

Rainford Severance

For Office Use Only:

File Number
Related File Number
Pre-consultation Meeting
Application Submitted
Complete Application

BNPL 2021 316
~~BNPL 2021 318~~
ANPL 2021 317
ANPL 2021 318
—
N/A
Aug. 11, 2021
yes.

Application Fee
Conservation Authority Fee
Well & Septic Info Provided
Planner
Public Notice Sign

1560.00
1560.00
2816.00 ✓ pd.
N/A
yes
Hanne Yager
—

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

- ☒ Consent/Severance/Boundary Adjustment
☐ Surplus Farm Dwelling Severance and Zoning By-law Amendment
☒ Minor Variance
☐ Easement/Right-of-Way

Property Assessment Roll Number: 491011160000000

A. Applicant Information

Name of Owner James Rainford and Amy Purcell

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 3782 Teeterville Road

Town and Postal Code Teeterville, ON N0E 1S0

Phone Number

Cell Number

Email jamesrain86@gmail.com

Name of Applicant same as above

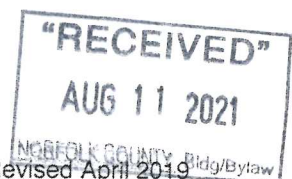
Address

Town and Postal Code

Phone Number

Cell Number

Email



Name of Agent	David Roe , Civic Planning Solutions Inc.
Address	599 Larch Street
Town and Postal Code	Delhi, ON N4B 3A7
Phone Number	519-582-1174
Cell Number	519-983-8154
Email	civicplanningsolutions@nor-del.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 the agent noted above.

☐ Owner ☒ Agent ☐ Applicant

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

B. Location, Legal Description and Property Information

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

Windham, Plan 47B, Blk 12, Lot 1, Lots 10 to 12 and Part Lot 13

Municipal Civic Address: 3782 Teeterville Road

Present Official Plan Designation(s): Hamlet (Teeterville)

Present Zoning: RH

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

☐ Yes ☒ No If yes, please specify:

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:

Dwelling and garage (see attached sketch)

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

6. Please describe **all proposed** buildings or structures/additions on the subject lands. Describe the type of buildings or structures/additions, and illustrate the setback, in metric units, from front, rear and side lot lines, ground floor area, gross floor area, lot coverage, number of storeys, width, length, and height on your attached sketch which must be included with your application:

New dwelling to be built on severed lot in future

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:

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

9. Existing use of abutting properties:

Residential

10. Are there any easements or restrictive covenants affecting the subject lands?

☐ Yes ☒ No If yes, describe the easement or restrictive covenant and its effect:

C. Purpose of Development Application

Note: Please complete all that apply.

1. Site Information

Existing

Proposed

Please indicate unit of measurement, for example: m, m² or %

Lot frontage	60.35m	
Lot depth	70.4m	
Lot width	60.35m	
Lot area	4238m ²	
Lot coverage		
Front yard		
Rear yard		
Left Interior side yard		
Right Interior side yard		
Exterior side yard (corner lot)		

2. Please outline the relief requested (assistance is available):

Relief required for minimum lot area of 4000m² required by the zoning by-law.

Each lot proposed with have a minmum lot area of 2119m²

3. Please explain why it is not possible to comply with the provision(s) of the Zoning By-law:

The HR zone requies a mumimum lot area of 4000m². In order to create a lot of less area will require a Hyrdogeological Report to confirm that the lots will be adequate to support private on site septic systems.

4. Description of land intended to be severed in metric units:

Frontage:	35.2m
Depth:	60.35m
Width:	35.2m
Lot Area:	2119m ²
Present Use:	Residential 1 storey garage to be moved
Proposed Use:	Residential New dwelling
Proposed final lot size (if boundary adjustment):	



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

Description of land intended to be retained in metric units:

Frontage: 35.2m

Depth: 60.35m

Width: 35.2m

Lot Area: 2119m²

Present Use: Residential

Proposed Use: Residential

Buildings on retained land: Dwelling

5. Description of proposed right-of-way/easement in metric units:

Frontage: _____

Depth: _____

Width: _____

Area: _____

Proposed Use: _____

6. List all properties in Norfolk County, which are owned and farmed by the applicant and involved in the farm operation:

Owners Name: n/a

Roll Number: _____

Total Acreage: _____

Workable Acreage: _____

Existing Farm Type: (for example: corn, orchard, livestock) _____

Dwelling Present?: ☐ Yes ☐ No If yes, year dwelling built _____



Owners Name: _____
Roll Number: _____
Total Acreage: _____
Workable Acreage: _____
Existing Farm Type: (for example: corn, orchard, livestock) _____
Dwelling Present?: ☐ Yes ☐ No If yes, year dwelling built _____

Owners Name: _____
Roll Number: _____
Total Acreage: _____
Workable Acreage: _____
Existing Farm Type: (for example: corn, orchard, livestock) _____
Dwelling Present?: ☐ Yes ☐ No If yes, year dwelling built _____

Owners Name: _____
Roll Number: _____
Total Acreage: _____
Workable Acreage: _____
Existing Farm Type: (for example: corn, orchard, livestock) _____
Dwelling Present?: ☐ Yes ☐ No If yes, year dwelling built _____

Note: If additional space is needed please attach a separate sheet.

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): _____

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:
knowledge of owner

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:

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: existing developed residential lot

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: not within a source water protection area

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
☒ Individual wells

- ☐ Communal wells
☐ Other (describe below)

Sewage Treatment

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

Storm Drainage

- ☐ Storm sewers
☐ Other (describe below)
- ☒ Open ditches

2. Existing or proposed access to subject lands

- ☒ Municipal road
☐ Unopened road
- ☐ Provincial highway
☐ Other (describe below)

Name of road/street:

William Street

G. Other Information

1. Does the application involve a local business? ☐ Yes ☒ No

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

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

I. Transfers, Easements and Postponement of Interest

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

Permission to Enter Subject Lands

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

Freedom of Information

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.



Owner/Applicant/Agent Signature



Date

J. Owner's Authorization

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

I/We James Rainford and Amy Purcell am/are the registered owner(s) of the lands that is the subject of this application.

I/We authorize David Roe, Civic Planning Solutions Inc. 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.



Owner



Owner

Date



Date

K. Declaration

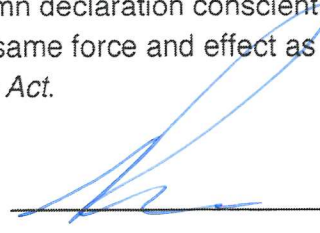
I, David Roe of Norfolk County

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:


Norfolk County


Owner/Applicant/Agent Signature

In Province of Ontario

This 15th day of June

A.D., 20 21



A Commissioner, etc.

Elizabeth Ann Catarino, a Commissioner, etc.
Province of Ontario
for John R. Hanselman, Barrister and Solicitor
Expires December 19, 2021

SCALE: 1 : 500
JEWITT AND DIXON LTD.
NOVEMBER 18, 2020

SCALE: 1 : 500

JEWITT AND DIXON LTD.

NOVEMBER 18, 2020

THIS PLAN IS IN METRIC AND CAN
BE CONVERTED TO IMPERIAL BY
MULTIPLYING BY 3.2808

THIS IS NOT A PLAN OF SURVEY AND SHALL NOT
BE USED FOR PURPOSES OTHER THAN THE
PURPOSE INDICATED IN THE TITLE BLOCK.

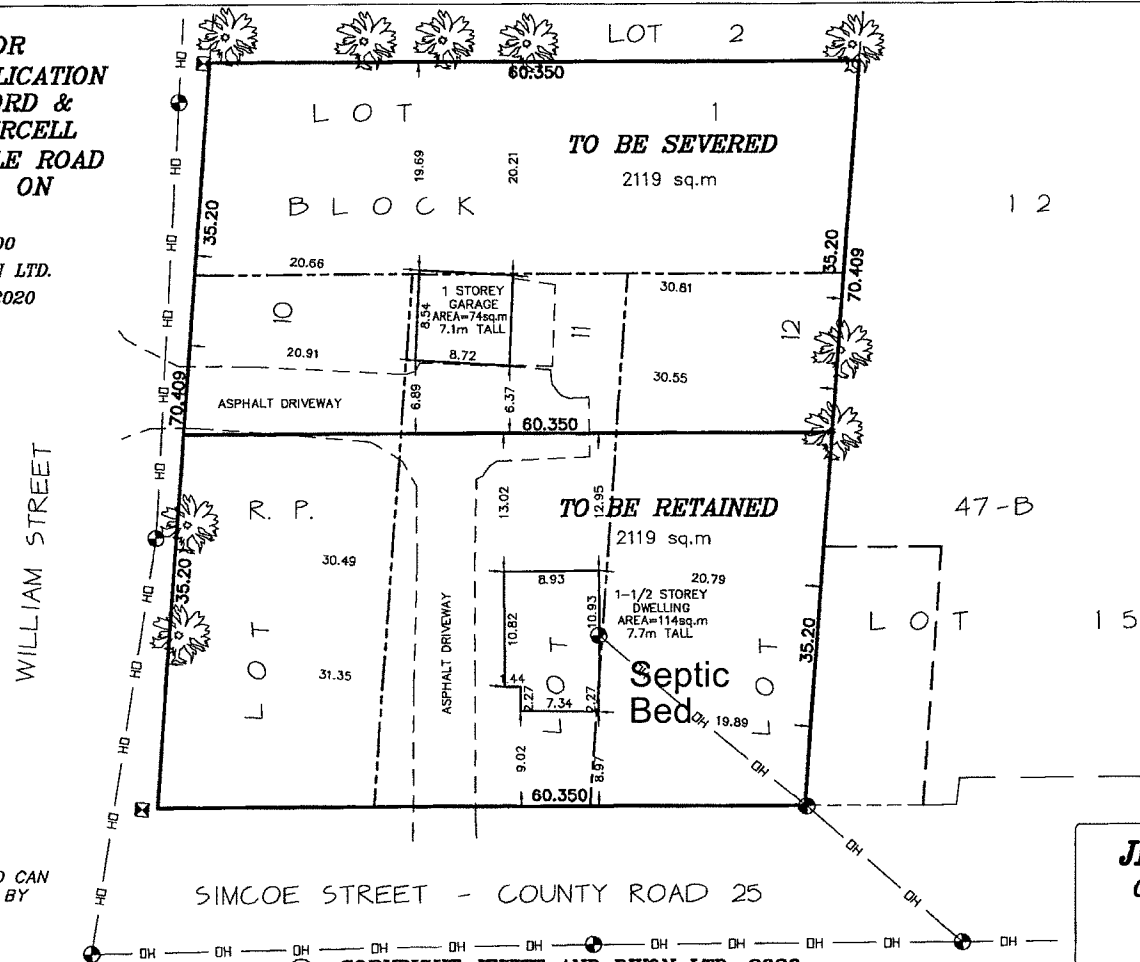
NO PERSON MAY COPY, REPRODUCE, DISTRIBUTE, OR ALTER THIS PLAN, IN WHOLE OR IN PART, WITHOUT THE WRITTEN PERMISSION OF JEWITT AND DIXON LTD.

PHONE: (519) 426-0842 FAX: (519) 426-1034
E-mail: surveyors@amtelecom.net

JOB # 20-2701 CLIENT: PURCELL/RAINFORD

**SKETCH FOR
SEVERANCE APPLICATION
JAMES RAINFORD &
ELIZABETH PURCELL
3782 TEETERVILLE ROAD
TEETERVILLE, ON**

SCALE: 1 : 500
JEWITT AND DIXON LTD.
NOVEMBER 18, 2020



NOTE:

THIS PLAN IS IN METRIC AND CAN
BE CONVERTED TO IMPERIAL BY
MULTIPLYING BY 3.2808

CAUTION:

THIS IS NOT A PLAN OF SURVEY AND SHALL NOT
BE USED FOR PURPOSES OTHER THAN THE
PURPOSE INDICATED IN THE TITLE BLOCK.

© COPYRIGHT JEWITT AND DIXON LTD. 2020

NO PERSON MAY COPY, REPRODUCE, DISTRIBUTE, OR ALTER THIS PLAN, IN WHOLE
OR IN PART, WITHOUT THE WRITTEN PERMISSION OF JEWITT AND DIXON LTD.

**JEWITT AND DIXON LTD.
ONTARIO LAND SURVEYORS**

R.R.1, SIMCOE, ONTARIO, N3Y 4J9
(61 PARK ROAD)

PHONE: (519) 426-0842 FAX: (519) 426-1034
E-mail: surveyors@amtelecom.net

JOB # 20-2701 CLIENT: PURCELL/RAINFORD

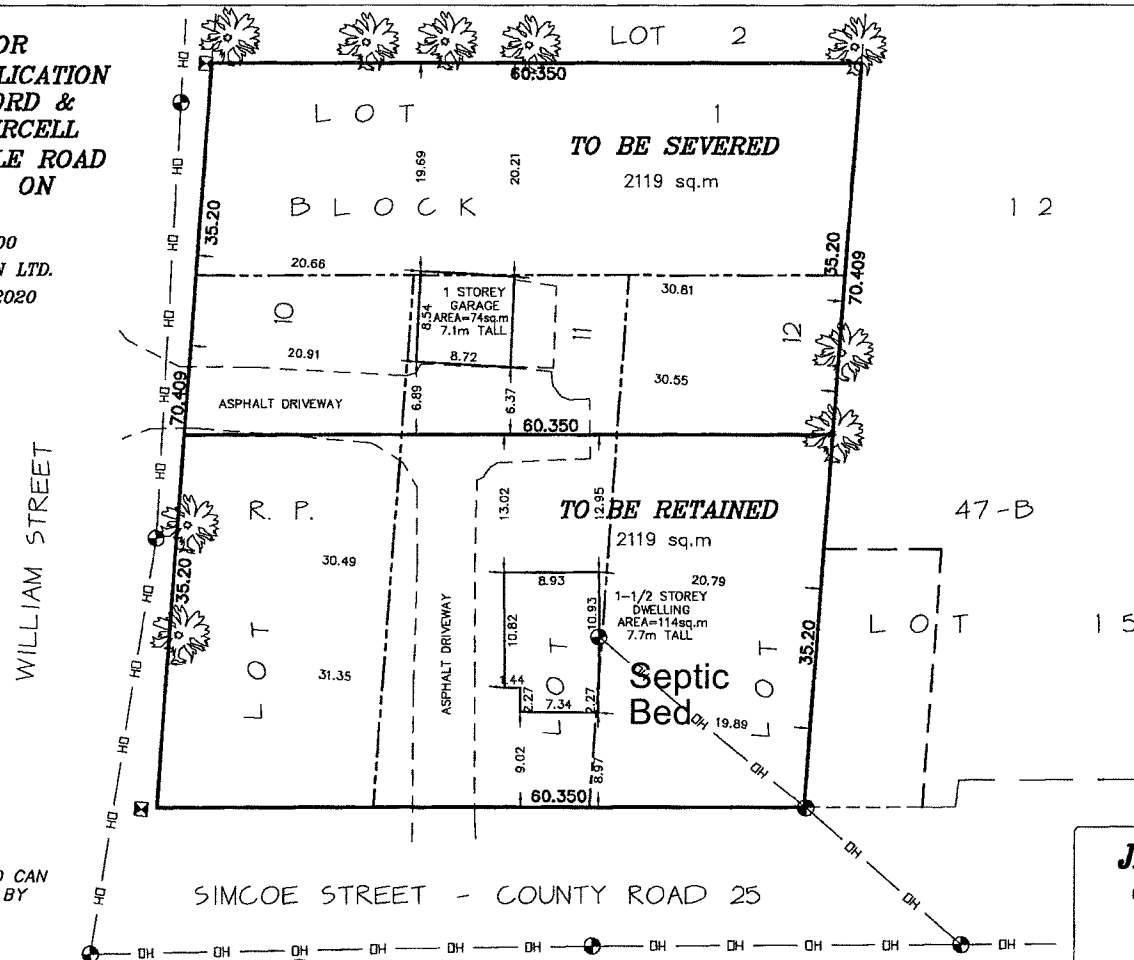
SCALE: 1 : 500
JEWITT AND DIXON LTD.
NOVEMBER 18, 2020

THIS PLAN IS IN METRIC AND CAN
BE CONVERTED TO IMPERIAL BY
MULTIPLYING BY 3.2808

THIS IS NOT A PLAN OF SURVEY AND SHALL NOT
BE USED FOR PURPOSES OTHER THAN THE
PURPOSE INDICATED IN THE TITLE BLOCK.

NO PERSON MAY COPY, REPRODUCE, DISTRIBUTE, OR ALTER THIS PLAN, IN WHOLE OR IN PART, WITHOUT THE WRITTEN PERMISSION OF JEWITT AND DIXON LTD.

JOB # 20-2701 CLIENT: PURCELL/RAINFORD



September 22, 2020

Mr. James Rainford
3782 Teeterville Road
Teeterville, ON
N0E 1S0

Wilson Associates

Consulting Hydrogeologists

Dear Mr. Rainford:

Re: Hydrogeological Assessment - Proposed Residential Lot
3782 Teeterville Road, Teeterville, County of Norfolk

It is proposed to sever one residential lot from the existing 0.4856ha (approximate) parcel of land located at 3782 Teeterville Road in the Community of Teeterville. The proposed severed lot is planned to be 0.21ha in area, and the retained parcel planned to be 0.2756ha. The attached map shows the layout of the site.

It is proposed to service the lot to be severed with an individual drilled water well and an individual subsurface sewage disposal system.

To support the development proposal, a hydrogeological study was conducted involving the following:

- Exploratory test holes were completed within the proposed severance lot to collect representative soil samples for percolation rate analyses and to identify shallow groundwater conditions.
- Sewage system development density assessment under current Ministry of the Environment, Conservation and Parks (MECP) Procedure D-5-4 "Technical Guideline For Individual On-Site Sewage Systems : Water Quality Impact Risk Assessment", commonly known as the "nitrate guideline".
- A review of water well records to provide comment regarding aquifer conditions and groundwater supply potential.
- Collection of a sample of potable water from a nearby existing water source to confirm drinking water quality.

At the request of James Rainford, the above hydrogeologic investigative requirements were addressed through a test hole and groundwater sampling program conducted August 26, 2020 and a subsequent background hydrogeologic analysis. This report provides a summary of background hydrogeologic information, groundwater availability, upper aquifer water quality, the results of the soils suitability study and comment regarding sewage impact potential.

SITE SETTING, GEOLOGY AND HYDROGEOLOGY

The proposed development is located within the south portion of the Community of Teeterville, at the southeast corner of the intersection of Teeterville Road and William Street. Frontage on Teeterville Road is about 71m and frontage along William Street is about 70m. The subject lands are cleared and contain an existing residence within the lands to be retained, and a workshop. The site exhibits an overall flat relief. Lands to the west, north and east are occupied by residential lots. Lands to the south are in agricultural use.

No surface water bodies are located on or in the close vicinity of the site, the closest being Teeter's Pond on Big Creek about 250m to the north of the site.

The site is located within the Norfolk Sand Plain physiographic region of southern Ontario. According to the Ontario Geological Survey Map 2369 "Quaternary Geology of the Simcoe Area", the upper overburden in the vicinity of the site consists of glaciolacustrine shallow water deposits of sand. Local well records indicate that the upper sands are upwards of 15m deep, although the majority of local wells are completed in these sands to a depth of less than about 12m. Although all local reported wells are shallow, the overburden is regionally indicated to be approximately 30m deep, with the lower overburden typically consisting of fine-grained deposits.

The bedrock beneath the site consists of limestone and dolostone of the Dundee Formation and the Detroit River Group.

The majority of local groundwater supplies are obtained from the granular deposits of the upper 6m to 12m of the overburden. The lower overburden typically provides little to no potential for groundwater supply due to its fine-grained character, and the bedrock is less often utilized due to the expense of deep drilling and the potential of obtaining aesthetically poor-quality water.

Shallow groundwater on the site will follow local drainage patterns, with a possibly very slight gradient to the north or northwest.

WELL POTENTIAL ANALYSIS

To establish well yield and basic water quality probabilities, up-to-date MECP records for water wells located within approximately 250 metres of the proposed lot were reviewed. Records for well abandonments, geotechnical or environmental monitoring wells are not included in the summary. The MECP water well record database contains the records for only 10 water wells within the review area, however many wells in the area will be shallow sandpoint wells, which often are unreported to the MECP. The water well records used in the preparation of the review are attached. The following summarizes the reported well record information within the review area.

Number of wells:	10
Drilled Construction:	6
Dug/Bored Construction:	0
Sandpoint Construction:	4

Unknown Construction: 0
Completed in Overburden: 10 (100%)
Completed in Bedrock: 0

The following summarizes the reported well performance data.

	Maximum	Minimum	Average
Well Depth (m)	14.0	5.2	10.1
Test Rate (L/min)	363	45	129
Test Period (Hours)	2.5	1	1.65

Reported Water Quality:

Fresh: 8 or 80% (no objectionable tastes or odours)
Sulphurous: none
Mineralized/Saline: none
Quality Not Reported: 2 or 20% (common in newer wells where contractors are not reporting quality)
Dry Well: none

The average reported well within about 250 metres of the proposed lot is of drilled construction, completed near the base of the overburden sand aquifer to a depth of 10.1 metres and yields 129 litres of fresh-quality water per minute over an average period of 1.65 hours. This average yield significantly exceeds the maximum water demand of a normal four bedroom home specified by the MECP (i.e. 18L/min without inline storage). Overall groundwater conditions are favourable for domestic water requirements.

It should be noted that the above summary and analysis is based solely on information contained in the MECP water well record database as reported by drilling contractors and is not subject to quality control, however the overall analytical summary is favourable.

WATER QUALITY

To identify probable potable groundwater quality at the proposed lot, a sample of untreated groundwater was collected from the water supply well at the existing on-site house on August 26, 2020, and submitted to Bureau Veritas Laboratories for bacteriological and general chemistry analysis. The well supplying the house is reported to be a 6m deep sandpoint well. The sample was collected in laboratory-supplied bottles, stored in an ice-packed cooler and submitted to the laboratory under chain of custody. The laboratory analytical report is attached.

The laboratory reported that the water from the on-site well contained no detectable Total Coliform E.Coli bacteria or background bacteria.

The water from the on-site well is slightly alkaline, with a pH value of 7.89. The water from the well is moderately hard, with a hardness value of 320 mg/L as CaCO₃, which is typical of

groundwater in the region.

The manganese content of the water from the on-site well at 0.09mg/L very slightly exceeds the aesthetic Ontario Drinking Water objective of 0.05mg/L. Manganese is not a health-related parameter, and can be easily treated using readily available water treatment equipment if the staining of plumbing fixtures becomes an issue.

All other chemical parameters were at acceptable levels under the Ontario Drinking Water Quality Standards.

SOILS INVESTIGATION

Test Holes:

Two exploratory test holes were excavated using portable soil sampling equipment within the proposed lot to be severed on September 9, 2019. The test holes were each completed to a depth of 1.8m, the soil profile was logged in each hole and representative soil samples were collected from each identified soil horizon for subsequent classification, analysis and storage. The attached diagram shows the approximate test hole locations. The following table provides a summary of the analytical results for representative soil samples.

Table 1 : Summary of Soil Analytical Data

Test Hole/ Sample	Depth (m)	Grain-Size Distribution				"k" (cm/sec)	T-Time (min/cm)
		Clay %	Silt %	Sand %	Gravel %		
TH1 S1	0.6	0	4	96	0	7×10^{-3}	7
TH2 S2	1.0	5	13	80	2	5×10^{-4}	12

Note: The above coefficient of permeability ("k" values) and T-time (percolation rates) are estimates based on field observation, laboratory grain-size analysis, experience with similar soils and guidelines of the Ontario Building Code.

In summary, the soil profile at the test holes consisted mainly of fine sand to fine sand with some silt, which exhibit a percolation rate in the range of 7 to 12 minutes/cm.

The grain-size analysis curves are attached. The following provides a summary of the test hole logs:

TEST HOLE 1

Depth (m)

0 - 0.4

0.4 - 1.8

Material

dark brown sandy TOPSOIL

red-brown to grey, loose, dry to wet fine SAND with traces of silt, silt lens at 1.0m (estimated T-time 7 min/cm)

TEST HOLE 2

<u>Depth (m)</u>	<u>Material</u>
0 - 0.7	FILL - mixture of topsoil and sand
0.7 - 1.2	brown, loose, dry to wet fine SAND with some silt and traces of clay (estimated T-time 12 min/cm)
1.2 - 1.8	grey, loose, dry to wet fine SAND with traces of silt (estimated T-time 7 min/cm)

Shallow Groundwater Conditions:

Emergent groundwater was observed both test holes, at a depth of 1.3m in Test Hole 1 (situated slightly higher) and at a depth of 0.9m in Test Hole 2 (situated slightly lower).

Septic System Design:

Under the Ontario Building Code, for a Class 4 sewage disposal system to operate effectively, the leaching bed must be located in soil with a percolation rate (T-time) of between 1 and 50 minutes per centimetre and the base of the absorption trenches must be situated at least 0.9m above the high ground water table, bedrock or a soil with a permeability of greater than 50 minutes per centimetre. To achieve a normal, in-ground installation, the high groundwater table, rock or soil with a permeability of greater than 50 min/cm must be situated at least 1.5 to 1.8 metres below grade.

Due to elevated watertable conditions, the bases of tile trenches should be set no lower than 0.4m below current grade at Test Hole 1 and at current grade at Test Hole 2. Based on the identified upper soil conditions, a native soil design percolation rate of 12min/cm is recommended for design purposes.

A standard fill-based sewage disposal system will require a contact area based on a loading rate of 10L/m²/day (i.e. 160m² for a standard 3-bedroom home with a design sewage flow of 1,600L/day, or 200m² for a standard 4-bedroom home with a design sewage flow of 2,000L/day).

It is understood that the County typically requires that a full sewage system reserve area be utilized in lot design. As the lots will each be in excess of 2,000m² in area, sufficient area is available for a 160m² or 200m² primary sewage disposal area, 160m² or 200m² reserve sewage disposal area. Lot design will need to address setbacks to the house envelope and any on-site and nearby sandpoint wells (30m).

SEWAGE SYSTEM IMPACT ASSESSMENT

Under the current MECP "Technical Guideline For Individual On-Site Sewage Systems : Water Quality Impact Risk Assessment" (Procedure D-5-4, also known as the "nitrate guideline"), each proposed development of five lots or greater utilizing individual on-site sewage systems requires an assessment of groundwater impact potential. The purpose of the assessment is to ensure that the discharge from the individual on-site sewage systems will have a minimal effect on groundwater and the present or potential use of adjacent properties. The assessment

involves a three-step process, with the need to advance to the next step dependant on the requirements of the previous step. Where the background nitrate content of shallow groundwater exceeds 10 mg/L, additional development cannot normally be supported.

The water sample collected from the on-site well at had a nitrate content of 0.73mg/L, and this background nitrate content is assumed in the calculation below for the subject lands.

Under Step 1 of the guideline, for developments where the lot size for each private residence within the development is one hectare or larger (with no lots being less than 0.8ha in area), the risk that the limits imposed by the guideline may be exceeded is considered acceptable with no additional hydrogeologic assessment. Step 1 of the guideline is not applicable.

Step 2 of the guideline is applicable where groundwater resources can be confidently demonstrated to be hydraulically isolated from potential sewage pathways. As the primary water supply aquifer is the upper sands, groundwater resources are not hydraulically isolated from potential sewage pathways, and Step 2 of the guideline does not apply.

Under Step 3 of the guideline, a mass-balance calculation is used to determine the minimum size of the proposed lots. Under the current MECP guideline only infiltrating precipitation and the volume of water contained in the sewage may be considered as dilutants for the nitrate contained in septic effluent. To establish the infiltration rate, the percentage of the local water surplus which may infiltrate is calculated using the Rational Method approach. According to the soil evaluation, the soil profile consists of sand (infiltration factor 40%), the overall relief is flat (infiltration factor 30%) and the cover is cleared (infiltration factor 10%), all resulting in an infiltration factor of 80%. According to the 2009 Long Point Region, Kettle Creek and Catfish Creek Integrated Water Budget Final Report, the water surplus for the area is in the range of 400mm per year (Big Creek sub-watershed above Delhi, precipitation 950mm/year, evapotranspiration 550mm/year). As such, the annual infiltration rate will be 320mm (80% of 400mm), representing 34% of average annual precipitation in the sub-watershed.

The following mass-balance formula is used to calculate the maximum density of the proposed development (total area of parcel = 0.4856ha) under the MECP guideline:

$$Q_T C_T = Q_S C_S + Q_P C_P$$

Where:

Q_T = Sum of Q_S and Q_P

C_T = Nitrate concentration (10mg/L, maximum permitted under the guideline)

Q_S = Volume of sewage (1000 L/day/lot, per MECP guideline)

C_S = Nitrate content of sewage (40 mg/L)

Q_P = Infiltration (320mm/year x 0.4856ha x 10,000L/mm/ha = 1.55×10^6 L/yr)

C_P = Nitrate content of shallow groundwater (0.73mg/L assumed, see above)

Therefore:

$$(Q_S + 1.55 \times 10^6 \text{ L/yr}) \times 10 \text{ mg/L} = (Q_S \times 40 \text{ mg/L}) + (1.55 \times 10^6 \text{ L/yr} \times 0.73 \text{ mg/L})$$

$$Q_S = 4.79 \times 10^5 \text{ L/year}$$

$$\text{Number of Lots} = 4.79 \times 10^5 \text{ L/yr} \div 1,000 \text{ L/day/lot} \div 365 \text{ days/yr} = 1.3 \text{ Lots}$$

Based on the MECP-specified daily volume of sewage for the purposes of the Procedure D-5-4 assessment, and an infiltration rate of 320mm/year, the maximum number of lots on the parcel (0.4856ha total) under the MECP guideline is 1.3 using conventional sewage disposal systems.

The above assessment approach, conducted in accordance with MECP guidelines, does not consider sewage dilution by groundwater flow-through nor does it consider denitrification processes in the subsurface. As such, the assessment will over-estimate the actual degree of groundwater impact of the proposed lots, this considered a safety factor.

For the two lots to be viable under the guideline, the severed lot will be required to utilize an individual subsurface sewage disposal system equipped with tertiary treatment capable of nitrate reduction. The use of such systems is not contemplated for this purpose (or any other purpose) in the MECP guidelines due to the age of the guidelines (ca. 1996), however nitrate reducing treatment systems are now commonly used in the Province under CAN/BNQ 3680-600 Certified Treatment Technologies for total nitrogen reduction. The systems are commonly capable of a nitrate reduction in the order of 50%, or 20mg/L. The above mass-balance formula is revised to determine the nitrate-reduction technology required to achieve a nitrate impact of 10mg/L.

$$Q_T C_T = Q_S C_S + Q_P C_P$$

Where:

Q_T = Sum of Q_S and Q_P

C_T = Maximum nitrate concentration (10mg/L)

Q_S = Volume of sewage (1,000 L/day/lot for one new lot plus one retained lot)

C_S = Nitrate content of sewage (40mg/L for retained lot and 20mg/L for new lot, or 30mg/L average)

Q_P = Infiltration (1.55×10^6 L/yr)

C_P = Nitrate content of groundwater (0.73mg/L)

Therefore:

$$(Q_S + 1.55 \times 10^6 \text{ L/yr}) \times 10 \text{ mg/L} = (Q_S \times 30 \text{ mg/L}) + (1.55 \times 10^6 \text{ L/yr} \times 0.73 \text{ mg/L})$$

$$Q_S = 7.19 \times 10^5 \text{ L/year}$$

$$\text{Number of Lots} = 7.19 \times 10^5 \text{ L/yr} \div 1,000 \text{ L/day/lot} \div 365 \text{ days/yr} = 2.0 \text{ Lots}$$

Based on the above, the sewage systems on the retained lot will be required to utilize nitrate reduction technology capable of an average nitrate reduction of at least 50% (i.e. 20mg/L nitrate). Commercially-available sewage treatment systems (meeting CAN/BNQ 3680-600 Certified Treatment Technologies for total nitrogen reduction) are typically demonstrated to be capable of a nitrate reduction of 50% (or 20mg/L nitrate), and are capable of higher rates of reduction with additional treatment measures. Municipal support and long-term maintenance agreements for individual sewage treatment units are required.

CONCLUSIONS AND RECOMMENDATIONS

1. The average reported well within about 250 metres of the proposed development is of drilled construction, completed near the base of the overburden sand aquifer to a depth of 10.1 metres and yields 129 litres of fresh-quality water per minute over an average period of 1.65 hours. This average yield significantly exceeds the maximum water demand of a normal four bedroom home specified by the MECP (i.e. 18L/min without inline storage). Overall groundwater conditions are favourable for domestic water requirements.
2. The quality of water from the on-site well was acceptable. The manganese content of the water from the on-site well at 0.09mg/L very slightly exceeds the aesthetic Ontario Drinking Water objective of 0.05mg/L. Manganese is not a health-related parameter, and can be easily treated using readily available water treatment equipment if the staining of plumbing fixtures becomes an issue
3. Due to elevated watertable conditions, the bases of tile trenches should be set no lower than 0.4m below current grade at Test Hole 1 and at current grade at Test Hole 2. Based on the identified upper soil conditions, a native soil design percolation rate of 12min/cm is recommended for design purposes.
4. A standard fill-based sewage disposal system will require a contact area based on a loading rate of 10L/m²/day (i.e. 160m² for a standard 3-bedroom home with a design sewage flow of 1,600L/day, or 200m² for a standard 4-bedroom home with a design sewage flow of 2,000L/day). Sufficient area is available for a 160m² or 200m² primary sewage disposal area, 160m² or 200m² reserve sewage disposal area. Lot design will need to address setbacks to the house envelope and any on-site and nearby sandpoint wells (30m).
5. Under MECP Procedure D-5-4, for the two lots to be viable, the severed lot will be required to utilize an individual subsurface sewage disposal system equipped with tertiary treatment capable of nitrate reduction.
6. Based on the findings of the preceding analysis, development of the subject lands as two residential lots serviced by private sewage disposal systems is considered viable, subject to the conclusions, limitations and recommendations outlined in this report.

Should there be any questions regarding the above information and discussion, please do not hesitate to contact this office.

IAN D. WILSON ASSOCIATES LIMITED




Geoffrey Rether, B.Sc., P. Geo.



MAP NORFOLK - Community Web Map

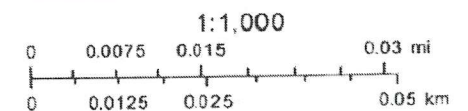


6/25/2020, 2:37:52 PM

-  Land Parcels
-  Plan Lines
-  DraftPlan

LAYOUT OF RETAINED AND PROPOSED SEVERED LOT
AND APPROXIMATE TEST HOLE LOCATIONS

RAINFORD PROPERTY, TEETERVILLE



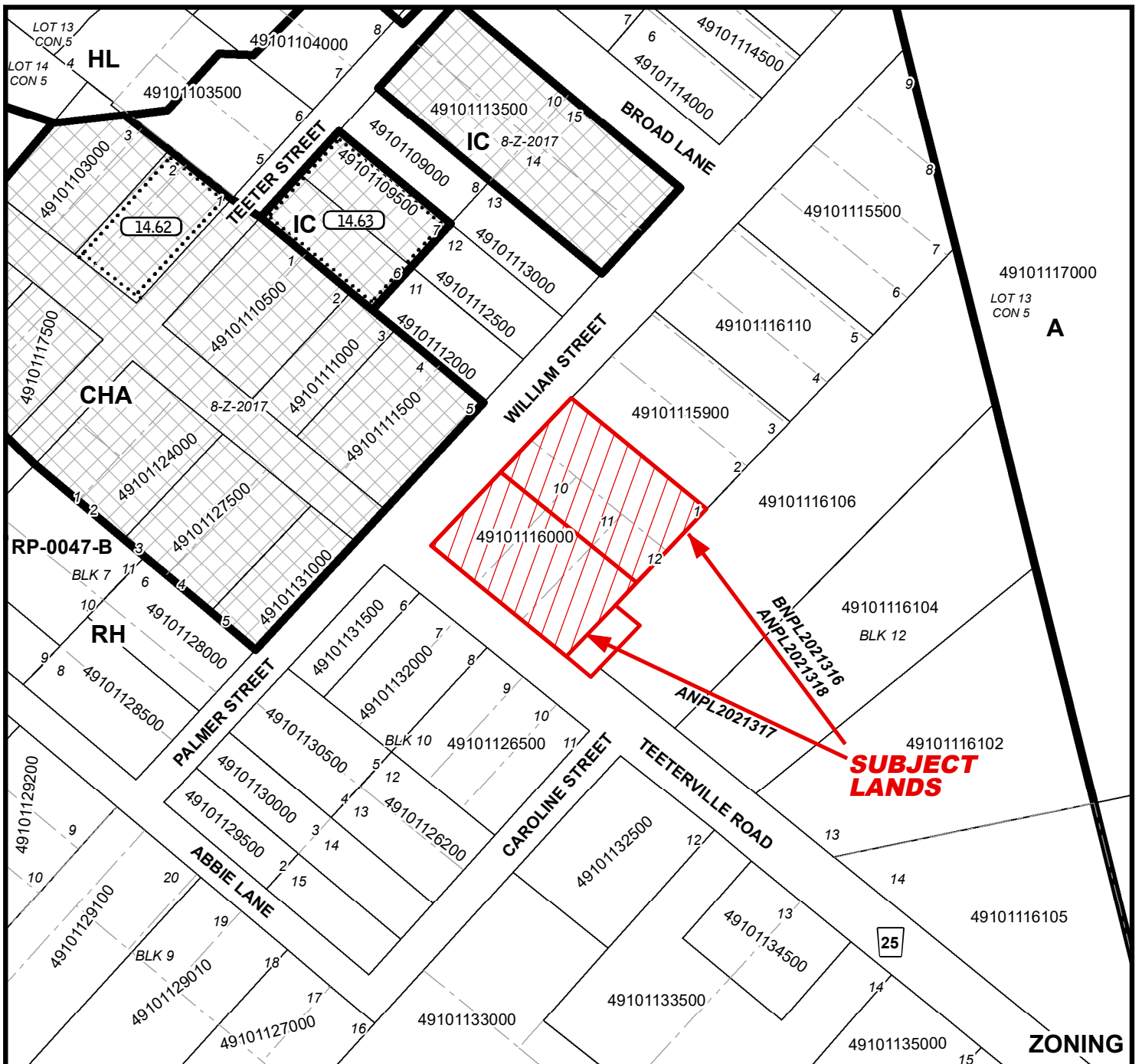
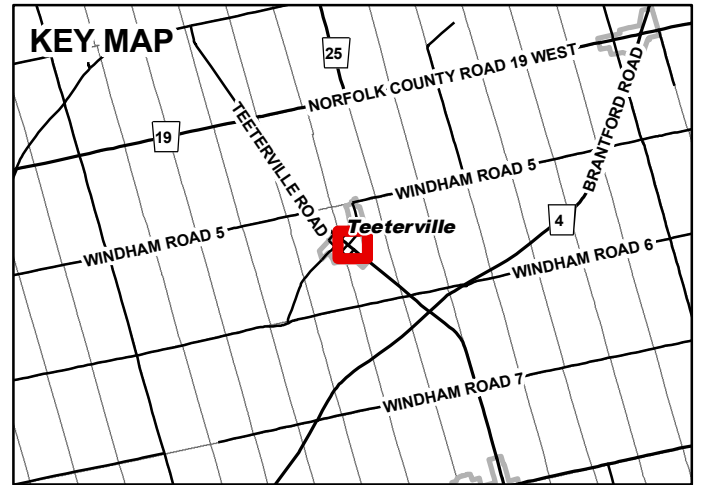
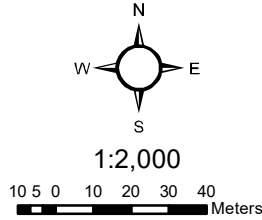
Queen's Printer for Ontario
Norfolk GIS

Norfolk GIS
© Norfolk County

MAP 1

File Number: BNPL2021316,
ANPL2021317 &
ANPL2021318

Geographic Township of
WINDHAM



MAP 2

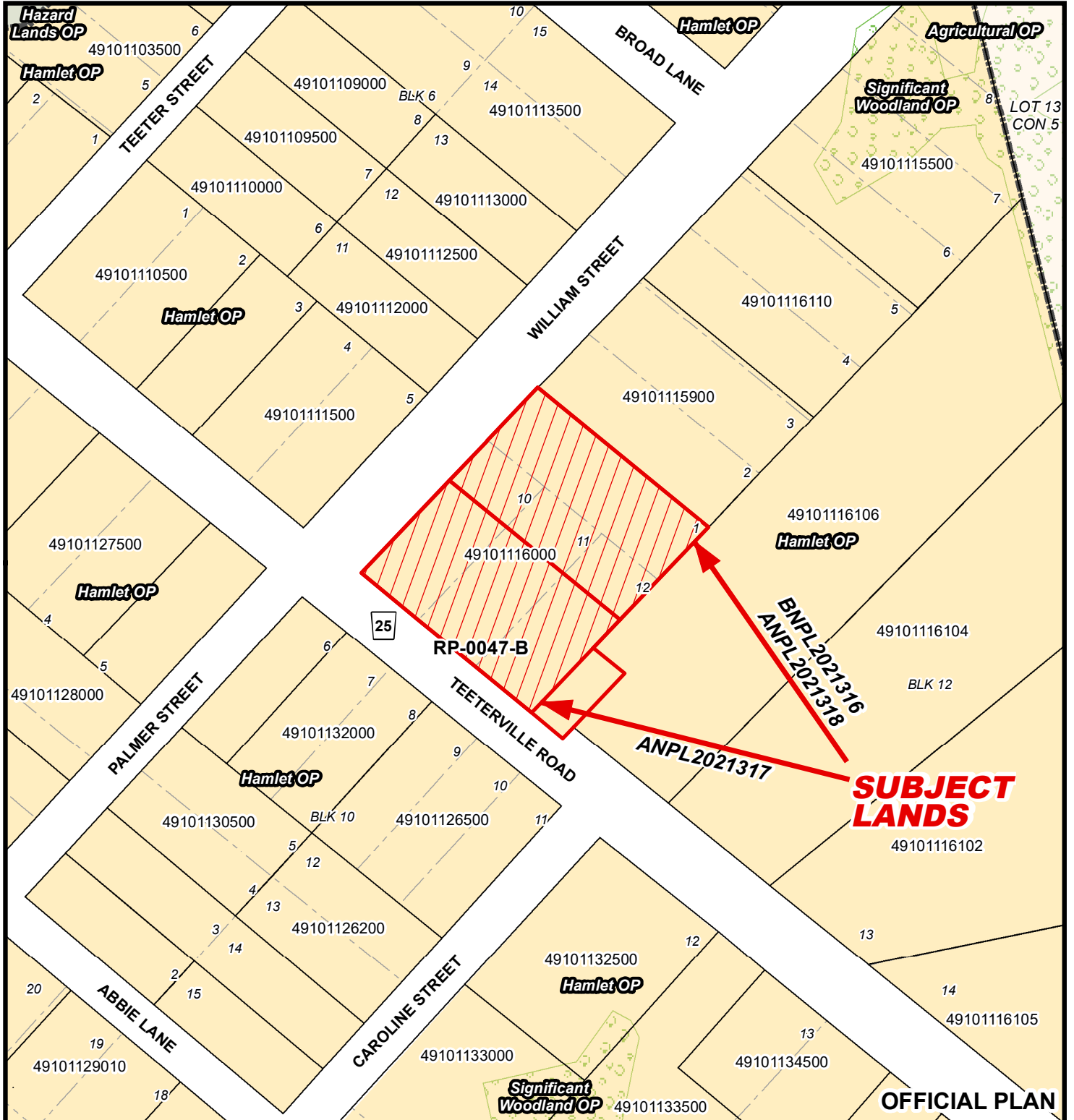
File Number: BNPL2021316, ANPL2021317 & ANPL2021318

Geographic Township of WINDHAM



6 3 0 6 12 18 24 Meters

1:1,500



MAP 3

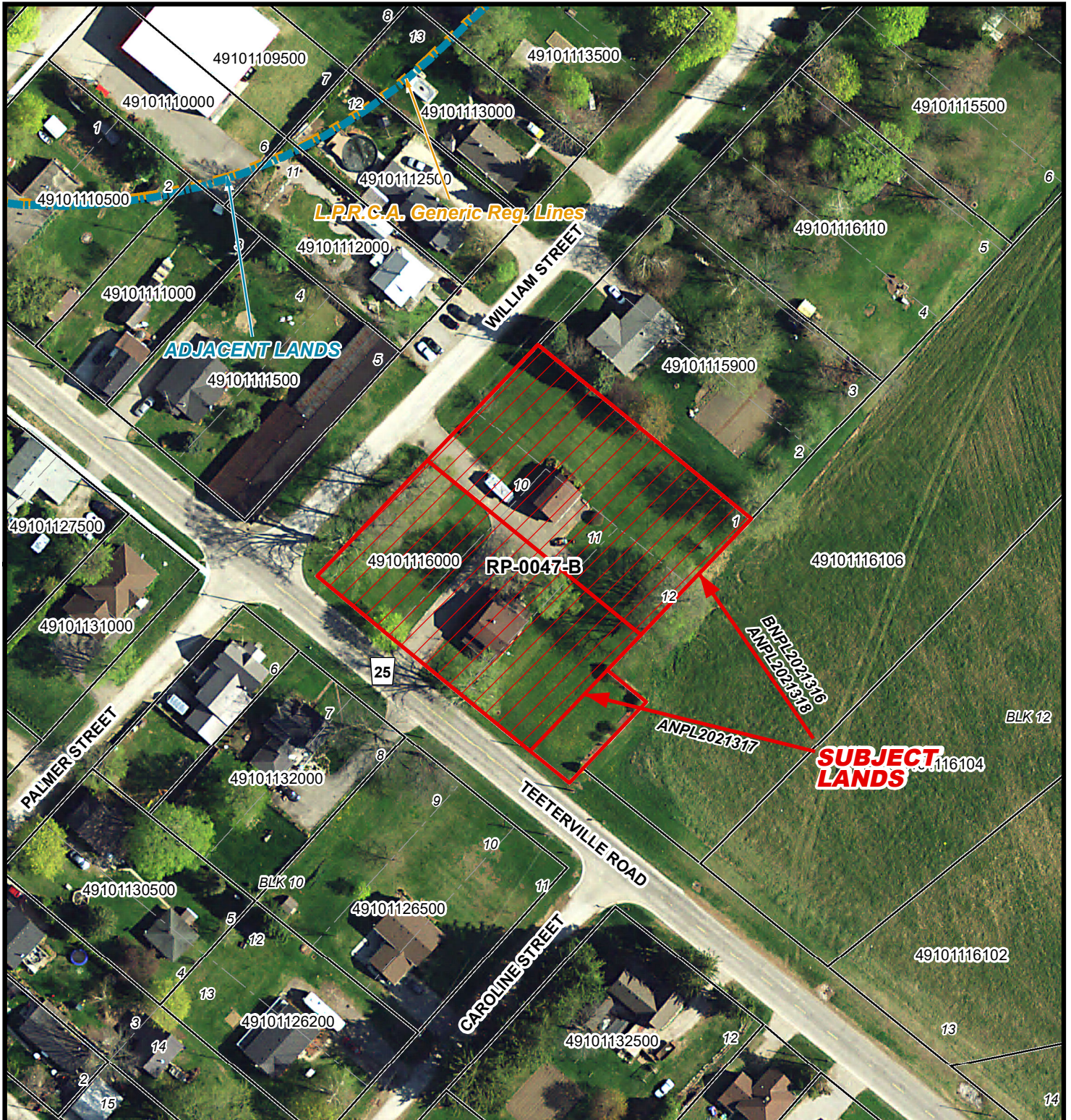
File Number: BNPL2021316, ANPL2021317 & ANPL2021318

Geographic Township of WINDHAM



4.5 250 4.5 9 13.5 18 Meters

1:1,200



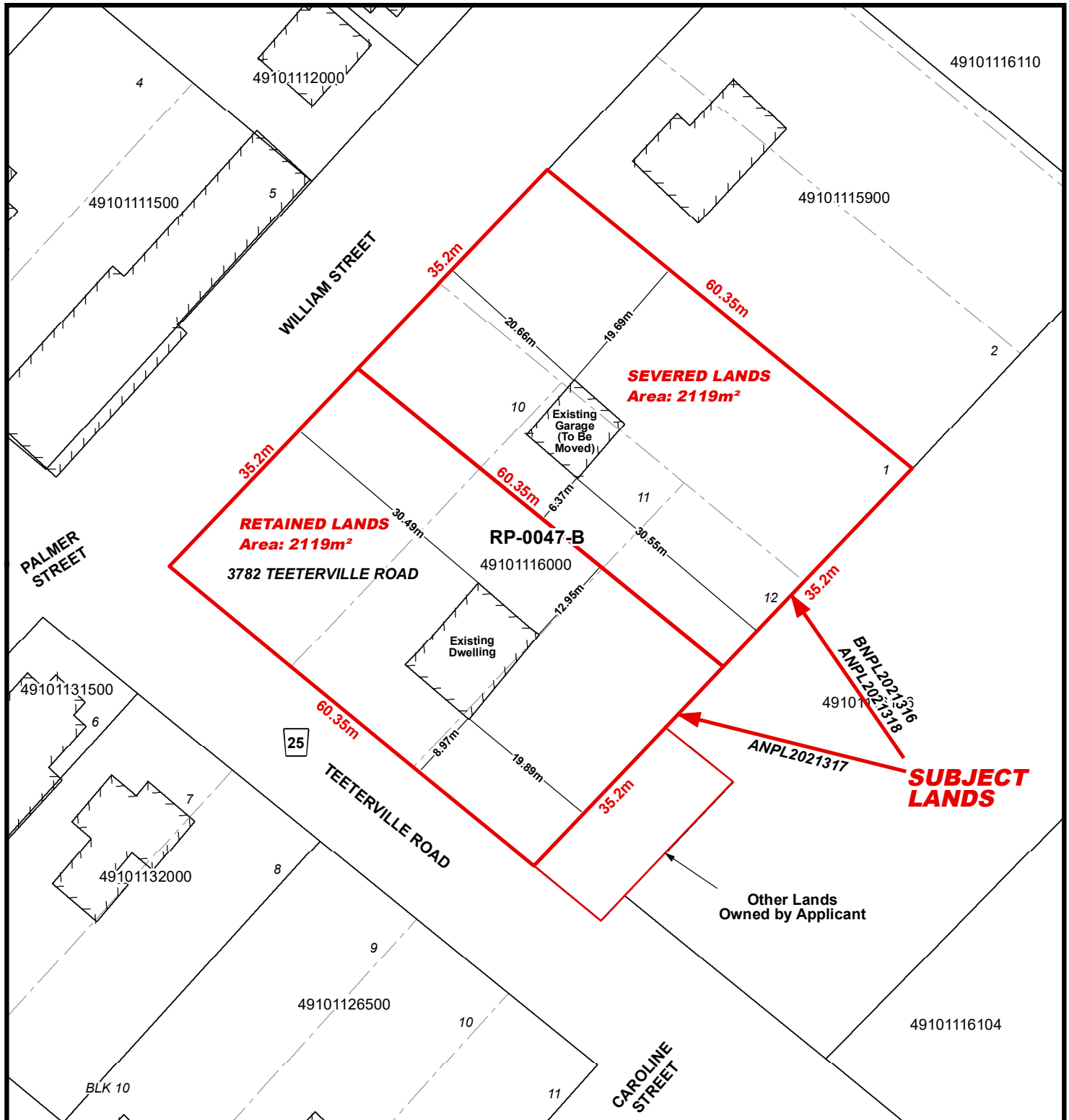
MAP 4

File Number: BNPL2021316, ANPL2021317 & ANPL2021318
Geographic Township of WINDHAM



2.5 5 7.5 10 Meters

1:700



LOCATION OF LANDS AFFECTED

File Number: BNPL2021316, ANPL2021317 & ANPL2021318

Geographic Township of WINDHAM



2.5 5 7.5 10 Meters

1:700

