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39 Years

NOKIA OTTAWA INNOVATION CAMPUS
570 & 520 March Road

Sanitary and Storm Trunk Sewer Design Brief

NOKIA OTTAWA INNOVATION CAMPUS

570 & 520 MARCH ROAD

SANITARY AND STORM TRUNK SEWER DESIGN BRIEF

Prepared By:

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

November 15, 2024
Revised February 7. 2025

Ref: R-2024-130
Novatech File: 123043

NOVATECH
Engineers, Planners & Landscape Architects

February 7, 2025

Nokia Ottawa Innovation Campus
600 March Road
Ottawa, Ontario
K2K 2T6

Attention: Ms. Margaret Wolodarski, Program Manager

Re: Sanitary and Storm Trunk Sewer Design Brief
Nokia Ottawa Innovation Campus
570 & 520 March Road, Ottawa, ON
Novatech File No.: 123043

Enclosed is a copy of the 'Sanitary and Storm Trunk Sewer Design Brief' prepared for the proposed Nokia Ottawa Innovation Campus development located at 570 March Road and what is being referred to as the Retained Lands located at 520 March Road. The purpose of this Design Brief is to summarize the contributing sanitary and storm flows from the Nokia campus that are tributary to the sanitary and storm trunk sewers located on and servicing the Kanata Research Park (KRP) Lands to the east. The Design Brief also describes the contributing flows from the municipal right-of-way and other adjacent private properties. This Design Brief will assist Nokia and KRP in discussions to establish their respective roles, responsibilities and rights as it relates to the Joint Use and Maintenance Agreements (JUMA) for these shared services. This report is being submitted in support of a Site Plan Control Application.

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

NOVATECH

François Thauvette, P. Eng.
Senior Project Manager

cc: Jean-Miguel Roy (City of Ottawa)
Barry Hand (Gensler)

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

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PREVIOUSLY APPROVED PLANS

1.0 INTRODUCTION

Nokia has retained Novatech to complete the site servicing, grading, and stormwater management design for the new Nokia Ottawa Innovation Campus. The purpose of this Design Brief is to summarize the contributing sanitary and storm flows from the Nokia campus that are tributary to the sanitary and storm trunk sewers located on and servicing the Kanata Research Park (KRP) Lands to the east. The Design Brief also describes the contributing flows from the municipal right-of-way and other adjacent private properties. This Design Brief will assist Nokia and KRP in discussions to establish their respective roles, responsibilities and rights as it relates to the Joint Use and Maintenance Agreements (JUMA) for these shared services. This report is being submitted in support of a Site Plan Control Application.

1.1 Background Information

Development within the KRP has progressed over the years as a private development with on-site sanitary and storm sewers. These on-site sewers were intended to become future public sewers when areas outside the private development area connected to these sewers. In the 1990s, public sanitary and storm sewers were constructed in Legget Drive but were not connected to the private sewers on the KRP lands east of Legget Drive. The recent Sanmina development (500 March Road) established the extension and connection of a portion of the public sanitary and storm sewers to the existing KRP sewers. Sewage flows from the Legget Drive municipal right-of-way and other adjacent private properties, including the existing Nokia surface parking lot, are currently being directed to the KRP sewers.

Ministry of Environment (MOE) Certificates of Approval (C of A), Ministry of the Environment and Climate Change (MOECC) Environmental Compliance Approvals (ECA), and Ministry of the Environment, Conservation and Parks (MECP) ECA's were obtained for these sewers, including recent modifications to the sewer systems. Refer to **Appendix A** for a copy of the following documents:

- Sanitary Sewers and appurtenances (MOE C of A No. 3-0979-95-006)
- Storm Sewer and appurtenances (MOE C of A No. 3-0979-95-007)
- SWM Facility (MOE C of A No. 8125-4MTJ36)
- Sanitary and Storm Sewer Extensions (MOECC ECA No. 3598-9STV8V)
- Storm Sewer and Headwall modifications (MECP ECA No. 8158-CMASST)

1.2 Proposed Nokia Development

Nokia has recently severed their 10.45 ha property into three parcels; the 600 March Road property including the existing office tower and adjacent parking lots (5.18 ha), the new Nokia Ottawa Innovation Campus (4.49 ha) located at 570 March Road and what is being referred to as the Retained Lands (0.78 ha), to be developed as a future phase, located at 520 March Road. The Design Brief specifically reviews the contributing sanitary and storm flows from the proposed Nokia Ottawa Innovation Campus (4.49 ha) as well as the anticipated flows from the Retained Lands (0.78ha), both tributary to the KRP sanitary and storm sewers.

The proposed development of the new severed parcels (570 & 520 March Road) will replace the existing surface parking lots at the south end of the property. The new development will require connections to the existing sanitary and storm sewers in Legget Drive, as well as an extension of the sanitary sewer north along Legget Drive. Storm flows from the northern portion of the site

will be re-distributed but will continue to be directed to the northern storm sewer on the KRP lands. Similarly, storm flows from the southern portion of the site to be developed will continue to be directed to the southern storm sewer on the KRP lands, via the sewer in Legget Drive.

Ministry of the Environment, Conservation, and Parks (MECP) ECAs will be required for the proposed sanitary sewer extension in Legget Drive and for on-site sanitary and storm sewers where multiple properties contribute flows to a common system.

1.3 Reference Material

The following reports and studies were reviewed and/or prepared as part of the design process:

[1] The "Stormwater Management Plan, Kanata Research Park" prepared by Novatech Engineering Consultants Ltd., revised in April 2000.

[2] The 'Development Servicing Study and Stormwater Management Report – Sanmina Development' (R-2014-064), prepared by Novatech, Issued to MOE on November 12, 2014.

[3]The 'Sanitary and Storm Trunk Sewer Design Brief – Kanata Research Park Lands' (R-2014-114), prepared by Novatech, issued to MOE on November 12, 2014.

[4] The 'Site Servicing and Stormwater Management Brief – Brookstreet Apartments' (R-2021-131), prepared by Novatech, issued to MOE on September 27, 2022.

[5] The 'Development Servicing Study and Stormwater Management Report - Nokia Ottawa Innovation Campus – 570 & 520 March Road' (R-2023-082), prepared by Novatech, dated February 7, 2025.

2.0 SANITARY SEWER

The proposed Nokia development will be serviced by extending a new 250mm dia. municipal sanitary sewer north along Legget Drive, as well as by extending private on-site sanitary sewers. Due to the size of the development, multiple connections to the municipal sanitary sewer in Legget Drive will be required, including sewer connections at the north end of the property (Lifestyle Street), at the south access road, as well as a direct connection from the R&D Lab building. All sanitary site flows will be directed to the 250mm dia. sanitary sewer routed through the KRP lands. This sewer currently outlets into the 750mm dia. March Trunk Sewer on the Marshes Golf Course.

As indicated on the previously approved Sanitary Drainage Area Plan (98066-SAN) and described in the 'Sanitary and Storm Trunk Sewer Design Brief'[3], prepared as part of the Sanmina development (500 March Road), sanitary flows from the subject site were always intended to be directed into this municipal sanitary sewer system. An easement is already in place for the sanitary sewers located on the KRP lands, east of Legget Drive.

2.1 Sanitary Design Flows

The City of Ottawa design criteria were used to calculate the theoretical sanitary flows for the various properties and parcels (i.e., existing, proposed and future) tributary to the sanitary sewer system on the KRP lands. The known re-development of properties within the KRP Lands, separate to the proposed Nokia development, will generate flows tributary to the overall sanitary sewer system. These areas have been included in the design calculations and are further discussed below.

Refer to the enclosed Sanitary Drainage Area Plan (C-400) provided in **Appendix E**, Sanitary Sewer Design Sheet provided in **Appendix B**, and following sections of the report for further details.

2.1.1 *Sanitary Flows to Legget Sanitary Sewer*

Existing sanitary flows for the Sanmina building (500 March Road) were taken directly from the previously approved 'Development Servicing Study and Stormwater Management Report – Sanmina Development'[2]. The anticipated sanitary flows generated by the Nokia Ottawa Innovation Campus and future Retained Lands (570 & 520 March Road) are described in the 'Development Servicing Study and Stormwater Management Report - Nokia Ottawa Innovation Campus'[5] but also summarized in **Table 2.1** below, along with the existing Sanmina flows tributary to the sanitary sewer in Legget Drive.

Table 2.1: Theoretical Sanitary Building Flows based on Design Population

Site	Use	Staff / Seats / Area	Average Flow (L/s)	Peaking Factor**	Peak Flow (L/s) ***
Sanitary Flows to Legget Sanitary Sewer via Sewer in Lifestyle Street					
Office Tower	Office	700 staff	0.61	1.5	0.91
Retail West	Café/Restaurant	50 seats*	0.22		0.33
Infiltration (ha)	-	0.420 ha.	-	-	0.14
Upper Lifestyle Street + Plaza (ha)	-	0.590 ha.	-	-	0.19
Sub-Total Retail West Outlet	-	-	0.83	-	**1.57**
Retail East	Gym + Showers	200 users*	0.18		0.28
Social Café	Quick Service	50 seats*	0.22		0.33
Infiltration (ha)	-	0.323 ha.	-	-	0.11
Lower Lifestyle Street (ha)	-	0.184 ha.	-	-	0.06
Sub-Total Retail East Outlet	-	-	0.40	-	**0.78**
Sub-Total	**-**	**-**	**1.23**	**-**	**2.34**
Sanitary Flows Directly to Legget Sanitary Sewer					
R&D Lab	Lab	600 staff	0.52	1.5	0.78
Infiltration (ha)	-	0.832 ha.	-	-	0.27
Sub-Total	-	-	**0.52**	**-**	**1.06**
Sanitary Flows to Legget Sanitary Sewer via Sewer in South Access Road					
Parking Garage	Parking	-	-	-	-
Infiltration (ha)	-	0.953 ha.	-	-	0.31
Access Road + Workyard	-	1.199 ha.	-	-	0.40
Sub-Total Parking Garage	**-**	-	-	**-**	**0.71**

Site	Use	Staff / Seats / Area	Average Flow (L/s)	Peaking Factor**	Peak Flow (L/s) ***
Retained Lands	Potential Future Office	500 staff	0.43	1.5	0.65
Infiltration (ha)	-	0.777 ha.	-	-	0.26
Sub-Total Retained Lands	**-**	-	0.43	**-**	**0.91**
Sub-Total		**-**	**0.43**	**-**	**1.62**
Total Nokia + Future Retained Lands Sanitary Flows			**2.18**		**5.02**
Sanitary Flows to Legett Sanitary Sewer from the Sanmina Property					
Existing Sanmina Building	Office	400 staff	0.35	5.7	2.00
Infiltration (ha)	-	2.20 ha.	-	-	0.72
Sub-Total	-	-	**0.35**	**-**	**2.72**
Legget Drive Infiltration (ha)	**Right-of-Way**	**0.83 ha.**	-	-	**0.27**
Total Sanitary Flows to Legget Sanitary Sewer			**2.54**		**8.01**

*Total of 200 Gym users assumed 2 x per day and 50 Café/Quick Service seats assumed to be used 3 x per day.

**A peaking factor of 1.5 is appropriate for the intended use and is consistent with the previous design of the KRP sanitary trunk sewer system.

***Represents rounded values.

2.1.2 *Existing Sanitary Flows from KRP Lands*

Existing off-site sanitary flows from the KRP Lands were taken directly from the previously approved 'Sanitary and Storm Trunk Sewer Design Brief - Kanata Research Park Lands'[3], with the following revisions:

- Maximum peaking factor for hotel revised from 4.0 to 3.8
- Peak flow column revised to include extraneous flows (0.33 L/s/ha)

Table 2.2 identifies the theoretical sanitary flows from the existing properties on KRP Lands.

Table 2.2 Theoretical Sanitary Flows based on Design Population

Site Component	Units	Persons per Unit/Floor Area per Person	Design Population	Flow per Person (L/c/day)	Average Flow (L/s)	Peaking Factor	Peak Flow (L/s)**
Sanitary Flows to KRP Sanitary Sewer from the Brookstreet Hotel							
Hotel	263 rooms	2	526	225	1.37	3.8	5.21
Hotel Employees	-	-	50	75	0.04	1.5	0.06
Restaurant	300 seats	1	300	125	0.43	2.0	0.86

Recreation Centre	-	-	300	20	0.07	2.0	0.14
Auditorium	600 seats	1	600	20	0.14	2.0	0.28
Commercial	800m^2	9.3m^2/person	86	5	0.001	1.5	0.01
Office	1,700 m^2	9.3m^2/person	183	75	0.16	1.5	0.24
Infiltration	4.38 ha.	-	-	-	-	-	1.45
Subtotal - Brookstreet Hotel	**-**	**-**	**-**	**-**	**2.21**	**-**	**8.25**
Sanitary Flows to KRP Sanitary Sewer from 'Tower D'							
Existing 'Tower D' Office	10,298 m^2	9.3m^2/person	1,107	75	0.96	1.5	1.44
Infiltration (ha)	3.37 ha.	-	-	-	-	-	1.11
Subtotal – Tower D	-	-	**0.96**	**-**	**0.96**	-	**2.55**
Sanitary Flows to KRP Sanitary Sewer from Existing Parking Garage							
Existing Parking Garage	-	-	-	-	**-**	-	-
Infiltration (ha)	1.07 ha.	-	-	-	-	-	0.35
Sub-Total – Parking Garage	**-**	**-**	**-**	**-**	**-**	**-**	**0.35**
Total Existing Off-site Flows to KRP Sanitary Sewer					**3.17**		**11.15**

**Represents rounded values.

2.1.3 *Sanitary Flows from Future KRP Re-Developments*

Theoretical sanitary flows from future re-developments of the 535 Legget Drive ('Tower C') and 359 Terry Fox Drive (Brookstreet Apartments) properties tributary to the sanitary sewer on KRP Lands are being included in the calculations. The design flows for these areas are expected to increase and are based on proposed future conditions.

Future off-site flows from the 'Tower C' residential development are based on preliminary architectural plans, with projected flows exceeding the existing flows presented for this building in the previously approved 'Sanitary and Storm Trunk Sewer Design Brief - Kanata Research Park Lands'[3]. Similarly, future off-site flows from the Brookstreet Apartments development were taken directly from the previously approved 'Site Servicing and Stormwater Management Brief – Brookstreet Apartments'[4]. **Table 2.3** identifies the theoretical sanitary flows from the future redevelopments described above.

Table 2.3: Theoretical Sanitary Flows based on Design Population

Site	Use	Design Population/ Area	Average Flow (L/s)	Peaking Factor	Peak Flow (L/s)**
Sanitary Flows to KRP Sanitary Sewer from 'Tower C'					
'Tower C'	Future Residential	202 residents	0.65	3.5	2.29
Infiltration	-	1.24 ha.	-	-	0.41
Subtotal – Tower C	-	-	**0.65**		**2.70**
Sanitary Flows to KRP Sanitary Sewer from the Brookstreet Apartments					
Brookstreet Apartments	Future Residential	463 residents	1.50	3.4	5.09
	Future Restaurant	207 seats	0.30	1.0	0.30
Infiltration (ha)	-	0.39 ha.	-	-	0.13
Subtotal – Brookstreet Apartments	**-**	**-**	**1.80**	**-**	**5.52**
Total Future Off-site Flows to KRP Sanitary Sewer			**2.45**		**8.22**

**Represents rounded values.

2.1.4 *Summary of Post-Development Flows to Sanitary Sewer System*

New 250mm dia. sanitary sewers are being proposed both along Legget Drive and along Lifestyle Street to match the size of the downstream municipal sanitary sewer system and to maximize the conveyance capacity of the system. The sanitary sewer system (private and public) will have more than sufficient capacity to service the existing, proposed, and future developments. The peak sanitary design flow to the Sanitary Trunk Sewer is anticipated to be approximately 18.42 L/s. This would result in a potential excess capacity of approximately 19.8 L/s, assuming a maximum pipe conveyance capacity of 38.24 L/s near the downstream end of the system. This excess capacity could potentially be used by other developments that contribute partial or entire site flows to the sanitary sewer system, including the future mixed-use lands to north, once the existing Nokia office building (600 March Road) is demolished and the site re-developed. Potential future connections to the private sanitary sewer either in Lifestyle Street or directly to the municipal sanitary sewer system in Legget Drive would need to be reviewed and discussed with Nokia, KRP and the City of Ottawa, once flow rates are established.

3.0 STORM DRAINAGE AND STORMWATER MANAGEMENT

As indicated on the previously approved Storm Drainage Area Plan (98066-STM) and described in the 'Sanitary and Storm Trunk Sewer Design Brief - Kanata Research Park Lands'[3], stormwater flows from the subject site were always intended to be directed into the storm sewer systems on KRP lands. Stormwater runoff from the subject site (i.e., existing surface parking lots) flows into two (2) distinct storm outlets:

- The northern portion of the Nokia parking lot currently flows into the storm sewer system located on the KRP lands (on the north side of Brookstreet Hotel), directly across Legget Drive. The maximum allowable release rate to this sewer system is 63.8 L/s.
- The southern portion of the Nokia parking lot currently flows into the storm sewer system located on the KRP lands (on the south side of Brookstreet Hotel), via the municipal storm sewer in Legget Drive. The maximum allowable release rate to this sewer system is 235.1 L/s (152 L/s + 83.1 L/s).

Under existing conditions, the downstream outlet for stormwater flows from the subject site is the existing stormwater management (SWM) Facility, located behind the Brookstreet Hotel on KRP land. An MOE Certificate of Approval (MOE C of A No. 8125-4MTJ36) was issued for the SWM Facility. Refer to **Appendix A** for a copy of this MOE C of A.

As part of the recent Sanmina development (500 March Road) a portion of the storm sewer in Legget Drive was re-routed to divert flows into the sewers on KRP lands on the south side of the Brookstreet Hotel. Easements were created for the off-site sewers on KRP lands as part of this previous work. An MOECC ECA (MOECC ECA #3598-9STV8V) was obtained for these works. Refer to **Appendix A** for a copy of this MOECC ECA.

The future development of the Brookstreet Apartments (359 Terry Fox Drive) will see modifications made the to the storm sewer on KRP lands on the north side of the Brookstreet Hotel. An MECP ECA (MECP ECA No. 8158-CMASST) was obtained for these works. Refer to **Appendix A** for a copy of this MECP ECA.

3.1 Stormwater Design Flows

Under post-development conditions, the proposed development, including the Nokia Ottawa Innovation Campus and Retained Land, will be serviced by extending new on-site storm sewer systems. Flows will be attenuated on-site prior to being directed to the existing SWM Facility on KRP lands, via the sewer systems on the north and south sides of the Brookstreet Hotel.

Refer to the enclosed Storm Drainage Area Plans (C-500 & C-501) provided in **Appendix E**, the Storm Sewer Design Sheets provided in **Appendix C**, and the following sections of the report for further details.

3.2 Stormwater Design Flows to Northern Outlet on KRP Lands

Storm drainage areas shown on the enclosed plan C-500 and modeled in the “Northern Outlet on KRP Lands” Storm Sewer Design Sheet were determined as described in the following section of the report.

3.2.1 *570 March Road (Northern portion of Nokia Site)*

Stormwater runoff from the northern portion of the Nokia Campus will be controlled using multiple inlet control devices (ICD) and control flow roof drains. On-site stormwater detention will be provided using underground stormwater storage tanks and roof storage. Site flows will be controlled to a maximum release rate of 63.5 L/s prior to being directed into the existing northern storm sewer system on KRP Lands. The remainder of flows from the southern portion

of the Nokia campus are not being directed into this storm sewer system. Refer to the 'Development Servicing Study and Stormwater Management Report – Nokia Ottawa Innovation Campus'[5] for further details.

3.2.2 *Northern Portion of KRP Lands*

Tributary flows from areas on the northern portion of KRP Lands were taken directly from the previously approved 'Site Servicing and Stormwater Management Brief – Brookstreet Apartments'[4]. Data for these areas is provided in the enclosed Storm Sewer Design Sheet. Refer to **Appendix C** and to **Appendix E** for details.

3.2.3 *Future Development of Brookstreet Apartments*

Future tributary flows from the development of the Brookstreet Apartments were taken directly from the previously approved 'Site Servicing and Stormwater Management Brief – Brookstreet Apartments'[4]. As part of the proposed works for this development, some segments of the northern trunk sewer on KRP lands will be upsized and re-routed around the extents of the proposed underground parking structure. The enclosed Storm Sewer Design Sheet and Storm Drainage Area Plan incorporate these modifications. Refer to **Appendix C** and to **Appendix E** for details.

3.3 Stormwater Design Flows to Southern Outlet on KRP Lands

Storm drainage areas shown on the enclosed plan C-501 and modeled in the "Southern Outlet on KRP Lands" Storm Sewer Design Sheet were determined as described in the following section of the report.

3.3.1 *570 March Road (Southern Portion of Nokia Site) and 520 March Road*

Stormwater runoff from the southern portion of the Nokia Campus and Retained Lands will be controlled using multiple inlet control devices (ICD). Site flows will be controlled to a maximum release rate of 235.1 L/s prior to being directed into the existing storm sewer in Legget Drive, which outlets to the southern storm sewer system on KRP Lands. The Storm Sewer Design Sheet for this site is provided in **Appendix C.** Refer to the 'Development Servicing Study and Stormwater Management Report – Nokia Ottawa Innovation Campus'[5] for further details.

3.3.2 *500 March Road (Sanmina)*

Tributary flows from the 500 March property were taken directly from the previously approved 'Development Servicing Study and Stormwater Management Report – Sanmina Development'[2]. Stormwater runoff is controlled using multiple inlet control devices (ICD) and control flow roof drains. Tributary site flows are controlled to a maximum release rate of 167.7 L/s, prior to being directed into the existing storm sewer in Legget Drive. Refer to **Appendix C** for details.

3.3.3 *Southern Portion of KRP Lands and Portion of Legget Drive*

Tributary flows from areas on the southern portion of KRP Lands and portion of Legget Drive were taken directly from the previously approved 'Sanitary and Storm Trunk Sewer Design Brief – Kanata Research Park Lands[3]. Data for these areas is provided in the enclosed Storm Sewer Design Sheet. Refer to **Appendix C** for details.

The future re-development of the 'Tower C' property (535 March Road) may see a reduction of flows to the southern storm sewer on KRP Lands through the implementation of control flow roof drains. However, as the proposed Nokia Ottawa Innovation Campus development may precede the 'Tower C' re-development, this reduction was not included in design calculations.

4.0 ANTICIPATED SEWER EASEMENTS

Easement(s) are anticipated to be required for the following site servicing infrastructure; however, the details remain to be finalized:

Sanitary Sewers

- The proposed sanitary sewer between SANMH 7a and the property line east of SANMH 11 will require an easement over the Nokia Campus and a JUMA to service the future development of the Retained Lands (520 March Road), as there is no existing sanitary sewer in March Road, along the frontage of the 520 March Road property.
- Should the future development of the mixed-use lands to the north (600 March Road) require a connection to the sanitary sewer in Lifestyle Street (due to the excess capacity available as described in Section 2.1.1 above), then an easement and updated JUMA would be required between SANMH 1 and the property line just east of SANMH 5a.
- Easements for the downstream off-site sanitary sewers are already in place over the KRP Lands.

Storm Sewers

- The proposed storm sewer between the property line south of STMMH 107 and the property line east of STMMH 109 will require an easement over the Retained Lands (520 March Road) property to convey flows from the Nokia entrance drop-off and plaza area to the existing storm sewer in Legget Drive.
- The proposed storm sewer segments between the property line east of STMMH 109 & CBMH 261 and the property line east of OGS Unit 2 will require an easement(s) over the Nokia Campus (570 March Road) and a JUMA to convey stormwater flows from the Retained Lands (520 March Road) to the existing storm sewer in Legget Drive. As indicated on the previously approved Storm Drainage Area Plan (98066-STM), the intent was always to convey flows from this area to the storm sewer system on KRP lands via the municipal storm sewer in Legget Drive.
- There is no excess capacity within the proposed storm sewer in Lifestyle Street to allow for possible flows from the future development of the mixed-use lands to the north (600 March Road). As a result, there would be no need for a future easement or JUMA for the storm sewers within Lifestyle Street.
- Easements for the downstream off-site storm sewers for the south outlet are already in place over the KRP Lands. The intent is to establish easements for the off-site storm sewers for the north outlet to ensure legal outlet.

Refer to the enclosed Sanitary Drainage Area Plan (C-400), Storm Drainage Area Plans (C500 and C501), and to the 'Development Servicing Study and Stormwater Management Report - Nokia Ottawa Innovation Campus'[5] for details.

5.0 MECP APPROVAL

This report, along with the 'Development Servicing Study and Stormwater Management Report –Nokia Ottawa Innovation Campus'[5], will be provided in support of a new MECP ECA application.

NOVATECH

Prepared by:

Kynan D'sa, B.A.Sc.
Design Technologist

Reviewed by:

François Thauvette, P. Eng.
Senior Project Manager

APPENDIX A
MOE/MOECC/MECP APPROVALS FOR LEGGET SEWERS AND KRP SEWERS & SWM FACILITIES

Ministry of the Environment

2435 Holly Lane
Ottawa ON K1V 7P2
Telephone: (613) 521-3450
Fax: (613) 521-5437

Ministère de l'Environnement

2436 Holly Lane
Ottawa ON K1V 7P2
Téléphone: (613) 521-3450
Télécopieur: (613) 521-5437

Ontario

To/a:	From/de:	Pages including Cover	Date
[redacted]	[redacted]	2	00/9/5

Message: [redacted] sent this to [redacted] I am forwarding it to you. Please let me know if you have any questions.

To/a:	From/de:	Pages including Cover	Date
RICHARD SIMPSON	CHARLES GOULET	6	2000 09 05

Message: As per our conversation this AM

Regards

Charles

To/a:	From/de:	Pages including Cover	Date

Message:

Ontario

Ministry of Environment and Energy

Ministère de l'Environnement et de l'Énergie

CERTIFICATE OF APPROVAL
SEWAGE
NUMBER 3-0976-95-006

LEGGET DRIVE SEWERS

Minto Developments Inc.
427 Laurier Avenue West
Ottawa, Ontario
K1R 7Y2

You have applied in accordance with Section 53 of the Ontario Water Resources Act for approval of:

Sanitary sewers and appurtenances to be constructed in the Legget Drive extension in part of Lot 8, Conc. 4, in the City of Kanata, as follows:

STREET	FROM	TO
Legget Drive	Approx. 445 m North of Solandt Road	Approx. 255 m North of Solandt Road

including stub sewer connections and building sewers from the main sewer to the street line, all in accordance with Plan No. 94017, prepared by David McManus Engineering Consultants Ltd, Consulting Engineers.

The above noted sewage works are approved under Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 19th *day of* July, 1995.

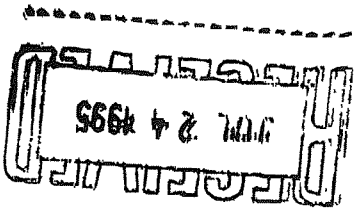
THIS IS A TRUE COPY OF
THE ORIGINAL CERTIFICATE
SIGNED BY
M. Tybinkowski, P. ENG.

MAILED ON July 20/95

BY _____

HS/jt

cc: -Mrs. M. Meikle, Clerk, City of Kanata
-Ms. M.J. Woollam, Clerk, R.M. of Ottawa-Carleton
-District Manager, MOEE Ottawa District Office
-David McManus Engineering Consultants Ltd.



Ontario

Ministry of Environment and Energy

Ministère de l'Environnement et de l'Énergie

AMENDED CERTIFICATE OF APPROVAL
SEWAGE
NUMBER 3-0979-95-007
Page 1 of 3

LEGGET DRIVE SEWERS

RECEIVED
OCT - 3 1995

Minto Developments Inc.
427 Laurier Avenue West
Ottawa, Ontario
K1R 7Y2

You have applied in accordance with Section 53 of the Ontario Water Resources Act for approval of:

construction of storm sewers and appurtenances to be constructed on Legget Drive in the City of Kanata, as follows:

STREET	FROM	TO
Legget Drive	Approx. 180 m north of Solandt Road	Approx. 490 m north of Solandt Road

including stub storm sewers, catchbasin leads and catchbasins all in accordance with plans and specifications prepared by David McManus Engineering Consultants Ltd., Consulting Engineers.

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

TERMS AND CONDITIONS

1. For the purpose of this Certificate of Approval:

   a) "Ministry" means the Ontario Ministry of Environment and Energy;

   b) "Director" means any Ministry employee within the Ministry appointed by the Minister pursuant to section 5 of the *Ontario Water Resources Act*;

   c) "Regional Director" means the Regional Director of the Eastern Region of the Ministry;

   d) "District Manager" means the District Manager of the Ottawa District Office of the Ministry's Eastern Region;

   e) "Owner" means Minto Developments Inc.

2. a) The approval granted by this certificate permits the owner to proceed with the proposed establishment of the facility subject to the conditions imposed herein, and is based upon a review of the proposed works in the context of its effect on the environment, its process performance and principles of sanitary engineering.

   b) The review did not include a consideration of the structural components of the works except to the extent necessary to review the works as set out in subsection (a).

3. a) The Owner shall prepare and make available for inspection by Ministry personnel, upon request, a complete set of drawings within one (1) year of substantial completion of the sewage works which shall show the sewage works as constructed at that time.

b) A complete set of the "as constructed" drawings, incorporating any amendments made from time to time, shall be kept by the Owner at the administration building of the sewage works as long as the sewage works is kept in operation.

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

1. Condition No. 1 is included to define terms used in this Certificate of Approval.

2. Condition No. 2 is included to make the owner, subsequent Owners, successors, assignees, and any third parties relying upon the certificate, aware that the review conducted by this Ministry and the approval granted as a result is limited in scope and should not be relied upon as an approval of the stipulated design aspects of the works.

3. Conditions No. 3 is included to ensure that the Ministry records can be kept accurate and current with respect to approved works and to ensure that subsequent owners of the works are made aware of the Certificate and continue to operate the works in compliance with it.

This Certificate of Approval revokes and replaces Certificate of Approval No. 3-0979-95-006 dated September 14, 1995.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board. Section 101 of the Ontario Water Resources Act, provides that the Notice requiring the hearing shall state:

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

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the sewage works are located;

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

This Notice must be served upon:

The Secretary,
Environmental Appeal Board,
112 St. Clair Avenue West,
Suite 502,
Toronto, Ontario.
M4V 1N3

AND

The Director,
Section 53, *Ontario Water Resources Act*,
Ministry of Environment and Energy,
250 Davisville Avenue, 3rd Floor,
Toronto, Ontario.
M4S 1H2

The above noted works are approved under Section 53 of the Ontario Water Resources Act

DATED AT TORONTO this 31st *day of* October, 1995

THIS IS A TRUE COPY OF
THE ORIGINAL CERTIFICATE
SIGNED BY
D.F. CARR, P. ENG.

MAILED ON OCT 3 1 1995

BY _____

VP/fn

cc: -Mrs. M. Meikle, Clerk, City of Kanata
-Ms. M.J. Woollam, Clerk, R.M. of Ottawa-Carleton
-District Manager, MOEE Ottawa District Office
-J. McManus, P. Eng, David McManus Engineering Consultants

Ontario

Ministry of the Environment **Ministère de l'Environnement**

CERTIFICATE OF APPROVAL
MUNICIPAL AND PRIVATE SEWAGE WORKS
NUMBER 8125-4MTJ36

Kanata Research Park Corporation
555 Legget Drive
Kanata, Ontario
K2K 2X3

Site Location: Kanata Research Park
Kanata City, Regional Municipality Of Ottawa-Carleton

You have applied in accordance with Section 53 of the Ontario Water Resources Act for approval of:

a stormwater management facility to serve Kanata Research Park at the above location covering area of approximately 188 hectares to provide quality and quantity control, as follows:

STORMWATER MANAGEMENT SYSTEM

- one (1) wet pond (# 1) with a total available storage capacity of approximately 28,920 cubic metres with active storage volume of 796 cubic metres and a minimum permanent pool volume of 3,322 cubic metres with an outlet structure complete with a Hickenbottom drain, an orifice and a weir to provide a release rate of 18.39 litres/second for the first flush and a maximum release rate of 1,514 litres/second for a 100 year storm event;

- one (1) wet pond (# 2) with a total available storage capacity of approximately 65,850 cubic metres with active storage volume of 846 cubic metres and a minimum permanent pool volume of 4,270 cubic metres with an outlet structure complete with a Hickenbottom drain, an orifice and a weir to provide a release rate of 19.32 litres/second for the first flush and a maximum release rate of 1,089 litres/second for a 100 year storm event;

- one (1) wet pond (# 3) with a total available storage capacity of approximately 25,250 cubic metres with an active storage volume of 1,286 cubic metres and a minimum permanent pool volume of 3,343 cubic metres with an outlet structure complete with a Hickenbottom drain with an orifice and weir to provide a release rate of 29.55 litres/second for the first flush and a maximum release rate of 2,148 litres/second for a 100 year storm event;

- three (3) stormceptors® STA 2000 for quality control of runoff, one for the parking area adjacent to Swansea Building, one for area 8 and one for area 10;

STORM SEWER OUTLETS

- one (1) network of storm sewer and storm sewer outlets from the dedicated manholes; and

- all other appurtenances essential for proper operation of the aforementioned sewage works;

all in accordance with the Application for Approval of Municipal and Private Sewage Works dated May 11, 2000, and the associated documents submitted by the President, Kanata Research Park Corporation, City of Kanata, Ontario.

For the purpose of this Certificate of Approval and the terms and conditions specified below, the following definitions apply:

(1) "certificate" means this entire certificate of approval document, issued in accordance with Section 53 of the *Ontario Water Resources Act*, and includes any schedules;

(2) "Director" means any Ministry employee appointed by the Minister pursuant to section 5 of the *Ontario Water*

Resources Act;

(3) "Ministry" means the Ontario Ministry of the Environment;

(4) "District Manager" means the District Manager of the Ottawa District Office of the Ministry;

(5) "Owner" means Kanata Research Park Corporation and includes its successors and assignees;

(6) "sewage works" means the sewage works described in the Owner's application, this certificate and in the supporting documentation referred to herein, to the extent approved by this certificate;

(7) "grab sample" means a 500 millilitre volume of stormwater collected over a period not exceeding fifteen minutes in an appropriate sample container as specified in "Standard Methods for Examination of Water and Wastewater", 19th Edition, 1995, as amended from time to time by more recently published editions;

(8) "composite sample" means a sample made up with no less than 5 grab samples of equal volume collected at the same sampling point at equal time intervals over a period of 4 hours following the start of stormwater discharge;

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

TERMS AND CONDITIONS

1. OPERATION AND MAINTENANCE

(1) The Owner shall ensure that at all times, the works and related equipment and appurtenances which are installed or used are properly operated and maintained.

(2) The Owner shall prepare an operations manual for the operation of the sewage works, maintain the operations manual up to date through revisions undertaken from time to time and retain a copy at the location of the sewage works. Upon request, the Owner shall make the manual available for inspection and copying by the Ministry personnel.

(3) The Owner shall ensure that the manual includes the following information:

(a) operating procedures for routine operation of the sewage works;

(b) inspection program including frequency of inspection for the sewage works and the methods or tests employed to detect when repair and/or maintenance is necessary;

(c) contingency plans and procedures for dealing with any abnormal situations and for notifying the District Manager;

(d) complaint procedures for receiving and responding to public complaints.

2. MONITORING AND REPORTING

(1) Prior to construction of the sewage works, the Owner shall establish the receiving water quality by measuring the BioMAP (d) WQI and/or BioMAP (q) WQI for Shirley's Brook at the downstream end of the development area, just upstream of the stream crossing Herzberg Road. The procedure for determination of these water quality indices are detailed in the publication "BioMAP Bioassessment of Water Quality", The Centre for Environmental Training, Niagara-on-the-Lake, ISBN 0-9685921-0-4, 1999;

(2) Five years from the date of the first bio-assessment of the water quality determined as per subsection (1), the Owner shall conduct a second bio-assessment of water quality at the same sampling location in Shirley's Brook.

(3) The Owner shall ensure that the following monitoring program is initiated upon commencement of operation of the sewage works, and subsequently carried out over a period of five years:

(a) Sampling locations for each of the three stormwater management ponds shall be

established to the satisfaction of the District Manager prior to commencement of the operation of the sewage works and may be changed or abandoned or new locations added following commencement of the operation if, in the opinion of the District Manager, it is necessary to do so to ensure representative samples are being collected;

(b) Composite samples of the effluent discharged at each of the three stormwater management ponds shall be collected for at least five (5) storm events during the period from May to September of a given calendar year;

(c) All samples shall be sent as soon as practicable to a reputable laboratory acceptable to the District Manager. In addition, samples shall be kept refrigerated at 4 degree Celsius from the time of collection until they are analyzed in the laboratory. The samples shall be analyzed for Total Suspended Solids, Total Phosphorus, and Ammonia plus Ammonium. The analyses shall be performed in accordance with "Standard Methods for Examination of Water and Wastewater", 19th Edition, 1995, as amended from time to time by more recently published editions; and,
(d) At the time of collecting samples for the month of July and August storm events, the level of Dissolved Oxygen, the water temperature and pH shall be measured in each of the three stormwater management ponds.

(e) Monitoring results shall be reported in writing to the District Manager within thirty (30) days following the calendar year being reported upon.

3. RECORD KEEPING AND RETENTION

The Owner shall retain for a minimum of seven (7) years or longer if requested in writing by the District Manager, all records and information related to or resulting from the monitoring activities required by this certificate and proposed by the Owner.

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

Condition No. 1 is included to ensure that the sewage works are properly operated and maintained in order to protect the environment and deterioration, loss or injury or damage to any person or property is prevented.

Condition No. 2 is included to ensure that quality of the stormwater from the sewage works is consistent with the design objectives and does not cause any impairment to the receiving waters.

Condition No. 3 is included to ensure that the monitoring data are kept for a reasonable period of time to enable the owner to demonstrate that the approved works is properly operated and maintained and the quality of the effluent from the works is consistent with the design objectives.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

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

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

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

This Notice must be served upon:

The Secretary*
Environmental Appeal Board
2300 Yonge St., 12th Floor
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Director
Section 53, *Ontario Water Resources Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Appeal Board's requirements for an appeal can be obtained directly from the Board at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted sewage works are approved under Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 24th day of August, 2000

Mohamed Dhalla, P.Eng.
Director
Section 53, *Ontario Water Resources Act*

AC/
c: District Manager, MOE Ottawa
Udo Boehme, Novatech Engineering Consultants Ltd.

Ontario

Ministry of the Environment **Ministère de l'Environnement**

AMENDMENT TO CERTIFICATE OF APPROVAL
MUNICIPAL AND PRIVATE SEWAGE WORKS
NUMBER 8125-4MTJ36
Notice No. 1

Kanata Research Park Corporation
555 Legget Drive
Kanata, Ontario
K2K 2X3

Site Location: Kanata Research Park
Kanata City, Regional Municipality Of Ottawa-Carleton

You are hereby notified that I have amended Certificate of Approval No. 8125-4MTJ36 issued on August 24, 2000 for the stormwater management facility to serve Kanata Research Park at the above location, as follows:

TERMS AND CONDITIONS

Condition No. 2(1) under **MONITORING AND REPORTING** is hereby revoked and is replaced as follows:
2 (1) Prior to construction of the sewage works, the Owner shall determine the antecedent receiving water quality by measuring the BioMAP (d) WQI and/or BioMap (q) WQI for each of Shirley's Brook and Kizell Drain at the following sampling locations:

(a) approximately 140 metres southeast from the east embankment of Terry Fox Drive - this position corresponds to the first bend of Shirley's Brook, upstream of the first stormwater management pond contiguous to Terry Fox Drive; and

(b) in the vicinity of the downstream crossing of Legget Drive and Kizell Drain and more specifically, approximately 40 metres southeast from the south embankment of Legget Drive.
The procedures for determining these water quality indices are detailed in the publication "BioMAP Bioassessment of Water Quality", The Centre for Environmental Training , Niagara-on-the Lake, ISBN 0-9685921-0-4, 1999.

The reason for this amendment to the Certificate of Approval is as follows:

Initially it was thought that the effluent from all three ponds would discharge to Shirley's Brook but additional field information revealed that, for most storm conditions, Shirley's Brook will receive effluent from Pond No.1 whereas Pond Nos. 2 and 3 will discharge to Kizell Drain.

This Notice shall constitute part of the approval issued under Certificate of Approval No. 8125-4MTJ36 dated August 24, 2000.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

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

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;

8. The municipality within which the works are located;

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

This Notice must be served upon:

The Secretary*
Environmental Appeal Board
2300 Yonge St., 12th Floor
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Director
Section 53, *Ontario Water Resources Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Appeal Board's requirements for an appeal can be obtained directly from the Board at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted sewage works are approved under Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 6th day of February, 2001

Mohamed Dhalla, P.Eng.
Director
Section 53, *Ontario Water Resources Act*

AC/
c: District Manager, MOE Ottawa
John Riddell, Novatech Engineering Consultants Ltd.

Ontario

Ministry of the Environment **Ministère de l'Environnement**

AMENDMENT TO CERTIFICATE OF APPROVAL
MUNICIPAL AND PRIVATE SEWAGE WORKS
NUMBER 8125- 4MTJ36
Notice No. 1

Kanata Research Park Corporation
555 Legget Drive, Suite 206
Kanata, Ontario
K2K 2X3

Site Location: Kanata Research Park
Kanata City, Regional Municipality Of Ottawa-Carleton

You are hereby notified that I have amended Certificate of Approval No. 8125- 4MTJ36 issued on August 24, 2000 for a stormwater management facility to serve Kanata Research Park located at the above site, as follows:

AMENDED SEWAGE WORKS

The following sewage works as described in the above Certificate of Approval is hereby revoked:

- "one (1) wet pond (#2) with a total available storage capacity of approximately 65,850 cubic metres with active storage volume of 846 cubic metres and a minimum permanent pool volume of 4,270 cubic metres with an outlet structure complete with a Hickenbottom drain, an orifice and a weir to provide release rate of 19.32 litres/second for the first flush and a maximum release rate of 1,089 litres/second for a 100 year storm event;"

and is replaced as follows:

- "one (1) wet pond (#2) with a total available storage capacity of approximately 62,774 cubic metres with active storage volume of 846 cubic metres and a minimum permanent pool volume of 4,270 cubic metres with an outlet structure complete with a Hickenbottom drain, an orifice and a weir to provide release rate of 19.32 litres/second for the first flush and a maximum release rate of 1,089 litres/second for a 100 year storm event;"

all in accordance with the Application for Approval of Municipal and Private Sewage Works dated December 13, 2000, and supporting information and documentation submitted by the President, Kanata Research Park Corporation, City of Kanata, Ontario.

This Notice shall constitute part of the approval issued under Certificate of Approval No. 8125- 4MTJ36 dated August 24, 2000.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

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

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;

8. The municipality within which the works are located;

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

This Notice must be served upon:

The Secretary*
Environmental Appeal Board
2300 Yonge St., 12th Floor
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Director
Section 53, *Ontario Water Resources Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Appeal Board's requirements for an appeal can be obtained directly from the Board at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted sewage works are approved under Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 29th day of March, 2001

Mohamed Dhalla, P.Eng.
Director
Section 53, *Ontario Water Resources Act*

AC/
c: District Manager, MOE Ottawa
Anthony Stewart, Novatech Engineering Consultants Ltd.

Ontario

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

ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 3598-9STV8V
Issue Date: January 16, 2015

Legget Drive Development Inc.
130 Slater Street, No. 1300
Ottawa, Ontario
K1P 6E2

Site Location: 515 and 525 Legget Drive
City of Ottawa

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

sanitary sewers to be constructed in the City of Ottawa on Legget Drive (from station 0+016 to station 1+123.2), and storm sewers to be constructed on Legget Drive (from station 0+050.0 to station 1+034.3);

all in accordance with the application from 500 March Road, dated November 12 , 2014, including final plans and specifications prepared by Novatech Engineers, Planners & Landscape Architects.

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

1. "Approval" means this Environmental Compliance Approval and any Schedules to it, including the application and supporting documentation;

2. "Director" means any Ministry employee appointed by the Minister pursuant to section 5 of the Part II.1 of the Environmental Protection Act;

3. "District Manager" means the District Manager of the Ottawa District Office of the Ministry;

4. "Ministry" means the Ontario Ministry of the Environment and Climate Change;

5. "Owner" means Legget Drive Development Inc., and includes its successors and assignees;

6. "Water Supervisor" means the Water Supervisor of the Ottawa District Office of the Ministry; and

7. "Works" means the sewage works described in the Owner's application, this Approval and in the supporting documentation referred to herein, to the extent approved by this Approval.

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

TERMS AND CONDITIONS

1. GENERAL PROVISIONS

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

1.2 Except as otherwise provided by these Conditions, the Owner shall design, build, install, operate and maintain the

Works in accordance with the description given in this Approval, the application for approval of the Works and the submitted supporting documents and plans and specifications as listed in this Approval.

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

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

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

2. EXPIRY OF APPROVAL

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

3. CHANGE OF OWNER

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

(a) change of Owner;

(b) change of address of the Owner;

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

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

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

3.3 Notwithstanding any other requirements in this Approval, upon transfer of the ownership or assumption of the Works to a municipality if applicable, any reference to the District Manager shall be replaced with the Water Supervisor.

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

1. Condition 1 is imposed to ensure that the Works are built and operated in the manner in which they were described for review and upon which Approval was granted. This Condition is also included to emphasize the precedence of Conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review. The Condition also advises the Owners their responsibility to notify any person they authorized to carry out work pursuant to this Approval of the existence of this Approval.

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

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

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

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

The Notice should also include:

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

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

This Notice must be served upon:

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

AND

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

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

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

DATED AT TORONTO this 16th day of January, 2015

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

BR/
c: District Manager, MOECC Ottawa
Francois Thauvette, P. Eng., Novatech Engineering Consultants Ltd.
Damien Whitaker, P.Eng., Senior Engineer, City of Ottawa
Linda Carkner, Program Manager, Infrastructure Services, City of Ottawa

Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 8158-CMASST
Issue Date: January 18, 2023

Wesley Clover International Corporation
390 March Road - Unit 110
Ottawa, Ontario
K2K0G7

Site Location: Brookstreet Apartments
Part of Lot 8, Concession 4
City of Ottawa, Ontario

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

Proposed Works

Modifications to existing stormwater management facility to serve Kanata Research Park at the above location covering area of approximately 200 hectares to provide quality and quantity control, as follows:

- **stormwater management facility:** one (1) wet pond (# 1) with a total available storage capacity of approximately 28,920 cubic metres with active storage volume of 800 cubic metres and a minimum permanent pool volume of 3,344 cubic metres with an outlet structure complete with a Hickenbottom drain, an orifice and a weir to provide a release rate of 18.39 litres/second for the first flush and a maximum release rate of 1,514 litres/second for a 100 year storm event;

Previous Works

- **stormwater management facility:** one (1) wet pond (# 2) with a total available storage capacity of approximately 62,774 cubic metres with active storage volume of 846 cubic metres and a minimum permanent pool volume of 4,270 cubic metres with an outlet structure complete with a Hickenbottom drain, an orifice and a weir to provide a release rate of 19.32 litres/second for the first flush and a maximum release rate of 1,089 litres/second for a 100 year storm event;

- **stormwater management facility:** one (1) wet pond (# 3) with a total available storage capacity of approximately 25,250 cubic metres with an active storage volume of 1,746 cubic metres and a minimum permanent pool volume of 3,573 cubic metres with an outlet structure complete with a Hickenbottom drain with an orifice and weir to provide a release rate of 29.55 litres/second for the first flush and a maximum release rate of 2,148 litres/second for a 100 year storm event; and

- three (3) stormceptors® STA 2000 for quality control of runoff, one for the parking area adjacent to Swansea Building, one for Area 8 and one for Area 10;

- one (1) network of storm sewer and storm sewer outlets from the dedicated manholes; and

- all other appurtenances essential for proper operation of the aforementioned sewage works;

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

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

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

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

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

3. "District Manager" means the District Manager of the appropriate local District Office of the Ministry, where the Works are geographically located;

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

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

6. "Owner" means 12316773 Canada Inc., and includes its successors and assignees;

7. "OWRA" means the *Ontario Water Resources Act, R.S.O. 1990, c. O.40* , as amended;

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

9. "Works" means the sewage Works described in the Owner's application, and this Approval.

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

conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL CONDITIONS

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

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

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

4. Where there is a conflict between the documents listed in Schedule "A" and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

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

2. EXPIRY OF APPROVAL

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

2. In the event that completion and commissioning of any portion of the Works is anticipated to be delayed beyond the specified expiry period, the Owner shall submit an application of extension to the expiry period, at least twelve (12) months prior to the end of the period. The application for extension shall include the reason(s) for the delay, whether there is any design change(s) and a review of whether the standards applicable at the time of Approval of the Works are still applicable at the time of request for extension, to ensure the ongoing protection of the environment.

3. CHANGE OF OWNER

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

a. change of Owner;

b. change of address of the Owner;

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

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

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

3. The Owner shall ensure that all communications made pursuant to this condition refer to the number at the top of this Approval.

4. OPERATION AND MAINTENANCE

1. If applicable, any proposed storm sewers or other stormwater conveyance in this Approval can be constructed but not operated until the proposed stormwater management facilities in this Approval or any other Approval that are designed to service the storm sewers or other stormwater conveyance are in operation.

2. The Owner shall make all necessary investigations, take all necessary steps and obtain all necessary approvals so as to ensure that the physical structure, siting and operations of the Works do not constitute a safety or health hazard to the general public.

3. The Owner shall inspect and ensure that the design minimum liquid retention volume is maintained in the Works at all times, except when maintenance is required.}

4. The Owner shall undertake an inspection of the condition of the Works, at least once a year, and undertake any necessary cleaning and maintenance to ensure that sediment, debris and excessive decaying vegetation are removed from the Works to prevent the excessive build-up of sediment, oil/grit, debris and/or decaying vegetation, to avoid reduction of the capacity and/or permeability of the Works, as applicable. The Owner shall also regularly inspect and clean out the inlet to and outlet from the Works to ensure that these are not obstructed.

5. The Owner shall construct, operate and maintain the Works with the objective that the effluent from the Works is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film, sheen, foam or discoloration on the receiving waters.

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

    a. the name of the Works; and

    b. the date and results of each inspection, maintenance and cleaning, including an estimate of the quantity of any materials removed and method of clean-out of the Works.

7. The Owner shall prepare an operations manual prior to the commencement of operation of the Works that includes, but is not necessarily limited to, the following information:

    a. operating and maintenance procedures for routine operation of the Works;

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

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

    d. contingency plans and procedures for dealing with potential spills and any other abnormal situations and for notifying the District Manager; and

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

8. The Owner shall maintain the operations manual current and retain a copy at the Owner's administrative office for the operational life of the Works. Upon request, the Owner shall make the manual available to Ministry staff.

5. TEMPORARY EROSION AND SEDIMENT CONTROL

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

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

6. REPORTING

1. One (1) week prior to the start-up of the operation of the Works, the Owner shall notify the District Manager (in writing) of the pending start-up date.

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

3. The Owner shall prepare a performance report within ninety (90) days following the end of the period being reported upon, and submit the report(s) to the District Manager when requested. The first such report shall cover the first annual period following the commencement of operation of the Works and subsequent reports shall be prepared to cover successive annual periods following thereafter. The reports shall contain, but shall not be limited to, the following information:

    a. a description of any operating problems encountered and corrective actions taken;

    b. a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works, including an estimate of the quantity of any materials removed from the Works;

    c. a summary of any complaints received during the reporting period and any steps taken to address the complaints;

    d. a summary of all spill or abnormal discharge events; and

    e. any other information the District Manager requires from time to time.

7. RECORD KEEPING

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

Schedule "A"

1. Application for Environmental Compliance Approval, dated April 25, 2002, received on April 29, 2002, submitted by Kanata Research Park Corporation;

2. Application for an amendment to Environmental Compliance Approval No. 5816-5ALKNH, dated November 15, 2022, received on November 29, 2022, submitted by 12316773 Canada Inc.;

3. Transfer of Review Letter of Recommendation, dated November 29, 2022 and signed by Jeff Shillington, P.Eng., Senior Engineer - Infrastructure Applications, Development Review, South Branch, City of Ottawa including the following supporting documents:

    a. Final Plans and Specifications prepared by Novatech Engineering Consultants Ltd.

    b. Pipe Data Form - Watermain, Storm Sewer, Sanitary Sewer, and Forcemain Design Supplement to Application for Approval for Water and Sewage Works.

    c. Hydraulic Design Sheets prepared by Novatech Engineering Consultants Ltd.

    d. Stormwater Management Brief prepared by Novatech Engineering Consultants Ltd.

4. Emails received on January 13, 2023 and January 16, 2023 from Curtis Ferguson, B.A.Sc., Land Development, Novatech Engineering Consultants Ltd.

5. Emails received on January 16, 2023 and January 17, 2023 from Greg MacDonald, P. Eng., Director, Land Development and Public Sector Infrastructure, Novatech Engineering Consultants Ltd.

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

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

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

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

4. Condition 4 is included as regular inspection and necessary removal of sediment and excessive decaying vegetation from the Works are required to mitigate the impact of sediment, debris and/or decaying vegetation on the treatment capacity of the Works. The Condition also ensures that adequate storage is maintained in the Works at all times as required by the design. Furthermore, this Condition is included to ensure that the Works are operated and maintained to function as designed.

5. Condition 5 is included as installation, regular inspection and maintenance of the temporary sediment and erosion control measures is required to mitigate the impact on the downstream receiving watercourse during construction until they are no longer required.

6. Condition 6 is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for all the terms and conditions outlined in this Approval, so that the Ministry can work with the Owner in resolving any problems in a timely manner.

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

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 5816-5ALKNH issued on May 30, 2002.

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

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance

approval in respect of which the hearing is required, and;

b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the *Environmental Protection Act,* a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

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

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

This Notice must be served upon:

Registrar*
Ontario Land Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5
OLT.Registrar@ontario.ca

and

The Director appointed for the purposes of Part II.1 of the *Environmental Protection Act*
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349 or 1 (866) 448-2248, or www.olt.gov.on.ca**

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

DATED AT TORONTO this 18th day of January, 2023

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

YZ/

c: District Manager, MECP Ottawa District Office
City Clerk, City of Ottawa
Jeff Shillington, P.Eng., City of Ottawa
Greg MacDonald, Novatech Engineering Consultants Ltd.

APPENDIX B
SANITARY SEWER DESIGN SHEET

SANITARY TRUNK SEWER
Sanitary Sewer Design Sheet

PROJECT : 123043
DESIGNED BY: KD
CHECKED BY: FST
DATE: 2/7/2025

NOVATECH
Engineers, Planners & Landscape Architects

LOCATION			INDIVIDUAL		CUMULATIVE		PEAK FLOWS				PROPOSED SEWER						
AREA	FROM MH	TO MH	FLOW RATE (L/s)	Infiltration Area (ha)	FLOW RATE (L/s)	Infiltration Area (ha)	PEAK FACTOR M	PEAK FLOW Q (p) (L/s)	PEAK EXTRAN.FLOW Q(i) (L/s)	***PEAK DESIGN FLOW Q (d) (L/s)***	LENGTH (m)	PIPE SIZE (mm)	TYPE OF PIPE	GRADE %	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)	Q/Q_{full}
Lifestyle Street	SAN MH 1	SAN MH 2	0.00	0.00	0.00	0.00	1.5	0.00	0.00	***0.00***	23.2	250	PVC	0.35	36.70	0.72	0.00%
Office Tower + Retail West	NOKIA-1	SAN MH 2	0.83	0.42	0.83	1.01	1.5	1.24	0.33	***1.57***	10.0	200	PVC	1.00	34.22	1.06	4.59%
Upper Lifestyle Street + Plaza			0.00	0.59													
Lifestyle Street	SAN MH 2	SAN MH 3	0.00	0.00	0.83	1.01	1.5	1.24	0.33	***1.57***	13.5	250	PVC	0.35	36.70	0.72	4.28%
	SAN MH 3	SAN MH 4	0.00	0.00	0.83	1.01	1.5	1.24	0.33	***1.57***	37.6	250	PVC	0.35	36.70	0.72	4.28%
	SAN MH 4	SAN MH 5	0.00	0.00	0.83	1.01	1.5	1.24	0.33	***1.57***	18.5	250	PVC	0.35	36.70	0.72	4.28%
Social Café + Retail East	NOKIA-2	SAN MH 5	0.40	0.32	0.40	0.51	1.5	0.60	0.17	***0.77***	12.6	200	PVC	1.00	34.22	1.06	2.25%
Lower Lifestye Street			0.00	0.19													
Lifestyle Street	SAN MH 5	SAN MH 5a	0.00	0.00	1.23	1.52	1.5	1.84	0.50	***2.34***	37.2	250	PVC	0.35	36.70	0.72	6.39%
	SAN MH 5a	SAN MH 6	0.00	0.00	1.23	1.52	1.5	1.84	0.50	***2.34***	13.8	250	PVC	0.35	36.70	0.72	6.39%
Legget-1	SAN MH 6	EX SAN MH A	0.00	0.34	1.23	1.86	1.5	1.84	0.61	***2.46***	113.2	250	PVC	0.35	36.70	0.72	6.69%
R&D Lab	NOKIA-3	SAN MH 12	0.52	0.83	0.52	0.83	1.5	0.78	0.27	***1.06***	1.2	200	PVC	1.00	34.22	1.06	3.09%
	SAN MH 12	EX SAN MH A	0.00	0.83	0.52	0.83	1.5	0.78	0.27	***1.06***	13.8	200	PVC	1.00	34.22	1.06	3.09%
Legget-2	EX SAN MH A	EX SAN MH B	0.00	0.15	1.75	2.85	1.5	2.62	0.94	***3.56***	60.2	250	PVC	0.30	33.98	0.67	10.48%
Legget-3	EX SAN MH B	EX SAN MH C	0.00	0.17	1.75	3.02	1.5	2.62	1.00	***3.62***	68.0	250	PVC	0.29	33.41	0.66	10.83%
Parking Garage	NOKIA-4	SAN MH 7	0.00	0.95	0.00	2.15	1.5	0.00	0.71	***0.71***	3.9	200	PVC	2.00	54.10	1.67	1.31%
Access Road + Workyard			0.00	1.20													
Access Road	SAN MH 7	SAN MH 8	0.00	0.00	0.00	2.15	1.5	0.00	0.71	***0.71***	73.5	200	PVC	2.50	54.10	1.67	1.31%
Retained Lands	RET LANDS	SAN MH 7a	0.43	0.78	0.43	0.78	1.5	0.65	0.26	***0.91***	3.0	200	PVC	1.00	34.22	1.06	2.65%
Access Road	SAN MH 7a	SAN MH 8	0.00	0.00	0.43	0.78	1.5	0.65	0.26	***0.91***	20.1	200	PVC	0.35	20.24	1.06	4.48%
South Access Road	SAN MH 8	SAN MH 9	0.00	0.00	0.43	2.93	1.5	0.65	0.97	***1.62***	11.9	250	PVC	0.50	43.87	0.87	3.69%
	SAN MH 9	SAN MH 10	0.00	0.00	0.43	2.93	1.5	0.65	0.97	***1.62***	52.8	250	PVC	0.50	43.87	0.87	3.69%
	SAN MH 10	SAN MH 11	0.00	0.00	0.43	2.93	1.5	0.65	0.97	***1.62***	27.8	250	PVC	0.35	36.70	0.72	4.41%
	SAN MH 11	EX SAN MH C	0.00	0.00	0.43	2.93	1.5	0.65	0.97	***1.62***	16.1	250	PVC	0.35	36.70	0.72	4.41%
Sanmina (500 March Road)	EX SAN MH	EX. SAN MH D	0.35	2.20	0.35	2.20	5.7	2.00	0.72	***2.72***	25.4	250	PVC	0.50	43.87	0.87	6.20%
Legget-4	EX. SAN MH D	EX. SAN MH C	0.00	0.17	0.35	2.37	5.7	2.00	0.78	***2.78***	55.1	250	PVC	0.33	35.64	0.70	7.79%
Legget Drive	EX. SAN MH C	EX SAN MH E	0.00	0.00	2.53	8.31	1.5	3.80	2.74	***6.54***	26.7	250	PVC	0.34	36.17	0.71	18.09%
KRP Site	EX SAN MH E	EX. SAN MH F	0.00	0.00	2.53	8.31	1.5	3.80	2.74	***6.54***	50.4	250	PVC	0.50	43.87	0.87	14.92%
	EX SAN MH F	EX SAN MH G	0.00	0.00	2.53	8.31	1.5	3.80	2.74	***6.54***	44.0	250	PVC	0.50	43.87	0.87	14.92%
	EX SAN MH G	EX. SAN MH H	0.00	0.00	2.53	8.31	1.5	3.80	2.74	***6.54***	9.1	250	PVC	1.00	62.04	1.22	10.55%
KRP Site (Tower C)	TOWER C	EX. SAN MH H	0.65	1.24	0.65	1.24	3.5	2.29	0.41	***2.70***	114.3	250	PVC	0.40	39.24	0.77	6.87%
KRP Site	EX. SAN MH H	EX. SAN MH I	0.00	0.00	3.18	9.55	1.5	4.77	3.15	***7.93***	9.5	250	PVC	1.00	62.04	1.22	12.78%
	EX. SAN MH I	EX. SAN MH J	0.00	0.00	3.18	9.55	1.5	4.77	3.15	***7.93***	48.1	250	PVC	0.67	50.78	1.00	15.61%
KRP Site (Tower D)	TOWER D	EX. SAN MH J	0.96	3.37	0.96	3.37	1.5	1.44	1.11	***2.55***	34.0	200	PVC	1.30	39.01	1.20	6.55%
KRP Site	EX. SAN MH J	EX. SAN MH K	0.00	0.00	4.14	12.92	1.5	6.22	4.26	***10.48***	61.9	250	PVC	0.35	36.70	0.72	28.55%
KRP Site (Brookstreet Hotel)	HOTEL	EX. SAN MH K	2.21	4.38	2.21	4.38	1.0 - 3.8	6.80	1.45	***8.25***	22.0	200	PVC	0.90	32.46	1.00	25.40%
KRP Site	EX. SAN MH K	EX. SAN MH L	0.00	0.00	6.35	17.30	1.5	9.53	5.71	***15.24***	21.0	250	PVC	0.38	38.24	0.75	39.85%
KRP Site (Parking Structure)	PARKING	FUTURE SAN MH 3	0.00	1.07	0.00	1.07	1.5	0.00	0.35	***0.35***	13.7	250	PVC	0.40	39.24	0.77	0.90%
Future Brookstreet Apts.	FUTURE APTS.	FUTURE SANMH 1	1.80	0.39	1.80	0.39	1.0-3.4	5.39	0.13	***5.52***	6.1	250	PVC	2.00	87.74	1.73	6.29%
KRP Site	FUTURE SANMH 1	FUTURE SANMH 2	0.00	0.00	1.80	0.39	1.0-3.4	5.39	0.13	***5.52***	24.0	250	PVC	0.50	43.87	0.87	12.58%
	FUTURE SANMH 2	FUTURE SANMH 3	0.00	0.00	1.80	0.39	1.0-3.4	5.39	0.13	***5.52***	35.9	250	PVC	0.50	43.87	0.87	12.58%
KRP Site	FUTURE SANMH 3	EX. SAN MH L	0.00	0.00	1.80	1.46	1.0-3.4	5.39	0.48	***5.87***	77.4	250	PVC	0.40	39.24	0.77	14.96%
KRP Site	EX. SAN MH L	EX. SAN MH M	0.00	0.00	8.15	18.76	1.5	12.23	6.19	***18.42***	88.9	250	PVC	0.38	38.24	0.75	48.17%
KRP Site	EX. SAN MH M	EX. 750 TRUNK	0.00	0.00	8.15	18.76	1.5	12.23	6.19	***18.42***	100.1	250	PVC	0.52	44.74	0.88	41.18%

Notes:
1. Q(d) = Q(p) + Q(i) , where
   Q(d) = Design Flow (L/sec)
   Q(p) = Population Flow (L/sec)
   Q(i) = Extraneous Flow (L/sec)
2. Q(i) = 0.33 L/sec/ha
3. Daily Sanitary Flows from Residential Development = 280L/person/day (Section 4, Ottawa Sewer Design Guidelines)
4. Daily Sanitary Flows from Office Towers = 75 L/person/day (Appendix 4-A, Ottawa Sewer Design Guidelines)
5. Residential Peaking Factor: Harmon Equation (Maximum Peaking Factor = 3.8)
6. Commercial Peaking Factor = 1.5 (Figure 4.3 Ottawa Sewer Design Guidelines)
7. Sanmina (500 March Road) Peaking Factor = 5.7 (Appendix 4-B Ottawa Sewer Design Guidelines)
8. Refer to Sanitary Drainage Area Plan (C400) for details of drainage areas and sanitary manhole number designation.
9. Refer to the 'Sanitary and Storm Sewer Design Brief - Kanata Research Park Lands' for a breakdown of Daily Sewage Flow components and applicable peaking factors from the KRP lands.

Sanitary sewer flows from Nokia and Retained Lands properties to Legget sanitary sewer.
Extension of sanitary sewer in Legget Drive.
Sanitary drainage area design based on future residential redevelopment.
Sanitary sewer segment with least available excess capacity.

APPENDIX C
STORM SEWER DESIGN SHEETS

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 123043
Project Name: Nokia Ottawa Innovation Campus
Date: 2/7/2025
Input By: KD
Reviewed By: FST
Drawing Reference: C500

Storm Design Event = 5 Year

520 & 570 March Road - Nokia Ottawa Innovation Campus
Northern Outlet through KRP Lands
1:5 Year Storm Event

Legend:
- Design Input by User
- As-Built Input by User
- Cumulative Cell
- Calculated Design Cell Output
- Calculated Uncontrolled Peak Flow Cell Output
- Design Input Restricted Peak Flow Cell

Reference: City of Ottawa - Sewer Design Guidelines (2012 and TBs)
MOE - Design Guidelines for Sewage Works (2008)

Location				Flow								Design Capacity / Proposed Sewer Pipe Sizing / Design								
Location	Area ID	From MH	To MH	Area A (ha.)	Runoff Coefficient C	Indivi. 2.78 AC	Accum. 2.78 AC	Time of Conc. Tc (min.)	Rain Intensity I (mm/hr)	Total Uncontrolled Peak Flow Q (L/s)	Total Restricted Peak Flow (L/s)	Pipe Length (m)	Pipe Size (mm) and Material	Pipe ID Actual (m)	Roughness n	Design Grade So (%)	Capacity Qfull (L/s)	Full Flow Velocity (m/s)	Time of Flow (min.)	Q / Qfull
Lifestyle Street	A-1	STMMH 101	STMMH 102	0.14	0.89	0.35	0.35	10.00	104.19	36.3		58.0	300 PVC	0.3048	0.013	1.00	100.9	1.38	0.70	36.0%
Lifestyle Street	A-1	STMMH 102	STMMH 103	0.00	-	0.00	0.00	10.70	100.64	Flows controlled by ICD	**17.5**	37.4	300 PVC	0.3048	0.013	2.00	142.7	1.96	0.32	12.3%
570 March Road	A-3, A-5	Retail West/Office	STMMH 103	0.39	0.90	0.97	0.97	10.00	104.19	Controlled by 20 RDs	**14.9**	25.8	375 PVC	0.381	0.013	2.00	258.7	2.27	0.19	5.8%
Lifestyle Street	A-1, A-3, A-5	STMMH 103	STMMH 104	0.00	-	0.00	0.00	11.02	99.11		**32.4**	20.0	375 PVC	0.381	0.013	2.00	258.7	2.27	0.15	12.5%
570 March Road	A-4, A-6	Retail East/Link	STMMH 104	0.19	0.90	0.48	0.48	10.00	104.19	Controlled by 10 RDs	**8.3**	14.3	300 PVC	0.3048	0.013	1.00	100.9	1.38	0.17	8.2%
Lifestyle Street	A-1, A3-A6	STMMH 104	STMMH 105	0.00	-	0.00	0.00	11.16	98.42		**40.7**	27.3	375 PVC	0.381	0.013	2.00	258.7	2.27	0.20	15.7%
Lifestyle Street	A-2	CBMH 249	CBMH 250	0.05	0.86	0.12	0.12	10.00	104.19	12.1		13.2	300 PVC	0.3048	0.013	0.35	59.7	0.82	0.27	20.3%
Lifestyle Street	A-2	CBMH 250	CBMH 251	0.17	0.86	0.40	0.52	10.27	102.79	53.4		6.3	300 PVC	0.3048	0.013	0.35	59.7	0.82	0.13	89.4%
Lifestyle Street	A-2	CBMH 251	STMMH 105	0.08	0.86	0.18	0.70	10.40	102.14	Flows controlled by ICD	**17.0**	3.2	300 PVC	0.3048	0.013	2.00	142.7	1.96	0.03	11.9%
Lifestyle Street	A1-A6	STMMH 105	OGS UNIT 1	0.00	-	0.00	0.00	11.37	97.49		**57.7**	8.1	375 PVC	0.381	0.013	0.35	108.2	0.95	0.14	53.3%
Legget Drive	A1-A6	OGS UNIT 1	EX CBMH "A"	0.00	-	0.00	0.00	11.51	96.85		**57.7**	70.1	375 PVC	0.381	0.013	0.40	115.7	1.01	1.15	49.9%
555 Legget Drive (KRP)	A1-A6, E-09	EX CBMH "A"	EX CBMH "B"	0.22	0.74	0.45	0.45	12.66	91.97	41.6	**57.7**	46.0	375 PVC	0.381	0.013	1.62	232.8	2.04	0.38	42.7%
555 Legget Drive (KRP)	E-07, E-08	EX CBMH	EX CBMH "B"	0.63	0.85	1.49	1.49	10.00	104.19	155.1		59.7	375 PVC	0.381	0.013	0.60	141.7	1.24	0.80	109.5%
535 Legget Drive (KRP)	A1-A6, E07-E10	EX CBMH "B"	EX CBMH "C"	0.22	0.76	0.46	2.41	13.03	90.50	217.7	**57.7**	34.9	450 PVC	0.4572	0.013	0.67	243.5	1.48	0.39	113.1%
535 Legget Drive (KRP)	E-11	Building	EX CBMH "C"	0.11	0.90	0.28	0.28	10.00	104.19	28.7		28.0	300 PVC	0.3048	0.013	0.50	71.3	0.98	0.48	40.2%
535 Legget Drive (KRP)	A1-A6, E07-E12	EX CBMH "C"	EX STMMH "D"	0.09	0.90	0.23	2.91	13.43	89.01	258.7	**57.7**	37.2	450 PVC	0.4572	0.013	2.40	460.8	2.81	0.22	68.7%
359 Terry Fox Drive (KRP)	E-13, E-15	EX CBMH	EX STMMH "D"	0.31	0.74	0.64	0.64	10.00	104.19	66.6		52.5	250 PVC	0.254	0.013	0.43	40.7	0.80	1.09	163.6%
535 Legget Drive (KRP)	A1-A6, E07-E15	EX STMMH "D"	EX CBMH "E"	0.35	0.75	0.73	4.28	13.65	88.20	377.0	**57.7**	24.0	450 PVC	0.4572	0.013	2.66	485.1	2.95	0.14	89.6%
525 Legget Drive (KRP)	A1-A6, E07-E17	EX CBMH "E"	EX CBMH "F"	0.19	0.90	0.48	4.75	13.78	87.71	416.6	**57.7**	65.0	900 CONC	0.9144	0.013	0.46	1280.9	1.95	0.56	37.0%
359 Terry Fox Drive (KRP)	E-18, E-19	EX CBMH	EX CBMH "F"	0.27	0.90	0.68	0.68	10.00	104.19	70.4		16.6	250 PVC	0.254	0.013	1.00	62.0	1.22	0.23	113.5%
525 Legget Drive (KRP)	A1-A6, E07-E20	EX CBMH "F"	EX CBMH "G"	0.10	0.90	0.25	5.68	14.34	85.76	486.8	**57.7**	24.4	900 CONC	0.9144	0.013	0.57	1425.9	2.17	0.19	38.2%
525 Legget Drive (KRP)	A1-A6, E07-E21	EX CBMH "G"	FUT STMMH "H"	0.03	0.68	0.06	5.73	14.53	85.12	488.0	**57.7**	7.4	900 CONC	0.9144	0.013	0.36	1133.2	1.73	0.07	48.2%

STORM SEWER DESIGN SHEET

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Location				Flow								Design Capacity: Proposed Sewer Pipe Sizing / Design								
Location	Area ID	From MH	To MH	Area A (ha.)	Runoff Coefficient C	Indivi. 2.78 AC	Accum. 2.78 AC	Time of Conc. Tc (min.)	Rain Intensity I (mm/hr)	Total Uncontrolled Peak Flow Q (L/s)	Total Restricted Peak Flow (L/s)	Pipe Length (m)	Pipe Size (mm) and Material	Pipe ID Actual (m)	Roughness n	Design Grade So (%)	Capacity Qfull (L/s)	Full Flow Velocity (m/s)	Time of Flow (min.)	Q / Qfull
525 Legget Drive (KRP)	E-23	Building	EX CBMH	0.17	0.90	0.43	0.43	10.00	104.19	44.3		3.3	250 PVC	0.254	0.013	1.00	62.0	1.22	0.04	71.4%
525 Legget Drive (KRP)	E-23, E-24	EX CBMH	FUT STMMH 1	0.13	0.90	0.33	0.75	10.04	103.96	78.0		32.7	375 PVC	0.381	0.013	2.23	273.1	2.40	0.23	28.6%
525 Legget Drive (KRP)	E-23, E-24	FUT STMMH 1	FUT CBMH 1	0.00	-	0.00	0.75	10.27	102.78	77.1		7.9	375 PVC	0.381	0.013	0.50	129.3	1.13	0.12	59.6%
525 Legget Drive (KRP)	E-23, E-24, F-4	FUT CBMH 1	FUT STMMH 2	0.02	0.90	0.05	0.80	10.39	102.18	81.8		28.9	375 PVC	0.381	0.013	0.50	129.3	1.13	0.42	63.3%
525 Legget Drive (KRP)	E-23, E-24, F-4	FUT STMMH 2	FUT CBMH 2	0.00	-	0.00	0.80	10.81	100.09	80.1		6.0	375 PVC	0.381	0.013	0.50	129.3	1.13	0.09	62.0%
525 Legget Drive (KRP)	E-23, E-24, F-4, F-5	FUT CBMH 2	FUT STMMH 3	0.02	0.90	0.05	0.85	10.90	99.66	84.8		9.8	450 PVC	0.4572	0.013	0.25	148.7	0.91	0.18	57.0%
525 Legget Drive (KRP)	E-22	Building	FUT STMMH 3	0.54	0.90	1.35	1.35	10.00	104.19	140.8		4.2	300 PVC	0.3048	0.013	0.50	71.3	0.98	0.07	197.3%
525 Legget Drive (KRP)	E-22-E24, F-4, F-5	FUT STMMH 3	FUT STMMH 4	0.00	-	0.00	2.20	11.08	98.81	217.6		9.7	525 PVC	0.5334	0.013	0.20	200.6	0.90	0.18	108.4%
525 Legget Drive (KRP)	F-1, F-2. F-3	CAP	FUT STMMH 4	0.16	0.90	0.40	0.40	10.00	104.19	41.7		3.0	450 PVC	0.4572	0.013	1.00	297.4	1.81	0.03	14.0%
525 Legget Drive (KRP)	E-22-E-24, F1-5	FUT STMMH 4	FUT STMMH "H"	0.00	-	0.00	2.60	11.26	97.97	254.9		46.8	525 PVC	0.5334	0.013	0.20	200.6	0.90	0.87	127.1%
525 Legget Drive (KRP)	A1-A6, E07-E24, F1-F6	FUT STMMH "H"	FUT STMMH "I"	0.02	0.90	0.05	8.39	14.60	84.88	711.7	**57.7**	35.9	975 CONC	0.9906	0.013	0.24	1145.4	1.49	0.40	67.2%
525 Legget Drive (KRP)	A1-A6, E07-E24, F1-F8	FUT STMMH "I"	FUT STMMH "J"	0.23	0.83	0.53	8.92	15.00	83.56	745.0	**57.7**	22.1	975 CONC	0.9906	0.013	0.24	1145.4	1.49	0.25	70.1%
525 Legget Drive (KRP)	A1-A6, E07-E24, F1-F8	FUT STMMH "J"	FUT STMMH "K"	0.00	-	0.00	8.92	15.25	82.77	745.0	**57.7**	24.7	975 CONC	0.9906	0.013	0.24	1145.4	1.49	0.28	70.1%
525 Legget Drive (KRP)	A1-A6, E07-E24, F1-F8	FUT STMMH "K"	SWM POND	0.00	-	0.00	8.92	15.52	81.90	745.0	**57.7**	7.7	975 CONC	0.9906	0.013	0.24	1145.4	1.49	0.09	70.1%
Totals				**4.82**								**922.1**								

Demand Equation / Parameters

1. Q = 2.78 ACI

Definitions

Q = Peak flow in litres per second (L/s)
A = Area in hectares (ha)
C = Weighted runoff coefficient (increased by 25% for 100-year)
I = Rainfall intensity in millimeters per hour (mm/hr)

Rainfall intensity is based on City of Ottawa IDF data presented in the City of Ottawa - Sewer Design Guidelines

Capacity Equation

Q full = $1000*(1/n)*A_p*R^{2/3}*So^{0.5}$

Definitions

Q full = Capacity (L/s)
n = Manning coefficient of roughness (0.013)
A_p = Pipe flow area (m^2)
R = Hydraulic Radius of wetted area (dia./4 for full pipes)
So = Pipe slope/gradient

Notes

1) Refer to the Novatech Report "Development Servicing Study and Stormwater Management Report - Nokia Ottawa Innovation Campus" (R-2023-082) for on-site storm drainage and stormwater details.
2) Refer to the Novatech Report "Sanitary and Storm Trunk Sewer Design Brief - Nokia Ottawa Innovation Campus" (R-2024-130) for off-site storm drainage and stormwater details.
3) Refer to Novatech Drawings C100 and C500 for the storm structure designations, storm pipe details and control structure tables.
4) Refer to Novatech Drawing C501 and associated storm sewer design sheet for STM drainage areas that contribute to southern STM Sewer on KRP Lands.
5) Stormwater flows from drainage areas A-0a and A-0b do not enter the storm sewer in Lifestyle Street, hence are not tributary to the northern STM Sewer on KRP Lands and have therefore been excluded from this design sheet.

STORM SEWER DESIGN SHEET

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 123043
Project Name: Nokia Ottawa Innovation Campus
Date: 2/7/2025
Input By: KD
Reviewed By: FST
Drawing Reference: C501

Storm Design Event = 5 Year

520 & 570 March Road - Nokia Ottawa Innovation Campus
Southern Outlet through KRP Lands
1:5 Year Storm Event

Legend:
- Design Input by User
- As-Built Input by User
- Cumulative Cell
- Calculated Design Cell Output
- Calculated Uncontrolled Peak Flow Cell Output
- Design Input Restricted Peak Flow Cell

Reference: City of Ottawa - Sewer Design Guidelines (2012 and TBs)
MOE - Design Guidelines for Sewage Works (2008)

Location				Flow								Design Capacity / Proposed Sewer Pipe Sizing / Design								
Location	Area ID	From MH	To MH	Area A (ha.)	Runoff Coefficient C	Indivi. 2.78 AC	Accum. 2.78 AC	Time of Conc. Tc (min.)	Rain Intensity I (mm/hr)	Total Uncontrolled Peak Flow Q (L/s)	Total Restricted Peak Flow (L/s)	Pipe Length (m)	Pipe Size (mm) and Material	Pipe ID Actual (m)	Roughness n	Design Grade So (%)	Capacity Qfull (L/s)	Full Flow Velocity (m/s)	Time of Flow (min.)	Q / Qfull
Legget Drive	B-1	Lab Building	CBMH 266	0.80	0.90	1.99	1.99	10.00	104.19	207.2		1.0	450 PVC	0.4572	0.013	1.00	297.4	1.81	0.01	69.7%
Legget Drive	B-1	CBMH 266	STMMH 118	0.00	0.90	0.00	0.00	10.01	104.14	Flows controlled by ICD	**41.0**	2.2	300 PVC	0.3048	0.013	0.50	71.3	0.98	0.04	57.5%
Legget Drive	B-1	STMMH 118	EX STMMH L1	0.00	0.90	0.00	0.00	10.05	103.95		**41.0**	10.3	525 CONC	0.5334	0.013	0.18	190.3	0.85	0.20	21.5%
Legget Drive	B-0a, B-1, L-1	EX STMMH L1	EX STMMH L2	0.39	0.52	0.56	0.56	10.25	102.90	58.0	**41.0**	65.6	525 CONC	0.5334	0.013	0.18	190.3	0.85	1.28	52.0%
Legget Drive	B-0a, B1, L1-2	EX STMMH L2	EX STMMH L3	0.21	0.55	0.32	0.88	11.53	96.74	85.6	**41.0**	72.4	525 CONC	0.5334	0.013	0.17	185.0	0.83	1.46	68.4%
570 March Road	B-2	CB 201	SWM TANK	0.05	0.66	0.09	0.09	10.00	104.19	9.6		8.0	250 PVC	0.254	0.013	0.50	43.9	0.87	0.15	21.8%
570 March Road	B-2	SWM TANK	CBMH 254	0.00	-	0.00	0.09	10.15	103.39	9.6		11.3	300 PVC	0.3048	0.013	0.35	59.7	0.82	0.23	16.0%
570 March Road	B-2	CB 207	CBMH 253	0.08	0.66	0.14	0.14	10.00	104.19	14.8		14.3	300 PVC	0.3048	0.013	0.35	59.7	0.82	0.29	24.7%
570 March Road	B-2	CBMH 253	CBMH 254	0.10	0.66	0.18	0.32	10.29	102.68	33.4		5.7	300 PVC	0.3048	0.013	0.35	59.7	0.82	0.12	55.9%
570 March Road	B-2	CBMH 254	CBMH 257	0.01	0.66	0.02	0.44	10.38	102.21	45.3		14.2	300 PVC	0.3048	0.013	0.35	59.7	0.82	0.29	75.9%
570 March Road	B-2	CB 206	CBMH 255	0.03	0.66	0.06	0.06	10.00	104.19	6.5		7.0	300 PVC	0.3048	0.013	0.35	59.7	0.82	0.14	10.9%
570 March Road	B-2	CBMH 255	CBMH 256	0.04	0.66	0.07	0.13	10.14	103.45	13.6		21.7	300 PVC	0.3048	0.013	0.35	59.7	0.82	0.44	22.8%
570 March Road	B-2	LD 1	CBMH 256	0.04	0.66	0.08	0.08	10.00	104.19	7.8		9.7	250 PVC	0.254	0.013	0.35	36.7	0.72	0.22	21.4%
570 March Road	B-2	CBMH 256	CBMH 257	0.04	0.66	0.08	0.28	10.58	101.20	21.2		22.1	300 PVC	0.3048	0.013	0.35	59.7	0.82	0.45	35.6%
570 March Road	B-2	CBMH 257	CBMH 258	0.07	0.66	0.13	0.85	10.67	100.76	80.1		28.2	375 PVC	0.381	0.013	0.35	108.2	0.95	0.50	74.0%
570 March Road	B-2	CBMH 258	CBMH 259	0.05	0.66	0.10	0.95	11.17	98.40	89.4		16.8	375 PVC	0.381	0.013	0.35	108.2	0.95	0.30	82.6%
570 March Road	B-2	CBMH 259	CBMH 260	0.01	0.66	0.02	0.97	11.46	97.05	91.1		60.5	375 PVC	0.381	0.013	0.35	108.2	0.95	1.06	84.2%
570 March Road	B-2	CBMH 260	STMMH 107	0.09	0.66	0.17	1.14	12.53	92.51	Flows controlled by ICD	**48.0**	7.3	375 PVC	0.381	0.013	0.35	108.2	0.95	0.13	44.4%
570 & 520 March Road	B-2	STMMH 107	STMMH 108	0.00	-	0.00	1.14	12.65	91.99		**48.0**	96.0	375 PVC	0.381	0.013	0.35	108.2	0.95	1.69	44.4%
Access Route	B-2	STMMH 108	STMMH 109	0.00	-	0.00	1.14	14.34	85.75		**48.0**	65.5	375 PVC	0.381	0.013	0.35	108.2	0.95	1.15	44.4%
520 March Road	C-1	CB 208	STMMH 109	0.64	0.20	0.36	0.36	10.00	104.19	Flows controlled by ICD	**27.0**	9.0	300 PVC	0.3048	0.013	1.00	100.9	1.38	0.11	26.8%
Access Route	B-2, C-1	STMMH 109	STMMH 111	0.00	-	0.00	1.49	15.49	82.01		**75.0**	23.0	450 PVC	0.4572	0.013	0.35	176.0	1.07	0.36	42.6%
570 March Road	B-3	Parking Garage	SWM TANK	1.00	0.90	2.51	2.51	10.00	104.19	261.7		1.6	375 PVC	0.381	0.013	1.00	365.8	1.60	0.02	71.5%
570 March Road	B-3	SWM TANK	STMMH 110	0.00	-	0.00	2.51	10.02	104.11	261.7		3.8	375 PVC	0.381	0.013	0.35	108.2	0.95	0.07	241.8%
570 March Road	B-3	STMMH 110	STMMH 111	0.19	0.86	0.44	2.95	10.08	103.75	Flows controlled by ICD	**46.0**	22.9	375 PVC	0.381	0.013	0.35	108.2	0.95	0.40	42.5%
Access Route	B2-B3, C-1	STMMH 111	STMMH 112	0.00	-	0.00	0.00	15.85	80.91		**121.0**	7.6	450 PVC	0.4572	0.013	0.32	168.3	1.02	0.12	71.9%
Access Route	C-2	CBMH 261	STMMH 112	0.08	0.90	0.19	0.19	10.00	104.19	Flows controlled by ICD	**15.0**	23.2	300 PVC	0.3048	0.013	0.35	59.7	0.82	0.47	25.1%
Access Route	B2-B3, C1-C2	STMMH 112	STMMH 113	0.00	-	0.00	0.19	15.97	80.54		**136.0**	62.7	450 PVC	0.4572	0.013	0.35	176.0	1.07	0.97	77.3%
Access Route	B2-B3, C1-C2	STMMH 113	STMMH 114	0.00	-	0.00	0.19	16.95	77.75		**136.0**	22.1	450 PVC	0.4572	0.013	0.35	176.0	1.07	0.34	77.3%
Access Route	B2-B3, C1-C2	STMMH 114	OGS UNIT 2	0.00	-	0.00	0.19	17.29	76.82		**136.0**	11.3	450 PVC	0.4572	0.013	0.35	176.0	1.07	0.18	77.3%

STORM SEWER DESIGN SHEET

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Location				Flow								Design Capacity / Proposed Sewer Pipe Sizing / Design								
Location	Area ID	From MH	To MH	Area A (ha.)	Runoff Coefficient C	Indivi. 2.78 AC	Accum. 2.78 AC	Time of Conc. Tc (min.)	Rain Intensity I (mm/hr)	Total Uncontrolled Peak Flow Q (L/s)	Total Restricted Peak Flow (L/s)	Pipe Length (m)	Pipe Size (mm) and Material	Pipe ID Actual (m)	Roughness n	Design Grade So (%)	Capacity Qfull (L/s)	Full Flow Velocity (m/s)	Time of Flow (min.)	Q / Qfull
Access Route	B-4	CB 211	CBMH 262	0.24	0.88	0.60	0.60	10.00	104.19	62.1		25.7	375 PVC	0.381	0.013	0.35	108.2	0.95	0.45	57.4%
Access Route	B-4	CBMH 262	CBMH 263	0.25	0.88	0.62	1.21	10.45	101.87	124.8		10.4	450 PVC	0.4572	0.013	0.35	176.0	1.07	0.16	70.9%
Access Route	B-4	CBMH 263	STMMH 116	0.18	0.88	0.45	1.66	10.61	101.06	169.9		12.9	450 PVC	0.4572	0.013	0.45	199.5	1.22	0.18	85.2%
Access Route	B-4	STMMH 115	STMMH 116	0.08	0.88	0.19	0.19	10.00	104.19	19.6		8.4	375 PVC	0.381	0.013	0.35	108.2	0.95	0.15	18.1%
Access Route	B-4	STMMH 116	OGS UNIT 2	0.00	-	0.00	1.85	10.79	100.20	Flows controlled by ICD	**35.0**	12.6	375 PVC	0.381	0.013	0.35	108.2	0.95	0.22	32.3%
Access Route/Legget Drive	B2-B4, C1-C2	OGS UNIT 2	EX. STMMH L3	0.00	-	0.00	2.03	17.47	76.35		**171.0**	12.9	450 PVC	0.4572	0.013	0.40	188.1	1.15	0.19	90.9%
500 March Road	B-0b, C-0, S-1	EX. STMMH L4	EX. STMMH L3	2.14	0.72	4.25	4.25	14.30	85.89	Flows controlled by ICD	**167.7**	18.3	600 CONC	0.6096	0.013	0.33	368.0	1.26	0.24	45.6%
Legget Drive	B0-4, C0-4, L1-2, S-1	EX. STMMH L3	EX. STMMH "A"	0.00	-	0.00	0.00	17.65	75.86	85.6	**379.7**	30.0	825 CONC	0.8382	0.013	0.50	1058.9	1.92	0.26	43.9%
525 Legget Drive (KRP)	B0-4, C0-4, L1-2, S-1	EX. STMMH "A"	EX. STMMH "B"	0.00	-	0.00	0.00	17.91	75.19	85.6	**379.7**	50.1	825 CONC	0.8382	0.013	0.50	1058.9	1.92	0.44	43.9%
525 Legget Drive (KRP)	B0-4, C0-4, L1-2, S-1	EX. STMMH "B"	EX. STMMH "C"	0.00	-	0.00	0.00	18.35	74.10	85.6	**379.7**	46.8	825 CONC	0.8382	0.013	0.50	1058.9	1.92	0.41	43.9%
525 Legget Drive (KRP)	B0-4, C0-4, L1-2, S-1	EX. STMMH "C"	EX. STMMH "D"	0.00	-	0.00	0.00	18.76	73.11	85.6	**379.7**	12.8	825 CONC	0.8382	0.013	1.00	1497.5	2.71	0.08	31.1%
525 Legget Drive (KRP)	TC1-TC5	EX. CBMH	EX. STMMH "D"	1.31	0.82	2.99	2.99	10.00	104.19	311.9		53.9	600 PVC	0.7096	0.013	0.17	396.0	1.00	0.90	78.8%
525 Legget Drive (KRP)	B0-4, C0-4, L1-2, S-1, TC1-5	EX. STMMH "D"	EX. STMMH "E"	0.00	-	0.00	2.99	18.83	72.92	397.5	**379.7**	15.3	900 CONC	0.9144	0.013	0.27	981.3	1.49	0.17	79.2%
525 Legget Drive (KRP)	TD-1	EX. CBMH	EX. STMMH "E"	0.84	0.75	1.75	1.75	10.00	104.19	182.5		49.0	300 PVC	0.3048	0.013	1.60	127.6	1.75	0.47	143.0%
525 Legget Drive (KRP)	B0-4, C0-4, L1-2, S1, TC1-5, TD-1	EX. STMMH "E"	EX. STMMH "F"	0.00	-	0.00	4.75	19.00	72.51	344.1	**379.7**	37.5	900 CONC	0.9144	0.013	0.20	844.6	1.29	0.49	85.7%
515 Legget Drive (KRP)	TD-2	Building	EX. STMMH "F"	0.14	0.90	0.35	0.35	10.00	104.19	36.5		38.0	200 PVC	0.2032	0.013	0.30	18.7	0.58	1.10	194.7%
525 Legget Drive (KRP)	H-1	Hotel	EX. STMMH "F"	0.72	0.85	1.70	1.70	10.00	104.19	177.3		15.5	200 PVC	0.2032	0.013	0.71	28.8	0.89	0.29	614.9%
525 Legget Drive (KRP)	B0-4, C0-4, L1-2, S1, TC1-5, TD1-2	EX. STMMH "F"	EX. STMMH "G"	0.00	-	0.00	6.80	19.49	71.39	485.2	**379.7**	64.8	900 CONC	0.9144	0.013	0.48	1308.4	1.99	0.54	66.1%
515 Legget Drive (KRP)	TD-3, TD-4	EX. CBMH	EX. STMMH "G"	2.84	0.75	5.92	5.92	10.00	104.19	617.0		79.0	450 CONC	0.4572	0.013	0.50	210.3	1.28	1.03	293.4%
525 Legget Drive (KRP)	B0-4, C0-4, L1-2, S1, TC1-5, TD1-4, H-1	EX. STMMH "G"	EX. STMMH "H"	0.00	-	0.00	12.72	20.03	70.18	892.6	**379.7**	22.5	975 CONC	0.9906	0.013	1.20	2561.1	3.32	0.11	49.7%
525 Legget Drive (KRP)	B0-4, C0-4, L1-2, S1, TC1-5, TD1-4, H-1	EX. STMMH "H"	EX. STMMH "I"	0.00	-	0.00	12.72	20.15	69.93	892.6	**379.7**	46.8	1050 CONC	1.0668	0.013	0.24	1395.6	1.56	0.50	91.2%
525 Legget Drive (KRP)	B0-4, C0-4, L1-2, S1, TC1-5, TD1-4, H-1	EX. STMMH "I"	SWM POND	0.00	-	0.00	12.72	20.65	68.87	892.6	**379.7**	42.9	1050 CONC	1.0668	0.013	0.44	1889.7	2.11	0.34	67.3%
Totals				**11.87**								**1432.1**								

Demand Equation / Parameters

1. Q = 2.78 ACI

Capacity Equation

Q full = $1000*(1/n)*A_p*R^{2/3}*So^{0.5}$

Definitions

Q = Peak flow in litres per second (L/s)
A = Area in hectares (ha)
C = Weighted runoff coefficient (increased by 25% for 100-year)
I = Rainfall intensity in millimeters per hour (mm/hr)

Rainfall intensity is based on City of Ottawa IDF data presented in the City of Ottawa - Sewer Design Guidelines

Definitions

Q full = Capacity (L/s)
n = Manning coefficient of roughness (0.013)
A_p = Pipe flow area (m^2)
R = Hydraulic Radius of wetted area (dia./4 for full pipes)
So = Pipe slope/gradient

Notes

1) Refer to the Novatech Report "Development Servicing Study and Stormwater Management Report - Nokia Ottawa Innovation Campus" (R-2023-082) for on-site storm drainage and stormwater details.
2) Refer to the Novatech Report "Sanitary and Storm Trunk Sewer Design Brief - Nokia Ottawa Innovation Campus" (R-2024-130) for off-site storm drainage and stormwater details.
3) Refer to Novatech Drawings C100 and C501 for the storm structure designations, storm pipe details and control structure tables.
4) Refer to Novatech Drawing C500 and associated storm sewer design sheet for STM drainage areas that contribute to the northern STM Sewer on KRP Lands.

APPENDIX D
OLD CITY OF KANATA AND NEW CITY OF OTTAWA IDF CURVES

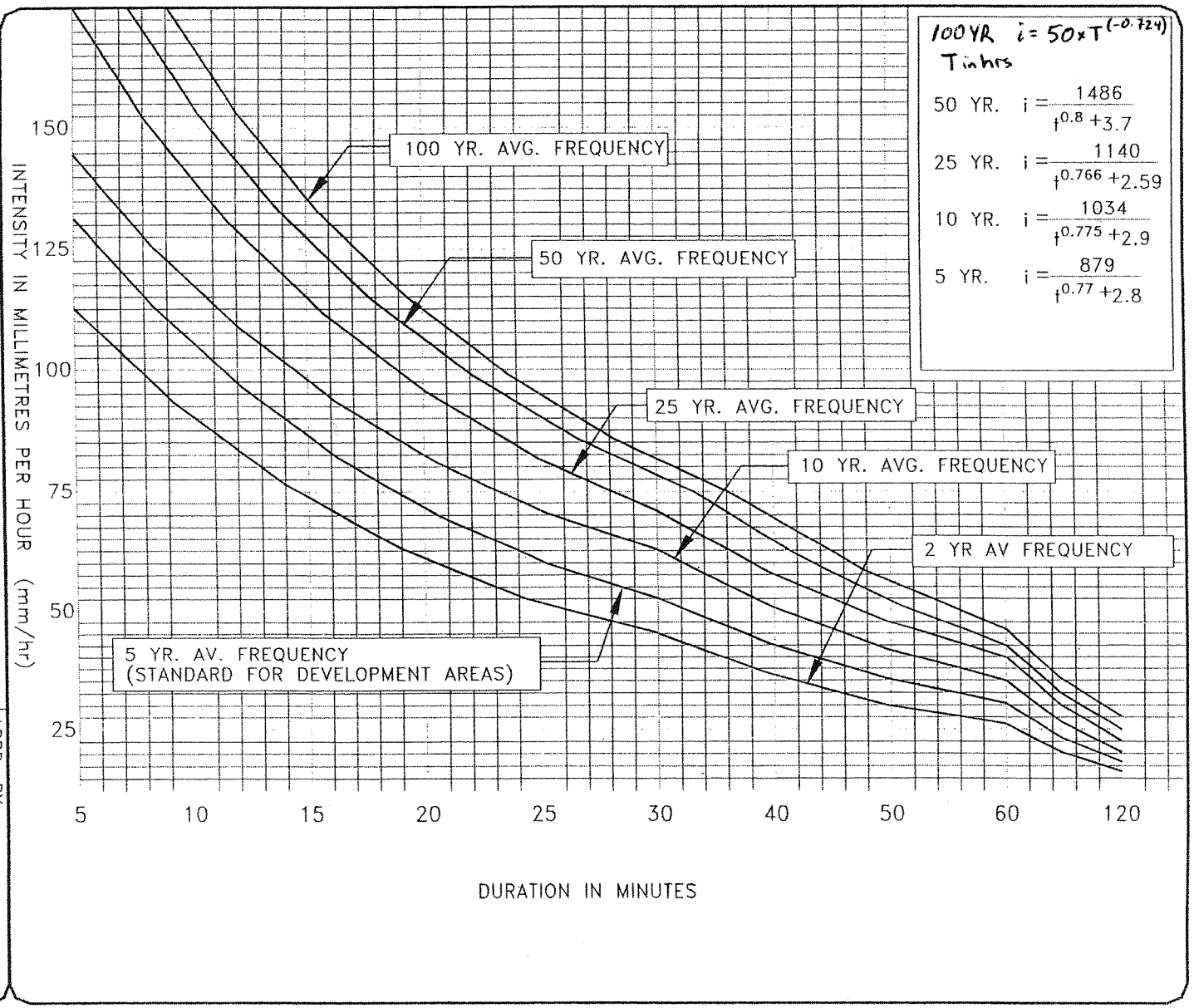
CITY OF KANATA

RAINFALL CURVES INTENSITY, DURATION AND FREQUENCY

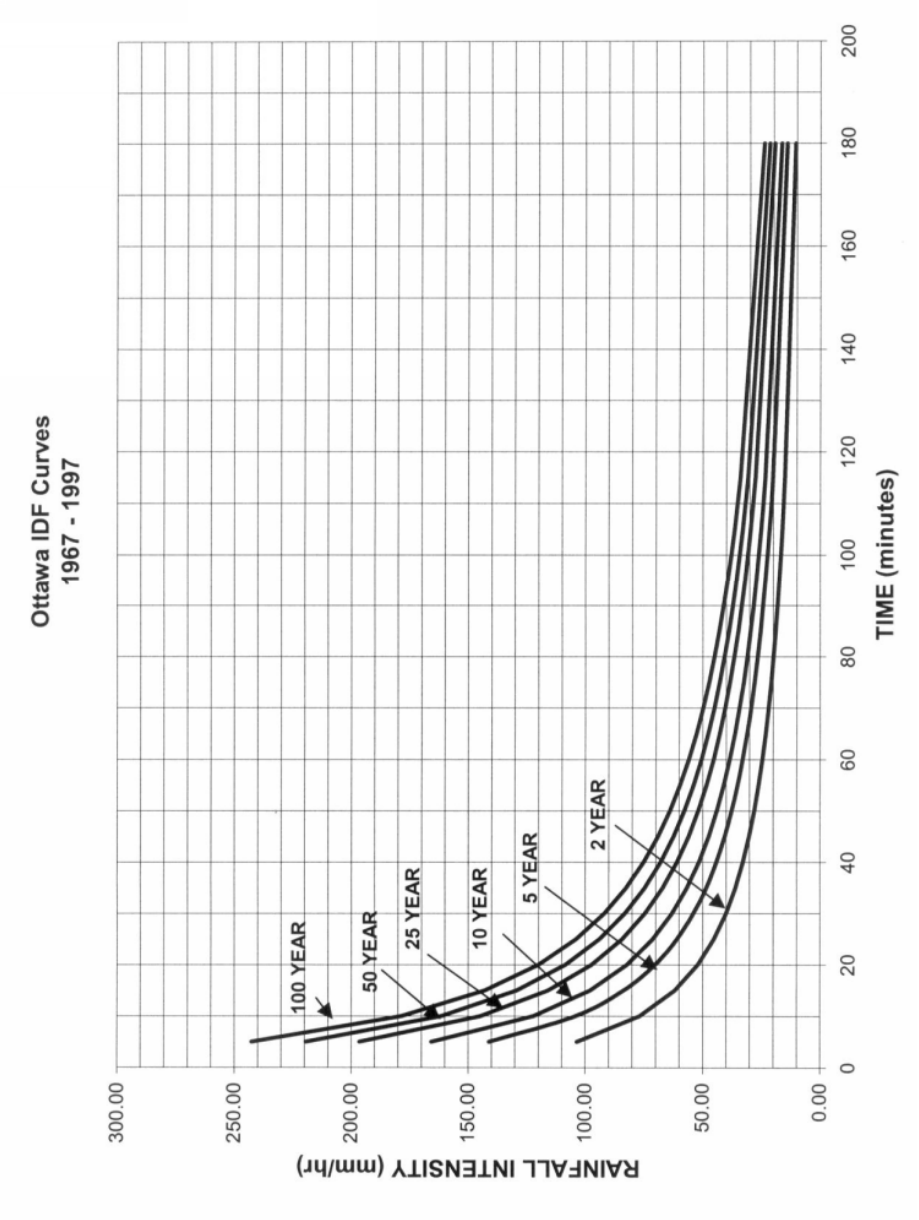
APPD. BY: Bill Arther, P.Eng.
CITY ENGINEER

REV. DATE: 3 March 1998

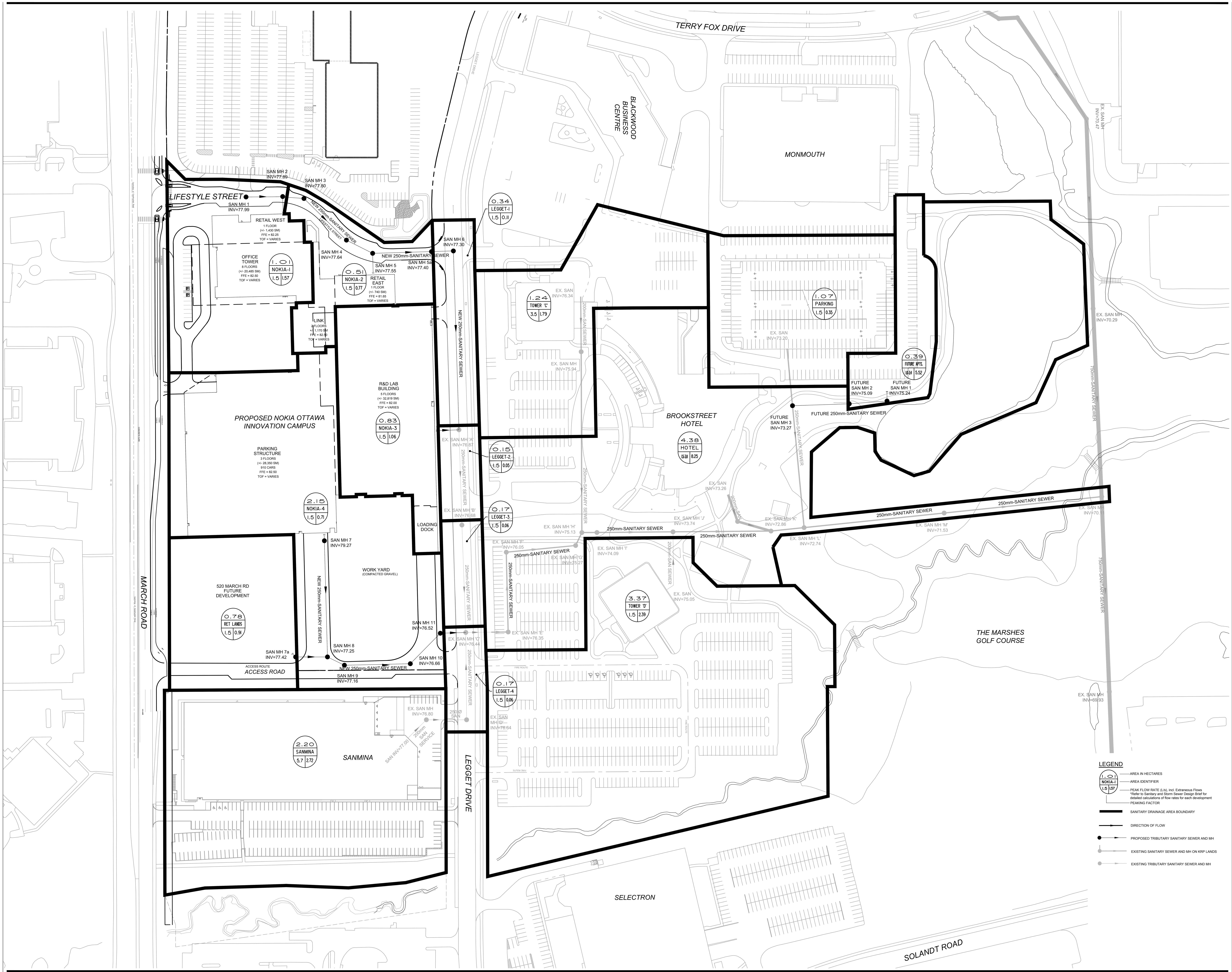
DWG. No.: KSD-0.01



APPENDIX 5-A OTTAWA INTENSITY DURATION FREQUENCY (IDF) CURVE



APPENDIX E
ENGINEERING DRAWINGS



NOKIA Ottawa Campus

570 March Rd, KanataOttawa ON K2K 2T6

Gensler

5005 Greenville Ave Tel 214.273.1500
Dallas TX 75206

Surveyor
Annis, O'Sullivan Vollebekk Ltd.
Planning Consultant
Novatech G.Winters@novatech-eng.com
Civil Engineering
Novatech F.thauvette@novatech-eng.com
Architectural Site Planning
Gensler Barry_hand@gensler.com
Electrical Engineering
Smith and Andersen Andre.drouin@smithandandersen.com
Mechanical Engineering Study
Smith and Andersen Elaine.guenette@smithandandersen.com
Geotechnical Engineering
GHD Karl.roechner@ghd.com
Landscape Planning
CSW Corush@csw.ca
Structural Engineering
AAR Jcarriere@aar.ca
Noise Report
Gradiant Wind Joshua.foster@gradientwind.com
Transportation Planners
Stantec Angelo.renon@stantec.com

△ Date	Description
NOV 15/24	ISSUED FOR SITE PLAN CONTROL APPROVAL
FEB 07/25	REVISED PER CITY COMMENTS

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

Key Plan

LEGGET DR.
LIFESTYLE ST.
MARCH RD.

Seal / Signature

LICENSED PROFESSIONAL ENGINEER
F.S. THAUVETTE
100041399
February 7, 2025
PROVINCE OF ONTARIO

Project Name
Nokia Ottawa Campus

Project Number
027.7946.000

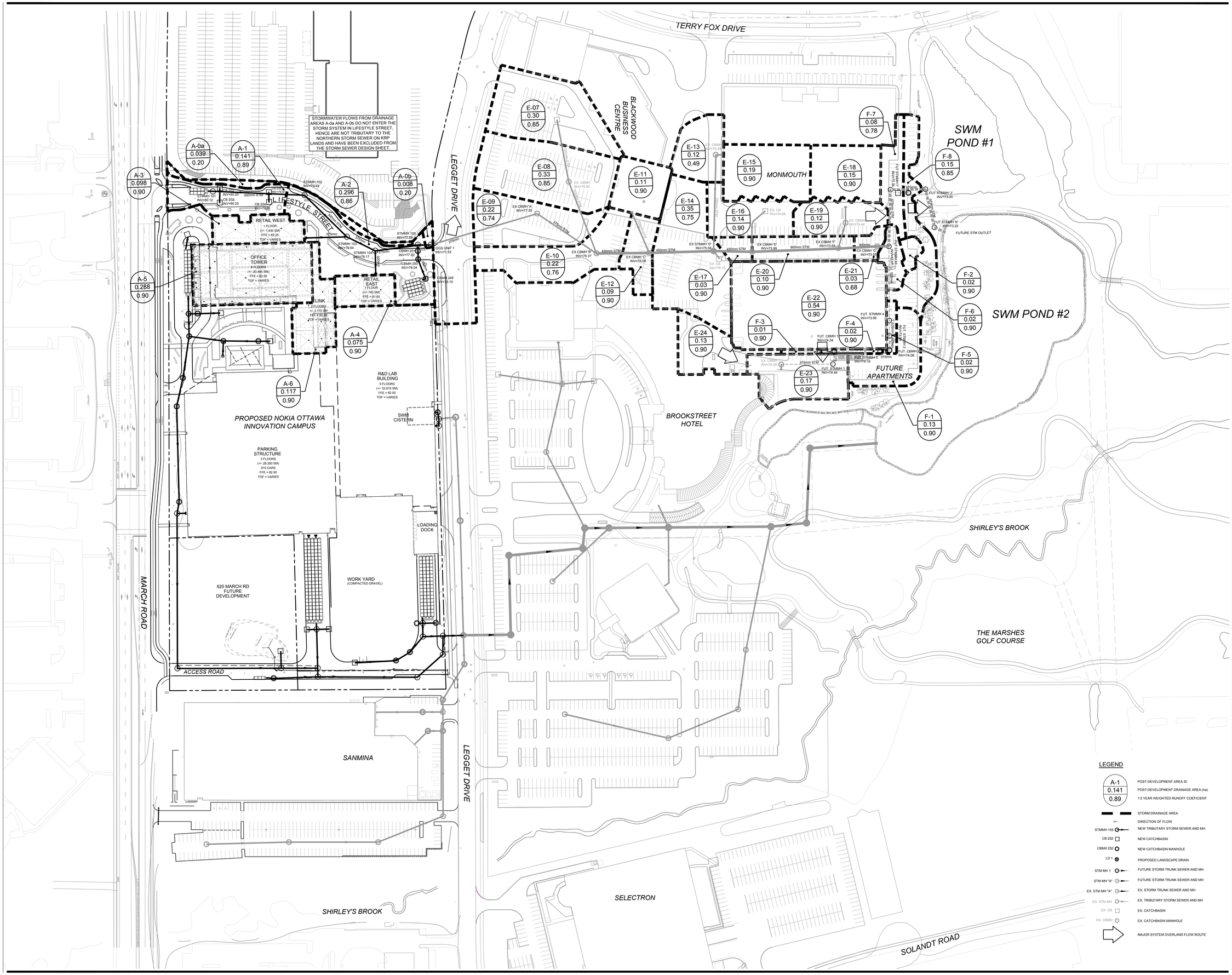
Description
SANITARY DRAINAGE AREA PLAN

Scale
1 : 750

C400

City Project no: D07-12-24-0149

Plan #19202



STORMWATER FLOWS FROM DRAINAGE AREAS A-0a AND A-0b DO NOT ENTER THE STORM SYSTEM IN LIFESTYLE STREET, HENCE ARE NOT TRIBUTARY TO THE NORTHERN STORM SEWER ON KRP LANDS AND HAVE BEEN EXCLUDED FROM THE STORM SEWER DESIGN SHEET.

LEGEND

A-1	POST-DEVELOPMENT AREA ID
0.141	POST-DEVELOPMENT DRAINAGE AREA (ha)
0.89	1:5 YEAR WEIGHTED RUNOFF COEFICIENT
▬ ▬	STORM DRAINAGE AREA
►	DIRECTION OF FLOW
STMMH 105	NEW TRIBUTARY STORM SEWER AND MH
CB 202 ☐	NEW CATCHBASIN
CBMH 252	NEW CATCHBASIN MANHOLE
LD 1	PROPOSED LANDSCAPE DRAIN
STM MH 1	FUTURE STORM TRUNK SEWER AND MH
STM MH "A"	FUTURE STORM TRUNK SEWER AND MH
EX. STM MH "A"	EX. STORM TRUNK SEWER AND MH
EX. STM MH	EX. TRIBUTARY STORM SEWER AND MH
EX. CB ☐	EX. CATCHBASIN
EX. CBMH	EX. CATCHBASIN MANHOLE
⇨	MAJOR SYSTEM OVERLAND FLOW ROUTE

NOKIA Ottawa Campus

570 March Rd, KanataOttawa ON K2K 2T6

Gensler

5005 Greenville Ave
Dallas TX 75206
Tel 214.273.1500

Surveryor	
Annis, O'Sullivan Vollebekk Ltd.	
Planning Consultant	
Novatech	G.Winters@novatech-eng.com
Civil Engineering	
Novatech	F.thauvette@novatech-eng.com
Architectural Site Planning	
Gensler	Barry_hand@gensler.com
Electrical Engineering	
Smith and Andersen	Andre.drouin@smithandandersen.com
Mechanical Engineering Study	
Smith and Andersen	Elaine.guenette@smithandandersen.com
Geotechnical Engineering	
GHD	Karl.roechner@ghd.com
Landscape Planning	
CSW	Corush@csw.ca
Structural Engineering	
AAR	Jcarriere@aar.ca
Noise Report	
Gradiant Wind	Joshua.foster@gradientwind.com
Transportation Planners	
Stantec	Angelo.renon@stantec.com

△ Date	Description
NOV 15/24	ISSUED FOR SITE PLAN CONTROL APPROVAL
FEB 07/25	REVISED PER CITY COMMENTS

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone	(613) 254-9643
Facsimile	(613) 254-5867
Website	www.novatech-eng.com

Key Plan

Seal / Signature

F.S. THAUVETTE
100041399
February 7, 2025

CON ON

Project Name

Nokia Ottawa Campus

Project Number

027.7946.000

Description

STORM DRAINAGE
AREA PLAN -
NORTH OUTLET

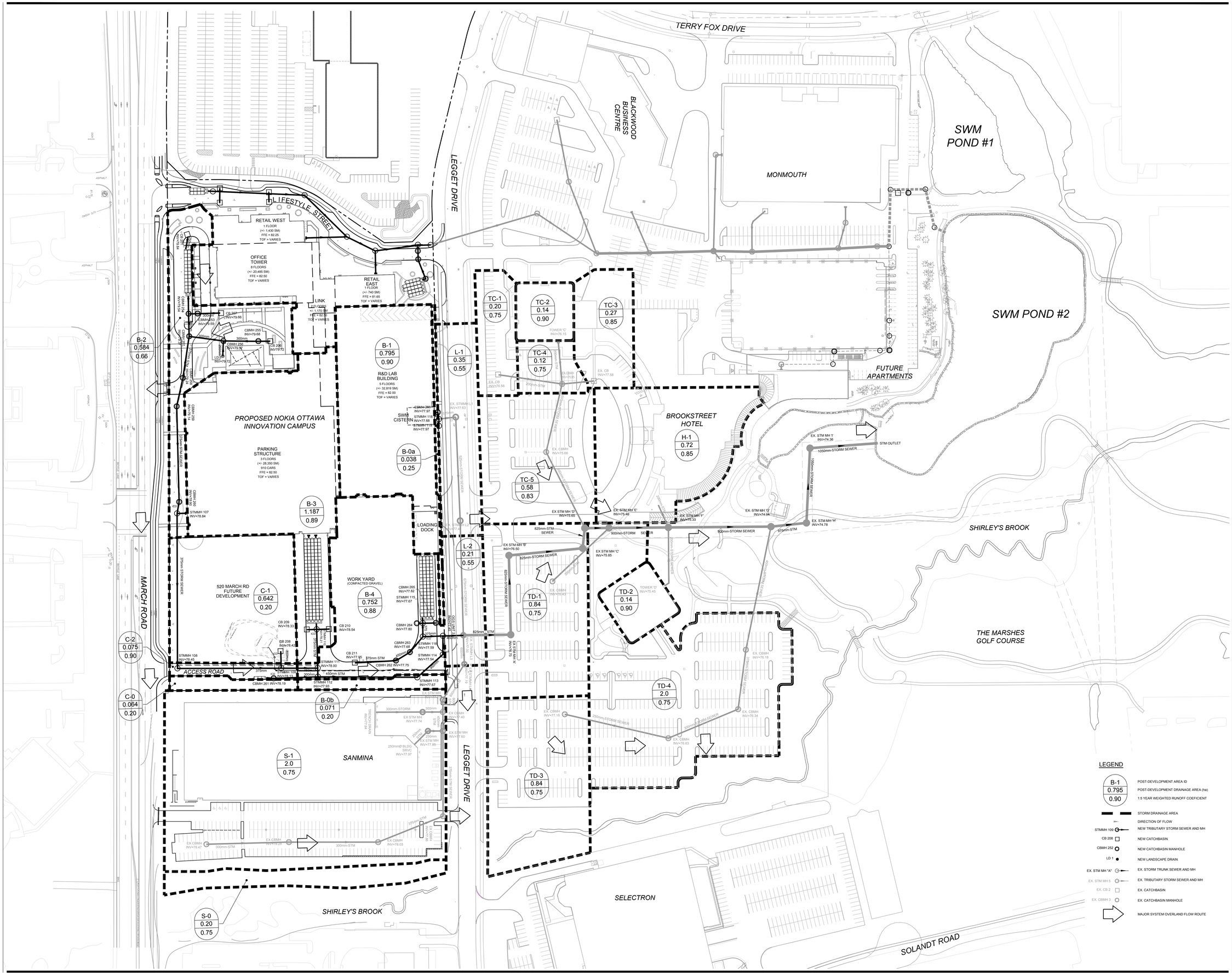
Scale

1 : 750 0 10 20 30

C500

City Project no: D07-12-24-0149

Plan #19202



NOKIA Ottawa Campus

570 March Rd, KanataOttawa ON K2K 2T6

Gensler

5005 Greenville Ave
Dallas TX 75206
Tel 214.273.1500

Surveyor
Annis, O'Sullivan Vollebekk Ltd.
Planning Consultant
Novatech G.Winters@novatech-eng.com
Civil Engineering
Novatech F.Rauvette@novatech-eng.com
Architectural Site Planning
Gensler Barry_hand@gensler.com
Electrical Engineering
Smith and Andersen Andre.drouin@smithandandersen.com
Mechanical Engineering Study
Smith and Andersen Elaine.guenette@smithandandersen.com
Geotechnical Engineering
GHD Karl.roechner@ghd.com
Landscape Planning
CSW Corush@csw.ca
Structural Engineering
AAR jcarriere@aar.ca
Noise Report
Gradient Wind Joshua.foster@gradientwind.com
Transportation Planners
Stantec Angelo.renon@stantec.com

△ Date	Description
NOV 15/24	ISSUED FOR SITE PLAN CONTROL APPROVAL
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NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643
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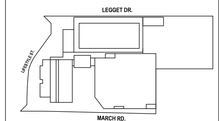
Key Plan



Seal / Signature

LICENSED PROFESSIONAL ENGINEER
F.S. THAUVETTE
100041999
PROVINCE OF ONTARIO

Project Name
Nokia Ottawa Campus

Project Number
027.7946.000

Description
STORM DRAINAGE AREA PLAN - SOUTH OUTLET

Scale
1 : 750

C501

City Project no: D07-12-24-0149

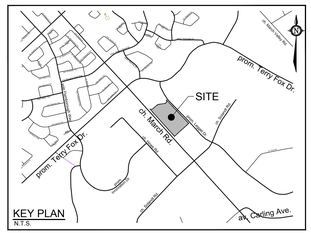
Plan #19202

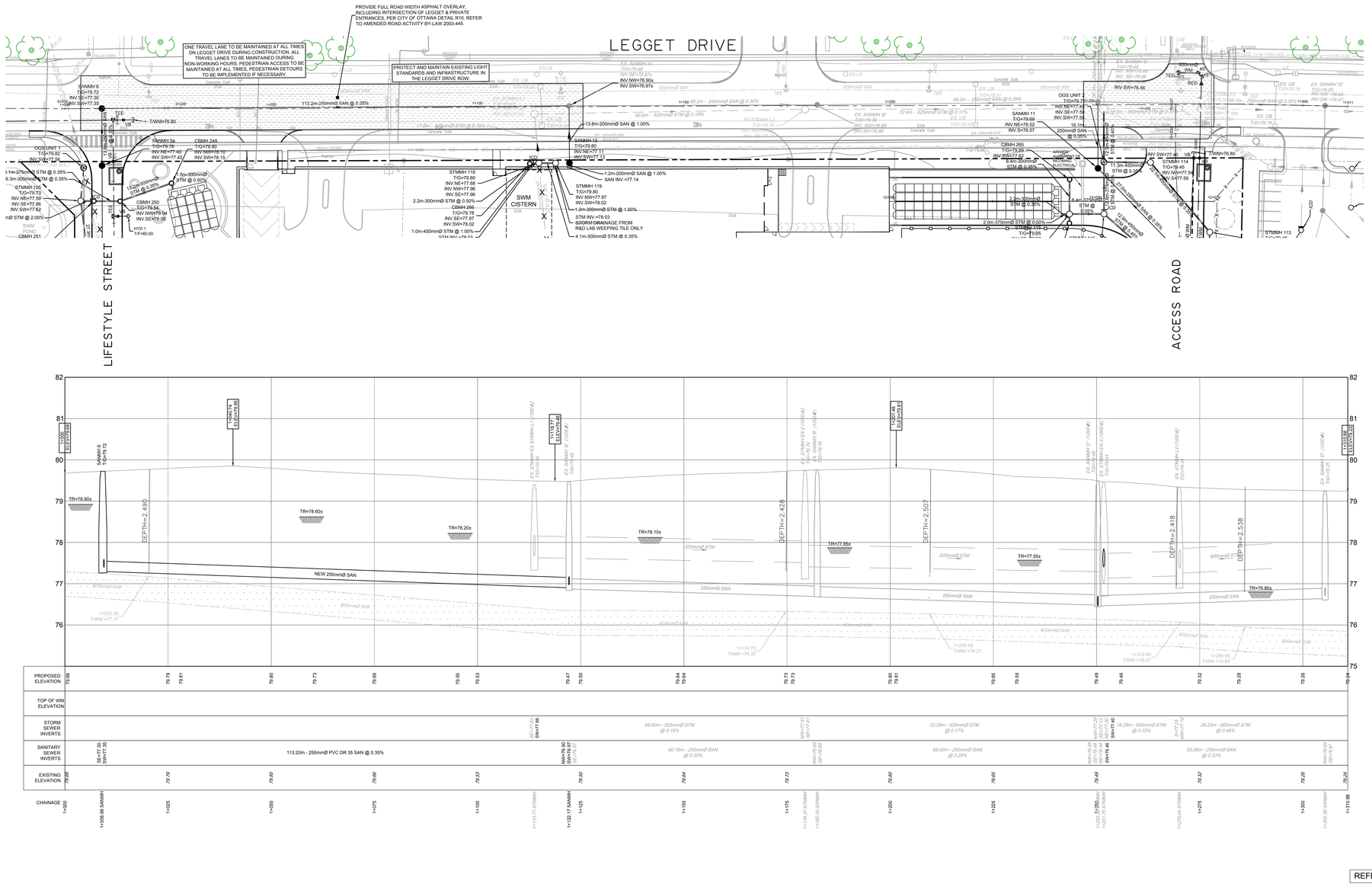
LEGEND

SAN MH 1	PROPOSED SANITARY MANHOLE AND SEWER		PROPOSED BUILDING ENTRANCE
CBMH 250	PROPOSED CATCHBASIN MANHOLE		*EXISTING CONCRETE CURB*
STMMH 100	PROPOSED STORM MANHOLE AND SEWER	SAMMH	*EXISTING SANITARY MANHOLE*
CB 200	PROPOSED CATCHBASIN	CBMH	*EXISTING CATCHBASIN MANHOLE*
LD 1	PROPOSED LANDSCAPE DRAIN	STMMH	*EXISTING STORM MANHOLE*
	THERMAL INSULATION FOR SHALLOW SEWERS	CB	*EXISTING CATCHBASIN*
	PROPOSED WATERMAIN / WATER SERVICE	HYD / WV	*EXISTING HYDRANT & VALVE*
HYD	PROPOSED HYDRANT AND VALVE		*EXISTING TREES / VEGETATION*
V&VB	PROPOSED VALVE BOX	EX UP	*EXISTING UTILITY POLE C/W GUY WIRES*
VC	PROPOSED VALVE CHAMBER		*EXISTING FENCE*
RED	PROPOSED REDUCER		*EXISTING LIGHT STANDARD*
	PROPOSED BARRIER CURB (PER SC1.1)	X	REMOVALS
DC	PROPOSED DEPRESSED CURB (PER SC1.1)		FULL ASPHALT OVERLAY PER CITY STANDARD R10
CC	PROPOSED CURB CUT		
ICD	PROPOSED INLET CONTROL DEVICE		

BENCHMARK NOTES:

1. ELEVATIONS SHOWN ARE GEODETIC AND ARE REFERRED TO THE CGVD28 GEODETIC DATUM.
2. IT IS THE RESPONSIBILITY OF THE USER OF THIS INFORMATION TO VERIFY THAT THE JOB BENCHMARK HAS NOT BEEN ALTERED OR DISTURBED AND THAT IT'S RELATIVE ELEVATION AND DESCRIPTION AGREES WITH THE INFORMATION SHOWN ON THIS DRAWING.
3. BENCHMARKS WERE PROVIDED ON THE TOPOGRAPHIC PLAN OF SURVEY OF BLOCK 6 AND PART OF BLOCK 1 REGISTERED PLAN 4M-642 AND PART OF LOTS 8 AND 9 CONCESSION 4, GEOGRAPHIC TOWNSHIP OF MARCH, CITY OF OTTAWA, SURVEYED BY ANNIS, O'SULLIVAN AND VOLLEBEKK LTD, SIGNED AND DATED FEBRUARY 20, 2022.





REFER TO DRAWING C-100 FOR ADDITIONAL NOTES

NOKIA Ottawa Campus

570 March Rd, KanataOttawa ON K2K 2T6

BLOCK 6 AND PART OF BLOCK 1 REGISTERED PLAN 4M-642 AND PART OF LOTS 8 AND 9 CONCESSION 4

Gensler

5005 Greenville Ave Tel 214.273.1500
Dallas TX 75206

Surveyor
Annis, O'Sullivan Vollebekk Ltd.
Planning Consultant
Novatech G.Winters@novatech-eng.com
Civil Engineering
Novatech F.Rauvette@novatech-eng.com
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Gensler Barry_hand@gensler.com
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Smith and Andersen Andre.drouin@smithandandersen.com
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Structural Engineering
AAR jcarriere@aar.ca
Noise Report
Gradient Wind Joshua.foster@gradientwind.com
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Stantec Angelo.renon@stantec.com

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FEB 07/25	REVISED PER CITY COMMENTS

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
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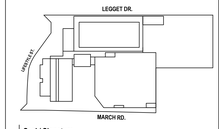
Key Plan



Seal / Signature

Project Name

Nokia Ottawa Campus

Project Number

027.7946.000

Description

PLAN AND PROFILE
LEGGET DRIVE
STATION 1+000 TO 1+310

Scale

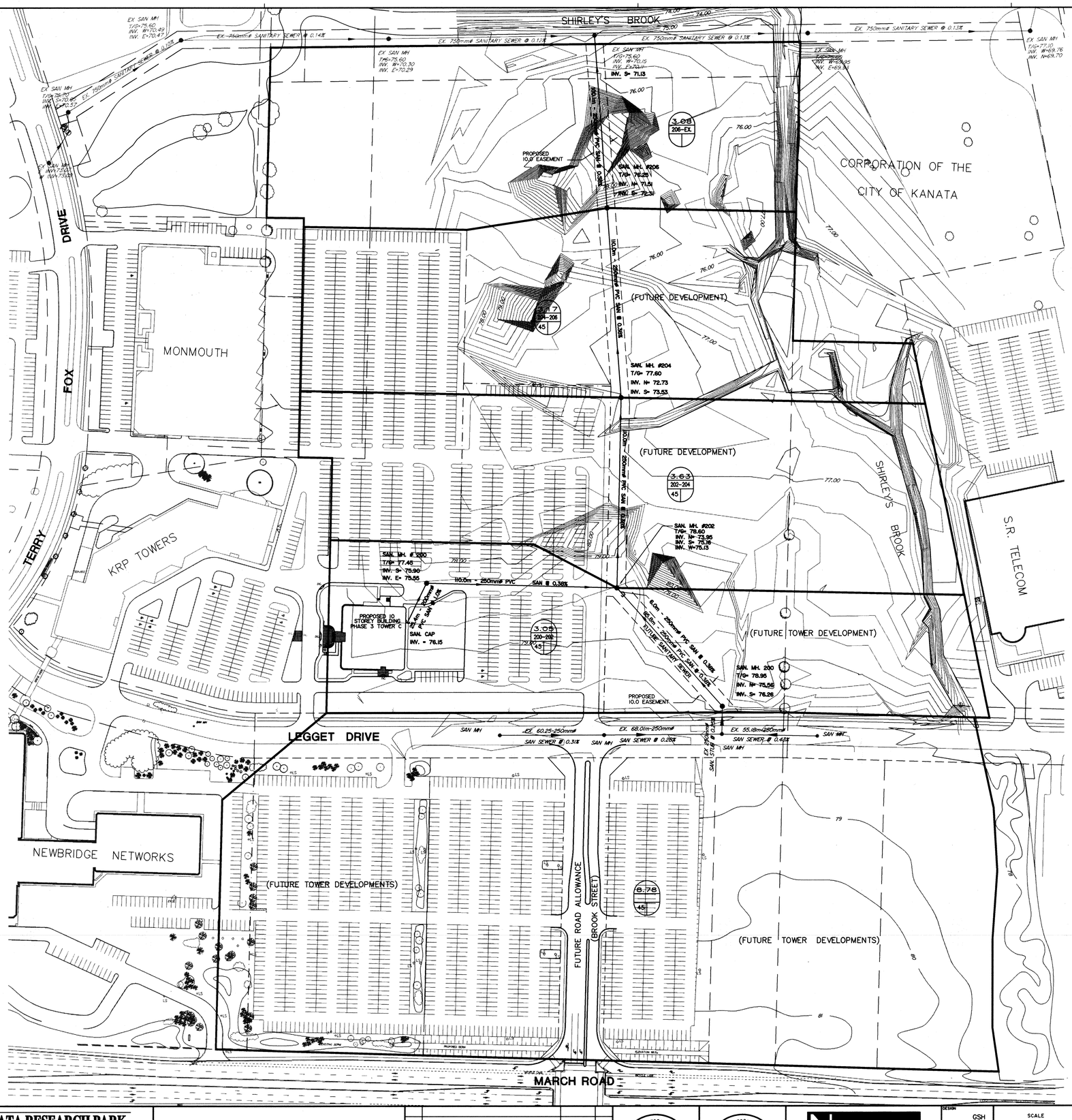
HORIZONTAL
1 : 400

VERTICAL
1 : 40

C601

City Project no: D07-12-24-0149

Plan #19202



NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

KANATA RESEARCH PARK
Kanata Research Park Corporation
599 Legget Drive, Suite 500, Kanata, Ontario, Canada, K2K 2X3
(613)591-4594

No.	REVISION	DATE	BY
1	ISSUED FOR COMMENTS	DEC. 11/98	GSH

LICENSED PROFESSIONAL ENGINEER — UDO BOEHME — PROVINCE OF ONTARIO
LICENSED PROFESSIONAL ENGINEER — G. S. HOLOWACH — PROVINCE OF ONTARIO

NOVATECH
CONSULTING ENGINEERS & PLANNERS
Suite 17, 77 Auriga Drive
Nepean, Ontario
K2E 7Z7
Telephone (613)727-1658
Facsimile (613)727-6972

DESIGN	GSH
CHECKED	UB
DRAWN	DU
CHECKED	GSH
APPROVED	UB
SCALE	1:1000

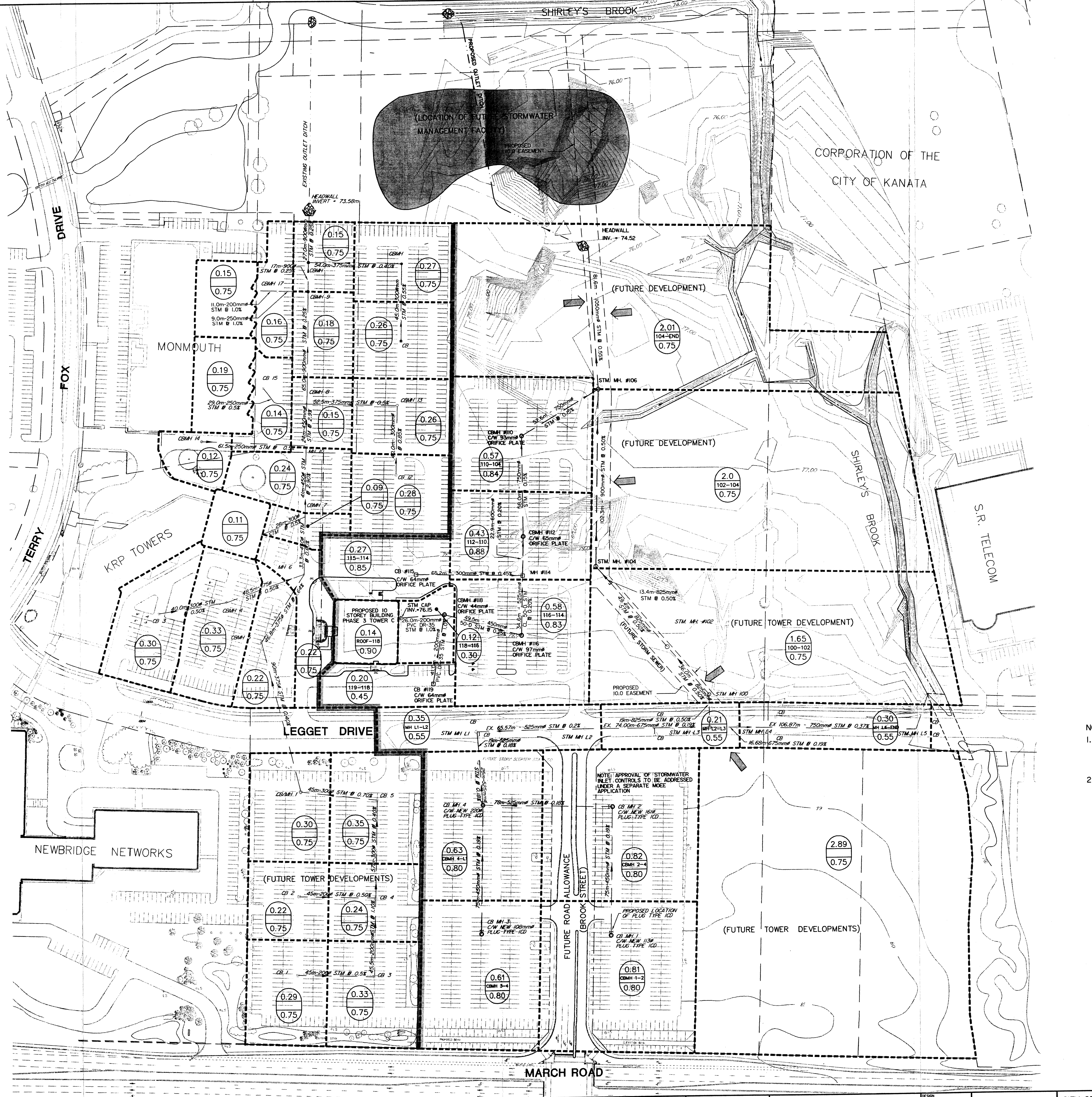
CITY OF KANATA
KANATA RESEARCH PARK
TOWER 'C' PROJECT

SANITARY DRAINAGE AREA PLAN

PROJECT No. 98066
DATE SEPTEMBER 1998
DRAWING No. 98066-SAN

PLAN8.DWG - 1000mmX707mm

Dec. 15, 1998 - 13:54:28 DWG Name: L:\NOVA\K R P\98066\DESIGN\DWG\98066STM.DWG Updated By: DU



LEGEND

- 2.02 — DRAINAGE AREA (hectares)
- 100–102 — MANHOLE TO MANHOLE
- 0.6 — RUN-OFF COEFFICIENT
- STORM DRAINAGE AREA
- STORM DRAINAGE AREA BOUNDARY
- MH #100 — EXISTING STORM SEWER AND MANHOLE
- CBMH #116 — EXISTING CATCHBASIN MANHOLE
- CB #119 — EXISTING CATCHBASIN
- DIRECTION OF FLOW
- MINOR STORM SYSTEM FLOW ROUTING (UNDEVELOPED AREAS)

NOTE:

1. RUNOFF COEFFICIENTS FOR TOWER 'C' PHASE 3 DEVELOPMENT ARE AS OUTLINED IN *"KANATA RESEARCH PARK - TOWER 'C' STORMWATER MANAGEMENT REPORT"* (NECL, Dec 1998)
2. APPROVAL OF STORMWATER INLET CONTROLS FOR THE EXISTING NEWBRIDGE PARKING LOT (PLUG TYPE ICD'S) TO BE ADDRESSED UNDER A SEPARATE MOEE APPLICATION.

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

KANATA RESEARCH PARK
Kanata Research Park Corporation
555 Legget Drive, Suite 304, Kanata, Ontario, Canada, K2K 2X3
(613)591-8594

No.	REVISION	DATE	BY
2	REVISED STORM SEWER PER R.M.O.C. COMMENTS	APR. 13/99	GSH
1	ISSUED FOR COMMENTS	DEC. 11/98	GSH

LICENSED PROFESSIONAL ENGINEER — UDO BOEHME — PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER — G. S. HOLOWACH — PROVINCE OF ONTARIO

NOVATECH
CONSULTING ENGINEERS & PLANNERS
Suite 17, 77 Auriga Drive
Nepean, Ontario
K2E 7Z7
Telephone (613)727-1658
Facsimile (613)727-6972

DESIGN	GSH
CHECKED	UB
DRAWN	DU
CHECKED	GSH
APPROVED	UB
SCALE	1:1000

CITY OF KANATA
KANATA RESEARCH PARK
TOWER 'C' PROJECT

STORM DRAINAGE AREA PLAN

PROJECT No. 98066
DATE SEPTEMBER 1998
DRAWING No. 98066–STM