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July 12, 2018

via e-mail (jwdmiller@rogers.com)
CCTA File 117024

Jason Miller

Miller Golf Design Group
103 Hillcrest Drive, Box 308
Clarksburg, ON, N0H 1J0

Re: **Z Vineyard/Winery Development, Municipality of Meaford
Servicing Review**

Dear Jason:

As requested, we have reviewed the proposed vineyard/winery development from a servicing perspective with a specific focus on water supply, on-site sewage treatment and disposal systems and the provision of utility services. The primary objective of this review is to determine the services available at the subject property and to demonstrate how the proposed development can be accommodated. Where no services are available, strategies to provide such are noted.

Proposed Vineyard/Winery Development

Site Location & Description

The subject property is located at 357038 The Blue Mountains/Meaford Townline Road in the Municipality of Meaford, as illustrated in Figure 1. Overall the property is approximately 60 hectares (147 acres) of which it is estimated 80% of the land has been cleared and is currently being used for agricultural purposes. The remaining 20% of the land remains fully vegetated. The property is bound to the east by The Blue Mountains/Meaford Townline Road and to the north, west and south by existing farmland.

Development Plan

The proposal for this site is to develop a vineyard/winery which would include a facility for the processing, manufacturing, bottling and storage of wine products. An accessory restaurant and small retail store are also proposed. A conceptual site plan is provided in Figure 2.

Sewage Disposal

Existing Services

The site is not currently serviced by a municipal sewage collection system and as such on-site facilities will be required for the treatment and disposal of both process and non-process waste generated by the proposed development.

Sewage Demands

It is understood that a maximum of 18,200 litres (4,000 gallons) of water per day will be required for both processing operations (i.e. wine production) and non-processing uses. Assuming that all water demands will translate to sewage demands, the total volume of sewage to be treated and disposed of on a daily basis is therefore 18,200 litres per day also.

To establish sewage demands for the non-processing uses (e.g. the proposed restaurant, patio areas, tasting areas, meeting rooms, offices, washroom facilities and the retail store), procedures in the Ontario Building Code were utilized. Associated details and calculations are provided in Appendix A, including a floor plan showing the building concept/configuration, room sizes and expected plumbing fixtures. Overall, it is expected that the non-processing uses will generate 15,400 litres of sewage per day.

For the processing operations, the flows were determined by subtracting the non-process waste from the total waste for the site, which translates to 2,800 litres of sewage per day (18,200 - 15,400 L/day).

Proposed Sewage System

To treat and dispose of waste from non-process uses, it is recommended an Ecoflo Biofilter or similar type system that incorporates a septic tank equipped with an effluent filter, treatment units and a polishing field be utilized. Grease traps will also be incorporated due to the presence of kitchen facilities.

To treat and dispose of waste from process operations, a more advanced treatment facility will likely be required prior to disposal. Further analysis in this regard will be undertaken at the time of final design.

A preliminary geotechnical investigation for the winery building and septic system was completed in June 2018 by Peto MacCallum Ltd., submitted under separate cover. The preliminary report found the following:

- Groundwater was generally not encountered within the upper 1.8 to 4.0 m of the site;
- Topsoil depths 500 to 700 mm;
- Clayey silt soils with some gravel, cobble and or boulders; and
- T-Time greater than 50 (min/cm).

Based on the findings of the report a fully raised loading bed of approximately 4,600 square metres in area will be required to disperse effluent generated from the proposed development. Based on the proposed site plan, there is sufficient land available to accommodate the required loading bed.

Prior to final design of an on-site sewage system to service the proposed development, the designer must confirm the expected flows, treatment and disposal requirements. Given the volume of waste generated by the proposed development, it is expected that approvals from the Ministry of the Environment, Conservation and Parks will be required.

Water Supply

Existing Services

The site is not serviced by a municipal water distribution system and as such on-site facilities will be required to meet the needs of the proposed development.

Water Demands

As determined in the previous section, the total water requirement for non-processing operations is estimated to be approximately 15,400 litres of water per day while the requirement for processing operations is estimated to be 2,800 litres of water per day for a total of 18,200 litres per day.

Proposed Water Supply

A drilled water well was installed on the property in 2017. The well record is enclosed in Appendix A. The record indicates that the well's recommended production rate to be 12 GMP or 54.6 litres of fresh water per minute. This is consistent with well records in the area of the development. The estimated daily water requirement of 18,200 litres could therefore be achieved by 6 hours of pumping throughout the day. This confirms that groundwater can be considered a viable source for the supply of fresh water to the proposed development (in that the available supply exceeds the demand).

To ensure the water supply needs (peak demand flow rates) for the proposed development are met at all times, on-site storage of fresh water will be considered, which can be achieved through the installation of storage tanks.

Stormwater Management

A separate Stormwater Management Report (July 2018) has been prepared by CCTA to address the necessary Town and Grey Sauble Conservation Authority approval requirements for stormwater management, and detail the stormwater management plan for the proposed development. The report concludes that the existing drainage patterns will generally be maintained, with stormwater directed into a proposed closed end buffer strip and a wet pond prior to being released to the existing outlets. Water quality for the site will be provided by a wet pond forebay designed to achieve Level 1 "Enhanced" quality

treatment in the form of 80% Total Suspended Solid (TSS) reduction in accordance with the MOECP Stormwater Management Guidelines. The stormwater management report should be read in conjunction with this brief.

Traffic Review

A separate Traffic Brief (April 2017) has been prepared by CCTA to address the potential for traffic impact from the site development. The brief considers the sight lines along Townline Road, the traffic volumes generated from the site activity, and the proposed site access and circulation. The brief concluded that the proposed development can be readily accommodated on the road system with no adverse impacts. Furthermore, the site access as proposed is considered appropriate and no improvements to the external road system are necessary. The traffic assessment brief should be read in conjunction with this brief.

Utility Servicing

The relevant utility companies (Hydro One, Bell Canada, Rogers Cable and Union Gas) were contacted to determine the availability of services for the site.

Hydro One

Hydro One has confirmed service to the site is available from a 3 phase power distribution system on the east side of Townline Road.

Bell Canada

Bell Canada has confirmed they have copper cable on the east side of Townline Road and on the north side of Sideroad 30 from which a telephone and high speed internet service to the property can be provided. Television services are not available from the copper cable and would only be available via satellite.

Bell has existing fibre services at Clark Street and Marsh Street in the Town of The Blue Mountains (a distance of approximately 3.9 kilometres) which could be extended to the site to provide faster and more reliable service.

Rogers Cable

Rogers Cable confirmed the nearest infrastructure from which it may be possible to extend Rogers services to the site is located at the intersection of the 11th Line and 33rd Sideroad, in the Town of The Blue Mountains, a distance of approximately 2.6 kilometres.

Union Gas

Union Gas confirmed the nearest infrastructure from which it may be possible to extend a gas service to the site is located at the intersection of Clark Street and Sideroad 30 in the Town of The Blue Mountains, a distance of approximately 3.3 kilometres.

Proposed Utility Services

As noted Bell Fibre, Rogers Cable and Union Gas do not currently provide direct service to the subject site. The existing installations (which range from 2.6 to 3.9 kilometres away) would have to be extended should the corresponding services be desired. It is expected that the costs to upgrade existing services, or extend new services, would be borne wholly or in part by the developer and such would be subject to agreements with the corresponding utility providers.

Summary

Based on the preceding analyses, while there are limited existing services available in the area to serve the development site, alternative means are possible. The construction of an on-site sewage system will be required to treat and dispose of waste generated by processing and non-processing operations. An on-site well and on-site storage of water will meet the required water demands. The proposed closed end buffer strip combined with a stormwater management pond will provide the requisite quantity and quality control for surface water run-off. The site access proposed is considered appropriate and no improvements to the external road system are necessary. Hydro One and Bell Canada have services immediately adjacent to the site which can be easily extended to serve the site. Rogers Cable and Union Gas also have services that could be extended if required.

We trust the above is sufficient. Please contact the undersigned if you have any questions or concerns.

Yours truly,
C.C. Tatham & Associates Ltd.



Randy Simpson, B.A.Sc., P.Eng.
Senior Engineer, Group Leader
RS:rlh
Encl.

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Appendix A:
Sewage System Calculations and Well Record

**Town of Meaford
Z Winery
Preliminary Sewage System Design
Domestic Flow Calculations
(See Diagram A)**

A) PROCESS PLANT (Domestic Flow)

OCCUPANT LOAD per Table 8.2.1.3.B. O.B.C.

Factory, Including Showers

	<u>Number of Shifts</u>	<u>Daily Design Flow (litres)</u> per person	<u>Tot'l Flow</u> l/day
Assume: 10 Employees 2 Shifts @ 8 Hours	(10 x 2)= 20	125	$(10 \times 2) =$ 2,500
		TOTAL	2,500

B) Restaurant & Patio

OCCUPANT LOAD per Table 8.2.1.3.B. O.B.C.

Food Service Operations (Restaurant not 24 hour), per seat

	<u>Persons</u>	<u>Daily Design Flow (litres)</u> per person	<u>Tot'l Flow</u> l/day
a) Number Seats indoor	60	125	7,500
b) Number of Seats outdoor (Patio)	30	125	3,750
		TOTAL	11,250

C) Building (Main)

Retail Store, per Table 8.2.1.3.B. O.B.C.

c) Area equals 75 sq. m.

<u>Area</u>	<u>Daily Design Flow (litres)</u> per person	<u>Tot'l Flow</u> l/day
75	5	375

Tasting Room, per Table 3.1.16.1 O.B.C.

Dining, Alcoholic Beverage Space

d) Area equals 63 sq. m.

<u>Area</u> Sq. m	<u>Area per Person</u> (O.B.C.)	<u>Occupant Load</u> People	<u>Daily Design Flow (litres)</u> Per Seat/(Person)	<u>Tot'l Flow</u> l/day
63.0	1.1	57		

Per Table 8.2.1.3.B O.B.C.

Assume Assembly Hall (No Food), per seat

8	$(57 \times 8) =$ 456
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Private Meeting Room, per Table 3.1.16.1 O.B.C.

Reading or Writing Rooms or Lounges

e) Area equals 39 sq. m.

<u>Area</u> Sq. m	<u>Area per Person</u> (O.B.C.)	<u>Occupant Load</u> People	<u>Daily Design Flow (litres)</u> Per Seat	<u>Tot'l Flow</u> l/day
39.0	1.85	21		

Per Table 8.2.1.3.B O.B.C.

Assume Assembly Hall (Food Service Provided), per seat

36	$(21 \times 36) =$ 756
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Meeting Room, per Table 3.1.16.1 O.B.C.

Reading or Writing Rooms or Lounges

f) Area equals 18.6 sq. m.

<u>Area</u> Sq. m	<u>Area per Person</u> (O.B.C.)	<u>Occupant Load</u> People	<u>Daily Design Flow (litres)</u> Per Seat	<u>Tot'l Flow</u> l/day
18.6	1.85	10		

Per Table 8.2.1.3.B O.B.C.

Assume Assembly Hall (Food Service Provided), per seat

8	$(10 \times 8) =$ 80
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SUBTOTAL	1,667
TOTAL	1,667

VOLUME TOTAL FOR BUILDING (LITRES)

A+B+C

(2500 + 11,250 + 1667)

EQUALS:

15,417 L/Day

PROCESS FLOW

Total flow volume given by client:	18,185 Litres/Day	(4000 gal)
Total volume from Domestic Use	15,417 Litres/Day	

Daily Process Volume 18,185 Litres -15,417 Litres = 2768 L/Day

Town of Meaford
Z Winery
Preliminary Sewage System Design
Restaurant and Building (No Process)
ECOFLO

DESIGN FLOW

Base Design Flow = 15,417 litres/day
Total Design Flow = 15,417 litres/day
Design T (Perc. Time) = 50 min/cm (Assume Clayey Soils)

TREATMENT

Septic Tank Volume = Qx3
= 46,251 L (use 29500L & 18,200L Tank)

Treatment Unit = Ecoflo 750 Biofilter System With Timed Dosed Pumping
= Unit capacity = 2,885 L/day (to be verified)
= 6 unit(s) required

Type A Dispersal Bed = QT/ 400
= 15,417 x 50 / 400
= 1927.1 m² (use 44m x 44m)

Loading Area = 4 L/m²/d
= $\frac{15,417}{4}$ L/d
= 3854.3 m² (51m x 51m)

Town of Meaford
Z Winery
Preliminary Sewage System Design
Process Plant Only

DESIGN FLOW

Base Design Flow = 2768 litres/day

Total Design Flow = 2768 litres/day

Design T (Perc. Time) = 50 min/cm

TREATMENT

Type A Dispersal Bed = QT/ 400
= $2,768 \times 50 / 400$
= 346.0 m² (use 20m x 17.5m)

Loading Area = 4 L/m²/d
= $\frac{2,768}{4}$ L/d
= 692 m² (23m x 20m)



Measurements recorded in: Metric Imperial

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A231364

Well Owner's Information

First Name, Last Name / Organization, E-mail Address, Mailing Address (Street Number/Name), Municipality, Province, Postal Code, Telephone No. (inc. area code)

Well Location

Address of Well Location (Street Number/Name), Township, Lot, Concession, County/District/Municipality, City/Town/Village, Province, Postal Code, UTM Coordinates, Zone, Easting, Northing, Municipal Plan and Sublot Number, Other

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

Table with columns: General Colour, Most Common Material, Other Materials, General Description, Depth (m/ft) From, To

Annular Space table with columns: Depth Set at (m/ft) From, To, Type of Sealant Used (Material and Type), Volume Placed (m³/ft³)

Results of Well Yield Testing table with columns: Draw Down (Time (min), Water Level (m/ft)), Recovery (Time (min), Water Level (m/ft)), Pumping rate (l/min / GPM), Duration of pumping, Final water level end of pumping (m/ft), Recommended pump depth (m/ft), Recommended pump rate (l/min / GPM), Well production (l/min / GPM)

Method of Construction and Well Use checkboxes: Cable Tool, Rotary (Conventional/Reverse), Boring, Air percussion, Other, etc.

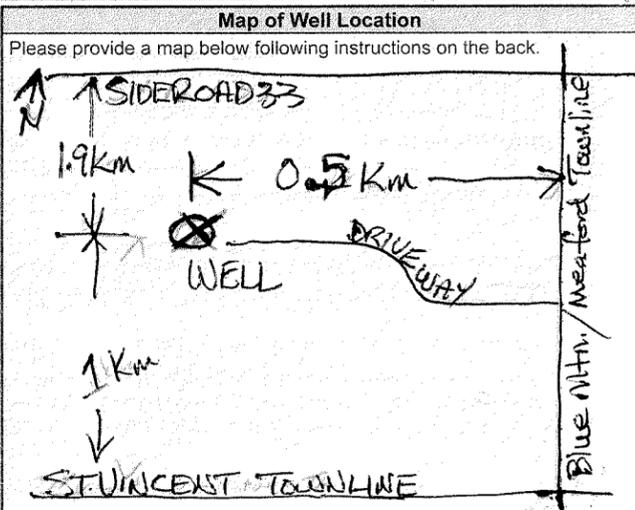
Construction Record - Casing table with columns: Inside Diameter (cm/in), Open Hole OR Material, Wall Thickness (cm/in), Depth (m/ft) From, To, Status of Well

Construction Record - Screen table with columns: Outside Diameter (cm/in), Material, Slot No., Depth (m/ft) From, To

Water Details and Hole Diameter table with columns: Water found at Depth (m/ft), Kind of Water, Depth (m/ft) From, To, Diameter (cm/in)

Well Contractor and Well Technician Information form: Business Name, Well Contractor's Licence No., Business Address, Municipality, Province, Postal Code, Business E-mail Address

Well Technician Information form: Bus. Telephone No., Name of Well Technician, Well Technician's Licence No., Signature of Technician and/or Contractor, Date Submitted



Comments: All LEFT TO 12PM 6. 16/

Ministry Use Only form: Well owner's information package delivered, Date Package Delivered, Date Work Completed, Audit No. 2265649

The Ontario Water Resources Act and Regulation 903

Certain Sections of the *Ontario Water Resources Act* are of interest to well owners, parts of these are described below for your information.

- Under Section 30 (1) No person shall discharge or deposit any material directly into any well or place that may impair the quality of any water.
- Under Section 34 (3) No person shall take more than 50,000 litres of water in a day for purposes other than domestic, farm, or fire fighting without a permit issued by the Ministry.
- Under Section 34 (7) The Ministry may require the owner of a flowing well to stop the flow of water from the well.
- Under Section 39, 43 Well Contractors and Well Technicians operating in the Province are required to obtain the appropriate licences from the Ministry to carry on the business of constructing wells and to work at the construction of water wells.

Regulation 903 under the *Ontario Water Resources Act* prescribes the minimum construction (including abandonment) requirements as well as outlines the licensing requirements, conditions, and the roles and responsibilities required of licensed well contractors, well technicians, and well owners in supporting the regulation in Ontario. The owner of a well is required to maintain the well at all times after completion in such manner as to prevent the entry of surface water or foreign materials into the well. The well owner is required to abandon (plug) a well that is not used or maintained. The owner may be required to abandon the well in a manner sufficient to prevent impairment of the quality of ground water if salty, sulphurous, or other non-potable water is encountered in the well. For further information on well construction, well maintenance, and well abandonment, and applicable exemptions, please refer to the *Ontario Water Resources Act* and Regulation 903, available at www.e-laws.gov.on.ca.

Instructions and Explanations for completing a Well Record

1. For use in the **Province of Ontario** only. This document is a permanent **legal** document. All **APPLICABLE** sections/fields **MUST** be completed in full and ALL **COPIES MUST** be **LEGIBLE** to avoid delays in processing and to comply with the Regulation 903. Please **PRINT** if completing by hand.
2. The Ministry's copy (top, **WHITE**) of the Well Record shall be returned to the Wells Help Desk, Ministry of the Environment and Climate Change, 125 Resources Road, Toronto ON M9P 3V6 within thirty (30) days after the date on which the well's structural stage is complete. The **PINK** copy shall be submitted to the Well Owner within fourteen (14) days after the date on which the well's structural stage is complete. The **YELLOW** copy is for the Well Contractor. The Well Contractor must retain a copy of the Well Record for a minimum of 2 years for future reference.
3. Not shaded fields are **COMMON FIELDS** and must be completed for all types of work, including abandonment, as applicable. Fields shaded in **YELLOW** must be completed for construction and alteration work, as applicable.
4. All measurements **MUST** be recorded in the specified unit, metric or imperial. To indicate the unit used, check off the applicable box on the top of the form. Measurements must be reported to 1/10th of a metre if the unit is a metre. All measurements of depth **MUST** be referenced to ground surface.
5. Well Owner's Information: If the well owner is not an individual, circle the word Organization and print the Organization/Company Name in "Last Name/Organization" field.
6. Well Location: Street Number/Name and City/Town/Village must be provided, if available. Geographic Township, Concession and Lot must be reported if the well is located in an area where such information exists. Current Municipality or Township, if reported, should be entered under "County/District/Municipality." UTM Coordinates must be recorded each time a Well Record is completed. Municipal Plan and Sublot Number may be provided, if available.
7. Abandonment details must be recorded in the "Overburden and Bedrock Materials/Abandonment Sealing Record" section. Indicate type of sealant used in "General Description" column and complete the "Depth" column.
8. Overburden and Bedrock Materials/Abandonment Sealing Record: For each formation encountered during construction, choose words from the lists below that best describe the formation on the basis of general colour, most common material, other materials, and general description of the formation. Print neatly in the correct columns.

General Colours		Materials					General Descriptions		
White	Yellow	Fill	Silt	Top Soil	Coarse Sand	Slate	Loose	Cemented	Previously Dug or Bored
Grey	Brown	Muck	Gravel	Limestone	Dolomite	Quartzite	Porous	Layered	Previously Drilled
Blue	Red	Peat	Stones	Fine Sand	Shale	Granite	Dense	Soft	Wood Fragments
Green	Black	Clay	Boulders	Medium Sand	Sandstone	Greenstone	Packed	Hard	

- Clay:** Composed of very fine particles. Forms dense hard lumps or clods when dry and a very elastic putty-like mass when wet. It can be rolled between fingers to form a long, flexible ribbon.
- Silt:** Grain size, midway between sand and clay. It may form clods which, when broken, feel soft and floury. When moist, it will form a cast that can be handled freely without breaking. Rolled between thumb and finger, it will not "ribbon" but will give a broken appearance.
- Sand:** Grains are loose and granular and may be seen and felt readily. Squeezed in the hand when dry, it falls apart when the pressure is released. Squeezed when moist, it will form a cast that will crumble when touched. Should be listed as fine, medium or coarse.
- Gravel:** Rock fragments greater than 0.3 cm in diameter.

Example: Overburden and Bedrock Materials Record for construction (measurements recorded in metric)

General Colours	Most Common Material	Other Materials	General Descriptions	Depth	
				From	To
Brown	Top Soil			0	0.6
Grey	Course Sand	Gravel, Silt	Loose, Wood Fragments	0.6	13.0
Blue	Clay	Silt, Stones	Dense	13.0	25.0
Brown	Fine Sand	Clay		25.0	31.0
Grey	Limestone		Porous, Hard	31.0	34.0

9. Water Level measurements in Results of Well Yield Testing: Distance between the surface of the ground and the top of the water in the well.
10. Water Details: Depth(s) at which water is found. The distance from the surface of the ground to the water bearing formation, or horizon, where water is found. There may be more than one water bearing formation.
11. Map of Well Location: Provide a map showing all property boundaries, and measurements sufficient to locate the well in relations to fixed points including an arrow indicating the North direction. In rural areas, one distance should be taken from a road and the other from either a road or a township lot line (Fig. 1). In a village, town or city, both distances should be taken from named streets (Fig 2). In areas where it is difficult to obtain lot and concession numbers, sufficient information should be supplied in the diagram so that the well can be related to a known unit such as a main highway, railway, or municipality (Figs. 3 & 4). Detailed drawings can be provided as attachments not larger than legal size (8.5" by 14").

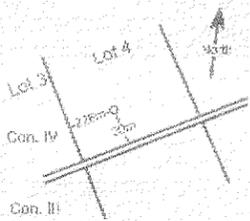


Fig. 1

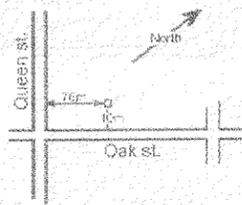


Fig. 2

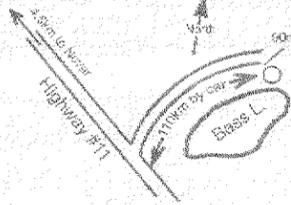


Fig. 3

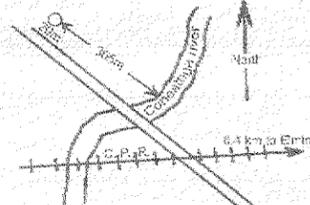
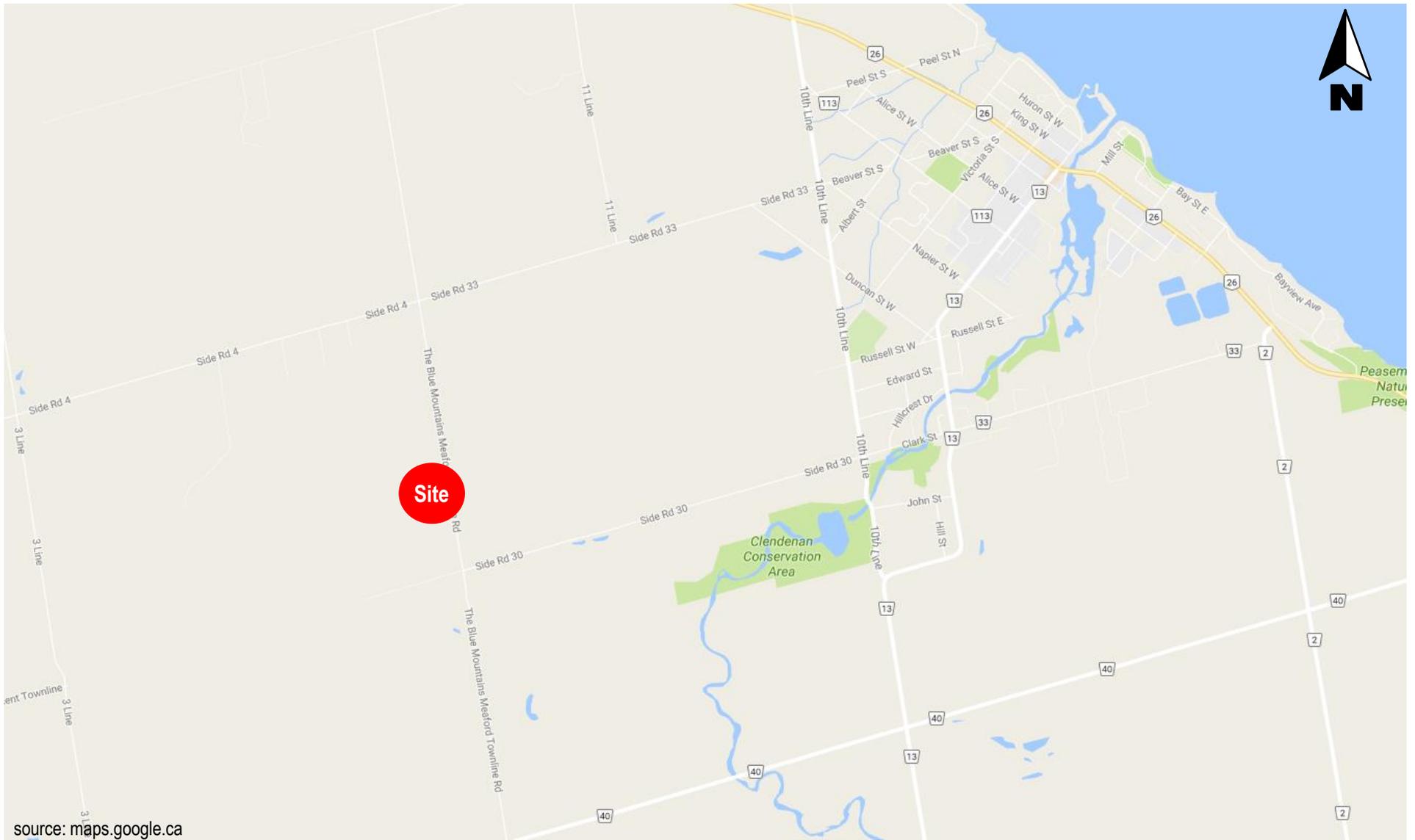


Fig. 4

Personal information contained on this form is collected pursuant to sections 35-50 and ss. 75(2) of the *Ontario Water Resources Act*, R.S.O. 1990, c.o. 40 and will be used for the purpose of registering your well (and any other public record purpose). Questions about this collection should be directed to the Wells Help Desk, Ministry of the Environment and Climate Change, 125 Resources Road, Toronto ON M9P 3V6 or 1 888-396-9355.

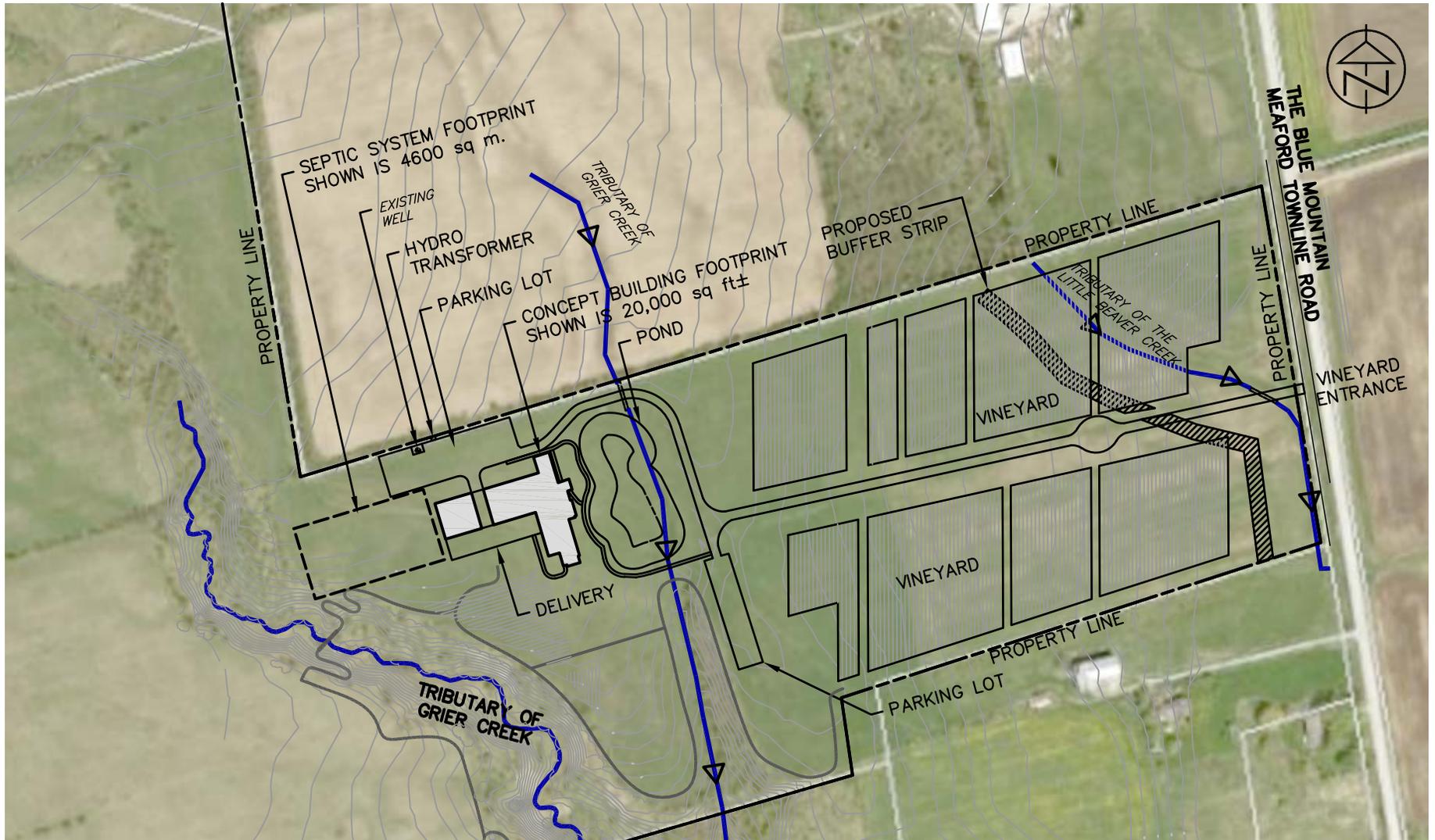


Vineyard/Winery Development
Site Location Plan

Figure
1



C.C. Tatham & Associates Ltd.
 Consulting Engineers



C.C. Tatham & Associates Ltd.
Consulting Engineers

Collingwood Bracebridge Orillia Barrie Ottawa

**Z VINEYARD - MUNICIPALITY OF MEAFORD
SITE CONCEPT PLAN**

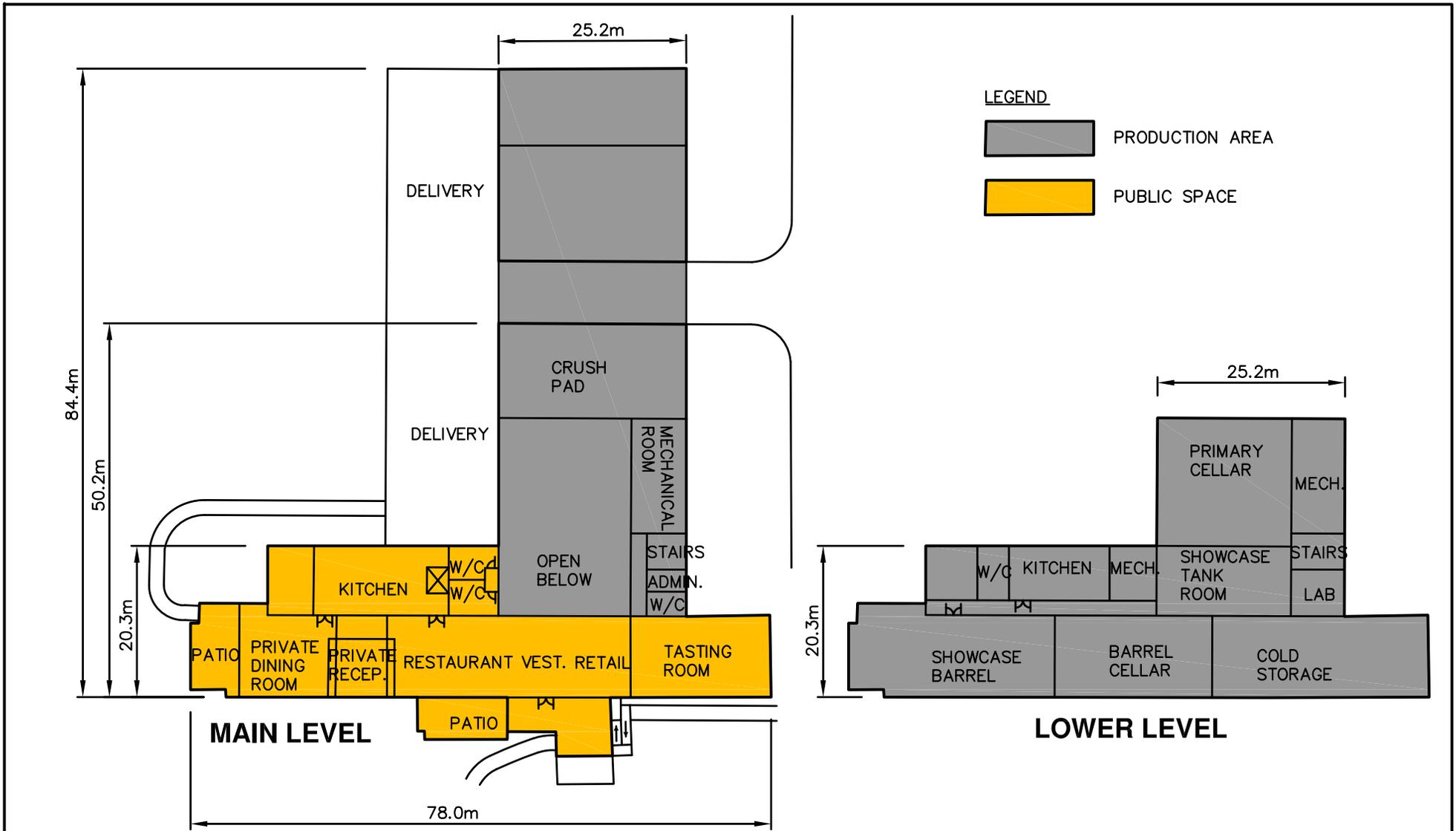
DWG. No.

FIG-02

SCALE: 1:4000

DATE: JULY/18

JOB NO. 117024



C.C. Tatham & Associates Ltd.
Consulting Engineers

Collingwood Bracebridge Orillia Barrie Ottawa

Z VINEYARD - MUNICIPALITY OF MEAFORD
BUILDING CONCEPT PLAN (20,000 S.F.±)

DWG. No.

SKA-02

SCALE: 1:750

DATE: JULY/18

JOB NO. 117024