

**For Office Use Only:**

File Number	<u>ZNPL2022062</u>	Public Notice Sign	
Related File Number		Application Fee	<u>3,897 - 446 = 3,451</u>
Pre-consultation Meeting	<u>September 23, 2021</u>	Conservation Authority Fee	
Application Submitted	<u>February 22, 2022</u>	Well & Septic Info Provided	
Complete Application	<u>February 25, 2022</u>	Planner	<u>Planner/ TBD</u>

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**Check the type of planning application(s) you are submitting.**

- Official Plan Amendment
- Zoning By-Law Amendment
- Temporary Use By-law
- Draft Plan of Subdivision/Vacant Land Condominium
- Condominium Exemption
- Site Plan Application
- Extension of a Temporary Use By-law
- Part Lot Control
- Cash-in-Lieu of Parking
- Renewable Energy Project or Radio Communication Tower

Please summarize the desired end result of this application (for example: a special zoning provision on the subject lands to include additional use(s), changing the zone and/or official plan designation of the subject lands, creating a certain number of lots, or similar)

To permit the construction of a 2400 sq.ft. vet clinic on the property (as per the attached plans)

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**Property Assessment Roll Number:** 494-040-12201-0000



**A. Applicant Information**

**Name of Owner** Eric Elver & Dr. Emily Zakrajsek

It is the responsibility of the owner or applicant to notify the planner of any changes in ownership within 30 days of such a change.

**Address** 522 Talbot Road  
**Town and Postal Code** Delhi, Ontario N4B 2W6  
**Phone Number** 226 268 4665  
**Cell Number**  
**Email** Eric.D.Elver@hotmail.com

**Name of Applicant** Same as Owner  
**Address**  
**Town and Postal Code**  
**Phone Number**  
**Cell Number**  
**Email**

**Name of Agent** J H Cohoon Engineering Limited  
**Address** 440 Hardy Road, Unit 1  
**Town and Postal Code** Brantford, Ontario N3T 5L8  
**Phone Number** 519 753 2656  
**Cell Number**  
**Email** rphillips@cohooneng.com

Please specify to whom all communications should be sent. Unless otherwise directed, all correspondence and notices in respect of this application will be forwarded to both owner and agent noted above.

Owner

Agent

Applicant

Names and addresses of any holder of any mortgagees, charges or other encumbrances on the subject lands:

N/A

## B. Location, Legal Description and Property Information

1. Legal Description (include Geographic Township, Concession Number, Lot Number, Block Number and Urban Area or Hamlet):

LOT 184 (43) CONCESSION 1 SOUTH OF TALBOT RD IN THE  
MIDDLE TOWNSHIP OF NORFOLK COUNTY  
(into severance proposed)

Municipal Civic Address: 522 Talbot Street

Present Official Plan Designation(s): Agriculture

Present Zoning: Agriculture

2. Is there a special provision or site specific zone on the subject lands?

Yes  No If yes, please specify corresponding number:

3. Present use of the subject lands:

Residential

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:

Existing Residential (262.5 sq.m.)

5. If an addition to an existing building is being proposed, please explain what it will be used for (for example: bedroom, kitchen, or bathroom). If new fixtures are proposed, please describe.

N/A

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:

The proposal is to construct a 40' x 60' vet clinic on the property associated with the residential use. (245.5 sq.m. in total area) and the associated parking areas

7. Are any existing buildings on the subject lands designated under the *Ontario Heritage Act* as being architecturally and/or historically significant? Yes  No   
If yes, identify and provide details of the building:

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8. If known, the length of time the existing uses have continued on the subject lands:  
>10 years

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9. Existing use of abutting properties:  
Agricultural

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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:

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### C. Purpose of Development Application

**Note: Please complete all that apply.**

1. Please explain what you propose to do on the subject lands/premises which makes this development application necessary:

The current zoning does not permit the proposed vet clinic within the agriculture zone

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2. Please explain why it is not possible to comply with the provision(s) of the Zoning By-law/and or Official Plan:

See above

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3. Does the requested amendment alter all or any part of the boundary of an area of settlement in the municipality or implement a new area of settlement in the municipality?  Yes  No If yes, describe its effect:

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4. Does the requested amendment remove the subject land from an area of employment?  Yes  No If yes, describe its effect:

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5. Does the requested amendment alter, replace, or delete a policy of the Official Plan?

Yes  No If yes, identify the policy, and also include a proposed text of the policy amendment (if additional space is required, please attach a separate sheet):

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6. Description of land intended to be severed in metric units: *No severance*

Frontage: 110.12

Depth: Varies

Width: N/A

Lot Area: \_\_\_\_\_

Present Use: Agricultural

Proposed Use: Agricultural with provision for Vet Clinic

Proposed final lot size (if boundary adjustment): N/A

If a boundary adjustment, identify the assessment roll number and property owner of the lands to which the parcel will be added: \_\_\_\_\_

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Description of land intended to be retained in metric units:

Frontage: N/A (Entire site)

Depth: \_\_\_\_\_

Width: \_\_\_\_\_

Lot Area: \_\_\_\_\_

Present Use: \_\_\_\_\_

Proposed Use: \_\_\_\_\_

Buildings on retained land: \_\_\_\_\_

7. Description of proposed right-of-way/easement:

Frontage: N/A

Depth: \_\_\_\_\_

Width: \_\_\_\_\_

Area: \_\_\_\_\_

Proposed use: \_\_\_\_\_

8. Name of person(s), if known, to whom lands or interest in lands to be transferred, leased or charged (if known):

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9. Site Information	Zoning	Proposed
Please indicate unit of measurement, for example: m, m <sup>2</sup> or %		
Lot frontage	30	A-xx 110.12
Lot depth	VARIES / N/A	VARIES / EXISTING
Lot width	30	110.12
Lot area	2000	26145
Lot coverage		0.9%
Front yard	13	27.43
Rear yard	9	155.87
Left Interior side yard	3.0 m	5.5 + 82.30
Right Interior side yard		
Exterior side yard (corner lot)	N/A	N/A
Landscaped open space		
Entrance access width		4.5m
Exit access width		4.5 m
Size of fencing or screening		N/A
Type of fencing		N/A
10. Building Size		
Number of storeys	N/A	1
Building height	11	4.5
Total ground floor area	N/A	244.1
Total gross floor area	N/A	244.1
Total useable floor area		244.1
11. Off Street Parking and Loading Facilities		
Number of off street parking spaces	8 plus 1 Accessible	Compliant
Number of visitor parking spaces		
Number of accessible parking spaces		
Number of off street loading facilities		

12. Residential (if applicable)

Number of buildings existing: 1

Number of buildings proposed: 1

Is this a conversion or addition to an existing building?  Yes  No

If yes, describe: \_\_\_\_\_

Type	Number of Units	Floor Area per Unit in m <sup>2</sup>
Single Detached	_____	_____
Semi-Detached	_____	_____
Duplex	_____	_____
Triplex	_____	_____
Four-plex	_____	_____
Street Townhouse	_____	_____
Stacked Townhouse	_____	_____
Apartment - Bachelor	_____	_____
Apartment - One bedroom	_____	_____
Apartment - Two bedroom	_____	_____
Apartment - Three bedroom	_____	_____

Other facilities provided (for example: play facilities, underground parking, games room, or swimming pool):

13. Commercial/Industrial Uses (if applicable)

Number of buildings existing: 0

Number of buildings proposed: 1

Is this a conversion or addition to an existing building?  Yes  No

If yes, describe: \_\_\_\_\_

Indicate the gross floor area by the type of use (for example: office, retail, or storage):

Vet Clinic - 245.5 sq.m.

Seating Capacity (for assembly halls or similar): \_\_\_\_\_

Total number of fixed seats: \_\_\_\_\_

Describe the type of business(es) proposed: **Vet Clinic** \_\_\_\_\_

Total number of staff proposed initially: **8** \_\_\_\_\_

Total number of staff proposed in five years: **14-15** \_\_\_\_\_

Maximum number of staff on the largest shift: **8 initially** \_\_\_\_\_

Is open storage required:  Yes  No

Is a residential use proposed as part of, or accessory to commercial/industrial use?

Yes  No If yes please describe:

Existing Residence to remain

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**14. Institutional (if applicable)**

Describe the type of use proposed: \_\_\_\_\_

Seating capacity (if applicable): \_\_\_\_\_

Number of beds (if applicable): \_\_\_\_\_

Total number of staff proposed initially: \_\_\_\_\_

Total number of staff proposed in five years: \_\_\_\_\_

Maximum number of staff on the largest shift: \_\_\_\_\_

Indicate the gross floor area by the type of use (for example: office, retail, or storage):

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**15. Describe Recreational or Other Use(s) (if applicable)**

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#### **D. Previous Use of the Property**

1. Has there been an industrial or commercial use on the subject lands or adjacent lands?  Yes  No  Unknown

If yes, specify the uses (for example: gas station or petroleum storage):

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2. Is there reason to believe the subject lands may have been contaminated by former uses on the site or adjacent sites?  Yes  No  Unknown

3. Provide the information you used to determine the answers to the above questions:  
Personal Knowledge

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4. If you answered yes to any of the above questions in Section D, a previous use inventory showing all known former uses of the subject lands, or if appropriate, the adjacent lands, is needed. Is the previous use inventory attached?  Yes  No

#### **E. Provincial Policy**

1. Is the requested amendment consistent with the provincial policy statements issued under subsection 3(1) of the *Planning Act*, R.S.O. 1990, c. P. 13?  Yes  No

If no, please explain:

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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

If no, please explain:

The proposed development is within the developed portion of the site.

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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

If no, please explain:

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**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.

4. 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 \_\_\_\_\_  
**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 \_\_\_\_\_  
**Active mine site within one kilometre**

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. Servicing and Access**

### **1. Indicate what services are available or proposed:**

#### **Water Supply**

Municipal piped water       Communal wells  
 Individual wells       Other (describe below)

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#### **Sewage Treatment**

Municipal sewers       Communal system  
 Septic tank and tile bed in good working order       Other (describe below)

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#### **Storm Drainage**

Storm sewers       Open ditches  
 Other (describe below)

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### **2. Existing or proposed access to subject lands:**

Municipal road       Provincial highway  
 Unopened road       Other (describe below)

Name of road/street: Talbot Road

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## **G. Other Information**

### **1. Does the application involve a local business? Yes No**

**If yes, how many people are employed on the subject lands?**

Once the building is complete. There will be at minimum 8 employee's, but within 5 years there will be close to 15

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### **2. Is there any other information that you think may be useful in the review of this application? If so, explain below or attach on a separate page.**

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## **H. Supporting Material to be submitted by Applicant**

In order for your application to be considered complete, **folded hard copies (number of paper copies as directed by the planner) and an electronic version (PDF) of the properly named site plan drawings, additional plans, studies and reports will be required, including but not limited to the following details:**

1. Concept/Layout Plan
2. All measurements in metric
3. Key map
4. Scale, legend and north arrow
5. Legal description and municipal address
6. Development name
7. Drawing title, number, original date and revision dates
8. Owner's name, address and telephone number
9. Engineer's name, address and telephone number
10. Professional engineer's stamp
11. Existing and proposed easements and right of ways
12. Zoning compliance table – required versus proposed
13. Parking space totals – required and proposed
14. All entrances to parking areas marked with directional arrows
15. Loading spaces, facilities and routes (for commercial developments)
16. All dimensions of the subject lands
17. Dimensions and setbacks of all buildings and structures
18. Location and setbacks of septic system and well from all existing and proposed lot lines, and all existing and proposed structures
19. Gross, ground and useable floor area
20. Lot coverage
21. Floor area ratio
22. Building entrances, building type, height, grades and extent of overhangs
23. Names, dimensions and location of adjacent streets including daylighting triangles
24. Driveways, curbs, drop curbs, pavement markings, widths, radii and traffic directional signs
25. All exterior stairways and ramps with dimensions and setbacks
26. Retaining walls including materials proposed
27. Fire access and routes
28. Location, dimensions and number of parking spaces (including visitor and accessible) and drive aisles
29. Location of mechanical room, and other building services (e.g. A/C, HRV)
30. Refuse disposal and storage areas including any related screening (if indoors, need notation on site plan)
31. Winter snow storage location



32. Landscape areas with dimensions
33. Natural features, watercourses and trees
34. Fire hydrants and utilities location
35. Fencing, screening and buffering – size, type and location
36. All hard surface materials
37. Light standards and wall mounted lights (plus a note on the site plan that all outdoor lighting is to be dark sky compliant)
38. Business signs (make sure they are not in sight lines)
39. Sidewalks and walkways with dimensions
40. Pedestrian access routes into site and around site
41. Bicycle parking
42. Architectural elevations of all building sides
43. All other requirements as per the pre-consultation meeting

In addition, the following additional plans, studies and reports, including but not limited to, **may also be required as part of the complete application submission:**

- Zoning Deficiency Form
- On-Site Sewage Disposal System Evaluation Form (to verify location and condition)
- Architectural Plan
- Buildings Elevation Plan
- Cut and Fill Plan
- Erosion and Sediment Control Plan
- Grading and Drainage Control Plan (around perimeter and within site) (existing and proposed)
- Landscape Plan
- Photometric (Lighting) Plan
- Plan and Profile Drawings
- Site Servicing Plan
- Storm water Management Plan
- Street Sign and Traffic Plan
- Street Tree Planting Plan
- Tree Preservation Plan
- Archaeological Assessment
- Environmental Impact Study



- Functional Servicing Report
- Geotechnical Study / Hydrogeological Review
- Minimum Distance Separation Schedule
- Noise or Vibration Study
- Record of Site Condition
- Storm water Management Report
- Traffic Impact Study – please contact the Planner to verify the scope required

**Site Plan applications will require the following supporting materials:**

1. Two (2) complete sets of the site plan drawings folded to 8½ x 11 and an electronic version in PDF format
2. Letter requesting that the Holding be removed (if applicable)
3. A cost estimate prepared by the applicant's engineer
4. An estimate for Parkland dedication by a certified land appraiser
5. Property Identification Number (PIN) printout

**Standard condominium exemptions will require the following supporting materials:**

- Plan of standard condominium (2 paper copies and 1 electronic copy)
- Draft condominium declaration
- Property Identification Number (PIN) printout

**Your development approval might also be dependent on Ministry of Environment and Climate Change, Ministry of Transportation or other relevant federal or provincial legislation, municipal by-laws or other agency approvals.**

**All final plans must include the owner's signature as well as the engineer's signature and seal.**

### **I. Development Agreements**

A development agreement may be required prior to approval for site plan, subdivision and condominium applications. Should this be necessary for your development, you will be contacted by the agreement administrator with further details of the requirements including but not limited to insurance coverage, professional liability for your engineer, additional fees and securities.

#### **J. 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.

#### **K. 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.

#### **L. Freedom of Information**

For the purposes of the *Municipal Freedom of Information and Protection of Privacy Act*, I authorize and consent to the use by or the disclosure to any person or public body any information that is collected under the authority of the *Planning Act, R.S.O. 1990, c. P. 13* for the purposes of processing this application.

Eric Elver Emily Zakrajsek

Feb 15, 2022

Owner/Applicant Signature

Date

#### **M. Owner's Authorization**

If the applicant/agent is not the registered owner of the lands that is the subject of this application, the owner(s) must complete the authorization set out below.

I/We E. Elver & Dr. Emily Zakrajsek am/are the registered owner(s) of the lands that is the subject of this application.

I/We authorize J H Cohoon Engineering Limited to make this application on my/our behalf and to provide any of my/our personal information necessary for the processing of this application. Moreover, this shall be your good and sufficient authorization for so doing.

Eric Elver Eric Elver

Feb 15, 2022

Owner

Date

Dr. Emily Zakrajsek Emily Zakrajsek

FEB 15, 2022

Owner

Date

**N. Declaration**

I, R W Phillips

of City of Brantford

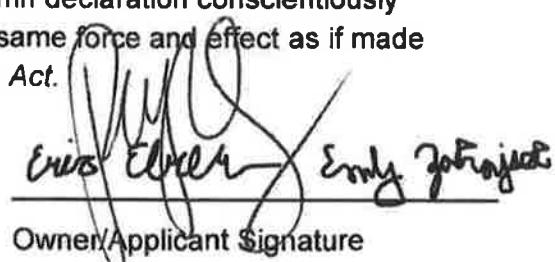
solemnly declare that:

all of the above statements and the statements contained in all of the exhibits transmitted herewith are true and I make this solemn declaration conscientiously believing it to be true and knowing that it is of the same force and effect as if made under oath and by virtue of *The Canada Evidence Act*.

Declared before me at:

City of Brantford

In County of Brant

  
Eric Clarkson      Emily Zografos  
Owner/Applicant Signature

This 15th day of Feb

A.D., 2022

Linda Clarkson

A Commissioner, etc.

**LINDA ELAINE CLARKSON**  
a Commissioner, etc., Province of Ontario  
for J.H. Cohoon Engineering Limited.  
Expires June 17, 2024



# J.H. COHOON ENGINEERING LIMITED

## CONSULTING ENGINEERS

440 Hardy Road, Unit #1, Brantford, ON N3T 5L8  
Tel: (519) 753-2656 Fax: (519) 753-4263  
[www.cohooneng.com](http://www.cohooneng.com)

February 14, 2022

County of Norfolk  
Community Planning Services  
60 Colborne Street South  
Simcoe, Ontario  
N3Y 4H3

Attention: Ms. Nicole Goodbrand  
Senior Planner

Re: Proposed Veterinary Clinic  
MN 522 Talbot Road  
Delhi, Ontario  
Norfolk County

Dear Ms. Goodbrand:

On behalf of our client, Mr. E. Elvers, please find enclosed the following information regarding our application for Re-Zoning relating to the above noted site.

1. One (1) copy of the pre-consultation notes relating to the meeting held September 23, 2021
2. Two (2) copies of the site development plan being drawing 15135-1 as prepared by our office (J H Cohoon Engineering Limited) which includes the preliminary landscaping plan for the development.
3. A cheque in the amount of \$ 3,897.00 from the developer of this site being the fee relating to the Official Plan Amendment and Re-Zoning Application being requested on this site.
4. Two (2) copies of the "Norfolk County Planning Department Development Application Form" as completed by our office including an authorization letter from the owner.
5. Two (2) copies of the planning justification report prepared by The Angrish Group in support of this application.
6. Two (2) copies of the preliminary building design as prepared by Joe's Carpentry relating to this development
7. Two (2) copies of the stormwater management report as prepared by J H Cohoon Engineering Limited as it relates to this development



Professional Engineers  
Ontario

8. Two (2) copies of the traffic impact brief as prepared by J H Cohoon Engineering Limited as it relates to this development
9. Electronic / USB drive of all to the above noted information.

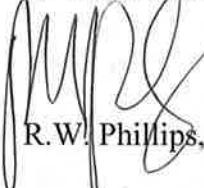
The proposal is to construct a 245.2 sq.m. single storey veterinary clinic to be located to the east of the existing residence on the subject property. As we understand, the rezoning amendment are required to allow for the establishment of the Veterinary Clinic on the lands (which are presently zoned "A - Agriculture" in the Norfolk County zoning bylaw).

With the submission of this information, we would respectfully your prompt circulation of the application to the various departments. We will make that submission at that time

If you require any further details, please do not hesitate to contact this office, at your earliest convenience.

Yours truly,

J.H. COHOON ENGINEERING LIMITED



R.W. Phillips, P.Eng.

c.c. E. Elvers



**THE ANGRISH GROUP**

156 Charing Cross Street, Brantford, ON N3R2J4

## **Planning Justification Report**

**522 Talbot Road, Delhi, Norfolk County**

Prepared For: Emily Zakrajsek

Prepared By: The Angrish Group

February 15, 2022

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## **1. Introduction**

The Planning Justification Report (PJR) has been prepared by The Angrish Group for the property municipally known as 522 Talbot Road, Delhi, Norfolk County.

A Zoning By-Law Amendment is proposed to allow the use of the property for a small scale veterinary clinic. An accessory building of approximately 224 sq.mt (2400 sq. ft.) will be constructed on the lands for the clinic which will be operated by the property owner and at least one other employee. The veterinary clinic will cater to the agricultural community as well as local residents by treating both farm animals and domesticated pets.

The PJR will provide an analysis of the provincial and municipal planning framework and provide a professional planning opinion related to the proposed Zoning By-Law Amendment Application required for the proposed veterinary clinic use in an agricultural area of the County.

## **2. Location and Description of Subject Lands**

The subject lands are described Part Lot 184 Con STR Middleton, Part 1 of 37R-9093 and are located at 522 Talbot Road, Delhi, Norfolk County.

The subject lands are approximately 6.5 acres (2.6 hectares) in size with a frontage of 110 meters (360 feet) on Talbot Street.

The lands contain a single detached dwelling and accessory structures in the form of two small sheds.

The property is located on the south side of Talbot Street, north of Old Mill Road and outside the Urban Boundary of Delhi. The lands are within the agricultural area of the County.

There are single detached dwellings located immediately to the east and west side of the property and agricultural farms located to the north and south.

The southern portion of the property is located within the regulation limit of Long Point Conservation Authority due to the presence of Hazard Lands. Additionally, there are Significant Woodlands on the property.

Map 1 below shows the location of the property and the surrounding land uses.

Map 1: Location of Subject Lands



### **3. Proposal**

The application proposes a veterinary clinic to be allowed on the subject lands to serve the local residential and farming community. The accessory building of approximately 224 sq.mt (2400 sq. ft.) will be constructed on the lands for the small scale clinic which will be operated by the property owner and at least one other employee. The veterinary clinic will serve farm animals as well as domesticated animals from the local community. The existing driveway will be utilized for the proposed use and no overnight stay of animals is being proposed for the site.

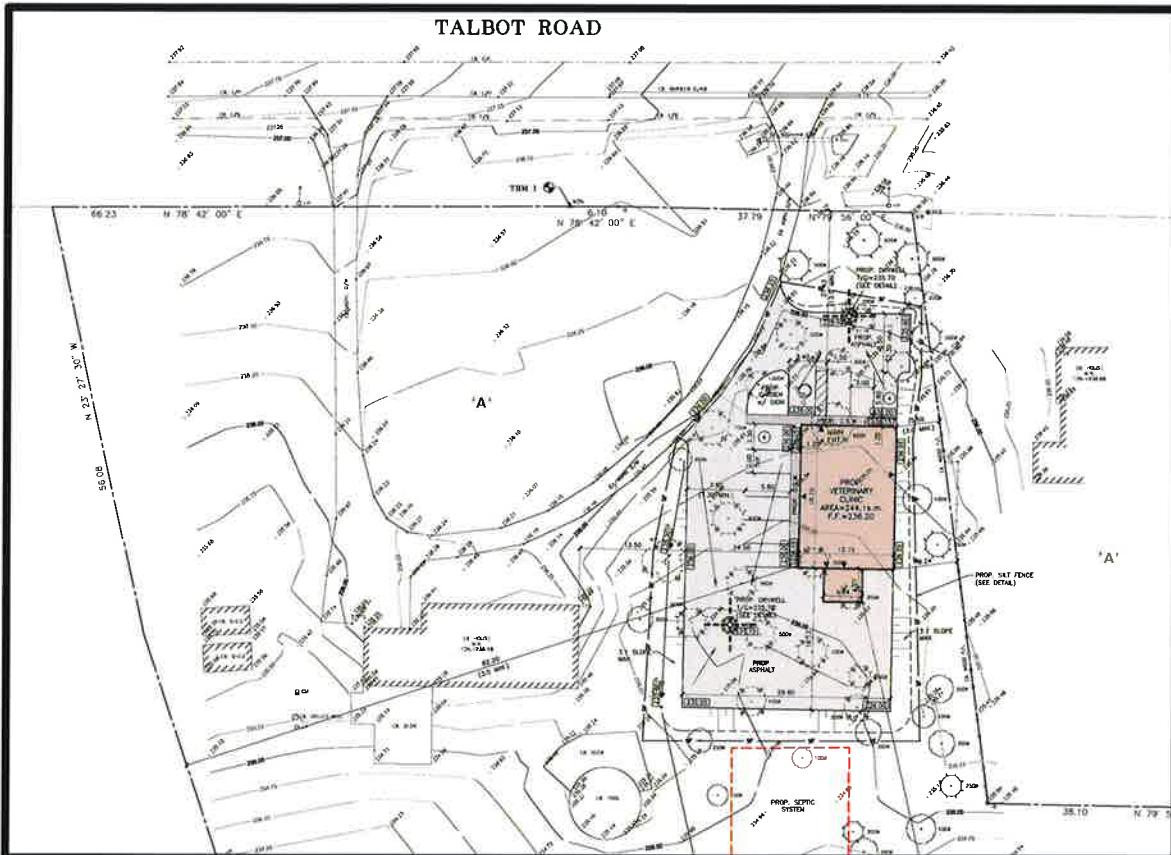
The subject lands are located within the Prime Agricultural Area of Norfolk County. The lands are currently designated Agricultural and Hazard Lands in the Norfolk County Official Plan (2018) (the “Official Plan”) zoned Agricultural (A) and Hazard Lands (HL) in the Norfolk County Zoning By-Law 1-Z-14. The municipal policy framework allows diversified agricultural uses that support the local farming community.

The proposed use will comply with the regulations of the Zoning By-Law.

A pre-consultation meeting with County staff was held on September 23, 2021 to discuss the proposed use. Staff noted that since a portion of the lands are within Significant Woodlands, Forestry Department will need to confirm the presence and the extent of the woodland boundaries. The proposed building is located outside the natural heritage features and it is our understanding that the Forestry Staff has confirmed there will be no negative impacts.

A Site Development Plan is included in the application submission and is noted in Map 2 below.

Map 2: Proposed Site Development Plan



A total of 10 parking spaces will be provided on site in addition to one (1) barrier-free parking space in accordance with the regulations of the Zoning By-Law. The proposed building will comply with the regulations of the Zoning By-Law.

It is proposed to amend the Zoning By-Law 1-Z-14 from the current Agricultural (A) Zone to Special Provision Agricultural (A-xxx) Zone to allow a veterinary clinic as a permitted use.

A Site Plan Control Application will also be submitted for the development of this site.

## 4. The Policy Context

The application is subject to the provisions of the Planning Act, as amended. All Planning Act applications are evaluated to ensure that the proposal is consistent with the Provincial Policy Statement (2020) and is in conformity with the Official Plan. This section demonstrates that the proposed application is consistent with, and conform to, the applicable provincial and local planning policy framework.

### 4.1. Provincial Policy Statement (2020)

The Provincial Policy Statement, 2020 (PPS) is issued in accordance with Section 3 of the Planning Act and came into effect on May 1, 2020. Section 3 of the Planning Act requires that decisions affecting planning matters “shall be consistent with” the PPS.

The PPS provides policy direction on matters of provincial interest related to land use planning and development in Ontario and sets the policy foundation for regulating the development and use of land. The PPS encourages strong communities, a clean and healthy environment and a strong economy and highlights that long-term prosperity, human and environmental health and social well-being should take precedence over short-term considerations.

*The subject property is located within the Prime Agricultural Area of Norfolk County. The lands are designated as Agricultural and Hazard Lands in the Official Plan. The property is serviced by private water and sanitary services. The property is not being farmed. The proposed use is very small scale in nature and supports the local agricultural community. The proposed building will be located outside the hazard lands, hence protecting the natural heritage features.*

It is my professional opinion that the proposal is consistent with the Provincial Policy Statement (2020).

### 4.2. Guidelines on Permitted Uses in Agricultural Areas

Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) released the Guidelines on Permitted Uses in Ontario's Prime Agricultural Areas. These guidelines assist in interpreting the policies in the Provincial Policy Statement (PPS) on the uses that are permitted in prime agricultural areas. The intent of PPS and these guidelines is to allow uses in prime agricultural areas that ensure settlement areas remain the focus of growth and development and ensures that prime agricultural areas are protected.

*The subject lands are not actively used for agricultural. The lands and the immediate surrounding properties contain mainly rural residential uses. No prime agricultural area will be taken out of production for the proposed veterinary clinic.*

*The proposed building will be located outside the hazard lands, hence protecting the natural heritage features.*

*The use is compatible with the surrounding agricultural uses as it will provide support and care of farm animals along with providing services to the domesticated animals. The proposed use will not create any land use conflicts and will provide direct and valuable services to the local agricultural community. The use of the property for a small scale veterinary clinic will diversify the rural economy by providing employment.*

*While a veterinary clinic is considered as an on-farm diversified use in the guidelines, the “on-farm diversified uses provisions in the PPS do not apply to small residential lots in the prime agricultural area”. The subject lands contain a residential use in an agricultural area. Hence the detailed assessment of an on-farm diversified use is not conducted for the proposed use.*

It is my professional opinion that the proposal meets the policy direction noted in the Guidelines on Permitted Uses in Ontario's Prime Agricultural Areas.

#### **4.3. Official Plan (2018)**

The Official Plan was adopted by County Council in 2006 with the five-year review completed in 2018. The Official Plan was approved by the Ministry of Municipal Affairs and Housing on October 5, 2018. The Official Plan provides a framework of objectives and strategies, land use designations and policies intended to guide the future growth and development in the County which will result in strong, balanced, sustainable, and complete communities.

*The subject property is designated Agricultural and Hazard Lands in the Official Plan. An excerpt from the Land Use Schedule B with the location of the property is shown on Map 3 below.*

Section 7.2 of the Official Plan provides policies for Agricultural Designation. The policies allow agricultural related commercial and industrial uses subject to a number of criteria (7.2.2.d).

- i. *The proposed use for a veterinary clinic will provide support to the agricultural community.*
- ii. *The use is proposed in the agricultural area of the County and provides direct services to surrounding farms.*
- iii. *The subject lands contain a residential use and are not farmed. The proposed use will be compatible with the surrounding agricultural operations.*

- iv. *The lands front on a municipal road and a new septic system will be installed for the proposed building.*

Map 2: Official Plan



- v. *The proposed use will maintain the agricultural character of the area by providing direct services to the local community.*
- vi. *There will be no negative impact on any municipal infrastructure.*
- vii. *The proposed veterinary clinic serving farm animals will not undermine the agricultural area of the County.*
- viii. *Technical information will be provided to support this application.*
- ix. *There will be no negative impact on the surrounding residences. There are adequate buffers in terms of existing trees and setbacks provided from the building to mitigate any impacts. No noise is expected to be generated for providing care for the animals. No overnight stay is being proposed. The parking to the building will be located away from the existing residences.*
- x. *The proposed building will be located outside the natural heritage features and it is our understanding that the Forestry Staff has confirmed there will be no negative impacts on the woodlot on the property.*
- xi. *The proposed building is located outside the natural heritage features.*

- xii. *A site-specific Zoning By-Law Amendment is being proposed to allow the use of the property for a veterinary clinic.*
- xiii. *A Site Plan Control Application will be submitted.*

It is my professional opinion that the proposed applications conform with the policies of Norfolk County Official Plan.

#### **4.1. Minimum Distance Separation Guidelines**

Minimum Distance Separation (MDS) Guidelines is prepared by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) and represents the Minimum Distance Separation Formulae as defined in the Provincial Policy Statement, 2014 (PPS). The MDS Document is a land use planning tool with the intent to prevent land use conflicts and minimize nuisance complaints from odour.

While MDS setbacks are an important and effective tool for dealing with nuisance issues related to odour, these do not eliminate all potential odour complaints.

MDS I formula determines setbacks between proposed new development and existing livestock facilities and MDS II formula determines setbacks between proposed new, enlarged or renovated livestock facilities and other existing or approved development.

*The subject lands are located in Prime Agricultural Area of Norfolk County and are designated Agricultural and Hazard Lands in the Official Plan. In accordance with the MDS Guidelines, the proposed veterinary clinic will not raise, house or keep livestock and is not considered as a livestock facility as defined in these guidelines. There are no manure storage facilities proposed on the subject property.*

*As per Guideline #35, the proposed use will not generate high human occupancy or activity generating more traffic to the agricultural area. however, this will support the local livestock operations by providing a service closer to the farms. There are no specific provisions in the County's Official Plan or Zoning By-Law that provides directions on applicability of MDS in such scenarios.*

It is my professional opinion that based on the review of Minimum Distance Separation (MDS) Guidelines, the proposal conforms to the general intent of the guidelines and that MDS shall not apply for the proposed veterinary clinic.

#### **4.2. Zoning By-Law**

The lands are zoned in part Agricultural (A) and Hazard Lands (HL) in Norfolk County Zoning By-Law 1-Z-2014.

An amendment to the Zoning By-Law is required to allow a veterinary clinic on subject lands.

## 5. Summary and Recommendations

The proposed application for a Zoning By-Law Amendment is requested to allow a veterinary clinic. An accessory building of approximately 224 sq.mt (2400 sq. ft.) will be constructed on the lands for the small scale clinic which will be operated by the property owner and at least one other employee. The veterinary clinic will serve farm animals as well as domesticated animals from the local community. The existing driveway will be utilized for the proposed use and no overnight stay of animals is being proposed for the site. The proposal meets the policy direction and provides direct services to agricultural area of the County.

It is my professional opinion that the proposed application is

- consistent with the Provincial Policy Statement;
- conforms with the policies of the Norfolk County Official Plan; and
- complies with the regulations of the Norfolk County Zoning By-Law 1-Z-2014.

The proposed Zoning By-Law Amendment Application represents good land use planning, and it is requested to the Council of the Norfolk County that the application be approved.

Respectfully Submitted,

**TAG – The Angrish Group**



Ruchika Angrish, MPlan, B.Tech, MCIP, RPP  
Co-Founder

CC: J.H. Cohoon Engineering Ltd.

*I hereby certify that this Planning Justification Report was prepared by a Registered Professional Planner, within the meaning of the Ontario Professional Planners' Institute Act, 1994.*



February 15, 2022

*I hereby certify that this plan/report was prepared by a Registered Professional Planner, within the meaning of the Ontario Professional Planners' Institute Act, 1994.*

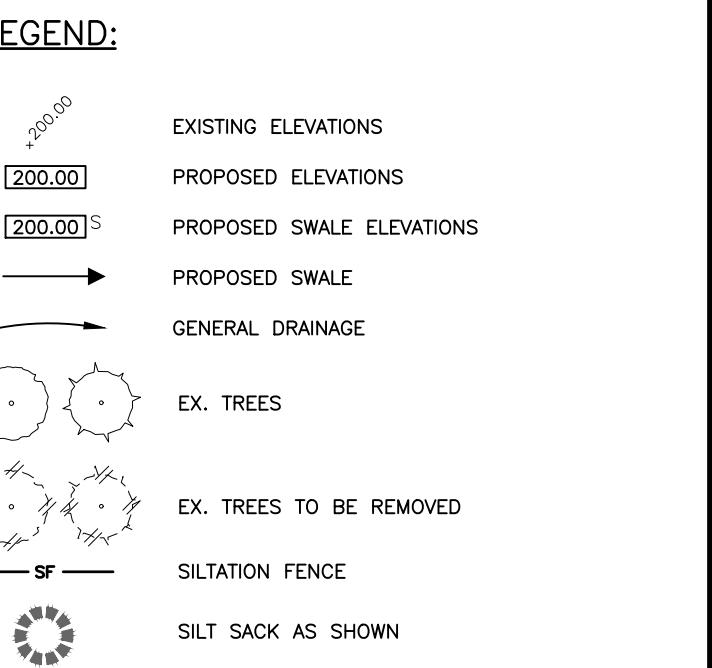
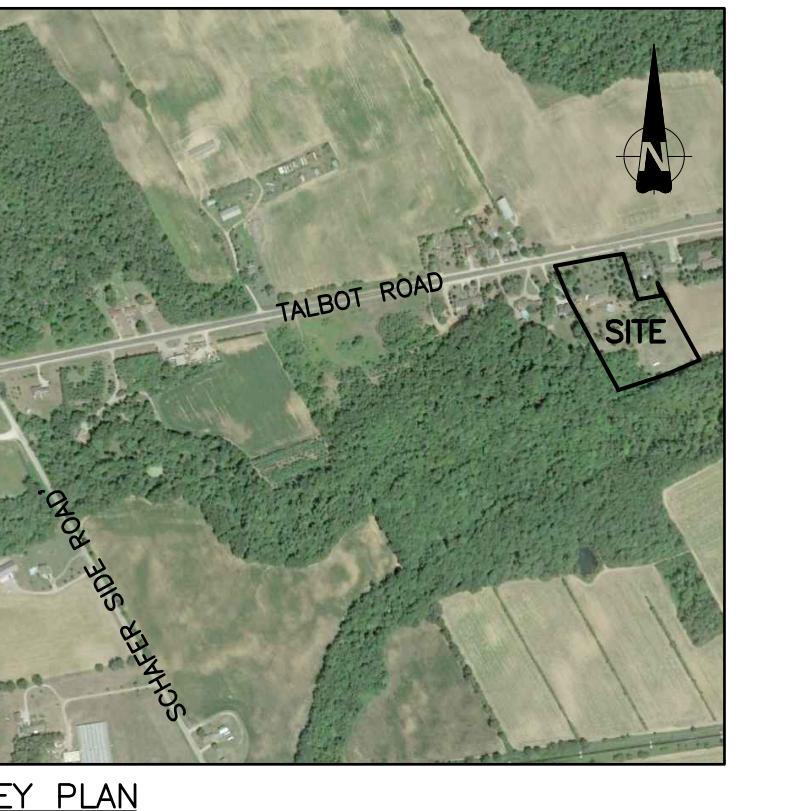
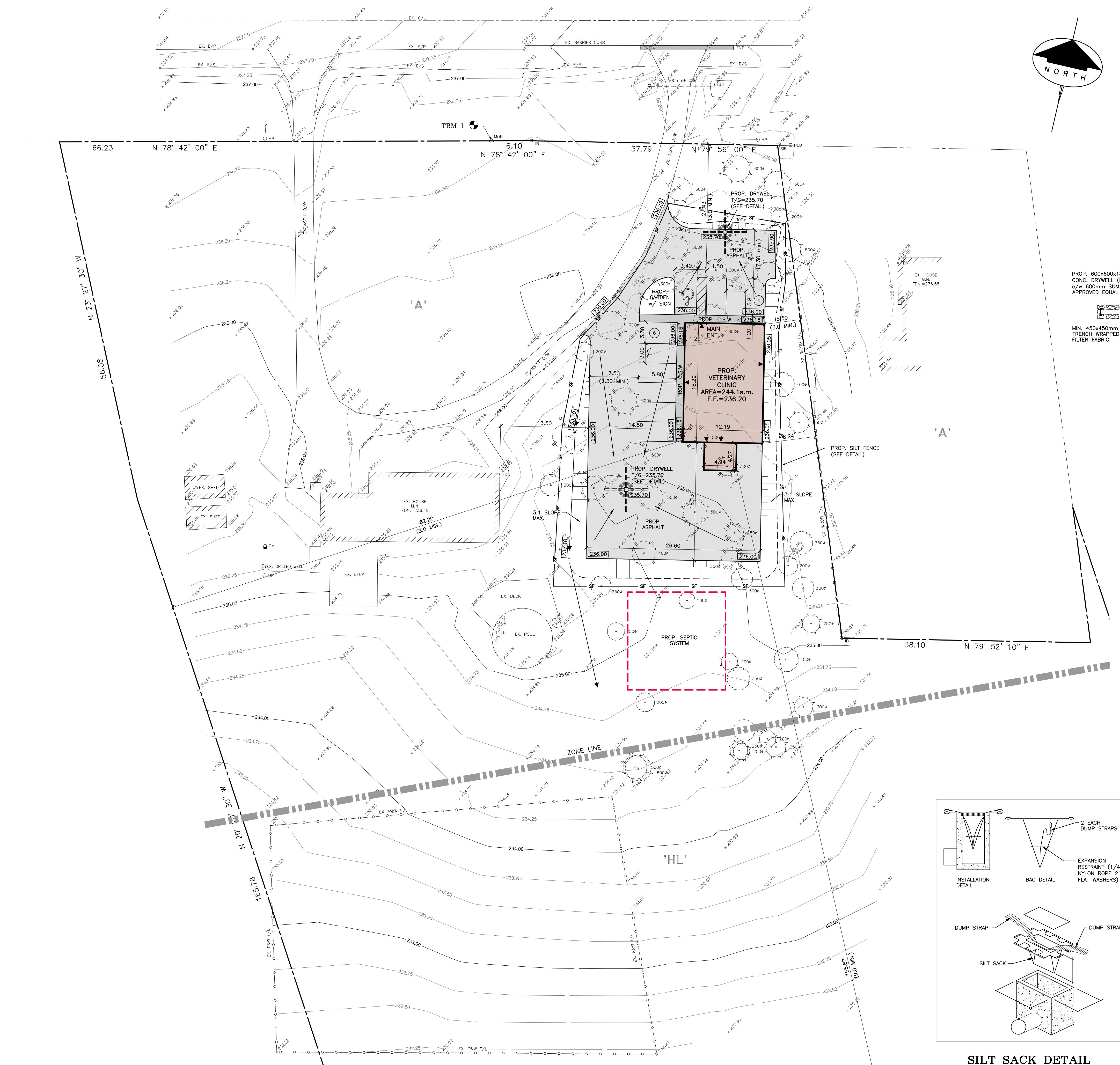
Feb 15, 2022

Date

Ruchika Angrish  
Registered Professional Planner



# TALBOT ROAD



1. ALL ELEVATIONS SHOWN ARE METRIC.  
 2. BUILDER/OWNER TO VERIFY COMPLIANCE WITH ZONING BYLAWS (ie. SIDEYARDS, SETBACKS, REARYARDS ETC.)  
 3. 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.  
 4. ALL SEC MEASURES ARE TO BE IN PLACE PRIOR TO COMMENCEMENT OF CONSTRUCTION.  
 5. OWNER/CONTRACTOR TO MAINTAIN EROSION CONTROL MEASURES THROUGHOUT SITE UNTIL A COMPLETE GRASS/VEGETATION COVER IS ACHIEVED.  
 6. ONLY AT THE DIRECTION OF THE ENGINEER ARE THE SEC MEASURES TO BE REMOVED.  
 7. SITE WORKS ARE TO BE STAGED IN SUCH A MANNER THAT EROSION WILL BE MINIMIZED, AND THE CONSULTANT MUST PROVIDE CONSTRUCTION STAGING PLANS. EROSION AND EROSION CONTROL FACILITIES HAVE BEEN INSTALLED PRIOR TO THE COMMENCEMENT OF ANY GRADING, EXCAVATION OR DEMOLITION.  
 8. CLEARING AND GRUBBING OF THE SITE SHOULD BE KEPT TO A MINIMUM AND VEGETATION REMOVED ONLY IN ADVANCE OF IMMEDIATE CONSTRUCTION.  
 9. STAPLES OR EARTH OR TOPSOIL ARE TO BE LOCATED AND PROTECTED TO MINIMIZE ENVIRONMENTAL INTERFERENCE. EROSION CONTROL FENCING IS TO BE INSTALLED AROUND THE BASE OF ALL STOCKPILES.  
 10. THE OWNER IS RESPONSIBLE TO ENSURE THE MUNICIPAL ROADWAYS ARE CLEANED OF ALL SEDIMENTS FROM VEHICULAR TRAFFIC ETC. FROM THE SITE, AT THE END OF EACH WORKDAY.  
 11. ALL DISTURBED AREAS, NOT INCLUDED IN THE CONSTRUCTION ZONE, ARE TO BE TOPSOILED AND SEDED IMMEDIATELY AFTER COMPLETION OF AREA GRADING.  
 12. ALL EXISTING AND PROPOSED CATCHBASINS ON THE SUBJECT PROPERTY, PLUS ANY CATCHBASINS WITHIN THE INFLUENCE OF RUNOFF FROM THE SITE, ARE TO BE PROTECTED WITH FILTER CLOTH OR APPROVED EQUIVALENT.

T.B.M. No. 1 ELEV. = 0m (GEO)  
TOP NUT OF FIRE HYDRANT AT INTERSECTION AS SHOWN.

**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](http://www.cohooneng.com)

PROJECT:

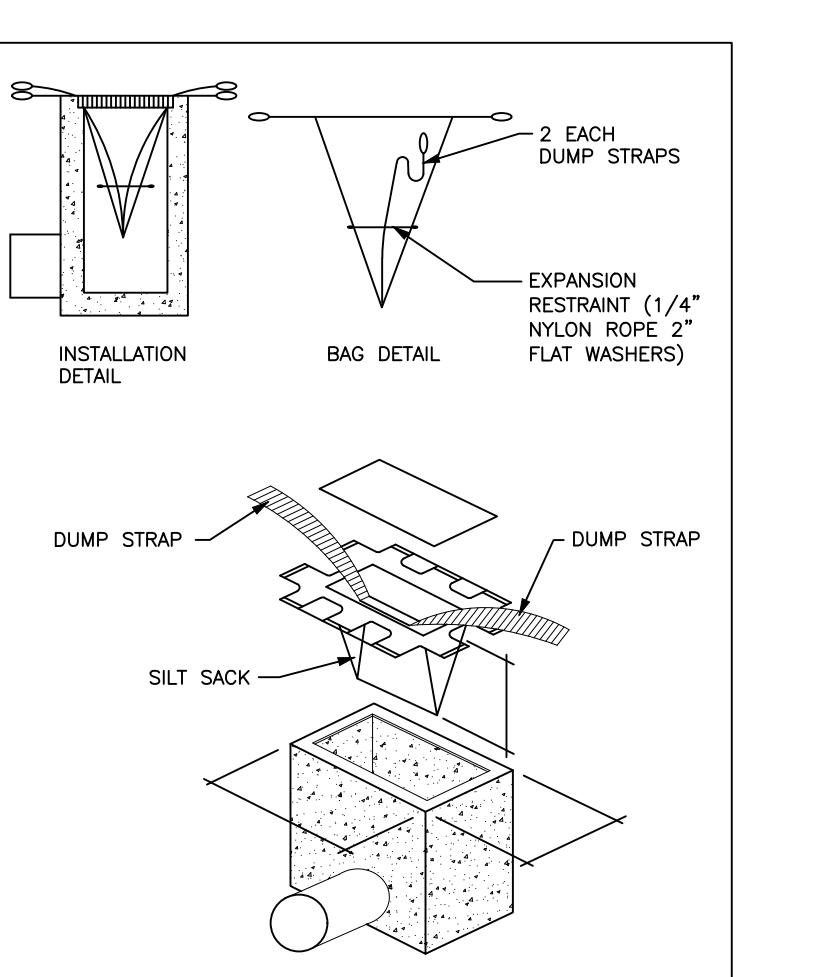
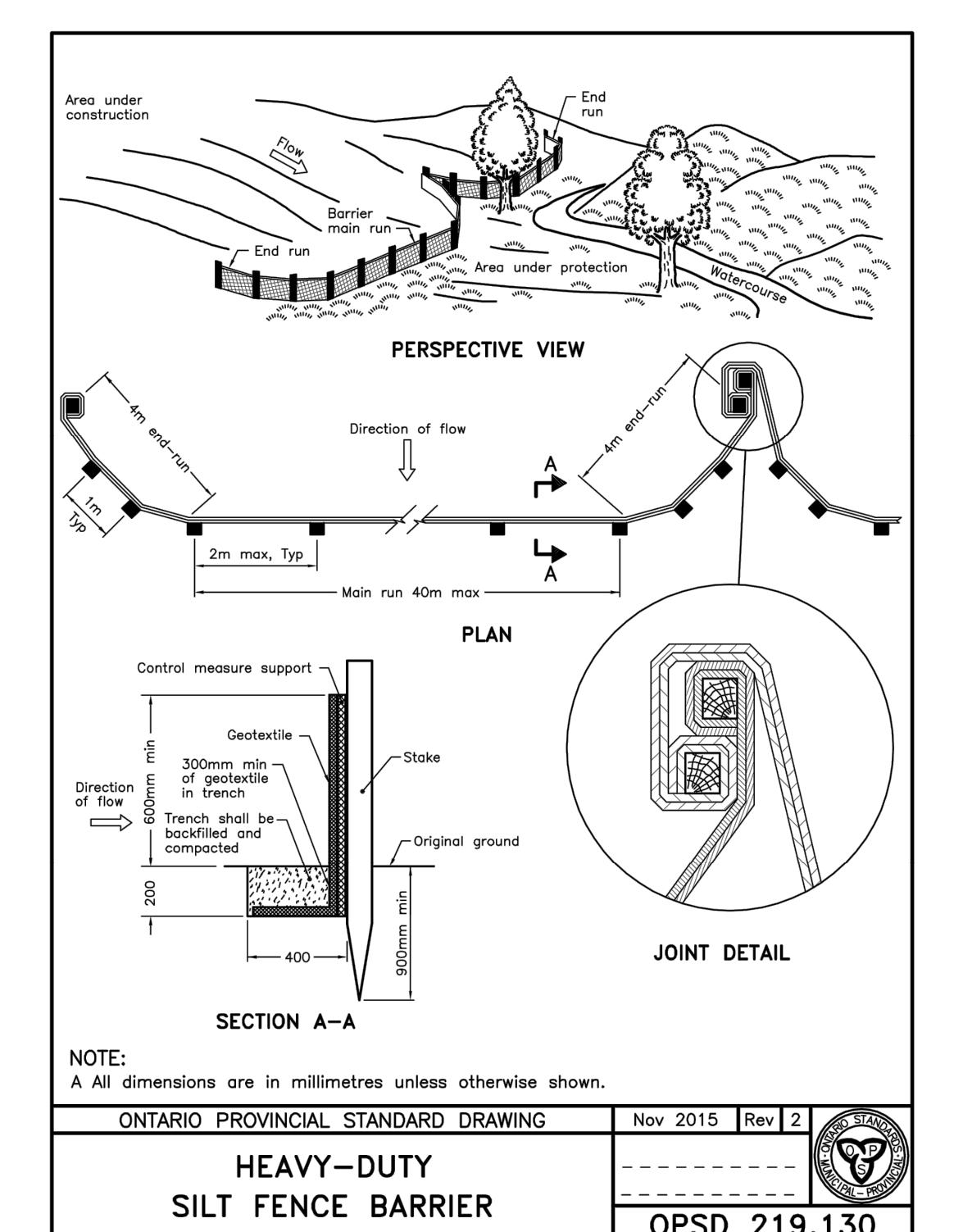
**PROPOSED VETERINARY CLINIC**  
522 TALBOT ROAD, DELHI  
NORFOLK COUNTY

CLIENT:  
JOE'S CARPENTRY

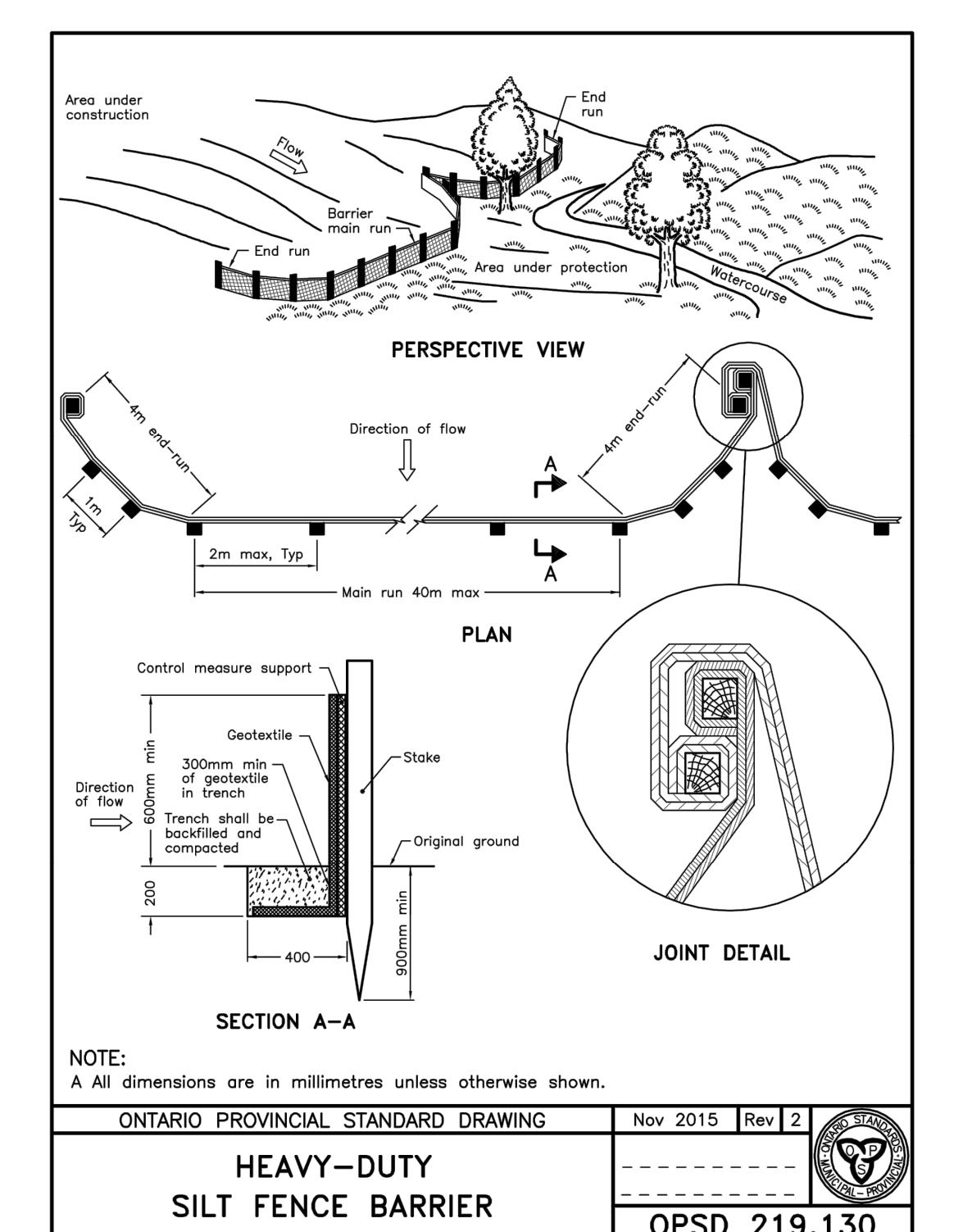
**SITE DEVELOPMENT PLAN**

DESIGN:	R.W.P.	SCALE:	1:300
DRAWN:	S.L.M./K.P.B.	JOB No:	15135
CHECKED:	R.W.P.		
SHEET:	1 of 1	DWG. No:	
DATE:	FEB. 11/22		

**15135-1**



**SILT SACK DETAIL**  
N.T.S.



**HEAVY-DUTY SILT FENCE BARRIER**  
OPSD 219.130

---

## **PROPOSED COMMERCIAL DEVELOPMENT PRELIMINARY STORMWATER MANAGEMENT**

**MN 522 Talbot Road  
Delhi, Ontario  
Norfolk County**

### **Prepared By:**

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

**Job: 15135**

**February 2022**

## STORM SEWERS & APPURTENANCES

### Storm Sewers

The site is intended to be serviced with an internal drywell system to handle all storm events up to and including the 100-year storm events.

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. In this case, the existing area is without storm sewers so an internal series of drywells is being proposed.

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

### Pre-Development Hydrologic Modeling Parameters

MIDUSS modeling software was used to establish pre-development runoff rates for the site. The affected site is approximately 0.131 hectares in size with the flow direction being extremely flat but is directed towards the rear of the property. The existing topography slope is approximately 2.5+/-%.

### Post Development Conditions

The proposed concept plan includes the following:

- A proposed veterinary clinic completes with the required parking areas resulting in an overall 96.8% impervious on the site being increased from the 0% impervious surfaces in the pre-development condition to a 96.8% impervious condition.

For the purposes of this report, 97% has been utilized in the hydrologic modeling for the overall development to represent the proposed development.

### Modelling Results – Quantity Control

Stormwater flows were calculated using MIDUSS modeling software. Norfolk County IDF parameters were used to generate rainfall for sizing of the SWM facility in accordance with Norfolk County Development Engineering Standards.

Peak flow reduction will be achieved through on-site detention in an effort minimize the potential for downstream flooding and erosion. Post development surface water runoff will be controlled to existing pre-development levels for the

2, 5, 10, 25, 50- and 100-year storm events (as possible). The results of the Miduss modeling have been included within Appendix 'D' of this report and can be summarized as follows:

**Table 1 – Peak Flow Rates**

Storm Event	Pre-Development Peak Flow (m <sup>3</sup> /sec)	Post Development Peak Flow No SWM (m <sup>3</sup> /sec)	Post Development Peak Flow with SWM
2 Year	0.002	0.024	0.004
5 Year	0.013	0.033	0.010
10 Year	0.023	0.038	0.015
25 Year	0.036	0.045	0.020
50 Year	0.046	0.050	0.024
100 Year	0.053	0.056	0.028

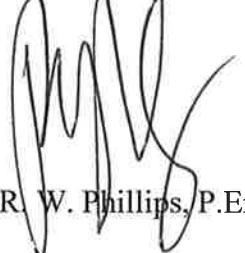
Peak flow reduction will be achieved by utilizing drywells within the parking area that will infiltrate into the existing sand / gravel subsoil.

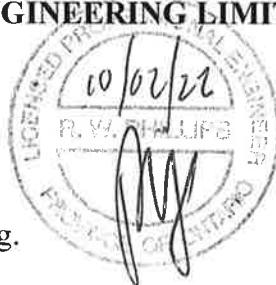
We have illustrated on the enclosed preliminary grading and servicing plan. (Included within Appendix 'C' of this report).

The proposed stormwater management system includes the provision for a minor system designed to accommodate the 5-year storm event.

Report Prepared By:

**J.H. COHOON ENGINEERING LIMITED**

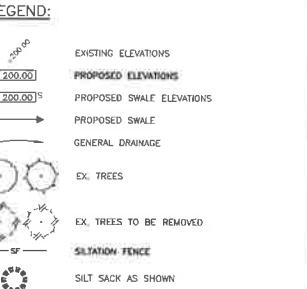
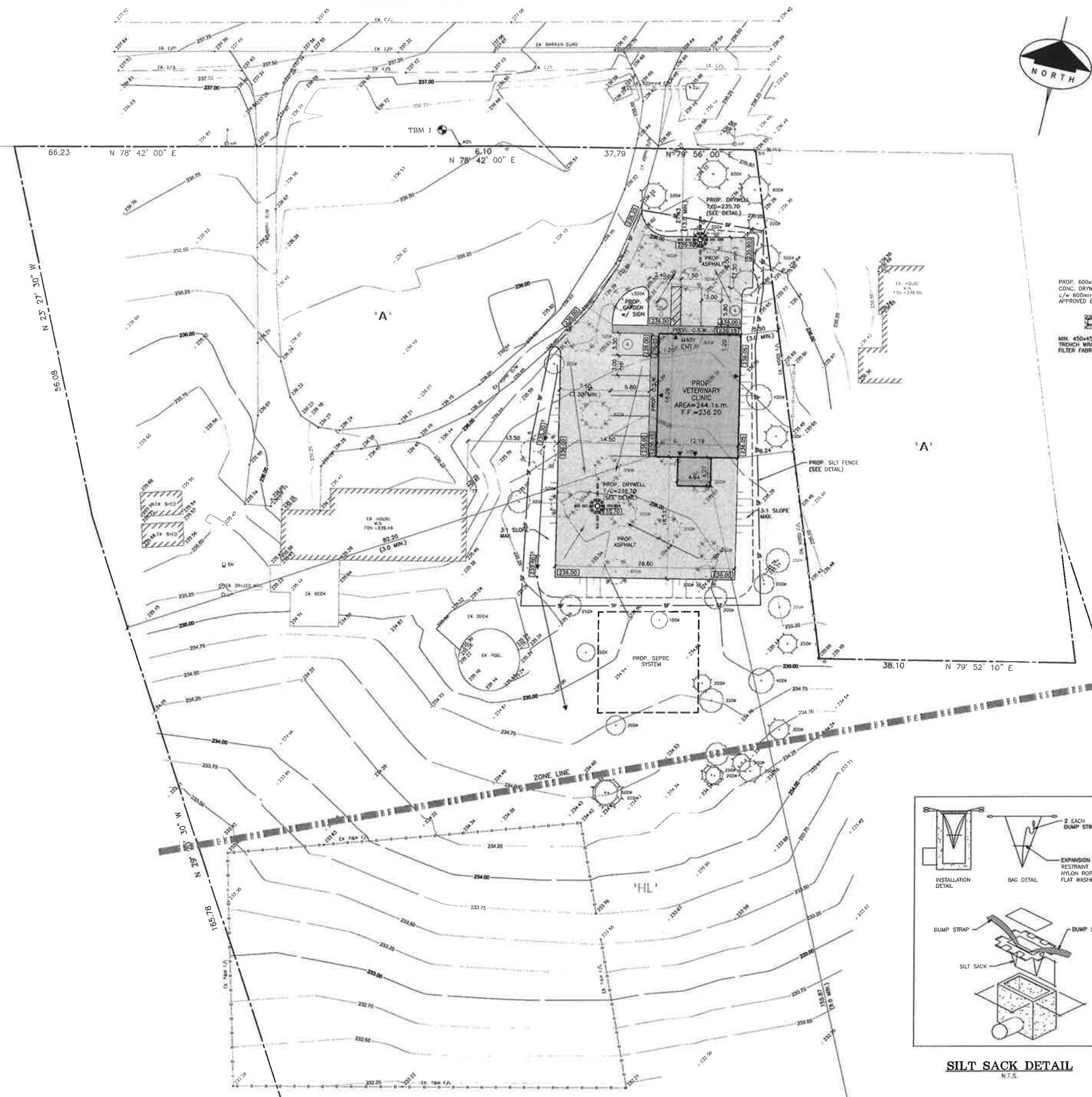
  
R. W. Phillips, P.Eng.



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**Appendix 'A'**  
**Development Proposal as prepared by**  
**J H Cohoon Engineering Drawing 15135-1**

# TALBOT ROAD



**NOTES:**

- ALL ELEVATIONS SHOWN ARE METRIC.
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T.B.M. No. 1 ELEV. = 0m (GEO)

TOP NOT OF FIRE HYDRANT AT INTERSECTION AS SHOWN.

**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](http://www.cohooneng.com)

PROJECT: 15135

DATE: (MM/DD/YY) BY:

REVISION: 15135

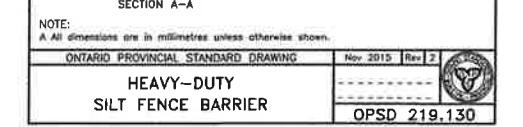
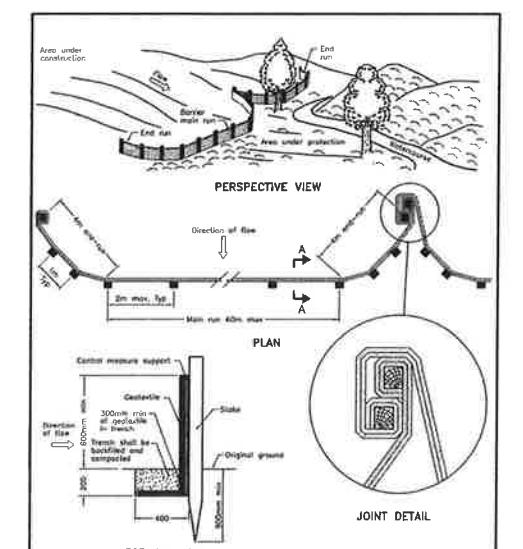
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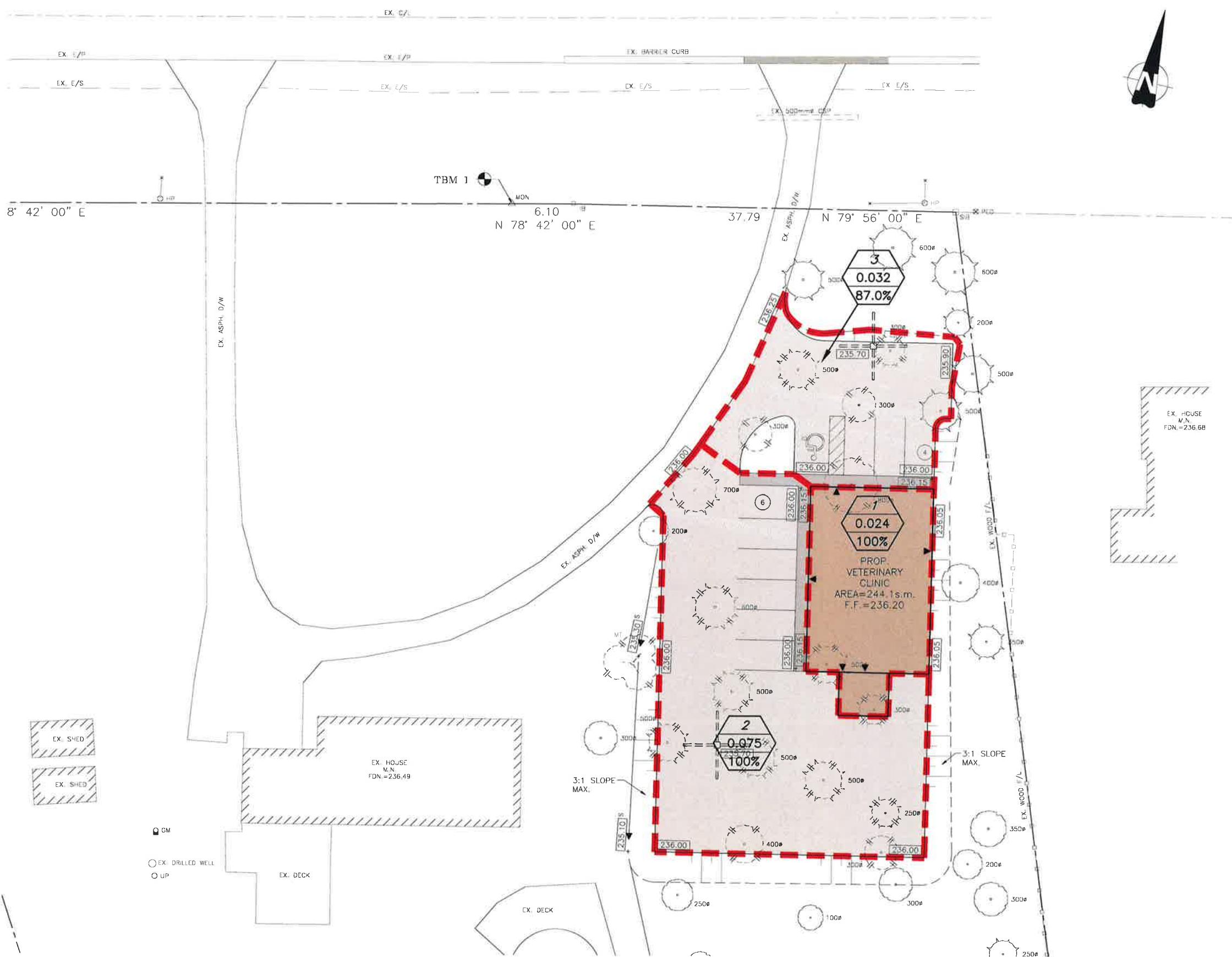
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**Appendix 'B'**

**MIDUSS COMPUTER SIMULATION RESULTS**

## TALBOT ROAD



## LEGEND

STORM DRAINAGE BOUNDARY

1

0.53

35.0

STORM DRAINAGE NUMBER

STORM AREA IN HECTARES

% IMPERVIOUS

## POST DEVELOPMENT STORM DRAINAGE AREAS

PROPOSED VETERINARY CLINIC  
522 TALBOT ROAD DELHI



CLIENT: JOE'S CARPENTRY  
SCALE: 1:400

JOB: 15135

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 " 2.500 Overland Slope"  
 " 0.131 Pervious Area"  
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 " 0.002 0.000 0.000 0.000 c.m/sec"  
 " Catchment 101 Pervious Impervious Total Area "  
 " Surface Area 0.131 0.000 0.131 hectare"  
 " Time of concentration 23.324 1.946 23.324 minutes"  
 " Time to Centroid 91.571 0.000 91.571 minutes"  
 " Rainfall depth 32.583 32.583 32.583 mm"  
 " Rainfall volume 42.68 0.00 42.68 c.m"  
 " Rainfall losses 30.249 32.583 30.249 mm"  
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" Time of concentration 12.444 1.735 12.444 minutes"
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 " 0.703 Exponent C"  
 " 0.400 Fraction R"  
 " 180.000 Duration"  
 " 1.000 Time step multiplier"  
 " Maximum intensity 106.299 mm/hr"  
 " Total depth 51.629 mm"  
 " 6 005hyd Hydrograph extension used in this file"  
 " 33 CATCHMENT 101"  
 " 2 Rectangular"  
 " 1 Equal length"  
 " 2 Horton equation"  
 " 101 No description"  
 " 0.000 % Impervious"  
 " 0.131 Total Area"  
 " 21.129 Flow length"  
 " 2.500 Overland Slope"  
 " 0.131 Pervious Area"  
 " 21.129 Pervious length"  
 " 2.500 Pervious slope"  
 " 0.000 Impervious Area"  
 " 21.129 Impervious length"  
 " 2.500 Impervious slope"  
 " 0.250 Pervious Manning 'n'"  
 " 35.000 Pervious Max.infiltration"  
 " 5.000 Pervious Min.infiltration"  
 " 0.500 Pervious Lag constant (hours)"  
 " 7.500 Pervious Depression storage"  
 " 0.015 Impervious Manning 'n'"  
 " 0.000 Impervious Max.infiltration"  
 " 0.000 Impervious Min.infiltration"  
 " 0.500 Impervious Lag constant (hours)"  
 " 2.000 Impervious Depression storage"  
 " 0.023 0.000 0.000 0.000 c.m/sec"  
 " Catchment 101 Pervious Impervious Total Area "  
 " Surface Area 0.131 0.000 0.131 hectare"  
 " Time of concentration 10.669 1.641 10.669 minutes"  
 " Time to Centroid 93.377 89.115 93.377 minutes"  
 " Rainfall depth 51.629 51.629 51.629 mm"  
 " Rainfall volume 67.63 0.00 67.63 c.m"  
 " Rainfall losses 34.081 2.000 34.081 mm"  
 " Runoff depth 17.548 49.629 17.548 mm"  
 " Runoff volume 22.99 0.00 22.99 c.m"  
 " Runoff coefficient 0.340 0.000 0.340 "

" Maximum flow 0.023 0.000 0.023 c.m/sec"  
" 40 HYDROGRAPH Add Runoff "  
" 4 Add Runoff "  
" 0.023 0.023 0.000 0.000"  
" 38 START/RE-START TOTALS 101"  
" 3 Runoff Totals on EXIT"  
" Total Catchment area 0.131 hectare"  
" Total Impervious area 0.000 hectare"  
" Total % impervious 0.000"  
" 19 EXIT"

" MIDUSS Output ----->"  
 " MIDUSS version Version 2.25 rev. 473"  
 " MIDUSS created February-07-10"  
 " 10 Units used: ie METRIC"  
 " Job folder: C:\swm\15135"  
 " Output filename: pre25.out"  
 " Licensee name: Bob"  
 " Company "  
 " Date & Time last used: 18/06/2021 at 2:05:23 PM"  
 " 31 TIME PARAMETERS"  
 " 10.000 Time Step"  
 " 180.000 Max. Storm length"  
 " 1500.000 Max. Hydrograph"  
 " 32 STORM Chicago storm"  
 " 1 Chicago storm"  
 " 721.533 Coefficient A"  
 " 2.253 Constant B"  
 " 0.679 Exponent C"  
 " 0.400 Fraction R"  
 " 180.000 Duration"  
 " 1.000 Time step multiplier"  
 " Maximum intensity 127.011 mm/hr"  
 " Total depth 63.151 mm"  
 " 6 005hyd Hydrograph extension used in this file"  
 " 33 CATCHMENT 101"  
 " 2 Rectangular"  
 " 1 Equal length"  
 " 2 Horton equation"  
 " 101 No description"  
 " 0.000 % Impervious"  
 " 0.131 Total Area"  
 " 21.129 Flow length"  
 " 2.500 Overland Slope"  
 " 0.131 Pervious Area"  
 " 21.129 Pervious length"  
 " 2.500 Pervious slope"  
 " 0.000 Impervious Area"  
 " 21.129 Impervious length"  
 " 2.500 Impervious slope"  
 " 0.250 Pervious Manning 'n'"  
 " 35.000 Pervious Max.infiltration"  
 " 5.000 Pervious Min.infiltration"  
 " 0.500 Pervious Lag constant (hours)"  
 " 7.500 Pervious Depression storage"  
 " 0.015 Impervious Manning 'n'"  
 " 0.000 Impervious Max.infiltration"  
 " 0.000 Impervious Min.infiltration"  
 " 0.500 Impervious Lag constant (hours)"  
 " 2.000 Impervious Depression storage"  
 " 0.036 0.000 0.000 0.000 c.m/sec"  
 " Catchment 101 Pervious Impervious Total Area "  
 " Surface Area 0.131 0.000 0.131 hectare"  
 " Time of concentration 9.093 1.528 9.093 minutes"  
 " Time to Centroid 97.045 88.972 97.045 minutes"  
 " Rainfall depth 63.151 63.151 63.151 mm"  
 " Rainfall volume 82.73 0.00 82.73 c.m"  
 " Rainfall losses 34.738 2.000 34.738 mm"  
 " Runoff depth 28.413 61.151 28.413 mm"  
 " Runoff volume 37.22 0.00 37.22 c.m"  
 " Runoff coefficient 0.450 0.000 0.450 "

" Maximum flow 0.036 0.000 0.036 c.m/sec"  
" 40 HYDROGRAPH Add Runoff "  
" 4 Add Runoff "  
" 0.036 0.036 0.000 0.000"  
" 38 START/RE-START TOTALS 101"  
" 3 Runoff Totals on EXIT"  
" Total Catchment area 0.131 hectare"  
" Total Impervious area 0.000 hectare"  
" Total % impervious 0.000"  
" 19 EXIT"

" MIDUSS Output ----->"  
 " MIDUSS version Version 2.25 rev. 473"  
 " MIDUSS created February-07-10"  
 " 10 Units used: ie METRIC"  
 " Job folder: C:\swm\15135"  
 " Output filename: pre50.out"  
 " Licensee name: Bob"  
 " Company "  
 " Date & Time last used: 18/06/2021 at 2:06:25 PM"  
 " 31 TIME PARAMETERS"  
 " 10.000 Time Step"  
 " 180.000 Max. Storm length"  
 " 1500.000 Max. Hydrograph"  
 " 32 STORM Chicago storm"  
 " 1 Chicago storm"  
 " 766.038 Coefficient A"  
 " 1.898 Constant B"  
 " 0.668 Exponent C"  
 " 0.400 Fraction R"  
 " 180.000 Duration"  
 " 1.000 Time step multiplier"  
 " Maximum intensity 141.545 mm/hr"  
 " Total depth 71.090 mm"  
 " 6 005hyd Hydrograph extension used in this file"  
 " 33 CATCHMENT 101"  
 " 2 Rectangular"  
 " 1 Equal length"  
 " 2 Horton equation"  
 " 101 No description"  
 " 0.000 % Impervious"  
 " 0.131 Total Area"  
 " 21.129 Flow length"  
 " 2.500 Overland Slope"  
 " 0.131 Pervious Area"  
 " 21.129 Pervious length"  
 " 2.500 Pervious slope"  
 " 0.000 Impervious Area"  
 " 21.129 Impervious length"  
 " 2.500 Impervious slope"  
 " 0.250 Pervious Manning 'n'"  
 " 35.000 Pervious Max.infiltration"  
 " 5.000 Pervious Min.infiltration"  
 " 0.500 Pervious Lag constant (hours)"  
 " 7.500 Pervious Depression storage"  
 " 0.015 Impervious Manning 'n'"  
 " 0.000 Impervious Max.infiltration"  
 " 0.000 Impervious Min.infiltration"  
 " 0.500 Impervious Lag constant (hours)"  
 " 2.000 Impervious Depression storage"  
 " 0.046 0.000 0.000 0.000 c.m/sec"  
 " Catchment 101 Pervious Impervious Total Area "  
 " Surface Area 0.131 0.000 0.131 hectare"  
 " Time of concentration 8.313 1.463 8.313 minutes"  
 " Time to Centroid 97.861 88.885 97.861 minutes"  
 " Rainfall depth 71.090 71.090 71.090 mm"  
 " Rainfall volume 93.13 0.00 93.13 c.m"  
 " Rainfall losses 35.051 2.000 35.051 mm"  
 " Runoff depth 36.038 69.090 36.038 mm"  
 " Runoff volume 47.21 0.00 47.21 c.m"  
 " Runoff coefficient 0.507 0.000 0.507 "

" Maximum flow 0.046 0.000 0.046 c.m/sec"  
" 40 HYDROGRAPH Add Runoff "  
" 4 Add Runoff "  
" 0.046 0.046 0.000 0.000"  
" 38 START/RE-START TOTALS 101"  
" 3 Runoff Totals on EXIT"  
" Total Catchment area 0.131 hectare"  
" Total Impervious area 0.000 hectare"  
" Total % impervious 0.000"  
" 19 EXIT"

```

" MIDUSS Output ----->" Version 2.25 rev. 473"
" MIDUSS version
" MIDUSS created February-07-10"
" 10 Units used: ie METRIC"
" Job folder: C:\swm\15135"
" Output filename: pre100.out"
" Licensee name: Bob"
" Company "
" Date & Time last used: 18/06/2021 at 2:07:55 PM"
" 31 TIME PARAMETERS"
" 10.000 Time Step"
" 180.000 Max. Storm length"
" 1500.000 Max. Hydrograph"
" 32 STORM Chicago storm"
" 1 Chicago storm"
" 801.041 Coefficient A"
" 1.501 Constant B"
" 0.657 Exponent C"
" 0.400 Fraction R"
" 180.000 Duration"
" 1.000 Time step multiplier"
" Maximum intensity 155.782 mm/hr"
" Total depth 78.830 mm"
" 6 005hyd Hydrograph extension used in this file"
" 31 TIME PARAMETERS"
" 10.000 Time Step"
" 180.000 Max. Storm length"
" 1500.000 Max. Hydrograph"
" 32 STORM Chicago storm"
" 1 Chicago storm"
" 801.041 Coefficient A"
" 1.501 Constant B"
" 0.657 Exponent C"
" 0.400 Fraction R"
" 180.000 Duration"
" 1.000 Time step multiplier"
" Maximum intensity 155.782 mm/hr"
" Total depth 78.830 mm"
" 6 005hyd Hydrograph extension used in this file"
" 33 CATCHMENT 101"
" 2 Rectangular"
" 1 Equal length"
" 2 Horton equation"
" 101 No description"
" 0.000 % Impervious"
" 0.131 Total Area"
" 21.129 Flow length"
" 2.500 Overland Slope"
" 0.131 Pervious Area"
" 21.129 Pervious length"
" 2.500 Pervious slope"
" 0.000 Impervious Area"
" 21.129 Impervious length"
" 2.500 Impervious slope"
" 0.250 Pervious Manning 'n'"
" 35.000 Pervious Max.infiltration"
" 5.000 Pervious Min.infiltration"
" 0.500 Pervious Lag constant (hours)"
" 7.500 Pervious Depression storage"
" 0.015 Impervious Manning 'n'"

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```

" 0.000 Impervious Max.infiltration"
" 0.000 Impervious Min.infiltration"
" 0.500 Impervious Lag constant (hours)"
" 2.000 Impervious Depression storage"
"           0.053    0.000    0.000  0.000 c.m/sec"
" Catchment 101      Pervious    Impervious  Total Area "
" Surface Area       0.131      0.000      0.131    hectare"
" Time of concentration 7.832      1.408      7.832    minutes"
" Time to Centroid    98.451     88.849     98.451    minutes"
" Rainfall depth      78.830     78.830     78.830    mm"
" Rainfall volume     103.27     0.00       103.27   c.m"
" Rainfall losses      35.397     2.000      35.397    mm"
" Runoff depth        43.433     76.830     43.433    mm"
" Runoff volume        56.90      0.00       56.90    c.m"
" Runoff coefficient    0.551      0.000      0.551    "
" Maximum flow         0.053      0.000      0.053    c.m/sec"
" 40 HYDROGRAPH Add Runoff "
" 4   Add Runoff "
"           0.053    0.053    0.000    0.000"
" 38 START/RE-START TOTALS 101"
" 3   Runoff Totals on EXIT"
" Total Catchment area                      0.131    hectare"
" Total Impervious area                     0.000    hectare"
" Total % impervious                      0.000"
" 19 EXIT"

```

```

" MIDUSS Output ----->" Version 2.25 rev. 473"
" MIDUSS version February-07-10"
" MIDUSS created ie METRIC"
" 10 Units used: C:\swm\15135"
" Job folder: pst2.out"
" Output filename: Bob"
" Licensee name: "
" Company "
" Date & Time last used: 18/06/2021 at 2:26:50 PM"
" 31 TIME PARAMETERS"
" 10.000 Time Step"
" 180.000 Max. Storm length"
" 1500.000 Max. Hydrograph"
" 32 STORM Chicago storm"
" 1 Chicago storm"
" 529.711 Coefficient A"
" 4.501 Constant B"
" 0.745 Exponent C"
" 0.400 Fraction R"
" 180.000 Duration"
" 1.000 Time step multiplier"
" Maximum intensity 69.337 mm/hr"
" Total depth 32.583 mm"
" 6 005hyd Hydrograph extension used in this file"
" 33 CATCHMENT 101"
" 2 Rectangular"
" 1 Equal length"
" 2 Horton equation"
" 101 No description"
" 100.000 % Impervious"
" 0.024 Total Area"
" 5.217 Flow length"
" 1.200 Overland Slope"
" 0.000 Pervious Area"
" 5.217 Pervious length"
" 1.200 Pervious slope"
" 0.024 Impervious Area"
" 5.217 Impervious length"
" 1.200 Impervious slope"
" 0.250 Pervious Manning 'n'"
" 35.000 Pervious Max.infiltration"
" 5.000 Pervious Min.infiltration"
" 0.500 Pervious Lag constant (hours)"
" 7.500 Pervious Depression storage"
" 0.015 Impervious Manning 'n'"
" 0.000 Impervious Max.infiltration"
" 0.000 Impervious Min.infiltration"
" 0.500 Impervious Lag constant (hours)"
" 2.000 Impervious Depression storage"
" 0.005 0.000 0.000 0.000 c.m/sec"
" Catchment 101 Pervious Impervious Total Area "
" Surface Area 0.000 0.024 0.024 hectare"
" Time of concentration 12.559 1.048 1.048 minutes"
" Time to Centroid 85.921 89.815 89.815 minutes"
" Rainfall depth 32.583 32.583 32.583 mm"
" Rainfall volume 0.00 7.82 7.82 c.m"
" Rainfall losses 30.249 2.000 2.000 mm"
" Runoff depth 2.334 30.583 30.583 mm"
" Runoff volume 0.00 7.34 7.34 c.m"
" Runoff coefficient 0.000 0.939 0.939 "

```

```

" Maximum flow 0.000 0.005 0.005 c.m/sec"
" 40 HYDROGRAPH Add Runoff "
" 4 Add Runoff "
" 0.005 0.005 0.000 0.000"
" 51 PIPE DESIGN"
" 0.005 Current peak flow c.m/sec"
" 0.013 Manning 'n'"
" 1.000 Diameter metre"
" 1.000 Gradient %"
" Depth of flow 0.033 metre"
" Velocity 0.594 m/sec"
" Pipe capacity 2.398 c.m/sec"
" Critical depth 0.037 metre"
" 53 ROUTE Zero Route"
" 0.00 Zero Route Reach length (metre)"
" 0.005 0.005 0.005 0.000 c.m/sec"
" 40 HYDROGRAPH Combine 2"
" 6 Combine "
" 2 Node #"
"
" Maximum flow 0.005 c.m/sec"
" Hydrograph volume 7.340 c.m"
" 0.005 0.005 0.005 0.005"
" 40 HYDROGRAPH Start - New Tributary"
" 2 Start - New Tributary"
" 0.005 0.000 0.005 0.005"
" 33 CATCHMENT 102"
" 2 Rectangular"
" 1 Equal length"
" 2 Horton equation"
" 102 No description"
" 100.000 % Impervious"
" 0.075 Total Area"
" 14.423 Flow length"
" 1.200 Overland Slope"
" 0.000 Pervious Area"
" 14.423 Pervious length"
" 1.200 Pervious slope"
" 0.075 Impervious Area"
" 14.423 Impervious length"
" 1.200 Impervious slope"
" 0.250 Pervious Manning 'n'"
" 35.000 Pervious Max.infiltration"
" 5.000 Pervious Min.infiltration"
" 0.500 Pervious Lag constant (hours)"
" 7.500 Pervious Depression storage"
" 0.015 Impervious Manning 'n'"
" 0.000 Impervious Max.infiltration"
" 0.000 Impervious Min.infiltration"
" 0.500 Impervious Lag constant (hours)"
" 2.000 Impervious Depression storage"
" 0.014 0.000 0.005 0.005 c.m/sec"
" Catchment 102 Pervious Impervious Total Area "
" Surface Area 0.000 0.075 0.075 hectare"
" Time of concentration 23.117 1.929 1.929 minutes"
" Time to Centroid 91.438 89.815 89.815 minutes"
" Rainfall depth 32.583 32.583 32.583 mm"
" Rainfall volume 0.00 24.44 24.44 c.m"
" Rainfall losses 30.249 2.000 2.000 mm"
" Runoff depth 2.334 30.583 30.583 mm"

```

" Runoff volume 0.00 22.94 22.94 c.m"  
 " Runoff coefficient 0.000 0.939 0.939 "  
 " Maximum flow 0.000 0.014 0.014 c.m/sec"  
 " 40 HYDROGRAPH Add Runoff "  
 " 4 Add Runoff "  
 " 0.014 0.014 0.005 0.005"  
 " 51 PIPE DESIGN"  
 " 0.014 Current peak flow c.m/sec"  
 " 0.013 Manning 'n'"  
 " 1.000 Diameter metre"  
 " 1.000 Gradient %"  
 " Depth of flow 0.056 metre"  
 " Velocity 0.840 m/sec"  
 " Pipe capacity 2.398 c.m/sec"  
 " Critical depth 0.066 metre"  
 " 53 ROUTE Zero Route"  
 " 0.00 Zero Route Reach length (metre)"  
 " 0.014 0.014 0.014 0.005 c.m/sec"  
 " 40 HYDROGRAPH Combine 2"  
 " 6 Combine "  
 " 2 Node #"  
 " "  
 " Maximum flow 0.019 c.m/sec"  
 " Hydrograph volume 30.277 c.m"  
 " 0.014 0.014 0.014 0.019"  
 " 40 HYDROGRAPH Confluence 2"  
 " 7 Confluence "  
 " 2 Node #"  
 " "  
 " Maximum flow 0.019 c.m/sec"  
 " Hydrograph volume 30.277 c.m"  
 " 0.014 0.019 0.014 0.000"  
 " 51 PIPE DESIGN"  
 " 0.019 Current peak flow c.m/sec"  
 " 0.013 Manning 'n'"  
 " 1.000 Diameter metre"  
 " 1.000 Gradient %"  
 " Depth of flow 0.063 metre"  
 " Velocity 0.914 m/sec"  
 " Pipe capacity 2.398 c.m/sec"  
 " Critical depth 0.075 metre"  
 " 53 ROUTE Zero Route"  
 " 0.00 Zero Route Reach length (metre)"  
 " 0.014 0.019 0.019 0.000 c.m/sec"  
 " 40 HYDROGRAPH Combine 2"  
 " 6 Combine "  
 " 2 Node #"  
 " "  
 " Maximum flow 0.019 c.m/sec"  
 " Hydrograph volume 30.277 c.m"  
 " 0.014 0.019 0.019 0.019"  
 " 40 HYDROGRAPH Start - New Tributary"  
 " 2 Start - New Tributary"  
 " 0.014 0.000 0.019 0.019"  
 " 33 CATCHMENT 3"  
 " 2 Rectangular"  
 " 1 Equal length"  
 " 2 Horton equation"  
 " 3 No description"  
 " 87.000 % Impervious"

```

" 0.032 Total Area"
" 8.000 Flow length"
" 1.200 Overland Slope"
" 0.004 Pervious Area"
" 8.000 Pervious length"
" 1.200 Pervious slope"
" 0.028 Impervious Area"
" 8.000 Impervious length"
" 1.200 Impervious slope"
" 0.250 Pervious Manning 'n'"
" 35.000 Pervious Max.infiltration"
" 5.000 Pervious Min.infiltration"
" 0.500 Pervious Lag constant (hours)"
" 7.500 Pervious Depression storage"
" 0.015 Impervious Manning 'n'"
" 0.000 Impervious Max.infiltration"
" 0.000 Impervious Min.infiltration"
" 0.500 Impervious Lag constant (hours)"
" 2.000 Impervious Depression storage"
" 0.005 0.000 0.019 0.019 c.m/sec"
" Catchment 3 Pervious Impervious Total Area "
" Surface Area 0.004 0.028 0.032 hectare"
" Time of concentration 16.232 1.355 1.522 minutes"
" Time to Centroid 87.846 89.815 89.793 minutes"
" Rainfall depth 32.583 32.583 32.583 mm"
" Rainfall volume 1.36 9.07 10.43 c.m"
" Rainfall losses 30.249 2.000 5.672 mm"
" Runoff depth 2.334 30.583 26.911 mm"
" Runoff volume 0.10 8.51 8.61 c.m"
" Runoff coefficient 0.072 0.939 0.826 "
" Maximum flow 0.000 0.005 0.005 c.m/sec"
" 40 HYDROGRAPH Add Runoff "
" 4 Add Runoff "
" 0.005 0.005 0.019 0.019"
" 56 DIVERSION"
" 0 Node number"
" 0.000 Overflow threshold"
" 1.000 Required diverted fraction"
" 0 Conduit type; 1=Pipe;2=Channel"
" Peak of diverted flow 0.005 c.m/sec"
" Volume of diverted flow 8.611 c.m"
" DIV00000.005hyd"
" Major flow at 0"
" 0.005 0.005 0.000 0.019 c.m/sec"
" 40 HYDROGRAPH Combine 2"
" 6 Combine "
" 2 Node #"
" "
" Maximum flow 0.019 c.m/sec"
" Hydrograph volume 30.277 c.m"
" 0.005 0.005 0.000 0.019"
" 40 HYDROGRAPH Confluence 2"
" 7 Confluence "
" 2 Node #"
" "
" Maximum flow 0.019 c.m/sec"
" Hydrograph volume 30.277 c.m"
" 0.005 0.019 0.000 0.000"
" 56 DIVERSION"
" 2 Node number"

```

" 0.004 Overflow threshold"  
" 1.000 Required diverted fraction"  
" 0 Conduit type; 1=Pipe;2=Channel"  
" Peak of diverted flow 0.015 c.m/sec"  
" Volume of diverted flow 11.548 c.m"  
" DIV00002.005hyd"  
" Divert to Infiltration 0.015cms"  
" 0.005 0.019 0.004 0.000 c.m/sec"  
" 40 HYDROGRAPH Combine 999"  
" 6 Combine "  
" 999 Node #"  
"  
" Maximum flow 0.004 c.m/sec"  
" Hydrograph volume 18.729 c.m"  
" 0.005 0.019 0.004 0.004"  
" 40 HYDROGRAPH Confluence 999"  
" 7 Confluence "  
" 999 Node #"  
"  
" Maximum flow 0.004 c.m/sec"  
" Hydrograph volume 18.729 c.m"  
" 0.005 0.004 0.004 0.000"  
" 38 START/RE-START TOTALS 999"  
" 3 Runoff Totals on EXIT"  
" Total Catchment area 0.131 hectare"  
" Total Impervious area 0.127 hectare"  
" Total % impervious 96.824"  
" 19 EXIT"

" MIDUSS Output ----->"  
 " MIDUSS version Version 2.25 rev. 473"  
 " MIDUSS created February-07-10"  
 " 10 Units used: ie METRIC"  
 " Job folder: C:\swm\15135"  
 " Output filename: pst5.out"  
 " Licensee name: Bob"  
 " Company "  
 " Date & Time last used: 18/06/2021 at 2:24:53 PM"  
 " 31 TIME PARAMETERS"  
 " 10.000 Time Step"  
 " 180.000 Max. Storm length"  
 " 1500.000 Max. Hydrograph"  
 " 32 STORM Chicago storm"  
 " 1 Chicago storm"  
 " 583.017 Coefficient A"  
 " 3.007 Constant B"  
 " 0.703 Exponent C"  
 " 0.400 Fraction R"  
 " 180.000 Duration"  
 " 1.000 Time step multiplier"  
 " Maximum intensity 92.454 mm/hr"  
 " Total depth 44.904 mm"  
 " 6 005hyd Hydrograph extension used in this file"  
 " 33 CATCHMENT 101"  
 " 2 Rectangular"  
 " 1 Equal length"  
 " 2 Horton equation"  
 " 101 No description"  
 " 100.000 % Impervious"  
 " 0.024 Total Area"  
 " 5.217 Flow length"  
 " 1.200 Overland Slope"  
 " 0.000 Pervious Area"  
 " 5.217 Pervious length"  
 " 1.200 Pervious slope"  
 " 0.024 Impervious Area"  
 " 5.217 Impervious length"  
 " 1.200 Impervious slope"  
 " 0.250 Pervious Manning 'n'"  
 " 35.000 Pervious Max.infiltration"  
 " 5.000 Pervious Min.infiltration"  
 " 0.500 Pervious Lag constant (hours)"  
 " 7.500 Pervious Depression storage"  
 " 0.015 Impervious Manning 'n'"  
 " 0.000 Impervious Max.infiltration"  
 " 0.000 Impervious Min.infiltration"  
 " 0.500 Impervious Lag constant (hours)"  
 " 2.000 Impervious Depression storage"  
 " 0.006 0.000 0.000 0.000 c.m/sec"  
 " Catchment 101 Pervious Impervious Total Area "  
 " Surface Area 0.000 0.024 0.024 hectare"  
 " Time of concentration 6.701 0.934 0.934 minutes"  
 " Time to Centroid 87.587 89.474 89.474 minutes"  
 " Rainfall depth 44.904 44.904 44.904 mm"  
 " Rainfall volume 0.00 10.78 10.78 c.m"  
 " Rainfall losses 33.604 2.000 2.000 mm"  
 " Runoff depth 11.301 42.904 42.904 mm"  
 " Runoff volume 0.00 10.30 10.30 c.m"  
 " Runoff coefficient 0.000 0.955 0.955 "

```

"
" Maximum flow 0.000 0.006 0.006 c.m/sec"
" 40 HYDROGRAPH Add Runoff "
" 4 Add Runoff "
" 0.006 0.006 0.000 0.000"
"
" 51 PIPE DESIGN"
" 0.006 Current peak flow c.m/sec"
" 0.013 Manning 'n'"
" 1.000 Diameter metre"
" 1.000 Gradient %"
" Depth of flow 0.037 metre"
" Velocity 0.648 m/sec"
" Pipe capacity 2.398 c.m/sec"
" Critical depth 0.043 metre"
"
" 53 ROUTE Zero Route"
" 0.00 Zero Route Reach length (metre)"
" 0.006 0.006 0.006 0.000 c.m/sec"
"
" 40 HYDROGRAPH Combine 2"
" 6 Combine "
" 2 Node #"
"
" Maximum flow 0.006 c.m/sec"
" Hydrograph volume 10.297 c.m"
" 0.006 0.006 0.006 0.006"
"
" 40 HYDROGRAPH Start - New Tributary"
" 2 Start - New Tributary"
" 0.006 0.000 0.006 0.006"
"
" 33 CATCHMENT 102"
" 2 Rectangular"
" 1 Equal length"
" 2 Horton equation"
" 102 No description"
" 100.000 % Impervious"
" 0.075 Total Area"
" 14.423 Flow length"
" 1.200 Overland Slope"
" 0.000 Pervious Area"
" 14.423 Pervious length"
" 1.200 Pervious slope"
" 0.075 Impervious Area"
" 14.423 Impervious length"
" 1.200 Impervious slope"
" 0.250 Pervious Manning 'n'"
" 35.000 Pervious Max.infiltration"
" 5.000 Pervious Min.infiltration"
" 0.500 Pervious Lag constant (hours)"
" 7.500 Pervious Depression storage"
" 0.015 Impervious Manning 'n'"
" 0.000 Impervious Max.infiltration"
" 0.000 Impervious Min.infiltration"
" 0.500 Impervious Lag constant (hours)"
" 2.000 Impervious Depression storage"
" 0.019 0.000 0.006 0.006 c.m/sec"
"
" Catchment 102 Pervious Impervious Total Area "
" Surface Area 0.000 0.075 0.075 hectare"
" Time of concentration 12.334 1.719 1.719 minutes"
" Time to Centroid 91.015 89.474 89.474 minutes"
" Rainfall depth 44.904 44.904 44.904 mm"
" Rainfall volume 0.00 33.68 33.68 c.m"
" Rainfall losses 33.604 2.000 2.000 mm"
" Runoff depth 11.301 42.904 42.904 mm

```

```

" Runoff volume 0.00 32.18 32.18 c.m"
" Runoff coefficient 0.000 0.955 0.955 "
" Maximum flow 0.000 0.019 0.019 c.m/sec"
" 40 HYDROGRAPH Add Runoff "
" 4 Add Runoff "
" 0.019 0.019 0.006 0.006"
" 51 PIPE DESIGN"
" 0.019 Current peak flow c.m/sec"
" 0.013 Manning 'n'"
" 1.000 Diameter metre"
" 1.000 Gradient %"
" Depth of flow 0.064 metre"
" Velocity 0.917 m/sec"
" Pipe capacity 2.398 c.m/sec"
" Critical depth 0.076 metre"
" 53 ROUTE Zero Route"
" 0.00 Zero Route Reach length (metre)"
" 0.019 0.019 0.019 0.006 c.m/sec"
" 40 HYDROGRAPH Combine 2"
" 6 Combine "
" 2 Node #"
" "
" Maximum flow 0.025 c.m/sec"
" Hydrograph volume 42.475 c.m"
" 0.019 0.019 0.019 0.025"
" 40 HYDROGRAPH Confluence 2"
" 7 Confluence "
" 2 Node #"
" "
" Maximum flow 0.025 c.m/sec"
" Hydrograph volume 42.475 c.m"
" 0.019 0.025 0.019 0.000"
" 51 PIPE DESIGN"
" 0.025 Current peak flow c.m/sec"
" 0.013 Manning 'n'"
" 1.000 Diameter metre"
" 1.000 Gradient %"
" Depth of flow 0.073 metre"
" Velocity 0.998 m/sec"
" Pipe capacity 2.398 c.m/sec"
" Critical depth 0.087 metre"
" 53 ROUTE Zero Route"
" 0.00 Zero Route Reach length (metre)"
" 0.019 0.025 0.025 0.000 c.m/sec"
" 40 HYDROGRAPH Combine 2"
" 6 Combine "
" 2 Node #"
" "
" Maximum flow 0.025 c.m/sec"
" Hydrograph volume 42.475 c.m"
" 0.019 0.025 0.025 0.025"
" 40 HYDROGRAPH Start - New Tributary"
" 2 Start - New Tributary"
" 0.019 0.000 0.025 0.025"
" 33 CATCHMENT 3"
" 2 Rectangular"
" 1 Equal length"
" 2 Horton equation"
" 3 No description"
" 87.000 % Impervious"

```

```

" 0.032 Total Area"
" 8.000 Flow length"
" 1.200 Overland Slope"
" 0.004 Pervious Area"
" 8.000 Pervious length"
" 1.200 Pervious slope"
" 0.028 Impervious Area"
" 8.000 Impervious length"
" 1.200 Impervious slope"
" 0.250 Pervious Manning 'n'"
" 35.000 Pervious Max.infiltration"
" 5.000 Pervious Min.infiltration"
" 0.500 Pervious Lag constant (hours)"
" 7.500 Pervious Depression storage"
" 0.015 Impervious Manning 'n'"
" 0.000 Impervious Max.infiltration"
" 0.000 Impervious Min.infiltration"
" 0.500 Impervious Lag constant (hours)"
" 2.000 Impervious Depression storage"
" 0.008 0.000 0.025 0.025 c.m/sec"
" Catchment 3 Pervious Impervious Total Area "
" Surface Area 0.004 0.028 0.032 hectare"
" Time of concentration 8.660 1.207 1.489 minutes"
" Time to Centroid 88.403 89.474 89.433 minutes"
" Rainfall depth 44.904 44.904 44.904 mm"
" Rainfall volume 1.87 12.50 14.37 c.m"
" Rainfall losses 33.604 2.000 6.108 mm"
" Runoff depth 11.301 42.904 38.796 mm"
" Runoff volume 0.47 11.94 12.41 c.m"
" Runoff coefficient 0.252 0.955 0.864 "
" Maximum flow 0.001 0.007 0.008 c.m/sec"
" 40 HYDROGRAPH Add Runoff "
" 4 Add Runoff "
" 0.008 0.008 0.025 0.025"
" 56 DIVERSION"
" 0 Node number"
" 0.000 Overflow threshold"
" 1.000 Required diverted fraction"
" 0 Conduit type; 1=Pipe;2=Channel"
" Peak of diverted flow 0.008 c.m/sec"
" Volume of diverted flow 12.415 c.m"
" DIV00000.005hyd"
" Divert to Infiltration 0.015 cms"
" 0.008 0.008 0.000 0.025 c.m/sec"
" 40 HYDROGRAPH Combine 2"
" 6 Combine "
" 2 Node #"
" "
" Maximum flow 0.025 c.m/sec"
" Hydrograph volume 42.475 c.m"
" 0.008 0.008 0.000 0.025"
" 40 HYDROGRAPH Confluence 2"
" 7 Confluence "
" 2 Node #"
" "
" Maximum flow 0.025 c.m/sec"
" Hydrograph volume 42.475 c.m"
" 0.008 0.025 0.000 0.000"
" 56 DIVERSION"
" 2 Node number"

```

```

" 0.010  Overflow threshold"
" 1.000  Required diverted fraction"
" 0  Conduit type; 1=Pipe;2=Channel"
" Peak of diverted flow      0.015  c.m/sec"
" Volume of diverted flow    9.255  c.m"
" DIV00002.005hyd"
" Divert to Infiltration 0.015cms"
" 0.008  0.025  0.010  0.000 c.m/sec"
" 40  HYDROGRAPH  Combine  999"
" 6  Combine "
" 999  Node #"
"
" Maximum flow      0.010  c.m/sec"
" Hydrograph volume 33.220  c.m"
" 0.008  0.025  0.010  0.010"
" 40  HYDROGRAPH  Confluence  999"
" 7  Confluence "
" 999  Node #"
"
" Maximum flow      0.010  c.m/sec"
" Hydrograph volume 33.220  c.m"
" 0.008  0.010  0.010  0.000"
" 38  START/RE-START TOTALS 999"
" 3  Runoff Totals on EXIT"
" Total Catchment area      0.131  hectare"
" Total Impervious area     0.127  hectare"
" Total % impervious        96.824"
" 19  EXIT"

```

```

"          MIDUSS Output ----->"  

"          MIDUSS version          Version 2.25  rev. 473"  

"          MIDUSS created          February-07-10"  

"          ie METRIC"  

" 10  Units used:          C:\swm\15135"  

"          Job folder:          pst10.out"  

"          Output filename:      Bob"  

"          Licensee name:        "  

"          Company:             "  

"          Date & Time last used: 18/06/2021 at 2:22:59 PM"  

" 31    TIME PARAMETERS"  

"          10.000  Time Step"  

"          180.000  Max. Storm length"  

"          1500.000  Max. Hydrograph"  

" 32    STORM Chicago storm"  

"          1  Chicago storm"  

"          670.324  Coefficient A"  

"          3.007  Constant B"  

"          0.698  Exponent C"  

"          0.400  Fraction R"  

"          180.000  Duration"  

"          1.000  Time step multiplier"  

"          Maximum intensity      107.682  mm/hr"  

"          Total depth          52.991  mm"  

"          6 005hyd  Hydrograph extension used in this file"  

" 33    CATCHMENT 101"  

"          2  Rectangular"  

"          1  Equal length"  

"          2  Horton equation"  

"          101  No description"  

"          100.000  % Impervious"  

"          0.024  Total Area"  

"          5.217  Flow length"  

"          1.200  Overland Slope"  

"          0.000  Pervious Area"  

"          5.217  Pervious length"  

"          1.200  Pervious slope"  

"          0.024  Impervious Area"  

"          5.217  Impervious length"  

"          1.200  Impervious slope"  

"          0.250  Pervious Manning 'n'"  

"          35.000  Pervious Max.infiltration"  

"          5.000  Pervious Min.infiltration"  

"          0.500  Pervious Lag constant (hours)"  

"          7.500  Pervious Depression storage"  

"          0.015  Impervious Manning 'n'"  

"          0.000  Impervious Max.infiltration"  

"          0.000  Impervious Min.infiltration"  

"          0.500  Impervious Lag constant (hours)"  

"          2.000  Impervious Depression storage"  

"          0.007  0.000  0.000  0.000  c.m/sec"  

"          Catchment 101  Pervious  Impervious  Total Area  "  

"          Surface Area  0.000  0.024  0.024  hectare"  

"          Time of concentration  5.644  0.879  0.879  minutes"  

"          Time to Centroid  91.666  89.139  89.139  minutes"  

"          Rainfall depth  52.991  52.991  52.991  mm"  

"          Rainfall volume  0.00  12.72  12.72  c.m"  

"          Rainfall losses  34.172  2.000  2.000  mm"  

"          Runoff depth  18.819  50.991  50.991  mm"  

"          Runoff volume  0.00  12.24  12.24  c.m"  

"          Runoff coefficient  0.000  0.962  0.962  "

```

```

"
" Maximum flow 0.000 0.007 0.007 c.m/sec"
" 40 HYDROGRAPH Add Runoff "
" 4 Add Runoff "
" 0.007 0.007 0.000 0.000"
" 51 PIPE DESIGN"
" 0.007 Current peak flow c.m/sec"
" 0.013 Manning 'n'"
" 1.000 Diameter metre"
" 1.000 Gradient %"
" Depth of flow 0.040 metre"
" Velocity 0.679 m/sec"
" Pipe capacity 2.398 c.m/sec"
" Critical depth 0.046 metre"
" 53 ROUTE Zero Route"
" 0.00 Zero Route Reach length (metre)"
" 0.007 0.007 0.007 0.000 c.m/sec"
" 40 HYDROGRAPH Combine 2"
" 6 Combine "
" 2 Node #"
"
" Maximum flow 0.007 c.m/sec"
" Hydrograph volume 12.238 c.m"
" 0.007 0.007 0.007 0.007"
" 40 HYDROGRAPH Start - New Tributary"
" 2 Start - New Tributary"
" 0.007 0.000 0.007 0.007"
" 33 CATCHMENT 102"
" 2 Rectangular"
" 1 Equal length"
" 2 Horton equation"
" 102 No description"
" 100.000 % Impervious"
" 0.075 Total Area"
" 14.423 Flow length"
" 1.200 Overland Slope"
" 0.000 Pervious Area"
" 14.423 Pervious length"
" 1.200 Pervious slope"
" 0.075 Impervious Area"
" 14.423 Impervious length"
" 1.200 Impervious slope"
" 0.250 Pervious Manning 'n'"
" 35.000 Pervious Max.infiltration"
" 5.000 Pervious Min.infiltration"
" 0.500 Pervious Lag constant (hours)"
" 7.500 Pervious Depression storage"
" 0.015 Impervious Manning 'n'"
" 0.000 Impervious Max.infiltration"
" 0.000 Impervious Min.infiltration"
" 0.500 Impervious Lag constant (hours)"
" 2.000 Impervious Depression storage"
" 0.022 0.000 0.007 0.007 c.m/sec"
" Catchment 102 Pervious Impervious Total Area "
" Surface Area 0.000 0.075 0.075 hectare"
" Time of concentration 10.390 1.618 1.618 minutes"
" Time to Centroid 94.305 89.144 89.144 minutes"
" Rainfall depth 52.991 52.991 52.991 mm"
" Rainfall volume 0.00 39.74 39.74 c.m"
" Rainfall losses 34.172 2.000 2.000 mm"
" Runoff depth 18.819 50.991 50.991 mm"

```

" Runoff volume 0.00 38.24 38.24 c.m"  
 " Runoff coefficient 0.000 0.962 0.962 "  
 " Maximum flow 0.000 0.022 0.022 c.m/sec"  
 " 40 HYDROGRAPH Add Runoff "  
 " 4 Add Runoff "  
 " 0.022 0.022 0.007 0.007"  
 " 51 PIPE DESIGN"  
 " 0.022 Current peak flow c.m/sec"  
 " 0.013 Manning 'n'"  
 " 1.000 Diameter metre"  
 " 1.000 Gradient %"  
 " Depth of flow 0.068 metre"  
 " Velocity 0.961 m/sec"  
 " Pipe capacity 2.398 c.m/sec"  
 " Critical depth 0.082 metre"  
 " 53 ROUTE Zero Route"  
 " 0.00 Zero Route Reach length (metre)"  
 " 0.022 0.022 0.022 0.007 c.m/sec"  
 " 40 HYDROGRAPH Combine 2"  
 " 6 Combine "  
 " 2 Node #"  
 " "  
 " Maximum flow 0.030 c.m/sec"  
 " Hydrograph volume 50.481 c.m"  
 " 0.022 0.022 0.022 0.030"  
 " 40 HYDROGRAPH Confluence 2"  
 " 7 Confluence "  
 " 2 Node #"  
 " "  
 " Maximum flow 0.030 c.m/sec"  
 " Hydrograph volume 50.481 c.m"  
 " 0.022 0.030 0.022 0.000"  
 " 51 PIPE DESIGN"  
 " 0.030 Current peak flow c.m/sec"  
 " 0.013 Manning 'n'"  
 " 1.000 Diameter metre"  
 " 1.000 Gradient %"  
 " Depth of flow 0.078 metre"  
 " Velocity 1.045 m/sec"  
 " Pipe capacity 2.398 c.m/sec"  
 " Critical depth 0.094 metre"  
 " 53 ROUTE Zero Route"  
 " 0.00 Zero Route Reach length (metre)"  
 " 0.022 0.030 0.030 0.000 c.m/sec"  
 " 40 HYDROGRAPH Combine 2"  
 " 6 Combine "  
 " 2 Node #"  
 " "  
 " Maximum flow 0.030 c.m/sec"  
 " Hydrograph volume 50.481 c.m"  
 " 0.022 0.030 0.030 0.030"  
 " 40 HYDROGRAPH Start - New Tributary"  
 " 2 Start - New Tributary"  
 " 0.022 0.000 0.030 0.030"  
 " 33 CATCHMENT 3"  
 " 2 Rectangular"  
 " 1 Equal length"  
 " 2 Horton equation"  
 " 3 No description"  
 " 87.000 % Impervious"

```

" 0.032 Total Area"
" 8.000 Flow length"
" 1.200 Overland Slope"
" 0.004 Pervious Area"
" 8.000 Pervious length"
" 1.200 Pervious slope"
" 0.028 Impervious Area"
" 8.000 Impervious length"
" 1.200 Impervious slope"
" 0.250 Pervious Manning 'n'"
" 35.000 Pervious Max.infiltration"
" 5.000 Pervious Min.infiltration"
" 0.500 Pervious Lag constant (hours)"
" 7.500 Pervious Depression storage"
" 0.015 Impervious Manning 'n'"
" 0.000 Impervious Max.infiltration"
" 0.000 Impervious Min.infiltration"
" 0.500 Impervious Lag constant (hours)"
" 2.000 Impervious Depression storage"
" 0.009 0.000 0.030 0.030 c.m/sec"
" Catchment 3 Pervious Impervious Total Area "
" Surface Area 0.004 0.028 0.032 hectare"
" Time of concentration 7.295 1.136 1.458 minutes"
" Time to Centroid 92.572 89.140 89.320 minutes"
" Rainfall depth 52.991 52.991 52.991 mm"
" Rainfall volume 2.20 14.75 16.96 c.m"
" Rainfall losses 34.172 2.000 6.182 mm"
" Runoff depth 18.819 50.991 46.809 mm"
" Runoff volume 0.78 14.20 14.98 c.m"
" Runoff coefficient 0.355 0.962 0.883 "
" Maximum flow 0.001 0.008 0.009 c.m/sec"
" 40 HYDROGRAPH Add Runoff "
" 4 Add Runoff "
" 0.009 0.009 0.030 0.030"
" 56 DIVERSION"
" 0 Node number"
" 0.000 Overflow threshold"
" 1.000 Required diverted fraction"
" 0 Conduit type; 1=Pipe;2=Channel"
" Peak of diverted flow 0.009 c.m/sec"
" Volume of diverted flow 14.979 c.m"
" DIV00000.005hyd"
" Divert to Infiltration 0.015 cms"
" 0.009 0.009 0.000 0.030 c.m/sec"
" 40 HYDROGRAPH Combine 2"
" 6 Combine "
" 2 Node #"
" "
" Maximum flow 0.030 c.m/sec"
" Hydrograph volume 50.481 c.m"
" 0.009 0.009 0.000 0.030"
" 40 HYDROGRAPH Confluence 2"
" 7 Confluence "
" 2 Node #"
" "
" Maximum flow 0.030 c.m/sec"
" Hydrograph volume 50.481 c.m"
" 0.009 0.030 0.000 0.000"
" 56 DIVERSION"
" 2 Node number"

```

```

" 0.015 Overflow threshold"
" 1.000 Required diverted fraction"
" 0 Conduit type; 1=Pipe;2=Channel"
" Peak of diverted flow      0.015 c.m/sec"
" Volume of diverted flow    8.767 c.m"
" DIV00002.005hyd"
" Divert to Infiltration 0.015cms"
" 0.009 0.030 0.015 0.000 c.m/sec"
" 40 HYDROGRAPH Combine 999"
" 6 Combine "
" 999 Node #"
"
" Maximum flow      0.015 c.m/sec"
" Hydrograph volume 41.714 c.m"
" 0.009 0.030 0.015 0.015"
" 40 HYDROGRAPH Confluence 999"
" 7 Confluence "
" 999 Node #"
"
" Maximum flow      0.015 c.m/sec"
" Hydrograph volume 41.714 c.m"
" 0.009 0.015 0.015 0.000"
" 38 START/RE-START TOTALS 999"
" 3 Runoff Totals on EXIT"
" Total Catchment area          0.131 hectare"
" Total Impervious area         0.127 hectare"
" Total % impervious            96.824"
" EXIT"

```

```

"
"          MIDUSS Output ----->"          Version 2.25  rev. 473"
"          MIDUSS version          February-07-10"
"          MIDUSS created          ie METRIC"
"          10  Units used:          C:\swm\15135"
"          Job folder:          pst25.out"
"          Output filename:          Bob"
"          Licensee name:          "
"          Company          "
"          Date & Time last used: 18/06/2021 at 2:20:57 PM"
" 31      TIME PARAMETERS"
"          10.000  Time Step"
"          180.000  Max. Storm length"
"          1500.000  Max. Hydrograph"
" 32      STORM Chicago storm"
"          1  Chicago storm"
"          721.533  Coefficient A"
"          2.253  Constant B"
"          0.679  Exponent C"
"          0.400  Fraction R"
"          180.000  Duration"
"          1.000  Time step multiplier"
"          Maximum intensity      127.011  mm/hr"
"          Total depth          63.151  mm"
"          6  005hyd  Hydrograph extension used in this file"
" 33      CATCHMENT 101"
"          2  Rectangular"
"          1  Equal length"
"          2  Horton equation"
"          101  No description"
"          100.000  % Impervious"
"          0.024  Total Area"
"          5.217  Flow length"
"          1.200  Overland Slope"
"          0.000  Pervious Area"
"          5.217  Pervious length"
"          1.200  Pervious slope"
"          0.024  Impervious Area"
"          5.217  Impervious length"
"          1.200  Impervious slope"
"          0.250  Pervious Manning 'n'"
"          35.000  Pervious Max.infiltration"
"          5.000  Pervious Min.infiltration"
"          0.500  Pervious Lag constant (hours)"
"          7.500  Pervious Depression storage"
"          0.015  Impervious Manning 'n'"
"          0.000  Impervious Max.infiltration"
"          0.000  Impervious Min.infiltration"
"          0.500  Impervious Lag constant (hours)"
"          2.000  Impervious Depression storage"
"          0.008  0.000  0.000  0.000  c.m/sec"
"          Catchment 101  Pervious  Impervious  Total Area  "
"          Surface Area  0.000  0.024  0.024  hectare"
"          Time of concentration  4.896  0.823  0.823  minutes"
"          Time to Centroid  94.790  88.972  88.972  minutes"
"          Rainfall depth  63.151  63.151  63.151  mm"
"          Rainfall volume  0.00  15.16  15.16  c.m"
"          Rainfall losses  34.738  2.000  2.000  mm"
"          Runoff depth  28.413  61.151  61.151  mm"
"          Runoff volume  0.00  14.68  14.68  c.m"
"          Runoff coefficient  0.000  0.968  0.968  "

```

```

"
" Maximum flow 0.000 0.008 0.008 c.m/sec"
" 40 HYDROGRAPH Add Runoff "
" 4 Add Runoff "
" 0.008 0.008 0.000 0.000"
" 51 PIPE DESIGN"
" 0.008 Current peak flow c.m/sec"
" 0.013 Manning 'n'"
" 1.000 Diameter metre"
" 1.000 Gradient %"
" Depth of flow 0.043 metre"
" Velocity 0.714 m/sec"
" Pipe capacity 2.398 c.m/sec"
" Critical depth 0.050 metre"
" 53 ROUTE Zero Route"
" 0.00 Zero Route Reach length (metre)"
" 0.008 0.008 0.008 0.000 c.m/sec"
" 40 HYDROGRAPH Combine 2"
" 6 Combine "
" 2 Node #"
"
" Maximum flow 0.008 c.m/sec"
" Hydrograph volume 14.676 c.m"
" 0.008 0.008 0.008 0.008"
" 40 HYDROGRAPH Start - New Tributary"
" 2 Start - New Tributary"
" 0.008 0.000 0.008 0.008"
" 33 CATCHMENT 102"
" 2 Rectangular"
" 1 Equal length"
" 2 Horton equation"
" 102 No description"
" 100.000 % Impervious"
" 0.075 Total Area"
" 14.423 Flow length"
" 1.200 Overland Slope"
" 0.000 Pervious Area"
" 14.423 Pervious length"
" 1.200 Pervious slope"
" 0.075 Impervious Area"
" 14.423 Impervious length"
" 1.200 Impervious slope"
" 0.250 Pervious Manning 'n'"
" 35.000 Pervious Max.infiltration"
" 5.000 Pervious Min.infiltration"
" 0.500 Pervious Lag constant (hours)"
" 7.500 Pervious Depression storage"
" 0.015 Impervious Manning 'n'"
" 0.000 Impervious Max.infiltration"
" 0.000 Impervious Min.infiltration"
" 0.500 Impervious Lag constant (hours)"
" 2.000 Impervious Depression storage"
" 0.026 0.000 0.008 0.008 c.m/sec"
" Catchment 102 Pervious Impervious Total Area "
" Surface Area 0.000 0.075 0.075 hectare"
" Time of concentration 9.013 1.514 1.514 minutes"
" Time to Centroid 97.001 88.972 88.972 minutes"
" Rainfall depth 63.151 63.151 63.151 mm"
" Rainfall volume 0.00 47.36 47.36 c.m"
" Rainfall losses 34.738 2.000 2.000 mm"
" Runoff depth 28.413 61.151 61.151 mm"

```

" Runoff volume 0.00 45.86 45.86 c.m"  
 " Runoff coefficient 0.000 0.968 0.968 "  
 " Maximum flow 0.000 0.026 0.026 c.m/sec"  
 " 40 HYDROGRAPH Add Runoff "  
 " 4 Add Runoff "  
 " 0.026 0.026 0.008 0.008"  
 " 51 PIPE DESIGN"  
 " 0.026 Current peak flow c.m/sec"  
 " 0.013 Manning 'n'"  
 " 1.000 Diameter metre"  
 " 1.000 Gradient %"  
 " Depth of flow 0.074 metre"  
 " Velocity 1.010 m/sec"  
 " Pipe capacity 2.398 c.m/sec"  
 " Critical depth 0.089 metre"  
 " 53 ROUTE Zero Route"  
 " 0.00 Zero Route Reach length (metre)"  
 " 0.026 0.026 0.026 0.008 c.m/sec"  
 " 40 HYDROGRAPH Combine 2"  
 " 6 Combine "  
 " 2 Node #"  
 " "  
 " Maximum flow 0.035 c.m/sec"  
 " Hydrograph volume 60.539 c.m"  
 " 0.026 0.026 0.026 0.035"  
 " 40 HYDROGRAPH Confluence 2"  
 " 7 Confluence "  
 " 2 Node #"  
 " "  
 " Maximum flow 0.035 c.m/sec"  
 " Hydrograph volume 60.539 c.m"  
 " 0.026 0.035 0.026 0.000"  
 " 51 PIPE DESIGN"  
 " 0.035 Current peak flow c.m/sec"  
 " 0.013 Manning 'n'"  
 " 1.000 Diameter metre"  
 " 1.000 Gradient %"  
 " Depth of flow 0.084 metre"  
 " Velocity 1.099 m/sec"  
 " Pipe capacity 2.398 c.m/sec"  
 " Critical depth 0.102 metre"  
 " 53 ROUTE Zero Route"  
 " 0.00 Zero Route Reach length (metre)"  
 " 0.026 0.035 0.035 0.000 c.m/sec"  
 " 40 HYDROGRAPH Combine 2"  
 " 6 Combine "  
 " 2 Node #"  
 " "  
 " Maximum flow 0.035 c.m/sec"  
 " Hydrograph volume 60.539 c.m"  
 " 0.026 0.035 0.035 0.035"  
 " 40 HYDROGRAPH Start - New Tributary"  
 " 2 Start - New Tributary"  
 " 0.026 0.000 0.035 0.035"  
 " 33 CATCHMENT 3"  
 " 2 Rectangular"  
 " 1 Equal length"  
 " 2 Horton equation"  
 " 3 No description"  
 " 87.000 % Impervious"

```

" 0.032 Total Area"
" 8.000 Flow length"
" 1.200 Overland Slope"
" 0.004 Pervious Area"
" 8.000 Pervious length"
" 1.200 Pervious slope"
" 0.028 Impervious Area"
" 8.000 Impervious length"
" 1.200 Impervious slope"
" 0.250 Pervious Manning 'n'"
" 35.000 Pervious Max.infiltration"
" 5.000 Pervious Min.infiltration"
" 0.500 Pervious Lag constant (hours)"
" 7.500 Pervious Depression storage"
" 0.015 Impervious Manning 'n'"
" 0.000 Impervious Max.infiltration"
" 0.000 Impervious Min.infiltration"
" 0.500 Impervious Lag constant (hours)"
" 2.000 Impervious Depression storage"
" 0.011 0.000 0.035 0.035 c.m/sec"
" Catchment 3 Pervious Impervious Total Area "
" Surface Area 0.004 0.028 0.032 hectare"
" Time of concentration 6.328 1.063 1.405 minutes"
" Time to Centroid 95.549 88.972 89.399 minutes"
" Rainfall depth 63.151 63.151 63.151 mm"
" Rainfall volume 2.63 17.58 20.21 c.m"
" Rainfall losses 34.738 2.000 6.256 mm"
" Runoff depth 28.413 61.151 56.895 mm"
" Runoff volume 1.18 17.02 18.21 c.m"
" Runoff coefficient 0.450 0.968 0.901 "
" Maximum flow 0.001 0.010 0.011 c.m/sec"
" 40 HYDROGRAPH Add Runoff "
" 4 Add Runoff "
" 0.011 0.011 0.035 0.035"
" 56 DIVERSION"
" 0 Node number"
" 0.000 Overflow threshold"
" 1.000 Required diverted fraction"
" 0 Conduit type; 1=Pipe;2=Channel"
" Peak of diverted flow 0.011 c.m/sec"
" Volume of diverted flow 18.206 c.m"
" DIV00000.005hyd"
" Divert to Infiltration 0.015 cms"
" 0.011 0.011 0.000 0.035 c.m/sec"
" 40 HYDROGRAPH Combine 2"
" 6 Combine "
" 2 Node #"
" "
" Maximum flow 0.035 c.m/sec"
" Hydrograph volume 60.539 c.m"
" 0.011 0.011 0.000 0.035"
" 40 HYDROGRAPH Confluence 2"
" 7 Confluence "
" 2 Node #"
" "
" Maximum flow 0.035 c.m/sec"
" Hydrograph volume 60.539 c.m"
" 0.011 0.035 0.000 0.000"
" 56 DIVERSION"
" 2 Node number"

```

" 0.020 Overflow threshold"  
" 1.000 Required diverted fraction"  
" 0 Conduit type; 1=Pipe;2=Channel"  
" Peak of diverted flow 0.015 c.m/sec"  
" Volume of diverted flow 8.957 c.m"  
" DIV00002.005hyd"  
" Divert to Infiltration 0.015cms"  
" 0.011 0.035 0.020 0.000 c.m/sec"  
" 40 HYDROGRAPH Combine 999"  
" 6 Combine "  
" 999 Node #"  
" "  
" Maximum flow 0.020 c.m/sec"  
" Hydrograph volume 51.582 c.m"  
" 0.011 0.035 0.020 0.020"  
" 40 HYDROGRAPH Confluence 999"  
" 7 Confluence "  
" 999 Node #"  
" "  
" Maximum flow 0.020 c.m/sec"  
" Hydrograph volume 51.582 c.m"  
" 0.011 0.020 0.020 0.000"  
" 38 START/RE-START TOTALS 999"  
" 3 Runoff Totals on EXIT"  
" Total Catchment area 0.131 hectare"  
" Total Impervious area 0.127 hectare"  
" Total % impervious 96.824"  
" 19 EXIT"

```

"          MIDUSS Output ----->
"          MIDUSS version          Version 2.25  rev. 473"
"          MIDUSS created          February-07-10"
"          10  Units used:          ie METRIC"
"          Job folder:           C:\swm\15135"
"          Output filename:      pst50.out"
"          Licensee name:        Bob"
"          Company:              "
"          Date & Time last used: 18/06/2021 at 2:18:22 PM"
" 31      TIME PARAMETERS"
"          10.000  Time Step"
"          180.000 Max. Storm length"
"          1500.000 Max. Hydrograph"
" 32      STORM Chicago storm"
"          1  Chicago storm"
"          766.038 Coefficient A"
"          1.898 Constant B"
"          0.668 Exponent C"
"          0.400 Fraction R"
"          180.000 Duration"
"          1.000 Time step multiplier"
"          Maximum intensity      141.545  mm/hr"
"          Total depth           71.090  mm"
"          6 005hyd Hydrograph extension used in this file"
" 33      CATCHMENT 101"
"          2 Rectangular"
"          1 Equal length"
"          2 Horton equation"
"          101 No description"
"          100.000 % Impervious"
"          0.024 Total Area"
"          5.217 Flow length"
"          1.200 Overland Slope"
"          0.000 Pervious Area"
"          5.217 Pervious length"
"          1.200 Pervious slope"
"          0.024 Impervious Area"
"          5.217 Impervious length"
"          1.200 Impervious slope"
"          0.250 Pervious Manning 'n'"
"          35.000 Pervious Max.infiltration"
"          5.000 Pervious Min.infiltration"
"          0.500 Pervious Lag constant (hours)"
"          7.500 Pervious Depression storage"
"          0.015 Impervious Manning 'n'"
"          0.000 Impervious Max.infiltration"
"          0.000 Impervious Min.infiltration"
"          0.500 Impervious Lag constant (hours)"
"          2.000 Impervious Depression storage"
"          0.009  0.000  0.000  0.000 c.m/sec"
"          Catchment 101      Pervious  Impervious Total Area "
"          Surface Area       0.000    0.024    0.024  hectare"
"          Time of concentration 4.476    0.788    0.788  minutes"
"          Time to Centroid    95.767   88.885   88.885  minutes"
"          Rainfall depth     71.090   71.090   71.090  mm"
"          Rainfall volume    0.00     17.06    17.06   c.m"
"          Rainfall losses    35.051   2.000    2.000   mm"
"          Runoff depth       36.038   69.090   69.090  mm"
"          Runoff volume      0.00     16.58    16.58   c.m"
"          Runoff coefficient 0.000    0.972    0.972   "

```

```

"
" Maximum flow 0.000 0.009 0.009 c.m/sec"
" 40 HYDROGRAPH Add Runoff "
" 4 Add Runoff "
" 0.009 0.009 0.000 0.000"
"
" 51 PIPE DESIGN"
" 0.009 Current peak flow c.m/sec"
" 0.013 Manning 'n'"
" 1.000 Diameter metre"
" 1.000 Gradient %"
" Depth of flow 0.046 metre"
" Velocity 0.738 m/sec"
" Pipe capacity 2.398 c.m/sec"
" Critical depth 0.053 metre"
"
" 53 ROUTE Zero Route"
" 0.00 Zero Route Reach length (metre)"
" 0.009 0.009 0.009 0.000 c.m/sec"
"
" 40 HYDROGRAPH Combine 2"
" 6 Combine "
" 2 Node #"
"
" Maximum flow 0.009 c.m/sec"
" Hydrograph volume 16.582 c.m"
" 0.009 0.009 0.009 0.009"
"
" 40 HYDROGRAPH Start - New Tributary"
" 2 Start - New Tributary"
" 0.009 0.000 0.009 0.009"
"
" 33 CATCHMENT 102"
" 2 Rectangular"
" 1 Equal length"
" 2 Horton equation"
" 102 No description"
" 100.000 % Impervious"
" 0.075 Total Area"
" 14.423 Flow length"
" 1.200 Overland Slope"
" 0.000 Pervious Area"
" 14.423 Pervious length"
" 1.200 Pervious slope"
" 0.075 Impervious Area"
" 14.423 Impervious length"
" 1.200 Impervious slope"
" 0.250 Pervious Manning 'n'"
" 35.000 Pervious Max.infiltration"
" 5.000 Pervious Min.infiltration"
" 0.500 Pervious Lag constant (hours)"
" 7.500 Pervious Depression storage"
" 0.015 Impervious Manning 'n'"
" 0.000 Impervious Max.infiltration"
" 0.000 Impervious Min.infiltration"
" 0.500 Impervious Lag constant (hours)"
" 2.000 Impervious Depression storage"
" 0.029 0.000 0.009 0.009 c.m/sec"
"
" Catchment 102 Pervious Impervious Total Area "
" Surface Area 0.000 0.075 0.075 hectare"
" Time of concentration 8.239 1.450 1.450 minutes"
" Time to Centroid 97.822 88.885 88.885 minutes"
" Rainfall depth 71.090 71.090 71.090 mm"
" Rainfall volume 0.00 53.32 53.32 c.m"
" Rainfall losses 35.051 2.000 2.000 mm"
" Runoff depth 36.038 69.090 69.090 mm

```

```

" Runoff volume 0.00 51.82 51.82 c.m"
" Runoff coefficient 0.000 0.972 0.972 "
" Maximum flow 0.000 0.029 0.029 c.m/sec"
" 40 HYDROGRAPH Add Runoff "
" 4 Add Runoff "
" 0.029 0.029 0.009 0.009"
" 51 PIPE DESIGN"
" 0.029 Current peak flow c.m/sec"
" 0.013 Manning 'n'"
" 1.000 Diameter metre"
" 1.000 Gradient %"
" Depth of flow 0.078 metre"
" Velocity 1.044 m/sec"
" Pipe capacity 2.398 c.m/sec"
" Critical depth 0.094 metre"
" 53 ROUTE Zero Route"
" 0.00 Zero Route Reach length (metre)"
" 0.029 0.029 0.029 0.009 c.m/sec"
" 40 HYDROGRAPH Combine 2"
" 6 Combine "
" 2 Node #"
" "
" Maximum flow 0.039 c.m/sec"
" Hydrograph volume 68.399 c.m"
" 0.029 0.029 0.029 0.039"
" 40 HYDROGRAPH Confluence 2"
" 7 Confluence "
" 2 Node #"
" "
" Maximum flow 0.039 c.m/sec"
" Hydrograph volume 68.399 c.m"
" 0.029 0.039 0.029 0.000"
" 51 PIPE DESIGN"
" 0.039 Current peak flow c.m/sec"
" 0.013 Manning 'n'"
" 1.000 Diameter metre"
" 1.000 Gradient %"
" Depth of flow 0.089 metre"
" Velocity 1.135 m/sec"
" Pipe capacity 2.398 c.m/sec"
" Critical depth 0.108 metre"
" 53 ROUTE Zero Route"
" 0.00 Zero Route Reach length (metre)"
" 0.029 0.039 0.039 0.000 c.m/sec"
" 40 HYDROGRAPH Combine 2"
" 6 Combine "
" 2 Node #"
" "
" Maximum flow 0.039 c.m/sec"
" Hydrograph volume 68.399 c.m"
" 0.029 0.039 0.039 0.039"
" 40 HYDROGRAPH Start - New Tributary"
" 2 Start - New Tributary"
" 0.029 0.000 0.039 0.039"
" 33 CATCHMENT 3"
" 2 Rectangular"
" 1 Equal length"
" 2 Horton equation"
" 3 No description"
" 87.000 % Impervious"

```

```

" 0.032 Total Area"
" 8.000 Flow length"
" 1.200 Overland Slope"
" 0.004 Pervious Area"
" 8.000 Pervious length"
" 1.200 Pervious slope"
" 0.028 Impervious Area"
" 8.000 Impervious length"
" 1.200 Impervious slope"
" 0.250 Pervious Manning 'n'"
" 35.000 Pervious Max.infiltration"
" 5.000 Pervious Min.infiltration"
" 0.500 Pervious Lag constant (hours)"
" 7.500 Pervious Depression storage"
" 0.015 Impervious Manning 'n'"
" 0.000 Impervious Max.infiltration"
" 0.000 Impervious Min.infiltration"
" 0.500 Impervious Lag constant (hours)"
" 2.000 Impervious Depression storage"
" 0.012 0.000 0.039 0.039 c.m/sec"
" Catchment 3 Pervious Impervious Total Area "
" Surface Area 0.004 0.028 0.032 hectare"
" Time of concentration 5.785 1.018 1.363 minutes"
" Time to Centroid 96.437 88.885 89.431 minutes"
" Rainfall depth 71.090 71.090 71.090 mm"
" Rainfall volume 2.96 19.79 22.75 c.m"
" Rainfall losses 35.051 2.000 6.297 mm"
" Runoff depth 36.038 69.090 64.793 mm"
" Runoff volume 1.50 19.23 20.73 c.m"
" Runoff coefficient 0.507 0.972 0.911 "
" Maximum flow 0.001 0.011 0.012 c.m/sec"
" 40 HYDROGRAPH Add Runoff "
" 4 Add Runoff "
" 0.012 0.012 0.039 0.039"
" 56 DIVERSION"
" 0 Node number"
" 0.000 Overflow threshold"
" 1.000 Required diverted fraction"
" 0 Conduit type; 1=Pipe;2=Channel"
" Peak of diverted flow 0.012 c.m/sec"
" Volume of diverted flow 20.734 c.m"
" DIV00000.005hyd"
" Divert to Infiltration 0.015 cms"
" 0.012 0.012 0.000 0.039 c.m/sec"
" 40 HYDROGRAPH Combine 2"
" 6 Combine "
" 2 Node #"
" "
" Maximum flow 0.039 c.m/sec"
" Hydrograph volume 68.399 c.m"
" 0.012 0.012 0.000 0.039"
" 40 HYDROGRAPH Confluence 2"
" 7 Confluence "
" 2 Node #"
" "
" Maximum flow 0.039 c.m/sec"
" Hydrograph volume 68.399 c.m"
" 0.012 0.039 0.000 0.000"
" 56 DIVERSION"
" 2 Node number"

```

```

" 0.024 Overflow threshold"
" 1.000 Required diverted fraction"
"   0 Conduit type; 1=Pipe;2=Channel"
"     Peak of diverted flow      0.015    c.m/sec"
"     Volume of diverted flow   8.955    c.m"
"     DIV00002.005hyd"
"     Divert to Infiltration 0.015cms"
"       0.012    0.039    0.024    0.000 c.m/sec"
" 40   HYDROGRAPH Combine 999"
"   6 Combine "
" 999 Node #"
"
"     Maximum flow      0.024    c.m/sec"
"     Hydrograph volume 59.444    c.m"
"       0.012    0.039    0.024    0.024"
" 40   HYDROGRAPH Confluence 999"
"   7 Confluence "
" 999 Node #"
"
"     Maximum flow      0.024    c.m/sec"
"     Hydrograph volume 59.444    c.m"
"       0.012    0.024    0.024    0.000"
" 38   START/RE-START TOTALS 999"
"   3 Runoff Totals on EXIT"
"     Total Catchment area           0.131    hectare"
"     Total Impervious area          0.127    hectare"
"     Total % impervious            96.824"
" 19   EXIT"

```

```

"          MIDUSS Output ----->
"          MIDUSS version                                Version 2.25  rev. 473"
"          MIDUSS created                                February-07-10"
"          10  Units used:                                ie METRIC"
"          Job folder:                                 C:\swm\15135"
"          Output filename:                            pst100.out"
"          Licensee name:                            Bob"
"          Company:                                 "
"          Date & Time last used:                    18/06/2021 at 2:09:26 PM"
" 31      TIME PARAMETERS"
"          10.000  Time Step"
"          180.000  Max. Storm length"
"          1500.000 Max. Hydrograph"
" 32      STORM Chicago storm"
"          1  Chicago storm"
"          801.041  Coefficient A"
"          1.501  Constant B"
"          0.657  Exponent C"
"          0.400  Fraction R"
"          180.000 Duration"
"          1.000  Time step multiplier"
"          Maximum intensity          155.782  mm/hr"
"          Total depth             78.830  mm"
"          6  005hyd  Hydrograph extension used in this file"
" 33      CATCHMENT 101"
"          2  Rectangular"
"          1  Equal length"
"          2  Horton equation"
"          101  No description"
"          100.000 % Impervious"
"          0.024  Total Area"
"          5.217  Flow length"
"          1.200  Overland Slope"
"          0.000  Pervious Area"
"          5.217  Pervious length"
"          1.200  Pervious slope"
"          0.024  Impervious Area"
"          5.217  Impervious length"
"          1.200  Impervious slope"
"          0.250  Pervious Manning 'n'"
"          35.000 Pervious Max.infiltration"
"          5.000  Pervious Min.infiltration"
"          0.500  Pervious Lag constant (hours)"
"          7.500  Pervious Depression storage"
"          0.015  Impervious Manning 'n'"
"          0.000  Impervious Max.infiltration"
"          0.000  Impervious Min.infiltration"
"          0.500  Impervious Lag constant (hours)"
"          2.000  Impervious Depression storage"
"          0.010  0.000  0.000  0.000  c.m/sec"
"          Catchment 101      Pervious  Impervious  Total Area  "
"          Surface Area      0.000    0.024    0.024  hectare"
"          Time of concentration  4.217    0.758    0.758  minutes"
"          Time to Centroid      0.000    88.849   88.849  minutes"
"          Rainfall depth        78.830   78.830   78.830  mm"
"          Rainfall volume       0.00     18.92    18.92  c.m"
"          Rainfall losses        78.830   2.000    2.000  mm"
"          Runoff depth          0.000    76.830   76.830  mm"
"          Runoff volume          0.00     18.44    18.44  c.m"
"          Runoff coefficient      0.000    0.975    0.975  "

```

```

"
" Maximum flow 0.000 0.010 0.010 c.m/sec"
" 40 HYDROGRAPH Add Runoff "
" 4 Add Runoff "
" 0.010 0.010 0.000 0.000"
"
" 51 PIPE DESIGN"
" 0.010 Current peak flow c.m/sec"
" 0.013 Manning 'n'"
" 1.000 Diameter metre"
" 1.000 Gradient %"
" Depth of flow 0.048 metre"
" Velocity 0.760 m/sec"
" Pipe capacity 2.398 c.m/sec"
" Critical depth 0.055 metre"
"
" 53 ROUTE Zero Route"
" 0.00 Zero Route Reach length (metre)"
" 0.010 0.010 0.010 0.000 c.m/sec"
"
" 40 HYDROGRAPH Combine 2"
" 6 Combine "
" 2 Node #"
"
" Maximum flow 0.010 c.m/sec"
" Hydrograph volume 18.439 c.m"
" 0.010 0.010 0.010 0.010"
"
" 40 HYDROGRAPH Start - New Tributary"
" 2 Start - New Tributary"
" 0.010 0.000 0.010 0.010"
"
" 33 CATCHMENT 102"
" 2 Rectangular"
" 1 Equal length"
" 2 Horton equation"
" 102 No description"
" 100.000 % Impervious"
" 0.075 Total Area"
" 14.423 Flow length"
" 1.200 Overland Slope"
" 0.000 Pervious Area"
" 14.423 Pervious length"
" 1.200 Pervious slope"
" 0.075 Impervious Area"
" 14.423 Impervious length"
" 1.200 Impervious slope"
" 0.250 Pervious Manning 'n'"
" 35.000 Pervious Max.infiltration"
" 5.000 Pervious Min.infiltration"
" 0.500 Pervious Lag constant (hours)"
" 7.500 Pervious Depression storage"
" 0.015 Impervious Manning 'n'"
" 0.000 Impervious Max.infiltration"
" 0.000 Impervious Min.infiltration"
" 0.500 Impervious Lag constant (hours)"
" 2.000 Impervious Depression storage"
" 0.032 0.000 0.010 0.010 c.m/sec"
" Catchment 102 Pervious Impervious Total Area "
" Surface Area 0.000 0.075 0.075 hectare"
" Time of concentration 7.763 1.396 1.396 minutes"
" Time to Centroid 98.408 88.849 88.849 minutes"
" Rainfall depth 78.830 78.830 78.830 mm"
" Rainfall volume 0.00 59.12 59.12 c.m"
" Rainfall losses 35.397 2.000 2.000 mm"
" Runoff depth 43.433 76.830 76.830 mm

```

```

" Runoff volume 0.00 57.62 57.62 c.m"
" Runoff coefficient 0.000 0.975 0.975 "
" Maximum flow 0.000 0.032 0.032 c.m/sec"
" 40 HYDROGRAPH Add Runoff "
" 4 Add Runoff "
" 0.032 0.032 0.010 0.010"
" 51 PIPE DESIGN"
" 0.032 Current peak flow c.m/sec"
" 0.013 Manning 'n'"
" 1.000 Diameter metre"
" 1.000 Gradient %"
" Depth of flow 0.081 metre"
" Velocity 1.074 m/sec"
" Pipe capacity 2.398 c.m/sec"
" Critical depth 0.099 metre"
" 53 ROUTE Zero Route"
" 0.00 Zero Route Reach length (metre)"
" 0.032 0.032 0.032 0.010 c.m/sec"
" 40 HYDROGRAPH Combine 2"
" 6 Combine "
" 2 Node #"
" "
" Maximum flow 0.043 c.m/sec"
" Hydrograph volume 76.062 c.m"
" 0.032 0.032 0.032 0.043"
" 40 HYDROGRAPH Confluence 2"
" 7 Confluence "
" 2 Node #"
" "
" Maximum flow 0.043 c.m/sec"
" Hydrograph volume 76.062 c.m"
" 0.032 0.043 0.032 0.000"
" 51 PIPE DESIGN"
" 0.043 Current peak flow c.m/sec"
" 0.013 Manning 'n'"
" 1.000 Diameter metre"
" 1.000 Gradient %"
" Depth of flow 0.093 metre"
" Velocity 1.168 m/sec"
" Pipe capacity 2.398 c.m/sec"
" Critical depth 0.113 metre"
" 53 ROUTE Zero Route"
" 0.00 Zero Route Reach length (metre)"
" 0.032 0.043 0.043 0.000 c.m/sec"
" 40 HYDROGRAPH Combine 2"
" 6 Combine "
" 2 Node #"
" "
" Maximum flow 0.043 c.m/sec"
" Hydrograph volume 76.062 c.m"
" 0.032 0.043 0.043 0.043"
" 40 HYDROGRAPH Start - New Tributary"
" 2 Start - New Tributary"
" 0.032 0.000 0.043 0.043"
" 33 CATCHMENT 3"
" 2 Rectangular"
" 1 Equal length"
" 2 Horton equation"
" 3 No description"
" 87.000 % Impervious"

```

```

" 0.032 Total Area"
" 8.000 Flow length"
" 1.200 Overland Slope"
" 0.004 Pervious Area"
" 8.000 Pervious length"
" 1.200 Pervious slope"
" 0.028 Impervious Area"
" 8.000 Impervious length"
" 1.200 Impervious slope"
" 0.250 Pervious Manning 'n'"
" 35.000 Pervious Max.infiltration"
" 5.000 Pervious Min.infiltration"
" 0.500 Pervious Lag constant (hours)"
" 7.500 Pervious Depression storage"
" 0.015 Impervious Manning 'n'"
" 0.000 Impervious Max.infiltration"
" 0.000 Impervious Min.infiltration"
" 0.500 Impervious Lag constant (hours)"
" 2.000 Impervious Depression storage"
" 0.014 0.000 0.043 0.043 c.m/sec"
" Catchment 3 Pervious Impervious Total Area "
" Surface Area 0.004 0.028 0.032 hectare"
" Time of concentration 5.451 0.980 1.328 minutes"
" Time to Centroid 97.002 88.849 89.484 minutes"
" Rainfall depth 78.830 78.830 78.830 mm"
" Rainfall volume 3.28 21.95 25.23 c.m"
" Rainfall losses 35.397 2.000 6.342 mm"
" Runoff depth 43.433 76.830 72.489 mm"
" Runoff volume 1.81 21.39 23.20 c.m"
" Runoff coefficient 0.551 0.975 0.920 "
" Maximum flow 0.002 0.012 0.014 c.m/sec"
" 40 HYDROGRAPH Add Runoff "
" 4 Add Runoff "
" 0.014 0.014 0.043 0.043"
" 56 DIVERSION"
" 0 Node number"
" 0.000 Overflow threshold"
" 1.000 Required diverted fraction"
" 0 Conduit type; 1=Pipe;2=Channel"
" Peak of diverted flow 0.014 c.m/sec"
" Volume of diverted flow 23.196 c.m"
" DIV00000.005hyd"
" Divert to Infiltration 0.015 cms"
" 0.014 0.014 0.000 0.043 c.m/sec"
" 40 HYDROGRAPH Combine 2"
" 6 Combine "
" 2 Node #"
" "
" Maximum flow 0.043 c.m/sec"
" Hydrograph volume 76.062 c.m"
" 0.014 0.014 0.000 0.043"
" 40 HYDROGRAPH Confluence 2"
" 7 Confluence "
" 2 Node #"
" "
" Maximum flow 0.043 c.m/sec"
" Hydrograph volume 76.062 c.m"
" 0.014 0.043 0.000 0.000"
" 56 DIVERSION"
" 2 Node number"

```

```

" 0.028  Overflow threshold"
" 1.000  Required diverted fraction"
"     0  Conduit type; 1=Pipe;2=Channel"
"     Peak of diverted flow      0.015  c.m/sec"
"     Volume of diverted flow   8.904  c.m"
"     DIV00002.005hyd"
"     Divert to Infiltration 0.015cms"
"     0.014  0.043  0.028  0.000  c.m/sec"
" 40  HYDROGRAPH  Combine  999"
"     6  Combine "
"     999  Node #"
"     "
"     Maximum flow      0.028  c.m/sec"
"     Hydrograph volume 67.158  c.m"
"     0.014  0.043  0.028  0.028"
" 40  HYDROGRAPH  Confluence  999"
"     7  Confluence "
"     999  Node #"
"     "
"     Maximum flow      0.028  c.m/sec"
"     Hydrograph volume 67.158  c.m"
"     0.014  0.028  0.028  0.000"
" 38  START/RE-START TOTALS 999"
"     3  Runoff Totals on EXIT"
"     Total Catchment area      0.131  hectare"
"     Total Impervious area    0.127  hectare"
"     Total % impervious      96.824"
" 19  EXIT"

```



# J.H. COHOON ENGINEERING LIMITED

CONSULTING ENGINEERS

440 Hardy Road, Unit #1, Brantford, ON N3T 5L8  
Tel: (519) 753-2656 Fax: (519) 753-4263  
www.cohooneng.com

February 11, 2022

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

Attention: Mr. Tim Dickhout  
Project Manager, Development

Re: Proposed Veterinary Clinic  
MN 522 Talbot Road  
Delhi, Ontario  
Norfolk County  
Traffic Considerations

Dear Sir:

In response to request from the owner of the property, Mr. E. Elver, our firm has reviewed the traffic impacts of the proposed development to be located at MN 522 Talbot Road, Delhi, Ontario, Norfolk County.

The re-zoning amendment application relating to this property relates only to the additional of the proposed veterinary clinic to the list of proposed uses within the agricultural zone on this site. The proposal is to construct a small 245.5 sq.m. vet clinic on the subject lands. The proposed site development has been included within Appendix 'A' of this report.

## Existing Transportation Network

The subject property is located on the south side of Talbot Road west of the main village of Delhi, Ontario. The attached aerial photograph and the key plan presented within Figure No. 1, illustrates the existing transportation network in the area.

The current zoning for the site is 'AGR' – Agricultural Zone Category which is consistent with the proposal with the exception of not permitting the veterinary clinic as a proposed use. The proposed site works includes the creation of an on-site parking lot on the north and west side of the proposed building. A land use plan illustrating the existing land uses in the area has been included within Appendix 'B' of this report.



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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 noting that the ITE manual for trip generations for this use is not identified. We have estimated the peak trips to and from this site as follows:

Vet Clinic	= Approximately 5 to 10 trips per unit for the peak pm hour
------------	---

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 intended to operate without any impacts to the existing road network with the following comments:

### **Parking**

The proposed parking on this site includes the construction of a surface parking area that is located on the north and west sides of the building. It is proposed that 8 parking spaces with an additional accessible space are being constructed to service the proposed veterinary clinic.

It is our opinion that as a result of the incorporation of the 9 parking spaces is sufficient in this application as the site exceeds the requirements for an animal hospital which requires 1 space for 25 sq.m. (as per the Norfolk County Zoning Bylaw).

### **Site Access**

The proposed site plan has been reviewed with consideration of access for all types of vehicles on this property. The proposal is to utilize the existing entrance as it appears to meet all the requirements for this type of entrance (Visibility, and maneuverability). The location of the existing entrance would not have any impact on the operation of the municipal rights-of-way.

### **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 a veterinary clinic (approximately 245.5 sq.m.)
- The access to the site is intended to be a full movement driveway onto Talbot Road.
- A total of 9 parking spaces are being proposed on the site
- The development is going to generate only 5-10 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,

J.H. COHOON ENGINEERING LIMITED  
  
R. W. Phillips, P.Eng.

## **Appendix 'A'**

### **J H Cohoon Engineering Limited – Site Development Plan**



# J.H. COHOON ENGINEERING LIMITED

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## **Appendix 'B'** **Land Use Aerial Photo of Subject Area**



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## TALBOT ROAD



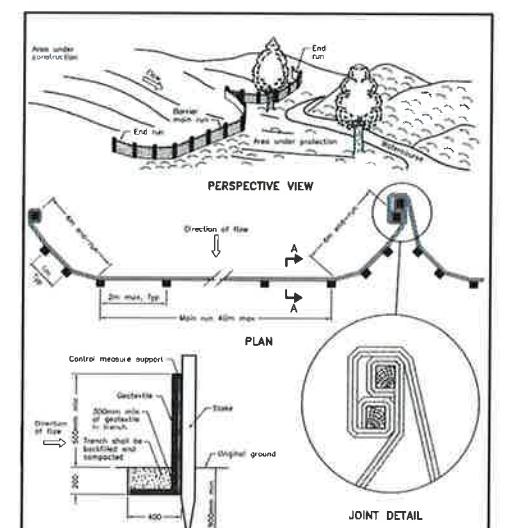
## KEY PLAN

## SITE STATISTICS

ITEM	PROPOSAL	ZONING BYLAW REQUIREMENTS
ZONING CATEGORY	A-xx (REZONE)	A
LOT AREA (sq. m.)	26,145	2000
LOT FRONTAGE (m)	110.12	30.00 MIN.
GROUND FLOOR AREA (sq. m.)	244.1	N/A
STREET SETBACK (m)	27.43	13.00 MIN.
REAR YARD (m)	155.87	9.00 MIN.
SIDE YARD (m)	5.50 & 82.20	3.00 MIN.
NUMBER OF PARKING SPACES	10	10
NUMBER OF BARRIER FREE PARKING SPACES	1	1
PARKING STALL DIMENSIONS (m)	3.00 x 5.80	3.00 x 5.80
BARRIER FREE PARKING STALL DIMENSIONS (m)	4.00 x 5.50	4.90 x 5.50 (TYPE 'A')
BUILDING HEIGHT (m)	4.50	11.00 MAX

---

A CALCULATION IS PERFORMED ON A SURNAMING NAME FOR A TOTAL OF 37 VARIANTS.



### SILT SACK DETAIL

END:

0.00  
0.0015  
→  
→  
EX. TREES  
EX. TREES TO BE REMOVED  
SILTATION FENCE  
SILT SACK AS SHOWN

ES:

ELEVATIONS SHOWN ARE METRIC.  
LAND OWNER TO VERIFY COMPLIANCE WITH ZONING BYLAWS  
SIDEWALKS, SETBACKS, REAR YARDS ETC.)

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.

SEC MEASURES ARE TO BE IN PLACE PRIOR TO  
COMMENCEMENT OF CONSTRUCTION.

OWNER/CONTRACTOR TO MAINTAIN EROSION CONTROL MEASURES  
ABOUT THE SITE UNTIL A COMPLETE GRASS/VEGETATION COVER  
IS ACHIEVED.

ALL WORKS ARE TO BE REMOVED.  
THE DIRECTIONS OF THE ENGINEER ARE THE SEC  
MEASURES TO BE REMOVED.

ALL WORKS ARE TO BE STAGED IN SUCH A MANNER THAT  
NO EROSION CONTROL MEASURES ARE REQUIRED.  
THE CONTRACTOR IS TO PROVIDE THE ENGINEER WITH  
CONFIRMATION THAT ALL APPROVED SILTATION AND  
EROSION CONTROL FACILITIES HAVE BEEN INSTALLED PRIOR TO  
COMMENCEMENT OF ANY GRADING, EXCAVATION OR  
CONSTRUCTION.

ARING AND GRUBBING OF THE SITE SHOULD BE KEPT TO A  
MINIMUM AND VEGETATION REMOVED ONLY IN ADVANCE OF  
IMMEDIATE CONSTRUCTION.

PILEHoles OR STOCPLES ARE TO BE LOCATED AND  
PROTECTED TO MINIMIZE ENVIRONMENTAL INTERFERENCE.  
EROSION CONTROL FENCING IS TO BE INSTALLED AROUND THE  
SITE OF ALL STOCKPLES.

OWNER IS RESPONSIBLE TO ENSURE THE MUNICIPAL  
HIGHWAYS ARE CLEANED OF ALL SEDIMENTS FROM VEHICULAR  
TRAILING ETC. TO AND FROM THE SITE, AT THE END OF EACH  
WORKDAY.

DISTURBED AREAS, NOT INCLUDED IN THE CONSTRUCTION  
AREA, ARE TO BE TOPSOILED AND SEEDED IMMEDIATELY AFTER  
COMPLETION OF AREA GRADING.

EXISTING AND PROPOSED CATCHBASINS ON THE SUBJECT  
PROPERTY, PLUS ANY CATCHBASINS WITHIN THE INFLUENCE  
DISTANCE FROM THE SITE, ARE TO BE PROTECTED WITH FILTER  
MATERIALS AND DRAINS AS DETERMINED BY THE  
ENGINEER.

No. 1 ELEV. = 0m (GEO)

9/19/03 8:04 AM  
DATE  
(9/19/2003)  
BY

RDY ROAD , UNIT #1 , BRANTFORD - ONTARIO , N3T 5L8  
(519) 753-2656 FAX (519) 753-4263 [www.cohooneng.com](http://www.cohooneng.com)

PROPOSED  
VETERINARY  
CLINIC  
522 TALBOT ROAD, DELHI  
NORTH GUINNESS

—  
—  
—

## SITE DEVELOPMENT PLAN

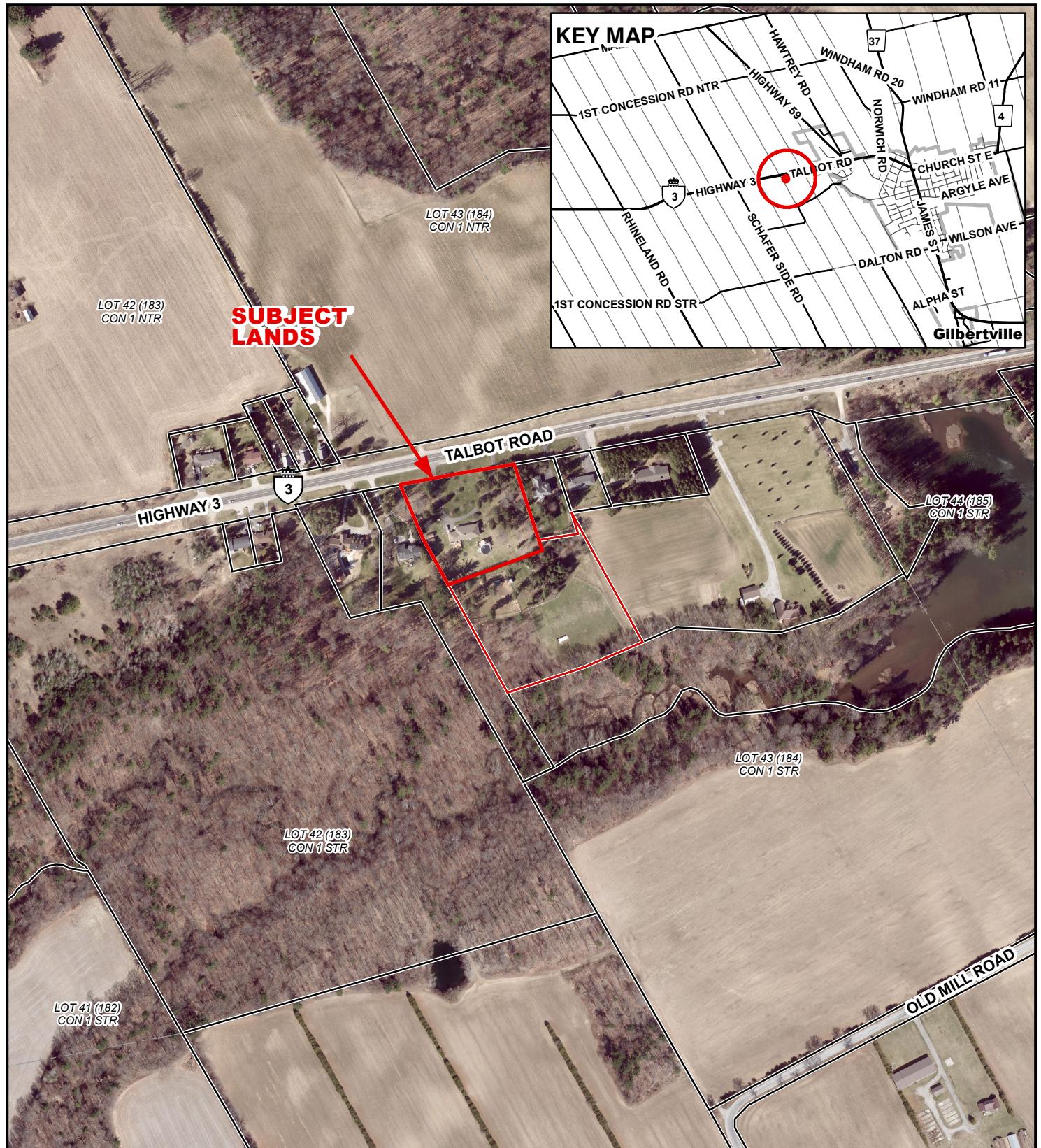
R.W.P.	SCALE: 1:300
S.L.M./K.P.B.	400 ft.
R.W.P.	15135
1 of 1	DEC. No
FEB. 11/22	15135-1



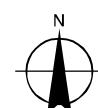


## CONTEXT MAP

Geographic Township of MIDDLETON

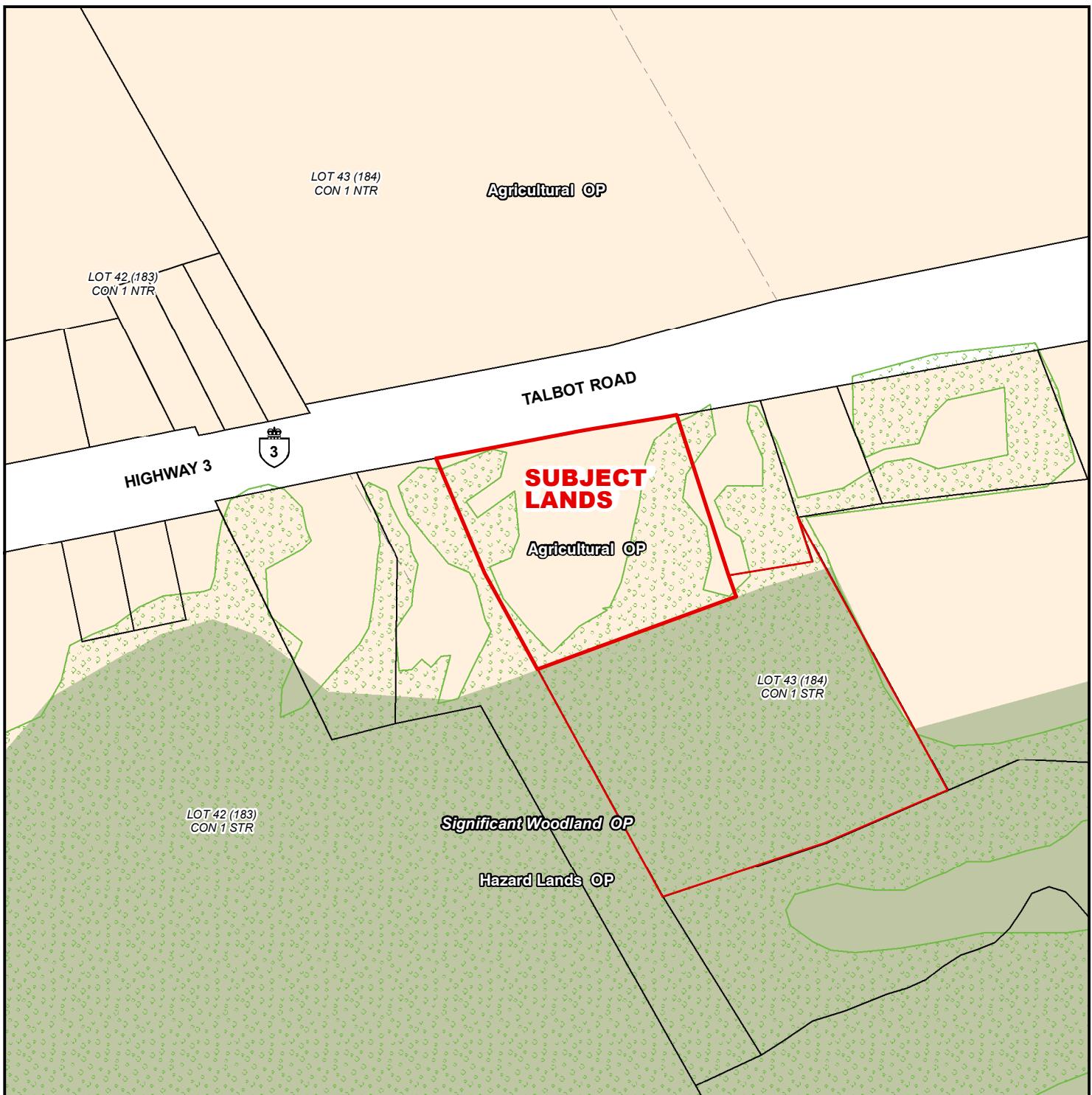


3/1/2022



40 20 0 40 80 120 160 Meters

**OFFICIAL PLAN MAP**  
Geographic Township of MIDDLETON



## Legend

- Subject Lands
- Lands Owned

## Official Plan Designations

- Agricultural
- Hazard Lands
- Significant Woodland

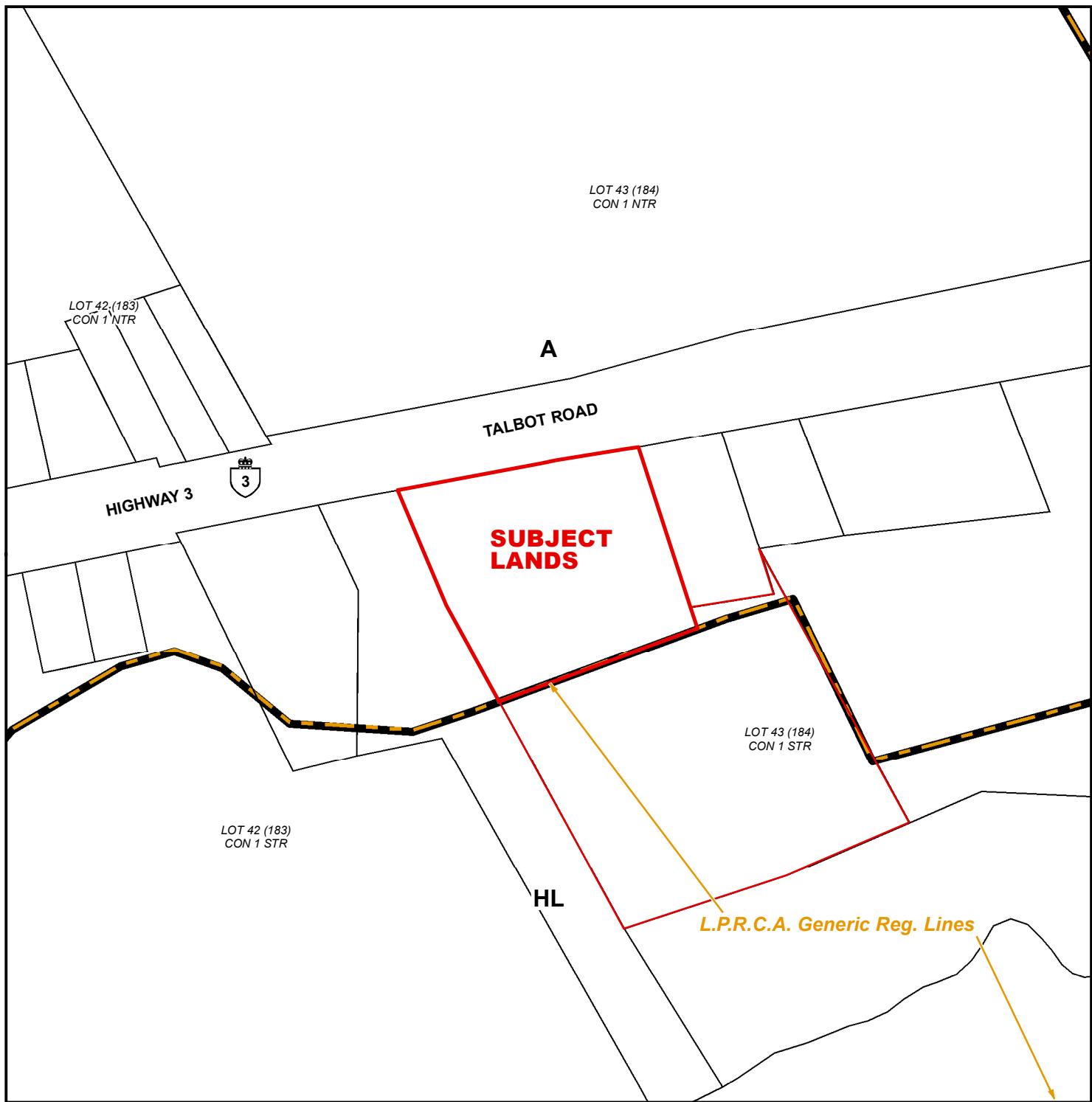
3/1/2022



20 10 0 20 40 60 80 Meters

## PROPOSED ZONING BY-LAW AMENDMENT MAP

Geographic Township of MIDDLETON



## LEGEND

- Subject Lands
- Lands Owned
- LPRCA Generic RegLines

ZONING BY-LAW 1-Z-2014

(H) - Holding

A - Agricultural Zone

HL - Hazard Land Zone

From: A

To: A with Special Provision

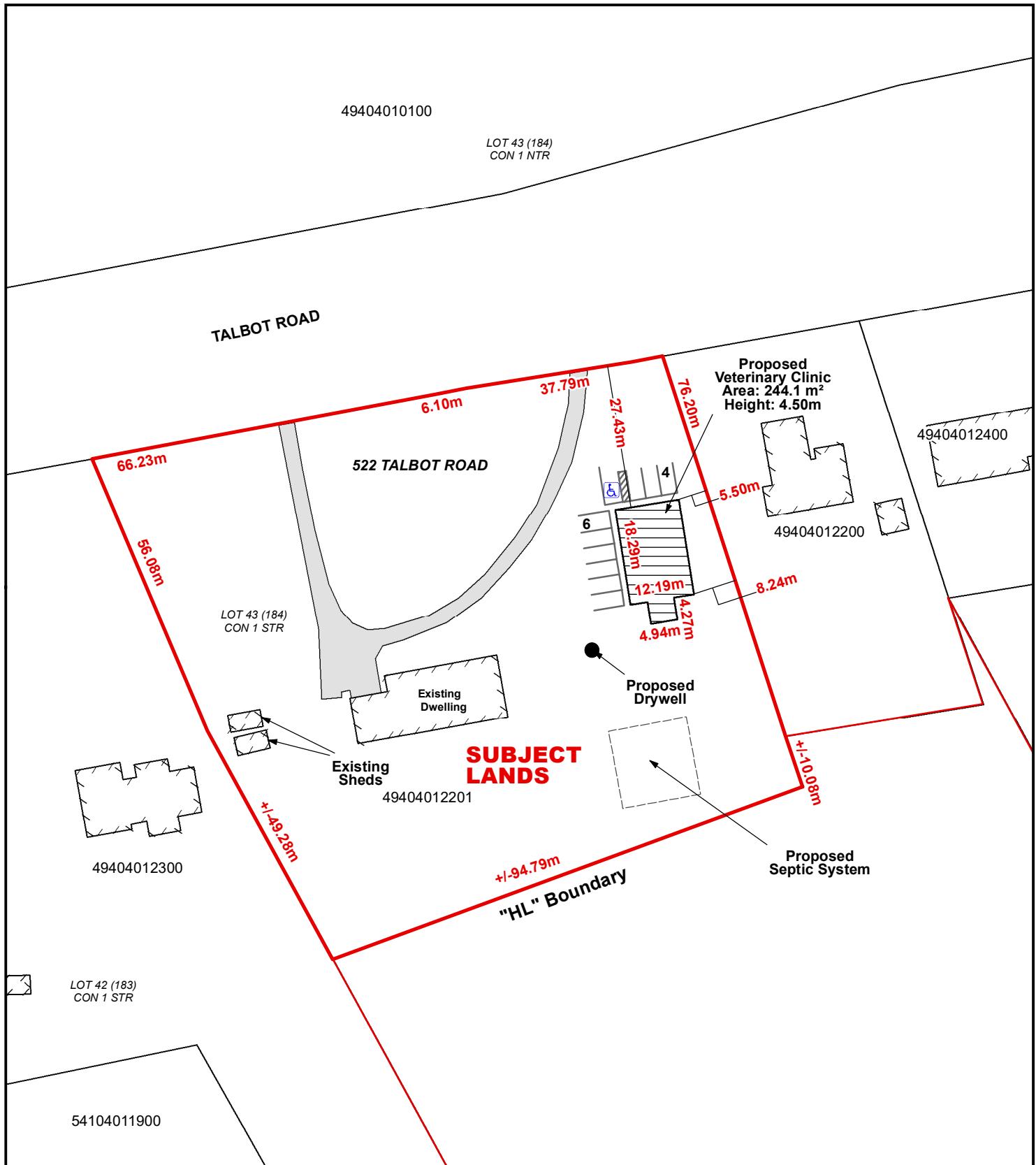
3/1/2022



20 10 0 20 40 60 80 Meters

## CONCEPTUAL PLAN

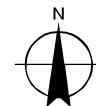
Geographic Township of MIDDLETON



Legend

- Subject Lands
- Lands Owned

3/1/2022



9.5 4.75 0 9.5 19 28.5 38 Meters