D.B. Gray Engineering Inc.

Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

700 Long Point Circle
Ottawa, Ontario K1T 4E9

613-425-8044
d.gray@dbgrayengineering.com

SITE SERVICING STUDY & STORMWATER MANAGEMENT REPORT

1818 BRADLEY SIDE ROAD
OTTAWA, ONTARIO

REPORT NO. 23123

SEPTEMBER 30, 2024

CONTENTS

LIST OF APPENDICES

1.0 INTRODUCTION

This Site Servicing Study & Stormwater Management Report is a description of the servicing for an event centre and cidery building and addresses the stormwater management requirements of about 1.47 hectares of land being developed at 1818 Bradley Side Road, in Ottawa. The entire property is about 11.7 hectares and is currently farmland / orchard with a several farm buildings and an existing dwelling. The property is also has frontage on Richardson Side Road and Huntmar Drive.

This report forms part of the site servicing and stormwater management design for the proposed development. Also refer to drawings C-1 to C-9 prepared by D. B. Gray Engineering Inc.

2.0 WATER SERVICING

2.1 WATER SUPPLY FOR FIREFIGHTING

The proposed one-storey building is about 730 m^2 in area. Using the Ontario Building Code (OBC) method to calculate the water supply for firefighting the required storage volume is 90,837 L, which calculates to be about a 34-minute water supply at 2,700 L/min (as per OBC A-3.2.5.7. Table 2), which is greater than the 30-minute minimum required by OBC. Refer to calculations in Appendix A.

These calculations will be submitted to the Ottawa Fire Services (OFS) to determine if the storage credit of 57,000 L is available. It is available if the site meets the FUS requirements for superior tanker shuttle (specifically the site must be within 5 km of a fire station and 2.5 km of an OFS approved water source).

Currently, two 45,460 L (10,000 gallon) tanks are proposed for a total of 90,920 L, exceeding the required volume. One tank will be equipped with a chute and draw pipe, and the other will have a chute and vent. (If the OFS analysis determines that the storage credit of 57,000 L can be applied, one 45,460 L (10,000 gallon) tank will be proposed.

2.2 DOMESTIC WATER SUPPLY

An existing drilled well, constructed 3.3 m west of the proposed building will provide the domestic water supply.

With respect to quantity; as stated in the Hydrogeological Assessment and Terrain Analysis, prepared by Paterson Group (File No: PM15625-LET.01, dated Aug 15, 2024):

> *"The existing submersible pump was used … The pumping test was carried out at a pumping rate of 30 L/min for a duration of 8 hours. …The selected rate of 30 L/min provides approximately 1.4 times the maximum total daily design volume of 10,000 L/day for the subject site during the 8-hour pumping test. The total daily design sanitary sewage flows (TDDSSF) are proposed to remain below the limit of 10,000 L/day as set out by the Ontario Building Code (OBC) not* [to] *require a large-scale subsurface sewage system."*

The total daily design sanitary sewage flow (TDDSSF) for the proposed building is 7,125 L/day (refer to Sanitary Servicing below) and the existing septic system serving the existing dwelling is calculated to have a capacity for a TDDSSF of 2,800 L/day for a total of 9,925 L/day (less than the maximum of 10,000 L/day). Therefore, as stated in the based on the Hydrogeological Assessment and Terrain Analysis, the well is capable of meeting the expected daily water demand, and as concluded in the assessment: *"The water supply aquifer intercepted by the existing well is considered to be adequate to support the water quantity demands for the proposed building …"*

With respect to quality; as concluded in the Hydrogeological Assessment and Terrain Analysis, prepared by Paterson Group (File No: PM15625-LET.01, dated Aug 15, 2024):

"The preferred water supply intercepted by TW1 contains a water supply that is potable, and contains only elevated concentrations of hardness, TDS, and iron. The noted parameters can be treated with current readily available water conditioning equipment."

"Colour, turbidity, and aluminum were measured to be elevated in initial laboratory testing. A resample was completed at a later date. The field testing of the resample showed 0 TCU for colour and 0.56 NTU for turbidity. Laboratory testing for aluminum was under the operational guideline at the resample. These values represent typical usage of TW1."

"If desired by the property owner, a residential grade water softener can be used to facilitate the reduction of the hardness concentration and reduce scaling. If a water softener is used for the proposed development, the owner should be made aware that additional sodium will be added to the water to reduce hardness. If desired, a point-of-use reverse osmosis system can be used to provide a drinking tap source without increasing sodium levels."

"The sodium concentration was measured to be above the 20 mg/L reporting limit and, as such, the Medical Officer of Health for the City of Ottawa should be informed to assist area physicians in the treatment of local residents on sodium reduced diets. It should be noted that some water treatment equipment may further increase the sodium concentration."

"The water quality as determined from the results of the analyses is acceptable. The water meets all the Ontario Drinking Water Standards (ODWS) health and aesthetic parameters tested for at the test well except for aesthetic objective for hardness, Iron, Manganese, TDS [total dissolved solids]*, Turbidity (lab measured) and Antimony. Sodium in the raw water supply exceeds the 20 mg/L medical advisory level for those on medically restricted low sodium diets."*

As is concluded in Hydrogeology Assessment and Terrain Analysis, the *"water supply that is potable, and contains only elevated concentrations of hardness, TDS, and iron"* … which *"can be treated with current readily available water conditioning equipment."*

3.0 SANITARY SERVICING

There is an existing on-site sewage (septic) system servicing the existing dwelling; and a new septic system will serve the proposed building.

As previously stated, the total daily design sanitary sewage flow (TDDSSF) for the proposed building is calculated to be 7,125 L/day, based on an event capacity of 150 people and 3 full-time employees and 10 employees per event; and in accordance with the Part 8 of the Ontario Building Code (OBC) as follows:

Event Centre ('Assembly Hall with kitchen facilities provided'):
150 people x 36 L/day per seat = 5,400 L/day
Employees ('Office' or 'Factory Area – no showers'):
13 employees x 75 L/day per employees = 975 L/day
Floor Drains (in cidery – 375 L/day for 'catch basins in garage floors for floor cleaning' as per Appendix 4-A Ottawa Sewer Design Guidelines):
2 floor drains x 375 L/day = 750 L/day

Total TDDSSF (proposed septic system):
Event Centre (5,400 L/day) + Employees (975 L/day) + Floor Drains (750 L/day) = 7,125 L/day

Also as previously stated the existing septic system serving the existing dwelling is calculated to have a capacity for a TDDSSF of 2,820 L/day, based on a four bedroom dwelling, 280 m^2 in area, 26 Fixture Units (FUs); and in accordance with the Part 8 of the Ontario Building Code (OBC) as follows:

Four-bedroom dwelling:
2,000 L/day
The greater of:
100 L/day for each 10 m^2 (or part of it) over 200 m^2: 80 m^2 x 100 L/day = 800 L/day
or
50 L/day for each FU over 20 FUs: 6 x 50 L/day = 300 L/day

Total TDDSSF (existing septic system):
Four-bedroom dwelling (2,000 L/day) + 80 m^2 over 200 m^2 (800 L/day) = 2,800 L/day

TOTAL SITE TDDSSF:
Proposed Septic System (7,125 L/day) + Existing Septic System (2,800 L/day) = 9,925 L/day

As stated in the Hydrogeological Assessment and Terrain Analysis, prepared by Paterson Group (File No: PM15625-LET.01, dated Aug 15, 2024):

> *"Based on the results of the predicted nitrate impact assessment, it is our opinion that the property can adequately support the proposed re-zoning without having an adverse impact on the underlying bedrock aquifer."*
>
> *"The predicted nitrate concentrations at the property boundary is calculated to be below the required 10 mg/L threshold when a conventional treatment system is used for greater than 10,000 L/day."*

Therefore, the proposed septic does not require nitrate reduction and it is not proposed.

The proposed on-site septic system will be a Class 4 system sized for a daily design sanitary sewage flow of 7,125 L/day; consisting of a minimum 21,375 L (3 x TDDSSF) septic tank; four ECOFLO 650BR biofilter treatment units (each having a 2,000 L capacity); and a Type 'A' dispersal bed.

An application for a septic permit will be submitted to the Ottawa Septic System Office (OSSO).

4.0 STORMWATER MANAGEMENT

4.1 QUALITY CONTROL

The City of Ottawa requires:
- an enhanced level of protection with 80% total suspended solids (TSS) removal from the rainwater runoff,
- Low Impact Development (LID) (as per 'Low Impact Development Technical Guidance Report – Implementation in Areas with Potential Hydrogeological Constraints' and as per the bulletin from the former MOECC (now MECP) titled Expectations RE: Stormwater Management released in February 2015), and
- water budget management, quality control and erosion control (as per the Carp River Watershed/Subwatershed Study).

Rainfall runoff from 59% of the portion of the property to be developed, including most (88%) of the hard surfaces (excluding roof drainage which is considered 'clean'), will drain to one of two infiltration trenches (the 'South Infiltration Trench' or 'North Infiltration Trench'). As per the MOE Stormwater Management Planning and Design Manual; if an infiltration trench is being used to treat stormwater runoff from roads and parking lots, pre-treatment is recommended to minimize the potential for suspended sediments to clog the trench; and sand filters, vegetated filter strips, grassed swales and/or oil/grit separators may be used. The hard surfaces draining to the infiltration trenches will drain across grass and via 90 m to 110 m of grassed swales or sheet drain across 2.5 m of grass. Approximately 60% of the grassed swales will have minimal longitudinal slopes (0.5% to 1.5%) that will keep flow velocities low making them effective

for pre-treatment and they will tend to increase the removal of TSS. The low flow conditions in these grassed areas will aid in filtering out coarse sediment from runoff and the grass will take up nutrients. For the infiltration trenches to function adequately, they require regular maintenance: any accumulated sediment needs to be removed from the grass and infiltration trench. Also, about once every five years (more frequently if ponding is observed during non-freezing conditions), the top 50 mm of clear stone (above the geotextile fabric) should be removed and replaced; and any geotextile material that has been damaged also be replaced.

As per the MOE Stormwater Management Planning and Design Manual, to remove 80% TSS from the 4,245 m^2 area draining to the 'South Infiltration Trench' (Drainage Area II) is calculated to require an infiltration trench with a storage volume of 12.8 m^3. The 'South Infiltration Trench' is proposed to have 13.3 m^3 storage volume. Similarly, to remove 80% TSS from the 4,466 m^2 draining to the 'North Infiltration Trench' (Drainage Area IV) is calculated to require an infiltration trench with a storage volume of 11.1 m^3. The 'North Infiltration Trench' is proposed to have 12.6 m^3 storage volume. Refer to calculations in Appendix B.

Based on the Geotechnical Investigation, prepared by GEMTEC Consulting Engineers and Scientists Limited, Project: 101817.001 (August 30, 2022), the soil underlying the topsoil is silty sand (which is confirmed by three other test pits and is considered to be representative of the subsurface conditions within 1.0 metres of the underside of the proposed infiltration trench). A Grain Size Distribution and Particle Size Analysis were conducted by Gemtec (refer to Appendix B) and the results of the analysis indicate that the subsurface soils consist of less than 1% cobbles and gravel, about 59% sand, 32% silt and 8% clay. Based on the tested properties of the soil samples obtained, and using the unified soil classification system, the soil is classified as SM (which includes silty sands). From the OBC Volume 2 Supplementary Standard SB-6, Chart 9 and Table 3, these soils at the site will have an estimated Percolation Time, T-time of 8 to 20 min/cm and a Coefficient of Permeability 10^{-3} to 10^{-5} cm/sec. The following table obtained from the Low Impact Development Stormwater Management Planning and Design Guide - Appendix C produced by Credit Valley Conservation and Toronto and Region Conservation indicates the relationship between the Percolation Time, Coefficient of Permeability and Infiltration Rate.

Table C1: Approximate relationships between hydraulic conductivity, percolation time and infiltration rate:

Hydraulic Conductivity, Kfs (centimetres/second)	Percolation Time, T (minutes/centimetre)	Infiltration Rate, 1/T (millimetres/hour)
0.1	2	300
0.01	4	150
0.001	8	75
0.0001	12	50
0.00001	20	30
0.000001	50	12

From the above table, the native soils within 1 metre of the bottom of the infiltration trenches have an estimated infiltration rate of 12 to 30 mm/hr. However, as per the City of Ottawa LID Technical Guidance Report a factor of safety should be considered; so a safety correction factor of 2.5 has been applied to the estimated infiltration rates. Therefore, the design infiltration rates are 12 to 20 mm/hr; and the proposed 100 mm depth of water above the trenches (controlled by 100 mm high weirs), will have a drawdown time of 3.3 to 8.3 hours. MOE Stormwater Management Planning and Design Manual recommends a maximum drawdown time of 24 to 48 hours. Refer to calculations in Appendix B.

The MOE Stormwater Management Planning and Design Manual recommend that the underside of an infiltration trench be a minimum of 1 m above the long-term groundwater level. As per the geotechnical report groundwater level was measured to be 3 to 4 m below grade. However, three other test pits were excavated which indicate that groundwater is 0.8 m to 1.8 m below grade. As such, native soil fill will be used to raise the underside of the 'South Infiltration Trench' 0 to 0.7 m above grade and about 1.5 m

above the estimated groundwater level. Similarly, the underside of the 'North Infiltration Trench' will be raised 0 to 0.5 m above grade and about 1.0 m above the estimated groundwater level.

As per the MOE Stormwater Management Planning and Design Manual it is recommended that the underside of an infiltration trench be a minimum of 1 m above bedrock; however, as per the geotechnical report, bedrock mapping indicates that the bedrock surface is expected at depths ranging from about 15 to 25 metres; therefore bedrock is not expected to be an issue.

The infiltration trenches promote runoff to infiltrate into the ground and are an effective method to achieve temperature mitigation and groundwater recharge. Water will be stored to a depth of 100 mm above the infiltration trenches (the infiltration trenches are controlled by 100 mm high weirs) providing 13.3 m^3 storage at the 'South Infiltration Trench' and 12.6 m^3 at the 'North Infiltration Trench', which is 11% to 18% greater, respectively, than the volume required to capture the entire runoff from a 5 mm rainfall event (11.9 m^3 is generated by the 5 mm rainfall event in area draining to 'South Infiltration Trench' (Drainage Area II) and, similarly, 10.7 m^3 is generated in area draining to 'North Infiltration Trench' (Drainage Area IV) – refer to Appendix C). In Ottawa, rainfall in 64% of days with precipitation is less than 5 mm; therefore, the entire runoff draining to the infiltration trenches during the majority of rainfall events will infiltrate into the ground.

The pre-development (existing) conditions of the part of the property to be developed has a calculated annual infiltration of 246 mm/yr. Based on the Carp River Watershed/Subwatershed Study) the subject property is expected to be considered a moderate recharge area which requires a post development infiltration target of 104 mm/yr. In eastern Ontario, on hard surfaces approximately 150 mm of the 943 mm annual precipitation (or 16%) is lost to evapotranspiration (Eastern Ontario Water Resources Management Study (2001) & Carp River Watershed / Subwatershed Study). Therefore, 84% of the precipitation on hard surfaces is available for infiltration. As per Environment Canada's records at the Ottawa International Airport (1981-2010), there are on average 58.4 days per year where the precipitation is greater than 5 mm. Conservatively assuming only 5 mm of precipitation on each of the 58.4 days (and assuming 84% available for infiltration), 958 m^3 is available for infiltration from the runoff from the 3,902 m^2 of the hard surfaces draining to the infiltration trenches. Therefore, about 16.4 m^3 is available for infiltration for each of the 58.4 days. The infiltration trenches, having a total storage volume of 21.8 m^3 (12.6 m^3 in the 'South Infiltration Trench' + 13.3 m^3 in the 'North Infiltration Trench'), have the capacity to capture and infiltrate into the ground 100% of this volume or about 958 m^3 annually. Inserting the 958 m^3 into the water balance calculations, the post development annual infiltration for the property is 205 mm/year; which is 197% of minimum expected target of 104 mm/year. Refer to calculations in Appendix B.

As per the Ministry of Environment, Conservation and Parks' (MECP's) Source Protection Information Atlas, the source protection plan for the subject property is the Mississippi-Rideau Source Protection Plan; and as per this plan the subject property is <u>not</u> within a Wellhead Protection Area, Intake Protection Area, or a Significant Groundwater Recharge Area or has a Highly Vulnerable Aquifer. Therefore, spills, potentially entering the groundwater via an infiltration trench, are not a significant concern.

An erosion and sediment control plan has been developed to be implemented during construction (see drawing C-4 and notes 2.1 to 2.7 on drawing C-6). In summary: to filter out construction sediment a silt fence barrier will be installed around the perimeter of the site where runoff will drain off the site, straw bale check dams will be installed at culverts, and any material deposited on a public road will be removed.

4.2 QUANTITY CONTROL

As per the City of Ottawa Phase 2 Pre-Consultation Meeting Feedback; the stormwater quantity control measures are to be based on the 100-year post development release rate controlled to the 2-year pre-development peak flow rate (the pre-development condition is considered the parcel prior to the inclusion of the cider production building) and the pre-development runoff coefficient ('C') or a maximum equivalent 'C' of 0.50, and a calculated time of concentration (but not less than 10 minutes). It is determined that

pre-development condition reflected a runoff coefficient of 0.30 (as per City of Ottawa Sewer Design Guidelines, Table 5.7 – a woodland or pasture); and, using the Airport Formula, the time of concentration is 12 minutes. Using the Rational Method, and a time of concentration of 12 minutes, the pre-development 2-year peak flow is 84.61 L/s. Therefore, the maximum allowable release rate is 84.61 L/s for all storm events up to the 100-year event. Refer to calculations in Appendix B.

Stormwater will be stored within the development on the surface above two infiltration trenches and in two stormwater detention areas. The stormwater released from the detention area will discharge to the Huntmar Drive roadside ditch. The Modified Rational Method is used to calculate the required storage volume. The runoff coefficients for the 100-year event are increased by 25% to maximum 1.00.

Drainage Area I (Uncontrolled Flow Off Site – 75 m^2)
Of the areas to be developed only a small portion of a driveway will drain uncontrolled off site. The flow rates are calculated at a time of concentration of 10 minutes.

	100-Year Event	2-Year Event
Maximum Flow Rate	3.72 L/s	1.28 L/s

Drainage Area II (4,245 m^2 – draining to the 'South Infiltration Trench')
A broad-crested weir will control the release of stormwater from this drainage area (which will drain to the stormwater detention area in Drainage Area III). The broad-crested weir will be a concrete curb with a 5.0 m long depressed section set at the 100-year ponding elevation of 102.04. During the 100-year event the weir will release 109.52 L/s at 0.05 m water depth above the weir; and during the 2-year 17.14 L/s will be released.

	100-Year Event	2-Year Event
Maximum Weir Release Rate	109.52 L/s	17.14 L/s
Maximum Ponding Elevation	102.04 m	102.04 m
Maximum Volume Stored	21.47 m^3	21.47 m^3

Drainage Area III (5,313 m^2 – draining to the 'South Stormwater Detention Area')
An inlet control device (ICD) located in the inlet of the culvert in the stormwater detention area will control the release of stormwater from this drainage area and will discharge stormwater to the Huntmar Drive roadside ditch adjacent to the east property. The ICD will restrict the flow and force the stormwater to rise in the detention area. The ICD shall be a plug style with a round orifice design manufactured by Pedro Plastics (or approved equal) and shall be sized by the manufacturer for a discharge rate of 15.90 L/s at 0.72 m head. It is calculated that an orifice area of 6,920 mm^2 ($\pm$94 mm diameter) and a discharge coefficient of 0.61 will restrict the outflow rate to 15.90 L/s at a head of 0.72 m. Based on this orifice the maximum outflow rate for the 2-year storm event is calculated to be 11.93 L/s at 0.41 m. A broad-crested weir will control the release of stormwater to the roadside ditch in the event that the 100-year storm is exceeded (or if there is blockage). The broad-crested weir will be a concrete curb with a 7.5 m long depressed section set at the 100-year ponding elevation of 100.60. The weir, for example, would release 15.90 L/s (the 100-year ICD outflow rate) at 0.01 m water depth above the weir.

	100-Year Event	2-Year Event
Maximum ICD Release Rate	15.90 L/s	31.40 L/s
Maximum Ponding Elevation	100.60 m	100.29 m
Maximum Volume Stored	246.35 m^3	68.93 m^3

Drainage Area IV (4,466 m^2 – draining to the 'North Infiltration Trench')

A broad-crested weir will control the release of stormwater from this drainage area (which will drain to the stormwater detention area in Drainage Area V). The broad-crested weir will be a concrete curb with a 3.4 m long depressed section set at the 100-year ponding elevation of 101.59. During the 100-year event the weir will release 97.88 L/s at 0.07 m water depth above the weir; and during the 2-year 17.91 L/s will be released.

	100-Year Event	2-Year Event
Maximum Weir Release Rate	97.88 L/s	17.91 L/s
Maximum Ponding Elevation	101.59 m	101.59 m
Maximum Volume Stored	16.95 m^3	16.95 m^3

Drainage Area V (593 m^2 – draining to the 'North Stormwater Detention Area')

An inlet control device (ICD) located in the inlet of the culvert in the stormwater detention area will control the release of stormwater from this drainage area and will discharge to the Huntmar Drive roadside ditch near the northeast corner of the property. The ICD will restrict the flow and force the stormwater to rise in the detention area. The ICD shall be a plug style with a round orifice design manufactured by Pedro Plastics (or approved equal) and each shall be sized by the manufacturer for a discharge rate of 64.99 L/s at 0.65 m head. It is calculated that an orifice area of 29,917 mm^2 ($\pm$195 mm diameter) and a discharge coefficient of 0.61 will restrict the outflow rate to 64.99 L/s at a head of 0.65 m. Based on this orifice the maximum outflow rate for the 2-year storm event is calculated to be 42.58 L/s at 0.28 m. A broad-crested weir will control the release of stormwater to the roadside ditch in the event that the 100-year storm is exceeded (or if there is blockage). The broad-crested weir will be a concrete curb with a 5.3 m long depressed section set at the 100-year ponding elevation of 100.48. The weir, for example, would release 64.99 L/s (the 100-year ICD outflow rate) at 0.04 m water depth above the weir.

	100-Year Event	2-Year Event
Maximum ICD Release Rate	64.99 L/s	42.58 L/s
Maximum Ponding Elevation	100.48 m	100.12 m
Maximum Volume Stored	50.81 m^3	0 m^3

Entire Site

	100-Year Event	2-Year Event
Pre-Development Flow Rate	258.70 L/s	84.61 L/s
Maximum Allowable Release Rate	84.61 L/s	84.61 L/s
Maximum Release Rate	84.61 L/s	55.86 L/s
Maximum Volume Required & Stored	335.57 m^3	107.34 m^3

The maximum post-development release rate during the 100-year event was calculated to be 67% less than the pre-development flow rate and equal to the maximum allowable release rate. To achieve the maximum allowable release rate, a maximum storage volume of 335.57 m^3 is required and provided. The maximum post-development release rate during the 2-year event was calculated to be 34% less than the pre-development flow rate and the maximum allowable release rate. The proposed stormwater management quantity control measures are expected to have a positive impact on the downstream municipal infrastructure.

4.2 SUFFICIENT AND LEGAL OUTLET

As per the City of Ottawa Phase 2 Pre-Consultation Meeting Feedback; *"runoff will need to be conveyed to a legal and sufficient outlet. If it is proposed to discharge storm water to the existing ditches in the ROW, the ditches will need to be shown to provide continuous flow to an outlet."*

Stormwater will be conveyed off the site via two stormwater detention areas, each of which outlets to the Huntmar Drive roadside ditch. As per the topographic survey of the property and adjacent areas the Huntmar Drive roadside ditch is approximately 1.2 m to 1.8 m deep and drains southeast at an average 0.4% slope which appears to provide a continuous flow to the Richardson Side Road intersection. Based on geoOttawa, from this intersection the roadside ditch on the south side of Richardson Side Road is a watercourse, which drains northeast at an average slope of about 1%, which appears to provide a continuous flow to the Carp River Municipal Drain. Therefore, the existing roadside ditches appear to provide a continuous flow to an outlet.

5.0 CONCLUSIONS

1. Two 45,460 L (10,000 gallon) tanks are proposed for a total of 90,920 L, exceeding the minimum 90,837 L that is required. The Ottawa Fire Services (OFS) will be asked to determine if a storage credit of 57,000 L is applicable to account for a superior tanker shuttle (the site must be within 5km of a fire station and 2.5 km of an OFS approved water source).

2. Based on the Hydrogeology Assessment and Terrain Analysis, the well is capable of meeting the expected daily water demand, and as concluded in the assessment: *"The water supply aquifer intercepted by the existing well is considered to be adequate to support the water quantity demands for the proposed building …"*.

3. As is concluded in Hydrogeology Assessment and Terrain Analysis, the *"water supply that is potable, and contains only elevated concentrations of hardness, TDS, and iron"* … which *"can be treated with current readily available water conditioning equipment."*

4. A new on-site sewage (septic) system is proposed. The total daily design sewage flow (TDDSSF) of 7,125 L/day is calculated for the proposed building (for a total of 9,925 L/day including the existing septic system serving the existing dwelling). As per the Hydrogeology Assessment and Terrain Analysis the proposed septic does not require nitrate reduction. An application for a septic permit will be submitted to the Ottawa Septic System Office (OSSO).

5. To achieve quality control as part of the stormwater management design, an infiltration trench, designed to remove 80% TSS, is proposed.

6. The infiltration trenches promote rainfall runoff to infiltrate into the ground and are an effective method to achieve temperature mitigation and groundwater recharge. The entire runoff draining to the infiltration trenches during the majority of rainfall events (5 mm or less) will infiltrate into the ground.

7. The infiltration trenches will help achieve a post development annual infiltration for the property of 205 mm/year; greater than the expected minimum target of 104 mm/year.

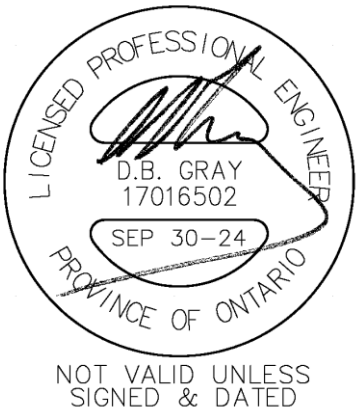
8. An Erosion & Sediment Control Plan has been developed to be implemented during construction.

9. The maximum post-development release rate during the 100-year event was calculated to be 67% less than the pre-development flow rate and equal to the maximum allowable release rate; and the maximum post-development release rate during the 2-year event was calculated to be 34% less than the pre-development flow rate and the maximum allowable release rate. The proposed

stormwater management quantity control measures are expected to have a positive impact on the downstream municipal infrastructure.

10. The roadside ditches appear to provide a continuous flow to an outlet at the Carp River Municipal Drain.

Prepared by D.B. Gray Engineering Inc.



APPENDIX A

WATER SERVICING

D.B. Gray Engineering Inc.

Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains

700 Long Point Circle
Ottawa, Ontario K1T 4E9

613-425-8044
d.gray@dbgrayengineering.com

September 25, 2024

1818 Bradley Side Road

Ottawa, Ontario

FIRE FLOW AND WATER STORAGE CALCULATIONS

(Based OFS Proposal)

OBC Method to Calculate Fire Flow

As per "Required Minimum Water Supply Flow Rate" as calculated using the Ontario Building Code - Appendix A - Article A-3.2.5.7 "Water Supply For Fire Fighting".

K = Water supply coefficient as per OBC A-3.2.5.7. Table 1
= 23 Group A-2 Occupancy, Building is of combustible construction with fire separations with no fire resistance ratings.

V = Building volume in cubic meters

Fooprint Area (sq.m)	Average Height (m)	Volume (cu.m)
730	5.41	3,949

S_{Total} = Total of spatial coefficients from exposure distances
= $1.0 + S_{Side\ 1} + S_{Side\ 2} + S_{Side\ 3} + S_{Side\ 4}$

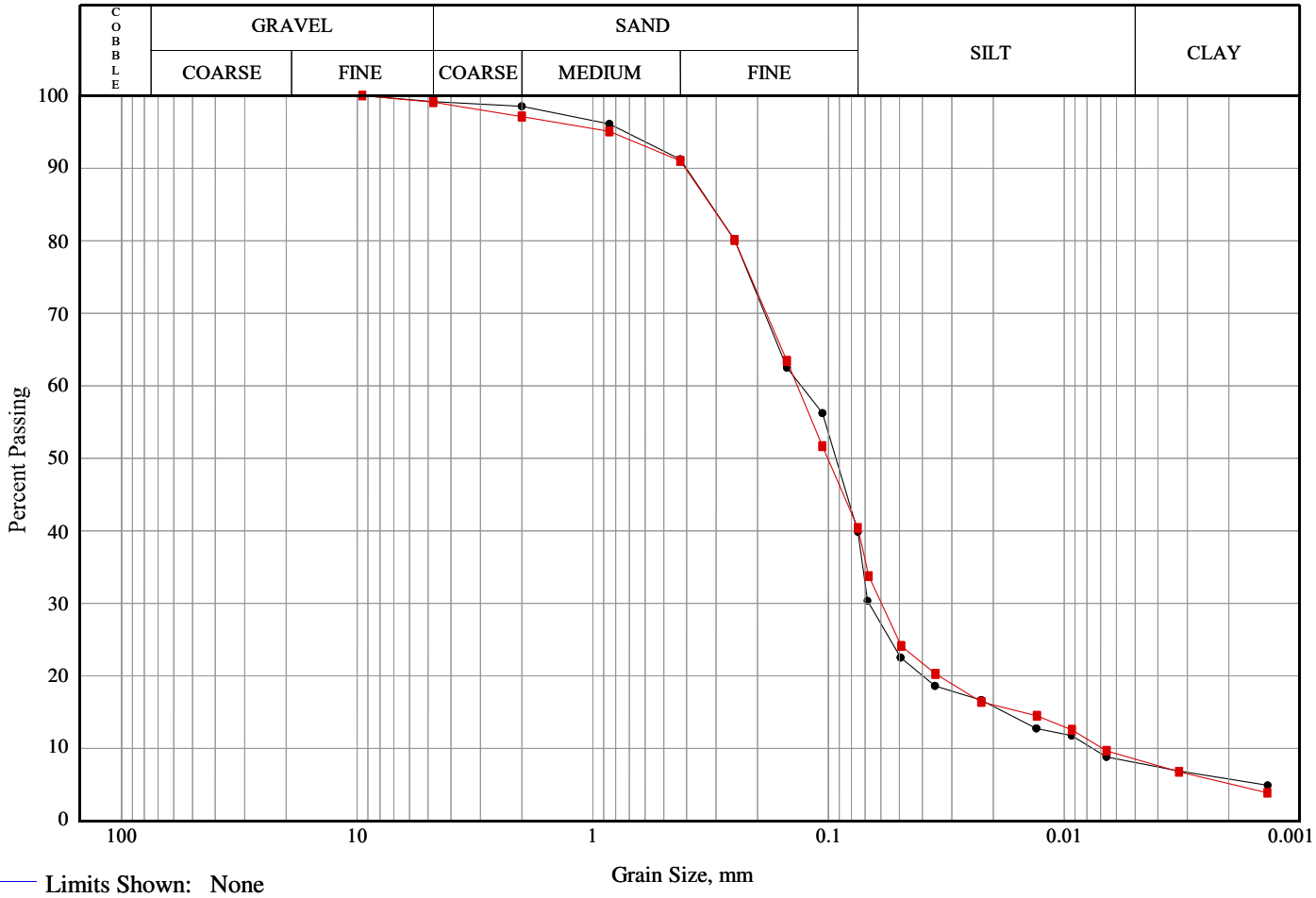
	Spatial Coefficient	Exposure Distance (m)	
$S_{Side\ 1}$	0.0	53	(north to centerline Bradley Side Road)
$S_{Side\ 2}$	0.0	10	(east to existing greenhouse)
$S_{Side\ 3}$	0.0	16	(south to property line
$S_{Side\ 4}$	0.0	48.0	(west to existing building)
S_{Total}	1.0		

Q = KVS_{Tot} (required water supply in litres)
Q = 90,837 L
= 2,700 L/min as per OBC A-3.2.5.7. Table 2
(less than 9,000 L/min; therefore, FUS calculations are not required)
(2,700 L/min; therefore, 1 draft points are required)

APPENDIX B

STORMWATER MANAGEMENT

GEMTEC Consulting Engineers and Scientists	Client: Morley Hoppner Limited	Soils Grading Chart (LS-702/ ASTM D-422)
	Project: Geotechnical Investigation, Proposed New Building, 181	
	Project #: 101817001	



Limits Shown: None

Line Symbol	Sample	Borehole/ Test Pit	Sample Number	Depth	% Cob.+ Gravel	% Sand	% Silt	% Clay
●	GLACIAL TILL	BH22-01	4	2.3 - 2.9 m	0.8	59.3	31.8	8.0
■	GLACIAL TILL	BH22-02	6	3.8 - 4.4 m	0.9	58.7	31.9	8.5

Line Symbol	CanFEM Classification	USCS Symbol	D_{10}	D_{15}	D_{30}	D_{50}	D_{60}	D_{85}	% 5-75µm
●	Silty sand , trace gravel, trace clay	N/A	0.01	0.02	0.07	0.09	0.13	0.32	31.8
■	Silty sand , trace gravel, trace clay	N/A	0.01	0.02	0.06	0.10	0.14	0.32	31.9

1818 Bradley Side Rd
Ottawa, Ontario

INFILTRATION CALCULATIONS

DRAINAGE AREA II (South Infiltration Trench)

Roof Area:	188	sq.m
Asphalt/Concrete Area:	0	sq.m
Gravel Area:	2167	sq.m
Infiltration Trench:	133	sq.m
Landscaped Area:	1757	sq.m
Total Catchment Area	4245	sq.m.
Pervious (Landscaped) Area:	1890	sq.m.
Total Catchment Area:	4245	sq.m.
Percentage Pervious:	45%	
Percentage Impervious:	55%	

Require Storage Volume *: 55% Impervious Level 30.2 cu.m./ha (interpolated from Table 3.2 *)
(for 80% TSS removal) 12.8 cu.m. (4245) sq.m.

* As per MOE Stormwater Management Planning and Design Manual, March 2003

		Infiltration Trench				
Water Depth m	Water Volume cu.m.	Clear Stone Depth m	Area sq.m.	Clear Stone Volume cu.m.	Void Volume 40% cu.m.	Total Volume cu.m.
0.10	13.3	0.00	133	0.0	0.00	13.3

Silty sand

Infiltration Rate		
75	mm/hr	High End of Range
30	mm/hr	Low End of Range

Design Infiltration Rate (2.5 safety factor)		
30	mm/hr	High End of Range
Time to Draw Down: 3.3	Hours	
12	mm/hr	Low End of Range
Time to Draw Down: 8.3	Hours	

INFILTRATION CALCULATIONS (continued)

DRAINAGE AREA IV (North Infiltration Trench)

Roof Area:	362	sq.m
Asphalt/Concrete Area:	0	sq.m
Gravel Area:	1185	sq.m
Infiltration Trench:	352	sq.m
Landscaped Area:	2567	sq.m
Total Catchment Area	4466	sq.m.
Pervious (Landscaped) Area:	2919	sq.m.
Total Catchment Area:	4466	sq.m.
Percentage Pervious:	65%	
Percentage Impervious:	35%	

Require Storage Volume *: 35% Impervious Level 24.9 cu.m./ha (interpolated from Table 3.2 *)
(for 80% TSS removal) 11.1 cu.m. (4466) sq.m.

* As per MOE Stormwater Management Planning and Design Manual, March 2003

		Infiltration Trench				
		Clear Stone		Clear Stone	Void Volume	
Water Depth	Water Volume	Depth	Area	Volume	40%	Total Volume
m	cu.m.	m	sq.m.	cu.m.	cu.m.	cu.m.
0.10	12.6	0.00	126	0.0	0.00	12.6

Silty sand

Infiltration Rate		
75	mm/hr	High End of Range
30	mm/hr	Low End of Range

Design Infiltration Rate (2.5 safety factor)		
30	mm/hr	High End of Range
Time to Draw Down: 3.3	Hours	
12	mm/hr	Low End of Range
Time to Draw Down: 8.3	Hours	

27-Sep-24

1818 Bradley Side Rd
Ottawa, Ontario
INFILTRATION CALCULATIONS

DRAINAGE AREA II (South Infiltration Trench)

			C
Roof Area:	188	sq.m.	0.90
Asphalt/Concrete Area:	0	sq.m.	0.90
Infiltration Trench:	133	sq.m.	1.00
Gravel Area:	2,167	sq.m.	0.80
Landscaped:	1,757	sq.m.	0.20
Total Catchment Area	4,245	sq.m.	0.56

Required Volume Required to Capture: 5 mm rain event: 11.9 cu.m.

64% of days with preciptation are 5mm or less

* Ottawa International Airport (1981-2010)

		Infiltration Trench				
Water Depth m	Water Volume cu.m.	Depth m	Area sq.m.	Volume cu.m.	Void Volume 40% cu.m.	Total Volume cu.m.
0.10	13.3	0.00	133	0.0	0.00	13.3

Silty sand

Infiltration Rate		
75	mm/hr	High End of Range
30	mm/hr	Low End of Range

Design Infiltration Rate (2.5 safety factor)		
30.0	mm/hr	High End of Range
Time to Draw Down: 3.3	Hours	
12	mm/hr	Low End of Range
Time to Draw Down: 8.3	Hours	

INFILTRATION CALCULATIONS (continued)

DRAINAGE AREA IV (North Infiltration Trench)

			C
Roof Area:	362	sq.m.	0.90
Asphalt/Concrete Area:	0	sq.m.	0.90
Infiltration Trench:	352	sq.m.	1.00
Gravel Area:	1,185	sq.m.	0.80
Landscaped:	2,567	sq.m.	0.20
Total Catchment Area	4,466	sq.m.	0.48

Required Volume Required to Capture: 5 mm rain event: 10.7 cu.m.

64% of days with preciptation are 5mm or less

* Ottawa International Airport (1981-2010)

		Infiltration Trench				
Water Depth m	Water Volume cu.m.	Depth m	Area sq.m.	Volume cu.m.	Void Volume 40% cu.m.	Total Volume cu.m.
0.10	12.6	0.00	126	0.0	0.00	12.6

Silty sand

Infiltration Rate		
75	mm/hr	High End of Range
30	mm/hr	Low End of Range

Design Infiltration Rate (2.5 safety factor)		
30.0	mm/hr	High End of Range
Time to Draw Down: 3.3	Hours	
12	mm/hr	Low End of Range
Time to Draw Down: 8.3	Hours	

27-Sep-24

1818 Bradley Side Road

Ottawa, Ontario

Water Balance and Infiltration Calculations

Water Balance is based on the equation: Mean Annual Precipitation - Change in Groundwater Storage - Evapotranspiration = Runoff + Infiltration

Where: Long term changes to groundwater storage are assumed to be negligible
and
Short term or seasonal changes to groundwater are assumed to balance out over the year.

Therefore: Mean Annual Precipitation - Evapotranspiration = Runoff + Infiltration

Infiltration is based on the equations: Surplus (available for infiltration) = Mean Annual Precipitation - Evapotranspiration
and
Infiltration = Surplus x Infiltration Coefficient
and
Infiltration Coefficient = Topography Factor + Soil Factor + Vegetation Factor
(as per the MOE SWM Planning & Design Manual, 2003 - see below)

Pre-Development

	Area (sq.m.)	Precipitation + (mm/yr)	Evapo-transpiration ++ (mm/yr)	Surplus (mm/yr)	Topography Factor *	Soil Factor **	Vegetation Factor ***	Infiltration Coefficient	Infiltration (mm/yr)
"Forest"	9643	943	560	383	0.1	0.3	0.2	0.60	230
"Meadows"	5049	943	390	553	0.1	0.3	0.1	0.50	277
Total:	14692							Weighted Average:	246

Post Development

	Area (sq.m.)	Precipitation + (mm/yr)	Evapo-transpiration ++ (mm/yr)	Surplus (mm/yr)	Topography Factor *	Soil Factor **	Vegetation Factor ***	Infiltration Coefficient	Infiltration (mm/yr)	Volume Including Infiltration Trench (cu.m.)	Infiltration (mm/yr)
Landscaped:	10173	943	575	368	0.1	0.3	0.15	0.55	202	2059	202
Hard Surfaces:	617	943	575	368				0.00	0		
Hard Surfaces: (draining to infiltration trench)	3902	943	150	793				0.00	0	958	246
Total:	14692									3017	
								Weighted Average:	140		205

	mm	Days with Precipitation +	Hard Surfaces Surplus / Precipitation	Hard Surfaces Area (sq.m.)	Hard Surfaces Available Annual Volume (cu.m.)	Hard Surfaces Annual Percentage Captured	Hard Surfaces Annual Volume Captured (cu.m.)	Required Volume of Infiltration Trench (cu.m.)
>=	0.2	163.6	0.84	3902	107	100%	107	0.7
>=	5	58.4	0.84	3902	958	100%	958	16.4
>=	10	30.0	0.84	3902	984	100%	984	32.8
>=	25	5.5	0.84	3902	451	100%	451	82.0

\+ Ottawa International Airport (1981-2010)
++ Eastern Ontario Water Resources Management Study (2001) & Carp River Watershed / Subwatershed Study

		Factor	Subject Property
* Topography:	Flat Land, average slope < 0.6m/km (<.06%)	0.3	
	Rolling Land, average slope 2.8 to 3.8m/km (0.28% to 0.38%)	0.2	
	Hilly Land, average slope 28 to 47m/km (2.8 to 4.7%)	0.1	
** Soil:	Tight impervious clay	0.1	
	Medium combination of clay and loam	0.2	= 0.3 for silty sand
	Open sandy loam	0.4	
*** Cover:	Cultivated Lands	0.1	
	Woodland	0.2	

As per MOE SWM Planning & Design Manual, 2003

SUMMARY TABLES

100-YEAR EVENT

Drainage Area	Pre-Development Flow Rate (L/s)	Maximum Allowable Release Rate (L/s)	Maximum Release Rate (L/s)	Maximum Volume Required (cu.m)	Maximum Volume Stored (cu.m)
AREA I (Uncontrolled Flow Off Site)	-	-	3.72	-	-
AREA II	-	-	109.52	21.47	21.47
AREA III	-	-	15.90	246.35	246.35
AREA IV	-	-	97.88	16.95	16.95
AREA V	-	-	64.99	50.81	50.81
TOTAL	258.70	84.61	84.61	335.57	335.57

2-YEAR EVENT

Drainage Area	Pre-Development Flow Rate (L/s)	Maximum Allowable Release Rate (L/s)	Maximum Release Rate (L/s)	Maximum Volume Required (cu.m)	Maximum Volume Stored (cu.m)
AREA I (Uncontrolled Flow Off Site)	-	-	1.28	-	-
AREA II	-	-	17.14	21.47	21.47
AREA III	-	-	12.01	68.93	68.93
AREA IV	-	-	17.91	16.95	16.95
AREA V	-	-	42.58	0.00	0.00
TOTAL	84.61	84.61	55.86	107.34	107.34

September 27, 2024

1818 Bradley Side Rd

Ottawa, Ontario

STORMWATER MANAGEMENT CALCULATIONS

Modified Rational Method

PRE-DEVELOPMENT CONDITIONS

100-YEAR EVENT

			C	
Total Catchment Area:	14,692	sq.m	0.375	1.25 x Woodland or Pasture - Rolling - Clay and Silt Loam as per Table 5.7 Ottawa Sewer Design Guidelines

Airport Formula

$$Tc = \frac{3.26 \cdot (1.1 - C) \cdot L^{1/2}}{Sw^{0.33}} \text{ min}$$

Sheet Flow Distance (L):	80	m
Slope of Land (Sw):	7	%
Time of Concentration (Sheet Flow):	11	min
Rainfall Intensity (i):	169	mm/hr
100-Year Pre-Development Flow Rate (2.78AiC):	258.70	L/s

2-YEAR EVENT

MAXIMUM ALLOWABLE RELEASE RATE

			C	
Total Catchment Area:	14,692	sq.m	0.30	Woodland or Pasture - Rolling - Clay and Silt Loam as per Table 5.7 Ottawa Sewer Design Guidelines

Airport Formula

$$Tc = \frac{3.26 \cdot (1.1 - C) \cdot L^{1/2}}{Sw^{0.33}} \text{ min}$$

Sheet Flow Distance (L):	80	m
Slope of Land (Sw):	7	%
Time of Concentration (Sheet Flow):	12	min
Rainfall Intensity (i):	69	mm/hr
2-Year Pre-Development Flow Rate (2.78AiC):	84.61	L/s

100-YEAR EVENT

DRAINAGE AREA I (Uncontrolled Flow Off Site)

(100-YEAR EVENT)

			C
Roof Area:	0	sq.m	1.00
Hard Area:	0	sq.m	1.00
Gravel Area:	75	sq.m	1.00
Detention Area:	0	sq.m	1.00
Soft Area:	0	sq.m	0.25
Total Catchment Area:	75	sq.m	1.00
Area (A):	75	sq.m	
Time of Concentration:	10	min	
Rainfall Intensity (i):	179	mm/hr	
Runoff Coeficient (C):	1.00		
Flow Rate (2.78AiC):	3.72	L/s	

DRAINAGE AREA II (To South Infiltration Trench)

(100-YEAR EVENT)

			C
Roof Area:	188	sq.m	1.00
Hard Area:	0	sq.m	1.00
Gravel Area:	2,167	sq.m	1.00
Infiltration Trench:	133	sq.m	1.00
Soft Area:	1,757	sq.m	0.25
Total Catchment Area:	4,245	sq.m	0.69

Water Elevation: 102.04 m

Maximum Release Rate: 109.52 L/s

Bottom Area (sq.m)	Top Area (sq.m)	Depth (m)	Volume	
133	308	0.10	21.47	cu.m

Maximum Volume Stored: 21.47 cu.m

Maximum Volume Required: 21.47 cu.m

DRAINAGE AREA II (Continued)

(100-YEAR EVENT)

Time (min)	i (mm/hr)	2.78AiC (L/s)	Weir Release Rate (L/s)	Stored Rate (L/s)	Required Storage Volume (cu.m)
10	179	145.31	109.52	35.78	21.47
15	143	116.28	109.52	6.76	6.08
20	120	97.61	97.61	0.00	0.00
25	104	84.51	84.51	0.00	0.00
30	92	74.76	74.76	0.00	0.00
35	83	67.20	67.20	0.00	0.00
40	75	61.15	61.15	0.00	0.00
45	69	56.19	56.19	0.00	0.00
50	64	52.04	52.04	0.00	0.00
55	60	48.52	48.52	0.00	0.00
60	56	45.49	45.49	0.00	0.00
65	53	42.84	42.84	0.00	0.00
70	50	40.52	40.52	0.00	0.00
75	47	38.46	38.46	0.00	0.00
80	45	36.61	36.61	0.00	0.00
85	43	34.95	34.95	0.00	0.00
90	41	33.46	33.46	0.00	0.00
95	39	32.09	32.09	0.00	0.00
100	38	30.84	30.84	0.00	0.00
105	36	29.70	29.70	0.00	0.00
110	35	28.65	28.65	0.00	0.00
115	34	27.67	27.67	0.00	0.00
120	33	26.77	26.77	0.00	0.00
125	32	25.93	25.93	0.00	0.00
130	31	25.14	25.14	0.00	0.00
135	30	24.41	24.41	0.00	0.00
140	29	23.72	23.72	0.00	0.00
145	28	23.08	23.08	0.00	0.00
150	28	22.47	22.47	0.00	0.00
180	24	19.45	19.45	0.00	0.00
210	21	17.21	17.21	0.00	0.00
240	19	15.47	15.47	0.00	0.00
270	17	14.07	14.07	0.00	0.00
300	16	12.93	12.93	0.00	0.00

DRAINAGE AREA III (To South Stormwater Detention Area)

(100-YEAR EVENT)

			C
Roof Area:	180	sq.m	1.00
Hard Area:	0	sq.m	1.00
Gravel Area:	362	sq.m	1.00
Detention Area:	950	sq.m	1.00
Soft Area:	3,821	sq.m	0.25
Total Catchment Area:	5,313	sq.m	0.46

Water Elevation:	100.60	m
Head:	0.72	m
Centroid of ICD Orifice: (ICD in inlet of culvert)	99.88	m
Invert of culvert:	99.83	m
Orifice Diameter:	94	mm
Orifice Area:	6,920	sq.mm
Discharge Coefficient:	0.61	
Maximum Release Rate:	15.90	L/s

Bottom Area (sq.m)	Top Area (sq.m)	Depth (m)	Volume	
347.7	699.0	0.48	246.35	cu.m

Maximum Volume Stored:	246.35	cu.m
Maximum Volume Required:	246.35	cu.m

DRAINAGE AREA III (Continued)

(100-YEAR EVENT)

Time (min)	i (mm/hr)	2.78AiC (L/s)	Flow from Area II (L/s)	ICD Release Rate (L/s)	Stored Rate (L/s)	Required Storage Volume (cu.m)
10	179	121.48	109.52	15.90	215.11	129.06
15	143	97.22	109.52	15.90	190.84	171.76
20	120	81.61	97.61	15.90	163.32	195.99
25	104	70.65	84.51	15.90	139.26	208.89
30	92	62.50	74.76	15.90	121.36	218.45
35	83	56.18	67.20	15.90	107.48	225.71
40	75	51.12	61.15	15.90	96.38	231.30
45	69	46.98	56.19	15.90	87.27	235.63
50	64	43.51	52.04	15.90	79.66	238.97
55	60	40.56	48.52	15.90	73.19	241.51
60	56	38.03	45.49	15.90	67.61	243.41
65	53	35.82	42.84	15.90	62.76	244.77
70	50	33.87	40.52	15.90	58.49	245.67
75	47	32.15	38.46	15.90	54.71	246.18
80	45	30.61	36.61	15.90	51.32	246.35
85	43	29.22	34.95	15.90	48.28	246.23
90	41	27.97	33.46	15.90	45.53	245.84
95	39	26.83	32.09	15.90	43.02	245.22
100	38	25.79	30.84	15.90	40.73	244.40
105	36	24.83	29.70	15.90	38.63	243.39
110	35	23.95	28.65	15.90	36.70	242.21
115	34	23.14	27.67	15.90	34.91	240.87
120	33	22.38	26.77	15.90	33.25	239.40
125	32	21.68	25.93	15.90	31.71	237.80
130	31	21.02	25.14	15.90	30.27	236.08
135	30	20.41	24.41	15.90	28.92	234.25
140	29	19.83	23.72	15.90	27.66	232.33
145	28	19.29	23.08	15.90	26.47	230.30
150	28	18.78	22.47	15.90	25.36	228.20
180	24	16.26	19.45	15.90	19.81	214.00
210	21	14.39	17.21	15.90	15.69	197.74
240	19	12.93	15.47	15.90	12.50	179.98
270	17	11.77	14.07	15.90	9.94	161.05
300	16	10.81	12.93	15.90	7.85	141.21

DRAINAGE AREA IV (To North Infiltration Trench)

(100-YEAR EVENT)

			C
Roof Area:	362	sq.m	1.00
Hard Area:	0	sq.m	1.00
Gravel Area:	1,185	sq.m	1.00
Detention Area:	352	sq.m	1.00
Soft Area:	2,567	sq.m	0.25
Total Catchment Area:	4,466	sq.m	0.57

Water Elevation: 101.59 m

Maximum Release Rate: 97.88 L/s

Bottom Area (sq.m)	Top Area (sq.m)	Depth (m)	Volume	
126.0	217.0	0.10	16.95	cu.m

Maximum Volume Stored: 16.95 cu.m

Maximum Volume Required: 16.95 cu.m

DRAINAGE AREA IV (Continued)

(100-YEAR EVENT)

Time (min)	i (mm/hr)	2.78AiC (L/s)	Weir Release Rate (L/s)	Stored Rate (L/s)	Required Storage Volume (cu.m)
10	179	126.12	97.88	28.24	16.95
15	143	100.93	97.88	3.05	2.75
20	120	84.72	84.72	0.00	0.00
25	104	73.35	73.35	0.00	0.00
30	92	64.89	64.89	0.00	0.00
35	83	58.33	58.33	0.00	0.00
40	75	53.08	53.08	0.00	0.00
45	69	48.77	48.77	0.00	0.00
50	64	45.17	45.17	0.00	0.00
55	60	42.11	42.11	0.00	0.00
60	56	39.48	39.48	0.00	0.00
65	53	37.19	37.19	0.00	0.00
70	50	35.17	35.17	0.00	0.00
75	47	33.38	33.38	0.00	0.00
80	45	31.78	31.78	0.00	0.00
85	43	30.34	30.34	0.00	0.00
90	41	29.04	29.04	0.00	0.00
95	39	27.85	27.85	0.00	0.00
100	38	26.77	26.77	0.00	0.00
105	36	25.78	25.78	0.00	0.00
110	35	24.86	24.86	0.00	0.00
115	34	24.02	24.02	0.00	0.00
120	33	23.23	23.23	0.00	0.00
125	32	22.50	22.50	0.00	0.00
130	31	21.82	21.82	0.00	0.00
135	30	21.19	21.19	0.00	0.00
140	29	20.59	20.59	0.00	0.00
145	28	20.03	20.03	0.00	0.00
150	28	19.50	19.50	0.00	0.00
180	24	16.88	16.88	0.00	0.00
210	21	14.93	14.93	0.00	0.00
240	19	13.42	13.42	0.00	0.00
270	17	12.22	12.22	0.00	0.00
300	16	11.22	11.22	0.00	0.00

DRAINAGE AREA V (To North Stormwater Detention Area)

(100-YEAR EVENT)

			C
Roof Area:	0	sq.m	1.00
Hard Area:	0	sq.m	1.00
Gravel Area:	0	sq.m	1.00
Detention Area:	593	sq.m	1.00
Soft Area:	0	sq.m	0.25
Total Catchment Area:	593	sq.m	1.00

Water Elevation:	100.48	m
Head:	0.65	m
Centroid of ICD Orifice: (ICD in inlet of culvert)	99.84	m
Invert of culvert:	99.74	m
Orifice Diameter:	195	mm
Orifice Area:	29,917	sq.mm
Discharge Coefficient:	0.61	
Maximum Release Rate:	64.99	L/s

Bottom Area (sq.m)	Top Area (sq.m)	Average Depth (m)	Volume	
60.0	234.5	0.37	50.81	cu.m

Maximum Volume Stored:	50.81	cu.m
Maximum Volume Required:	50.81	cu.m

DRAINAGE AREA V (Continued)

(100-YEAR EVENT)

Time (min)	i (mm/hr)	2.78AiC (L/s)	Flow from Area IV (L/s)	ICD Release Rate (L/s)	Stored Rate (L/s)	Required Storage Volume (cu.m)
10	179	29.44	97.88	64.99	62.33	37.40
15	143	23.56	97.88	64.99	56.45	50.81
20	120	19.77	84.72	64.99	39.51	47.42
25	104	17.12	73.35	64.99	25.48	38.23
30	92	15.14	64.89	64.99	15.05	27.09
35	83	13.61	58.33	64.99	6.96	14.61
40	75	12.39	53.08	64.99	0.48	1.15
45	69	11.38	48.77	60.16	0.00	0.00
50	64	10.54	45.17	55.72	0.00	0.00
55	60	9.83	42.11	51.94	0.00	0.00
60	56	9.21	39.48	48.69	0.00	0.00
65	53	8.68	37.19	45.86	0.00	0.00
70	50	8.21	35.17	43.38	0.00	0.00
75	47	7.79	33.38	41.17	0.00	0.00
80	45	7.42	31.78	39.20	0.00	0.00
85	43	7.08	30.34	37.42	0.00	0.00
90	41	6.78	29.04	35.82	0.00	0.00
95	39	6.50	27.85	34.35	0.00	0.00
100	38	6.25	26.77	33.02	0.00	0.00
105	36	6.02	25.78	31.80	0.00	0.00
110	35	5.80	24.86	30.67	0.00	0.00
115	34	5.61	24.02	29.62	0.00	0.00
120	33	5.42	23.23	28.66	0.00	0.00
125	32	5.25	22.50	27.76	0.00	0.00
130	31	5.09	21.82	26.92	0.00	0.00
135	30	4.95	21.19	26.13	0.00	0.00
140	29	4.81	20.59	25.40	0.00	0.00
145	28	4.67	20.03	24.71	0.00	0.00
150	28	4.55	19.50	24.05	0.00	0.00
180	24	3.94	16.88	20.82	0.00	0.00
210	21	3.49	14.93	18.42	0.00	0.00
240	19	3.13	13.42	16.56	0.00	0.00
270	17	2.85	12.22	15.07	0.00	0.00
300	16	2.62	11.22	13.84	0.00	0.00

2-YEAR EVENT

DRAINAGE AREA I (Uncontrolled Flow Off Site)

(2-YEAR EVENT)

			C
Roof Area:	0	sq.m	0.90
Hard Area:	0	sq.m	0.90
Gravel Area:	75	sq.m	0.80
Detention Area:	0	sq.m	1.00
Soft Area:	0	sq.m	0.20
Total Catchment Area:	75	sq.m	0.80
Area (A):	75	sq.m	
Time of Concentration:	10	min	
Rainfall Intensity (i):	77	mm/hr	
Runoff Coeficient (C):	0.80		
Flow Rate (2.78AiC):	1.28	L/s	

DRAINAGE AREA II (To South Infiltration Trench)

(2-YEAR EVENT)

			C
Roof Area:	188	sq.m	0.90
Hard Area:	0	sq.m	0.90
Gravel Area:	2,167	sq.m	0.80
Infiltration Trench:	133	sq.m	1.00
Soft Area:	1,757	sq.m	0.20
Total Catchment Area:	4,245	sq.m	0.56

Water Elevation: 102.04 m

Maximum Release Rate: 17.14 L/s

Average Bottom Area (sq.m)	Average Top Area (sq.m)	Depth (m)	Volume	
133.4	308.0	0.10	21.47	cu.m

Maximum Volume Stored: 21.47 cu.m

Maximum Volume Required: 21.47 cu.m

DRAINAGE AREA II (Continued)

(2-YEAR EVENT)

Time (min)	i (mm/hr)	2.78AiC (L/s)	weir Release Rate (L/s)	Stored Rate (L/s)	Required Storage Volume (cu.m)
10	77	50.97	17.14	33.83	20.30
15	62	40.99	17.14	23.86	21.47
20	52	34.53	17.14	17.39	20.87
25	45	29.97	17.14	12.84	19.26
30	40	26.57	17.14	9.44	16.99
35	36	23.93	17.14	6.79	14.27
40	33	21.81	17.14	4.67	11.22
45	30	20.07	17.14	2.93	7.92
50	28	18.61	17.14	1.47	4.42
55	26	17.37	17.14	0.23	0.77
60	25	16.30	16.30	0.00	0.00
65	23	15.36	15.36	0.00	0.00
70	22	14.54	14.54	0.00	0.00
75	21	13.81	13.81	0.00	0.00
80	20	13.16	13.16	0.00	0.00
85	19	12.57	12.57	0.00	0.00
90	18	12.04	12.04	0.00	0.00
95	17	11.56	11.56	0.00	0.00
100	17	11.11	11.11	0.00	0.00
105	16	10.71	10.71	0.00	0.00
110	16	10.33	10.33	0.00	0.00
115	15	9.99	9.99	0.00	0.00
120	15	9.66	9.66	0.00	0.00
125	14	9.36	9.36	0.00	0.00
130	14	9.09	9.09	0.00	0.00
135	13	8.82	8.82	0.00	0.00
140	13	8.58	8.58	0.00	0.00
145	13	8.35	8.35	0.00	0.00
150	12	8.13	8.13	0.00	0.00
180	11	7.05	7.05	0.00	0.00
210	9	6.25	6.25	0.00	0.00
240	8	5.62	5.62	0.00	0.00
270	8	5.12	5.12	0.00	0.00
300	7	4.71	4.71	0.00	0.00

DRAINAGE AREA III (To South Stormwater Detention Area)

(2-YEAR EVENT)

			C
Roof Area:	180	sq.m	0.90
Hard Area:	0	sq.m	0.90
Gravel Area:	362	sq.m	0.80
Detention Area:	950	sq.m	1.00
Soft Area:	3,821	sq.m	0.20
Total Catchment Area:	5,313	sq.m	0.41

Water Elevation:	100.29	m
Head:	0.41	m
Centroid of ICD Orifice: (ICD in inlet of culvert)	99.88	m
Invert of culvert:	99.83	m
Orifice Diameter:	94	mm
Orifice Area:	6,920	sq.mm
Discharge Coefficient:	0.61	
Maximum Release Rate:	12.01	L/s

Bottom Area (sq.m)	Top Area (sq.m)	Depth (m)	Volume	
348	470	0.17	68.93	cu.m

Maximum Volume Stored:	68.93	cu.m
Maximum Volume Required:	68.93	cu.m

DRAINAGE AREA III (Continued)

(2-YEAR EVENT)

Time (min)	i (mm/hr)	2.78AiC (L/s)	Flow from Area II (L/s)	ICD Release Rate (L/s)	Stored Rate (L/s)	Required Storage Volume (cu.m)
10	77	46.24	17.14	12.01	51.37	30.82
15	62	37.19	17.14	12.01	42.32	38.09
20	52	31.33	17.14	12.01	36.46	43.75
25	45	27.19	17.14	12.01	32.33	48.49
30	40	24.11	17.14	12.01	29.24	52.63
35	36	21.71	17.14	12.01	26.84	56.37
40	33	19.79	17.14	12.01	24.92	59.80
45	30	18.21	17.14	12.01	23.34	63.01
50	28	16.88	17.14	12.01	22.01	66.04
55	26	15.76	17.14	12.01	20.89	68.93
60	25	14.79	16.30	12.01	19.08	68.68
65	23	13.94	15.36	12.01	17.30	67.46
70	22	13.19	14.54	12.01	15.73	66.07
75	21	12.53	13.81	12.01	14.34	64.52
80	20	11.94	13.16	12.01	13.09	62.85
85	19	11.41	12.57	12.01	11.97	61.06
90	18	10.92	12.04	12.01	10.96	59.18
95	17	10.48	11.56	12.01	10.04	57.20
100	17	10.08	11.11	12.01	9.19	55.14
105	16	9.71	10.71	12.01	8.42	53.02
110	16	9.37	10.33	12.01	7.70	50.82
115	15	9.06	9.99	12.01	7.04	48.57
120	15	8.77	9.66	12.01	6.43	46.27
125	14	8.50	9.36	12.01	5.85	43.91
130	14	8.24	9.09	12.01	5.32	41.51
135	13	8.01	8.82	12.01	4.82	39.07
140	13	7.78	8.58	12.01	4.36	36.59
145	13	7.57	8.35	12.01	3.92	34.07
150	12	7.38	8.13	12.01	3.50	31.52
180	11	6.40	7.05	12.01	1.44	15.60
210	9	5.67	6.25	11.92	0.00	0.00
240	8	5.10	5.62	10.73	0.00	0.00
270	8	4.65	5.12	9.77	0.00	0.00
300	7	4.28	4.71	8.99	0.00	0.00

DRAINAGE AREA IV (To North Infiltration Trench)

(2-YEAR EVENT)

			C
Roof Area:	362	sq.m	0.90
Hard Area:	0	sq.m	0.90
Gravel Area:	1,185	sq.m	0.80
Infiltration Trench:	352	sq.m	1.00
Soft Area:	2,567	sq.m	0.20
Total Catchment Area:	4,466	sq.m	0.48

Water Elevation: 101.59 m

Maximum Release Rate: 17.91 L/s

Average Bottom Area (sq.m)	Average Top Area (sq.m)	Depth (m)	Volume	
126.0	217.0	0.10	16.95	cu.m

Maximum Volume Stored: 16.95 cu.m

Maximum Volume Required: 16.95 cu.m

DRAINAGE AREA IV (Continued)

(2-YEAR EVENT)

Time (min)	i (mm/hr)	2.78AiC (L/s)	Weir Release Rate (L/s)	Stored Rate (L/s)	Required Storage Volume (cu.m)
10	77	45.68	17.91	27.77	16.66
15	62	36.73	17.91	18.83	16.95
20	52	30.94	17.91	13.04	15.65
25	45	26.86	17.91	8.96	13.43
30	40	23.81	17.91	5.91	10.64
35	36	21.44	17.91	3.54	7.43
40	33	19.54	17.91	1.64	3.93
45	30	17.98	17.91	0.08	0.21
50	28	16.68	16.68	0.00	0.00
55	26	15.56	15.56	0.00	0.00
60	25	14.60	14.60	0.00	0.00
65	23	13.77	13.77	0.00	0.00
70	22	13.03	13.03	0.00	0.00
75	21	12.38	12.38	0.00	0.00
80	20	11.79	11.79	0.00	0.00
85	19	11.27	11.27	0.00	0.00
90	18	10.79	10.79	0.00	0.00
95	17	10.36	10.36	0.00	0.00
100	17	9.96	9.96	0.00	0.00
105	16	9.59	9.59	0.00	0.00
110	16	9.26	9.26	0.00	0.00
115	15	8.95	8.95	0.00	0.00
120	15	8.66	8.66	0.00	0.00
125	14	8.39	8.39	0.00	0.00
130	14	8.14	8.14	0.00	0.00
135	13	7.91	7.91	0.00	0.00
140	13	7.69	7.69	0.00	0.00
145	13	7.48	7.48	0.00	0.00
150	12	7.29	7.29	0.00	0.00
180	11	6.32	6.32	0.00	0.00
210	9	5.60	5.60	0.00	0.00
240	8	5.04	5.04	0.00	0.00
270	8	4.59	4.59	0.00	0.00
300	7	4.22	4.22	0.00	0.00

DRAINAGE AREA V (To North Stormwater Detention Area)

(2-YEAR EVENT)

			C
Roof Area:	0	sq.m	0.90
Hard Area:	0	sq.m	0.90
Gravel Area:	0	sq.m	0.80
Detention Area:	593	sq.m	1.00
Soft Area:	0	sq.m	0.20
Total Catchment Area:	593	sq.m	1.00

Water Elevation:	100.12	m
Head:	0.28	m
Centroid of ICD Orifice: (ICD in inlet of culvert)	99.84	m
Invert of culvert:	99.74	m
Orifice Diameter:	195	mm
Orifice Area:	29,917	sq.mm
Discharge Coefficient:	0.61	
Maximum Release Rate:	42.58	L/s

Average Bottom Area (sq.m)	Average Top Area (sq.m)	Depth (m)	Volume	
60.0	60.0	0.00	0.00	cu.m
		Maximum Volume Stored:	0.00	cu.m
		Maximum Volume Required:	0.00	cu.m

DRAINAGE AREA V (Continued)

(2-YEAR EVENT)

Time (min)	i (mm/hr)	2.78AiC (L/s)	Flow from Area IV (L/s)	ICD Release Rate (L/s)	Stored Rate (L/s)	Required Storage Volume (cu.m)
10	77	12.66	17.91	30.57	0.00	0.00
15	62	10.18	17.91	28.09	0.00	0.00
20	52	8.58	17.91	26.48	0.00	0.00
25	45	7.45	17.91	25.35	0.00	0.00
30	40	6.60	17.91	24.51	0.00	0.00
35	36	5.94	17.91	23.85	0.00	0.00
40	33	5.42	17.91	23.32	0.00	0.00
45	30	4.99	17.91	22.89	0.00	0.00
50	28	4.62	16.68	21.30	0.00	0.00
55	26	4.31	15.56	19.88	0.00	0.00
60	25	4.05	14.60	18.65	0.00	0.00
65	23	3.82	13.77	17.58	0.00	0.00
70	22	3.61	13.03	16.64	0.00	0.00
75	21	3.43	12.38	15.81	0.00	0.00
80	20	3.27	11.79	15.06	0.00	0.00
85	19	3.12	11.27	14.39	0.00	0.00
90	18	2.99	10.79	13.78	0.00	0.00
95	17	2.87	10.36	13.23	0.00	0.00
100	17	2.76	9.96	12.72	0.00	0.00
105	16	2.66	9.59	12.25	0.00	0.00
110	16	2.57	9.26	11.83	0.00	0.00
115	15	2.48	8.95	11.43	0.00	0.00
120	15	2.40	8.66	11.06	0.00	0.00
125	14	2.33	8.39	10.72	0.00	0.00
130	14	2.26	8.14	10.40	0.00	0.00
135	13	2.19	7.91	10.10	0.00	0.00
140	13	2.13	7.69	9.82	0.00	0.00
145	13	2.07	7.48	9.55	0.00	0.00
150	12	2.02	7.29	9.31	0.00	0.00
180	11	1.75	6.32	8.07	0.00	0.00
210	9	1.55	5.60	7.15	0.00	0.00
240	8	1.40	5.04	6.44	0.00	0.00
270	8	1.27	4.59	5.86	0.00	0.00
300	7	1.17	4.22	5.39	0.00	0.00

27-Sep-24

1818 Bradley Side Rd
Ottawa, Ontario

BROAD CRESTED WEIR CALCULATIONS

1:100 YEAR EVENT

DRAINAGE AREA II (Weir at South Infiltration Trench)

Length of Weir based on an assumed coefficient of discharge (Cd):

if Q=	109.52	l/s (maximum permited flow)	assumes Cd= 0.577
=	0.10952	cu.m./s	
& H=	0.05	m (max. depth of water above top of weir)	(assumes P/H is large)
then L=	5.00	m (length of weir) L = (Q / ((1.705 x H^(3/2))	

Length of Weir based on a calculate coefficient of discharge (Cd):

if P=	0.10	m (depth of pond)
& Lp=	5.4	m (width of pond: perpendicular to direction of flow)
then Vp=	0.1310	m/s (velocity in pond: Vp = Q / (P+H) / Lp)
& E=	0.055724	m (energy: E = H + 2V^2/2g)
& Cd=	0.591	(Cd = 0.577 x (E/H)^(3/2))

if Q=	109.52	l/s (maximum permited flow)
=	0.10952	cu.m./s
& H=	0.05	m (depth of water above top of weir)
then L=	4.88	m (length of weir) L = (Q / ((Cd x (2/3) x (2x9.81)^(1/2) x H^(3/2))

DRAINAGE AREA III (Weir at South Detention Area)

Length of Weir based on an assumed coefficient of discharge (Cd):

if Q=	15.90	l/s (max. permited flow-assumes ICD blocked)	assumes Cd= 0.577
=	0.01590	cu.m./s	
& H=	0.01	m (max. depth of water above top of weir)	(assumes P/H is large)
then L=	7.50	m (length of weir) L = (Q / ((1.705 x H^(3/2))	

Length of Weir based on a calculate coefficient of discharge (Cd):

if P=	0.72	m (depth of pond)
& Lp=	9.5	m (width of pond: perpendicular to direction of flow)
then Vp=	0.0023	m/s (velocity in pond: Vp = Q / (P+H) / Lp)
& E=	0.011560	m (energy: E = H + 2V^2/2g)
& Cd=	0.577	(Cd = 0.577 x (E/H)^(3/2))

if Q=	15.90	l/s (maximum permited flow)
=	0.01590	cu.m./s
& H=	0.01	m (depth of water above top of weir)
then L=	7.50	m (length of weir) L = (Q / ((Cd^(2/3) x (2x9.81)^(1/2) x H^(3/2))

BROAD CRESTED WEIR CALCULATIONS (continued)

DRAINAGE AREA IV (Weir at North Infiltration Trench)

Length of Weir based on an assumed coefficient of discharge (Cd):

if Q=	97.88	l/s (maximum permited flow)	assumes Cd= 0.577
=	0.09788	cu.m./s	
& H=	0.07	m (max. depth of water above top of weir)	(assumes P/H is large)
then L=	3.40	m (length of weir) L = (Q / ((1.705 x H^(3/2))	

Length of Weir based on a calculate coefficient of discharge (Cd):

if P=	0.10	m (depth of pond)
& Lp=	5.4	m (width of pond: perpendicular to direction of flow)
then Vp=	0.1093	m/s (velocity in pond: Vp = Q / (P+H) / Lp)
& E=	0.066409	m (energy: E = H + 2V^2/2g)
& Cd=	0.585	(Cd = 0.577 x (E/H)^(3/2))

if Q=	97.88	l/s (maximum permited flow)
=	0.09788	cu.m./s
& H=	0.07	m (depth of water above top of weir)
then L=	3.35	m (length of weir) L = (Q / ((Cd x (2/3) x (2x9.81)^(1/2) x H^(3/2))

DRAINAGE AREA V (Weir North Detention Area)

Length of Weir based on an assumed coefficient of discharge (Cd):

if Q=	64.99	l/s (max. permited flow-assumes ICD blocked)	assumes Cd= 0.577
=	0.06499	cu.m./s	
& H=	0.04	m (max. depth of water above top of weir)	(assumes P/H is large)
then L=	5.30	m (length of weir) L = (Q / ((1.705 x H^(3/2))	

Length of Weir based on a calculate coefficient of discharge (Cd):

if P=	0.68	m (depth of pond)
& Lp=	8.6	m (width of pond: perpendicular to direction of flow)
then Vp=	0.0105	m/s (velocity in pond: Vp = Q / (P+H) / Lp)
& E=	0.037256	m (energy: E = H + 2V^2/2g)
& Cd=	0.577	(Cd = 0.577 x (E/H)^(3/2))

if Q=	64.99	l/s (maximum permited flow)
=	0.06499	cu.m./s
& H=	0.04	m (depth of water above top of weir)
then L=	5.30	m (length of weir) L = (Q / ((Cd^(2/3) x (2x9.81)^(1/2) x H^(3/2))

APPENDIX C

PRE-CONSULTATION MEETING NOTES & CITY OF OTTAWA SERVICING STUDY CHECKLIST

File No.: PC2024-0122

April 12, 2024

Ken Hoppner
1818 Farm and Cidery Inc.
Via email: khoppner@morleyhoppner.com

Subject: Phase 2 Pre-Consultation: Meeting Feedback
Proposed Zoning By-law Amendment and Site Plan Control Application – 1811 Richardson Side Road

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on April 5, 2024.

Pre-Consultation Preliminary Assessment

1 ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐

One (1) indicates that considerable major revisions are required while five (5) suggests that the proposal appears to meet the City's key land use policies and guidelines. This assessment is purely advisory and does not consider technical aspects of the proposal or in any way guarantee application approval.

Next Steps

1. A review of the materials submitted for the above-noted pre-consultation has been undertaken and staff are satisfied that the information is consistent with previous direction provided and sufficient to move to a Phase 3 pre-consultation.

2. Please note that if your development proposal changes significantly in scope, design, or density between the Phase 2 pre-consultation review and Phase 3 pre-consultation submission, you may be required to repeat the Phase 2 pre-consultation process.

Supporting Information and Material Requirements

1. The attached **Study and Plan Identification List** outlines the information and material that has been further identified and/or confirmed, during this phase of pre-consultation, as required (R) or advised (A) as part of a future complete application submission.

    a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.

Consultation with Technical Agencies

1. Please consult with the Mississippi Valley Conservation Authority to determine additional considerations and requirements in relation to the Zoning By-law Amendment and Site Plan Control Applications.

Proposal overview

- Previous consultation resulted in need of more info related to the conversion.
- Re-zoning due to size of building
- Most infrastructure is existing
- New portions would include
    - Septic system
    - Landscaping around the building
- Proposed dwelling units
    - For the future – looking to use the farm help policies of the Zoning By-law.
    - They have the ability for an additional dwelling unit (farm help provisions).
    - And then can also do 3 additional units in form of bunk houses or trailers (farm help provisions).
    - Dwellings are for people running the business.
    - Looking to modify zoning to permit 2 additional detached dwellings for farm help, whereas the zoning only permits 1.
- For the OFDU, architectural wood screen is proposed so the structure is not closed off (will look closed off); 3-season use.

Planning

List of Studies and Plans provided:

- **Site Plan 1818 Farm and Cidery**, Site Plan, prepared by Vandenberg and Wildeboer Architects, dated March 20th, 2024.

Comments:

- Staff note these comments should be read in conjunction with those provided in the Phase 1 Pre-consultation Feedback Form for file PC2023-0196

- Property is designated Agricultural Resource Area on Schedule B9 of the newly adopted Official Plan.

- On-farm Diversified Uses that are compatible with surrounding agricultural operations are permitted within lands designated as Agricultural Resource Areas. However, permitted On-farm Diversified Uses are subject to limitations. Please refer to Policy 9.1.1 (2) to see the Official Plan policy relevant to on-farm diversified uses.

- The property is zoned Agricultural Subzone 3
  - The agricultural use and cidery are permitted under the current zoning.
  - The proposed place of assembly is considered under the City's On-farm diversified use provisions of Section 79A of the Zoning By-law.

    - Please also refer to OMAFRA's Guidelines on Permitted Uses in Ontario's Prime Agricultural Areas for information regarding on-farm diversified uses (specifically Section 2.3).
    - Performance standards for an on-farm diversified use include:
      - Uses being limited to 2% of the total lot area, to a maximum of 1 hectare;
      - The area on on-farm diversified uses includes:
        - Total area of buildings, structures and outdoor storage associated with home based businesses, and
        - The total area of buildings and structures built after November 8, 2017 associated with the on-farm diversified use, and
        - 50% of buildings or structures built prior to November 8, 2017 that have been converted to an on-farm diversified use, and
        - The area of the laneways and septic systems that were developed on or after November 8, 2017, and
        - Parking areas, outdoor storage areas, and landscaped areas that are associated with an on-farm diversified use, and
        - Despite all of the above, the area of agri-tourism uses associated with activities such as wagon rides or corn mazes on lands producing harvestable crops are not included in the area calculations
      - The total floor area occupied by on-farm diversified uses may not exceed 20% of the total land area permitted for on-farm diversified uses on the lot, to a maximum of 600 square metres (except where otherwise stated), and;
        - The total floor area occupied by on-farm diversified uses, limited to place of assembly, instructional facility and restaurant uses, whether located in new or existing buildings, may not exceed 150 square metres.
      - Any outdoor storage areas and parking areas associated with the on-farm diversified use must not be located within 10 metres of any lot line
      - Maximum number of heavy vehicles, including recreational vehicles, associated with an on-farm diversified use: 3
      - Required parking is as identified under Table 101 for the use proposed.
      - Every effort should be made to cluster on-farm diversified uses, make use of existing laneways, and locate on areas of poorer soil.

- Comments related to farm help accommodation (3 detached dwellings on property).
  - The intent of the provisions for housing related to farm help is that housing is temporary.
  - It is staff's opinion that the introduction of 3 detached dwellings on a property would result in the creation of a Planned Unit Development (PUD), which is not a permitted use in the AG3 zone.

- A major Zoning By-law Amendment would be required to add a PUD as a permitted use on the property. A separate pre-consultation process is required for this portion of the proposal, starting with a Phase 1 pre-consultation.
- This proposal will also trigger the need for an Official Plan amendment.
- If the applicant would like to include this as part of the OFDU zoning proposal, then an updated Phase 2 pre-consultation will be required, with a cover letter outlining all requests for the zoning application.
- Any pre-consultation application filed for the inclusion of a PUD/3 detached dwellings on the property, would need to demonstrate that the proposal can meet the intent of the PPS, OP, and Zoning By-law, as it relates to protection of agricultural land and multiple dwellings on a property.
- It is unlikely that staff would be able to support a request to add a third detached dwelling on a property that is identified as an agricultural property in both Official Plan designation and existing zoning.

- Discussion
  - A place of assembly proposed as an On-farm Diversified Use (OFDU) is limited to a floor area of 150 m^2. This limitation applies to new and existing buildings.
    - This limitation includes any areas inside and outside the building used on a regular basis for the place of assembly (ceremony and seating areas, outdoor eating areas, etc).
  - Any parking, servicing, and pathways that are used only for the place of assembly are to be included in the calculation of the 2% coverage. Through the review process, if these features are shared with other ventures (winery, retail store, vineyard) staff will consider the ability of not counting these areas towards the total 2% of lot area permitted for OFDU. The application will need to demonstrate that these areas are jointly used.
  - The application will need to demonstrate that the parking meets minimum parking requirements for a Place of Assembly at a rate of 10 spaces per 100sq metres of gross floor area of assembly area.
  - The area associated with the septic system must be considered in the 2% of lot area permitted. Any increase in size to a septic system above the requirements for the farm operation must be included in the 2%.
  - If the OFDU exceeds the permitted 2% of lot area (to a maximum of 1 hectare), this must be included in the zoning by-law amendment application.
  - The place of assembly is proposed at 477sq m, which exceeds the permitted 150 m^2; a Minor Zoning By-law Amendment will be required to increase capacity.
  - A planning rationale will be required for the Zoning By-law Amendment application. The rationale must include a discussion on how the proposal meets OMAFRA's Guidelines on Permitted Uses in Ontario's Prime Agricultural Area (Publication 851), specifically section 2.3.
  - The Planning Rationale must provide a discussion on what the proposed on-farm diversified use is, and how it will operate on the site.

  - **Site Plan** drawing comments/questions:
    - What is the intent on the 2 proposed detached dwellings on the plan?
      - See comments above – the dwellings are proposed as housing for farm help

        - This plan will need to show the area coverage of all uses on the property (including the septic system, water storage tanks, etc); the area breakdown/calculations can be provided in the chart found on the plan.
        - If a separate service connection is ever provided from the assembly area to the septic system, this must be included in the 2% calculation.
        - The concept plan must include any ceremony and seating areas, outdoor seating areas, etc. associated with the businesses.
        - If any walking paths and/or vehicular drive aisles are solely used by the assembly area, this must be included in the 2% calculation.

- Planning submission documents:
    - Zoning By-law Amendment (OFDU only):
        - Concept plan/Site Plan
        - Zoning Confirmation Report
        - Planning Rationale
        - Plan of Survey
    - Site Plan Control:
        - Site Plan
        - Zoning Confirmation Report
        - Plan of Survey

Engineering

List of Studies and Plans Reviewed:

- **Site Plan**, prepared by Vandenberg & Wildeboer Architects, dated March 20, 2024.

Overview:

- Zoning By-law Amendment
    - Site Servicing Brief (scoped)
    - Hydrogeological and Terrain Analysis
- Site Plan Control
    - Site Servicing Study
    - Grading and Drainage Plan
    - Geotechnical Brief + possibly Slope Stability Report
    - Hydrogeological and Terrain Analysis

Deficiencies:

1. A Site Servicing Study was identified as a required study in the Studies and Plan Identification List but was not provided in the Phase 2 submission package for the Site Plan Control. A Site Servicing Brief will be required for the Zoning By-law Amendment application. This study forms part of the standard requirements for site plan control and zoning applications, was deemed applicable for this application, and will be required for a complete application submission.

2. A Grading and Drainage Plan was identified as a required plan in the Studies and Plan Identification List but was not provided in the Phase 2 submission package for the Site Plan Control application. This plan forms part of the standard requirements for site plan control applications, was deemed applicable for this application, and will be required for a complete application submission.

3. A Geotechnical Brief, and possibly a Slope Stability Study, were identified as required studies in the Studies and Plan Identification List but was not provided in the Phase 2 submission package for the Site Plan Control application. This study forms part of the standard requirements for site plan control applications, was deemed applicable for this application, and will be required for a complete application submission.

4. A Hydrogeological and Terrain Analysis was identified as a required study in the Studies and Plan Identification List but was not provided in the Phase 2 submission package for the Site Plan Control application. A Hydrogeological and Terrain Analysis will be required for the Zoning Amendment. This study forms part of the standard requirements for site plan control and zoning applications, was deemed applicable for this application, and will be required for a complete application submission.

Comments:

5. Servicing (Zoning and Site Plan)

    a. A **Site Servicing Study** will be required with the Site Plan Control application. A Site Servicing Brief will be required for the Zoning Amendment application, the scope of the Brief will be laid out below. This report should be completed exceeding the minimum requirements laid out in the Site Servicing Study Terms of Reference. The report will serve to address how the design of the site complies with City design guidelines and Official Plan policies, among other evaluation criteria noted in the Terms of Reference. The Official Plan, which receives authority through the Planning Act, identifies in Policy 6, section 2.2.3, that flooding is the costliest type of natural disaster in Canada. The risks of not implementing stormwater management practices could include damage to property, infrastructure, contamination of drinking water sources, and affecting people's safety, finances, physical and mental health. The City looks to lessen these risks by reviewing development to ensure stormwater management practices are being implemented, infrastructure is resilient to future climate conditions, including extreme weather events, and using low impact development where feasible to manage smaller, infrequent events. The study forms part of the requirements for Site Plan Control applications noted in the Studies and Plan Identification List, provided with the feedback documents.

b. In the Site Servicing Brief, the Zoning By-law Amendment version of the report, the reporting should discuss the proposed servicing that contributes to whether the site can support the proposed development. This would include servicing demands in terms of water supply and fire flow, allowable septic loading, legal drainage outlets, amongst other criteria required to support the application;

    i. In terms of the water supply portion of the study, the water demands will be determined from the proposed uses permitted under the new zoning. Consider the possible water demands and uses available under this proposed zoning.

    ii. In terms of the provision of a water supply for fire suppression, the reporting should identify the size and location of any required storage for on-site fire retention.

    iii. Discussion of the allowable septic loading as determined by the Hydrogeological and Terrain Analysis Investigation. Inform the potential septic design sizing as it relates to the definition of the site area for the place of assembly use.

    iv. In terms of stormwater management, identification of the parcels legal drainage outlets for surface runoff, the location of any LID, and Stormwater Management facilities.

c. The quantity criteria will be that the 100-yr post development peak flow rate must match the 2-year pre-development peak flow rate. The pre-development condition is considered the parcel prior to the inclusion of the cider production building. As part of complete site plan control applications, whether development or redevelopment, must identify and mitigate the impacts of additional runoff resulting from increased imperviousness through measures such as site-specific stormwater management postulated in policy 6, section 4.7.1 of the Official Plan.

d. The pre-development runoff coefficient or a maximum equivalent ‘C’ of 0.5, whichever is less as described in the Sewer Design Guidelines, Second Edition, document no. SDG002, October 2012, City of Ottawa, including technical bulletins ISDTB-2014-01, PIEDTB-2016-01, ISTB 2018-01, ISTB-2018-04, ISTB-2019-02, section 8.3.7.3.

e. A calculated time of concentration cannot be less than 10 minutes as described in section 5.1.4 of the Sewer Design Guidelines.

f. The water quality control should be an enhanced level treatment, 80% long term suspended sediment removal, as per the Carp River Watershed/Subwatershed Study. Reporting of TSS removal shall be extensive and if peer reviewed and published papers are relied on for

conclusions, the conclusions shall be patently clear and the report shall show overwhelming agreement.

g. Runoff will need to be conveyed to a legal and sufficient outlet. If it is proposed to discharge storm water to the existing ditches in the ROW, the ditches will need to be shown to provide continuous flow to an outlet. This comment is sourced from the Official Plan which notes in policy 8, section 4.7.1, that proof of legal and sufficient outlet for proposed stormwater management and drainage systems will be required as a condition of Site Plan Control.

h. The Carp River Subwatershed/Watershed Study identifies in section 10.2.1 the technical requirements for Surface Water Resources, which for example includes that the Site Servicing Study discusses the proposed stormwater management strategy for maintaining the existing surface water budget, baseflow conditions and surface water quality based on proposed site planning and design considerations, locations and preliminary sizing of proposed stormwater management BMPs. These technical requirements must be carried in the design.

i. Low Impact Development (LID) is to be implemented as per the bulletin from the former MOECC (now MECP) titled Expectations RE: Stormwater Management released in February 2015. The Official Plan defines LID as a stormwater management strategy that seeks to mitigate the impacts of increased runoff and stormwater pollution by managing runoff as close to its source as possible. LID comprises a set of site design strategies that minimize runoff through distributed, small scale structural practices that mimic natural or predevelopment hydrology through the processes of infiltration, evapotranspiration, harvesting, filtration and detention of stormwater. These practices can effectively remove nutrients, pathogens and metals from runoff, and they reduce the volume and intensity of stormwater flows. The City has released a document titled ‘Low Impact Development Technical Guidance Report – Implementation in Areas with Potential Hydrogeological Constraints’ which aids sites which may have constraints such as low permeability or high groundwater.

j. The **Site Servicing Study,** in both the Zoning and Site Plan Control applications, should include a section addressing the provision of a water supply for fire suppression. It is the responsibility of the owner to ensure that an adequate water supply for firefighting is provided. Generally, the FUS (Fire Underwriters Survey) methodology, as opposed to the OBC methodology is applied for all rural areas, however, should the structure be less than 600 m2, the OBC method can be applied, as long as no fuels, highly combustible materials are stored in the building.

    i. Enhanced review will be invoked should the construction coefficient be less than 1 as part of the fire flow calculations.

ii. Fire Routes now require designation with By-law through the Site Plan process by contacting fireroutes@ottawa.ca after preliminary site plan approval.

6. Background studies

   a. The property is within the Carp River Watershed/Subwatershed Study area and the proponent should itemize and detail concurrence with the content of these studies and plans. With the purpose of protecting, improving or restoring the quality and quantity of water in receiving watercourses, development is required to conform to approved Subwatershed Studies based on section 4.7.1 of the Official Plan. Subwatershed studies are an integral part of the overall planning process, and if successfully completed should provide a solid foundation such that the environmental features will be protected, enhanced or restored under present conditions, and as land use changes occur.

   b. Among several other requirements to be contemplated by the reporting, the Carp River Watershed study mapping identifies this property on Figure 3.4.31, the mapping indicates.

   c. Precambrian Bedrock, Till Organic Deposits Over Till, Escarpment with groundwater recharge potential < 75 mm/yr near the existing dwelling and existing barn.

   d. Clay with groundwater recharge potential of 100 mm/yr for the orchard and gardens area.

   e. These values will be confirmed through in-situ infiltration completed as part of the Geotechnical Study. Rationale should be provided for the infiltration rate, based on Carp River Subwatershed/Watershed study data and site investigations, to be implemented in the design of Stormwater Management and LID facilities.

7. Grading (Site Plan)

   a. A Grading and Drainage Plan will be required identifying the existing and proposed drainage patterns and their relationship with the surface runoff control. As part of a complete application, the Grading and Drainage Plan should identify and implement site, grading, building, and servicing design measures to protect new development from flooding as per policy 6, section 4.7.1 of the Official Plan. The plan forms part of the requirements for Site Plan Control applications noted in the Studies and Plan Identification List, provided with the feedback documents.

   b. The Plan should have a note that references the horizontal and vertical datums that were used and tied into to complete the project. The drawing should also make reference (on the face of the plan) to a site benchmark

that can be used by anyone with a level to carry out checks on the particular project.

8. Geotechnical (Site Plan)

    a. A **Geotechnical Brief** will be required with the Site Plan Control application. The report should provide sufficient soils and engineering information to confirm that the fire route and expanded gravel parking areas are suitably designed to accommodate the required emergency services vehicles, based on the requirements of the Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa. The study forms part of the requirements for Site Plan Control applications noted in the Studies and Plan Identification List, provided with the feedback documents Hydrogeological and Terrain Analysis.

    b. Based on the available mapping, there appears to be a till escarpment around the existing dwelling and barn leading to an area of potentially sensitive marine clays in the orchard and garden areas as shown on the site plan. Sensitive marine clays are potentially hazardous and can result in unstable slopes where existing grade differences or alterations occur. Should a report be required based on the Slope Stability Guidelines for Development Applications, the report would serve to address that development is generally directed to areas outside of unstable slopes, confirming the objectives of section 10.1.4 of the Official Plan.

    c. The study should contemplate/investigate at a minimum the pavement structure and groundwater elevation, in addition to the other evaluation criteria noted in the Terms of Reference for Geotechnical Studies. Based on policy, estimates of groundwater level will be dismissed and instead actual recordings are required.

9. Hydrogeological and terrain analysis requirements (Zoning and Site Plan Control)

    a. A **Hydrogeological and Terrain Analysis** will be required to establish that there is an adequate quantity and quality of groundwater to support the proposed development(s). The requirements for the Hydrogeological and Terrain Analysis Report are outlined in the City of Ottawa Hydrogeological and Terrain Analysis Guidelines, Section 5.0 titled Site Plans and section 7.0 for Zoning By-law Amendments. The study forms part of the requirements for Site Plan Control and Zoning Amendment applications noted in the Studies and Plan Identification List, provided with the feedback documents. The Official Plan section 4.7.2 requires that as part of a complete application where development is on the basis of private services, sufficient information must be provided with the application to assess the likelihood that;

i. Sufficient quantity of groundwater exists on site to service the development, and

ii. A water well can be constructed on the proposed lot(s) that will not be impacted by identified potential sources of groundwater contamination in the area, and

iii. The quality of the groundwater meets or exceeds the Ontario Drinking Water Standards, Objectives and Guidelines, including the City's Hydrogeological and Terrain Analysis Guidelines, and

iv. The operation of the on-site wastewater system on the lot will not adversely impact the wells of neighboring properties.

v. Note that the expected groundwater in this area has potential to be poor quality and moderate yield based on its location in the Verulam formation.

vi. The well(s) locations should be shown on all plans. Wells must be placed in specified locations for the protection of all wells onsite. The grading plan should indicate that grading around the well(s) meets O.Reg. 903 requirements, i.e., minimum well casing height above ground surface and the land around the well must slope away from the well to prevent ponding.

b. It appears that a supply well has been drilled, it will need to be tested to confirm water quantity and quality suitability prior to site plan approval based on section 5.1 of the Hydrogeological and Terrain Analysis Guidelines, March 2021. Support must be provided for the pump test rate; which should be the maximum day rate. The rate should consider the actual use. MOE/MECP records show well was completed on February 16, 2022, received by MOE May 25, 2022.

c. The parameters of water quality that will be tested will be the "subdivision suite" known to local well testing companies, as well as trace metals and VOCs. Requirements are outlined in the City of Ottawa Hydrogeological and Terrain Analysis Guidelines, section 5.2.4. The report should also provide an assessment of adjacent land uses and concerns and determine if any other parameters need to be tested (e.g. petroleum hydrocarbons, etc.).

d. Any water table measurements needed to support the design must be derived from spring-time investigation to assess seasonally high levels, to be included in the Geotechnical reporting.

e. If any well(s) need to be decommissioned, the well(s) need to be decommissioned in accordance with Wells Regulation (O.Reg. 903) under the Ontario Water Resources Act (See O.Reg. 903 - Section 21(3)). The

MECP well decommissioning record must be included in the report. The septic bed(s) need(s) to be decommissioned in accordance with the Ottawa Septic System Office (OSSO) requirements and to the satisfaction of the OSSO. All these details need to be investigated and included in the reporting.

f. Note that if the on-site well system will provide groundwater which serves the public, it will be a regulated drinking water system under O.Reg. 319 and must also follow any requirements set by Ottawa Public Health. Any requirements related to the regulated system must be fulfilled prior to the use of the system.

g. Bollards, or other means of preventing vehicle access, will need to be provided between areas with vehicle access and the existing or proposed well(s).

h. Technical consultation with the hydrogeological report reviewer, Obai, at obai.mohammed@ottawa.ca, is encouraged prior to commencing the field work program, please provide a work plan to the assigned Infrastructure Project Manager for comment in advance of work on-site.

i. A Septic System Impact Assessment must be completed as part of the Hydrogeological and Terrain Analysis Report, as per the City's Hydrogeological and Terrain Analysis Report Guidelines and MECP Guideline D-5-4, please refer to the HGTA for the predictive assessment for commercial/industrial developments (not residential developments). The sewage system design must be submitted with the application.

j. Note, that thin soils could be present on site, where less than 2 meters of overburden is present. There is potential karst topography to the south of the site. Should these be encountered, enhanced discussion and mitigation is required in the Terrain Analysis portion of the reporting.

k. The report needs to investigate if the site is hydrogelogically sensitive. If the site is hydrogeologically sensitive, then mitigative measures are to be recommended, to protect the underlying supply aquifer. This could include, but is not limited to, increased casing depth, increased separation distance between wells and septic systems, strategic placement of wells and septic system, based on direction of groundwater flow and existing soil thickness, and additional protective construction measures for the septic systems.

l. Note that compact gravel will be considered impermeable in the septic impact assessment unless accompanied by field testing to confirm infiltration rates.

m. If the expected daily design flow is 10,000 L/d or less, the septic permit from the Ottawa Septic System Office must be issued prior to Site Plan Approval being granted.

n. If the design flow exceeds 10,000 L/d, a reasonable Use Assessment must accompany the application to the City. Sewage systems with design flows exceeding 10,000 L/d require the issuance of an Environmental Compliance Approval (ECA) from the MECP prior to Site Plan Approval being granted.

o. For the Site Plan Control application (not applicable to lot creation or zoning) septic treatment (i.e. tertiary treatment with nitrate dilution) may be considered as part of the septic impact assessment calculations. A system certified though NSF or BNQ should be recommended.

p. Bollards, or other means of preventing vehicle access, will need to be provided between areas with vehicle access and the proposed septic system(s).

10. Construction constraints

a. The site has low groundwater recharge potential based on the Carp River WS/SWS identifying areas with till escarpments and sensitive marine clays and it will be a challenge to find the preferential location for SWM/LID facilities. The Stormwater Management engineering consultant should contemplate the location of the SWM/LID facilities and provide thorough discussion of design methodology in the Site Servicing Study. The fact that geotechnical conditions render design difficult is not sufficient rationale to not implement LID facilities or measures.

b. Wells are to have a minimum 3-meter clearance from structures, property lines and parking areas in accordance with section 5.2.2 of the Hydrogeological and Terrain Analysis Guidelines. The existing well location shown on the site plan would limit the accessibility of the well should a drilling rig need to access for any future maintenance, cleaning, deepening, as may be required to achieve adequate water quantity or quality.

11. Site Lighting (Site Plan)

a. Exterior site lighting will require certification by a licensed professional engineer confirming the design complies with the following:

b. The location of the fixtures, fixture type (make, model, part number and the mounting height) must be shown on one of the approved plans.

i. Lighting must be designed only using fixtures that meet the criteria for Full Cut-off classification, as recognized by the

Illuminating Engineering Society of North America (IESNA or IES), and

ii. It must result in minimal light spillage onto adjacent properties. As a guideline, 0.5 foot-candle is normally the maximum allowable spillage.

12. Severance/Coach House

    a. Additional dwelling units proposed on the property must meet all City requirements, more detailed comments can be provided once the method has been determined.

    b. Coach houses must share one of more of the private services with the principal dwelling based on the policies of the Zoning By-law. E.g. connected to the principal dwelling's well or septic system.

    c. The applicant should reach out to the Development Review All Wards group for feasbility of a potential severance and the anticipated scoping of engineering conditions to be applied.

13. Note: Please be aware that the requirements for Site Plan Control applications will not be the same as those required through Building Permit applications. The two processes do not follow the same guidelines or policies. Site Plan Control applications are subject to the Planning Act, whose purpose is to provide a land use planning system led by provincial policy, integrating matters of provincial interest in provincial and municipal planning decisions. The Official Plan is a legal document, adopted under the authority of and integrating the policies of the Planning Act. The Official Plan contains the goals, objectives, and policies required to manage and direct physical change and the effects on the social, economic, built and natural environments. This Site Plan Control application will therefore be subject to the requirements of the Official Plan. The plans and studies prepared as part of any previous building permits applications are not likely to address the concerns of the Official Plan and related planning guidelines. It should therefore be anticipated that revised plans and studies, where existing reports exist, will need to be prepared anew or revised significantly to address Site Plan Control requirements.

Feel free to contact Travis Smith (travis.smith@ottawa.ca), Infrastructure Project Manager, for follow-up questions.

Transportation

Comments:

14. Phase 1 comments related to the site plan still apply.

Feel free to contact Mike Giampa (mike.giampa@ottawa.ca), Transportation Project Manager, for follow-up questions.

Environment

Comments:

15. As indicated in the previous pre-consult meeting, development adjacent to a Natural Heritage System Linkage Area can trigger an Environmental Impact Study (EIS) as per the Official Plan Section 5.6.4.1. We continue to be of the opinion that the development is minor with respect to its potential impact on the adjacent Natural Heritage System Linkage Area and continue to recommend that the EIS be waived.

16. As discussed in the meeting, the proposal to add two dwellings in the regenerating forest is a potential concern and we would ask that if dwellings are added that at that time how the forest cover on the site could be maintained without any significant changes to the character of the property. This isn't to say that no trees are removed, just that the general character and ecological function of the site remains as it currently planned. If there is a request to remove the wooded area, that may require an EIS depending on the proposal and the applicable policies.

Feel free to contact Matthew Hayley (matthew.hayley@ottawa.ca), Environmental Planner, for follow-up questions.

Forestry

17. There are no tree-related concerns with the proposed rezoning. The comments below relate to the site plan application.

18. Site is >1ha, so a TCR is required; it can be scoped to the areas where work is proposed, as well as any trees within the ROW. This is to determine the presence of endangered tree species (butternut or black ash) and any impacts to trees related to the proposed site works.

19. A permit is required for removal of any trees from City property.

20. If coach houses or additional dwellings are proposed, these must be addressed in the TCR, including the proposed laneways. The location of the laneways and dwellings should be determined based on the least impact to existing healthy trees.

21. Trees on shared or adjacent properties must be protected unless permission is received from the owners for removal.

22. Given that there will be public access from Richardson Side Rd, consideration should be given to remove and replace the dead ash trees along this frontage, for safety purposes.

23. To ensure that no harm is caused to breeding birds, tree removal and vegetation clearing should be avoided during the migratory bird season (April 15 – August 15) as specified by The City of Ottawa's Environmental Impact Study Guidelines.

24. A Landscape Plan is required, including all elements within the Landscape Plan Terms of Reference. This can be scoped to the landscaping proposed around the building and parking lots/development, not orchard/agricultural production trees.

25. To support the City's urban forest canopy cover target, efforts shall be made to provide as much canopy cover as possible at a site level, through tree planting and tree retention. The Landscape Plan shall show how the proposed tree planting and retention will contribute to the City's overall canopy cover over time by doing a projection of the future canopy cover for the site to 40 years. The calculations for the canopy cover projection must be shown on the plan.

26. The City's priority is to plant large-growing native species wherever space and site conditions allow, and most particularly where planting is proposed adjacent to natural areas, forests, etc. As this site is surrounded by forested/natural lands, all species proposed for planting along these shared property lines must be native and non-invasive.

Feel free to contact Nancy Young (nancy.young@ottawa.ca), Forester, for follow-up questions.

Parkland

Parkland dedication is required, in accordance with the Parkland Dedication By-law 2022-280.

27. As the proposed development exceeds the maximum gross floor area provisions provided in the Zoning By-law for an on farm diversified use, the proposed would not benefit from the exemption provided for OFDUs in the Parkland Dedication By-law. The applicable parkland dedication rate is commercial/ industrial rate. The applicable rate is 2% the gross land area of the portion of property that is impacted by the proposed development.

28. Based on the site plan provided in the pre-consualtion submission , the portion of the property being used for the use is 1955 sq m. Thje parkland dedication amount is 39.1 sq m. staff will confirm this area at time of development application.

29. Please note that park comments are preliminary and will be finalized (and subject to change) upon receipt of the development application and the requested

supporting documentation. Additionally, if the proposed land use changes, then the parkland dedication requirement be re-evaluated accordingly.

30. Parks & Facilities Planning is requesting **Cash in Lieu** for this proposal. The value of the property will be determined by market appraisal approved by the City prior to planning approval for the site plan.

Feel free to contact anissa.mcalpine@ottawa.ca, Parks Planner, for follow-up questions.

Next Steps

Staff will provide required plans and studies lists for both the Phase 3 pre-consultation for the Zoning by-law Amendment application and for the Site Plan Control application.

Separate Phase 3 pre-consultation applications will be required for the Zoning By-law Amendment and Site Plan Control applications.

These can occur concurrently; however, the Zoning by-law Amendment application must be complete, with the appeal period complete, prior to moving forward with the formal Site Plan Control application.

We look forward to further discussing your project with you.

Should there be any questions, please do not hesitate to contact myself or the contact identified for the above areas / disciplines.

Yours Truly,

Sarah McCormick
Planner III

Encl. Study and Plan Identification List

c.c. Anissa McAlpine – Planner II, Parks
Nancy Young – Forester
Travis Smith – Infrastructure Project Manager
Jasdeep Brar – Planner I
Matthew Hayley – Planner III, Environmental

GENERAL

Executive Summary: **N/A**

Date and revision number of report: **Included**

Location map and plan showing municipal address, boundary and layout of proposed development: **Included**

Plan showing site and location of all existing services: **Included**

Development statistics, land use, density, adherence to zoning and Official Plan and reference to applicable watershed and subwatershed plans: **N/A**

Summary of Pre-Application Consultation meetings with City of Ottawa and other approval agencies: **Included**

Confirmation of conformance with higher level studies: **N/A**

Statement of objectives and servicing criteria: **Included**

Identification of existing and proposed infrastructure available in the immediate area: **Included**

Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development: **N/A**

Concept level master grading plan to confirm existing and proposed grades in the proposed development: **Included**

Identification of potential impacts of proposed piped services on private services on adjacent lands: **N/A**

Proposed phasing of proposed development: **N/A**

Reference to geotechnical studies: **Included**

All preliminary and formal site plan submissions should have the following information:

- Metric scale: **Included**
- North arrow: **Included**
- Key plan: **Included**
- Property limits: **Included**
- Existing and proposed structures and parking areas: **Included**
- Easements, road widenings and right-of-ways: **Included**
- Street names: **Included**

WATER SERVICING

Confirmation of conformance with Master Servicing Study: **N/A**

Availability of public infrastructure to service proposed development: **N/A**

Identification of system constraints: **N/A**

Identification of boundary conditions: **N/A**

Confirmation of adequate domestic supply: **Included**

Confirmation of adequate fire flow: **Included**

Check of high pressures: **N/A**

Definition of phasing constraints: **N/A**

Address reliability requirements: **N/A**

Check on necessity of a pressure zone boundary modification: **N/A**

Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for proposed development: **N/A**

Description of proposed water distribution network: **N/A**

Description of required off-site infrastructure to service proposed development: **N/A**

Confirmation that water demands are calculated based on the City of Ottawa Water Design Guidelines: **N/A**

Provision of a model schematic showing the boundary conditions locations, streets, parcels and building locations**: N/A**

SANITARY SERVICING

Summary of proposed design criteria: **Included**

Confirmation of conformance with Master Servicing Study: **N/A**

Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the City of Ottawa Sewer Design Guidelines: **N/A**

Description of existing sanitary sewer available for discharge of wastewater from proposed development: **N/A**

Verification of available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service proposed development: **N/A**

Calculations related to dry-weather and wet-weather flow rates: **N/A**

Description of proposed sewer network: **N/A**

Discussion of previously identified environmental constraints and impact on servicing: **N/A**

Impacts of proposed development on existing pumping stations or requirements for new pumping station: **N/A**

Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity: **N/A**

Identification and implementation of emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding: **N/A**

Special considerations (e.g. contamination, corrosive environment): **N/A**

STORMWATER MANAGEMENT & STORM SERVICING

Description of drainage outlets and downstream constraints: **Included**

Analysis of available capacity in existing public infrastructure: **N/A**

Plan showing subject lands, its surroundings, receiving watercourse, existing drainage pattern and proposed drainage pattern: **Included**

Water quantity control objective: **Included**

Water quality control objective: **Included**

Description of the stormwater management concept: **Included**

Setback from private sewage disposal systems: **Included**

Watercourse and hazard lands setbacks: **N/A**

Record of pre-consultation with the Ministry of the Environment, Conservation and Parks and the Conservation Authority having jurisdiction on the affected watershed: **N/A**

Confirmation of conformance with Master Servicing Study: **N/A**

Storage requirements and conveyance capacity for minor events (5-year return period) and major events (100-year return period): **Included**

Identification of watercourses within the proposed development and how watercourses will be protected or if necessary altered by the proposed development: **N/A**

Calculation of pre-development and post-development peak flow rates: **Included**

Any proposed diversion of drainage catchment areas from one outlet to another: **N/A**

Proposed minor and major systems: **Included**

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: **N/A**

Identification of municipal drains: **N/A**

Description of how the conveyance and storage capacity will be achieved for the proposed development: **Included**

100-year flood levels and major flow routing: **Included**

Inclusion of hydraulic analysis including hydraulic grade line elevations: **N/A**

Description of erosion and sediment control during construction: **Included**

Obtain relevant floodplain information from Conservation Authority: **N/A**

Identification of fill constraints related to floodplain and geotechnical investigation: **N/A**

APPROVAL AND PERMIT REQUIREMENTS

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 Act. 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: **N/A**

Application for Certificate of Approval (CofA) under the Ontario Water Resources Act: **N/A**

Changes to Municipal Drains: **N/A**

Other permits (e.g. National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation): **N/A**

CONCLUSIONS

Clearly stated conclusions and recommendations: **Included**

Comments received from review agencies: **N/A**

Signed and stamped by a professional Engineer registered in Ontario: **Included**