



October 22, 2018

County of Peterborough
470 Water Street
City of Peterborough, ON
K9H 3M3

Attention Doug Saccoccia

Dear Mr. Saccoccia,

**Reference: Town and Country Landscaping — 365 County Road 28
Traffic Impact Study, County of Peterborough, ON
D.M. Wills Project No. 18-7264**

D.M. Wills Associates Limited. (Wills) has been retained by Town and Country Landscaping to complete a Traffic Impact Study in support of the proposed Official Plan + Zoning By-law Amendments (OPA/ZBA) for Town and Country Landscaping and at 365 County Road 28, in the County of Peterborough (The County).

Roadway Existing Conditions

Town and Country Landscaping is located in the south-west quadrant of the intersection of County Road 28 and Second Line. The portion of the lot subject to the OPA/ZBA, has an area of 1.95 ha and contains existing buildings, an equipment parking area and a main office building. The existing access to the site is a single entrance on Second Line just east of the County Road 28 intersection. A separate entrance to the adjacent residence is provided via County Road 28.

County Road 28 is under the jurisdiction of the County of Peterborough; County Road 28 adjacent to the proposed development is a two-lane undivided roadway, one-lane for each direction, and has a rural cross section (granular shoulders, ditches and culverts). County Road 28 exists as an important north-south arterial spanning between the Southern Limits of the County and Highway 7 / 115.

Existing Site Conditions

The proponents are currently undertaking OPA/ZBA applications in support of their Landscaping business. The site will serve as the landscaping operation yard, including a 4,000 sq. ft. storage building, temporary parking area for equipment, and an existing office with a proposed 2400 ft² addition. The business currently employees 50 people within the area.

The site is currently developed, and both the size and location meet the needs of the operation. No plans for expansion are currently being

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considered. A single entrance onto Second Line is being used as the main entrance to the site and is proposed to remain as such.

Existing Traffic Conditions

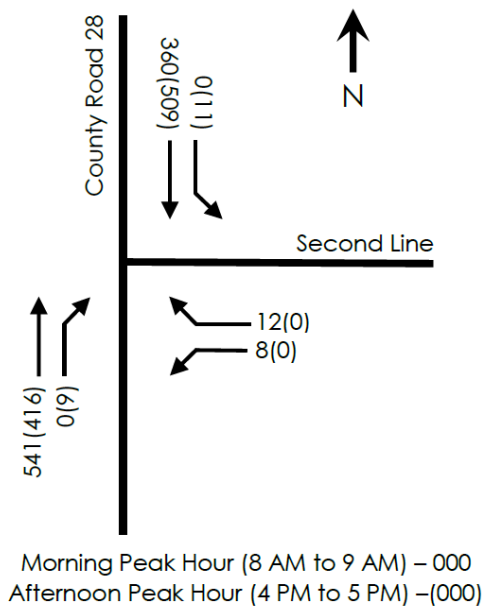
The County of Peterborough provided the typical weekday traffic volumes for County Road 28 at the proposed development.

Spring 2015:	9,418 vehicles / day
Summer 2015:	8,830 vehicles / day
Fall 2015:	10,068 vehicles / day

For the purposes of traffic analysis, the fall traffic volumes were used as they represent the worst case scenario. Peak AM and PM traffic volumes were found using the 'Basic Volume Summary: 028079' reports provided by the County.

The morning and afternoon peak traffic volumes were found to occur between 8:00 am to 9:00 am, and 4:00 pm to 5:00 pm respectively. The peak hour traffic volumes along County Road 28 at the proposed development are shown below:

Peak Hour Traffic Volume (Existing)





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Traffic Generation

To estimate the amount of traffic that will be generated by the development, first principles were used alongside insight from the property owners.

Number of round trips per day per season:

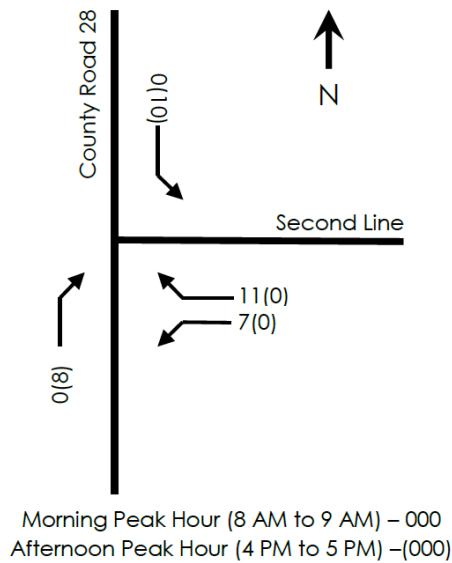
- Three (3) Triaxles – **1 round trip per truck** per day during Summer season May 1st to Dec 15th.
- Twelve (12) ½ & ¾ Ton trucks – **1 round trip per truck** per day from Apr 15th to Oct 30th.
- Four (4) Terra Stars, One (1) F550 & One (1) Sterling – Approximately **2 to 3 round trips per day** from Apr 15th to Oct 30th.
- Summer Hours – 6:30 am to 5:30 pm Monday to Friday
- Winter Hours – 8:00 am to 5:00 pm Monday to Friday
- Vehicles turn left out of the driveway to access Second Line to use County Road 28 and come in the same way.

To account for worst case scenarios, the round trips generated from the above information will be assumed to occur during the peak hour volumes of the existing conditions. The total trips generated during both AM and PM peak hours by the site will be 18. This can be broken down into:

- Three (3) round trips of the triaxles
- Twelve (12) round trips of the ½ and ¾ ton trucks
- Three (3) round trips of the Terra Star International Trucks / Dodge Sterling / Ford F550

The total trips generated by the development were distributed along County Road 28 according to the existing traffic patterns. For the morning peak hour, the directional traffic split was 60% northbound and 40% southbound. For the afternoon peak hour, the directional traffic split was 45% northbound and 55% southbound.

Peak Hour Traffic Generated



Future Conditions

To account for changes in the development usage that would impact traffic operations in the future, consideration was given to potential growth of the business. The owners were consulted and business operations at this site are not expected to undergo significant growth for the horizon years covered in this study.

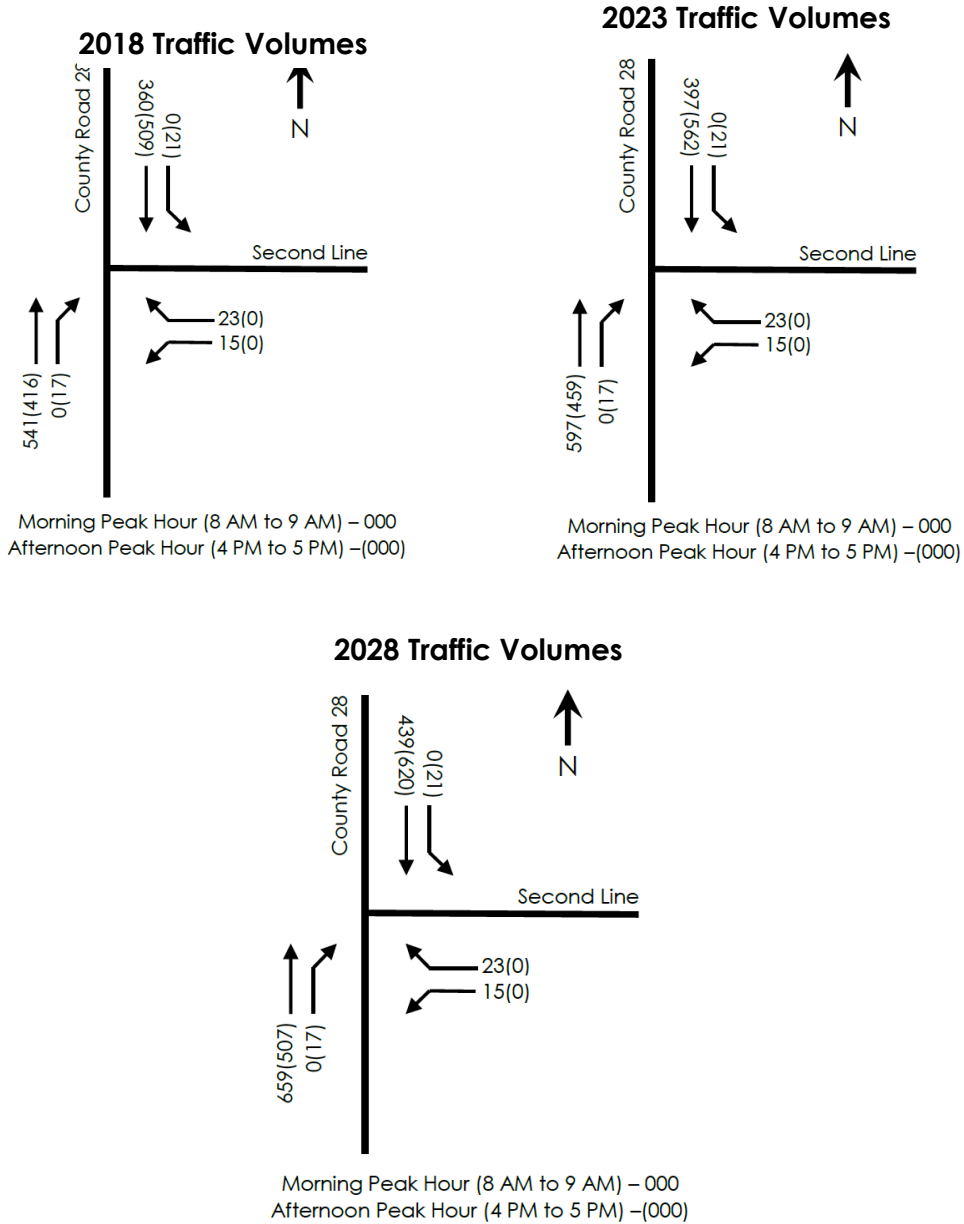
To obtain traffic volumes for the year 2018 and horizon years 2023 and 2028, the provided 2016 traffic volumes were projected forward using an annual growth rate of 2.0%. The projected traffic volumes can be found in the following table:

Year	AM Peak Hour		PM Peak Hour	
	Northbound	Southbound	Northbound	Southbound
2018	541	360	416	509
2023	597	397	459	562
2028	659	439	507	620



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Using the projected traffic volumes and the trips generated by the proposed development the total traffic volumes are found below:



Traffic Operations

Synchro software was used to review the existing and future capacity of the intersection. The method assesses the available critical gaps in the flow of traffic along County Road 28, which will allow traffic to enter or exit the proposed development. Traffic operations were investigated for the base year of 2018, the horizon year 2023 and the horizon year 2028. The results are shown in the following table:

Movement	2018				2023				2028			
	v/c	Delay (s)	Q95th (m)	LOS	v/c	Delay (s)	Q95th (m)	LOS	v/c	Delay (s)	Q95th (m)	LOS
AM Peak Hour												
WBL	0.15	20.9	4.3	C	0.17	24.1	5.1	C	0.20	27.2	5.9	D
WBR	0.15	20.9	4.3	C	0.17	24.1	5.1	C	0.20	27.2	5.9	D
NBT	0.35	0.0	0.0	A	0.39	0.0	0.0	A	0.42	0.0	0.0	A
NBR	N/A				N/A				N/A			
SBL	N/A				N/A				N/A			
SBT	0.00	0.0	0.0	A	0.00	0.0	0.0	A	0.00	0.0	0.0	A
PM Peak Hour												
WBL	N/A				N/A				N/A			
WBR	N/A				N/A				N/A			
NBT	0.28	0.0	0.0	A	0.30	0.0	0.0	A	0.33	0.0	0.0	A
NBR	0.28	0.0	0.0	A	0.30	0.0	0.0	A	0.33	0.0	0.0	A
SBL	0.03	0.5	0.8	A	0.03	0.5	0.8	A	0.04	0.6	0.9	A
SBT	0.03	0.9	0.8	A	0.03	0.9	0.8	A	0.04	1.0	0.9	A

Results show that the trips generated by the proposed development are not significant and do not change the existing traffic conditions; the same level of service (LOS) remains with or without the added trips. A LOS 'A', which indicates ideal traffic operations, is maintained for the base year of 2018 for northbound and southbound traffic on County Road 28. The LOS 'A' remains throughout the projected ten (10) year horizon along County Road 28. The LOS for Second Line (i.e. WBL, WBR) decreases from LOS 'C' to LOS 'D' in the 2028 horizon year. Given there is no expansion of the subject site operations the decrease in LOS is attributable to the increased traffic volumes resulting from the conservative 2% annual growth rate.

Auxiliary Lanes Warrant Analyses

There is currently an existing right turn taper at the Country Road 28 and Second Line intersection. The need for a left turn lane along County Road 28 at the Second Line intersection was reviewed. MTO standards were considered for left turn lane requirements with specific reference to the TAC Manual. The southbound left turning vehicles are below 5% of the opposing volume (3.4%). As such a left turn lane is not required noting consideration of a left turn lane is typically considered as turning volumes approach 5% of the opposing volume. Furthermore, based on the Synchro analysis, the intersection of County Road 28 and Second Line continues to operate at an acceptable LOS throughout all of the study horizons, noting the County Road 28 movements remain at LOS 'A'.

Based on the above methodologies, there is no need for any additional auxiliary lanes at the County Road 28 / Second Line intersection.

Sight Lines at Entrance

While considering the required sight lines at the proposed site entrance, Peterborough County By-Law No. 2012-26 was reviewed. For the 80 km/h posted speed limit, a sight line distance of 180 m is required, based on the observer's eye at 1.1 m and the top of the oncoming vehicle at 1.3 m. The horizontal alignment of County Road 28 at the intersection of County Road 28 and Second Line is tangent with sight lines in excess of 180m. Similarly the vertical grade through the intersection is unchanging (i.e. no crests / sags) providing in excess of 180 m of sight distance.

A similar assessment of sight lines was considered for the entrance to Second Line. Second Line is tangent and flat in the vicinity of entrance and as such provide good sight lines in both directions. The sight line to the east is in excess of 180 m. The sight line to the west is approximately 140 m terminating at the intersection of County Road 28.

Conclusions and Recommendations

The assessment reviewed the overall impact that the existing Town and Country Landscaping operations have on traffic operations along County Road 28 for the base year 2018, as well as future conditions in 2023 and 2028.

Due to the relatively small number of additional trips generated by the proposed development, there is little effect on the normal traffic operations of County Road 28. A Synchro analysis yielded an Level of Service (LOS) 'A' for the County Road 28 and Second Line intersection through all study horizons. The level of service 'A' indicates good



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operations with essentially no delays, meaning that vehicles will be able to find appropriate gaps in the flow of traffic to safely enter and exit the proposed development via County Road 28 and Second Line. Turning movements from Second Line onto County Road 28 have a level of service 'C' or 'D', throughout each of the study horizons, indicating a moderate delay for these vehicles accessing the County Road. It is also worth noting that the development has operated in this location for several years, including in 2015 when the traffic counts were recorded. In this time there have been no concerns identified from a safety or traffic operations perspective.

The need for a left turn lane was also reviewed, noting an existing northbound right turn taper. Using the warrant criteria specified by the County of Peterborough, it was concluded that no left lanes are required. The traffic turning volumes generated by the proposed development are well below the lower warrant limits.

Based on the preceding assessment, it is concluded that the proposed landscaping business can be operated without significant impact to the existing traffic conditions along County Road 28.

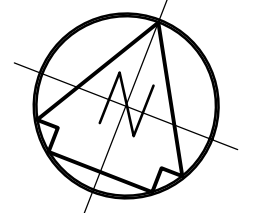
Sincerely,

A handwritten signature in black ink, appearing to read 'M. Lang'.

Michael Lang, P.Eng.
Manager, Transportation Department
D.M. Wills Associates Limited

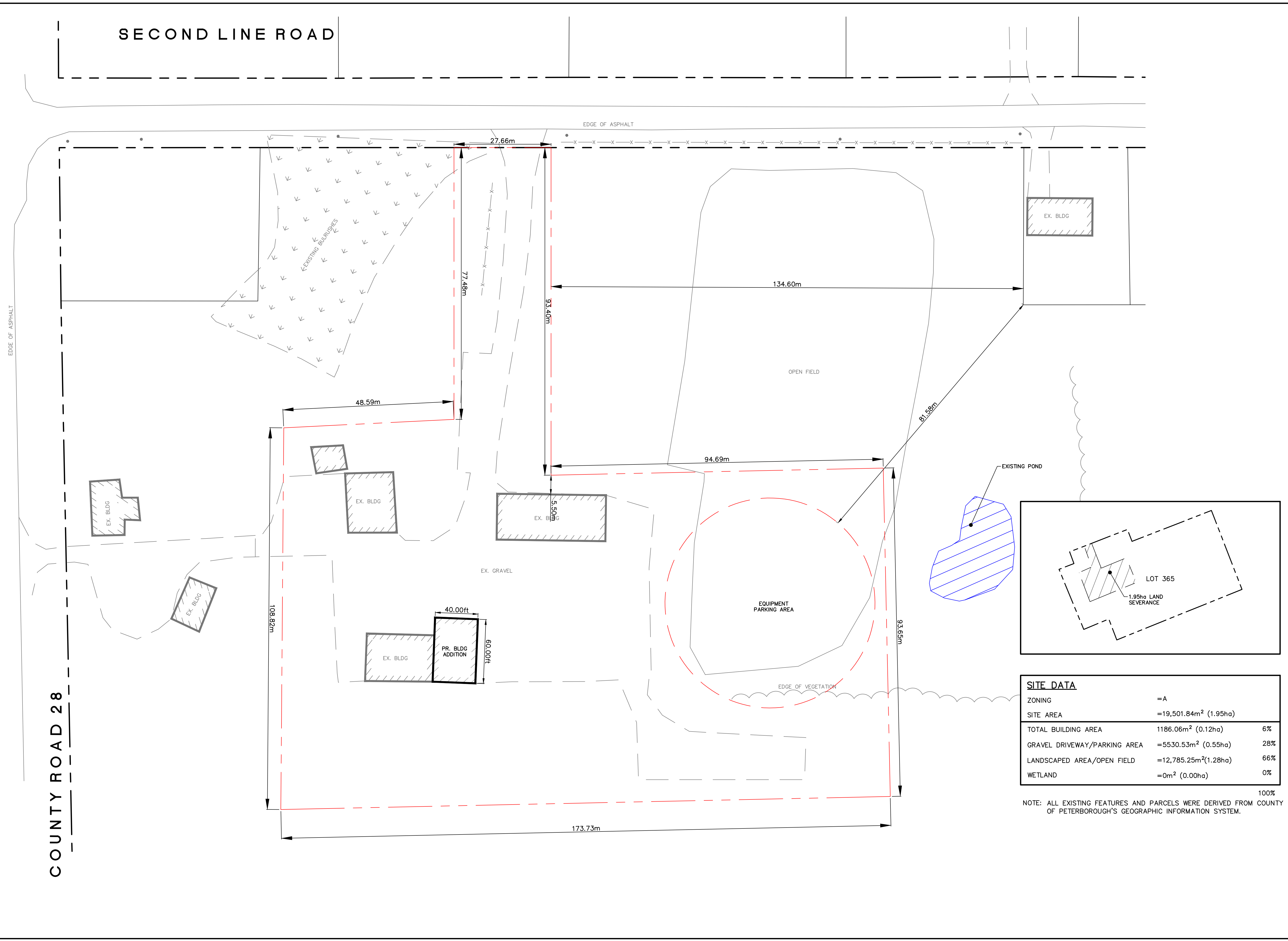
Appendix

SECOND LINE ROAD



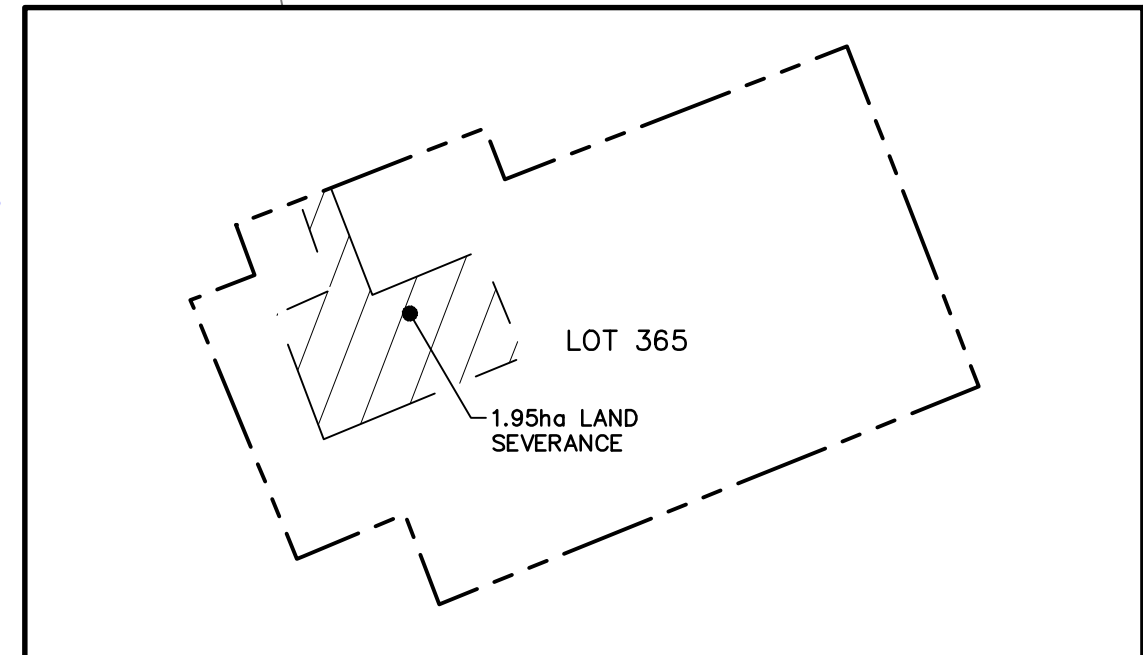
TRUE NORTH

KEY PLAN



REVISIONS		
No.	Description	Date
1	ISSUED FOR RE-ZONING	04/12/18

METRIC Dimensions are in METRES and/or MILLIMETRES unless otherwise shown
LEGEND TO BE READ IN CONJUNCTION WITH QPSD 100 SERIES



DRAFT

SITE DATA			
ZONING	=A		
SITE AREA	=19,501.84m ² (1.95ha)		
TOTAL BUILDING AREA	1186.06m ² (0.12ha)	6%	
GRAVEL DRIVEWAY/PARKING AREA	=5530.53m ² (0.55ha)	28%	
LANDSCAPED AREA/OPEN FIELD	=12,785.25m ² (1.28ha)	66%	
WETLAND	=0m ² (0.00ha)	0%	
			100%

NOTE: ALL EXISTING FEATURES AND PARCELS WERE DERIVED FROM COUNTY OF PETERBOROUGH'S GEOGRAPHIC INFORMATION SYSTEM.

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 E. wills@dmwills.com

Project Name/Location		
365 COUNTY ROAD 28		
TOWNSHIP OF OTONABEE SOUTH MONAGHAN		
Drawing Title		
CONCEPTUAL SITE PLAN		
Drawn By: T.M.	SCALE: Horz. 1:500	Vert. --
Designed By: --	Plot Date: OCTOBER 18, 2018	
Checked By: D.K.	Project No.: 17-7264	Sht. No.:
Engineer: ---	Dwg File No.: 7264-SP	00

COUNTY ROAD 28