

## Committee of Adjustment Application to Planning Department

## Complete Application religion of complete Application religions and dead of the strong of the strong

A complete Committee of Adjustment application consists of the following:

- 1. A properly completed and signed application form (signature must on original sign is also provided that is required to be posted on the subject lands that s;(noisney as
- 2. Supporting information adequate to illustrate your proposal as listed in Section H of this application form (plans are required in paper copy and digital PDF format);

incomplete applications will be identified and returned to the applicant. The Plann

- 3. Written authorization from all registered owners of the subject lands where the applicant is not the owner as per Section N; and,
- 4. Cash, debit or cheque payable to Norfolk County in the amount set out in the Norfolk County User Fees By-Law. Planning application development fees are not required with the submission of your completed and signed development application. Your planning application fee will be determined by the planner when your application has been verified and deemed
- complete. Prepayments will not be accepted. Indus ai noitspiliggs moy emit emas ent 5. Completed applications are to be mailed to the attention of Secretary Treasurer -Committee of Adjustment: 185 Robinson Street, Suite 200, Simcoe, ON N3Y 5L6 or email your application committee of adjustment@norfolkcounty.ca. Make sure submissions are clearly labelled including address, name, and application type. Failure to do so may impact the timing of your application.

The above listed items are required to ensure that your application is given full consideration. An incomplete or improperly prepared application will not be accepted and may result in delays during the processing of the application. This application must be typed or printed in ink and completed in full. Notification Sign Requirements

Please review all of the important information summarised below.

### the public meeting on your behalf. Please keep this sign posted until you have received Before your Application is Submitted

A pre-consultation meeting is not usually required for Committee of Adjustment applications; however, discussion with Planning Department staff prior to the submission of an application is strongly encouraged. The purpose of communicating with a planner before you submit your application is: to review your proposal / application, to discuss potential issues; and to determine the required supporting information and materials to be submitted with your application before it can be need because considered complete by staff. You might find it helpful to retain the services of an independent professional (such as a registered professional planner) to help you with your application. Information about the Official Plan and Zoning By-law can be found on the County website: www.norfolkcounty.ca/planning



After Your Application is Submitted

#### After Your Application is Submitted

Once your payment has been received and the application submitted, in order for your application to be deemed complete all of the components noted above are required.

Incomplete applications will be identified and returned to the applicant. The *Planning Act* permits up to 30 days to review and deem an application complete.

Once your application has been deemed complete by the Planning Department, it is then circulated to public agencies and County departments for review and comment. A sign is also provided that is required to be posted on the subject lands that summarizes the application and identifies the committee meeting date. The comments received from members of the community will be included in the planning report and will inform any recommendations in relation to the application.

If the subject lands are located in an area that is regulated by either the Long Point Region Conservation Authority or by the Grand River Conservation Authority an additional fee will be required if review by the applicable agency is deemed necessary. A separate cheque payable to the Long Point Region Conservation Authority or the Grand River Conservation Authority is required in accordance with their fee schedule at the same time your application is submitted.

**Additional studies** required as part of the complete application shall be at the sole expense of the applicant. In some instances peer reviews may be necessary to review particular studies and that the cost shall be at the expense of the applicant. The company to complete the peer review shall be selected by the County.

If the application is withdrawn prior to the circulation to commenting agencies, the entire original fee will be refunded. If withdrawn after the circulation to agencies, half the original fee will be refunded. No refund is available after the public meeting and/or approval of application.

#### **Notification Sign Requirements**

Planning Department staff may post a notification sign on your property in advance of the public meeting on your behalf. Please keep this sign posted until you have received a notice in the mail indicating that the Secretary Treasurer received no appeals. However, it is the applicant's responsibly to ensure that the sign is correctly posted within the statutory timeframes, according to the *Planning Act*. Failure to post a sign in advance of the public meeting in accordance with statutory requirements will impact the timing of your application at the Committee of Adjustment meeting. Applicants are responsible for removal of the sign following the appeal period. The signs are recyclable and can be placed in your blue box.

direct density of fundary from the first for the first for the sense for the sense of the sense for the sense of the sense

#### Contact Us

For additional information or assistance in completing this application, please contact a planner at 519-426-5870 ext. 1842 or Committee.of.Adjustment@NorfolkCounty.ca



For Office Use Only: File Number Related File Number Pre-consultation Meeting Application Submitted Complete Application	Application Fee  Conservation Authority Fee  Well & Septic Info Provided  Planner  Public Notice Sign				
Check the type of plan	ning application(s) you are submitting.				
	Boundary Adjustment  ng Severance and Zoning By-law Amendment  Vav				
s ec elirec	Names and addresses 0,030,001,032,010,030,000 and addresses obarge				
Property Assessment	Roll Number: 2003 194013 edi no 2003 2004				
A. Applicant Information	8 (1981) 1981 (1981) 1985 (1981) 1985 (1981) 1987 (1981) 1987 (1981) 1987 (1981) 1987 (1981) 1987 (1981) 1987				
Name of Owner	2828088 Ontario Inc  and Property Information and Property Information				
It is the responsibility of ownership within 30 day	the owner or applicant to notify the planner of any changes in				
Address Nation X	39 Ball Street				
Town and Postal Code	Paris, Ontario N3L1X3				
Phone Number	519-761-1280				
Cell Number	519-761-1280				
Email 1	lubellahomes@gmail.com				
Name of Applicant Address	2828088 Ontario Inc (Peter Ligori)  39 Ball Street				
Town and Postal Code	Paris, Ontario N3L1X3 about toeidue entro esu toeser 9 .8				
Phone Number	519-761-1280 fathebiseA				
Cell Number	519-761-1280				
Email Services and Assessment	lubellahomes@gmail.com				



Na	me of Agent	Carried States		Por Office Use Only
Ad	dress	Application Pee		Pile Nupper De stad Esta Number
To	wn and Postal Code	Conservation Authority  Vaul & September 1950 Pen		Pre-consultation Meetly of
Ph	one Number	Planner of the wife of		Applicance Subministed Complete Application
Се	Il Number	as dear learning as	that he diff a fillipping of	Department, dis
Em	naìl	teriorio de la compansa de la compa	and the second and an artifaction of the second and the second and the second and the second	t i grande tida error e e e e e e e e e e e e e e e e e
all	correspondence and	all communications sho notices in respect of th above.	is application will be	forwarded to the
	Owner	☐ Agent	☐ Applica	nt
	ames and addresses of cumbrances on the su	of any holder of any mo ubject lands:	rtgagees, charges or	이 전에는 얼마를 즐겁게 되었다. [1] "당시장은 전기 시계를 받았다.
		grave English (1960)	180 BEACCOD	and the later of the party of the later
В.	Location, Legal De	escription and Proper	ty Information	Tenwo to emay.
1.	이 보면서는 것은 그렇게 보고 있다면 보다 하게 되었다면 하게 되었다.	clude Geographic Tow Irban Area or Hamlet):	nship, Concession N	umber, Lot Number,
	LT 2-4 BLK 5 PL	19B EXCEPT NR38	34270; NORFOLK	COUNTY SESTEDA
		Mark South Commission of the C		Town and Postal Co
	Municipal Civic Addr	ess: 42 MECHANI	C ST E, WATERF	ORD sedmul anorth
Spanning	Present Official Plan	Designation(s):	1971-167-41C	Cell Number
	Present Zoning:	ggmail.com <sub>extract</sub>	esimonalistu.	Email
2.	Is there a special pro	ovision or site specific z	one on the subject la	
	☐ Yes ☐ No If yes	s, please specify:	39 Bail Succi	MisotiquA facement
- 44	are significant should show the superior sold	and the second s		Address
3.	Present use of the su Residential	ubject lands:	\$18-7314726 	Town and Postal Cod <del>Francisco</del>
	agreement to the extention of	right the same superior that the same superior	JOST 1 ON STO	Cel Number
		William Holling Mil	construence on adviction advice	



	1-88881" DWB not 1 fort 19033
4.	Please describe all existing buildings or structures on the subject lands and whether they are to be retained, demolished or removed. If retaining the buildings or structures, please describe the type of buildings or structures, and illustrate the setback, in metric units, from front, rear and side lot lines, ground floor area, gross floor area, lot coverage, number of storeys, width, length, and height on your attached sketch which must be included with your application:  One two storey house and two small sheds
5.	If an addition to an existing building is being proposed, please explain what it will be used for (for example a bedroom, kitchen, or bathroom). If new fixtures are proposed, please describe.
6.	Please describe all proposed buildings or structures/additions on the subject lands. Describe the type of buildings or structures/additions, and illustrate the setback, in metric units, from front, rear and side lot lines, ground floor area, gross floor area, lot coverage, number of storeys, width, length, and height on your attached sketch which must be included with your application:  Two semi detached buildings
7.	Are any existing buildings on the subject lands designated under the <i>Ontario</i> Heritage Act as being architecturally and/or historically significant? Yes  No  No
	If yes, identify and provide details of the building:
8.	If known, the length of time the existing uses have continued on the subject lands:
9.	Existing use of abutting properties:  Residential
10	Are there any easements or restrictive covenants affecting the subject lands?
	☐ Yes ☑ No If yes, describe the easement or restrictive covenant and its effect: ○



## C. Purpose of Development Application to agricultud probable as said

Note: Please complete all that apply. Failure to complete this section will result in an incomplete application.

Site Information (Please refer to Zoning By-law to confirm permitted dimensions)

	Existing	Permitted 100	Provision (	Proposed 000	Deficiency
Lot frontage	a distribution de la company de la compa	11.5m	and the same and t	12,25m	No
Lot depth			and the second second second second		
Lot width	llease explain If new fixture		g building is be droom kitche	n to an existing	
Lot area		345~2		492.8	N°
Lot coverage					
Front yard	ditions on the	Gm Gm	sed buildings	orbe alla edho	eeboo o
Rear yard	con areas, grope	7.5~	tol ebia briant	17.56m	In Noem
Height		tion	in your application	pe included w	which must
Left Interior side yard	e sample anne a del commende de commence de la comm	1.2~	and in the second secon	1.23m	No
Right Interior side yard	ed ur der the c ignificant? Y	shus 2 shest	on the subject	1.23m	Ka No A
Exterior side yard (corner lot)	COSE Company	6m	entin dista	4.57~	Nos iden
Parking Spaces (number)	to If was fill of the su	noo even ene	the existing t	2 mit to ritorial en	No
Aisle width	to a 15 Transport of the Section of	The Contract of the Contract o			
Stall size	e septembre e signi ant antico di filipio e	englisher service (1955) Service (1957)	pperties	of sbutting p	Extranglus
Loading Spaces	townstrander towicius entror	cella el renev	5 6 VIII 5 132 5 1 10	ny easements	Sharking service and service of
Other	is thereeved to	rent or restricts	ribe the easer	teeb sey'll ov	D Yes D



## Lots 2-3-4 on DWG 15373-1

## C. Purpose of Development Application

Note: Please complete all that apply. Failure to complete this section will result in an incomplete application.

1. Site Information (Please refer to Zoning By-law to confirm permitted dimensions)

a propried to the second second	Existing	Permitted	Provision	Proposed	Deficiency
Lot frontage	场	8.5m	ndary Adjustin	8.85m	COOMINS
Lot depth	elical district	erskernistransk grynser av serve	81.1	E E E	Pontage:
Lot width			Land Samuel Co	politica de la compania del compania de la compania del compania de la compania del la compania de la compania dela compania del la compania de la compania del la compania del la compania del la compan	Depth:
Lot area		255m²		357.7~2	No
Lot coverage			na kade shu	the second secon	Present Us
Front yard		(mem	leuiba viabriuo	6.09m	No
Rear yard	nq bas redmu	n HontiSwess	identify the ass	17.48m	If ad/unda
Height		e de la composition della comp	ebba ed liw lec	which the par	the lands to
Left Interior side yard		1.2m	en e	1.23m	No
Right Interior side yard		nuli 2milio	oniale retaine	b11.23ml to	De <b>6</b> (Ation
Exterior side yard (corner lot)			To see		Depth: Wath:
Parking Spaces (number)	, and a spiral resolution in the section of	2	Tattoshie	97 A	Lot Area: Present Us
Aisle width			Lochoby	isa: isa	Proposed t
Stall size	Type (torext	ujta dom, arc	rard, Ives/69/		
Loading Spaces	nezeelyaw-lo-		Description of	Right-of-Way	Easement units:
Other	and the management are a side				Frontage:



11-81831 DUNITION POR BURGET

C. Purpose of Development Application

2.	Please explain wl By-law:	hy it is not possible to co	omply with the p	non intrasperedit	f the Zoning
	Incarend bet	Byelaw to confirm perch	refer to Zoning		
	d I Deidency	Prayecon   Propose	Permisse	prifaix <sup>2</sup>	
3.	Consent/Severa	nce/Boundary Adjustn	nent: Description	on of land inte	ended to be
	severed in metric Frontage:	units:			Lot depth
	Depth:	40.4			dibby to 1
	Width:	21.13		and the second second second	
	Lot Area:	850.5	1255m	Y 1 ST	Lot area
	Present Use:	Residential			Lot
	Proposed Use:	Residential		and the second second second second	608,19403
	Proposed final lo	t size (if boundary adjust	tment)		Front yard
		h the parcel will be adde			A SUPERIOR
		60111401	mS1	3.25	Leit Interior
	Description of lar	nd intended to be retaine 나구. 구	d in metric units	1.220	Right and Internal and a vard
	Depth:	40.4			Exterior side
	Width:	17.7	W 4.77 - 1	1	yard (corner
	Lot Area:	715.4			Parking
	Present Use:	Residential	8 1	. Alexandria	Spaces
	Proposed Use:	Residential	· · · · · · · · · · · · · · · · · · ·	tani ing pertangan di darih di dalam dapa	Trans. Cr. 18
	Buildings on retai	ned land: None			Lange Store
					Stell size
4.	Easement/Right	-of-Way: Description of	proposed right-	of-way/easen	nent in metric
	Frontage:	100 C 100 C 100 C			10.40
	Depth:	and the same of th	and the same of th		L



Width:	ethan fry 'n iske tolle lûse alle'
Area: Maria and an array of the fundament	profession with a field and the second of th
Proposed Use:	Same all and any and
5. Surplus Farm Dwelling Severances Only: List all proposition which are owned and farmed by the applicant and involved	######################################
Owners Name:tlud pulling built	Dwelling Present? [] Yes
Roll Number:	Date of Land Purchaser
Total Acreage:	8 110 P. S.
Workable Acreage:	Owners Namer translation to A
Existing Farm Type: (for example: corn, orchard, livestock)	Rost Monspepulari, servanda
Dwelling Present?: ☐ Yes ☐ No If yes, year dwelling bui	Total Acreece
Date of Land Purchase:	Workship Acresges, values
ample: com, orchard, livestock) eav 33,57,77,77 contrasting	Existing Farm Type: (for exa
Owners Name: tilud pulling bus yes, yes I No II	Owelling Present?: [] Yes
Roll Number:	Date of Land Purchase:
Total Acreage:	
Workable Acreage: and an analysis assets as a second assets as a second assets as a second assets as a second as a	Note: If additional space is
Existing Farm Type: (for example: corn, orchard, livestock)	D. All Applications, Provid
Dwelling Present?: ☐ Yes ☐ No If yes, year dwelling bui	of Cas inere been an indes
Date of Land Purchase:	Flands? [] Yes St No []
or example: gas station, or petroleum storage):	If yes, specify the uses (fo
Owners Name:	
Roll Number: # ###	A180 N 35 8 18 8 0 1
Total Acreage:  Workable Acreage:    Total Acreage:   Tot	
Existing Farm Type: (for example: corn, orchard, livestock)	violing in one out the each
Dwelling Present?:   Yes   No If yes, year dwelling bui	
Date of Land Purchase:	LAW XMH



ALL DESCRIPTION OF THE PROPERTY OF THE PROPERT		
Owners Name:		1800A
Roll Number:	and the second of the second o	Proposed Use.
Total Acreage:	the majories that a group of the transition of the property of the contract of	elemporario estre estreno de producente de la composición de la composición de la composición de la composición
Workable Acreage:	velling Severances Only: List all properties	5. Surplus Farm Dy
Existing Farm Type: (for	r example: corn, orchard, livestock)	Section 2 Section 1880 m
Dwelling Present?: □	Yes ☐ No If yes, year dwelling built	Очлас Мате
Date of Land Purchase:		Roll Number
		Total Acreage
Owners Name:	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	Viorkable Acreage
Roll Number:	(for example: com, prchard livestock)	Existing Farm Type:
Total Acreage:	Tyes T No If yes year dwelling built in	
Workable Acreage:	A PRESENTAL SERVICES SAVELY SAVELY	erimi i G has 1 to ste 1
Existing Farm Type: (fo	or example: corn, orchard, livestock)	
Dwelling Present?: □	Yes ☐ No If yes, year dwelling built	Owners Name
Date of Land Purchase		Roll Number
and the second s	and the state of t	Total Acreage:
	ace is needed please attach a separate sh	
D. All Applications: P	Previous Use of the Property	Existing Farm Type:
1. Has there been an i	ndustrial or commercial use on the subject la	ands or adjacent
If yes, specify the us	ses (for example: gas station, or petroleum s	torage):
ingeneral eric i septembre i septembre kantalis per pri e trap en material e i se e	astronomica e en e	Portes a Mante. Post Number
man in the contract of the second of the sec		Total Agreage
2. Is there reason to b	elieve the subject lands may have been conf	taminated by former
uses on the site or	adjacent sites?□ Yes ☒ No □ Unknown	Existing Farm Type



4. If you answered yes to any of the above questions in Section D, a previous inventory showing all known former uses of the subject lands, or if appropri- adjacent lands, is needed. Is the previous use inventory attached?   Yes		
Ε.	All Applications: Provincial Policy	
1.	Is the requested amendment consistent with the provincial policy statements issued under subsection 3(1) of the <i>Planning Act, R.S.O. 1990, c. P. 13?</i> ★ Yes □ No	
	If no, please explain:    Internal Inspiration Colors   C	
2.	It is owner's responsibility to be aware of and comply with all relevant federal or provincial legislation, municipal by-laws or other agency approvals, including the Endangered Species Act, 2007. Have the subject lands been screened to ensure that development or site alteration will not have any impact on the habitat for endangered or threatened species further to the provincial policy statement subsection 2.1.7?  Yes  No	
	Rehabilitated mine subject lands on CI within 500 meters — distance careans beautiful and stance careans beautiful and mine site.  CI On the subject tands on CI within 500 meters — distance careans — 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
3.	Have the subject lands been screened to ensure that development or site alteration will not have any impact on source water protection?   Yes No	
	Note: If in an area of source water Wellhead Protection Area (WHPA) A, B or C please attach relevant information and approved mitigation measures from the Risk Manager Official.	
	Erosion  Cl. On the subject lands or Cl within 500 meters - distance	
	Abandoned gas wetts.  ☐ On the subject lands or ☐ within 500 meters – distance	



All Applications: Are any of the following uses or features on the subject lands or within 500 metres of the subject lands, unless otherwise specified? Please check boxes, if applicable.	
Livestock facility or stockyard (submit MDS Calculation with application)	
☐ On the subject lands or ☐ within 500 meters – distance	
Wooded area  ☐ On the subject lands or ☐ within 500 meters – distance	
Municipal Landfill  ☐ On the subject lands or ☐ within 500 meters – distance	
Sewage treatment plant or waste stabilization plant  On the subject lands or within 500 meters – distance dista	
Provincially significant wetland (class 1, 2 or 3) or other environmental feature  ☐ On the subject lands or ☑ within 500 meters – distance	>
Floodplain ☐ On the subject lands or ☐ within 500 meters – distance ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
Rehabilitated mine site  ☐ On the subject lands or ☐ within 500 meters – distance	
Non-operating mine site within one kilometre  ☐ On the subject lands or ☐ within 500 meters – distance	N. T.
Active mine site within one kilometre person dosque you even for life.  ☐ On the subject lands or ☐ within 500 meters – distance	
Industrial or commercial use (specify the use(s))  ☐ On the subject lands or ☐ within 500 meters – distance	
Active railway line ☐ On the subject lands or ☐ within 500 meters – distance	
Seasonal wetness of lands  ☐ On the subject lands or ☐ within 500 meters – distance	
Erosion  ☐ On the subject lands or ☐ within 500 meters – distance	
Abandoned gas wells  ☐ On the subject lands or ☐ within 500 meters – distance	



F.	All Applications: Servicing and Access						
1.	Indicate what services are available or proposed:  Water Supply						
	☐ Individual wells exponentiants of any charges a		Other (describe below)				
		Maria	intern ni sinomerosem IIA				
			<ol> <li>Existing and proposed easier Parking space totals — inquite</li> </ol>				
	Municipal sewers Application for the prabase		Communal system				
	☐ Septic tank and tile bed in good working order	1 dec	A TARREST AND AND AND AND AND A STATE OF A S				
	Storm Drainage the Attentional Freedom of Inform	ai o	3. A. Namés of adjacent streets				
	Storm sewers	8 10	Open ditches				
			in addition, the following addition in a particular particular may also be required as particular in the control of the contro				
2.	Existing or proposed access to subject lands:						
	fogical Review bear laqioinuM 🗷		경 <u>에</u> 불발되었다. [편] 하는 [편] 하는 [편] 이 보고 있다면 하는데				
			Other (describe below)				
	Name of road/street:	ri Si	Record of Site Condition <sup>© 16</sup>				
P¥	also be dependent on Ministry of Environment.						
G.	All Applications: Other Information and await						
1.	Does the application involve a local business? ☐ Yes ☒ No						
	If yes, how many people are employed on the subject lands?						
2.	Is there any other information that you think may be application? If so, explain below or attach on a se						
			and the second s				
	who is accommode, in marriaged that any Continuous of the Boats	energy (	er of the control of				



H. Supporting Material to be submitted by Applicant	E. All Applications? Servicing
In order for your application to be considered complete, f paper copies as directed by the planner) and an <b>electror</b> <b>plan drawings, additional plans, studies and reports</b> not limited to the following details:	will be required, including but
<ol> <li>Concept/Layout Plan</li> <li>All measurements in metric</li> </ol>	☐ Individual wells
<ul><li>3. Existing and proposed easements and right of ways</li><li>4. Parking space totals – required and proposed</li></ul>	Sewage Transment
5. All dimensions of the subject lands	Municipal sewera purcus
6. Dimensions and setbacks of all buildings and structu	
<ol> <li>Location and setbacks of septic system and well from lines, and all existing and proposed structures</li> </ol>	m all existing and proposed lot
8. Names of adjacent streets	Storm Drainage
9. Natural features, watercourses and trees	Annual State of the Control of the C
In addition, the following additional plans, studies and rep to, may also be required as part of the complete applicati	
☐ On-Site Sewage Disposal System Evaluation Form (to about toeidus of a Environmental Impact Study	verify location and condition)
and the second of the second o	Z Municipal road earns
☐ Geotechnical Study / Hydrogeological Review	
☐ Minimum Distance Separation Schedule	Unopened road
☐ Record of Site Condition	Name of road/super.
Your development approval might also be dependent on I	Ministry of Environment
Conservation and Parks, Ministry of Transportation or oth provincial legislation, municipal by-laws or other agency a	
All final plans must include the owner's signature as a signature and seal.	
signature and seal. School peldus of no beyoldine e	If yes, now many people an

2. Is there any other information that you think may be useful in the review of this

application? If so, explain below or affach on a separate chap



#### I. Transfers, Easements and Postponement of Interest

The owner acknowledges and agrees that if required it is their solicitor's responsibility on behalf of the owner for the registration of all transfer(s) of land to the County, and/or transfer(s) of easement in favour of the County and/or utilities. Also, the owner further acknowledges and agrees that it is their solicitor's responsibility on behalf of the owner for the registration of postponements of any charges in favour of the County.

#### **Permission to Enter Subject Lands**

Permission is hereby granted to Norfolk County officers, employees or agents, to enter the premises subject to this application for the purposes of making inspections associated with this application, during normal and reasonable working hours.

#### Freedom of Information

I authorize and consent to the use by or the	m of Information and Protection of Privacy Act, he disclosure to any person or public body any hority of the Planning Act, R.S.O. 1990, c. P. blication.
- ( <del>)</del>	Oct. 17/24
Owner/Applicant/Agent Signature	A Commission of the Commission Date
J. Owner's Authorization	
If the applicant/agent is not the registered application, the owner must complete the	owner of the lands that is the subject of this authorization set out below.
I/Welands that is the subject of this application	am/are the registered owner(s) of the
I/We authorize	Harri 귀하다 : : (10.1 ) 1.1 (10.1 ) (10.2 ) (10.2 ) (10.2 ) (10.2 ) (10.2 ) (10.2 ) (10.2 ) (10.2 ) (10.2 ) (10.2 ) (10.2 ) (10.2 ) (10.2 ) (10.2 ) (10.2 ) (10.2 ) (10.2 ) (10.2 )
Owner	Date

\*Note: If property is owned by an Ontario Ltd. Corporation, Articles of Incorporation are required to be attached to the application.

Owner

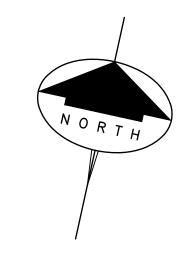


Date

K. Declaration 1, teter Ligari o	f Paris
solemnly declare that:	
all of the above statements and the statements are true and I make the believing it to be true and knowing that it is under oath and by virtue of <i>The Canada Events</i>	is solemn declaration conscientiously of the same force and effect as if made
Declared before me at:  the town of Peris	
In the Country of Brent	Owner/Applicant/Agent Signature
This 18 day of October	
A.D., 20 <u>24</u>	Spencer Pluck A Commissioner, etc., County of Brant, While Deputy Clerk of the County of Brant.



A Commissioner, etc.



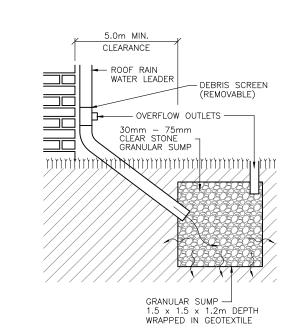


**KEY PLAN:** 

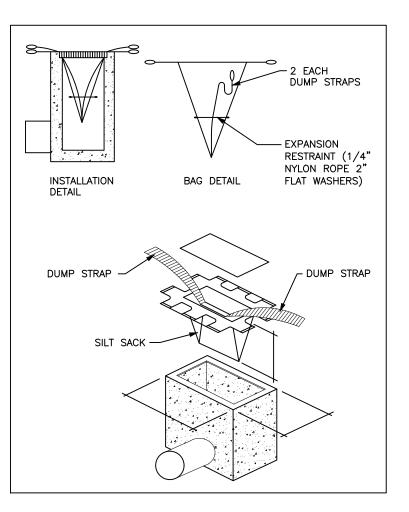
## INDIVIDUAL UNIT SITE STATISTICS

ITEM	LOT 1	LOT 2	LOT 3	LOT 4	ZONING BYLAW REQUIREMENTS
ZONING CATEGORY		R2 (REZONED	FROM R1-A)		R2
LOT AREA (sq. m.)	 492.8	357.7 – –	357.7 – –	357.7 – –	255.0 MIN. (INTERIOR) 345.0 MIN. (CORNER)
LOT FRONTAGE (m)	 12.25	8.85 	8.85 	8.85 	8.50 MIN. (INTERIOR) 11.50 MIN. (CORNER)
FRONT YARD (m)	6.00	6.09	6.00	6.09	6.00 MIN.
EXTERIOR SIDE YARD (m)	4.57**				6.00 MIN.
INTERIOR SIDE YARD (m)		1.23	1.23	1.23	1.20 MIN.
REAR YARD (m)	17.56	17.48	17.58	17.49	7.50 MIN.
PERCENTAGE OF FRONT YARD LANDSCAPED	72.8%	62.2%	62.9%	63.0%	50% MIN.
BUILDING HEIGHT (m)					11.00 MIN.

<sup>\*\*</sup> ITEM REQUIRES A MINOR VARIANCE

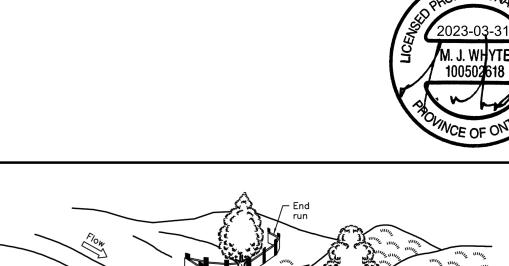


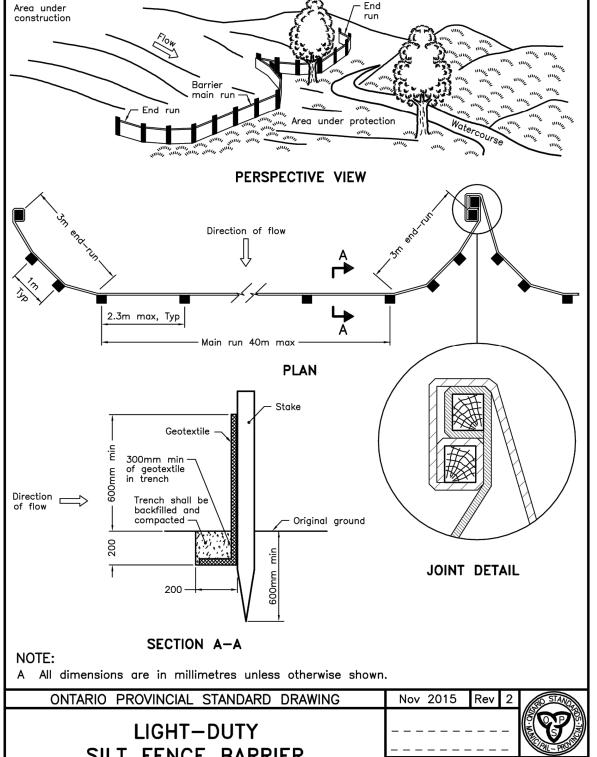




SILT SACK DETAIL

N.T.S.





OPSD 219.110

SILT FENCE BARRIER

THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND ABOVEGROUND UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE COMMENCING WORK, THE CONTRACTOR SHALL FAMILIARIZE HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

## **LEGEND:**

EXISTING ELEVATIONS 200.00 PROPOSED ELEVATIONS PROPOSED SWALE ELEVATIONS PROPOSED SWALE

SILT SACK AS SHOWN EX. TREES TO REMAIN

EX. TREES TO BE REMOVED PROPOSED DOWNSPOUT c/w

LIMIT OF S.W.M. POND (100 Yr. EVENT) MAX. POND ELEVATION ÀS NOTED

CONCRETE SPLASH PAD

<-O RWL

1. ALL ELEVATIONS SHOWN ARE METRIC.

- 2. BUILDER/OWNER TO VERIFY COMPLIANCE WITH ZONING BYLAWS (ie. SIDEYARDS, SETBACKS, REARYARDS ETC.)
- WHERE ONLY ONE ELEVATION IS SHOWN, EXISTING AND PROPOSED ELEVATIONS ARE THE SAME.
- I. THE SILTATION & EROSION CONTROL (SEC) MEASURES ILLUSTRATED ON THIS PLAN ARE CONSIDERED TO BE THE MINIMUM REQUIREMENT. SITE CONDITIONS MAY REQUIRE ADDITIONAL MEASURES WHICH WILL BE IDENTIFIED BY THE ENGINEER DURING CONSTRUCTION.
- ALL SEC MEASURES ARE TO BE IN PLACE PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- OWNER/CONTRACTOR TO MAINTAIN EROSION CONTROL MEASURES THROUGHOUT SITE UNTIL A COMPLETE GRASS/VEGETATION COVER IS ACHIEVED.
- ONLY AT THE DIRECTION OF THE ENGINEER ARE THE SEC MEASURES TO BE REMOVED.
- ALL EXPOSED AREAS NOT SUBJECT TO ACTIVE CONSTRUCTION WITHIN 30 DAYS ARE TO BE REVEGETATED AS PER 0.P.S.S. 572 IMMEDIATELY UPON COMPLETION OF AREA GRADING.
- . CONTRACTOR TO PROVIDE SILT FENCE AROUND PERIMETER OF ALL ON SITE STOCKPILES.
- 10. CONTRACTOR TO PROVIDE SILT SACKS ON TOP OF ALL EXISTING AND PROPOSED STORM STRUCTURES WITHIN THE INFLUENCE OF RUNOFF DURING CONSTRUCTION UNTIL ADEQUATE VEGETATIVE
- PROVIDE (2)—REAR YARD SOAK—AWAY PITS PER BUILDING AS SHOWN.

COVER IS ACHIEVED.

	WOC	D STA	UTIL	ELEV. Ity pole				•	GEO) LAKE
ĺ									
	NO.			REVISION	1			ATE DD/YY)	BY



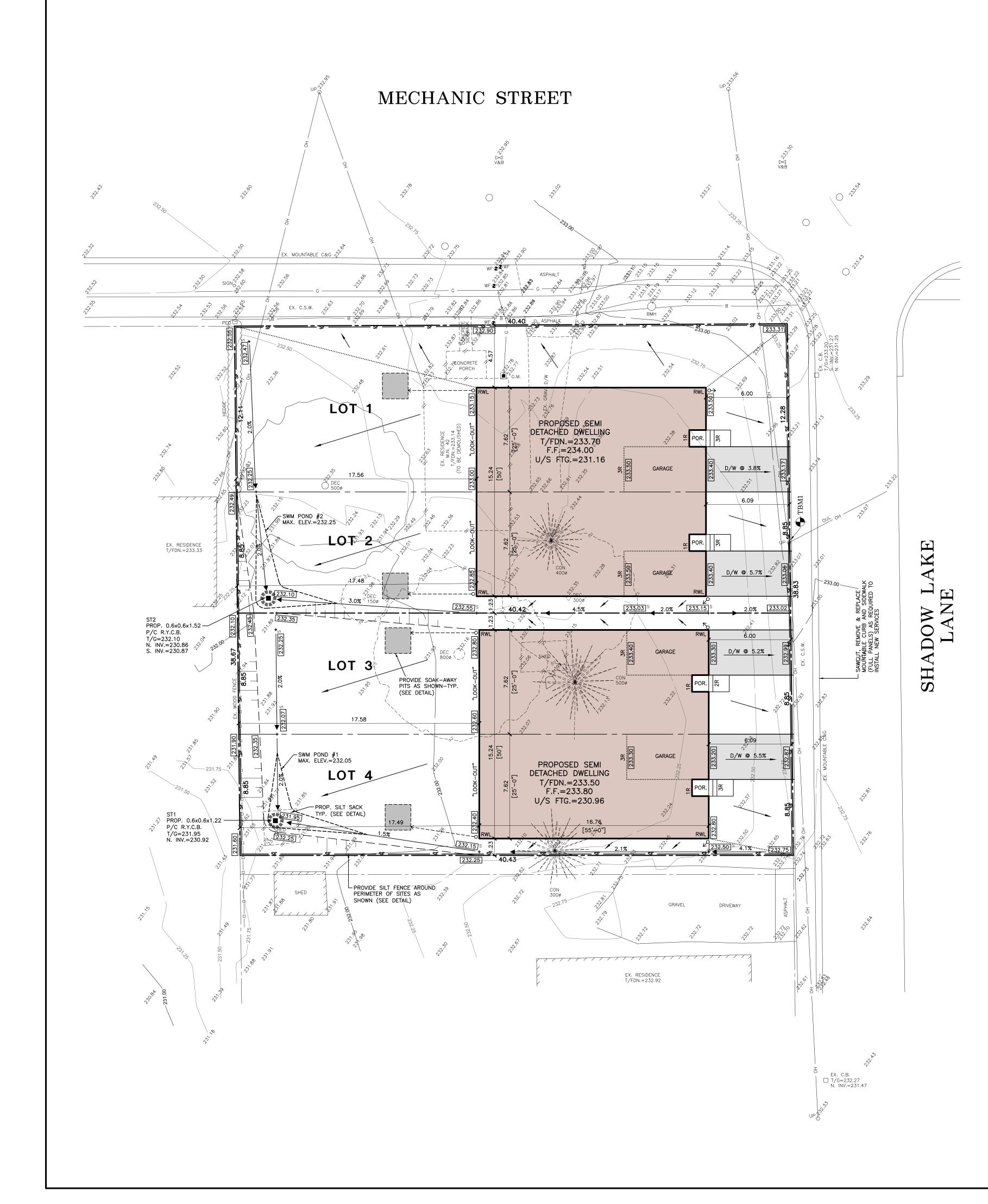
440 HARDY ROAD , UNIT #1 , BRANTFORD - ONTARIO , N3T 5L8

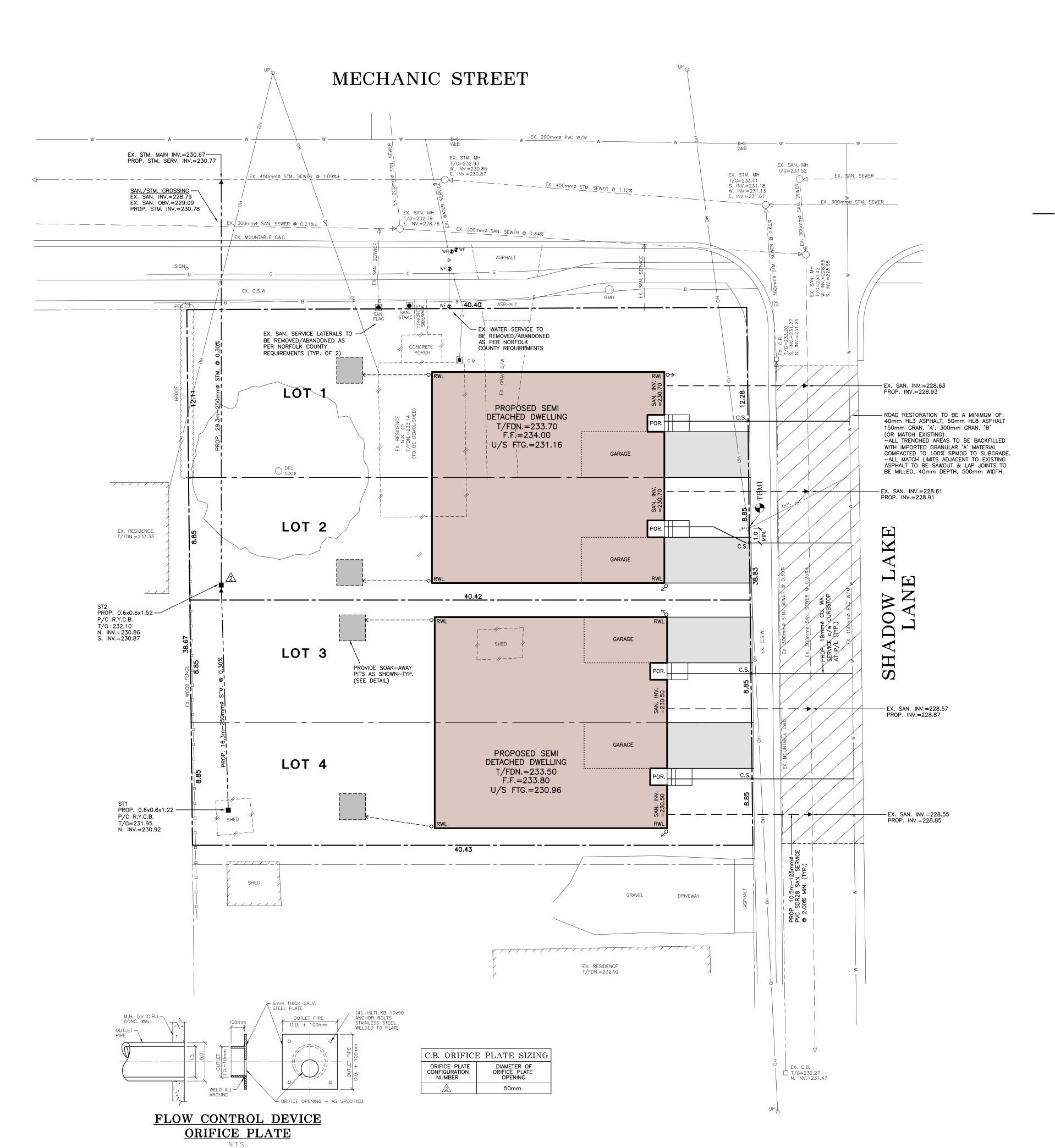
PROPOSED SEMI DETACHED DWELLINGS LOTS 2, 3 & 4 BLOCK 5, R.P. 19B M.N. 42 MECHANIC STREET NORFOLK COUNTY

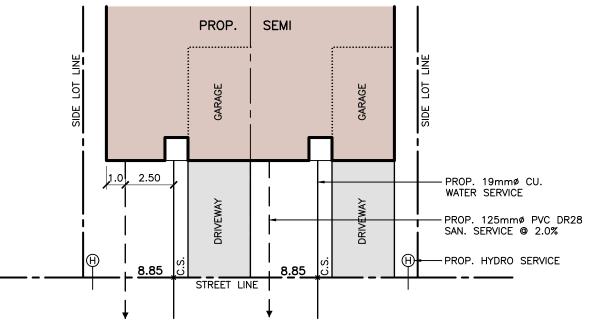
LUBELLA HOMES

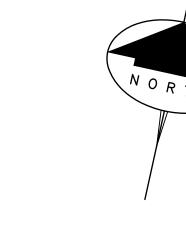
## GRADING & SILTATION AND EROSION CONTROL PLAN

	031011 00	DIVINOL I LAIV
DESIGN:	M.J.W.	SCALE: 1:150
DRAWN:	K.P.B.	JOB No:
CHECKED:	M.J.W.	15373
SHEET:	1 of 2	DWG. No:
DATE:	MAR. 28/23	15373-1









## TYPICAL LOT SERVICING

## **GENERAL NOTES:**

- CONSTRUCTION OF SEWERS, WATERMAINS AND RELATED APPURTENANCES SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE CURRENT STANDARD DRAWINGS OF THE COUNTY OF NORFOLK, AND THE ONTARIO PROVINCIAL STANDARDS DRAWINGS (OPSD). THE COUNTY OF NORFOLK DRAWINGS SHALL TAKE PRECEDENCE OVER THE OPSD DRAWINGS.
- INFORMATION REGARDING ANY EXISTING SERVICES AND/OR UTILITIES SHOWN ON THE APPROVED SET OF CONSTRUCTION DRAWINGS IS FURNISHED AS THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL INTERPRET THIS INFORMATION AS THEY SEE FIT WITH THE UNDERSTANDING THAT THE OWNER AND HIS AGENTS DISCLAIM ALL RESPONSIBILITY FOR ITS ACCURACY AND/OR SUFFICIENCY.
- 3. ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION AND HE SHALL REPORT ANY DISCREPANCIES IMMEDIATELY
- 4. RELOCATION OF EXISTING SERVICES AND/OR UTILITIES SHALL BE CONSTRUCTED AS SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER.
- 5. THE CONTRACTOR SHALL OBTAIN ALL PERMITS FOR CONSTRUCTION.

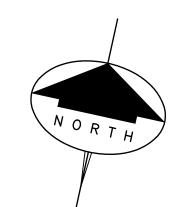
AND STANDARDS PRESCRIBED BY THE COUNTY.

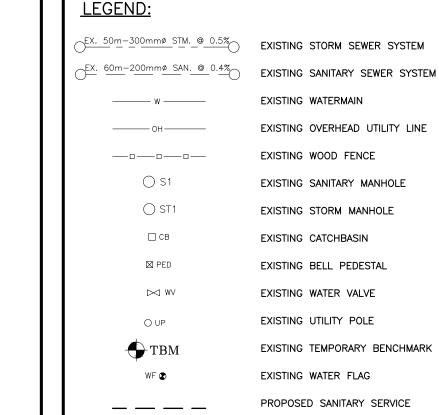
- 6. FOR ALL SEWERS AND WATERMAIN IN FILL SECTIONS, THE COMPACTION SHALL BE VERIFIED PRIOR TO LAYING OF PIPE.
- 7. NO SUBSTITUTIONS WILL BE ALLOWED WITHOUT WRITTEN APPROVAL FROM THE COUNTY OF NORFOLK OR THE ENGINEER.
- 8. ALL EXCAVATIONS TO BE BACKFILLED WITH SELECT NATIVE MATERIAL, APPROVED BY THE ENGINEER, TO 95% S.P.D.
- 9. THE DEVELOPER AND/OR CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING (UNTIL ROAD CONSTRUCTION IS FINISHED) SILT CONTROL DEVICES AS SHOWN ON THE DRAWINGS AND AS DIRECTED BY THE ENGINEER.
- 10. ALL WORKS SHALL BE DESIGNED AND CONSTRUCTED SO AS TO COMPLY WITH APPLICABLE LAW, TO BE CONSISTENT WITH THE COUNTY OF NORFOLK DEVELOPMENT & ENGINEERING STANDARDS AND IN ACCORDANCE WITH CURRENT GUIDELINES, CODES, REGULATIONS
- 11. ALL BOULEVARD AREAS TO BE RESTORED WITH #1 NURSERY SOD ON A MINIMUM 100mm OF
- 12. ALL TRENCH BACKFILL UNDER EXISTING ROADWAYS SHALL BE COMPACTED IN MINIMUM 230mm LIFTS TO 98% STANDARD PROCTOR DENSITY. A GEOTECHNICAL ENGINEER'S REPRESENTATIVE SHALL BE ON SITE DURING THE WORK TO VERIFY THE COMPACTION OF EACH LIFT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS OF RE-TESTING.
- 13. AN ENGINEER IS REQUIRED TO BE ONSITE FOR INSPECTION OF ALL UNDERGROUND SERVICES.
- 14. DRIVEWAYS MUST HAVE A MINIMUM 1.0m CLEARANCE FROM ALL UTILITIES SUCH AS FIRE
- 15. ALL WATER SERVICE CONNECTIONS 19mm DIA. ASTM B88 TYPE 'K' SOFT COPPER AS PER OPSD 1104.01 & COUNTY OF NORFOLK ENGINEERING STANDARDS, & INSTALLED IN ACCORDANCE WITH OPSD 802.110 TYPE 2. TRENCH BEDDING TO BE GRANULAR 'A'.
- 16. CURB STOPS TO BE MUELLER A-726 OR EQUIVALENT APPROVED BY THE COUNTY OF NORFOLK.
- 17. CATHODIC PROTECTION TO BE PROVIDED AT ALL VALVES, BENDS AND FITTINGS WITH 11.0 KG ZINC ANODES AND ON ALL WATER SERVICE CONNECTIONS WITH 5.5 KG ZINC ANODES.
- 18. WATER SERVICES TO BE INSTALLED WITH A MINIMUM COVER OF 1.70m BELOW FINISHED
- 19. LOT 2 WATER SERVICE INSTALLATION OF BE MIN. 1.0m FROM EXISTING UTILITY POLE.
- 20. ALL WATER SERVICES TO BE INSTALLED OVER EXISTING STORM SEWER. PROVIDE MINIMUM 1.70m COVER OVER AND MINIMUM SEPARATION TO EXISTING STORM SEWER. 21. NO WORK ON WATER SERVICES CAN TAKE PLACE WITHOUT SUPERVISION OF A LICENSED
- NORFOLK COUNTY OPERATOR ON SITE. 22. ALL APPLICABLE PERMITS ARE TO BE APPLIED FOR PRIOR TO THE INSTALLATION OF

## **SANITARY SEWERS:**

ANY SERVICES.

- SANITARY & STORM SEWERS & RELATED APPURTENANCES SHALL BE DESIGNED AND CONSTRUCTED SO AS TO COMPLY WITH APPLICABLE LAW, TO BE CONSISTENT WITH THE COUNTY OF NORFOLK DEVELOPMENT AND ENGINEERING STANDARDS AND IN ACCORDANCE WITH CURRENT GUIDELINES, CODES, REGULATIONS, BEST PRACTICES AND STANDARDS PRESCRIBED BY THE COUNTY.
- 2. COVER AND BEDDING MATERIAL FOR PVC PIPE AS PER OPSD 802.010 TYPE 2 TRENCH BEDDING SHALL BE GRANULAR 'A' MATERIAL UNLESS OTHERWISE INDICATED.
- 3. PVC PIPE WILL REQUIRE SPECIAL CONSTRUCTION PROCEDURES FOR LEAKAGE AND TESTING, PIPE DEFLECTION, ETC.
- 4. ALTERNATE MATERIALS MAY BE ACCEPTABLE, PROVIDED APPROVAL HAS FIRST BEEN OBTAINED FROM THE COUNTY OF NORFOLK AND ENGINEER IN WRITING.
- 5. ALL SEWER AND CULVERT INSTALLATIONS TO CONFORM WITH OPSD 802.031 TYPE 3 SOIL.
- 6. PRIVATE SANITARY DRAINS TO 125mmø PVC DR28 PIPE AND HAVE A MIN. GRADE OF 2.0%, AS PER NORFOLK COUNTY DESIGN CRITERIA.
- 7. A 38x89mm x 2.0m LONG MARKER IS TO BE PLACED FROM THE CAPPED LATERAL AND EXTEND 1.0m ABOVE GROUND AND PAINTED GREEN FOR SANITARY AND WHITE FOR STORM.
- BEDDING FOR PRIVATE SANITARY & STORM DRAINS AS PER OPSD 1006.02 TYPE 2 TRENCH WITH GRANULAR 'A' BEDDING AND COVER MATERIAL.
- 9. MINIMUM FALL FOR PRIVATE SANITARY & STORM DRAINS TO BE 2.0%
- 10. SANITARY SERVICES TO BE INSTALLED USING SERVICE SADDLES OR PRE-MANUFACTURED TEE APPROVED BY NORFOLK COUNTY. ALL CONNECTIONS TO SHALL CONFORM TO CURRENT





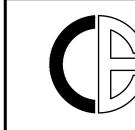
PROPOSED WATER SERVICE

PROPOSED DOWNSPOUT c/w CONCRETE SPLASH PAD

PROPOSED CATCHBASIN

THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND ABOVEGROUND UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE COMMENCING WORK. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

<u>T.E</u>	3.M.	No.	1	EL	EV.	=	233	3.54	m		((	GEO
		KE ON SHOWN.		LITY	POLE	ON	THE	WEST	SIDE	OF	SHADOW	' LAK
NO.				RE	EVISION	1				D (MM/	ATE 'DD/YY)	BY



J.H. COHOON **ENGINEERING** CONSULTING ENGINEERS

440 HARDY ROAD , UNIT #1 , BRANTFORD - ONTARIO , N3T 5L8 TEL. (519) 753-2656 FAX. (519) 753-4263 www.cohooneng.com

PROPOSED SEMI DETACHED DWELLINGS LOTS 2, 3 & 4 BLOCK 5, R.P. 19B M.N. 42 MECHANIC STREET NORFOLK COUNTY

LUBELLA HOMES

SERVICING PLAN

DESIGN:	M.J.W.	SCALE: 1:150
DRAWN:	K.P.B.	JOB No:
CHECKED:	M.J.W.	15373
SHEET:	2 of 2	DWG. No:
DATE:	MAR 28/23	15373-2

MAR. 28/23





## J.H. COHOON ENGINEERING LIMITED

#### **CONSULTING ENGINEERS**

December 26, 2022

Norfolk County Engineer Environmental and Infrastructure Services Division 185 Robinson St., Suite 200 Simcoe, Ontario N3Y 5L6

Attention:

Mr. Tim Dickhout

Project Manager, Development

Re:

Proposed Residential Development

MN 42 Mechanic Street Waterford, Ontario Norfolk County

Traffic Considerations

Dear Sir:

In response to request from the owner of the property, Mr. P. Ligori of Lubella Homes, our firm has reviewed the traffic impacts of the proposed development to be located at MN 42 Mechanic Street in Waterford, Ontario, Norfolk County.

In support of an application for re-zoning and for severance of the property, to create two semi-detached lots (4 units total) on the subject property, a traffic brief was requested as part of the pre-consultation notes. The proposed site development has been included within Appendix 'A' of this report.

#### Existing Transportation Network

The subject property is located on the west side of Shadow Lake Lane on the southwest corner of the intersection of Mechanic Street and Shadow Lake Lane in Waterford, Ontario. The attached aerial photograph and the key plan presented within Figure No. 1, illustrates the existing transportation network in the area.

The site is serviced with municipal sidewalks on the existing streets (Mechanic Street), adjacent to the property. These sidewalks provide the existing and proposed residences to have access to the walkable community that exists. The uses that are present in the area are consistent with a residential area of a small community. Our firm reached out to Norfolk County and determined that no existing traffic volumes were available for either Mechanic Street or Shadow Lake Lane.



The current zoning for the site is 'R1A' – Urban Residential Type 1 Zone Type A which is predominately a single-family residential zone. Additional land uses in the area are also residential with a scattering of 'R2' – Urban Residential Type 2 Zone and 'R3' – Urban Residential Type 3 Zone where both zones include additional units on a lot. The 'R2' and 'R3' zones are scattered throughout the area. A land use plan illustrating the existing land uses in the area has been included within Appendix 'B' of this report.



KEY PLAN:

Figure No. 1 Key Plan

#### **Development Proposal**

In consideration of the impacts of the traffic generated on the subject property and utilizing the ITE manual for trip generations during the peak hours, we have estimated the following trip generations for this site during the peak hours

#### Residential

Two Semi-Detached units (four units total)

= Approximately 0.6 trips per unit for the peak pm hour – this trip generation for single family homes is 1.0 and 0.6 for apartments. For the purpose of this analysis, a trip generation of 1.0 was utilized.

In this case, this would translate into about 4 peak hour trips relating to this site.

In review of the requirements for the typical TIS report, a full TIS is usually only required when the trip generation exceed 75 peak hour vehicles generated. As such, a traffic brief is being proposed in support of this application.

The site is anticipated to operate without any impacts to the existing road network. The addition of 4 peak hour trips associated with the development on Shadow Lake Lane and ultimately onto Mechanic Street would be considered insignificant for this area of the Town of Waterford. We have included the following information relating to this development.

#### **Parking**

The proposed parking on this site includes the construction of a surface parking area that is located on site either within the integral garage or a space in front of the garage. In total, the proposed development will have 2 parking spots per unit or 8 spaces to be constructed on the site. Within Norfolk County, the required parking space is to be 3.0m x 5.8m with the exception of the garage which is intended / required to be 3.3m in width (due to the presence of walls adjacent to the space) and 5.8m in length.

The Norfolk County Zoning Bylaw requires one (1) space per dwelling unit whereas two (2) spaces are proposed for this site.

It is our opinion that as a result of the incorporation of the 8 parking spaces is sufficient in this application. The proposed parking space as the site does not require any parking under the provisions of the current zoning bylaw.

The following memo has been subdivided into two sections: Existing Traffic Demand Management (TDM) Opportunities, and Proposed TDM Opportunities.

**Proposed TDM Opportunities** 

Walking: The site is intended to be pedestrian friendly in nature

with concrete sidewalk pedestrian walkways to the existing concrete sidewalks on Shadow Lake Lane

and Mechanic Street from the main entrances.

Parking: The parking on each site lot will have sufficient

parking to service the site.

With the inclusion of the TDM opportunities being undertaken are appropriate for the project's location. Our firm anticipates that the measures being implemented will allow for a much more accessible site making it easier for people to use alternative methods of transportation.

#### **Site Access**

The proposed site plan has been reviewed with consideration of access for all types of vehicles on this property.

In the review of the site plan in conjunction with the road network, the proposed driveway access locations are greater than 20m+ from the existing intersection at of Mechanic Street and Shadow Lake Lane. The location of the entrance would not have any impact on the operation of the municipal rights-of-way. Shadow Lake Lane is currently a dead-end street with only three (3) existing driveways

Fire protection for this development will be provided directly from the Shadow Lake Lane right-of-way to meet the requirements of the Ontario Building Code.

#### **Conclusions:**

The findings of our analysis of the site complete with considerations of the overall development are as follows:

- The development proposal to redevelop the subject property to allow for approximately two (2) semi-detached buildings (four (4) units total).
- The access to the site is intended to be a full movement driveway onto Shadow Lake Lane which is a dead-end street in Waterford, Ontario
- The development is going to generate only a maximum of 4 peak pm hour movements as a result of the increased development
- The anticipated increased traffic from the development would be considered insignificant as it relates to the overall capacity of existing infrastructure in the area.

I trust that this information will be sufficient to allow the re-zoning application to proceed.

Yours truly,

R.W. Phillips, P.Eng.

J.H. COHOON ENGINEES

c.c. Lubella Homes

## Appendix 'A'

J H Cohoon Engineering Limited – Site Development Plan Being drawing 15373-1



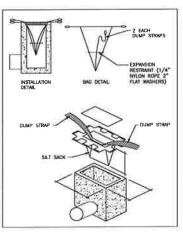


KEY\_PLAN:

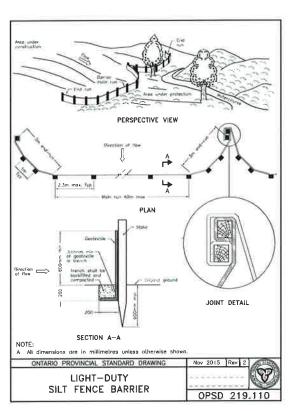
#### INDIVIDUAL UNIT SITE STATISTICS

<i>ПЕМ</i>	LOT 1	LOT 2	LOT 3	LOT 4	ZONING BYLAW REQUIREMENTS
ZONING CATEGORY		R2 (REZONED	FROM R1-A)		R2
LOT AREA (sq. m.)	492.8	357.7	357,7	357.7	255,0 MIN. (INTERIOR) 345,0 MIN. (CORNER)
LOT FRONTAGE (m)	12,25	8.85	8.85	8.85	8.50 MIN. (INTERIOR) 11.50 MIN. (CORNER)
FRONT YARD (m)	6,00	6.09	6.00	6.09	6,00 MIN.
EXTERIOR SIDE YARD (m)	4.57**	9.4	-		6.00 MIN.
INTERIOR SIDE YARD (m)		1,23	1.23	1.23	1.20 MIN.
REAR YARD (m)	17,56	17.48	17,58	17.49	7,50 MIN.
PERCENTAGE OF FRONT YARD LANDSCAPED	72.8%	62.2%	62,9%	63.0%	50% MIN.
BUILDING HEIGHT (m)	474		-		11,00 MIN.

<sup>\*\*</sup> ITEM REQUIRES A MINOR VARIANCE



SILT SACK DETAIL



THE POSTION OF POLE LINES, CONDUTS, WATERIANNS, SENERS AND OTHER UNDERFORUND AND ADDRESSED UNITED SAND STRUCTURES ARE NOT RECESSARILY SHOWN ON THE CONTRACT DRAWNIGS, AND WHERE SHOWN, THE ACQUIMACY OF THE POSTION OF SUCH UTLIES AND STRUCTURES IS NOT GLAWANTEZD, BED'EST OF SHOWN OF ALL SUCH UTLIES AND STRUCTURES OF THE POSTION OF ALL SUCH UTLIES AND STRUCTURES OF THE POST OF ALL SUCH UTLIES AND STRUCTURES.

#### LEGEND:

EXISTING ELEVATIONS

[200.00] PROPOSED ELEVATIONS

[200.00] PROPOSED SWALE ELEVATION

GENERAL DRAINAGE

— PROPOSED SILT FE

SILT SACK AS SHOWN

EX, TREES TO REMAIN

EX. TREES TO BE REMOVED

#### NOTES:

- ALL ELEVATIONS SHOWN ARE METI
- BUILDER/OWNER TO VERIFY COMPLIANCE WITH ZONING BYLAWS (io. SIDEYARDS, SETBACKS, REARYARDS ETC.)
- 3. WHERE ONLY ONE ELEVATION IS SHOWN, EXISTING AND PROPOSELEVATIONS ARE THE SAME.
- 4. THE SILTATION & EROSION CONTROL (SEC) MEASURES HLUSTRATED ON THIS PLAN ARE CONSIDERED TO BE THE MINIMUM REQUIREMENT. SITE CONDITIONS MAY REQUIRE
- 5. ALL SEC MEASURES ARE TO BE IN PLACE PRIOR TO COMMERCEMENT OF CONSTRUCTION.
- DWNER/CONTRACTOR TO MAINTAIN EROSON CONTROL MEASURES THROUGHOUT SITE UNTIL A COMPLETE GRASS/VECETATION COVER IS ACHIEVED.
- ONLY AT THE DIRECTION OF THE ENGINEER ARE THE SEC MEASURES TO BE REMOVED.
- ALL EXPOSED AREAS NOT SUBJECT TO ACTIVE CONSTRUCTION
  WITHIN 30 DAYS ARE TO BE REVEGETATED AS PER 0.P.S.S.
- CONTRACTOR TO PROVIDE SILT FENCE AROUND PERIMETER OF ALL ON SITE STOCKPILES.
- 10. CONTRACTOR TO PROVIDE SILT SACKS ON TOP OF ALL EXISTIN AND PROPOSED STORM STRUCTURES WITHIN THE INFLUENCE OF RUNOFF DURING CONSTRUCTION UNTIL ADEQUATE VEGETATIVE

WDDD STAKE	ON WHILITY POLE BY THE Y	WEST SOE BY SHADOW
	777.0	
_		
NO.	REVISION	DATE (MM/DD/YY)



J.H. COHOON
ENGINEERING
LIMITED
CONSULTING ENGINEERS

440 HARDY ROAD , UNIT #1 , BRANTFORD — ONTARIO , N3T 5LB TEL (519) 753-2856 FAX (519) 753-4283 www.cohooneng.com

PROJECT:

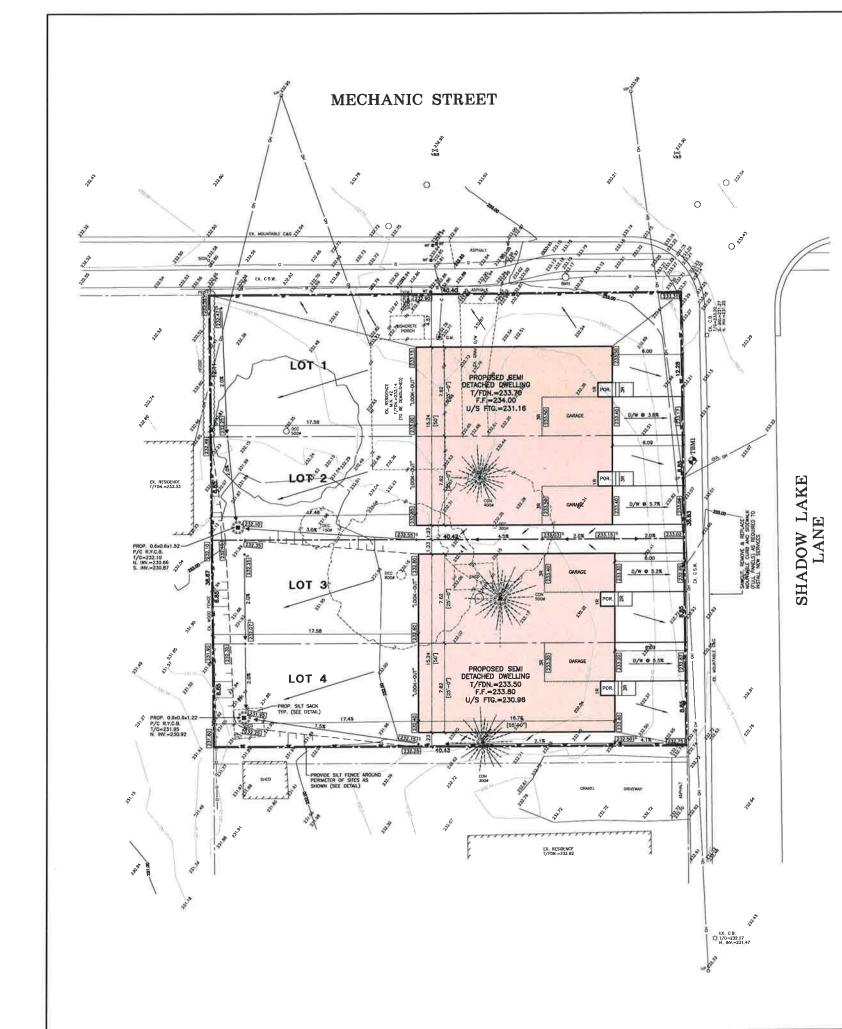
PROPOSED RESIDENCES LOTS 2, 3 & 4 BLOCK 5, R.P. 19B M.N. 42 MECHANIC STREET

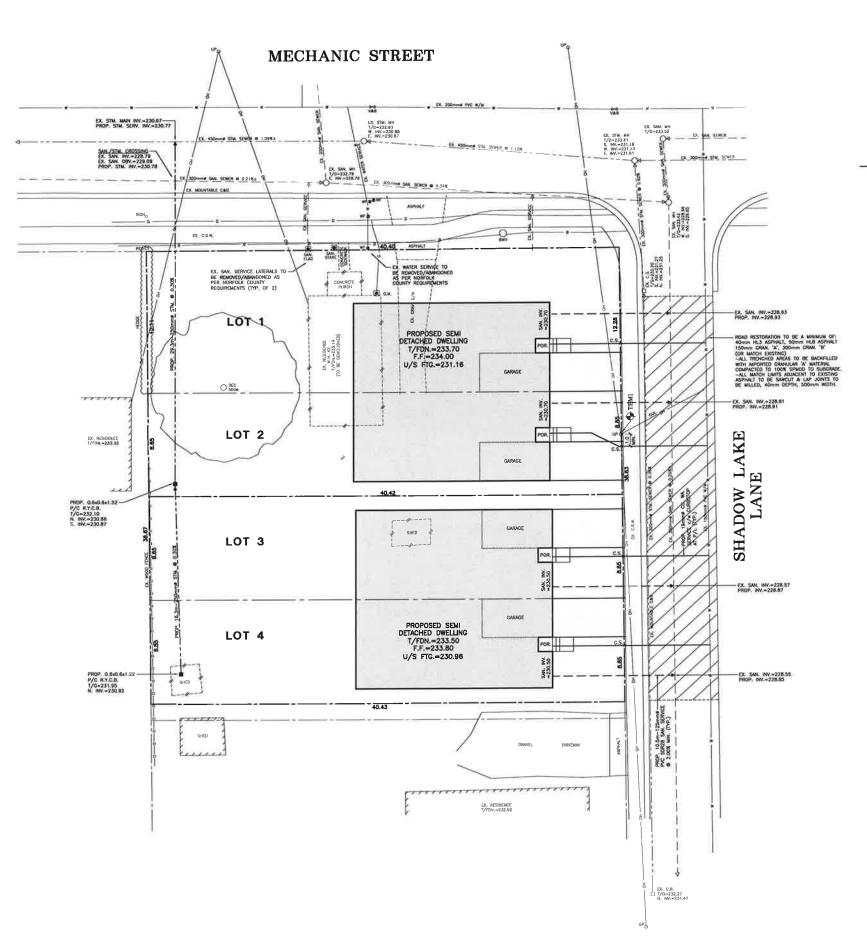
M.N. 42 MECHANIC STRE NORFOLK COUNTY

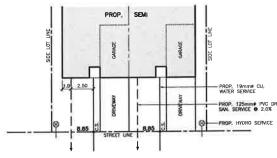
LUBELLA HOMES

GRADING & SILTATION AND EROSION CONTROL PLAN

DESIGN:	M.J.W.	SCALE: 1:150
DRAWN:	K.P.B.	JOB No:
CHECKEO:	M.J.W.	15373
SHEET:	1 of 2	OWG. No
DATE:	DEC. 28/22	15373-1









#### TYPICAL LOT SERVICING

#### GENERAL NOTES:

- CONSTRUCTION OF SEMERS, MATERIAANS AND RELATED APPURITEMANCES SHALL BE UNDERTRACEN IN ACCORDANCE WITH THE CURRENT STANDARD DRAWNOS OF THE COUNTY OF NOMFOLK, AND THE ONTARIO PROVINCIAL STANDARDS DRAWNOS (OPSU). THE COUNT OF NOMFOLK ORDAWNOS SHALL TAKE PRECEDENCE OVER THE OPSU DIMENNOS.
- INFORMATION RECARDING ANY EXISTING SERVICES AND/OR UTILITIES SHOWN ON THE APPROVED SET OF CONSTRUCTION DRAWNINGS IS FURNISHED AS THE BEST ANALABLE. INFORMATION. THE CONTRACTOR SHALL INTERPRET THIS INFORMATION AS THEY SEE WITH THE UNDERSTANDING THAT THE OWNER AND HIS AGENTS DISCLAIM ALL RESPONSIBILITY FOR ITS ACCUPACY AND/OR SUPPRESENCY.
- ALL DIMENSIONS SHALL BE CHECKED AND VERHIFED IN THE FIELD BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION AND HE SHALL REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ENGINEER,
- RELOCATION OF EXISTING SERVICES AND/OR UTILITIES SHALL BE CONSTRUCTED AS SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER.
- 5. THE CONTRACTOR SHALL OBTAIN ALL PERMITS FOR CONSTRUCTION
- 8) FOR ALL SEWERS AND WATERMAIN IN FILL SECTIONS, THE COMPACTION SHALL BE VERIFIED PRIOR TO LAYING OF PIPE.
- 7. NO SUBSTITUTIONS WILL BE ALLOWED WITHOUT WRITTEN APPROVAL FROM THE COUNTY OF NORFOLK OR THE ENGINEER.
- 8. ALL EXCAVATIONS TO BE BACKFILLED WITH SELECT NATIVE MATERIAL APPROVED BY THE ENGINEER, TO 95% S.P.D.
- THE DEVELOPER AND/OR CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING (UNTIL ROAD CONSTRUCTION IS FRISHED) SIXT CONTROL DEVICES AS SHOWN ON THE DRAWNESS AND AS DREECED BY THE ENGINEER.
- ALL WORKS SHALL BE DESCRED AND CONSTRUCTED SO AS TO COMPLY WITH APPLICABLE LAW, TO BE CONSISTENT WITH THE COUNTY OF ROPPOLA DEVELOPMENT & ENGREENING STANDARDS AND IN ACCORDANCE WITH CURRENT GUIDELINES, COOKS, REGULATIONS AND STANDARDS PRESCRIBED BY THE COUNTY.
- 11. ALL BOULEVARD AREAS TO BE RESTORED WITH #1 NURSERY SOD ON A MINIMUM 100mm OF SELECT TOPSOIL.
- 12. ALL TRENCH INCIFIL UNDER EXISTING ROMOMAYS SHALL BE COMPACTED IN MINIMUM 230mm LITE: TO BES STRANDARD PROCERS DENSITY. A GOTTICONNEAL EXEMITER'S REPRESENTATIVE SHALL BE ON SITE QUARKS THE WORK TO VERBET THE COMPACTION OF EACH LIFT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS OF RE-TESTING.
- 13. AN ENGINEER IS REQUIRED TO BE ONSITE FOR INSPECTION OF ALL UNDERGROUND SERVICES
- 14. DINCHAYS MUST HAVE A MINIMUM 1.0m CLEANANCE FROM ALL UTLITIES SUCH AS FIRE HYDRANT, STREETLIGHT POLES, TRANSFORMERS, CANADA POST COMMUNITY MALBOX LOCATIONS, ETC.
- ALL WATER SERVICE CONVECTIONS 19 mm DIA. ASTM 888 TYPE 'K' SDFT COPPER AS PER OPSO 1104-01 & COUNTY OF NORTOLK BLOOKEERING STAMBARDS, & INSTALLED IN ACCORDANCE WITH OPSO 802.110 TYPE Z. TREACH BEDDING TO BE GRANLARA' 'X'.
- 18. CURB STOPS TO BE MUELLER A-728 OR EQUIVALENT APPROVED BY THE COUNTY OF NORFOLK
- 17. CATHODIC PROTECTION TO BE PROMOTED AT ALL WALVES, BENDS AND FITTINGS WITH 11.0 KG
- 18 WATER SERVICES TO BE INSTALLED WITH A MINIMUM COVER OF 1,70m BELOW FINISHED
- 20. ALL WATER SERVICES TO BE INSTALLED OVER EXISTING STORM SEWER. PROVIDE MINIMUM 1,70m COVER OVER AND MINIMUM SEPARATION TO EXISTING STORM SEWER.
- 21. NO WORK ON WATER SERVICES CAN TAKE PLACE WITHOUT SUPERVISION OF A LICENSED NORFOLK COUNTY OPERATOR ON SITE
- 22. ALL APPLICABLE PERMITS ARE TO BE APPLIED FOR PRIOR TO THE INSTALLATION OF ANY SERVICES.

#### SANITARY SEWERS:

- SANITARY & STORM SEWERS & RELATED APPURTENANCES SHALL BE DESIGNED AND CONSTRUCTED SO AS TO COMPLY WITH APPLICABLE LAW, TO BE CONSISTENT WITH THE COUNTY OF ROPIGOLA (DEVLICABLENT AND E ROMERING STANDARDS AND IN ACCORDANCE CURRENT GUIDELINES, CODES, REGULATIONS, BEST PRACTICES AND STANDARDS PRESCRIE BY THE COUNTY.
- COWER AND DEDDING MATERIAL FOR PVC PIPE AS PER OPSD 802.010 TIPE 2 TRENCH BEDDING SHALL BE GUANULAR 'A' MATERIAL UNLESS OTHERWISE INDICATED.
- 3. PVC PIPE WILL REQUIRE SPECIAL CONSTRUCTION PROCEDURES FOR LEAKAGE AND TESTING, PIPE DEFLECTION, ETC.
- ALTERNATE MATERIALS MAY BE ACCEPTABLE, PROVIDED APPROVAL HAS FIRST BEEN OFTAINED FROM THE COUNTY OF NORFOLK AND ENGINEER IN WRITING.
- 5. ALL SEWER AND CULVERT INSTALLATIONS TO CONFORM WITH OPSD 802,031 TYPE 3 SOIL
- PRIVATE SANITARY DRAINS TO 125mm# PVC DR28 PIPE AND HAVE A MIN, GRADE OF 2.0%, AS PER NORFOLK COUNTY DESIGN CRITERIA.
- 7. A 38x89mm x 2.0m LONG MARKER IS TO BE PLACED FROM THE CAPPED LATERAL AND EXTEND 1.0m ARXIV. GROUND AND PAINTED GREEN FOR SANITARY AND WHITE FOR STORM.
- 8. BEDDING FOR PRIVATE SANITARY & STORM DRAINS AS PER OPSD 1006.02 TYPE 2 TRENCH WITH GRANULAR 'A' BEDDING AND COVER MATERIAL.
- 9 MINIMUM FALL FOR PRIVATE SANITARY & STORM DRAINS TO BE 2.0%
- SANITARY STRUCES TO BE INSTALLED USING SERVICE SADDLES OR PRE-MANUFACTURED TEE APPROADS BY NORFOLK COUNTY. ALL CONNECTIONS TO SHALL CONFORM TO CURRENT OPEN TOOS-010 AND OPES 410.

#### LEGEND:

EX 50m-300mm# STV 0 0.5% DOSTING STORM SEMER SYSTEM EX. 60m-200mm SAN. 0 0.4% DUSTING SANITARY SEWER SYSTE O S1 O STI □ C8 FXISTING CATCHRASIN DUSTING BELL PEDESTAL EXISTING WATER VALVE Que EXISTING UTILITY POLE **⊕** ТВМ WF @ EXISTING WATER FLAG c.s.

T.B.M.	No. 1 ELEV. = 233.	<b>54m</b> (G	EO)
WOOD STAN	KE ON UTILITY POLE ON THE WI HOWN	EST SIDE OF SHADOW	LAKE
٨٥,	REVISION	DATE (WW/DD/YY)	BY



J.H. COHOON **ENGINEERING** LIMITED CONSULTING ENGINEERS

440 HARDY ROAD , UNIT ∮1 , BRANTFORD - ONTARIO , N3T 5LB TEL (519) 753-2858 FAX. (519) 753-4283 www.cohooneng.com

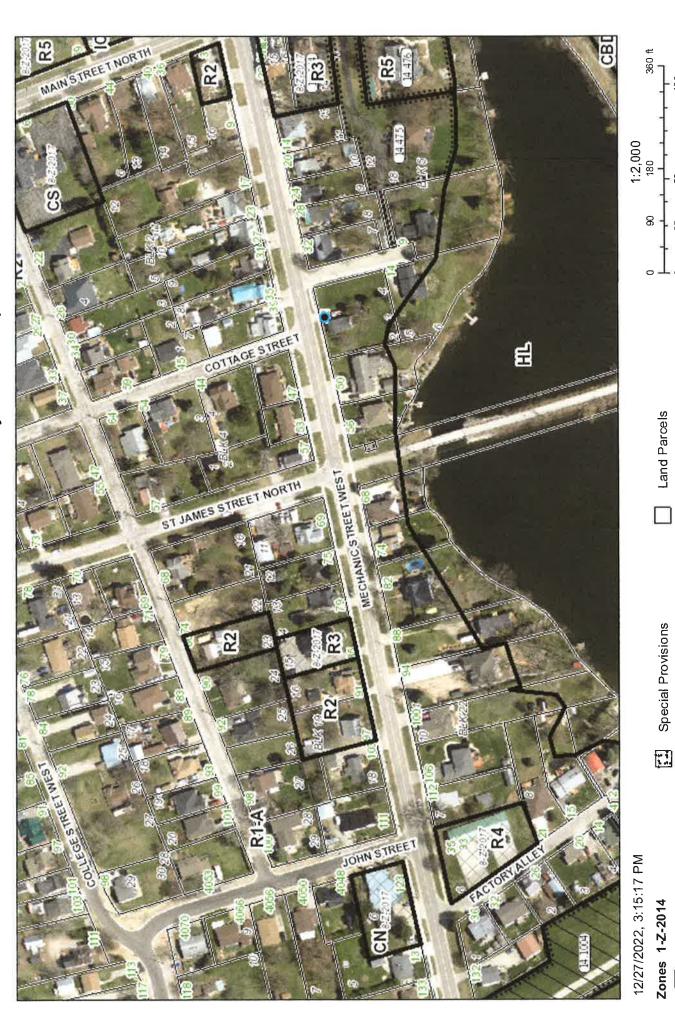
PROPOSED RESIDENCES LOTS 2, 3 & 4 BLOCK 5, R.P. 19B M.N. 42 MECHANIC STREET NORFOLK COUNTY

LUBELLA HOMES

SERVICING PLAN

DESIGN	M.J.W.	SCALE 1:150
DRAWN:	K.P.B.	J09 No:
CHECKED:	M.J.W.	15373
SHEET:	2 of 2	DWG. No.
DATE:	250 22 (20	1 15373-2

Appendix 'B'
Land Use Aerial Photo of Subject Area
Including zoning bylaw provisions for the Area



Norfalk GIS Norfalk County

100 m

Queen's Printer for Ontario Norfolk GIS

**Civic Address** 

Plan Lines

Lakeshore Erosion Prone Areas

Zone with Holding Provision

Zone

Site Plan Control

## 5.0 Residential Zones

#### 5.1 Urban Residential Type 1 Zone (R1)

#### 5.1.1 Permitted Uses

In an R1 *Zone*, no land, *building* or *structure* shall be used except in accordance with the following uses:

- a) dwelling, single detached
- b) bed & breakfast, subject to Subsection 3.4
- c) home occupation
- d) accessory residential dwelling unit, subject to Subsection 3.2.3.

#### 5.1.2 Zone Provisions

In an R1-A and R1-B *Zone*, no *building* or *structure* shall be *erected* or *altered* except in accordance with the provisions in the following *Zones*:

a)	Provision minimum lot area:	R1-A	R1-B
<b>-</b> - <i>y</i>	i) interior lot	450 square metres	360 square metres
	ii) corner lot	560 square metres	450 square metres
b)	minimum lot frontage:	•	_
,	i) interior lot	15 metres	12 metres
	ii) corner lot	18 metres	15 metres
c)	minimum front yard:	6 metres	6 metres
,	i) detached garage with rear	3 metres	3 metres
	lane		
d)	minimum exterior side yard:	6 metres	6 metres
e)	minimum interior side yard:		
	i) detached garage	3 metres&1.2 metres	3 metres&1.2 metres
	ii) detached garage with a rear <i>lane</i> ; attached garage	1.2 metres each side	1.2 metres each side
f)		7.5 metres	7.5 metres
٠.	v	11 metres	11 metres
0/	0 0	[8-Z-2017]	[8-Z-2017]
c) d)	minimum lot frontage: i) interior lot ii) corner lot minimum front yard: i) detached garage with rear lane minimum exterior side yard: minimum interior side yard: i) detached garage	15 metres 18 metres 6 metres 3 metres 6 metres 3 metres 1.2 metres 1.2 metres 1.1 metres 11 metres	12 metres 15 metres 6 metres 3 metres 6 metres 7.5 metres 11 metres

#### 5.1.3 Projection of an Attached Garage

The wall of an attached garage facing the *street* in an R1-B *Zone* shall project no more than 3.5 metres from the main front wall of the *dwelling*. This projection shall be measured from the wall of the garage facing the *front lot line* to the nearest structural element of the front wall of the *dwelling* facing the *front lot line*, including any covered porch which extends along the entire front wall of the *dwelling*, but excluding eaves, stairs or gutters.

This provision shall not apply where:

- the front wall of the *dwelling* and the wall of the attached garage containing the opening for vehicular access do not face the same *lot line*; or,
- b) the width of the attached garage is less than 60 percent of the width of the *dwelling*.

#### 5.2 Urban Residential Type 2 Zone (R2)

#### 5.2.1 Permitted Uses

In an R2 *Zone*, no land, *building* or *structure* shall be used except in accordance with the following uses:

- a) dwelling, single detached
- b) dwelling, semi-detached
- c) dwelling, duplex
- d) bed & breakfast, subject to Subsection 3.4
- e) day care nursery
- f) home occupation
- g) accessory residential dwelling unit, subject to Subsection 3.2.3.

#### 5.2.2 Zone Provisions for Semi-Detached and Duplex Dwellings

In an R2 *Zone*, no *building* or *structure* shall be *erected* or *altered* except in accordance with the provisions for each of the following uses:

,	Provision	Semi-detached (per unit)	Duplex Dwelling
a)	minimum lot area: i) interior lot	255 square metres	450 square metres
b)	ii) corner lot minimum lot frontage:	345 square metres	540 square metres
,	i) interior lot	8.5 metres	15 metres
	ii) corner lot	11.5 metres for the corner unit	18 metres
c)	minimum front yard:	6 metres	6 metres
,	i) except where a detached	3 metres	3 metres
	private garage or parking space		
1\	is accessed via a rear lane	Constant	( aluna
d) e)	minimum exterior side yard: minimum interior side yard:	6 metres	6 metres
	i) detached private garage or parking space accessed via front yard	3 metres	3 metres&1.2 metres
	ii) detached <i>private garage</i> or <i>parking space</i> accessed via a rear <i>lane</i>	1.2 metres	1.2 metres each side
	iii) attached private garage	1.2 metres	1.2 metres each side
f)	minimum rear yard:	7.5 metres	7.5 metres
g)	maximum building height:	11 metres	11 metres
		[8-Z-2017]	[8-Z-2017]

#### 5.2.3 Zone Provisions for all Other Permitted Uses

The provisions in the R1-B *Zone* shall apply to all other uses except a *home* occupation which shall be *permitted* in any *dwelling* within the R2 *Zone*.

#### 5.2.4 Mutual Side Lot Line for Semi-Detached Dwelling

On the mutual *side lot line* separating two (2) attached *semi-detached dwelling units*, no *interior side yard* is *required* where the walls are joined; where the walls are not joined, a 1.2 metre *side yard* shall be *required*.

#### 5.2.5 Projection of an Attached Garage

The wall of an attached garage facing the *street* in an R2 *Zone* shall project no more than 3.5 metres from the front wall of the *dwelling*. This projection shall be measured from the wall of the garage facing the *front lot line* to the nearest structural element of the front wall of the *dwelling* facing the *front lot line*, including any covered porch which extends along the entire front wall of the *dwelling*, but excluding eaves, stairs or gutters.

This provision shall not apply where:

- a) the front wall of the *dwelling* and the wall of the attached garage containing the opening for vehicular access do not face the same *lot line*;
- b) the width of the attached garage is less than 60 percent of the width of the *dwelling*; or,
- c) a duplex or single detached dwelling is located on a lot with a lot frontage of 15 metres or greater.

#### 5.3 <u>Urban Residential Type 3 Zone (R3)</u>

#### 5.3.1 Permitted Uses

In an R3 *Zone*, no land, *building* or *structure* shall be used except in accordance with the following uses:

- a) dwelling, single detached
- b) dwelling, semi-detached
- c) dwelling, duplex
- d) dwelling, tri-plex
- e) dwelling, four-plex
- f) boarding or lodging house
- g) bed & breakfast, subject to Subsection 3.4
- h) day care nursery
- i) home occupation
- j) accessory residential dwelling unit, subject to Subsection 3.2.3.

#### 5.3.2 Zone Provisions for Tri-plex, Four-plex, Boarding or Lodging House

In an R3 *Zone*, no *building* or *structure* shall be *erected* or *altered* except in accordance with the provisions for each of the following *dwelling* types:

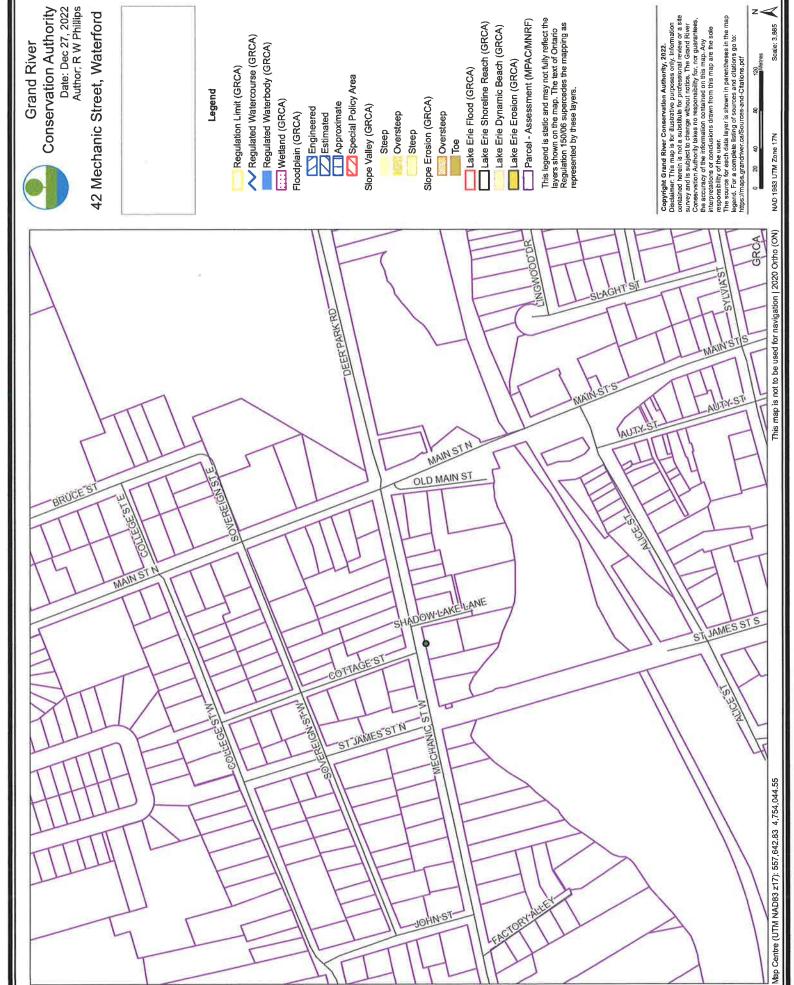
	Provision	Tri-plex	Four-plex	Boarding or Lodging House
a)	minimum lot area:			
,	i) interior lot	510 sq. m.	660 sq. m.	450 sq. m.
	ii) corner lot	600 sq. m.	765 sq. m.	540 sq. m.
b)	minimum lot frontage:			
,	i) interior lot	17 metres	19.5 metres	15 metres
	ii) corner lot	20 metres	22.5 metres	18 metres
c)	minimum front yard:	6 metres	6 metres	6 metres
d)	minimum exterior side yard:	6 metres	6 metres	6 metres
e)	minimum interior side yard:	3 metres&	3 metres	
·	-	1.2 metres		
	i) attached garage			1.2 metres
				each side
	ii) detached garage			3 metres&
				1.2 metres
f)	minimum rear yard:	12 metres	12 metres	12 metres
g)	minimum usable floor area:			8 sq. m. and
	for a boarding room			an additional
				6 sq. m. for
				each
				additional
				occupant
h)	maximum building height:	11 metres	11 metres	11 metres
		[8-Z-2017]	[8-Z-2017]	[8-Z-2017]

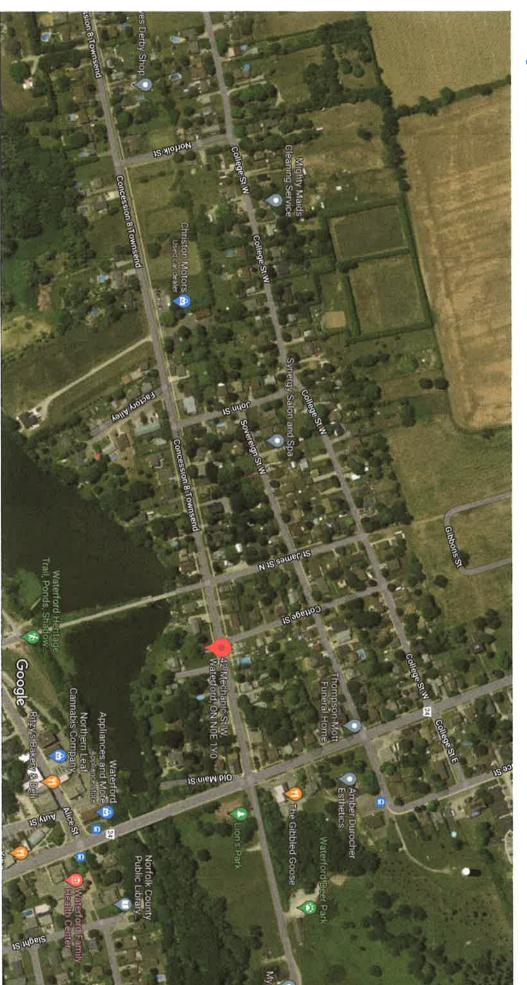
#### 5.3.3 Zone Provisions for all Other Permitted Uses

The provisions for the Urban Residential Type 2 (R2) Zone shall apply to all other uses except a home occupation which shall be permitted in any dwelling within the R3 Zone.

#### 5.3.4 Yard Exemption for a Boarding or Lodging House

Any existing single detached dwelling having any yard less than that required by this By-Law may be used as a boarding or lodging house provided any extension or addition to the dwelling house complies with the yard requirements.









# FUNCTIONAL SERVICING REPORT (Including Stormwater Management) PROPOSED RESIDENTIAL DEVELOPMENT

42 Mechanic Street Waterford, Ontario Norfolk County

Prepared for:

**Lubella Homes** 

Prepared By:

J.H. Cohoon Engineering Limited 440 Hardy Road, Unit 1 Brantford, Ontario N3T 5L8 Phone (519) 753-2656 Fax (519) 753-4263

March 2023

Our File No. 15373

#### 1.0 INTRODUCTION

The following Preliminary Servicing Report was prepared by J.H. Cohoon Engineering Limited for Lubella Homes in support of an application for approval of a proposed residential development on the site located on Mechanic Street, at the intersection of Shadow Lake Lane, in the Town of Waterford, Norfolk County. The site is presently used for a single family dwelling facing Mechanic Street. The subject property is legally known as "Lot 2, 3 and 4, Block 5, Registered Plan 19B, Norfolk County". The property is illustrated on the attached legal survey document in the following Appendix 'A'

The objective of this report is to document the preliminary servicing to be utilized for the site. Full services will be installed (i.e., sanitary, storm and water) within the development and connected to the existing municipal system in the existing municipal road allowance abutting the subject lot. The owner will assume full responsibility for the installation and maintenance of the services on the property.

#### 2.0 PROPOSED DEVELOPMENT CONCEPT

The proposed development is to be constructed on the lands identified above in the Town of Waterford, Norfolk County. The site proposed for the development as a residential single-family style of development which is approximately 0.15 hectares in size. A key map illustrating the site location is provided in Figure 1.

The development is intended to be severed into two parcels, each of which will contain a semi-detached dwelling, totaling to four residential units. The overall development proposal is illustrated on the plans prepared by J H Cohoon Engineering Limited being drawings 15373-1 and 15373-2, which have been included within Appendix 'B' of this report for reference.



Figure 1 - Key Plan (Google Maps)

#### 3.0 SANITARY SEWERS & APPURTENANCES

#### 3.1 Design Flows

This particular development is proposed to be fully connected to the municipal sanitary sewer system that is located on the abutting streets to the development. The site is presently connected to the sanitary sewer on Mechanic Street, however new services are proposed out to the sanitary sewer facilities in Shadow Lake Lane, therefore external works will be required to direct the flows into the sanitary sewer located to the east of the property on Shadow Lake Lane.

In accordance with the current Norfolk County requirements, the design flows have been provided within this report for consideration of the Norfolk County Public Works Department. The following information is being provided to the County of Norfolk for their use and consideration.

Sanitary Design Flows

#### Residential Component

4 Units (Proposed)

2.75 persons per unit (average)

The average daily flow the average daily flow is based upon 450 litres per person per day

 $450 \times 4 \times 2.75 = 4,950 \text{ litres per day}$ 

= 0.057 litres per second

Total Average Design Flow = 0.057 litres per second.

On the basis of the Harmon Peaking Factor, and a total population for this site being 11 persons, the peaking factor of 4.6 was applied resulting in a peak design flow for this site being 0.262 litres per second.

With the consideration of Infiltration on this site as follows:

Site Area = 0.15 hectares +/-

Infiltration Rate = 0.28 litres per second per hectare

Infiltration Allowance

= 0.042 litres per second

#### Summary of Results

Average Flow Rate (including Infiltration) = 0.099 litres per sec Peak Flow Rate (including infiltration) = 0.304 litres per sec

### 3.2 Sanitary Outlet

The sanitary sewer system for the subject development will be connected into the existing Sanitary Sewers near the site. Through the detailed design of this site, the conveyance of the sanitary flows to the existing sanitary sewer system will be undertaken. The analysis relating to the overall impact of this development on the receiving sanitary sewer system will be reviewed by the Norfolk County Public Works Department as part of this submission.

#### 4.0 WATERMAINS & APPURTENANCES

#### 4.0 Design Flows

The peak design flow rate from the proposed development using current Norfolk County Standards. As with the wastewater, the estimated average flows have been detailed with the Sanitary Sewer Section of this report. (Section 3.1 above). However, in this case, a consumption of 450 litres per person per day and a peaking factor of 2.25 have been utilized.

The summary of the water system demands can be summarized as follows:

4 Unit Development	Average Daily Flow Rate (Litres per second)	Peak Daily Flow Rate (Litres per second)
	0.057	0.128

As noted in the Norfolk County design criteria, a peaking factor of 2.25 was used for the calculation of the peak flow rate.

The proposed fire protection to this development will be handled by the existing fire hydrants located on the Mechanic Street.

Utilizing the requirements of the Fire Underwriters Survey 1999, the following outlines the water demand for the overall building area of the subject building.

The analysis was carried out on a block-by-block basis to determine the maximum fire demand for each of the buildings on the site.

This largest fire compartment would be in the order of 505 sq.m. (2 storey) being 2 units within the plan within the development.

Utilizing the Fire Underwriters Survey Document, our estimation of the required fire demand is as follows:

Estimate of Fire Flow Required = 220 \* C \* SQRT (A)

Where C = Coefficient related to type of Construction

Wood Frame Construction (Type V) = 1.5

A = Total Area of the Building (As outlined above) = 505 sq. m.

- = 220 x 1.5 \* SQRT (505)
- = 7,415.8 litres per m

#### Modifications

Occupancy = Normal Residential Hazard Occupancy

-15%

#### Spatial Exposure (Estimated)

North	Street	+ 0%
East	Street	+ 0%
West	< 20m	+ 14%
South	<3m	+ 24%

Total + 23%

Increase

1,705.6 litres per min

Total Fire Demand 9,121.4 litres per min = 152.0 litres per sec.

#### 5.0 STORM SEWERS & APPURTENANCES

#### 5.1 Storm Sewers / Storm water Management

The site is intended to be serviced with municipal storm sewers which are to be designed to handle the 5-year storm event. The overall stormwater management system is to be consistent with the current policies of the County of Norfolk which require reduction in the post development flows to below the pre-development rates for all storm events up to and including the 100-year event.

The proposed development results in greater impervious areas and as such, conventional stormwater management techniques are required to be implemented.

#### **Pre-Development Hydrologic Modeling Parameters**

The runoff characteristics of this site were determined utilizing the latest version of "EPA SWMM 5.1.013" stormwater management computer simulation program. In accordance with Norfolk County Standards, all storm events (2, 5, 10, 25, 50, & 100) were analysed and the results of the analysis are summarized in the following **Table 1**. The pre-development site has an overall area of 0.157 Ha, and 7.7% impervious surfaces.

### **Post Development Conditions**

The proposed concept plan includes the development of two semi-detached housing buildings, in addition to their driveway facilities. The existing singe family dwelling on the site will be demolished as part of this concept. The proposed development has an increase in impervious area from 7.7% pre-development, to 33.8%. As a result of this increase, on-site storm water management controls will be implemented.

#### **Modelling Results – Quantity Control**

Stormwater flows were calculated using EPA SWMM modeling software. Norfolk County IDF parameters were used to generate rainfall for sizing of the storm water system in accordance with Norfolk County Development Engineering Standards.

Peak flow reduction will be achieved through on-site retention in an effort minimize the potential for downstream surcharging. Post development discharge will be controlled to existing pre-development levels for the 2, 5, 10, 25, 50- and 100-year storm events. The results of the EPA SWMM modeling have been included within Appendix 'C' of this report and can be summarized as follows:

Storm Event	Pre- Development Peak Flow (m³/sec)	Post Development Peak Flow No SWM (m³/sec)	Post Development Peak Flow with SWM
2 Year	0.003	0.015	0.005*
5 Year	0.009	0.027	0.010*
10 Year	0.014	0.034	0.013
25 Year	0.022	0.045	0.015
50 Year	0.029	0.052	0.017
100 Year	0.035	0.059	0.019

**Table 1: Pre and Post Analysis Results** 

<sup>\*</sup> negligible increase

Peak flow reduction will be achieved by designing an outlet structure that restricts the runoff into the storm sewer system on Mechanic Street. Additional LID measures have been implemented at this site in the form of soak-away pits on the rain-water leaders. These have been implemented to meet the County's requirement for relief from a comprehensive analysis of the existing storm sewer system in the area, as well as to further reduce the peak discharge rates from the above values (LID controls are not modelled in the software, and will therefore further help to the off-site flows where a negligible increase was found).

The storage that is being proposed will be a combination of surface storage and soak-away pits located on the subject property. The overall details of the stormwater management scheme have been illustrated on the design drawings located in Appendix 'B.'

#### **Quality Control**

In this case, the run-off from the site has been directed through grassed swales as a means of quality control. The impervious surfaces on this site main consist of roof-top surfaces, which are considered as clean run-off. The driveway impervious areas will drain to the municipal right-of-way in a conventional flow pattern.

#### 6.0 CONCLUSIONS

The preceding sections of this report outline the servicing requirements for the proposed semidetached dwelling development at this site on Mechanic Street and Shadow Lake Lane in the Town of Waterford, Norfolk County. Based on the work completed to date, it may be concluded that the proposed development can be developed with full municipal services.

Report Prepared By:

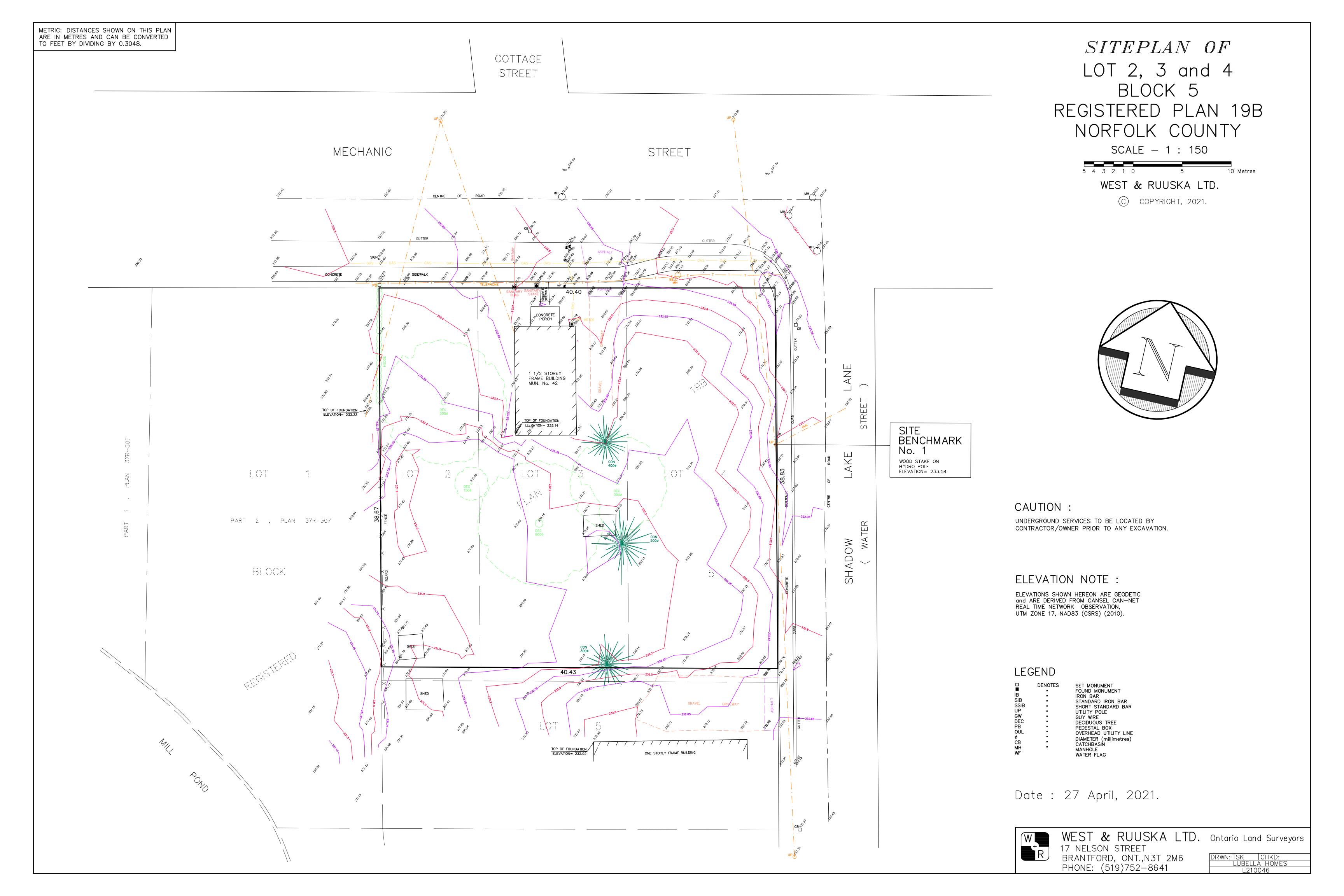
#### J.H. COHOON ENGINEERING LIMITED



Matthew J. Whyte, P.Eng.

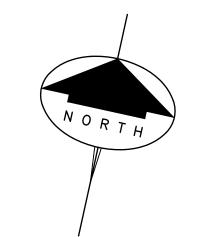
## APPENDIX 'A'

Survey Information as prepared by West & Ruuska Ltd.



### APPENDIX 'B'

J H Cohoon Engineering Limited Development & Grading & Servicing Plans 15373-1 & 15373-2



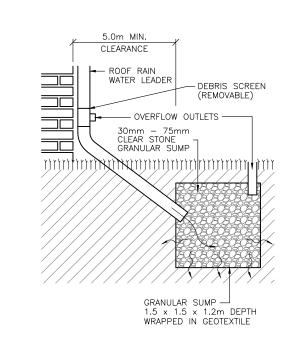


KEY PLAN:

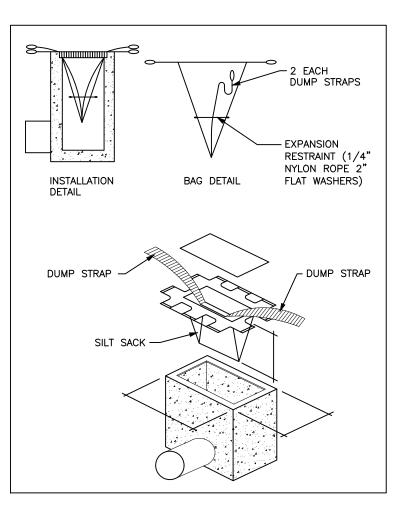
# INDIVIDUAL UNIT SITE STATISTICS

ITEM	LOT 1	LOT 2	LOT 3	LOT 4	ZONING BYLAW REQUIREMENTS
ZONING CATEGORY		R2 (REZONED	FROM R1-A)		R2
LOT AREA (sq. m.)	 492.8	357.7 – –	357.7 – –	357.7 – –	255.0 MIN. (INTERIOR) 345.0 MIN. (CORNER)
LOT FRONTAGE (m)	 12.25	8.85 	8.85 	8.85 	8.50 MIN. (INTERIOR) 11.50 MIN. (CORNER)
FRONT YARD (m)	6.00	6.09	6.00	6.09	6.00 MIN.
EXTERIOR SIDE YARD (m)	4.57**				6.00 MIN.
INTERIOR SIDE YARD (m)		1.23	1.23	1.23	1.20 MIN.
REAR YARD (m)	17.56	17.48	17.58	17.49	7.50 MIN.
PERCENTAGE OF FRONT YARD LANDSCAPED	72.8%	62.2%	62.9%	63.0%	50% MIN.
BUILDING HEIGHT (m)					11.00 MIN.

<sup>\*\*</sup> ITEM REQUIRES A MINOR VARIANCE

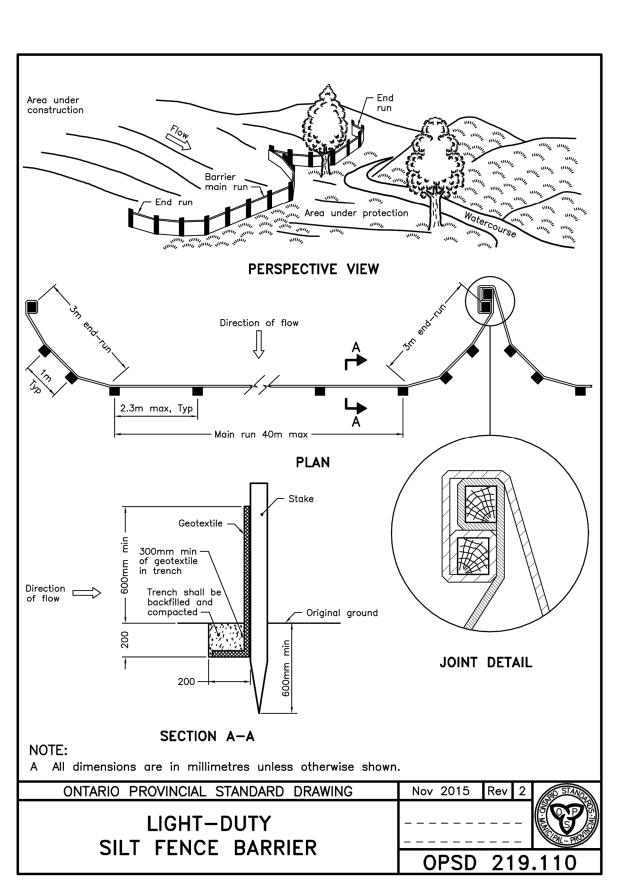


TYPICAL SOAK-AWAY
PIT DETAIL
REPRODUCED FROM M.O.E.E. 2003 S.W.M. GUIDELINES



SILT SACK DETAIL

N.T.S.



THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND ABOVEGROUND UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE COMMENCING WORK, THE CONTRACTOR SHALL FAMILIARIZE HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

# LEGEND:

EXISTING ELEVATIONS

[200.00] PROPOSED ELEVATIONS

[200.00] PROPOSED SWALE ELEVATIONS

PROPOSED SWALE
GENERAL DRAINAGE

PROPOSED SILT FENCE
SILT SACK AS SHOWN

EX. TREES TO BE REMOVED

EX. TREES TO REMAIN

←O RWL PROPOSED DOWNSPOUT c/w CONCRETE SPLASH PAD

LIMIT OF S.W.M. POND (100 Yr. EVENT)
MAX. POND ELEVATION AS NOTED

## NOTES

1. ALL ELEVATIONS SHOWN ARE METRIC.

- 2. BUILDER/OWNER TO VERIFY COMPLIANCE WITH ZONING BYLAWS (ie. SIDEYARDS, SETBACKS, REARYARDS ETC.)
- WHERE ONLY ONE ELEVATION IS SHOWN, EXISTING AND PROPOSED ELEVATIONS ARE THE SAME.
- H. THE SILTATION & EROSION CONTROL (SEC) MEASURES ILLUSTRATED ON THIS PLAN ARE CONSIDERED TO BE THE MINIMUM REQUIREMENT. SITE CONDITIONS MAY REQUIRE ADDITIONAL MEASURES WHICH WILL BE IDENTIFIED BY THE ENGINEER DURING CONSTRUCTION.
- ALL SEC MEASURES ARE TO BE IN PLACE PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- 6. OWNER/CONTRACTOR TO MAINTAIN EROSION CONTROL MEASURES THROUGHOUT SITE UNTIL A COMPLETE GRASS/VEGETATION COVER IS ACHIEVED.
- 7. ONLY AT THE DIRECTION OF THE ENGINEER ARE THE SEC MEASURES TO BE REMOVED.
- 3. ALL EXPOSED AREAS NOT SUBJECT TO ACTIVE CONSTRUCTION WITHIN 30 DAYS ARE TO BE REVEGETATED AS PER 0.P.S.S. 572 IMMEDIATELY UPON COMPLETION OF AREA GRADING.
- 9. CONTRACTOR TO PROVIDE SILT FENCE AROUND PERIMETER OF ALL ON SITE STOCKPILES.
- 10. CONTRACTOR TO PROVIDE SILT SACKS ON TOP OF ALL EXISTING AND PROPOSED STORM STRUCTURES WITHIN THE INFLUENCE OF RUNOFF DURING CONSTRUCTION UNTIL ADEQUATE VEGETATIVE
- COVER IS ACHIEVED.

  11. PROVIDE (2)—REAR YARD SOAK—AWAY PITS PER BUILDING AS SHOWN.

Т.В	.м.	No.	1	EL	EV.	=	233	3.54	m		((	GEO)
		AKE ON SHOWN.	UTI	LITY	POLE	ON	THE	WEST	SIDI	E OF	SHADOW	LAKE

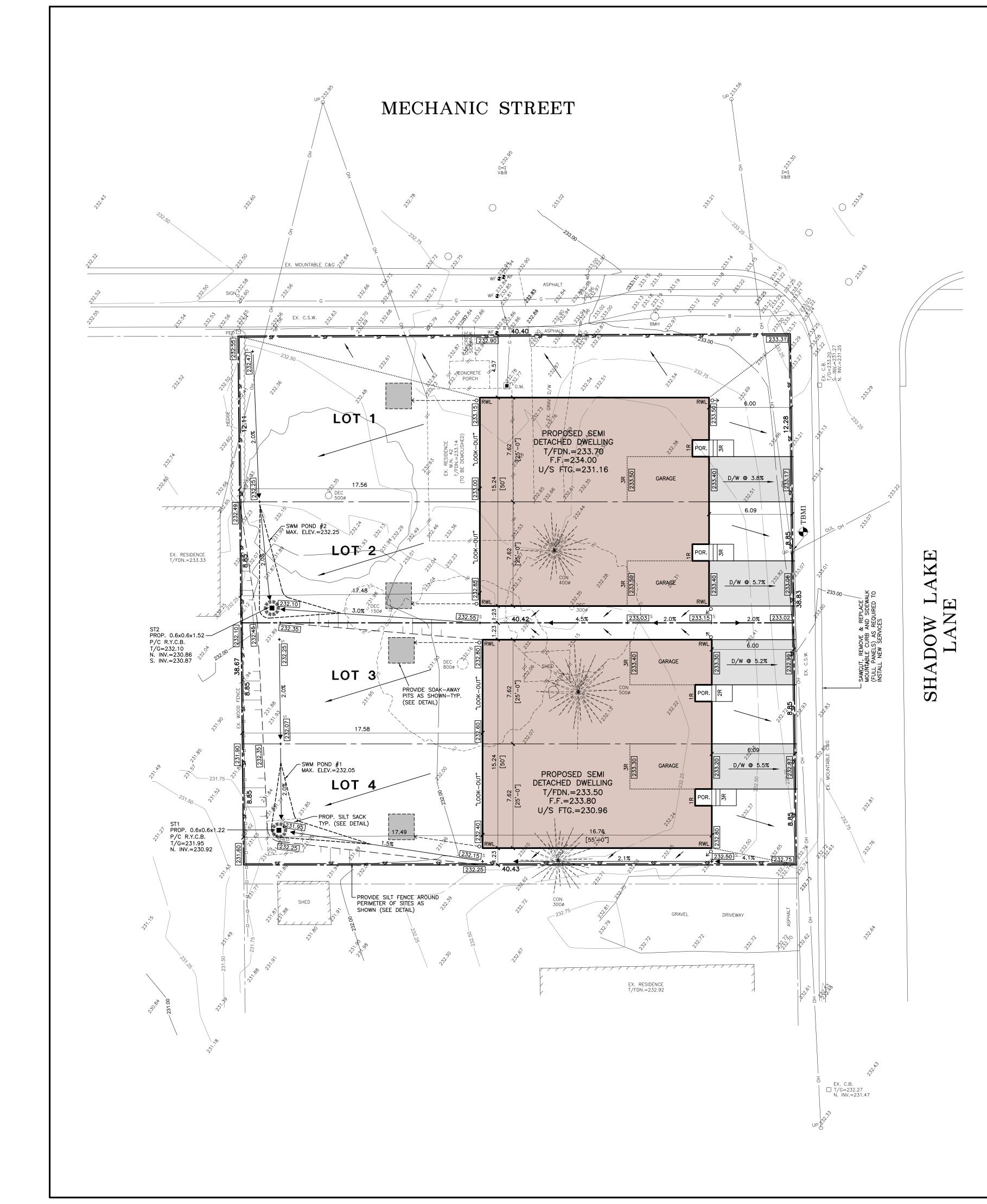


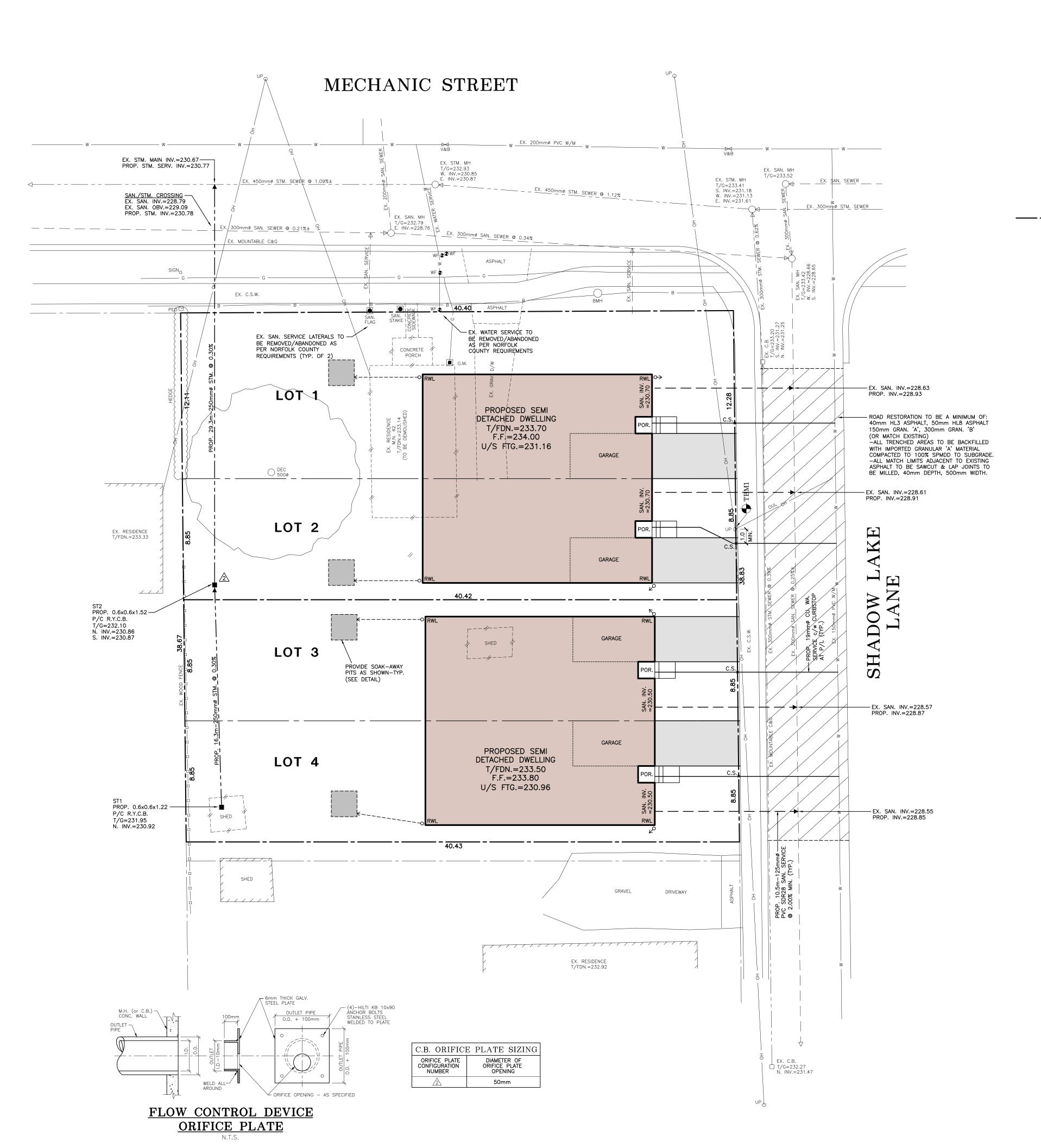
PROPOSED SEMI
DETACHED DWELLINGS
LOTS 2, 3 & 4
BLOCK 5, R.P. 19B
M.N. 42 MECHANIC STREET
NORFOLK COUNTY

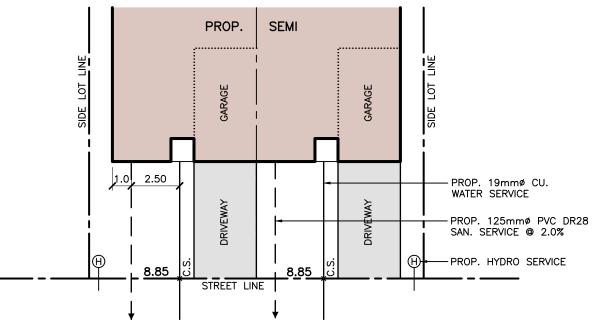
LUBELLA HOMES

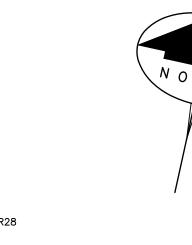
# GRADING & SILTATION AND EROSION CONTROL PLAN

		ONTROL 1 LAN
DESIGN:	M.J.W.	SCALE: 1:150
DRAWN:	K.P.B.	JOB No:
CHECKED:	M.J.W.	15373
SHEET:	1 of 2	DWG. No:
DATE:	MAR. 28/23	15373-1









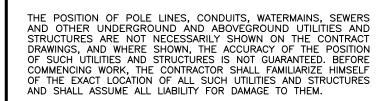
# TYPICAL LOT SERVICING

# **GENERAL NOTES:**

- CONSTRUCTION OF SEWERS, WATERMAINS AND RELATED APPURTENANCES SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE CURRENT STANDARD DRAWINGS OF THE COUNTY OF NORFOLK, AND THE ONTARIO PROVINCIAL STANDARDS DRAWINGS (OPSD). THE COUNTY OF NORFOLK DRAWINGS SHALL TAKE PRECEDENCE OVER THE OPSD DRAWINGS.
- 2. INFORMATION REGARDING ANY EXISTING SERVICES AND/OR UTILITIES SHOWN ON THE APPROVED SET OF CONSTRUCTION DRAWINGS IS FURNISHED AS THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL INTERPRET THIS INFORMATION AS THEY SEE FIT WITH THE UNDERSTANDING THAT THE OWNER AND HIS AGENTS DISCLAIM ALL RESPONSIBILITY FOR ITS ACCURACY AND/OR SUFFICIENCY.
- ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION AND HE SHALL REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ENGINEER.
- 4. RELOCATION OF EXISTING SERVICES AND/OR UTILITIES SHALL BE CONSTRUCTED AS SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER.
- 5. THE CONTRACTOR SHALL OBTAIN ALL PERMITS FOR CONSTRUCTION.
- 6. FOR ALL SEWERS AND WATERMAIN IN FILL SECTIONS, THE COMPACTION SHALL BE VERIFIED PRIOR TO LAYING OF PIPE.
- NO SUBSTITUTIONS WILL BE ALLOWED WITHOUT WRITTEN APPROVAL FROM THE COUNTY OF NORFOLK OR THE ENGINEER.
- ALL EXCAVATIONS TO BE BACKFILLED WITH SELECT NATIVE MATERIAL, APPROVED BY THE ENGINEER, TO 95% S.P.D.
- THE DEVELOPER AND/OR CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING (UNTIL ROAD CONSTRUCTION IS FINISHED) SILT CONTROL DEVICES AS SHOWN ON THE DRAWINGS AND AS DIRECTED BY THE ENGINEER.
- 10. ALL WORKS SHALL BE DESIGNED AND CONSTRUCTED SO AS TO COMPLY WITH APPLICABLE LAW, TO BE CONSISTENT WITH THE COUNTY OF NORFOLK DEVELOPMENT & ENGINEERING STANDARDS AND IN ACCORDANCE WITH CURRENT GUIDELINES, CODES, REGULATIONS AND STANDARDS PRESCRIBED BY THE COUNTY.
- 11. ALL BOULEVARD AREAS TO BE RESTORED WITH #1 NURSERY SOD ON A MINIMUM 100mm OF
- 12. ALL TRENCH BACKFILL UNDER EXISTING ROADWAYS SHALL BE COMPACTED IN MINIMUM 230mm LIFTS TO 98% STANDARD PROCTOR DENSITY. A GEOTECHNICAL ENGINEER'S REPRESENTATIVE SHALL BE ON SITE DURING THE WORK TO VERIFY THE COMPACTION OF EACH LIFT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS OF RE—TESTING.
- 13. AN ENGINEER IS REQUIRED TO BE ONSITE FOR INSPECTION OF ALL UNDERGROUND SERVICES.
- 14. DRIVEWAYS MUST HAVE A MINIMUM 1.0m CLEARANCE FROM ALL UTILITIES SUCH AS FIRE HYDRANT, STREETLIGHT POLES, TRANSFORMERS, CANADA POST COMMUNITY MAILBOX
- 15. ALL WATER SERVICE CONNECTIONS 19mm DIA. ASTM B88 TYPE 'K' SOFT COPPER AS PER OPSD 1104.01 & COUNTY OF NORFOLK ENGINEERING STANDARDS, & INSTALLED IN ACCORDANCE WITH OPSD 802.110 TYPE 2. TRENCH BEDDING TO BE GRANULAR 'A'.
- 16. CURB STOPS TO BE MUELLER A-726 OR EQUIVALENT APPROVED BY THE COUNTY OF NORFOLK.
- 17. CATHODIC PROTECTION TO BE PROVIDED AT ALL VALVES, BENDS AND FITTINGS WITH 11.0 KG ZINC ANODES AND ON ALL WATER SERVICE CONNECTIONS WITH 5.5 KG ZINC ANODES.
- WATER SERVICES TO BE INSTALLED WITH A MINIMUM COVER OF 1.70m BELOW FINISHED GRADE.
- 19. LOT 2 WATER SERVICE INSTALLATION OF BE MIN. 1.0m FROM EXISTING UTILITY POLE.
- 20. ALL WATER SERVICES TO BE INSTALLED OVER EXISTING STORM SEWER. PROVIDE MINIMUM 1.70m COVER OVER AND MINIMUM SEPARATION TO EXISTING STORM SEWER.
- 21. NO WORK ON WATER SERVICES CAN TAKE PLACE WITHOUT SUPERVISION OF A LICENSED NORFOLK COUNTY OPERATOR ON SITE.
- 22. ALL APPLICABLE PERMITS ARE TO BE APPLIED FOR PRIOR TO THE INSTALLATION OF ANY SERVICES.

## SANITARY SEWERS:

- I. SANITARY & STORM SEWERS & RELATED APPURTENANCES SHALL BE DESIGNED AND CONSTRUCTED SO AS TO COMPLY WITH APPLICABLE LAW, TO BE CONSISTENT WITH THE COUNTY OF NORFOLK DEVELOPMENT AND ENGINEERING STANDARDS AND IN ACCORDANCE WITH CURRENT GUIDELINES, CODES, REGULATIONS, BEST PRACTICES AND STANDARDS PRESCRIBED BY THE COUNTY.
- COVER AND BEDDING MATERIAL FOR PVC PIPE AS PER OPSD 802.010 TYPE 2 TRENCH BEDDING SHALL BE GRANULAR 'A' MATERIAL UNLESS OTHERWISE INDICATED.
- 3. PVC PIPE WILL REQUIRE SPECIAL CONSTRUCTION PROCEDURES FOR LEAKAGE AND TESTING, PIPE DEFLECTION, ETC.
- 4. ALTERNATE MATERIALS MAY BE ACCEPTABLE, PROVIDED APPROVAL HAS FIRST BEEN OBTAINED FROM THE COUNTY OF NORFOLK AND ENGINEER IN WRITING.
- 5. ALL SEWER AND CULVERT INSTALLATIONS TO CONFORM WITH OPSD 802.031 TYPE 3 SOIL.
- PRIVATE SANITARY DRAINS TO 125mmø PVC DR28 PIPE AND HAVE A MIN. GRADE OF 2.0%, AS PER NORFOLK COUNTY DESIGN CRITERIA.
- 7. A 38x89mm x 2.0m LONG MARKER IS TO BE PLACED FROM THE CAPPED LATERAL AND EXTEND 1.0m ABOVE GROUND AND PAINTED GREEN FOR SANITARY AND WHITE FOR STORM.
- 8. BEDDING FOR PRIVATE SANITARY & STORM DRAINS AS PER OPSD 1006.02 TYPE 2 TRENCH WITH GRANULAR 'A' BEDDING AND COVER MATERIAL.
- 9. MINIMUM FALL FOR PRIVATE SANITARY & STORM DRAINS TO BE 2.0%
- 10. SANITARY SERVICES TO BE INSTALLED USING SERVICE SADDLES OR PRE-MANUFACTURED TEE APPROVED BY NORFOLK COUNTY. ALL CONNECTIONS TO SHALL CONFORM TO CURRENT



<u>LEGEND:</u>  $\overbrace{}^{\text{EX. }50\text{m}-300\text{mm} \emptyset} \underbrace{}^{\text{STM.}} \underbrace{}^{\text{@}} \underbrace{}^{\text{0.5\%}}$  EXISTING STORM SEWER SYSTEM EXISTING WATERMAIN EXISTING OVERHEAD UTILITY LINE EXISTING WOOD FENCE S1 EXISTING SANITARY MANHOLE O ST1 EXISTING STORM MANHOLE □ СВ EXISTING CATCHBASIN ☑ PED EXISTING BELL PEDESTAL EXISTING WATER VALVE ₩V EXISTING UTILITY POLE O UP EXISTING TEMPORARY BENCHMARK EXISTING WATER FLAG WF 🏖 PROPOSED SANITARY SERVICE PROPOSED WATER SERVICE PROPOSED CATCHBASIN PROPOSED DOWNSPOUT c/w CONCRETE SPLASH PAD

T.B	3.M.	No.	1	ELEV.	=	233	3.54	m		((	GEO)
		AKE ON SHOWN.		ITY POLE	ON.	THE	WEST	SIDE	OF	SHADOW	/ LAKE
NO.				REVISIO	N					DATE /DD/YY)	BY



J.H. COHOON
ENGINEERING
LIMITED
CONSULTING ENGINEERS

440 HARDY ROAD , UNIT #1 , BRANTFORD — ONTARIO , N3T 5L8 TEL. (519) 753—2656 FAX. (519) 753—4263 www.cohooneng.com

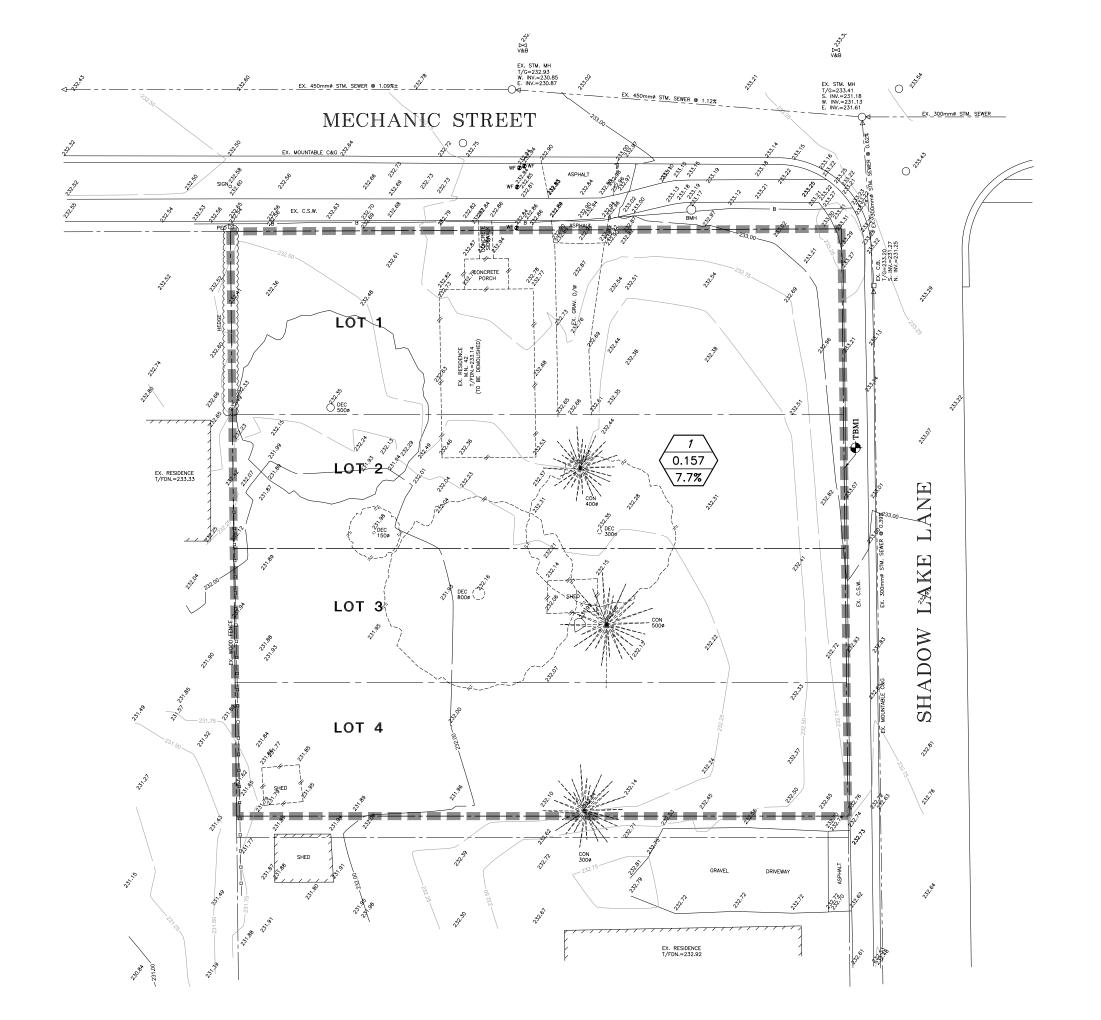
PROPOSED SEMI
DETACHED DWELLINGS
LOTS 2, 3 & 4
BLOCK 5, R.P. 19B
M.N. 42 MECHANIC STREET
NORFOLK COUNTY

LUBELLA HOMES

SERVICING PLAN

DESIGN:	M.J.W.	SCALE: 1:150
DRAWN:	K.P.B.	JOB No:
CHECKED:	M.J.W.	15373
SHEET:	2 of 2	DWG. No:

# **APPENDIX 'C'** EPA SWMM Analysis



## LEGEND

STORM DRAINAGE BOUNDARY



→ STORM DRAINAGE NUMBER→ STORM AREA IN HECTARES

→ % IMPERVIOUS



# POST DEVELOPMENT STORM DRAINAGE AREAS

PROPOSED SEMI-DETACHED DWELLINGS 42 MECHANIC STREET - NORFOLK COUNTY



J.H. COHOON ENGINEERING LIMITED CONSULTING ENGINEERS BRANTFORD

CLIENT: LUBELLA HOMES SCALE: 1:250

JOB: 15373

```
PRE-DEVELOPMENT: 2 YEAR STORM
```

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)

-----

WARNING 04: minimum elevation drop used for Conduit C1

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

NOTE: The summary statistics displayed in this report are based on results found at every computational time step, not just on results from each reporting time step.

\*\*\*\*\*\*\*\*\*\*

Analysis Options

Flow Units CMS
Process Models:
Rainfall/Runoff YES
RDII NO
Snowmelt NO
Groundwater NO

Flow Routing YES
Ponding Allowed YES
Water Quality NO

Water Quality ...... NO
Infiltration Method ..... MODIFIED\_GREEN\_AMPT

Flow Routing Method ..... KINWAVE

Antecedent Dry Days .... 0.0
Report Time Step ... 00:10:00
Wet Time Step ... 00:05:00
Dry Time Step ... 00:05:00
Routing Time Step ... 30.00 sec

********	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm
********		
Total Precipitation	0.005	31.960
Evaporation Loss	0.000	0.000
Infiltration Loss	0.005	29.345
Surface Runoff	0.000	2.559
Final Storage	0.000	0.116
Continuity Error (%)	-0.188	

*******		
*******	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
*******		
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.000	0.004
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.000	0.004
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

All links are stable.

Minimum Time Step : 30.00 sec
Average Time Step : 30.00 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 1.00
Percent Not Converging : 0.00

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff CMS	Runoff Coeff
A1	31.96	0.00	0.00	29.35	2.35	0.21	2.56	0.00	0.00	0.080

Node	Туре	Average Depth Meters	Maximum Depth Meters	HGL	Time of Max Occurrence days hr:min	Reported Max Depth Meters
ST1	JUNCTION	0.00	0.00	0.00	0 00:00	0.00
Out1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00

Node	Туре	Maximum Lateral Inflow CMS	Inflow	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
ST1	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 lt
Out1	OUTFALL	0.003	0.003	0 01:50	0.00402	0.00402	0.000

No nodes were flooded.

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
Out1	45.14	0.000	0.003	0.004
System	45.14	0.000	0.003	0.004

Link	Туре	Flow	Time of Max Occurrence days hr:min	Veloc	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	0.000	0 00:00	0.00	0.00	0.00

No conduits were surcharged.

Analysis begun on: Thu Mar 30 09:17:57 2023 Analysis ended on: Thu Mar 30 09:17:57 2023 Total elapsed time: < 1 sec

```
PRE-DEVELOPMENT: 5 YEAR STORM
```

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)

WARNING 04: minimum elevation drop used for Conduit C1

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

NOTE: The summary statistics displayed in this report are based on results found at every computational time step, not just on results from each reporting time step.

\*\*\*\*\*\*

Analysis Options

Flow Units ..... CMS Process Models:

 Rainfall/Runoff
 YES

 RDII
 NO

 Snowmelt
 NO

 Groundwater
 NO

 Flow Routing
 YES

Flow Routing YES
Ponding Allowed YES
Water Quality NO

Water Quality ...... NO
Infiltration Method ..... MODIFIED\_GREEN\_AMPT

Flow Routing Method ..... KINWAVE

Antecedent Dry Days .... 0.0
Report Time Step ... 00:10:00
Wet Time Step ... 00:05:00
Dry Time Step ... 00:05:00
Routing Time Step ... 30.00 sec

********	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm
Total Precipitation	0.007	44.160
Evaporation Loss	0.000	0.000
Infiltration Loss	0.006	37.856
Surface Runoff	0.001	6.350
Final Storage	0.000	0.116
Continuity Error (%)	-0.365	

********	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
*******		
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.001	0.010
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.001	0.010
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

\*\*\*\*\*\*\*\*

Highest Flow Instability Indexes

All links are stable.

Minimum Time Step : 30.00 sec
Average Time Step : 30.00 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 1.00
Percent Not Converging : 0.00

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff CMS	Runoff Coeff
A1	44.16	0.00	0.00	37.86	3.29	3.06	6.35	0.01	0.01	0.144

Node Depth Summary \*\*\*\*\*\*\*\*\*

Node	Туре	Average Depth Meters	Maximum Depth Meters	HGL	Time of Max Occurrence days hr:min	Reported Max Depth Meters
ST1	JUNCTION	0.00	0.00	0.00	0 00:00	0.00
Out1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00

Node	Туре	Maximum Lateral Inflow CMS	Inflow	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
ST1	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 lt
Out1	OUTFALL	0.009	0.009	0 01:50	0.00997	0.00997	0.000

No nodes were flooded.

	Flow Freq	Avg Flow	Max Flow	Total Volume
Outfall Node	Pcnt	CMS	CMS	10^6 ltr
Out1	50.14	0.001	0.009	0.010
System	50.14	0.001	0.009	0.010

Link	Туре	Flow	Time of Max Occurrence days hr:min	Veloc	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	0.000	0 00:00	0.00	0.00	0.00

No conduits were surcharged.

Analysis begun on: Thu Mar 30 09:17:49 2023 Analysis ended on: Thu Mar 30 09:17:49 2023 Total elapsed time: < 1 sec

```
PRE-DEVELOPMENT: 10 YEAR STORM
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)
```

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)

WARNING 04: minimum elevation drop used for Conduit C1

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

NOTE: The summary statistics displayed in this report are based on results found at every computational time step, not just on results from each reporting time step.

\*\*\*\*\*\*\*\*\*\*

Analysis Options

Flow Units CMS
Process Models:
Rainfall/Runoff YES
RDII NO
Snowmelt NO
Groundwater NO

Flow Routing .... YES
Ponding Allowed .... YES
Water Quality .... NO

Water Quality ...... NO
Infiltration Method ..... MODIFIED\_GREEN\_AMPT

Flow Routing Method  $\ldots$  KINWAVE

Antecedent Dry Days .... 0.0
Report Time Step ... 00:10:00
Wet Time Step ... 00:05:00
Dry Time Step ... 00:05:00
Routing Time Step ... 30.00 sec

********	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm
Total Precipitation	0.008	52.124
Evaporation Loss	0.000	0.000
Infiltration Loss	0.007	42.019
Surface Runoff	0.002	10.238
Final Storage	0.000	0.116
Continuity Error (%)	-0.478	

*******	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
*******		
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.002	0.016
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.002	0.016
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

All links are stable.

Minimum Time Step : 30.00 sec
Average Time Step : 30.00 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 1.00
Percent Not Converging : 0.00

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff CMS	Runoff Coeff
A1	52.12	0.00	0.00	42.02	3.91	6.33	10.24	0.02	0.01	0.196

Node	Туре	Average Depth Meters	Maximum Depth Meters	HGL	Time of Max Occurrence days hr:min	Reported Max Depth Meters
ST1	JUNCTION	0.00	0.00	0.00	0 00:00	0.00
Out1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00

Node	Туре	Maximum Lateral Inflow CMS		Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
ST1	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 1
Out1	OUTFALL	0.014	0.014	0 01:50	0.0161	0.0161	0.000

No nodes were flooded.

	Flow Freq	Avg Flow	Max Flow	Total Volume
Outfall Node	Pcnt	CMS	CMS	10^6 ltr
Out1	50.42	0.001	0.014	0.016
System	50.42	0.001	0.014	0.016

Link	Туре	Flow	Time of Max Occurrence days hr:min	Veloc		Max/ Full Depth
C1	CONDUIT	0.000	0 00:00	0.00	0.00	0.00

No conduits were surcharged.

Analysis begun on: Thu Mar 30 09:17:38 2023 Analysis ended on: Thu Mar 30 09:17:38 2023 Total elapsed time: < 1 sec

```
PRE-DEVELOPMENT: 25 YEAR STORM
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)
```

EPA SIORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)

WARNING 04: minimum elevation drop used for Conduit C1

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\*

Analysis Options

Flow Units CMS
Process Models:
Rainfall/Runoff YES
RDII NO
Snowmelt NO
Groundwater NO

Flow Routing ...... YES
Ponding Allowed ..... YES
Water Quality ..... NO

Water Quality ...... NO
Infiltration Method ..... MODIFIED\_GREEN\_AMPT

Flow Routing Method  $\ldots$  KINWAVE

Antecedent Dry Days .... 0.0
Report Time Step ... 00:10:00
Wet Time Step ... 00:05:00
Dry Time Step ... 00:05:00
Routing Time Step ... 30.00 sec

\*\*\*\*\*\*\*\*

	VOIUME	Deptii
Runoff Quantity Continuity	hectare-m	mm
*******		
Total Precipitation	0.010	62.200
Evaporation Loss	0.000	0.000
Infiltration Loss	0.007	46.165
Surface Runoff	0.003	16.343
Final Storage	0.000	0.116
Continuity Error (%)	-0.680	
*******	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
********		
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.003	0.026
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.003	0.026
EXCCINAL OUCITOW	0.003	0.020

Volume

0.000

0.000

0.000

0.000

0.000

Denth

0.000

0.000

0.000

0.000

0.000

Flooding Loss .....

Evaporation Loss .....

Exfiltration Loss ......

Initial Stored Volume ....

Final Stored Volume  $\ldots$ 

Continuity Error (%) .....

All links are stable.

Minimum Time Step : 30.00 sec
Average Time Step : 30.00 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 1.00
Percent Not Converging : 0.00

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff CMS	Runoff Coeff
A1	62.20	0.00	0.00	46.16	4.69	11.66	16.34	0.03	0.02	0.263

Node Depth Summary \*\*\*\*\*\*\*\*\*

		Average	Maximum	Maximum	Time of Max	Reported
		Depth	Depth		Occurrence	Max Depth
Node	Туре	Meters	Meters	Meters	days hr:min	Meters
ST1	JUNCTION	0.00	0.00	0.00	0 00:00	0.00
Out1	OUTFALL	9.99	0.00	0.00	0 00:00	9.99

Node	Туре	Maximum Lateral Inflow CMS	Total Inflow	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
ST1	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 1
Out1	OUTFALL	0.022	0.022	0 01:50	0.0257	0.0257	0.000

No nodes were flooded.

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
Out1	50.69	0.002	0.022	0.026
System	50.69	0.002	0.022	0.026

Link	Туре	Flow	Time of Max Occurrence days hr:min	Veloc	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	0.000	0 00:00	0.00	0.00	0.00

No conduits were surcharged.

Analysis begun on: Thu Mar 30 09:17:26 2023 Analysis ended on: Thu Mar 30 09:17:26 2023 Total elapsed time: < 1 sec

```
PRE-DEVELOPMENT: 50 YEAR STORM
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)
```

\_\_\_\_\_\_

WARNING 04: minimum elevation drop used for Conduit C1

\*

NOTE: The summary statistics displayed in this report are based on results found at every computational time step, not just on results from each reporting time step.

Analysis Options

Flow Units ..... CMS Process Models: Rainfall/Runoff ..... YES RDII ..... NO Snowmelt ..... NO Groundwater ..... NO Flow Routing ...... YES Ponding Allowed ..... YES

Water Quality ...... NO
Infiltration Method ..... MODIFIED\_GREEN\_AMPT

Flow Routing Method ..... KINWAVE

Starting Date ...... 03/29/2023 00:00:00 Ending Date ..... 03/29/2023 06:00:00

Antecedent Dry Days ..... 0.0 Report Time Step ..... 00:10:00 Wet Time Step ..... 00:05:00 Dry Time Step ...... 00:05:00
Routing Time Step ...... 30.00 sec

********	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm
Tatal Danainitation		70.071
Total Precipitation	0.011	70.071
Evaporation Loss	0.000	0.000
Infiltration Loss	0.008	49.090
Surface Runoff	0.003	21.389
Final Storage	0.000	0.116
Continuity Error (%)	-0.746	

*******	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
*******		
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.003	0.034
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.003	0.034
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

\*\*\*\*\* Highest Flow Instability Indexes

All links are stable.

\*\*\*\*\*\*\*\* 

Minimum Time Step : 30.00 sec
Average Time Step : 30.00 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : 0.00 Average Iterations per Step : 1.00 Percent Not Converging 0.00

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff CMS	Runoff Coeff
A1	70.07	0.00	0.00	49.09	5.29	16.10	21.39	0.03	0.03	0.305

Node	Туре	Average Depth Meters	Maximum Depth Meters	HGL	Time of Max Occurrence days hr:min	Reported Max Depth Meters
ST1	JUNCTION	0.00	0.00	0.00	0 00:00	0.00
Out1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00

Node	Type	Maximum Lateral Inflow CMS	Inflow	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
ST1	JUNCTION	0.000	0.000	0 00:00		0	0.000 ltr
Out1	OUTFALL	0.029	0.029	0 01:50	0.0336	0.0336	0.000

No nodes were flooded.

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
Out1	50.69	0.003	0.029	0.034
System	50.69	0.003	0.029	0.034

Link	Туре	Flow	Time of Max Occurrence days hr:min	Veloc	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	0.000	0 00:00	0.00	0.00	0.00

No conduits were surcharged.

Analysis begun on: Thu Mar 30 09:17:16 2023 Analysis ended on: Thu Mar 30 09:17:16 2023 Total elapsed time: < 1 sec

```
PRE-DEVELOPMENT: 100 YEAR STORM
```

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)

WARNING 04: minimum elevation drop used for Conduit C1

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

NOTE: The summary statistics displayed in this report are based on results found at every computational time step, not just on results from each reporting time step.

\*\*\*\*\*\*\*

Analysis Options

Flow Units CMS
Process Models:
Rainfall/Runoff YES
RDII NO
Snowmelt NO
Groundwater NO

Flow Routing YES
Ponding Allowed YES
Water Quality NO

Water Quality ...... NO
Infiltration Method ..... MODIFIED\_GREEN\_AMPT

Flow Routing Method ..... KINWAVE

Antecedent Dry Days .... 0.0
Report Time Step ... 00:10:00
Wet Time Step ... 00:05:00
Dry Time Step ... 00:05:00
Routing Time Step ... 30.00 sec

********	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm
Total Precipitation	0.012	77.764
Evaporation Loss	0.000	0.000
Infiltration Loss	0.008	51.813
Surface Runoff	0.004	26.467
Final Storage	0.000	0.116
Continuity Error (%)	-0.813	

*******	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
*******		
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.004	0.042
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.004	0.042
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

All links are stable.

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff CMS	Runoff Coeff
A1	77.76	0.00	0.00	51.81	5.90	20.57	26.47	0.04	0.04	0.340

Node	Туре	Average Depth Meters	Maximum Depth Meters	HGL	Time of Max Occurrence days hr:min	Reported Max Depth Meters
ST1	JUNCTION	0.00	0.00	0.00	0 00:00	0.00
Out1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00

Node	Туре	Maximum Lateral Inflow CMS	Inflow	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
ST1	JUNCTION	0.000	0.000	0 00:00	0	0	0.000 lt
Out1	OUTFALL	0.035	0.035	0 01:50	0.0416	0.0416	0.000

No nodes were flooded.

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
Out1	50.83	0.004	0.035	0.042
System	50.83	0.004	0.035	0.042

Link	Туре	Flow	Time of Max Occurrence days hr:min	Veloc	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	0.000	0 00:00	0.00	0.00	0.00

No conduits were surcharged.

Analysis begun on: Thu Mar 30 09:14:12 2023 Analysis ended on: Thu Mar 30 09:14:12 2023 Total elapsed time: < 1 sec

## LEGEND

STORM DRAINAGE BOUNDARY



→ STORM DRAINAGE NUMBER→ STORM AREA IN HECTARES

→ % IMPERVIOUS



# POST DEVELOPMENT STORM DRAINAGE AREAS

PROPOSED SEMI-DETACHED DWELLINGS 42 MECHANIC STREET - NORFOLK COUNTY



J.H. COHOON ENGINEERING LIMITED CONSULTING ENGINEERS BRANTFORD

CLIENT: LUBELLA HOMES SCALE: 1:250 JOB: 15373

```
POST-DEVELOPMENT: 2 YEAR STORM
```

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)

-----

WARNING 04: minimum elevation drop used for Conduit 02

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

NOTE: The summary statistics displayed in this report are based on results found at every computational time step, not just on results from each reporting time step.

\*\*\*\*\*\*\*\*\*\*

Analysis Options

Flow Units ... CMS
Process Models:
Rainfall/Runoff YES
RDII ... NO
Snowmelt ... NO
Groundwater ... NO
Flow Routing YES
Ponding Allowed YES

Water Quality ...... NO
Infiltration Method ..... MODIFIED\_GREEN\_AMPT

Flow Routing Method ..... KINWAVE

Antecedent Dry Days .... 0.0
Report Time Step ... 00:10:00
Wet Time Step ... 00:05:00
Dry Time Step ... 00:05:00
Routing Time Step ... 30.00 sec

**************************************	Volume hectare-m	Depth mm
Total Precipitation Evaporation Loss Infiltration Loss Surface Runoff	0.005 0.000 0.003 0.002	31.960 0.000 20.790 10.940
Final Storage Continuity Error (%)	0.000 -0.866	0.507

*******	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
*******		
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.002	0.017
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.002	0.017
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

All links are stable.

Minimum Time Step : 30.00 sec
Average Time Step : 30.00 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 1.18
Percent Not Converging : 0.00

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff CMS	Runoff Coeff
A1	31.96	0.00	0.00	18.83	12.30	0.36	12.66	0.01	0.00	0.396
A2	31.96	0.00	0.00	21.97	9.31	0.34	9.65	0.01	0.00	0.302
A3	31.96	0.00	0.00	31.10	0.00	1.55	1.55	0.00	0.00	0.048
A4	31.96	0.00	0.00	14.94	15.80	0.87	16.67	0.00	0.00	0.522
A5	31.96	0.00	0.00	30.64	0.00	2.97	2.97	0.00	0.00	0.093

Node	Туре	Average Depth Meters	Maximum Depth Meters	HGL	Time of Max Occurrence days hr:min	Reported Max Depth Meters
ST1	JUNCTION	0.01	0.06	230.98	0 01:50	0.06
ST2	JUNCTION	0.29	1.24	232.10	0 01:12	1.24
N2	JUNCTION	0.04	0.05	230.91	0 01:13	0.05
Out1	OUTFALL	0.02	0.02	230.79	0 01:13	0.02

		Maximum	Maximum		Lateral	Total	Flow
		Lateral	Total	Time of Max	Inflow	Inflow	Balance
		Inflow	Inflow	Occurrence	Volume	Volume	Error
Node	Type	CMS	CMS	days hr:min	10^6 ltr	10^6 ltr	Percent
ST1	JUNCTION	0.004	0.004	0 01:50	0.00608	0.00608	0.000
ST2	JUNCTION	0.004	0.009	0 01:50	0.00608	0.0121	0.000
N2	JUNCTION	0.000	0.001	0 01:12	0	0.0119	0.000
Out1	OUTFALL	0.005	0.005	0 01:50	0.00502	0.0168	0.000

Flooding refers to all water that overflows a node, whether it ponds or not.

				Total	Maximum
		Maximum	Time of Max	Flood	Ponded
	Hours	Rate	Occurrence	Volume	Volume
Node	Flooded	CMS	days hr:min	10^6 ltr	1000 m3
ST2	4.81	0.008	0 01:50	0.007	0.007

	Flow Freq	Avg Flow	Max Flow	Total Volume
Outfall Node	Pcnt	CMS	CMS	10^6 ltr
Out1	95.97	0.001	0.005	0.017
System	95.97	0.001	0.005	0.017

Link	Туре	Maximum  Flow  CMS	0ccu	of Max rrence hr:min	Maximum  Veloc  m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	0.004	0	01:50	0.50	0.12	0.23
C2	CONDUIT	0.001		01:13	0.27	0.02	0.10
O2	CONDUIT	0.001		01:12	0.37	1.04	1.00

Conduit Surcharge Summary \*\*\*\*\*\*\*\*\*\*\*\*

				Hours	Hours
		Hours Full		Above Full	Capacity
Conduit	Both Ends	Upstream	Dnstream	Normal Flow	Limited
02	4.81	4.81	4.81	4.81	4.81

Analysis begun on: Thu Mar 30 11:48:26 2023 Analysis ended on: Thu Mar 30 11:48:26 2023 Total elapsed time: < 1 sec

```
POST-DEVELOPMENT: 5 YEAR STORM
```

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)

WARNING 04: minimum elevation drop used for Conduit 02

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

NOTE: The summary statistics displayed in this report are based on results found at every computational time step, not just on results from each reporting time step.

\*\*\*\*\*\*\*

Analysis Options

Flow Units CMS
Process Models:
Rainfall/Runoff YES
RDII NO
Snowmelt NO
Groundwater NO

Flow Routing YES
Ponding Allowed YES
Water Quality NO

Water Quality ...... NO
Infiltration Method ..... MODIFIED\_GREEN\_AMPT

Flow Routing Method  $\ldots$  KINWAVE

Antecedent Dry Days .... 0.0
Report Time Step ... 00:10:00
Wet Time Step ... 00:05:00
Dry Time Step ... 00:05:00
Routing Time Step ... 30.00 sec

********	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm
Total Precipitation	0.007	44.160
Evaporation Loss	0.000	0.000
Infiltration Loss	0.004	25.904
Surface Runoff	0.003	18.105
Final Storage	0.000	0.507
Continuity Error (%)	-0.806	

*******	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
*******		
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.003	0.028
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.002	0.021
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.001	0.008
Continuity Error (%)	0.000	

All links are stable.

Minimum Time Step : 30.00 sec
Average Time Step : 30.00 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 1.20
Percent Not Converging : 0.00

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff CMS	Runoff Coeff
A1	44.16	0.00	0.00	23.51	17.22	3.09	20.31	0.01	0.01	0.460
A2 A3	44.16 44.16	0.00 0.00	0.00 0.00	27.59 38.26	13.03 0.00	3.34 6.68	16.37 6.68	0.01 0.00	0.01 0.00	0.371 0.151
A4	44.16	0.00	0.00	18.36	22.14	3.30	25.44	0.01	0.01	0.576
A5	44.16	0.00	0.00	37.77	0.00	7.46	7.46	0.00	0.00	0.169

Node	Туре	Average Depth Meters	Maximum Depth Meters	HGL	Time of Max Occurrence days hr:min	Reported Max Depth Meters
ST1 ST2	JUNCTION JUNCTION	0.01 0.47	0.08 1.24	231.00	0 01:50 0 00:45	0.08 1.24
N2	JUNCTION	0.47	0.05	230.91	0 00:45 0 00:47	0.05
Out1	OUTFALL	0.02	0.02	230.79	0 00:47	0.02

						T-1-1	
		Maximum	Maximum		Lateral	Total	Flow
		Lateral	Total	Time of Max	Inflow	Inflow	Balance
		Inflow	Inflow	Occurrence	Volume	Volume	Error
Node	Type	CMS	CMS	days hr:min	10^6 ltr	10^6 ltr	Percent
ST1	JUNCTION	0.008	0.008	0 01:50	0.00975	0.00975	0.000
ST2	JUNCTION	0.009	0.016	0 01:50	0.0103	0.02	0.000
N2	JUNCTION	0.000	0.001	0 00:46	0	0.0124	0.000
Out1	OUTFALL	0.010	0.010	0 01:50	0.00836	0.0207	0.000

Flooding refers to all water that overflows a node, whether it ponds or not.  $\ensuremath{\mathsf{E}}$ 

Node	Hours Flooded	Maximum Rate CMS	Time of Max Occurrence days hr:min	Total Flood Volume 10^6 ltr	Maximum Ponded Volume 1000 m3
ST2	5.26	0.015	0 01:51	0.014	0.014

O.+C-11 N-4-	Flow	Avg	Max	Total
	Freq	Flow	Flow	Volume
Outfall NodeOut1	Pcnt	CMS	CMS	10^6 ltr
	96.39	0.001	0.010	0.021
System	96.39	0.001	0.010	0.021

Link	Туре	Maximum  Flow  CMS	Time of Max Occurrence days hr:min	Maximum  Veloc  m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	0.008	0 01:51	0.59	0.21	0.32
C2	CONDUIT	0.001	0 00:47	0.28	0.02	0.10
O2	CONDUIT	0.001	0 00:46	0.37	1.07	1.00

Conduit				Hours Above Full Normal Flow	
02	5.26	5.26	5.26	5.26	5.26

Analysis begun on: Thu Mar 30 11:48:18 2023 Analysis ended on: Thu Mar 30 11:48:18 2023 Total elapsed time: < 1 sec

```
POST-DEVELOPMENT: 10 YEAR STORM
```

-----

WARNING 04: minimum elevation drop used for Conduit 02

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

NOTE: The summary statistics displayed in this report are based on results found at every computational time step, not just on results from each reporting time step.

\*\*\*\*\*\*\*

Analysis Options

Flow Units ... CMS
Process Models:
Rainfall/Runoff YES
RDII ... NO
Snowmelt ... NO
Groundwater ... NO
Flow Routing YES
Ponding Allowed YES

Water Quality ...... NO
Infiltration Method ..... MODIFIED\_GREEN\_AMPT

Flow Routing Method ..... KINWAVE

Antecedent Dry Days .... 0.0
Report Time Step ... 00:10:00
Wet Time Step ... 00:05:00
Dry Time Step ... 00:05:00
Routing Time Step ... 30.00 sec

********	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm
********		
Total Precipitation	0.008	52.124
Evaporation Loss	0.000	0.000
Infiltration Loss	0.004	28.611
Surface Runoff	0.004	23.705
Final Storage	0.000	0.507
Continuity Error (%)	-1.342	

*******	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
*******		
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.004	0.037
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.002	0.024
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.001	0.014
Continuity Error (%)	0.000	

All links are stable.

Minimum Time Step : 30.00 sec
Average Time Step : 30.00 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 1.20
Percent Not Converging : 0.00

	Total	Total	Total	Total	Imperv	Perv	Total	Total	Peak	Runoff
	Precip	Runon	Evap	Infil	Runoff	Runoff	Runoff	Runoff	Runoff	Coeff
Subcatchment	mm	mm	mm	mm	mm	mm	mm	10^6 ltr	CMS	
A1	52.12	0.00	0.00	25.94	20.45	5.56	26.00	0.01	0.01	0.499
A2	52.12	0.00	0.00	30.46	15.47	6.15	21.62	0.01	0.01	0.415
A3	52.12	0.00	0.00	42.27	0.00	11.36	11.36	0.00	0.00	0.218
A4	52.12	0.00	0.00	20.31	26.26	5.68	31.94	0.01	0.01	0.613
A5	52.12	0.00	0.00	41.92	0.00	13.86	13.86	0.00	0.00	0.266

Node	Туре	Average Depth Meters	Maximum Depth Meters	HGL	Time of Max Occurrence days hr:min	Reported Max Depth Meters
ST1	JUNCTION	0.01	0.09	231.01	0 01:50	0.09
ST2	JUNCTION	0.56	1.24	232.10	0 00:36	1.24
N2	JUNCTION	0.05	0.05	230.91	0 00:38	0.05
Out1	OUTFALL	0.02	0.02	230.79	0 00:38	0.02

		Maximum	Maximum			Lateral	Total	Flow
		Lateral	Total	Time of	f Max	Inflow	Inflow	Balance
		Inflow	Inflow	0ccurr	rence	Volume	Volume	Error
Node	Туре	CMS	CMS	days hr	r:min	10^6 ltr	10^6 ltr	Percent
ST1	JUNCTION	0.010	0.010	0 6	 01:50	0.0125	0.0125	0.000
ST2	JUNCTION	0.012	0.022	0 6	1:50	0.0136	0.0261	0.000
N2	JUNCTION	0.000	0.001	0 6	00:37	0	0.0126	0.000
Out1	OUTFALL	0.012	0.013	0 6	01:50	0.0111	0.0237	0.000

Flooding refers to all water that overflows a node, whether it ponds or not.

				Total	Maximum
		Maximum	Time of Max	Flood	Ponded
	Hours	Rate	Occurrence	Volume	Volume
Node	Flooded	CMS	days hr:min	10^6 ltr	1000 m3
ST2	5.40	0.021	0 01:51	0.020	0.020

	Flow	Avg	Max	Total
	Freq	Flow	Flow	Volume
Outfall Node	Pcnt	CMS	CMS	10^6 ltr
Out1	96.39	0.001	0.013	0.024
System	96.39	0.001	0.013	0.024

Link	Туре	Maximum  Flow  CMS	Time of Max Occurrence days hr:min	Maximum  Veloc  m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	0.010	0 01:50	0.64	0.28	0.37
C2	CONDUIT	0.001	0 00:38	0.27	0.02	0.10
O2	CONDUIT	0.001	0 00:37	0.37	1.04	1.00

Conduit				Hours Above Full Normal Flow	, ,
02	5.40	5.40	5.40	5.40	5.40

Analysis begun on: Thu Mar 30 11:48:09 2023 Analysis ended on: Thu Mar 30 11:48:09 2023 Total elapsed time: < 1 sec

```
POST-DEVELOPMENT: 25 YEAR STORM
```

-----

WARNING 04: minimum elevation drop used for Conduit 02

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

NOTE: The summary statistics displayed in this report are based on results found at every computational time step, not just on results from each reporting time step.

\*\*\*\*\*\*\*\*\*\*

Analysis Options

Flow Units CMS
Process Models:
Rainfall/Runoff YES
RDII NO
Snowmelt NO
Groundwater NO

Flow Routing .... YES
Ponding Allowed .... YES
Water Quality .... NO

Water Quality ...... NO
Infiltration Method ..... MODIFIED\_GREEN\_AMPT

Flow Routing Method  $\ldots$  KINWAVE

Antecedent Dry Days .... 0.0
Report Time Step ... 00:10:00
Wet Time Step ... 00:05:00
Dry Time Step ... 00:05:00
Routing Time Step ... 30.00 sec

********	Volume	Depth
Runoff Quantity Continuity ************************************	hectare-m	mm
Total Precipitation	0.010	62.200
Evaporation Loss	0.000	0.000
Infiltration Loss	0.005	31.470
Surface Runoff	0.005	31.328
Final Storage	0.000	0.507
Continuity Error (%)	-1.776	

*******	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
*******		
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.005	0.049
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.003	0.027
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.002	0.022
Continuity Error (%)	0.000	

All links are stable.

Minimum Time Step : 30.00 sec
Average Time Step : 30.00 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 1.19
Percent Not Converging : 0.00

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff CMS	Runoff Coeff
A1	62.20	0.00	0.00	28.51	24.53	9.28	33.81	0.02	0.01	0.544
A2	62.20	0.00	0.00	33.43	18.57	10.43	28.99	0.02	0.02	0.466
A3	62.20	0.00	0.00	46.66	0.00	18.16	18.16	0.00	0.00	0.292
A4	62.20	0.00	0.00	22.43	31.54	8.97	40.51	0.01	0.01	0.651
A5	62.20	0.00	0.00	46.30	0.00	19.71	19.71	0.00	0.00	0.317

Node	Туре	Average Depth Meters	Depth	HGL	Time of Max Occurrence days hr:min	Reported Max Depth Meters
ST1	JUNCTION	0.02	0.11	231.03	0 01:50	0.10
ST2	JUNCTION	0.58	1.24	232.10	0 00:31	1.24
N2	JUNCTION	0.05	0.05	230.91	0 00:32	0.05
Out1	OUTFALL	0.02	0.02	230.79	0 00:58	0.02

		 Maximum	Maximum		Lateral	Total	Flow
		Lateral	Total	Time of	Max Inflow	Inflow	Balance
Node	Type	Inflow CMS	Inflow CMS	Occurre days hr:		Volume 10^6 ltr	Error Percent
ST1	JUNCTION	0.014	0.014	0 01	:50 0.0162	0.0162	0.000
ST2	JUNCTION	0.016	0.030	0 01	:50 0.0183	0.0345	0.000
N2	JUNCTION	0.000	0.001	0 00	:31 0	0.0128	0.000
Out1	OUTFALL	0.015	0.015	0 01	:50 0.0147	0.0274	0.000

Flooding refers to all water that overflows a node, whether it ponds or not.  $\ensuremath{\mathsf{E}}$ 

				Total	Maximum
		Maximum	Time of Max	Flood	Ponded
	Hours	Rate	Occurrence	Volume	Volume
Node	Flooded	CMS	days hr:min	10^6 ltr	1000 m3
ST2	5.49	0.028	0 01:50	0.028	0.028

0.45-11.45-1	Flow	Avg	Max	Total
	Freq	Flow	Flow	Volume
Outfall NodeOut1	Pcnt	CMS	CMS	10^6 ltr
	96.53	0.001	0.015	0.027
System	96.53 96.53	0.001	0.015  0.015	0.027
System	90.55	0.001	0.015	0.027

Link	Туре	Flow	Time of Max Occurrence days hr:min	Maximum  Veloc  m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	0.013	0 01:50	0.69	0.37	0.43
C2	CONDUIT	0.001	0 00:58	0.27	0.02	0.10
O2	CONDUIT	0.001	0 00:31	0.37	1.07	1.00

Conduit				Hours Above Full Normal Flow	
02	5.49	5.49	5.49	5.49	5.49

Analysis begun on: Thu Mar 30 11:48:00 2023 Analysis ended on: Thu Mar 30 11:48:00 2023 Total elapsed time: < 1 sec

```
POST-DEVELOPMENT: 50 YEAR STORM
```

\_\_\_\_\_\_

WARNING 04: minimum elevation drop used for Conduit 02

\*

NOTE: The summary statistics displayed in this report are based on results found at every computational time step, not just on results from each reporting time step.

Analysis Options

Flow Units ..... CMS Process Models: Rainfall/Runoff ..... YES

RDII ..... NO Snowmelt ..... NO Groundwater ..... NO Flow Routing ...... YES Ponding Allowed ..... YES

Water Quality ...... NO
Infiltration Method ..... MODIFIED\_GREEN\_AMPT

Flow Routing Method ..... KINWAVE

Starting Date ...... 03/29/2023 00:00:00 Ending Date ..... 03/29/2023 06:00:00

Antecedent Dry Days ..... 0.0 Report Time Step ..... 00:10:00 Wet Time Step ..... 00:05:00 Dry Time Step ...... 00:05:00
Routing Time Step ...... 30.00 sec

********	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm
Total Precipitation	0.011	70.071
Evaporation Loss	0.000	0.000
Infiltration Loss	0.005	33.604
Surface Runoff	0.006	37.136
Final Storage	0.000	0.507
Continuity Error (%)	-1.678	

*******	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
********		
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.006	0.058
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.003	0.030
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.003	0.028
Continuity Error (%)	0.000	

\*\*\*\*\*

Highest Flow Instability Indexes

All links are stable.

\*\*\*\*\*\*\*\* 

Minimum Time Step : 30.00 sec
Average Time Step : 30.00 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : 0.00 Average Iterations per Step : 1.19 Percent Not Converging 0.00

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff CMS	Runoff Coeff
A1	70.07	0.00	0.00	30.42	27.67	12.22	39.89	0.02	0.02	0.569
A2	70.07	0.00	0.00	35.64	20.94	13.84	34.78	0.02	0.02	0.496
A3	70.07	0.00	0.00	49.95	0.00	22.89	22.89	0.00	0.00	0.327
A4	70.07	0.00	0.00	24.02	35.56	11.18	46.74	0.01	0.01	0.667
A5	70.07	0.00	0.00	49.65	0.00	23.59	23.59	0.00	0.00	0.337

Node	Туре	Average Depth Meters	Maximum Depth Meters	HGL	Time of Max Occurrence days hr:min	Reported Max Depth Meters
ST1	JUNCTION	0.02	0.12	231.04	0 01:50	0.12
ST2	JUNCTION	0.59	1.24	232.10	0 00:29	1.24
N2	JUNCTION	0.05	0.05	230.91	0 00:29	0.05
Out1	OUTFALL	0.02	0.02	230.79	0 00:57	0.02

		Maximum	Maximum	Time -C !	Lateral	Total	Flow
		Lateral Inflow	Total Inflow	Time of D		Inflow Volume	Balance Error
Node	Туре	CMS	CMS	days hr:		10^6 ltr	Percent
ST1	JUNCTION	0.016	0.016	0 01	:50 0.0191	0.0191	0.000
ST2	JUNCTION	0.019	0.035	0 01	:50 0.0219	0.041	0.000
N2	JUNCTION	0.000	0.001	0 00	:29 0	0.0129	0.000
Out1	OUTFALL	0.017	0.017	0 01	:50 0.0172	0.03	0.000

Flooding refers to all water that overflows a node, whether it ponds or not.

				Total	Maximum
		Maximum	Time of Max	Flood	Ponded
	Hours	Rate	Occurrence	Volume	Volume
Node	Flooded	CMS	days hr:min	10^6 ltr	1000 m3
ST2	5.53	0.034	0 01:50	0.034	0.034

	Flow	Avg	Max	Total
	Freq	Flow	Flow	Volume
Outfall Node	Pcnt	CMS	CMS	10^6 ltr
Out1	96.67	0.001	0.017	0.030
System	96.67	0.001	0.017	0.030

Link	Туре	Maximum  Flow  CMS	Time of Max Occurrence days hr:min	Maximum  Veloc  m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	0.016	0 01:50	0.72	0.44	0.47
C2	CONDUIT	0.001	0 00:57	0.27	0.02	0.10
O2	CONDUIT	0.001	0 00:29	0.37	1.04	1.00

Conduit				Hours Above Full Normal Flow	
02	5.53	5.53	5.53	5.53	5.53

Analysis begun on: Thu Mar 30 11:47:47 2023 Analysis ended on: Thu Mar 30 11:47:47 2023 Total elapsed time: < 1 sec

```
POST-DEVELOPMENT: 100 YEAR STORM
```

WARNING 04: minimum elevation drop used for Conduit 02

not just on results from each reporting time step.

#### \*\*\*\*\*\*\*

Analysis Options

Flow Units ..... CMS Process Models:

 Rainfall/Runoff
 YES

 RDII
 NO

 Snowmelt
 NO

 Groundwater
 NO

 Flow Routing
 YES

Flow Routing YES
Ponding Allowed YES
Water Quality NO

Water Quality ...... NO
Infiltration Method ..... MODIFIED\_GREEN\_AMPT

Flow Routing Method ..... KINWAVE

Antecedent Dry Days .... 0.0
Report Time Step ... 00:10:00
Wet Time Step ... 00:05:00
Dry Time Step ... 00:05:00
Routing Time Step ... 30.00 sec

********	Volume	Depth
Runoff Quantity Continuity ************************************	hectare-m	mm
	0.012	77 764
Total Precipitation		77.764
Evaporation Loss	0.000	0.000
Infiltration Loss	0.006	35.641
Surface Runoff	0.007	42.854
Final Storage	0.000	0.507
Continuity Error (%)	-1.593	

*******	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
*******		
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.007	0.067
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.003	0.033
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.003	0.035
Continuity Error (%)	0.000	

\*\*\*\*\*\*

Highest Flow Instability Indexes

All links are stable.

#### 

Minimum Time Step : 30.00 sec
Average Time Step : 30.00 sec
Maximum Time Step : 30.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 1.23
Percent Not Converging : 0.00

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff CMS	Runoff Coeff
A1	77.76	0.00	0.00	32.24	30.82	15.08	45.90	0.02	0.02	0.590
A2	77.76	0.00	0.00	37.75	23.33	17.19	40.52	0.03	0.02	0.521
A3	77.76	0.00	0.00	53.10	0.00	27.27	27.27	0.00	0.00	0.351
A4	77.76	0.00	0.00	25.55	39.67	13.22	52.89	0.01	0.01	0.680
A5	77.76	0.00	0.00	52.81	0.00	27.33	27.33	0.00	0.00	0.351

Node	Туре	Average Depth Meters	Maximum Depth Meters	HGL	Time of Max Occurrence days hr:min	Reported Max Depth Meters
ST1	JUNCTION	0.02	0.13	231.05	0 01:50	0.12
ST2 N2	JUNCTION JUNCTION	0.60 0.05	1.24 0.05	232.10 230.91	0 00:25 0 00:25	1.24 0.05
Out1	OUTFALL	0.02	0.02	230.79	0 00:53	0.02

		 Maximum	 Maximum			Lateral	Total	Flow
		Lateral	Total	Time o	of Max	Inflow	Inflow	Balance
		Inflow	Inflow	0ccur	rence	Volume	Volume	Error
Node	Type	CMS	CMS	days h	ır:min	10^6 ltr	10^6 ltr	Percent
ST1	JUNCTION	0.018	0.018	0	01:50	0.022	0.022	0.000
ST2	JUNCTION	0.022	0.040	0	01:50	0.0255	0.0475	0.000
N2	JUNCTION	0.000	0.001	0	00:25	0	0.013	0.000
Out1	OUTFALL	0.019	0.019	0	01:50	0.0197	0.0326	0.000

Flooding refers to all water that overflows a node, whether it ponds or not.  $\ensuremath{\mathsf{E}}$ 

Node	Hours Flooded	Maximum Rate CMS	Time of Max Occurrence days hr:min	Total Flood Volume 10^6 ltr	Maximum Ponded Volume 1000 m3
ST2	5.59	0.039	0 01:50	0.041	0.041

	Flow	Avg	Max	Total
	Freq	Flow	Flow	Volume
Outfall Node	Pcnt	CMS	CMS	10^6 ltr
Out1	96.67	0.002	0.019	0.033
System	96.67	0.002	0.019	0.033

Link	Туре	Maximum  Flow  CMS	Time of Occurre days hr:	ence	Maximum  Veloc  m/sec	Max/ Full Flow	Max/ Full Depth
C1	CONDUIT	0.018	0 00	1:50	0.74	0.50	0.50
C2	CONDUIT	0.001		0:53	0.27	0.02	0.10
O2	CONDUIT	0.001		0:25	0.37	1.02	1.00

Conduit				Hours Above Full Normal Flow	, ,
02	5.59	5.59	5.59	5.59	5.59

Analysis begun on: Thu Mar 30 11:46:01 2023 Analysis ended on: Thu Mar 30 11:46:01 2023 Total elapsed time: < 1 sec

# MAP A CONTEXT MAP Urban Area of WATERFORD





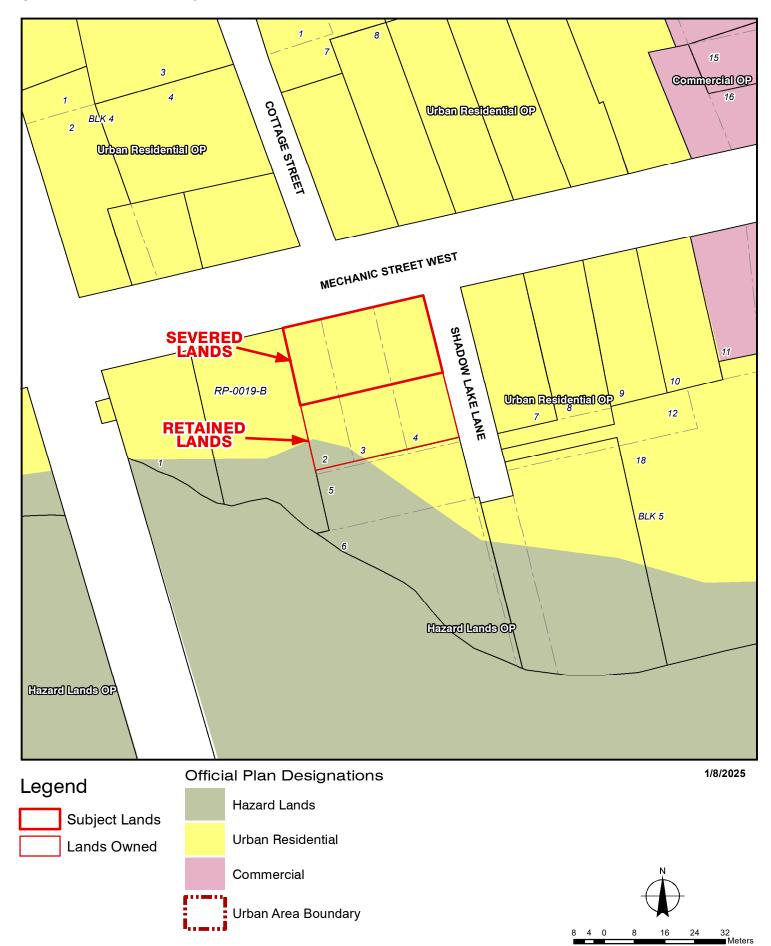
2020 Air Photo



10 5 0 10 20 30 40 Meters

## **MAP B**OFFICIAL PLAN MAP





7.53.75 0

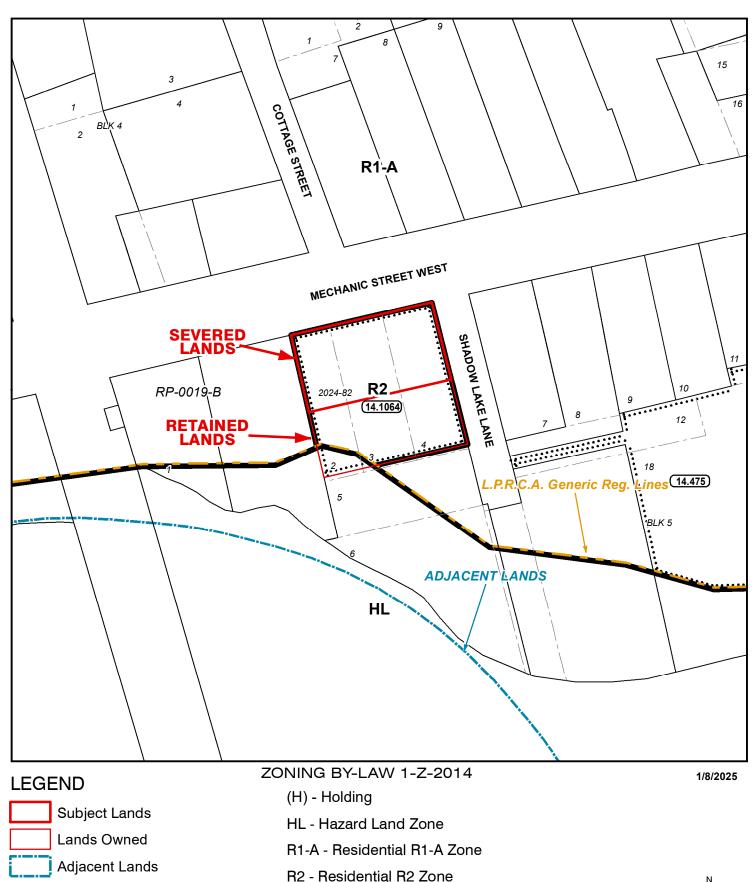
7.5 15

#### MAP C

## PROPOSED ZONING BY-LAW AMENDMENT MAP

Urban Area of WATERFORD

LPRCA Generic RegLines

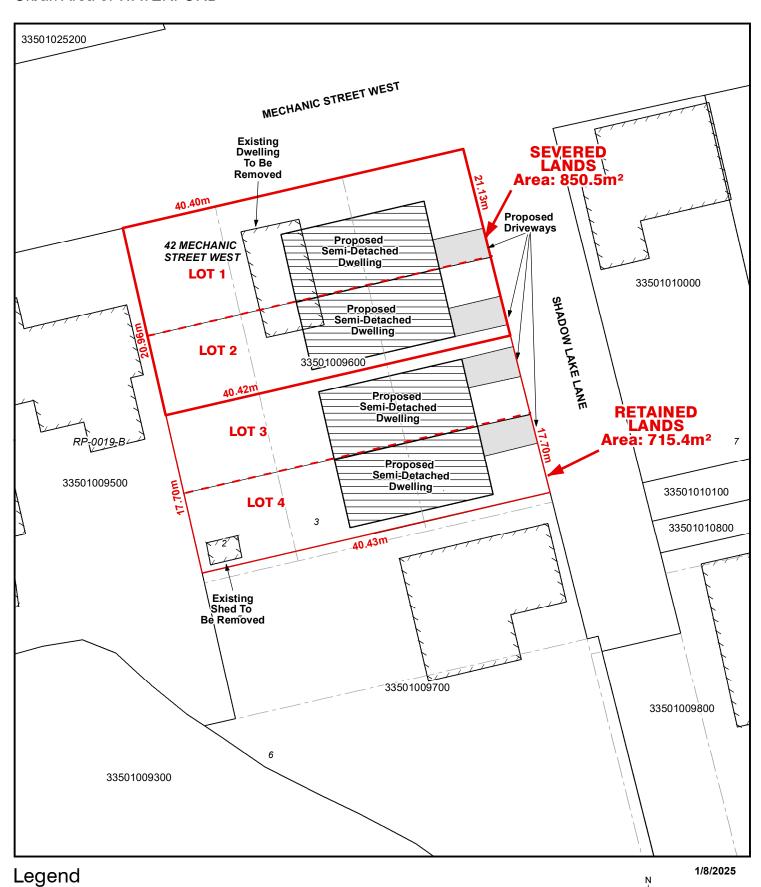


### CONCEPTUAL PLAN

Urban Area of WATERFORD

Subject Lands

Lands Owned



#### **CONCEPTUAL PLAN**

Urban Area of WATERFORD

Subject Lands

Lands Owned

