.7	34116.4
280	10.0	1113.2				16.8	2339.3	305.8	2033.6	34164.2
285	9.9	1097.6				16.6	2306.3	305.8	2000.6	34209.8
290	9.7	1082.5				16.3	2274.3	305.8	1968.6	34253.3
295	9.6	1067.8				16.1	2243.3	305.8	1937.6	34294.8
300	9.5	1053.6				15.9	2213.2	305.8	1907.5	34334.2
305	9.3	1039.8				15.7	2184.0	305.8	1878.2	34371.8
310	9.2	1026.4				15.5	2155.6	305.8	1849.9	34407.4
315	9.1	1013.3				15.3	2128.1	305.8	1822.3	34441.3
320	9.0	1000.7				15.1	2101.3	305.8	1795.5	34473.4
325	8.9	988.4				14.9	2075.2	305.8	1769.4	34503.9
330	8.8	976.4				14.7	2049.8	305.8	1744.1	34532.7
335	8.7	964.7				14.5	2025.2	305.8	1719.4	34559.9
340	8.6	953.3				14.4	2001.1	305.8	1695.4	34585.5
345	8.5	942.3				14.2	1977.7	305.8	1672.0	34609.7
350	8.4	931.5				14.0	1954.9	305.8	1649.2	34632.3
355	8.3	921.0				13.9	1932.7	305.8	1626.9	34653.6
360	8.2	910.7				13.7	1911.0	305.8	1605.3	34673.5
365	8.1	900.7				13.6	1889.9	305.8	1584.1	34692.0
370	8.0	891.0				13.4	1869.2	305.8	1563.5	34709.2
375	7.9	881.4				13.3	1849.1	305.8	1543.3	34725.1
380	7.8	872.1				13.1	1829.4	305.8	1523.7	34739.8
385	7.7	863.0				13.0	1810.2	305.8	1504.5	34753.3
390	7.7	854.2				12.9	1791.5	305.8	1485.7	34765.6
395	7.6	845.5				12.7	1773.1	305.8	1467.4	34776.7
400	7.5	837.0				12.6	1755.2	305.8	1449.4	34786.7
405	7.4	828.7				12.5	1737.7	305.8	1431.9	34795.6
410	7.4	820.6				12.4	1720.5	305.8	1414.8	34803.4
415	7.3	812.6				12.2	1703.8	305.8	1398.0	34810.2
420	7.2	804.9				12.1	1687.3	305.8	1381.6	34816.0
425	7.2	797.3				12.0	1671.3	305.8	1365.5	34820.7
430	7.1	789.8				11.9	1655.5	305.8	1349.8	34824.5
435	7.0	782.5				11.8	1640.1	305.8	1334.4	34827.3
440	7.0	775.4				11.7	1625.0	305.8	1319.3	34829.2
445	6.9	768.4				11.6	1610.3	305.8	1304.5	34830.2
450	6.8	761.5				11.5	1595.8	305.8	1290.0	34830.2
455	6.8	754.8				11.4	1581.6	305.8	1275.8	34829.4
460	6.7	748.2				11.3	1567.6	305.8	1261.9	34827.7
465	6.7	741.7				11.2	1554.0	305.8	1248.2	34825.2
470	6.6	735.4				11.1	1540.6	305.8	1234.8	34821.9
475	6.5	729.1				11.0	1527.4	305.8	1221.7	34817.7
480	6.5	723.0				10.9	1514.5	305.8	1208.8	34812.8
485	6.4	717.0				10.8	1501.9	305.8	1196.1	34807.1
490	6.4	711.1				10.7	1489.5	305.8	1183.7	34800.6
495	6.3	705.4				10.6	1477.3	305.8	1171.5	34793.3
500	6.3	699.7				10.5	1465.3	305.8	1159.5	34785.4
505	6.2	694.1				10.4	1453.5	305.8	1147.7	34776.7
510	6.2	688.6				10.4	1441.9	305.8	1136.2	34767.3
515	6.1	683.2				10.3	1430.6	305.8	1124.8	34757.3
520	6.1	677.9				10.2	1419.4	305.8	1113.7	34746.5
525	6.0	672.7				10.1	1408.5	305.8	1102.7	34735.1
530	6.0	667.6				10.0	1397.7	305.8	1091.9	34723.0
535	5.9	662.6				10.0	1387.1	305.8	1081.3	34710.3
540	5.9	657.7				9.9	1376.7	305.8	1070.9	34697.0

Note:
C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

100-year $Q_{attenuated}$ 305.76 L/s
100-year Max. Storage Required 34830.2 m^3



BENCH MARK No. 0011988U502

TOWNSHIP: STITTSVILLE
CONCRETE CULVERT ALONG HAZELDEAN ROAD, 1.3 KM NE OF ROAD INTERSECTION WITH MAIN ST NORTH. BRASS CAP SET ON TOP OF CONC CULVERT, SOUTH SIDE OF THE ROAD, 30 CM WEST OF EASTERLY EXTREMITY, 30 CM NORTH OF THE SOUTH FACE, SLIGHTLY BELOW ROAD LEVEL.
ELEVATION = 106.039 m

No.	BY	DATE	DESCRIPTION	BY
7	Z.L.	14-12-15	REVISED AS PER FLUVIAL DESIGN	
6	Z.L.	14-11-14	REVISED AS PER CITY'S COMMENTS	
5	Z.L.	14-09-24	REVISED AS PER CITY'S COMMENTS	
4	Z.L.	14-08-20	3rd SUBMISSION	
3	Z.L.	14-06-04	2nd SUBMISSION	
2	Z.L.	14-03-05	1st RE-SUBMISSION	
1	Z.L.	13-08-09	1st SUBMISSION	

CITY OF OTTAWA

PROJECT No. 12-644

W. LIU 100167932 14-12-15 PROVINCE OF ONTARIO

Z. LI 14-12-15 PROVINCE OF ONTARIO

STORM DRAINAGE PLAN

mattamyHOMES

POND 4
KANATA WEST

DSEL
david schaeffer engineering ltd
120 Iber Road, Unit 203
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

REVIEWED BY DEVELOPMENT REVIEW BRANCH
SIGNED
DATE Jan 15th 2015
PLAN NUMBER 16828

DRAWN BY: W.L./I.V.	CHECKED BY: K.M.	DRAWING NO.	SHEET NO.
DESIGNED BY: K.M.	CHECKED BY: Z.L.		2C
SCALE: 1:3000	DATE: MAY 2013		

M:\12644\Subm_3\Drawings\02C_644_Strm_Drainage.dwg, 02C, 15/01/2015 11:59:01 AM, VY

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 4298-9Q6HQ3
Issue Date: October 31, 2014

Mattamy (Fairwinds West) Limited
50 Hines Road, Suite 100
City of Ottawa, Ontario
K2K 2M5

Site Location: Part of Lot 1, Concession 1 (March)
Kanata West Development Area
City of Ottawa

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

an amendment of the stormwater management Works for the collection, treatment and disposal of stormwater run-off from a number of subdivision developments located along Maple Grove Road in the vicinity of Johnwoods Street and Huntmar Drive, serving a major part of the Kanata West Community located north of Hazeldean Road, south of Palladium Drive, west of the Carp River and Poole Creek in the City of Ottawa, providing Normal Level water quality control and erosion protection and attenuating post-development peak flows to pre-development levels for all storm events up to and including the 10-year storm event, to consolidate previous approvals and to modify the stormwater management facilities and outfalls to Poole Creek and the Carp River, consisting of the following:

Proposed Works:

storm sewer: - modification of the outfall of the storm sewer on Maple Grove Road by extending the 2550 mm diameter storm sewer on Maple Grove Road from the existing manhole (MH 185) approximately 228 m in a northerly direction, discharging to Interim Pond 4, identified below, and removing the outlet storm sewer from approximately 60 m west of Poole Creek (MH 185) to Poole Creek;

stormwater management facility (Interim Pond 4 - catchment area 278.3 hectares): - one (1) wet pond with two (2) sediment forebays and one (1) inlet pipe, located north of Maple Grove Road, south of Palladium Drive west of the Carp River, having a permanent pool volume of 29,736 m^3, an extended detention volume of 22,288 m^3, and a total storage volume of approximately 62,820 m^3, including the permanent pool volume, at a total depth of approximately 3.9 m, discharging eastward through an outlet structure to the Carp River, and ultimately to the Ottawa River;

stormwater management facility (Interim Pond 1): - decommissioning and removal of the wet pond located on the south side of Maple Grove Road, east of Huntmar Drive upon completion of construction of Interim Pond 4;

Previous Works:

Under Approval 6206-8X7JWX, issued August 16, 2012:

storm and sanitary sewers on Maple Grove Road, consisting of the following:
- trunk and local storm sewer on Maple Grove Road from Johnwoods Street (MH 401) to Montserrat Street (MH 107), from approximately 120 m east of Rosehill Avenue (existing MH 181) to approximately 60 m west of Poole Creek (MH 185), and an outlet storm sewer from approximately 60 m west of Poole Creek (MH 185) to Poole Creek;
- trunk sanitary sewer on Maple Grove Road from Johnwoods Street (MH 104A) to Montserrat Street (MH 110A), and from approximately 245 m east of Rosehill Avenue (existing MH 96) to approximately 50 m west of Poole Creek (MH 98);
- local sanitary sewers along the Maple Grove Road frontage of Fairwinds West subdivision and Poole Creek Village (Tartan) subdivision connecting to the trunk sanitary sewer from MH 118A to MH 107A and from MH 117A to MH 110A;

Under Approval 1716-9CHP4Z, issued November 4, 2013:

oil and grit separator at the inlet to Interim Pond 1; (Note: This oil and grit separator was approved but never constructed.)

stormwater management facility (Interim Pond 1 - catchment area 125.47 hectares): - a wet pond with a sediment forebay, located on the south side of Maple Grove Road, east of Huntmar Drive, providing Enhanced Level water quality control and erosion protection and attenuating post-development peak flows to pre-development levels for all storm events up to and including the 100-year storm event, discharging to Poole Creek;

temporary stormwater diversion ditch: - a temporary storm conveyance ditch to divert flows from the Bryanston Gate subdivision to an existing storm sewer on Maple Grove Road to allow for deep service construction west on Maple Grove Road from its current termination at Montserrat Street to Johnwoods Street, ultimately discharging to the Interim Pond 1; (Note: The temporary diversion ditch was removed upon completion of construction of the trunk storm sewer on Maple Grove Road under 6206-8X7JWX.)

including erosion/sedimentation control measures during construction and all other controls and appurtenances essential for the proper operation of the aforementioned Works;

all in accordance with the submitted supporting documents listed in Schedule "A" forming part of this Approval.

For the purpose of this environmental compliance approval, the following definitions apply:

"Approval" means this entire document including the application and any supporting documents listed in any schedules in this Approval;

"Director" means a person appointed by the Minister pursuant to section 5 of the Environmental Protection Act for the purposes of Part II.1 of the Environmental Protection Act;

"District Manager" means the District Manager of the Ottawa office of the Ministry;

"Ministry" means the ministry of the government of Ontario responsible for the Environmental Protection Act and the Ontario Water Resources Act and includes all officials, employees or other persons acting on its behalf;

"Owner" means the Mattamy (Fairwinds West) Limited and includes their successors and assignees;

"Previous Works" means those portions of the sewage Works previously approved under an Approval;

"Water Supervisor" means the Water Supervisor of the Ottawa-Cornwall office of the Ministry;

"Works" means the sewage works described in the Owner's application(s) and this Approval.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL PROVISIONS

(1) The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the Conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) The designation of The City of Ottawa as the operating authority of the site on the application for approval of the Works does not relieve the Owner from the responsibility of complying with any and all of the Conditions of this Approval.

(3) Except as otherwise provided by these Conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with the description given in this Approval, and the application for approval of the Works.

(4) Where there is a conflict between a provision of any submitted document referred to in this Approval and the Conditions of this Approval, the Conditions in this Approval shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.

(5) Where there is a conflict between the listed submitted documents, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

(6) The Conditions of this Approval are severable. If any Condition of this Approval, or the application of any requirement of this Approval to any circumstance, is held invalid or unenforceable, the application of such Condition to other circumstances and the remainder of this Approval shall not be affected thereby.

(7) The issuance of, and compliance with the Conditions of this Approval does not:

(a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including, but not limited to, the obligation to obtain approval from the local conservation authority necessary to construct or operate the sewage Works; or

(b) limit in any way the authority of the Ministry to require certain steps be taken to require the Owner to furnish any further information related to compliance with this Approval.

(8) This Approval includes the treatment and disposal of stormwater run-off from a catchment area of 278.3 hectares draining to Interim Pond 4, assuming an average imperviousness of 37%. Any future development changes within the total drainage area that might increase the required storage volumes or increase the flows to or from Interim Pond 4 or any structural/physical changes to Interim Pond 4, including the inlets or outlets, will require an amendment to this Approval.

2. EXPIRY OF APPROVAL

(1) This Approval will cease to apply to those parts of the proposed Works which have not been constructed within **five (5) years** of the date of this Approval.

3. CHANGE OF OWNER

(1) The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within **thirty (30) days** of the change occurring:

(a) change of Owner;

(b) change of address of the Owner;

(c) change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, R.S.O. 1990, c. B17 shall be included in the notification to the District Manager;

(d) change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the Corporations Information Act, R.S.O. 1990, c. C39 shall be included in the notification to the District Manager.

(2) In the event of any change in ownership of the Works, other than a change in ownership to the

municipal, i.e. assumption of the Works, the Owner shall notify the succeeding owner in writing of the existence of this Approval, and a copy of such notice shall be forwarded to the District Manager and the Director.

(3) Notwithstanding any other requirements in this Approval, upon transfer of the ownership of the Works to a municipality, if applicable, any reference to the "District Manager" within the Terms and Conditions of this Approval shall be replaced with "Water Supervisor".

4. OPERATION AND MAINTENANCE

The Owner shall, upon issuance of this Approval, carry out the following operation and maintenance program:

(1) The Owner shall undertake routine visual inspections of the Works over the lifetime of the Works including inspection of the facility after each large event (15 mm or greater in the previous 24 hours as required by the City of Ottawa's Kanata West Overall Monitoring Plan) to ensure proper functioning of the facility including confirming adequacy of the general site conditions (erosion / landscaping etc.), depth of sediment accumulation, proper functioning of the monitoring equipment, and Works' inlet and outlet controls. As required the Owner shall clean and maintain the Works to to ensure proper functioning of the facility and to prevent excessive build up of sediments and/or vegetation within Interim Pond 4.

(2) The Owner shall ensure that the design minimum liquid retention volume (permanent pool) is maintained within the main cell, and that the water levels are monitored to determine draw down characteristics of the facility (typically 24 – 48 hours). Flow monitoring is not proposed in this program.

(3) The Owner shall maintain a logbook to record the results of these inspections and any cleaning and maintenance operations undertaken, and shall keep the logbook at the Owner's local office for inspection by the Ministry.The logbook shall include the following:

(a) the name of the Works; and

(b) the date and results of each inspection, maintenance and cleaning, including an estimate of the quantity of any materials removed.

(4) The Owner shall prepare an operations manual within **three (3) months** of the issuance of this Approval, that includes, but is not limited to, the following information:

(a) operating procedures for routine operation of the Works;

(b) inspection programs, including frequency of inspection, for the Works and the methods or tests employed to detect when maintenance is necessary;

(c) repair and maintenance programs, including the frequency of repair and maintenance for the Works; and

(d) procedures for the inspection and calibration of monitoring equipment.

(5) The Owner shall maintain the operations manual current and retain a copy at the Owner's local office for the operational life of the Works and upon request make the manual available to the staff of the Ministry as well as the City of Ottawa.

5. MONITORING AND RECORDING

(1) The Owner shall carry out a monitoring program for the inspection and maintenance of the Works as per the standardized SWM monitoring program specified by the City of Ottawa for the Kanata West Area and the requirements of the Mississippi Valley Conservation Authority.

(2) The Owner shall copy the District Manager/Water Supervisor on any and all reports submitted to the City of Ottawa and/or the Mississippi Valley Conservation Authority related to the operation and maintenance of the Works.

(3) A minimum of **two (2) years** after 90% of the homes in the residential subdivisions within the drainage catchment area of Interim Pond 4 have been occupied and the monitoring program for the maintenance and inspection of the Works has been rigorously followed, the requirement to copy the District Manager in Subsection (2), above, may be modified by the District Manager in writing from time to time.

6. TEMPORARY EROSION AND SEDIMENT CONTROL

(1) The Owner shall install and maintain temporary sediment and erosion control measures during construction and conduct inspections once every **two (2) weeks** and after each significant storm event (a significant storm event is defined as a minimum of 25 mm of rain in any 24 hours period). The inspections and maintenance of the temporary sediment and erosion control measures shall continue until they are no longer required and at which time they shall be removed and all disturbed areas reinstated properly.

(2) The Owner shall maintain records of inspections and maintenance which shall be made available for inspection by the Ministry, upon request. The record shall include the name of the inspector, date of inspection, and the remedial measures, if any, undertaken to maintain the temporary sediment and erosion control measures.

7. RECORD KEEPING

The Owner shall retain for a minimum of **five (5) years** from the date of their creation, all records and information related to or resulting from the operation and maintenance activities required by this Approval.

Schedule "A"

1. Application from Mattamy (Fairwinds North) Limited, dated April 12, 2012, including final plans and specifications prepared by David Schaeffer Engineering Ltd.;

2. Application for Environmental Compliance Approval, dated September 10, 2014 and received on September 23, 2014, submitted by David Schaeffer Engineering Ltd.;

3. Design Brief for Pond 4 Kanata West, dated August 25, 2014, prepared by J.F. Sabourin and Associates Inc. and David Schaeffer Engineering Ltd.;

4. Set of Engineering Drawings (22 drawings) dated August 20, 2014, prepared by David Schaeffer Engineering Ltd.;

5. Geotechnical Review, Proposed Stormwater Management Pond (SWMP) Design - Pond 4, dated September 18, 2014, prepared by Paterson Group Inc,;

6. Pipe Data Form and Storm Sewer Design Sheet, prepared by David Schaeffer Engineering Ltd.;

7. Copy of a letter from John Price of the Mississippi Valley Conservation Authority to David Schaeffer Engineering Ltd., dated August 29, 2014;

8. Copy of a Memorandum from Greenland International Consulting Ltd. to City of Ottawa, dated September 4, 2014;

9. Three (3) e-mails from Jennifer Ailey of David Schaeffer Engineering Ltd. to the Ministry, dated October 23, 2014; and

10. Two (2) e-mails from Jennifer Ailey of David Schaeffer Engineering Ltd. to the Ministry, dated October 31, 2014.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is imposed to ensure that the Works are built and operated in the manner in which they were described for review and upon which approval was granted. This Condition is also included to emphasize the precedence of Conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review.

2. Condition 2 is included to ensure that, when the Works are constructed, the Works will meet the standards that apply at the time of construction to ensure the ongoing protection of the environment..

3. Condition 3 is included to ensure that the Ministry records are kept accurate and current with respect to approved Works and to ensure that any subsequent Owner of the Works is made aware of the Approval and continue to operate the Works in compliance with it.

4. Condition 4 is included to require that the Works be properly operated and maintained such that the environment is protected.

5. Condition 5 is included to enable the Owner to evaluate and demonstrate the performance of the Works, on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives specified in the Approval and that the Works do not cause any impairment to the receiving watercourse.

6. Condition 6 is included as installation, regular inspection and maintenance of the temporary sediment and erosion control measures is required to mitigate the impact on the downstream receiving watercourse during construction, until they are no longer required.

7. Condition 7 is included to require that all records are retained for a sufficient time period to adequately evaluate the long-term operation and maintenance of the Works.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 6206-8X7JWX, and 1716-9CHP4Z issued on August 16, 2012 and November 4, 2013, respectively.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are

substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 31st day of October, 2014

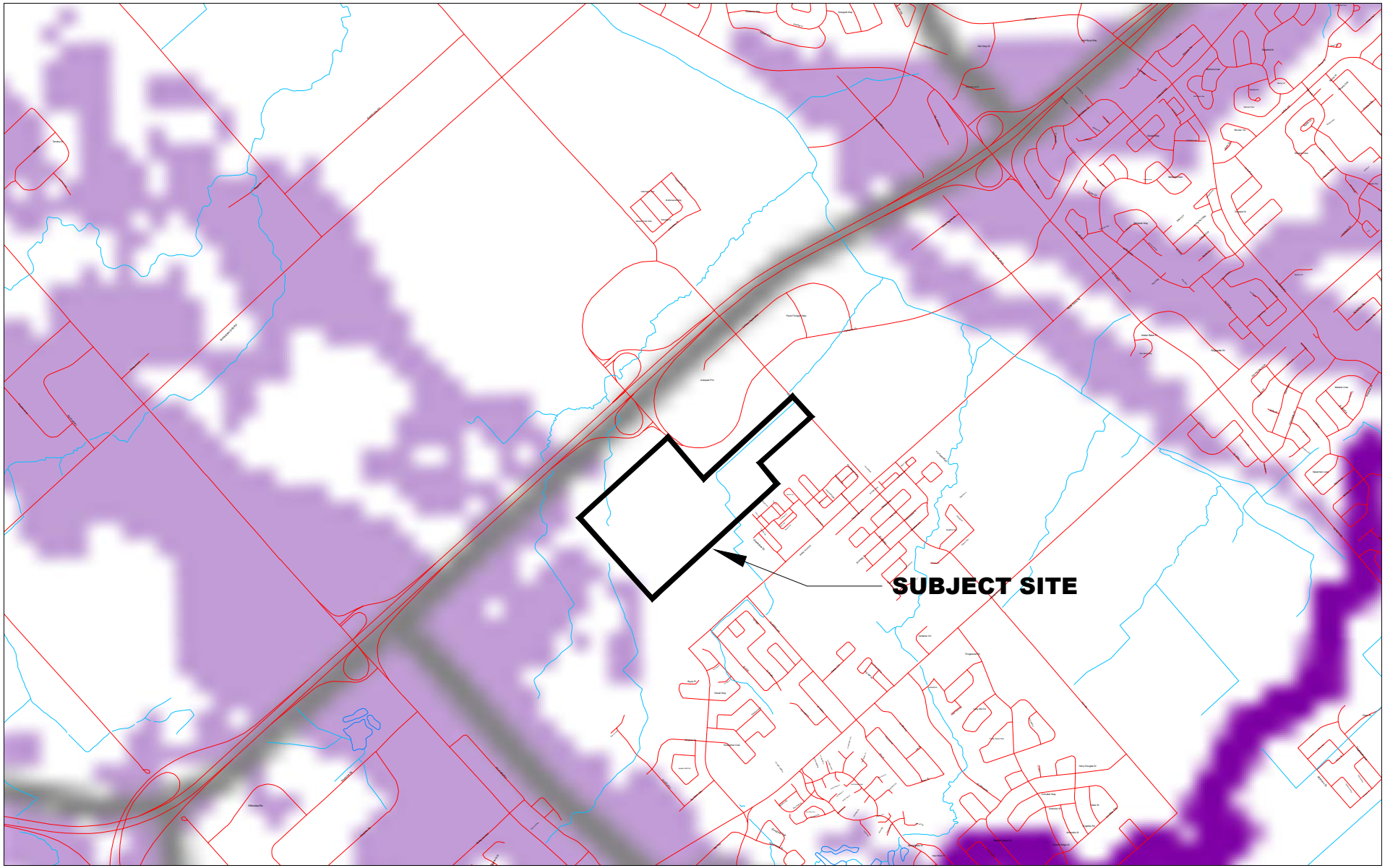
Edgardo Tovilla
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

DC/
c: District Manager, MOE Ottawa office
Water Supervisor, MOE Ottawa-Cornwall office
Jennifer Ailey, David Schaeffer Engineering Ltd. (DSEL)

APPENDIX F

Excerpt from Mississippi-Rideau Source Water Protection Plan, Schedule M
(MVCA & RVCA, August 2014)

Overlay of Subject Site on Mississippi-Rideau Source Water Protection Plan, Schedule M (August 28, 2014)

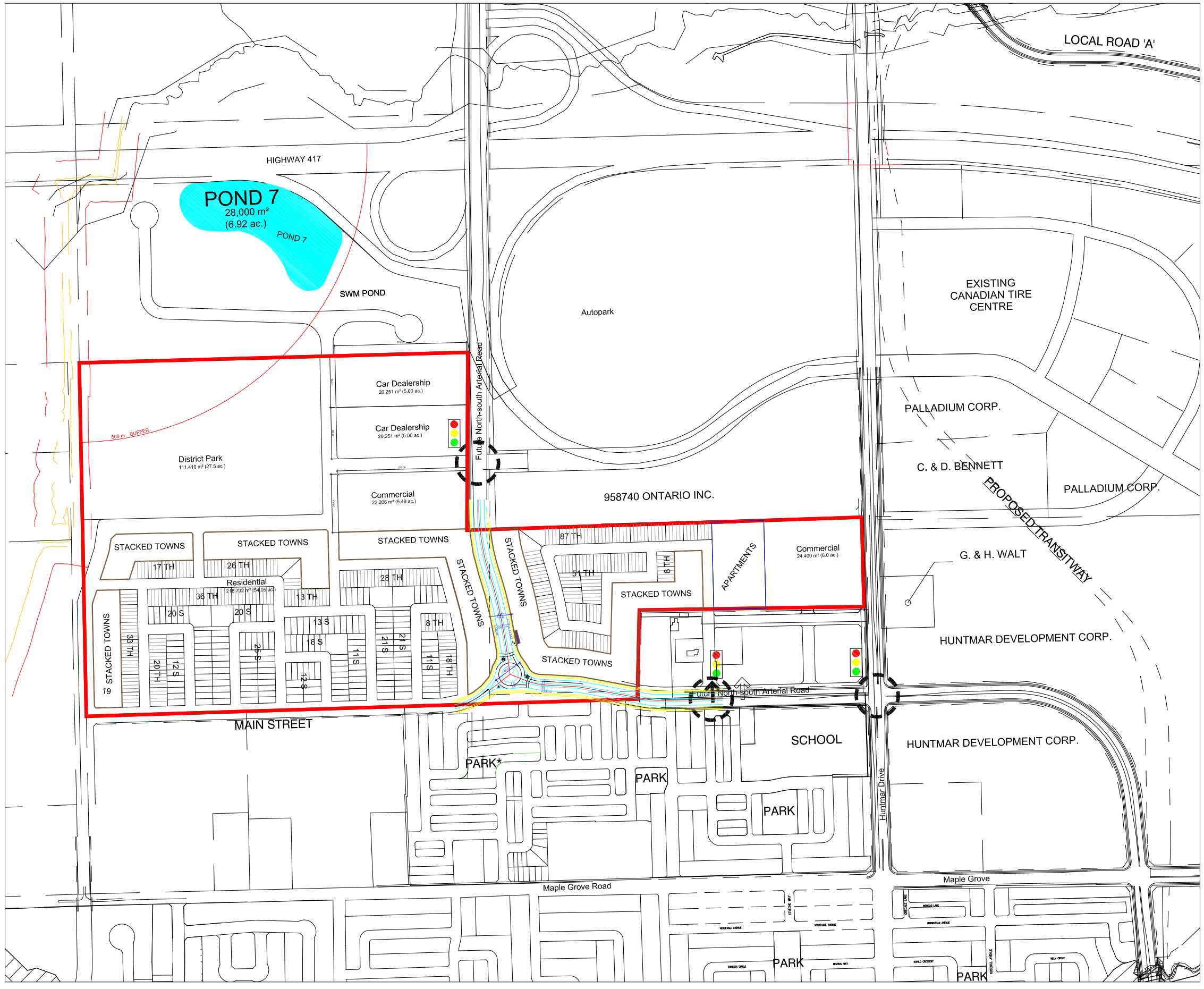


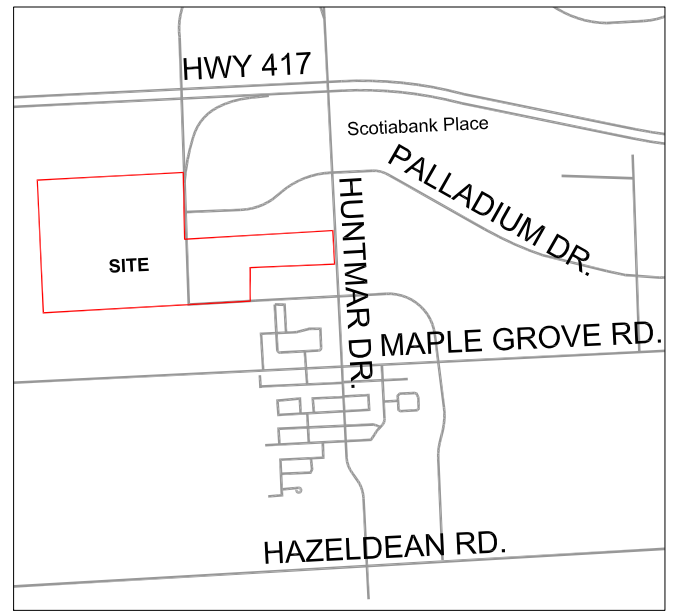
Significant Groundwater Recharge Area

Prepared By: DSEL, June 2016

DRAWINGS

CONCEPT	Proposed Concept Plan (Fotenn, June 2016)
STM-EX	Existing Drainage Plan (DSEL, July 2016)
WTR	Water Servicing Plan (DSEL, July 2016)
SAN	Sanitary Servicing Options (DSEL, July 2016)
STM-MSS	Stormwater Servicing Per MSS (DSEL, July 2016)
STM-PRF	Preferred Stormwater Servicing (DSEL, July 2016)





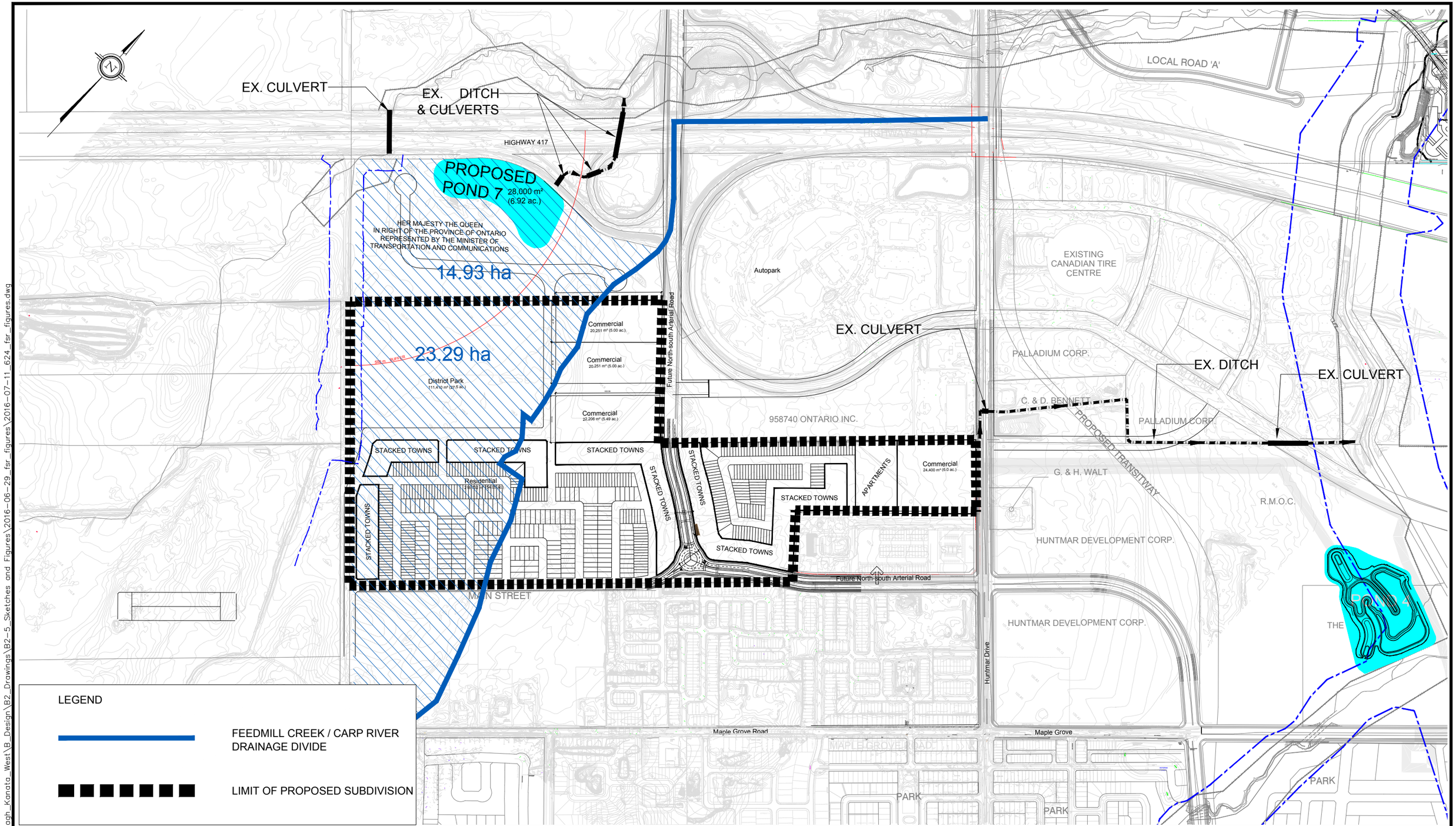
PROJECT
CAVANAGH - KANATA WEST

DRAWING
CONCEPT PLAN 5

FOTENN PLANNING & URBAN DESIGN
223 McLeod Street Ottawa ON K2P 0Z8
Tel: 613 730 5709 Fax: 613 730 1136
www.fotenn.com

DESIGNED	GV
DRAWN	GV
DATE	2016.06.23
SCALE	NTS

DRAWING No.
002



LEGEND

FEEDMILL CREEK / CARP RIVER DRAINAGE DIVIDE

LIMIT OF PROPOSED SUBDIVISION

DSEL
david schaeffer engineering ltd
SMART SUBDIVISIONS™

120 Iber Road, Unit 103
Stittsville, Ontario, K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

195 HUNTMAR DRIVE
EXISTING DRAINAGE
CITY OF OTTAWA

DATE: JULY 11, 2016
SCALE: 1:7500
PROJECT No.: 12-624
FIGURE STM-EX

Z:\Projects\12-624_Cavanagh_Kanata_West\B_Design\B2_Drawings\B2-5_Sketches and Figures\2016-06-29_fsr_figures\2016-07-11_624_fsr_figures.dwg

HIGHWAY 417

PROPOSED POND 7 28,000 m² (6.92 ac.)

HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF ONTARIO REPRESENTED BY THE MINISTER OF TRANSPORTATION AND COMMUNICATIONS

LOCAL ROAD 'A'

Ex. 610mmØ WTR

Ex. 305mmØ WTR

EXISTING CANADIAN TIRE CENTRE

Autopark

Ex. 305mmØ WTR

Ex. 305mmØ WTR

Future North-south Arterial Road

305mmØ WTR

305mmØ WTR

District Park 111,410 m² (27.5 ac.)

500 m BUFFER

Commercial 20,251 m² (5.00 ac.)

Commercial 20,251 m² (5.00 ac.)

Commercial 22,206 m² (5.49 ac.)

958740 ONTARIO INC.

PALLADIUM CORP.

C. & D. BENNETT

PALLADIUM CORP.

EX 305mmØ WTR

PROPOSED TRANSITWAY

305mmØ WTR

STACKED TOWNS

STACKED TOWNS

STACKED TOWNS

STACKED TOWNS

STACKED TOWNS

STACKED TOWNS

APARTMENTS

Commercial 24,400 m² (6.0 ac.)

G. & H. WALT

R.M.O.C.

HUNTMAR DEVELOPMENT CORP.

610mmØ WTR

305mmØ WTR

305mmØ WTR

Future North-south Arterial Road

MAIN STREET

Ex. 200mmØ WTR

406mmØ WTR

Huntmar Drive

HUNTMAR DEVELOPMENT CORP.

POND 4

THE

EX.305mmØ WTR

Maple Grove Road

Maple Grove

610mmØ WTR

MAPLE GROVE ROAD

EX.406mmØ WTR

PARK

PARK

PARK

LEGEND

EXISTING WATERMAIN

PROPOSED LOCAL WATERMAIN

PROPOSED TRUNK WATERMAIN

LIMIT OF PROPOSED SUBDIVISION

DSEL
david schaeffer engineering ltd
SMART SUBDIVISIONS™

120 Iber Road, Unit 103
Stittsville, Ontario, K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

195 HUNTMAR DRIVE
WATER SERVICING
CITY OF OTTAWA

DATE:	JULY 11, 2016
SCALE:	1:7500
PROJECT No.:	12-624
FIGURE	WTR

Z:\Projects\12-624_Cavanagh_Kanata_West\B_Design\B2_Drawings\B2-5_Sketches and Figures\2016-06-29_fsr_figures\2016-07-11_624_fsr_figures.dwg

HIGHWAY 417

PROPOSED POND 7
28,000 m²
(6.92 ac.)

HER MAJESTY THE QUEEN
IN RIGHT OF THE PROVINCE OF ONTARIO
REPRESENTED BY THE MINISTER OF
TRANSPORTATION AND COMMUNICATIONS

Autopark

LOCAL ROAD 'A'

EXISTING
CANADIAN TIRE
CENTRE

PALLADIUM CORP.

C. & D. BENNETT

PALLADIUM CORP.

958740 ONTARIO INC.

PROPOSED TRANSITWAY

675mmØ SAN

G. & H. WALT

R.M.O.C.

HUNTMAR DEVELOPMENT CORP.

Future North-south Arterial Road

500 m BUFFER

District Park
111,410 m² (27.5 ac.)

Commercial
20,251 m² (5.00 ac.)

Commercial
20,251 m² (5.00 ac.)

Commercial
22,206 m² (5.49 ac.)

STACKED TOWNS

STACKED TOWNS

STACKED TOWNS

STACKED TOWNS

STACKED TOWNS

STACKED TOWNS

STACKED TOWNS

STACKED TOWNS

APARTMENTS

Commercial
24,400 m² (6.0 ac.)

Residential
7.81 ha (19.3 ac.)

Future North-south Arterial Road

MAIN STREET

HUNTMAR DEVELOPMENT CORP.

THE

EX. 300mmØ SAN

EX 450mmØ SAN

EX 900mmØ SAN

EX 825mmØ SAN

EX. 600mmØ SAN

K.W.P.S.

MAPLEGROVE ROAD

PARK

PARK

PARK

LEGEND

EXISTING SANITARY SEWER

PROPOSED SANITARY SEWER ALIGNMENT
(DEVIATION FROM KANATA WEST MSS)

OPTION 1 SANITARY SEWER PER KANATA WEST MSS

OPTION 2 SANITARY SEWER THROUGH OTHERS

OPTION 3 SANITARY SEWER VIA HUNTMAR
(PREFERRED)

LIMIT OF PROPOSED SUBDIVISION

david schaeffer engineering ltd
SMART SUBDIVISIONS™

120 Iber Road, Unit 103
Stittsville, Ontario, K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

195 HUNTMAR DRIVE
SANITARY SERVICING OPTIONS
CITY OF OTTAWA

DATE: JULY 11, 2016
SCALE: 1:7500
PROJECT No.: 12-624
FIGURE SAN

Z:\Projects\12-624_Cavanagh_Kanata_West\B_Design\B2_Drawings\B2-5_Sketches and Figures\2016-06-29_fsr_figures\2016-07-11_624_fsr_figures.dwg

HIGHWAY 417

POND 7
(MSS)

HER MAJESTY THE QUEEN
IN RIGHT OF THE PROVINCE OF ONTARIO
REPRESENTED BY THE MINISTER OF
TRANSPORTATION AND COMMUNICATIONS

34HA
70%
C=0.70 PER KANATA WEST MSS

500 m BUFFER

Future North-south Arterial Road

Autopark

LOCAL ROAD 'A'

EXISTING
CANADIAN TIRE
CENTRE

PALLADIUM CORP.

C. & D. BENNETT

PALLADIUM CORP.

958740 ONTARIO INC.

PROPOSED TRANSITWAY

G. & H. WALT

R.M.O.C.

HUNTMAR DEVELOPMENT CORP.

Commercial
20,251 m² (5.00 ac.)

Commercial
20,251 m² (5.00 ac.)

District Park
111,410 m² (27.5 ac.)

Commercial
22,206 m² (5.49 ac.)

STACKED TOWNS

STACKED TOWNS

STACKED TOWNS

STACKED TOWNS

STACKED TOWNS

STACKED TOWNS

STACKED TOWNS

Residential
7.28 ha (18.0 ac.)

APARTMENTS

Commercial
24,400 m² (6.0 ac.)

Future North-south Arterial Road

MAIN STREET

278HA
62%
C=0.63 PER POND 4
DESIGN BRIEF
(DSEL, DEC. 2014)

EX.
1050mmØ STM

EX.
900mmØ STM

EX.
1500mmØ
STM

EX.
1800mmØ
STM

EX. 2100mmØ STM

EX. 900mmØ STM

Huntmar Drive

Maple Grove Road

Maple Grove

EX.2400mmØ STM

EX. 2250mmØ STM

POND 4

THE

MAPLE GROVE ROAD

PARK

PARK

PARK

LEGEND

DRAINAGE BOUNDARY

EXISTING STORM SEWER

PROPOSED STORM SEWER

LIMIT OF PROPOSED SUBDIVISION

david schaeffer engineering ltd
SMART SUBDIVISIONS™

120 Iber Road, Unit 103
Stittsville, Ontario, K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

195 HUNTMAR DRIVE
STORM SERVICING - MSS
CITY OF OTTAWA

DATE:
JULY 11, 2016
SCALE:
1:7500
PROJECT No.:
12-624
FIGURE
STM-MSS

Z:\Projects\12-624_Cavanagh_Kanata_West\B_Design\B2_Drawings\B2-5_Sketches and Figures\2016-06-29_fsr_figures\2016-07-11_624_fsr_figures.dwg

HIGHWAY 417

PROPOSED POND 7
28,000 m²
(6.92 ac.)

10.5HA
70%
C=0.70
TO FEEDMILL CREEK

HER MAJESTY THE QUEEN
IN RIGHT OF THE PROVINCE OF ONTARIO
REPRESENTED BY THE MINISTER OF
TRANSPORTATION AND COMMUNICATIONS

16.5HA
70%
C=0.70
TO POND 7

500 m BUFFER

District Park
111,410 m² (27.5 ac.)

40.8HA
70%
C=0.70
TO POND 7

Commercial
20,251 m² (5.00 ac.)

Commercial
20,251 m² (5.00 ac.)

Commercial
22,206 m² (5.49 ac.)

Future North-south Arterial Road

Autopark

958740 ONTARIO INC.

STACKED TOWNS

STACKED TOWNS

STACKED TOWNS

STACKED TOWNS

STACKED TOWNS

STACKED TOWNS

Residential
236752 m² (154.00 ac.)

13.8HA
62%
C=0.63
TO POND 4

APARTMENTS

Commercial
24,400 m² (6.0 ac.)

MAIN STREET

218.3HA
62%
C=0.63
TO POND 4

EX. 1050mmØ STM

EX. 900mmØ STM

EX. 1500mmØ STM

EX. 1800mmØ STM

EX. 900mmØ STM

EX. 2100mmØ STM

Maple Grove Road

Maple Grove

EX. 2400mmØ STM

Huntmar Drive

LOCAL ROAD 'A'

EXISTING CANADIAN TIRE CENTRE

PALLADIUM CORP.

C. & D. BENNETT

PALLADIUM CORP.

PROPOSED TRANSITWAY

G. & H. WALT

R.M.O.C.

HUNTMAR DEVELOPMENT CORP.

HUNTMAR DEVELOPMENT CORP.

THE

POND 4

EX. 2550mmØ STM

PARK

PARK

PARK

LEGEND

- DRAINAGE BOUNDARY
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- LIMIT OF PROPOSED SUBDIVISION

DSEL
david schaeffer engineering ltd
SMART SUBDIVISIONS™

120 Iber Road, Unit 103
Stittsville, Ontario, K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

195 HUNTMAR DRIVE
STORM SERVICING - PREFERRED
CITY OF OTTAWA

DATE: JULY 11, 2016
SCALE: 1:7500
PROJECT No.: 12-624
FIGURE STM-PRF

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