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nexTrans CONSULTING ENGINEERS
NextEng Consulting Group Inc.

March 28, 2024

TD Consulting Inc.
155 St. David Street
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Attention: Nick Fegan

Re: Traffic Brief
Proposed Residential Development
00 County Road 49, Municipality of Trent Lakes
Our Project No. NT-23-114

1.0 INTRODUCTION

Nextrans Consulting Engineers (A Division of NextEng Consulting Group Inc.) was retained through TD Consulting Inc. (the 'Client') to prepare a Traffic Brief in support of the Site Plan Application(s) for a proposed residential development. The subject site is located on County Road 49 south of Ranch Road, addressed as 00 County Road 49, in the Municipality of Trent Lakes.

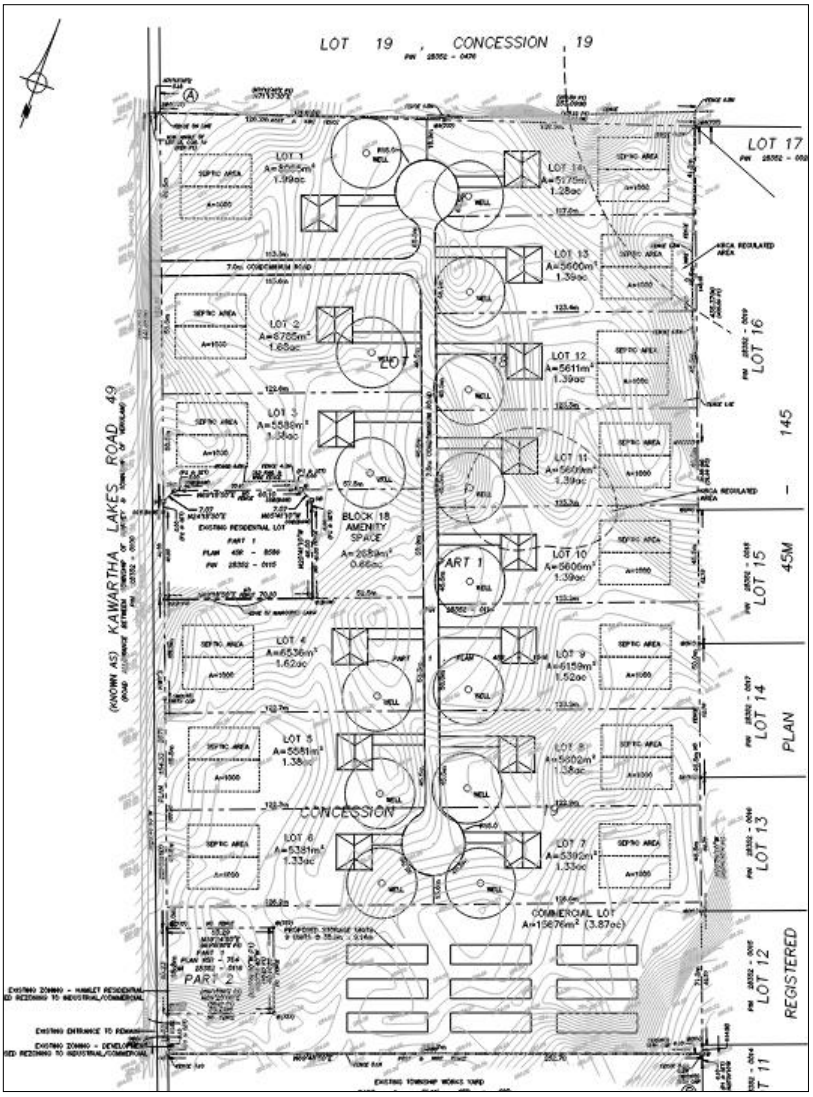
The location of the proposed development is illustrated in **Figure 1-1**.

Figure 1-1 – Subject Site Location

The subject property is currently vacant. The development proposal is to subdivide the property to facilitate 14 new residential lots, and a commercial self-storage facility with a GFA of 3,134.6 m^2. The residential subdivision will have two (2) new roads, one of which will provide access from County Road 49. Access to the commercial property will be provided via a new access onto County Road 49.

The proposed site plan is shown in **Figure 1-2**. The complete site plan is provided in **Appendix A**.

Figure 1-2 – Proposed Site Plan



2.0 EXISTING CONDITIONS

2.1 Existing Road Network

The existing road network in the study area is described below:

- **County Road 49:** A north-south road under the jurisdiction of the County. Within the study area, County Road 49 (also known as Kawartha Lakes Road 49) has a (2)-lane cross-section (one (1) lane per travel direction) and an unposted speed limit of 50 km/h.

- **County Road 36:** An east-west road under the jurisdiction of the County. Within the study area, County Road 36 has a (2)-lane cross-section (one (1) lane per travel direction) and an unposted speed limit of 50 km/h.

3.0 SITE TRAFFIC

3.1 Site Trip Generation

Anticipated trip rates and trips generated by the proposed stacked townhouse building were determined using the *Trip Generation Manual, 11th Edition* published by the Institute of Transportation Engineers (ITE). The new trips and trip rates were calculated using the fitted curve equations for ITE Land Use Code (LUC) 210 'Single-Family Detached Housing'. The trip generation summary is shown in **Table 3.2**.

Table 3.2 – Site Traffic Trip Generation (ITE)

ITE Land Use	Parameter	Morning Peak Hour			Afternoon Peak Hour		
		In	Out	Total	In	Out	Total
Single-Family Dwelling LUC 210 *14 Dwelling Units*	New Trips	**3**	**9**	**12**	**10**	**6**	**16**
	Trip Rate	0.21	0.68	0.89	0.71	0.41	1.12

The anticipated number of vehicle trips generated by proposed commercial self-storage facility were determined using land LUC 151 'Mini-Warehouse' in the Trip Generation Manual. The trip generation is summarized in **Table 3.3**.

ITE Land Use	Parameter	Morning Peak Hour			Afternoon Peak Hour		
		In	Out	Total	In	Out	Total
Mini Warehouse LUC 210 *3,134.6 m^2 GFA*	New Trips	**2**	**1**	**3**	**2**	**3**	**5**
	Trip Rate	0.06	0.03	0.09	0.06	0.09	0.15

The proposed residential subdivision is expected to generate 12 new two-way vehicle trips (three (3) inbound and nine (9) outbound) in the AM peak hour and 16 new two-way vehicle trips (10 inbound and six (6) outbound) during the PM peak hour.

The proposed commercial self-storage facility is expected to generate three (3) new two-way vehicle trips (two (2) inbound and one (1) outbound) in the AM peak hour and five (5) new two-way vehicle trips (two (2) inbound and three (3) outbound) during the PM peak hour.

Based on the estimated number of peak hour trips, both residential subdivision and the proposed commercial self-storage facility are expected to have a minimal impact on the surrounding road network.

4.0 PARKING ASSESSMENT

4.1 Vehicular Parking Requirements

The subject lands are subject to the provisions of the Municipality of Trent lakes Zoning By-law B2014-070. The vehicle parking requirements for the proposed residential development are detailed in **Table 4.1**.

Table 4.1 – Residential Vehicle Parking Requirements (By-law B2014-070)

Use	No. of Units	Minimum Parking Rate	Parking spaces required
Single Detached Dwelling	13	1 space per dwelling	13

In accordance with Zoning By-law B2014-070, the proposed development requires one (1) parking space per dwelling. Each proposed dwelling will provide an interior parking garage and driveway.

The parking requirements for the proposed commercial self-storage facility, in accordance with By-law B2014-070, are summarized in **Table 4.2**.

Table 4.2 – Commercial Self-Storage Vehicle Parking Requirements (By-law B2014-070)

Use	GFA	Minimum Parking Rate	Parking spaces required
Commercial Self-Storage	3,134.6 m^2	1 space per 37.2 m^2 GFA	84
Accessible Parking	--	5% of required parking	4

The proposed commercial self-storage facility requires a minimum of 84 parking spaces and requires that four (4) spaces be accessible spaces. The current proposed concept plan does not detail parking provisions for the commercial self-storage facility. The proposed parking supply should be provided in accordance with the By-law requirements.

4.0 LOADING REQIUREMENTS

In accordance with Zoning By-law B2014-070, the loading requirements for the proposed commercial self-storage facility are summarized in **Table 4.3**.

Table 4.2 – Commercial Self-Storage Loading Space Requirements (By-law B2014-070)

Use	GFA	Loading Space Requirement
Commercial Self-Storage	3,134.6 m^2	1 loading space for every 1,858 m^2 GFA

The proposed commercial self-storage facility requires a minimum of one (1) loading space. The required dimensions of the loading space are 3.7 m x 13.7 m. The current proposed concept plan does not detail parking provisions for the commercial self-storage facility. A loading space should be provided in accordance with the By-law requirements.

5.0 SITE PLAN REVIEW

5.1 Site Access Location

Site access for the residential subdivision is proposed through a new road which will intersect County Road 49, and access to the commercial property will be provided through one (1) driveway fronting County Road 49. The new driveways must be in a suitable location that provides adequate spacing between other intersections along County Road 49. According to Section 8.9.8 of the Transportation Association of Canada Geometric Design Guide for Canadian Roads (the 'TAC Manual'), the minimum intersection spacing of driveways for residential and commercial uses are 1.0 m and 3.0 m, respectively. Both driveway locations satisfy this requirement, with the nearest driveway being the that of the existing Township works yard, which is located about 60 m south of the proposed commercial driveway.

According to Section 8.8.2 of the TAC Manual, the minimum acceptable corner clearances for the proposed residential and commercial driveways from street corners, that is, the distance from the driveway to the nearest major intersection, are 2.0 m. The proposed intersection of the residential site access and County Road 49 is located approximately 730 m south of the intersection of County Road 49 and Anderson Line / Ranch Road, which is the nearest intersection.

The proposed intersection locations are acceptable based on the spacing and corner clearance criteria.

5.2 Sightline Analysis

The sight distance requirements for the proposed accesses onto County Road 49 were assessed in accordance with the Geometric Design Guide for Canadian Roads to determine if the site access location and configuration provides adequate sight distances for stopping and departure.

5.2.1 Sightline Analysis

For the distance assessment, a design speed of 60 km/hr (unposted speed plus 10 km/hr) under stop control was utilized. Sight distance requirements were considered for passenger vehicles approaching the existing access on Bristol Road West. The criterion applied for vehicles approaching the intersection is stopping sight distance. Under the stopping sight distance assessment, the target height applied is 0.38 m for vehicle taillights, and for intersection movements a top of car height of 1.3 m is applied. A driver eye height of 1.05 m is applied for all scenarios.

Adjustments for road grade were not applied as the existing grading of County Road 49 in the subject area is relatively flat and would have a negligible effect on the stopping sight distance.

In accordance with the Geometric Design Guide for Canadian Roads by the Transportation Association of Canada (TAC 2017) section 2.5.3, the required stopping distance, adjusted for effect of grade, is determined using the following equation:

$$d_b = 0.039 \times V^2 / a$$

Where:
d_b = Braking distance (m);
V = design speed (km/h);
a = Deceleration rate (m/s^2) (Assumed as 3.4 m/s^2, as per TAC 2017 Section 2.5.2.2)

Then:

$$\text{Stopping Sight Distance} = 0.278tV + d_b$$

Where:

t = perception / reaction time = 2.5 s (TAC 2017, Section 2.2.5.5)

Minimum stopping sight distance = 0.278 x 2.5 x 60 + 60^2 / 3.4
= 83.0 m say **85 m**

5.2.2 Departure Sight Distance

To assesses scenarios where vehicles are departing from the location of the proposed driveway, the departure sight distance was assessed under Case B1 – Left Turn from the Minor Road, in accordance with Section 9.9.2.3 of the *Geometric Design Guide for Canadian Roads (TAC 2017)*. The departure sight distance was assumed to be under stop-controlled conditions.

As stipulated in of the Geometric Design Guide for Canadian Roads, the intersection sight distance along the major road is determined using the following equation:

$ISD = 0.278\ V_{major}\ t_g$

Where:
ISD = Intersection sight distance (length of the leg of sight triangle along the major road) (m);
V_{major} = design speed of the major road (km/h); and,
T_g = time gap for minor road vehicle to enter the major road (s)

Case B1 – Minimum intersection sight distance for vehicles turning left from the proposed access onto County Road 49:

ISD = 0.278 x 60 x 7.5
= 125.1 m say **130 m**

The required stopping sight distance and departure sight distances for both accesses are 85 m and 130 m, respectively. County Road 49 has relatively flat grading and a straight horizontal alignment, which allows for very long sightlines onto County Road 49 from the locations of both proposed driveways. As shown below in **Figure 5-1**, the sight distances on County Road 49 reach or exceed 200 m for the northbound and southbound approaches.

Figure 1-2 – Sightlines on County Road 49

7.0 CONCLUSION

The findings and conclusions of this analysis are as follows:

- The subject property is currently vacant. The subject property is currently vacant. The development proposal is to subdivide the property to facilitate 14 new residential lots, and a commercial self-storage facility with a GFA of 3,134.6 m^2. The residential subdivision will have two (2) new roads, one of which provide access from County Road 49. Access to the commercial property will be provided via a new access onto County Road 49.
- The proposed residential subdivision is expected to generate 12 new two-way vehicle trips (three (3) inbound and nine (9) outbound) in the AM peak hour and 16 new two-way vehicle trips (10 inbound and six (6) outbound) during the PM peak hour.
- The proposed commercial self-storage facility is expected to generate three (3) new two-way vehicle trips (two (2) inbound and one (1) outbound) in the AM peak hour and five (5) new two-way vehicle trips (two (2) inbound and three (3) outbound) during the PM peak hour.
- Based on the estimated number of peak hour trips, both residential subdivision and the proposed self-storage facility are expected to have a negligible impact on the existing road network.
- In accordance with Zoning By-law B2014-070, the proposed development requires one (1) parking space per dwelling. Each proposed dwelling will provide an interior parking garage and driveway.
- The proposed commercial self-storage facility requires a minimum of 84 parking spaces and requires that four (4) spaces be accessible spaces. The current proposed concept plan does not detail parking provisions for the commercial self-storage facility. The proposed parking supply should be provided in accordance with the By-law requirements.
- The proposed commercial self-storage facility requires a minimum of one (1) loading space. The required dimensions of the loading space are 3.7 m x 13.7 m. The current proposed concept plan does not detail parking provisions for the commercial self-storage facility. A loading space should be provided in accordance with the By-law requirements.
- Based on the TAC intersection spacing guidelines, the proposed locations of the residential and commercial driveways are acceptable.
- The proposed locations of both the residential and commercial site driveways provide adequate sightlines onto County Road 49.

We trust the enclosed sufficiently addresses your needs. Should you have any questions, please do not hesitate to contact the undersigned.

Yours truly,

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