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Proposed Low-Rise Residential Development 455 Wanaki Road

Site Servicing & Stormwater Management Report

Proposed Low-Rise Residential Development 455 Wanaki Road

Site Servicing and Stormwater Management Report

Prepared By:

NOVATECH Suite 200, 240 Michael Cowpland Drive Ottawa, Ontario K2M 1P6

June 25th 2019

Novatech File: 119066 Ref: R-2019-094



June 25, 2019

City of Ottawa Planning, Infrastructure and Economic Development Department Planning and Infrastructure Approvals 110 Laurier Avenue West, 9th Floor Ottawa, ON K1P 1J1

Attention: Richard Buchanan, CET Project Manager, Development Approvals Central

Dear Richard:

Reference: Site Servicing and Stormwater Management Report 455 Wanaki Road Our File No.: 119066

Enclosed is the 'Site Servicing and Stormwater Management Report' prepared for the proposed low-rise residential development located at 455 Wanaki Road in the City of Ottawa.

This report is submitted in support of a Site Plan Control application.

Please contact the undersigned, should you have any questions or require additional information.

Yours truly,

NOVATECH

Greg MacDonald, P.Eng. Director, Land Development and Public Sector Infrastructure

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Figure 2:	Proposed Site Plan

Appendices

- Appendix A: Pre-Consultation Correspondence
- Appendix B: Sanitary Flow Calculations and Relevant Excerpts from the Wateridge Phase 1B Design Brief
- Appendix C: Water Demand and FUS Calculations and Correspondence
- Appendix D: Stormwater Management Calculations

Attached Plans

- 119066-GP: General Plan of Services
- 119066-GR: Grading and Erosion and Sediment Control Plan
- 119066-STM: Storm Drainage Area Plan

1.0 INTRODUCTION

It is proposed to construct a low-rise residential development for Habitat for Humanity at 455 Wanaki Road, in the City of Ottawa. Novatech has been retained to complete a Site Servicing and Stormwater Management report for the proposed development.

This report addresses the approach to site servicing and stormwater management for the proposed development and is being submitted in support of a site plan control application.

1.1 Location and Site Description

The subject site is located at 455 Wanaki Road in the City of Ottawa, as shown in **Figure 1 (Aerial Plan)** and is approximately 1,014 square metres (m^2) in area.

The site is located within the Wateridge Village development on the former CFB Rockcliffe lands, which are currently under re-development by the Canada Lands Company. The site is bordered by Burma Road (existing) to the west, Wanaki Road to the east, Provender Avenue to the south and the Burma stormwater management facility to the north.

Figure 1 – Aerial Plan provides an aerial view of the site.



Image Source: geoOttawa 2017 Aerial map

The subject site is currently undeveloped.

1.2 Pre-Consultation Information

A pre-consultation meeting was held with the City of Ottawa on March 14, 2019, at which time the client was advised of the general submission requirements. Refer to **Appendix A** for a summary of the correspondence related to the proposed development.

1.3 Reference Material

The following material has been consulted to develop the servicing and grading design.

- 1 "Design Brief Wateridge Village at Rockcliffe Phase 1B", prepared by IBI Group, January 2017
- 2 "Burma Stormwater Management Facility Design, Wateridge Village at Rockcliffe Phase 1B report", prepared by IBI dated June, 2017 (Rev. 5)
- 3 "Former CFB Rockcliffe Master Servicing Study", prepared by IBI Group, August 2015
- 4 Wateridge Phase 1B design drawings, prepared by IBI Group. Received in CAD format on 8 May 2019.
- 5 "Geotechnical Investigation Proposed Residential Development Wateridge Block 29 Wanaki Road Ottawa" report (PG4965-1), prepared by Paterson Group, June 21, 2019

2.0 PROPOSED DEVELOPMENT

The proposed development will consist of a three (3) storey building with a walk-out basement level with a total of +/- 9 residential units. The site will have a parking lot with a single two-way access to Burma Road.

Figure 2 – **Proposed Site Plan** (by CSV Architects) provides a general layout of the proposed development.



3.0 SITE SERVICING

The objective of the site servicing design is to conform to the requirements of the City of Ottawa, to provide suitable sewage outlets and to ensure that a domestic water supply and appropriate fire protection are provided for the proposed development.

Servicing criteria, expected sewage flows and water demands for the proposed development have been established using the City of Ottawa design guidelines for sewer systems and water distribution.

3.1 Wateridge Phase 1B Services

The site is located adjacent to sections of Wanaki Road and Provender Avenue which are part of the Wateridge Phase 1B proposed works. These works were under construction at the time of writing of this report, however the municipal services and roadway up to the first lift of asphalt have been constructed. As-built information is not yet available so design information from the latest Phase 1B design drawings (by IBI Group)⁴ has been used to obtain pipe information for the adjacent municipal services in these roads.

3.2 **Proposed Servicing Overview**

In general, the proposed development will be serviced for sanitary and water by extending new private water and sanitary services to the existing sanitary manhole and watermain stub located near the north-east corner of the site. These connect to the recently constructed municipal sanitary sewer and watermain in Wanaki Road. For stormwater, a new private stormwater system will be extended to the existing stormwater sewer outlet in the north-west corner of the site which drains directly to the Burma Stormwater Management Facility.

Refer to the subsequent sections of the report and to the attached drawing **119066-GP** for further details.

4.0 SANITARY SERVICING

An existing 250mm dia. sanitary service from the existing on-site sanitary manhole (SANMH 147AW) to the existing 250mm dia. municipal sanitary sewer located in Wanaki Road provides an outlet for sanitary flows from the site. There is also an existing 250mm dia. municipal sanitary sewer in Burma Road.

The municipal sanitary sewer in Wanaki Road and the 250mm dia. sewer onto the site form part of the Wateridge Phase 1B works (by IBI) and were designed to allow for future development of this site¹. The estimated future peak sanitary flow from this site was calculated to be 0.54 L/s¹. Refer to **Appendix B** for relevant excerpts of the sanitary design calculations and sanitary drainage area map from the Phase 1B Design Brief (1).

The proposed development will be serviced by extending a new private 200mm dia. sanitary sewer from the existing sanitary manhole on site (MH 147AW).

The theoretical sanitary flows for the proposed development are summarized below in **Table 4.1**. Refer to **Appendix B** for detailed calculations and design criteria.

Unit Count	Design Population	Average Flow ¹	Peak Flow ²
	(people)	(L/s)	(L/s)
9 x Single Family Units	30.6	0.10	0.40 ³

¹ Average Dry Weather Flow

² Peak Wet Weather Flow includes an infiltration allowance of 0.33 L/s/gross ha.

³ Residential Peaking Factor = 3.68 (per Harmon Equation).

Based on Manning's Equation, a 200mm dia. sanitary gravity sewer at a minimum slope of 0.5% has a full flow conveyance capacity of approximately 44 L/s, which is sufficient to convey the theoretical sanitary design flows calculated above.

The theoretical peak sanitary flow from the proposed development of 0.40 L/s is less than the estimated future peak sanitary flow allowed for in the design of the Phase 1B works of 0.54 L/s. Therefore, the existing municipal sanitary sewer system in Wanaki Road has sufficient capacity to accommodate the proposed development.

5.0 WATER SERVICING

A 150mm dia. watermain connection to near the north-east corner of the site was designed as part of the Wateridge Phase 1B works. It is assumed that this watermain connection has been constructed although no as-built information is available at this time. This watermain connects to the existing 406mm dia. municipal watermain in Wanaki Road. There are also existing 305mm dia. municipal watermains in Provender Avenue and Burma Road. The proposed development will be serviced by extending a new private watermain from the existing 150mm dia. watermain connection to the proposed building.

5.1 Water Demands

The theoretical domestic water demands for the proposed development are given in **Table 5.1**. Refer to **Appendix C** for the design criteria used, taken from Section 4 of the Ottawa Design Guidelines – Water Distribution.

Average Water Demand	Maximum Day Demand	Peak Hour Demand	
(L/s)	(L/s)	(L/s)	
0.13	0.33	0.73	

Table 5.1: Theoretical Water Demands for Proposed Development

The municipal watermain system on Wanaki Road forms part of the Wateridge Phase 1B works (by IBI) and the Phase 1B Design Brief (1) indicates this system was designed to allow for future development of this site as low-rise residential.

5.2 Water Supply for Fire-Fighting

The Fire Underwriters Survey (FUS) was used to estimate fire flow requirements for the proposed development. In the absence of detailed architectural information, some assumptions were made

regarding the building construction:

- Wood frame construction
- Non-combustible occupancy type
- Non-sprinklered

It should be noted that fire flow requirements calculated using the FUS method tend to generate higher values when compared to flows being calculated using the Ontario Building Code (OBC).

The calculated fire flow demand for the proposed residential building is 183 L/s (11,000L/min). Refer to **Appendix C** for a copy of the FUS fire flow calculations.

There are four (4) existing municipal fire hydrants within 75m of the property. Refer to attached drawing **119066-GP** for their locations.

Preliminary water demand and fire flow calculations were provided to the City of Ottawa by email on June 6, 2019 to generate municipal watermain network boundary conditions and to perform a multi hydrant analysis. This information had not yet been received from the City of Ottawa at the time of writing of this report. However, it is expected that the existing municipal watermain network within the vicinity of the can provide adequate water supply to the proposed development.

6.0 STORMWATER

6.1 Stormwater Management Criteria and Objectives

The stormwater management criteria and objectives for the site are as follows:

- Provide a dual drainage system (i.e. minor and major system flows).
- Control the post-development flows from the site to an allowable release rate, as specified in the Burma Stormwater Management Facility Design, Wateridge Village at Rockcliffe -Phase 1B report (2). Post-development peak flows will be controlled for storms up to and including the 100-year design event, prior to being released into the municipal storm system.
- Provide on-site stormwater storage to control flows to the allowable release rate using surface ponding in the proposed parking lot area. Limit ponding to 300mm depth.
- Provide guidelines to ensure that site preparation and construction is in accordance with the current Best Management Practices for Erosion and Sediment Control.

6.2 **Pre-Development Conditions**

Under existing conditions, the 0.102 ha site is undeveloped and overlain with a mixture of topsoil and gravel. Stormwater flows from the site are currently being conveyed to the existing Burma SWM facility to the north of the site via a temporary catch basin located in the northwest corner of the site with a 375mm dia. outlet. The Burma SWM facility was recently retrofitted as part of the Wateridge Phase 1B works ². The Burma SWM facility outlets to the existing Wateridge municipal storm sewer system and ultimately discharges to the Wateridge Phase 1A works.

An existing stormwater manhole (MH 147W) with a 300mm dia. stormwater sewer outletting to the existing 1050mm dia. municipal storm sewer in Wanaki Road is located near the north east corner of the site. There is also an existing 300mm dia. municipal storm sewer located in Burma Avenue.

The uncontrolled pre-development peak flows for the 5-year and the 100-year design events assuming a time of concentration of 10 minutes and a runoff coefficient of 0.60 were calculated using the Rational Method and are summarized in **Table 6.2**.

 Table 6.2: Pre-Development Site Flows

Design Storm	Peak Flow
5-year	17.6 L/s
100-year	37.8 L/s

Refer to **Appendix D** for detailed calculations and design criteria.

6.3 Allowable Release Rate

The Burma SWM Pond was recently retrofitted to provide quantity control for approximately 50 ha of upstream development, including the subject site. The design criteria for the subject site used in the hydrological and hydraulic modelling completed as part of the pond design assumed an impervious ratio of 86% for future development of the site. This is equivalent to a runoff coefficient (C) of 0.78. A modelled flow of 26.0 L/s for both the 5-year and the 100-year design event was used for the subject site. Relevant extracts from the Burma Stormwater Management Facility Design report (2) are included in **Appendix D**.

The allowable release rate for the site was calculated using the Rational Method with the same design criteria as the Burma SWM Facility model (2): a runoff coefficient (C) of 0.78, a 5-year rainfall intensity of 104.2 mm/hr, based on City of Ottawa IDF Curves using a time of concentration of 10 minutes. The allowable release rate was calculated to be 20.9 L/s. Refer to **Appendix D** for detailed calculations.

6.4 Post-Development Conditions

The proposed development will be serviced by extending a new private storm sewer system from the existing outlet pipe to the Burma SWM Facility located in the north-west corner of the site.

The proposed development will consist of two (2) drainage sub-catchment areas. Refer to plan **119066-STM** for details. A brief description of these areas is as follows:

- A-1: Direct Runoff Areas Runoff from areas around the exterior of the site and the front of the building will drain uncontrolled towards the municipal Right-of-Ways and the Burma SWM Facility lands.
- A-2: Controlled Runoff Area Runoff from the parking lot and most of the proposed building roof will be controlled by the use of an inlet control device on the outlet of the proposed catchbasin in the parking lot area.

The post-development flows for the site were calculated using the Rational Method and are detailed in the subsequent sections of the report. Refer to **Appendix D** for detailed SWM calculations.

6.4.1 Area A-1 – Uncontrolled Direct Runoff

The uncontrolled post-development flows from this direct runoff sub-catchment area (0.039 ha) are shown in **Table 6.3-B**.

Design Event	Uncontrolled Flow
5-year	5.2 L/s
100-year	10.4 L/s

6.4.2 Area A-2– Controlled Flows

Stormwater runoff from sub-catchment area A-2 will be directed to the proposed parking lot area and captured by the proposed catchbasin located in the parking lot. The post-development flows from this sub-catchment will be attenuated by the use of an orifice plug type ICD installed within the outlet pipe of the proposed catchbasin. Stormwater runoff from this drainage area will be temporarily stored on the surface of the parking lot prior to being discharged into the proposed storm sewer system.

The design flows for this sub-catchment area were determined by subtracting the uncontrolled flows from Area A-1 from the allowable release rate for both the 5-year and 100-year design storms. The Modified Rational Method was used to determine the required storage volumes for the 5-year and 100-year design events. The stage-storage curve for the proposed catchbasin and parking lot ponding was determined from the proposed grading. Refer to drawing **119066-GR** for details of the proposed grading. An iterative process was used to determine the required orifice size for the plug type ICD and the approximate ponding depths for the 5-year and 100-year design storms.

Table 6.3-C summarizes the controlled flows, the type of ICD, required storage volumes and approximate ponding depths for the 5-year and 100-year design events and the total storage volume available.

Design Event	ICD Type	Controlled Flow	Storage Volume Required	Approximate Ponding Depth	Storage Volume Available
5-year	56mm	10.1 L/s	1.4 m ³	6 cm	10 m ³
100-year	Orifice Plug	10.3 L/s	6.4 m ³	12 cm	

Table 6.3-C: Area A-2 – Post-Development Controlled Flows

Refer to **Appendix D** for detailed calculations.

6.4.3 Summary of Post-Development Flows

Table 6.3-D compares the total post-development flows from the site to the allowable release rate and to the total pre-development flows for the 5-year and the 100-year design events.

Design Event	Pre-Development Flow	Allowable Release Rate	Post-Development Total Flow		
5-year	17.6 L/s	20.01/2	15.3 L/s		
100-year	37.8 L/s	20.9 L/S	20.7 L/s		

 Table 6.3-D: Stormwater Flow Comparison Table

The existing 375mm dia. outlet pipe to the Burma Stormwater Management Facility was designed to be at a slope of approximately 5%, so is estimated to have a full flow capacity of approximately 408 L/s.

The total stormwater flows from the site will decrease from the pre-development flows and the post-development flows will meet the allowable release rate for both the 5-year and 100-year design storm events.

6.5 Stormwater Quality Control

The subject site is located within the jurisdiction of the Rideau Valley Conservation Authority (RVCA). As per the Wateridge Phase 1B Design Brief (1), stormwater quality control will be provided by the Eastern Stormwater Management Facility for the Wateridge development area, constructed as part of Phase 1A.

7.0 SITE GRADING

The existing site is generally flat at an elevation of approximately \pm 91.3 with sloped sides rising between approximately 1-3m to the adjacent higher right-of-ways and Burma SWM Facility lands. The finished floor elevations (FFE) of the proposed development have been set to accommodate the elevations of the proposed curbs along Wanaki Road and Provender Avenue and the existing elevations along Burma Road and the asphalt path along the exterior of the Burma SWM Facility. Refer to plan **119066-GR** for details.

7.1 Major System Overflow Route

In the case of a major rainfall event exceeding the design storms provided for, stormwater from the site will overflow towards the adjacent Burma Road right-of-way and the Burma SWM Facility lands. The finished floor elevations have been set to be a minimum of 0.3m above the major system overflow points in the adjacent streets. The major system overflow route is shown on plan **119066-GR**.

8.0 GEOTECHNICAL INVESTIGATIONS

A Geotechnical Investigation Report (5) has been prepared by Paterson Group. Refer to the Geotechnical Report for sub-surface conditions, construction recommendations and geotechnical inspection requirements

9.0 EROSION AND SEDIMENT CONTROL

To mitigate erosion and to prevent sediment from entering the storm sewer system, temporary erosion and sediment control measures will be implemented on-site during construction in accordance with the Best Management Practices for Erosion and Sediment Control. This includes the following temporary measures:

- Filter bags will be placed under the grates of nearby catchbasins and manholes and will remain in place until construction is completed.
- Silt fencing will be placed per OPSS 577 and OPSD 219.110 along the surrounding construction limits, where applicable.
- Mud mats will be installed at the site entrances.
- Street sweeping and cleaning will be performed, as required, to suppress dust and to provide safe and clean roadways adjacent to the construction site.
- On-site dewatering is to be directed to a sediment trap and/or gravel splash pad and discharged safely to an approved outlet as directed by the engineer.

The temporary erosion and sediment control measures will be implemented prior to construction and will remain in place during all phases of construction. Regular inspection and maintenance of the erosion control measures will be undertaken.

10.0 CONCLUSIONS

This report has been prepared in support of a site plan control application for the proposed lowrise residential development at 455 Wanaki Road. The proposed development will consist of +/-9 single family residential units.

The conclusions are as follows:

- The proposed development will be serviced for sanitary and water by extending new private water and sanitary systems to the existing connections near the northeast corner of the property which are connected to the recently constructed municipal sanitary sewer and watermain in Wanaki Road.
- An existing catchbasin with an outlet to the Burma SWM Facility is located in the northwestern corner of the site. A new private stormwater system will be extended from this existing outlet pipe.
- Based on information in the Wateridge Development Phase 1B Design Brief (1), the municipal sanitary sewer and municipal watermain in Wanaki Road were sized to accommodate low-rise residential development of this site.
- The proposed low-rise development is located within 75m of four (4) existing municipal fire hydrants along the adjacent streets. It is expected that the existing municipal watermain network within the vicinity of the can provide adequate water supply to the proposed development.
- On-site stormwater quantity control will be provided by using surface storage in the proposed parking lot area.
- On-site stormwater quality control is not required, nor being provided. The Wateridge Eastern SWM pond located downstream provides quality treatment of stormwater runoff from the site.
- Temporary erosion and sediment controls will be provided during construction.

NOVATECH

Prepared by:

Bolam

Lydia Bolam, P. Eng. Project Engineer Reviewed by:



Greg MacDonald, P. Eng. Director | Land Development and Public Sector Infrastructure

APPENDIX A

Pre-Consultation Correspondence

Pre-Application Consultation Meeting Notes

Property Address: 455 Wanaki Road PC2019-0062 March 14, 2019, 4103E

Attendees:

Internal Invitees:

Planner (File Lead) – Kimberley Baldwin Urban Designer – Christopher Moise Project Manager, Infrastructure – Richard Buchanan Project Manager, Transportation – Wally Dubyk Planning Co-op Student – Caleb Miller

External Invitees:

Applicant, Colonnade BridgePort – Bonnie Martell Architect – Anthony Leaning Habitat for Humanity – Marc Caron Habitat for Humanity – Steve Walsh

Wateridge Community Association – Lysanne Brault Wateridge Community Association – Jane Thompson

Meeting notes:

Opening & attendee introduction

- Introduction of meeting attendees
- Confirmation of signed N.D.A. by Community Association Representatives
- Overview of proposal: A 3 storey residential building with a total of 8 stacked units. The building is defined as 3-storey per Code, and by bylaw is also likely 3-storey as the 2nd level (ground floor) is closest to grade. We haven't calculated this exactly yet, so it will be confirmed. If the bylaw provision that grade is to be calculated based on existing grades, prior to raising levels as part of the plan of subdivision, then it might still be a 4-storey building. Mr. Leaning asked staff to verify whether that provision applies, as it would also affect compliance with maximum building height.
- The units will be ground oriented. Some of the units will be barrier free accessible units. 8 Parking spaces planned to accommodate the Habitat for Humanity families who may rely on vehicle transportation.
- Mr. Caron provided a brief background of Habitat for Humanity and the work that they do across Canada.

Preliminary comments and questions from staff and agencies, including follow-up actions:

Planning – Kim Baldwin and John Lunney

- Staff explained some of the Secondary policies applicable to the site.
 - As per Secondary Plan, the site is designated low-rise residential
 - The required density for the site is 32 units per net hectare, which on this site results in a minimum of 9 units
 - The building(s) should face Wanaki
 - A cycle track is proposed along Wanaki.
- Staff confirmed that 5 metre setback is required on all sides regardless if the development is deemed a townhouse or an apartment
 - Correction: A 5m setback on all sides of the site <u>applies to a PUD</u> <u>development only</u> (ie. Multiple buildings on one lot). The setbacks that would apply to a single low-rise apartment building or stacked dwelling is complex. Ms. Baldwin and Mr. Lunney are currently examining the provisions applying to those other uses with Zoning Interpreter staff. Confirmation to follow next week.
- Amenity space requirements are dependent on the use proposed. See Section 137 of the Zoning Bylaw. Note that amenity space cannot technically be provided in the front and/or corner side yards.
- Ms. Baldwin highlighted that community consultation is currently required for this development. in June 2019, the threshold for public consultation in a site plan control application process will be changing. For the community's information, a four to 13-unit residential development would not trigger public consultation in the new process.

Urban Design – Christopher Moise

- Through the lens of local context, the site may be over-accommodating in parking. A large area of the site is currently designated for surface parking.
- This site will be setting design precedents for future nearby development and should seek every opportunity to achieve excellent design
- The size of the lot looks like it could accommodate additional density. More density would be compatible with the adjacent dwelling units immediately west of the site and the vision for the Wateridge community.

Engineering – Richard Buchanan

- Site Plan will need to reflect effective servicing for whatever building type is finalized
- Staff can provide the servicing plan from the approved subdivision.
- If there is only one building proposed, only one service can be provided.
- ESA not required (Study already completed through subdivision process)
- Geotechnical report and noise study will be required
- A complete list of plans and studies will be submitted to the applicant in a followup email.

Transportation – Wally Dubyk

- 8 Parking spaces has no significant impact on traffic, so a Traffic Impact Assessment is not likely required
- Please fill out a Traffic Screening form to confirm
- Along Wanaki, a cycle track and sidewalk is proposed. Canada Lands Company will construct the works in the right-of-way. Please show all the proposed works on your site plan. A cross section of the approved CLC plans will be provided to you.
 - Comment from Mr. Moise: If sidewalks are proposed along Wanaki, consider removing the in-lot sidewalks if they are redundant

Questions and comments from the Community Association representative

Lysanne Brault – General Comments

- This development is welcomed by the community. The community may even want to participate in the project.
- Comments on parking
 - Not sure less than one car per unit is desirable on this Habitat for Humanity site as living at Wateridge, is not like people living downtown who can easily walk to all amenities. One car per household is to be expected.
 - If insufficient parking is provided and the residents and their visitors at this site start parking on the street, Wanaki being a collector and main access to Wateridge, this would not be appropriate, nor would it be appropriate that they park on neighboring Provender area.

Jane Thompson – Site Specific comments

- The site is a gateway to the neighbourhood that requires special design considerations
- The frontage of Burma appears to have many mature trees. If mature trees still exists on site, efforts to conserve them would be greatly preferred

Next steps

- Planning staff to send applicant list of plans and studies required.
- Planning staff to respond to applicant's zoning questions.
- Encourage applicant to discuss the proposal with Councillor, community groups and neighbours

Legend:

The letter S indicates that the study or plan is required with application submission.

The letter A indicates that the study or plan may be required to satisfy a condition of approval/draft approval.

For information on preparing required studies and plans refer to:

http://ottawa.ca/en/city-hall/planning-and-development/guide-preparing-studies-and-plans

S/A	Number of copies	ENGINEERING	S/A	Number of copies
S	5	1. Site Servicing Plan 2. Assessment of Adequacy of Public Services / Site Servicing Brief	S	3
S	5	3. Grade Control and Drainage Plan 4. Geotechnical Study / Slope Stability Study	S	3
	2	5. Composite Utility Plan 6. Groundwater Impact Study		6
	5	7. Servicing Options Report 8. Wellhead Protection Study		6
	9	Community Transportation Study and / or Transportation Impact Study / Brief 10. Erosion and Sediment Control Plan / Brief	S	3
S	3	11. Storm water Management Brief 12. Hydro geological and Terrain Analysis	l	8
	3	13. Hydraulic Water main Analysis 14. Noise / Vibration Study	S	3
	10	15. Roadway Modification Design Plan 16. Confederation Line Proximity Study		9

S/A	Number of PLANNING / DESIGN / SURVEY		S/A	Number of copies		
		50	17. Draft Plan of Subdivision	18. Plan Showing Layout of Parking Garage		2
	30	19. Draft Plan of Condominium	20. Planning Rationale	S	2	
S	5	21. Site Plan	22. Minimum Distance Separation (MDS)		3	
	10	23. Concept Plan Showing Proposed Land Uses and Landscaping	24. Agrology and Soil Capability Study		5	
	3	25. Concept Plan Showing Ultimate Use of Land	26. Cultural Heritage Impact Statement		3	
S	5	27. Landscape Plan	28. Archaeological Resource Assessment Requirements: S (site plan) A (subdivision, condo)		3	
S	2	29. Survey Plan	30. Shadow Analysis		3	
S	3	 Architectural Building Elevation Drawings (dimensioned) 	 Design Brief (includes the Design Review Panel Submission Requirements) 	S	Available online	
	6	33. Wind Analysis				

S/A	Number of copies	E	ENVIRONMENTAL					
	3	 Phase 1 Environmental Site Assessment 	 Impact Assessment of Adjacent Waste Disposal/Former Landfill Site 		6			
	3	 Phase 2 Environmental Site Assessment (depends on the outcome of Phase 1) 	37. Assessment of Landform Features		7			
	4	38. Record of Site Condition	39. Mineral Resource Impact Assessment		4			
S	5	 Tree Conservation Report (can be provided on the landscape plan) 	41. Scoped Environmental Impact Statement		11			
	4	 Mine Hazard Study / Abandoned Pit or Quarry Study 						

S/A	Number of copies	ADDITIC	S/A	Number of copies	
		43.	44.		

Meeting Date: March 14, 2019	Application Type: ,Site Plan Control , with Public Consultation (now unti June 2019)				
File Lead: Kimberley Baldwin	Engineer/Project Manager: Richard Buchanan				
Site Address: 455 Wanaki Road	*Preliminary Assessment: 1 2 3 4 5				

*One (1) indicates that considerable revisions are required before a planning application is submitted, while five (5) suggests that 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.

It is important to note that the need for additional studies and plans may result during application review. If following the submission of your application, it is determined that material that is not identified in this checklist is required to achieve complete application status, in accordance with the Planning Act and Official Plan requirements, City Planning will notify you of outstanding material required within the required 30 day period. Mandatory pre-application consultation will not shorten the City's standard processing timelines, or guarantee that an application will be approved. It is intended to help educate and inform the applicant about submission requirements as well as municipal processes, policies, and key issues in advance of submitting a formal development application. This list is valid for one year following the meeting date. If the application is not submitted within this timeframe the applicant must again pre-consult with the City.

Last updated January, 2014

APPENDIX B

Sanitary Flow Calculations and Relevant Excerpts from Wateridge Phase 1B Design Report

THEORETICAL SANITARY FLOW DESIGN SHEET

Engineers, Planners & Landscape Architects

LOCATION		RESIDENTIAL FLOW				EXTRANEOUS FLOW		TOTAL FLOWS			
Use	Total Area	Number of Units	Design Population	Avg Flow	Peak Factor	Res. Peak Flow	Infiltration Dry Weather (I/I dry)	Allowance Wet Weather (I/I wet)	Average Dry Weather Flow (ADWF)	Peak Dry Weather Flow (PDWF)	Peak Wet Weather Flow (PWWW)
	(ha)	(units)	(persons)	(l/s)	-	(l/s)	(l/s)	(l/s)	(l/s)	(l/s)	(l/s)
THEORETICAL PROPOSED BUILDING	G USE										
Residential	0.101	9	30.6	0.10	3.68	0.37	0.01	0.03	0.10	0.37	0.40
Design Parameters: Peak Extraneous Flows Residential Population Densities Peak Extraneous Flows Single Family unit 3.40 people / unit											
Average Sanitary Flows Residential Peaking Factors Residential	280 Harmon Equatio	L/person/day on, K=0.8, Max. = 4.0	Infiltration Allowance (Wet Weather) C Infiltration Allowance (Total I/I) C		0.05 l/s 0.28 l/s	Designed: Checked:	LGB GJM				
							Date:	19/06/2019			

p/p/u

p/p/u

p/p/u

p/p/Ha

INIST

COM

IND

50.000 L/Ha/day

50,000 L/Ha/day

35.000 L/Ha/dav

17000 L/Ha/dav

TH/SD 2.7

1.8

60

APT

Other

IBI GROUP

ibigroup.com

400-333 Preston Street

Ottawa Ontario K1S 5N4 Canada tel 613 225 1311 fax 613 225 9868

RESIDENTIAL ICI AREAS INFILTRATION ALLOWANCE FIXE LOCATION AREA (Ha) AREA (Ha) AREA UNIT TYPES POPULATION PEAK PEAK PEAK AREA FLOW FROM MH INSTITUTIONAL INDUSTRIAL ТО МН Phase 1B XTERNA FACTOR FLOW COMMERCIAL FLOW STREET AREA ID SF SD тн APT IND CUM IND CUM (L/s) IND CUM IND CUM IND CUM (Ha) (Ha) (L/s) (L/s) hase 1 201A MH201A MH202A 0.31 0.0 4.00 0.00 0.00 0.00 0.00 0.00 0.31 0.31 0.09 0.00 Hemlock Road 0.0 Future Street No. 6 EX202A BULK202AN MH202A 2.08 358.5 358.5 4.00 5.81 0.00 0.00 0.00 0.00 2.08 2.08 0.58 0.00 Hemlock Road 202A MH202A MH203A 0.21 0.0 358.5 4.00 5.81 0.00 0.00 0.00 0.00 0.21 2.60 0.73 0.00 0.00 Future Street No. 5 EX203A BUI K203AN MH203A 1 40 160.5 160.5 4 00 2 60 0.00 0.00 0.00 0.00 1 40 1 40 0.39 0.00 203A, EXPARK2 MH204A 0.44 0.00 0.00 0.64 0.64 0.00 Hemlock Road MH203A 0.20 0.0 0.0 4.00 0.00 0.00 0.18 FX204A rue Moses Tennisco Street BUI K204AN MH204A 153.5 153.5 4.00 0.00 0.00 1.39 1.39 0.39 0.00 1.39 2 4 9 0.00 0.00 Hemlock Road 204A MH204A MH205A 0.00 0.00 0.00 0.21 1.60 0.00 0.21 153.5 4.00 2.49 0.45 0.0 0.00 0.00 0.00 rue Michael Stoqua Street EX205A BUILK205AN MH205A 1.38 241.5 241.5 4.00 3.91 0.00 0.00 0.00 1.38 1.38 0.39 0.00 Hemlock Road 205A MH205A MH206A 0.25 395.0 0.00 0.00 0.25 0.90 0.00 4.00 6.40 0.00 3.23 0.0 EX206A-B BULK206AN MH206A 0.00 0.00 rue Bareille-Snow Street <u>9.61</u> <u>1755.0</u> 1755.0 3.63 25.80 0.00 0.00 0.00 9.61 9.61 2.69 MH206A MH207A 206A 0.00 0.00 0.00 0.00 Hemlock Road 0.20 0.0 2150.0 3.56 31.02 0.00 0.20 13.04 3.65 Block 20 PARK1 MH207AN MH207A 0.32 0.0 0.0 4.00 0.00 0.00 0.00 0.00 0.00 0.32 0.32 0.09 0.00 PARK1, 207A MH207A BULK176AE 0.12 2150.0 31.02 0.00 0.00 0.00 0.00 0.12 13.48 3.77 0.00 Hemlock Road 0.0 3.56 Phase 1A Hemlock Road BULK176AE MH176A 0.0 2150.0 3.56 31.02 0.00 0.00 0.00 0.00 0.00 13.48 3.77 0.00 hase 1 0.00 0.90 0.90 chemin Wanaki Road 200A, COM1 MH200A MH214A 0.25 0.0 0.0 4.00 0.00 0.00 0.78 1.15 1.15 0.32 0.00 214A, COM2 MH214A BULK153AN 0.16 0.0 0.0 4.00 0.00 0.00 0.65 1.55 0.00 1.35 0.81 1.96 0.55 0.00 chemin Wanaki Road Phase 1B 143B BULK143AE MH143A 0.31 104.0 104.0 4.00 1.69 0.00 0.00 0.00 0.00 0.31 0.31 0.09 0.00 chemin Wanaki Road 143A MH143A MH144A 0.27 0.0 104.0 4.00 1.69 0.00 0.00 0.00 0.00 0.27 0.58 0.16 0.00 chemin Wanaki Road chemin Wanaki Road 144A 144R MH144A MH145A 0.72 0.0 104.0 4.00 1.69 0.00 0.00 0.00 0.00 0.72 1.30 0.36 0.00 chemin Wanaki Road 145A, 145B, 145C MH145A MH146A 2.77 835.6 939.6 3.82 14.53 0.00 0.00 0.00 0.00 2.77 4.07 1.14 0.00 chemin Wanaki Road MH146A MH147A 0.14 14.53 0.00 0.00 0.00 0.14 4.21 0.00 146A 0.0 939.6 3.82 0.00 1.18 chemin Wanaki Road PARK2 MH147A 0.55 0.00 0.00 0.00 BLK147AE 0.00 0.00 0.55 0.0 0.0 4.00 0.00 0.55 0.15 chemin Wanaki Road 147C BLK147AW MH147A 0.10 33.6 33.6 4.00 0.54 0.00 0.00 0.00 0.00 0.10 0.10 0.03 0.00 chemin Wanaki Road 1474 MH147A MH170A 0.03 0.0 973.2 3.81 15.01 0.00 0.00 0.00 0.00 0.03 4 89 1 37 0.00 MH107A MH147C 5.05 chemin Wanaki Road 147B 0.16 0.0 973.2 3.81 15.01 0.00 0.00 0.00 0.00 0.16 1.41 0.00 MH147C BLK148AW 0.0 973.2 3.81 15.01 0.00 0.00 5.05 1.41 0.00 chemin Wanaki Road 0.00 0.00 0.00 Phase 1R 154A 2.62 0.00 Block 9 MH158A MH217A 0.19 0.0 973.2 3.81 15.01 3.83 0.00 5.60 0.19 12.94 3.62 215Aa-b 216Aa-b 117.8 117.8 4.00 1.91 0.00 0.79 0.79 MH215A MH216A 0.79 0.00 0.00 0.00 0.22 0.00 croissant Squadron Crescent 4 212.3 4.00 MH216A MH217A 94.5 3.44 0.00 0.00 0.00 0.00 0.67 1.46 0.41 0.00 proissant Squadron Crescent 0.67 6 2.62 3.83 217A MH217A MH218A 1185.5 18.01 0.00 0.02 14.42 0.00 0.02 3 75 5.60 4.04 croissant Squadron Crescent 0.0 croissant Squadron Crescent 218A MH218A MH218B 0.02 0.0 1185.5 3.75 18.01 2.62 3.83 0.00 5.60 0.02 14.44 4.04 0.00 THORN1 EX SANMH MH218B 1574.0 1574.0 3.66 0.00 0.00 5.55 0.00 0.00 5.55 5.55 1.55 0.00 23.36 MH218B MH219A 2759.5 3.47 38.82 3.83 0.00 5.60 0.07 20.06 5.62 218B 0.07 2.62 0.00 croissant Squadron Crescent 219A MH219A MH220A 0.15 0.0 2759.5 3.47 38.82 2.62 3.83 0.00 5.60 0.15 20.21 5.66 0.00 croissant Squadron Crescent MH220A MH221A 319.0 3078.5 3.43 3.83 croissant Squadron Crescent 220A 220B 1 46 42 81 2.62 0.00 5.60 1 46 21.67 6.07 0.00 0.0 3078.5 3.43 42.81 MH221A MH222A 2.62 3.83 0.02 21.69 6.07 221A 222A 0.02 0.00 5.60 0.00 croissant Squadron Crescent MH222A MH169A 0.22 0.0 3078.5 3.43 42.81 2.62 3.83 0.00 5.60 0.22 21.91 6.13 0.00 croissant Squadron Crescent esion Parameters: signed No. Revision . Mannings coefficient (n) = 0.013 City submission No. 1 1 ICI Areas Residential . Demand (per capita): 350 L/day 300 L/day City submission No. 2 2. SE 3.4 . Infiltration allowance: 0.28 L/s/Ha Checked: IIIM City submission No. 3

Dwa. Reference:

38298-501

File Reference:

38298.5.7.1

Date:

7/8/2016

Peak Factor

1.5

1.5

MOE Char

. Residential Peaking Factor:

Harmon Formula = $1+(14/(4+P^{0.5}))$

where P = population in thousands

SANITARY SEWER DESIGN SHEET

Former CFB Rockcliffe City of Ottawa Canada Lands Company

FIXED	TOTAL			PROPOSED SEWER D		DESIGN		
FLOW	FLOW	CAPACITY	LENGTH	DIA	SLOPE	VELOCITY	AVAIL	
(L/s)	(L/s)	(L/s)	(m)	(mm)	(%)	(m/s)	L/s	(%)
0.00	0.09	50.02	87.06	250	0.65	0.987	49.93	99.83%
0.00	0.03	30.02	07.00	230	0.00	0.307	49.90	33.0378
0.00	6.39	31.02	21.00	250	0.25	0.612	24.63	79.40%
0.00	6.54	75.98	86.00	250	1.50	1.500	69.44	91.40%
0.00	2 00	83.23	21.00	250	1.80	1.6/3	80.24	96 40%
0.00	2.33	03.23	21.00	230	1.00	1.043	00.24	30.4078
0.00	0.18	82.07	86.00	250	1.75	1.620	81.89	99.78%
0.00	2.88	83.23	21.00	250	1.80	1.643	80.36	96.54%
0.00	2.94	67.96	90.00	250	1.20	1.341	65.02	95.68%
0.00	4.00	67.00	01.00	250	4.00	4.044	C2 CC	02.07%
0.00	4.30	67.96	21.00	230	1.20	1.341	03.00	93.07%
0.00	7.30	31.02	112.00	250	0.25	0.612	23.71	76.45%
0.00	28.49	87.74	21.00	250	2.00	1.731	59.24	67.52%
0.00	34.67	55.26	89.33	300	0.30	0.757	20.59	37.26%
0.00	0.00	00.04	11.00	050	0.40	0.774	00.45	00.77%
0.00	0.09	39.24	14.00	250	0.40	0.774	39.15	99.77%
0.00	34.79	65.38	33.16	300	0.42	0.896	30.59	46.79%
0.00	34.79	65.38	21.97	300	0.42	0.896	30.59	46.79%
0.00	1.10	73.41	98.28	250	1.40	1.449	72.30	98.50%
0.00	1.89	51.91	44.22	250	0.70	1.024	50.01	96.35%
0.00	1.77	43.87	21.50	250	0.50	0.866	42.10	95.96%
0.00	1.85	87.74	47.73	250	2.00	1.731	85.89	97.89%
0.00	2.05	87.74	40.57	250	2.00	2 121	85.69 01.70	97.00%
0.00	15.07	107.45	55.01	230	3.00	2.121	51.75	03.4270
0.00	15.71	43.54	37.48	250	1.00	1.224	27.83	63.92%
0.00	0.15	39.24	17.66	250	0.40	0.774	39.08	99.61%
0.00	0.57	42.97	17.00	250	0.50	0.966	42.20	09 70%
0.00	0.57	43.07	17.55	230	0.50	0.000	43.30	90.70%
0.00	16.38	31.02	10.23	250	0.25	0.612	14.64	47.19%
0.00	16.42	31.02	39.00	250	0.25	0.612	14.59	47.05%
0.00	16.42	31.02	11.77	250	0.25	0.612	14.59	47.05%
0.00	24.23	53.37	171.95	250	0.74	1.053	29.13	54.59%
0.00	2 13	50.02	80.00	250	0.65	0.987	17.80	95 7/%
0.00	3.85	50.02	71.19	250	0.65	0.987	46.17	92.30%
0.00	27.65	36.70	10.52	250	0.35	0.724	9.05	24.66%
0.00	27.66	36.70	12.49	250	0.35	0.724	9.05	24.65%
0.00	24.92	74.13	46.02	300	0.54	1.016	49.21	66.39%
0.00	50.04	59.68	37.08	300	0.35	0.818	9.64	16 16%
0.00	50.08	59.68	72.49	300	0.35	0.818	9.60	16.09%
0.00	54.48	59.68	43.77	300	0.35	0.818	5.21	8.72%
0.00	54.48	59.68	8.66	300	0.35	0.818	5.20	8.71%
0.00	54.54	59.68	89.42	300	0.35	0.818	5.14	8.61%
	f				ł	Date		
						7/8/2016		
						11/4/2016		
						1/25/2017		
):						Sheet No:		
16						1 of 2		

DEVELOPMENT REVIE	VED BY W SERVICES BRANCH					
Signed	2017					
Plan Number						
LEGEND :						
	RUNOFF COEFFICIENT					
,	AREA IN HECTARES					
F F	POTENTIAL DRAINAGE DIRECTION					
14						
13 12						
11 10						
9						
7	DWMENTS JI M 2017-08-07					
5 ISSUED FOR TENDER	J.I.M. 2017: 03: 23					
3 SUBMISSION No.3 FOR	CITY REVIEW J.I.M. 2017:01:25					
2 SUBMISSION No.2 FOR CITY REVIEW J.L.M. 2016: 11: 04 1 SUBMISSION No.1 FOR CITY REVIEW J.L.M. 2016: 07: 08						
No. REVISIO	DNS By Date					
CANADA LAN SociÉTÉ IMM 30 Metcalfe St Ottawa, On K1 613 998 7277	IDS COMPANY OBILIÈRE DU CANADA reet Suite 601 P 5L4					
IBI GRC 400 – 3 tel 613 ; ibigrou	DUP 33 Preston Street ON K1S 5N4 Canada 225 1311 fax 613 225 9868 p.com					
WATERIDO AT ROC PHA:	GE VILLAGE KCLIFFE se 1B					
TTOGOTO OF ON W	N N					
Drawing Title SANITARY DRAINAGE AREA PLAN						
Scale	1 : 2000	23				
Design J.I.M.	MAY 2016					
Drawn M.M.	J.I.M.	6-15				
Project No. 38298	501A	1-10				
	#17063	ă				

APPENDIX C

Water Demand and FUS Calculations

and Correspondence

Г

455 Wanaki Road PRELIMINARY WATER DEMAND CALCULATIONS

Water Demand (Proposed)									
	Resid	dential	Demands (L/s)						
Building	Units Total Pop'n (pers)		Average Day	Average Day Max. Daily					
Proposed 9 31		0.13	0.33	0.73					
Total	9	31	0.13	0.33	0.73				

Notes:

Residential Densities (from	City of Otta	<u>wa data):</u>		
- Singe Family Unit =	3.4	persons/unit		
Avg. Day Demand:				
- Residential	350	L/c/day		
Max Daily Demand				
- Residential	2.5	x Avg. Day		
D. I.I. D. I.I.				
- Residential	2.2	x Max. Dav		

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines

Novatech Project #: 119066 Project Name: 455 Wanaki Road Date: 5/6/2019 Input By: LGB Reviewed By: GJM

Engineers, Planners & Landscape Architects

Legend Input

Input by User

No Information or Input Required

Building Description: 3-storey residential building with walk-out basement (GFA=1030m2) Wood frame

Step			Input		Value Used	Total Fire Flow
	<u></u>	Base Fire Flov	N			(⊑/1111)
	Construction Ma	terial		Mult	iplier	
	Coefficient	Wood frame	Yes	1.5		
1	related to type	Ordinary construction		1		
	of construction	Non-combustible construction		0.8	1.5	
	C	Modified Fire resistive construction (2 hrs)		0.6		
		Fire resistive construction (> 3 hrs)		0.6		
	Floor Area					
		Building Footprint (m ²)	1030			
	Α	Number of Floors/Storeys	1			
2		Area of structure considered (m ²)			1,030	
	F	Base fire flow without reductions				11.000
	-	$F = 220 C (A)^{0.5}$,
	•	Reductions or Surc	harges			
	Occupancy haza	rd reduction or surcharge		Reduction	/Surcharge	
	(1)	Non-combustible		-25%		
3		Limited combustible	Yes	-15%		
-		Combustible		0%	-15%	9,350
		Free burning		15%		
		Rapid burning		25%		
	Sprinkler Reduct	tion		Redu	iction	
		Adequately Designed System (NFPA 13)	No	-30%		
4	(2)	Standard Water Supply		-10%		0
	(2)	Fully Supervised System		-10%		U
			Cum	ulative Total	0%	
	Exposure Surch	arge (cumulative %)			Surcharge	
		North Side	> 45.1m		0%	
5		East Side	30.1- 45 m		5%	
5	(3)	South Side	30.1- 45 m		5%	1,870
		West Side	20.1 - 30 m		10%	
			Cum	ulative Total	20%	
		Results				
		Total Required Fire Flow, rounded to near	rest 1000L/mir	ı	L/min	11,000
6	(1) + (2) + (3)	$(2,000 \downarrow /min < Eiro Elow < 45,000 \downarrow /min)$		or	L/s	183
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	USGPM	2,906
		Required Duration of Fire Flow (hours)			Hours	2
7	Storage Volume	Poquired Volume of Fire Flow (notis)			m ³	1320
				m ⁻	1320	

Lydia Bolam

From:	Buchanan, Richard <richard.buchanan@ottawa.ca></richard.buchanan@ottawa.ca>
Sent:	Wednesday, June 19, 2019 10:20 AM
То:	Lydia Bolam
Cc:	Greg MacDonald
Subject:	RE: 455 Wanaki Road - Watermain Boundary Condition Request

Should receive soon.

Richard Buchanan, CET

Coordinator, Front Ending Agreements and Brownfields Programs Planning Services, Development Review Branch Planning, Infrastructure and Economic Development Department City of Ottawa | Ville d'Ottawa \$613.580.2424 ext./poste 27801 ottawa.ca/planning / ottawa.ca/urbanisme

From: Lydia Bolam <I.bolam@novatech-eng.com>
Sent: June 06, 2019 11:11 AM
To: Buchanan, Richard <Richard.Buchanan@ottawa.ca>
Cc: Greg MacDonald <g.Macdonald@novatech-eng.com>
Subject: 455 Wanaki Road - Watermain Boundary Condition Request

CAUTION: This email originated from an External Sender. Please do not click links or open attachments unless you recognize the source.

ATTENTION : Ce courriel provient d'un expéditeur externe. Ne cliquez sur aucun lien et n'ouvrez pas de pièce jointe, excepté si vous connaissez l'expéditeur.

Hi Richard,

We would like to please request the municipal watermain boundary conditions for the proposed residential development at 455 Wanaki Road. It is proposed to construct a 3-storey residential building with a walk-out basement level with a total of 8 units.

The location of the proposed 150mm dia. water service connection and the 4 existing fire hydrants within the vicinity of the site are shown on the attached plan. Ideally, the City could provide the boundary conditions and the maximum available fire flow for this development.

Based on preliminary calculations, using the City of Ottawa Guidelines for Drinking Water Systems, the water demands for the proposed building are as follows:

•	Average Day Demand = 0.11 L/s	(8 Units x 3.4 people/unit x 350 L/c/d)
•	Max. Day Demand = 0.28 L/s	(2.5 x Avg. Demand)
•	Peak Hour Demand = 0.62 L/s	(2.2 x Max. Day Demand)

Based on the Fire Underwriters Survey (FUS) Guidelines, the fire flow for the proposed non-sprinklered building is approximately 183 L/s (see attached FUS calculations sheet).

Please let me know if you have any questions.

Kind regards,

Lydia Bolam, P.Eng., Project Engineer NOVATECH Engineers, Planners & Landscape Architects 240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 Ext:276 | Fax: 613.254.5867 The information contained in this email message is confidential and is for exclusive use of the addressee.

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455 WANAKI ROAD

APPENDIX D

SWM Calculations

Ottawa Sewer Design Guidelines

OTTAWA INTENSITY DURATION FREQUENCY (IDF) CURVE

Proposed Development 455 Wanaki Road

Project No: 119066

Pre - Development: Overall Flows									
		A imp (ha) C=0.9	A grav (ha) C=0.6	A perv (ha) C= 0.20		Gun	Q-pre (L/s)		
Description	A (ha)				C ₅	(25% increase)	5 year	100 year	
Site Area	0.102	0.000	0.102	0.000	0.60	0.75	17.6	37.8	
Total =	0.102	0.000	0.1015	0.000			17.6	37.8	

t_c=10mins t_c=10mins

Allowable Site Flows									
		A imp (ha)	A grav (ha)	A perv (ha)	•	C ₁₀₀	Q-allow	able (L/s)	
Description	A (ha)	C=0.9	C=0.6	C= 0.20	C ₅	(25% increase)	5 year	100 year	
Site Area (73% impervious)	0.102	0.074	0	0.027	0.71	0.80	20.9	20.9	
							Allowable Site		

Allowable Site Flow

t_c=10mins t_c=10mins

Post - Development: Total Flows for Uncontrolled Sub Catchments										
Aroa	Area		A imp (ha)	A pavers (ha)	A perv (ha)	C.	C ₁₀₀	Q-post unco	ontrolled (L/s)	
Alea Description		A (IIa)	C=0.9	C=0.6	C=0.2	05	(25% increase)	5 year	100 year	
A-1	Direct Runoff	0.039	0.015	0	0.024	0.47	0.54	5.2	10.40	
A-2	Controlled Area	0.063	0.036	0	0.027	0.60	0.67	10.8	21.10	
	Total =	0.102	0.050	0	0.0512	0.55	0.62	16.1	31.50	

t_c=10mins t_c=10mins

	Post - Development : Total Flows for Controlled Site										
Δrea	Description	Q-post co	ontrolled (L/s)	Storage Re	Provided						
Alea	Description	5 year	100 year	5 year	100 year	(m ³)					
A-1	Direct Runoff (Uncontrolled)	5.2	10.4	N/A	N/A	N/A					
A-2	Controlled Area	10.1	10.3	1.4	6.4	8.0					
	Total =	15.3	20.7	1.3	6.4	8.0					
		Meet Allow	able Site Flow								

455 Wanaki	i Road										
Project No:	119066										
REQUIRED	STORAGE - 1	:5 YEAR I	EVENT								
AREA A-1	AREA A-1 Uncontrolled Off Site Drainage										
OTTAWA IE	OF CURVE				_						
Are	ea = 0.039	ha	Qallow =	5.24	L/s						
	C = 0.47		Vol(max) =	0.6	m3						
Time	Intensity	Q	Qnet	Vol							
(min)	(mm/hr)	(L/s)	(L/s)	(m3)							
5	141.18	7.10	1.86	0.56							
10	104.19	5.24	0.00	0.00							
15	83.56	4.20	-1.04	-0.93							
20	70.25	3.53	-1.71	-2.05							
25	60.90	3.06	-2.18	-3.27							
30	53.93	2.71	-2.53	-4.55							
35	48.52	2.44	-2.80	-5.88							
40	44.18	2.22	-3.02	-7.25							
45	40.63	2.04	-3.20	-8.64							
50	37.65	1.89	-3.35	-10.04							
55	35.12	1.77	-3.48	-11.47							
60	32.94	1.66	-3.59	-12.91							
65	31.04	1.56	-3.68	-14.35							
70	29.37	1.48	-3.76	-15.81							
75	27.89	1.40	-3.84	-17.28							
90	24.29	1.22	-4.02	-21.71							
105	21.58	1.09	-4.16	-26.19							
120	19.47	0.98	-4.26	-30.70							
135	17.76	0.89	-4.35	-35.23							
150	16.36	0.82	-4.42	-39.78							

455 Wanaki Ro	ad				
Project No: 11	9066				
REQUIRED ST	ORAGE - 1	:100 YEAR			
AREA A-1	Uncontrol	led Off Site	e Drainage		
OTTAWA IDF C	URVE				
Area =	0.039	ha	Qallow =	10.3	L/s
C =	0.54		Vol(max) =	1.1	m3
Time	Intensity	Q	Qnet	Vol	
(min)	(mm/hr)	(L/s)	(L/s)	(m3)	
5	242.70	14.02	3.70	1.11	
10	178.56	10.31	0.00	0.00	
15	142.89	8.25	-2.06	-1.85	
20	119.95	6.93	-3.38	-4.06	
25	103.85	6.00	-4.31	-6.47	
30	91.87	5.31	-5.01	-9.01	
35	82.58	4.77	-5.54	-11.64	
40	75.15	4.34	-5.97	-14.33	
45	69.05	3.99	-6.32	-17.08	
50	63.95	3.69	-6.62	-19.86	
55	59.62	3.44	-6.87	-22.67	
60	55.89	3.23	-7.08	-25.50	
65	52.65	3.04	-7.27	-28.36	
70	49.79	2.88	-7.44	-31.24	
75	47.26	2.73	-7.58	-34.13	
90	41.11	2.37	-7.94	-42.87	
105	36.50	2.11	-8.20	-51.69	
120	32.89	1.90	-8.41	-60.57	
135	30.00	1.73	-8.58	-69.50	
150	27.61	1.59	-8.72	-78.46	

455 Wanaki R Project No: 1	455 Wanaki Road Project No: 119066 BEOURDE STORAGE 1:5 YEAR EVENT										
AREA A-2 Controlled Flow-Parking Lot Storage											
OTTAWA IDF	CURVE										
Area	= 0.063	ha	Qallow =	10.1	L/s						
C	= 0.60		Vol(max) =	1.4	m3						
Time	Intensity	Q	Qnet	Vol							
(min)	(mm/hr)	(L/s)	(L/s)	(m3)							
5	141.18	14.68	4.58	1.37							
10	104.19	10.84	0.74	0.44							
15	83.56	8.69	-1.41	-1.27							
20	70.25	7.31	-2.79	-3.35							
25	60.90	6.33	-3.77	-5.65							
30	53.93	5.61	-4.49	-8.08							
35	48.52	5.05	-5.05	-10.61							
40	44.18	4.60	-5.50	-13.21							
45	40.63	4.23	-5.87	-15.86							
50	37.65	3.92	-6.18	-18.55							
55	35.12	3.65	-6.45	-21.28							
60	32.94	3.43	-6.67	-24.03							
65	31.04	3.23	-6.87	-26.80							
70	29.37	3.05	-7.05	-29.59							
75	27.89	2.90	-7.20	-32.40							
90	24.29	2.53	-7.57	-40.90							
105	21.58	2.24	-7.86	-49.49							
120	19.47	2.02	-8.08	-58.14							
135	17.76	1.85	-8.25	-66.84							
150	16.36	1.70	-8.40	-75.59							

Structures	Size (mm)	Area (m ²)	T/G	Inv IN	Inv OUT
CB	600 x 600	0.36	92.10	-	89.92

Inlet Control Device - Circular Plug

Flow (L/s) = 10.3

1:100 Yr

		Underground Storage				Total Storage		
			CB	Total U/G	Pondir	ng @ CB	Total Surface	-
Elevation (m)	System Head (m)		Volume (m°)	Volume (m³)	Area (m ⁻)	Volume (m°)	Volume (m³)	Volume (m³)
89.92	0.00		0.0	0.00			0.00	0.00
91.00	1.08		0.4	0.39			0.00	0.39
91.50	1.58		0.57	0.57			0.00	0.57
92.00	2.08		0.75	0.75			0.00	0.75
92.10	2.18		0.78	0.78	0.0	0.00	0.00	0.78
92.15	2.23		0.78	0.78	20.0	0.50	0.50	1.28
92.20	2.28		0.78	0.78	81.0	3.02	3.02	3.81
92.25	2.33		0.78	0.78	195.0	9.92	9.92	10.71

BURMA STORMWATER MANAGEMENT FACILITY DESIGN WATERIDGE VILLAGE AT ROCKCLIFFE PHASE 1B Prepared for Canada Lands Company

3 Overall Stormwater Management Approach

As established in the August 2015 MSS, the proposed stormwater management concept for the Rockcliffe development consists of a dual drainage network and two end-of-pipe stormwater management facilities. That study also recommended that in addition to the two SWM facilities, several major flow features be provided across the site to aid in reducing surface flow to meet City of Ottawa criteria and reduce pipe sizes within the Rockcliffe development. The Phase 1B design will follow the recommendations of the approved August 2015 MSS, including construction of the Wanaki Road culvert crossing.

One of the major flow features proposed to be constructed as part of Phase 1B is the retrofitted Burma SWM Facility. Several retrofit options were considered. The proposed solution includes the installation of a new culvert at Wanaki Road to convey runoff to the pond; the widening and deepening of the existing pond, including the introduction of a permanent pool; and a new outlet structure.

In addition, as part of the Burma SWM facility construction, it is proposed to install end-of-pipe Vortechs units for a basic treatment of the minor flows, or 60% removal of total suspended solids, from Thorncliffe Village, prior to discharge to the pond. Further discussion is provided in **Section 3.2.3**.

The total drainage area tributary to the Burma SWM Facility is approximately 60.8 ha, including the external areas, school (SC154), and the employment lands (Areas LOT 200, LOT214, LOT152, LOT151, and LOT150). It should be noted that on-site storage requirements up to the 100 year storm event have been determined for the employment lands, school block, and the future high-rise mix use (Area EX145) within the NRC area. **Figure 1** shows the area tributary to Burma SWM Facility.

The August 2015 MSS presented a tributary drainage area of approximately 50 ha. The increase in area is due to the revised drainage area boundaries and the revised grading on Wanaki Road as part of the detailed design. Specifically, major flow from Wanaki Road; and emergency overflow from the adjacent employment lands, in excess of the 100 year on-site storage, is now directed to the retrofitted facility at the location shown on **Figure 1**.

The retrofitted facility is a wet pond and provides water quantity control only for approximately 58.2 ha of development as shown on **Figure 1**. Areas tributary to the retrofitted Burma SWM Facility are listed in **Table 3-1**. Further discussion on the flow routing is provided within **Section 3.2**. The catchment areas are shown on **Figure 1** and **Drawing 750** enclosed in **Appendix A**.

CONTRIBUTING DRAINAGE AREA ID)	AREA (LOCATION,	CONTRIBUTING FLOW
	EXTRNE	Total Flow
Thorncliffe Village	EXTRNC	Total Flow
Thomaine village	EXTRNN	Total Flow
	EXTRNW	Minor Flow
	EXNRCN	Total Flow
NRC Lands	EXNRCS	Total Flow
	SWM1	Total Flow

Table 3-1: Areas Tributary to the Retrofitted Burma SWM Facility

BURMA STORMWATER MANAGEMENT FACILITY DESIGN WATERIDGE VILLAGE AT ROCKCLIFFE PHASE 1B Prepared for Canada Lands Company

CONTRIBUTING DRAINAGE AREA ID)	AREA (LOCATION,	CONTRIBUTING FLOW
Wanaki Road	S149	Cascading Flow*
Future High-Rise Mix Use, east side of Wanaki Road (NRC land)	EXP147	Total Flow
South End of Wanaki Road	MH 147	Minor Flow

Notes: * maximum ponding is utilized on-site during the 100 year design storm event, prior to being discharged to the park dry pond. # on-site storage requirements up to the 100 year storm event to be provided.

3.1 Dual Drainage Concept

The dual drainage system for the portion of Phase 1B tributary to the Burma SWM Facility accommodates both major and minor stormwater runoff. During frequent storms, the effective runoff collected by catchment areas is directly released via catchbasin inlets into the network of storm sewers, called the minor system. During less frequent storms, the balance of the flow (in excess of the minor flow) is accommodated by a system of rear yard swales and street segments called the major system. The main advantage of this arrangement is its ability to adjust the rate of total inflow into the minor system to satisfy the required level of service.

The proposed dual drainage system for post-development conditions of former CFB Rockcliffe was evaluated using the DDSWMM model for both Phase 1A and Phase 1B of the development. The dual drainage evaluation of Phase 1A development is provided in the "Design Brief Wateridge Village at Rockcliffe Phase 1A" (IBI Group, April 2016). Detailed design of the Phase 1B is being completed concurrently with the SWM facility design and detailed discussion is provided in the Draft "Design Brief Wateridge Village at Rockcliffe Phase 1B" (IBI, January 2017) report.

3.2 Retrofitted Burma SWM Facility

The retrofitted Burma SWM Facility is located at the northern boundary of Thorncliffe Village, west of Wanaki Road. The area tributary to the pond is shown on **Figure 1**. The retrofitted SWMF is comprised of a wet cell, with four (4) inlet pipes and an outlet structure connected to the Phase 1B storm sewers on Squador Crescent (MH221). Further discussion on the flow routing is provided within **Sections 3.2.1 and 3.2.2**.

Outflow from the Burma SWM Facility will be conveyed via the main storm trunk to the Eastern SWMF for water quality treatment. The outlet pipe will direct flow from the facility to the storm sewers on Squador Crescent (MH221) and from there flow will be routed to Eastern SWM Facility via the main trunk along Codd's Road (see **Figure 1**). Detailed discussion on each component is provided in **Section 5**.

The main trunk storm sewer servicing the study area has been designed as part of Phase 1A development and is extended north from the development towards the escarpment bordering the Rockcliffe development area. The trunk storm sewer terminates at the top of the escarpment and the runoff cascades to the Eastern SWMF below via a waterfall. Refer to the "Design Brief Wateridge Village at Rockcliffe Phase 1A" (IBI Group, April 2016) for the detailed site stormwater management design of the Phase 1A development, and to the Phase 1B Design Brief for the design of the Phase 1B storm sewer trunk which is being completed concurrent with the Burma SWM Facility design.

The overall plan of the proposed stormwater management system is presented on Drawing 700.

J:\38298-CFBRockniffe\5.9 Drowinas\56civi\\SWM Ph18\Fiaures\Subdivision\38298-Ph1B Swm Fiau

Drainage A	lrea	Downstream		IMP Ratio	Segment	Subcatchment	Road ROW	Ponding	Maximum Storage	5 Year Modeled	100 Year Captured
Segment ID	Area (ha)	Segment ID [‡]	МН	(%)	Length (m)	Width (m)	Cross Section (m)	Area ID [¶]	Available (m ³)	Flow (I/s)*	Flow (I/s)†
EX145	2.74	S145	S145	0.86	308.25	616.50	N/A	100yr S.C	352.00	554.00	554.00
EX147	0.13	EXTRNE	S147	0.86	40.00	29.25	N/A			26.00	26.00
EX166	0.61	S166	S166	0.86	68.63	137.25	N/A			123.00	128.00
EX201	0.56	S201B	S201	0.86	63.00	126.00	N/A			113.00	165.20
EX202A	0.90	EX202B	S202	0.86	101.25	202.50	20.00			182.00	265.40
EX202B	0.35	S202A	S202	0.86	39.38	78.75	20.00			71.00	103.20
EX202C	0.20	S203B	S202	0.86	22.50	45.00	N/A			40.00	59.00
EX203	0.73	S203B	S203	0.86	82.13	164.25	20.00			147.00	215.30
EX204A	0.72	S204A	S204	0.86	81.00	162.00	20.00			145.00	145.00
EX204B	0.47	S204A	S204	0.86	52.88	105.75	N/A			95.00	138.60
EX205A	0.81	S205A	S205	0.86	91.13	182.25	20.00			164.00	165.00
EX205B	0.63	S205C	S205	0.86	70.88	141.75	N/A			127.00	128.00
EX206A	1.02	S206A	S206	0.86	114.75	229.50	20.00			206.00	206.00
EX206B	0.46	S207	S206	0.86	51.75	103.50	N/A			93.00	95.00
EX208A	0.81	S208	S208	0.86	91.13	182.25	N/A			164.00	164.00
EX231A	0.86	S231	S231	0.86	96.75	193.50	20.00			174.00	174.00
EX231B	0.30	S231	S231	0.86	33.75	67.50	N/A			61.00	64.00
EXNRCN	18.39	USBRM	USBRM	0.71	450.00	1200.00	N/A			2578.00	4847.30
EXNRCS	18.65	USBRM	USBRM	0.71	514.00	2628.00	N/A			2994.00	5641.40
EXP147	0.40	SWM1	S147	0.14	45.00	90.00	N/A			16.00	15.00
EXP203	0.44	S204B	S203	0.14	49.50	99.00	N/A			18.00	20.00
EXTFOX	1.90	CELL3	OUT	0.86	213.75	427.50	N/A			384.00	311.00
EXTRNE	0.99	BRMA	BURMA	0.71	111.38	222.75	N/A			169.00	340.00
EXTRNC	5.70	BRMA	BURMA	0.71	239.00	4282.50	N/A			1086.00	2075.50
EXTRNN	0.53	BRMA	BURMA	0.71	59.63	119.25	N/A			91.00	171.60
EXTRNW	2.18	CELL1	BURMA	0.71	193.00	981.00	N/A			399.00	435.00

Notes: * Values reported are from the DDSWMM output file 38298-PH1B-5CH.dat/out. † ICD flow is from the DDSWMM output file 38298-100CH.dat/out.

FOR HYDROLOGICAL PARAMETERS:

- 1. Refer to **Drawing 750** for the DDSWMM model schematic.
- 2. Catchment areas are based on the rational method spreadsheet with some minor modifications for modeling purposes. See **Drawing 750** for the catchment areas used in the DDSWMM modeling for the subject site.

Imperviousness for the subject site was determined by obtaining the footprint of the model units intended for the site and placing the maximum footprint on the lots. The imperviousness ratios for single family units were calculated for a typical single family unit street segment and rear yard segment.

LEGEND

PROPOSED WATERMAIN PROPOSED SANITARY SEWER AND MANHOLE PROPOSED STORM SEWER AND MANHOLE

EXISTING STORM SEWER AND MANHOLE

EXISTING SANITARY SEWER AND MANHOLE

EXISTING WATERMAIN

PROPOSED CATCHBASIN PROPOSED BEND AND THRUSTBLOCK 22.5° OR 45°

GENERAL NOTES:

- 1. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS. 2. DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
- OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
- BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE, ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR \$5,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED.
- RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
- 6. REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY.
- 7. ALL ELEVATIONS ARE GEODETIC.
- 8. REFER TO THE GEOTECHNICAL INVESTIGATION REPORT (REPORT NO. PG4965-1, DATED JUNE 21, 2019, PREPARED BY PATERSON GROUP INC.) FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS. THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
- 9. REFER TO ARCHITECT'S AND LANDSCAPE ARCHITECT'S DRAWINGS FOR BUILDING AND HARDSURFACE AREAS AND DIMENSIONS.
- 10. REFER TO SITE SERVICING AND STORMWATER MANAGEMENT REPORT (R-2019-094) PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.
- 11. SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
- 12. PROVIDE LINE/PARKING PAINTING.
- 13. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GENERAL PLAN OF SERVICES INDICATING ALL SERVICING AS-BUILT INFORMATION SHOWN ON THIS PLAN. AS-BUILT INFORMATION MUST INCLUDE: PIPE MATERIAL, SIZES, LENGTHS, SLOPES, INVERT AND T/G ELEVATIONS, STRUCTURE LOCATIONS, VALVE AND HYDRANT LOCATIONS, T/WM ELEVATIONS AND ANY ALIGNMENT CHANGES, ETC.

			SCALE	DESIGN	FOR REV	EW ONLY
			1:200	LGB CHECKED GJM DRAWN		PROFESSIONAL PROFESSION
JED FOR SITE PLAN APPROVAL	XX JUN 2019	GJM	1:200 0 2 4 6 8	RG CHECKED LGB		G.J. MacDONALD
REVISION	DATE	BY		GJM		

1. SPECIFICATIONS:

WATERMAIN NOTES:

WATERMAIN TRENCHING THERMAL INSULATION IN SHALLOW TRENCHES THERMAL INSULATION OF WATERMAINS AT OPEN STRUCTURES WATERMAIN

SPEC. No. W22 W23 PVC DR 18

REFERENCE CITY OF OTTAWA CITY OF OTTAWA CITY OF OTTAWA

2. SUPPLY AND CONSTRUCT ALL WATERMAINS AND APPURTENANCES IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARDS AND SPECIFICATIONS. EXCAVATION, INSTALLATION, BACKFILL AND RESTORATION OF ALL WATERMAINS BY THE CONTRACTOR. CONNECTIONS AND SHUT-OFFS AT THE MAIN AND CHLORINATION OF THE WATER SYSTEM SHALL BE PERFORMED BY CITY OFFICIALS.

9. ALL STORM AND SANITARY SERVICES SHALL BE EQUIPPED WITH BACKFLOW PREVENTERS

AS PER THE CITY OF OTTAWA STANDARD DETAILS S14 AND S14.1 OR S14.2.

- 3. WATERMAIN SHALL BE MINIMUM 2.4m DEPTH BELOW GRADE UNLESS OTHERWISE INDICATED.
- 4. PROVIDE MINIMUM 0.50m VERTICAL CLEARANCE BETWEEN OUTSIDE OF WM PIPE AND ALL SEWERS.
- 5. WATER SERVICE IS TO BE CONSTRUCTED TO WITHIN 1.0m OF FOUNDATION WALL AND CAPPED, UNLESS OTHERWISE INDICATED.

_							
INLET CONTROL DEVICE DATA - CB							
ICD TYPE: 56mm CIRCULAR ORIFICE PLUG TYPE DIAMETER OF OUTLET PIPE: 200mm							
DESIGN EVENT	ESIGN DESIGN FLOW D VENT (L/s) HI		WATER ELEVATION (m)	VOLUME (m ³)			
1:5 YR	10.1	2.24	92.16	1.4			
1:100 YR	10.3	2.30	92.22	6.4			

DRAWING NAME

LOCATION

CITY OF OTTAWA

455 WANAKI ROAD

GENERAL PLAN OF SERVICES

119066-00

REV #

119066-GP

ING No.

					SC	CALE			DESIGN	FOR REV	IEW ONLY
					1:	200			RG/LGB CHECKED GJM DRAWN		PROFESSION AND THE
				0	1	:200 4	6	8			G.J. MacDONALD
1.	ISSUED FOR SITE PLAN APPLICATION	25 JUN 2019	GJM						APPROVED		NCE OF ONTAT
No.	REVISION	DATE	BY						GJM		

1. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.

2. DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.

3. OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.

4. BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE, ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR \$5,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED.

5. RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.

6. REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY

8. REFER TO THE GEOTECHNICAL INVESTIGATION REPORT (No. PG4965-1, DATED JUNE 21, 2019, PREPARED BY PATERSON GROUP INC.) FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS. THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.

9. REFER TO ARCHITECT'S AND LANDSCAPE ARCHITECT'S DRAWINGS FOR BUILDING AND HARDSURFACE AREAS AND DIMENSIONS.

10. REFER TO 'SITE SERVICING AND STORMWATER MANAGEMENT REPORT' (R-2019-094) PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.

11. SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).

1. ALL TOPSOIL, ORGANIC OR DELETERIOUS MATERIAL MUST BE ENTIRELY REMOVED FROM BENEATH THE PROPOSED PAVED AREAS AS DIRECTED BY THE SITE

2. EXPOSED SUBGRADES IN PROPOSED PAVED AREAS SHOULD BE PROOF ROLLED WITH A LARGE STEEL DRUM ROLLER AND INSPECTED BY THE GEOTECHNICAL

3. ANY SOFT AREAS EVIDENT FROM THE PROOF ROLLING SHOULD BE SUB-EXCAVATED AND REPLACED WITH SUITABLE MATERIAL THAT IS FROST COMPATIBLE WITH THE

4. THE GRANULAR BASE SHOULD BE COMPACTED TO AT LEAST 100% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE. ANY ADDITIONAL GRANULAR FILL USED BELOW THE PROP OSED PAVEMENT SHOULD BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE.

5. MINIMUM OF 2% GRADE FOR ALL GRASS AREAS UNLESS OTHERWISE NOTED.

6. MAXIMUM TERRACING GRADE TO BE 3:1 UNLESS OTHERWISE NOTED.

7. ALL GRADES BY CURBS ARE EDGE OF PAVEMENT GRADES UNLESS OTHERWISE INDICATED.

8. ALL CURBS SHALL BE BARRIER CURB (150mm) UNLESS OTHERWISE NOTED AND CONSTRUCTED AS PER CITY OF OTTAWA STANDARDS (SC1.1).

9. REFER TO LANDSCAPE PLAN FOR PLANTING AND OTHER LANDSCAPE FEATURE DETAILS.

10. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GRADING PLAN INDICATING AS-BUILT ELEVATIONS OF ALL DESIGN GRADES SHOWN ON THIS PLAN.

EROSION AND SEDIMENT CONTROL NOTES:

Website

1. THE OWNER AGREES TO PREPARE AND IMPLEMENT AN EROSION AND SEDIMENT CONTROL PLAN TO THE SATISFACTION OF THE CITY OF OTTAWA, APPROPRIATE TO THE SITE CONDITIONS, PRIOR TO UNDERTAKING ANY SITE ALTERATIONS (FILLING, GRADING, REMOVAL OF VEGETATION, ETC.) AND DURING ALL PHASES OF SITE PREPARATION AND CONSTRUCTION IN ACCORDANCE WITH THE CURRENT BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL SUCH AS BUT NOT LIMITED TO INSTALLING FILTER CLOTHS ACROSS MANHOLE/CATCHBASIN LIDS TO PREVENT SEDIMENTS FROM ENTERING STRUCTURES AND INSTALL AND MAINTAIN A

2. THE CONTRACTOR SHALL PLACE FILTER CLOTH UNDER THE CATCHBASIN AND MANHOLE GRATES FOR THE DURATION OF CONSTRUCTION AND WILL REMAIN IN PLACE

3. SILT FENCING SHALL BE UTILIZED TO CONTROL EROSION FROM THE SITE DURING CONSTRUCTION.

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4. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY

119066-00

REV # '

119066-GR

VING No.

	SCALE	DESIGN	FOR REVIEW ONLY		LOCATION	
	1.200		PROFESSION		CITY OF OTTAWA 455 WANAKI ROAD	
	1.200			Engineers, Planners & Landscape Architects	DRAWING NAME	PROJECT No. 119066-00
	1:200 0 2 4 6 8		HUNG 22-19	Ottawa, Ontario, Canada K2M 1P6 Telephone (613) 254-9643	STORM DRAINAGE AREA PLAN	REV REV # 1
ED WITH SITE SERVICING & SWM REPORT 25 JUN 2019 REVISION DATE	GJM BY	APPROVED	NCE OF ONTAR	Facsimile (613) 254-5867 Website www.novatech-eng.com		drawing №. 119066-STM

INLET CONTROL DEVICE DATA - CB							
ICD TYPE: 56mm CIRCULAR ORIFICE PLUG TYPE DIAMETER OF OUTLET PIPE: 200mm							
DESIGN EVENT	DESIGN FLOW (L/s)	DESIGN HEAD (m)	WATER ELEVATION (m)	VOLUME (m ³)			
1:5 YR	10.1	2.24	92.16	1.4			
1:100 YR	10.3	2.30	92.22	6.4			