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nexTrans CONSULTING ENGINEERS
NextEng Consulting Group Inc.

October 17, 2024

Jeffrey Homes
1200 Airport Boulevard, Suite 201
Oshawa, ON L1J 8P5

Attention: Scott Jeffrey

Re: Engineering Service – Transportation Impact Study Addendum Letter
Proposed Residential Development
168 County Road 49, Municipality of Trent Lakes
Our Project No. NT-23-207

Nextrans Consulting Engineers (a Division of NextEng Consulting Group Inc.) is pleased to present this Transportation Impact Study Addendum Letter in support of the proposed Draft Plan of Subdivision Application.

The subject lands are bound by County Road 49 to the west, Moonline Road North to the east and are approximately 335 m north of Ellwood Crescent. The subject lands are municipally addressed as 168 County Road 49 in the Township of Harvey, Municipality of Trent Lakes, Ontario. The development proposal consists of 59 residential estate lots. The proposed development consists of the east and west subdivision, which is separated by an environmental feature in the middle. Vehicular access to the west subdivision is envisioned via Street 'A' and Street 'B', which will intersect with County Road 49. Vehicular access to the east subdivision is envisioned via Street 'C', which will intersect with Moon Line Road North.

Nextrans previously prepared a Transportation Impact Study in support of the proposed Draft Plan of Subdivision Application. The purpose of this letter is to address the latest comments issued by the County of Peterborough's third-party reviewer, Stantec Consulting Ltd. (herein 'Stantec'). Our responses to the new comments issued by Stantec are provided below.

[New] Comment 2 – What is the split of the lots between east and west parcels?

NEXTRANS RESPONSE: As noted previously in our reporting, there is an environmental feature that separates the east and west parcels.

[New] Comment 3 – It is recommended that jurisdictions and approximate paved width for each road be identified.

NEXTRANS RESPONSE: Acknowledged. This information has been detailed in Section 1.0 of this Addendum.

[New] Comment 4 – The existing lane configuration for eastbound right/left turn movements on Ranch Road and Moon Line Road N intersection; sounds to be shared. Please confirm.

NEXTRANS RESPONSE: Acknowledged. It is noted that this comment has no bearing on the findings of our previously stated conclusions and recommendations.

[New] Comment 5 – The AM/PM Peak Hours and signals are not relevant to Figure 2-1. The legend should be updated.

NEXTRANS RESPONSE: Acknowledged. It is noted that this comment has no bearing on the findings of our previously stated conclusions and recommendations.

[New] Comment 7 – It is recommended that Figure 2.2 be relocated under this section or that a reference to Figure 2.2 be attached at the end of the report.

NEXTRANS RESPONSE: Acknowledged. It is noted that this comment has no bearing on the findings of our previously stated conclusions and recommendations.

[New] Comment 9 – The HCM 2000 unsignalized intersections traffic operational criteria will be added to a new table.

NEXTRANS RESPONSE: Acknowledged. It is noted that this is an informational comment that does not affect the conclusions or recommendations of our study. Based on the results of the Future Total Traffic Assessment, all movements of the study area intersections analyzed are projected to operate with volume to capacity ratios below 0.40, with levels of service (LOS) B or greater, with no delay exceeding 12 seconds and with 95th percentile queue lengths shorter than 2m during both AM and PM peak hour.

Based on the County's *Traffic Impact Assessment Guidelines,* all unsignalized public road study intersections must operate with an acceptable LOS 'E' or better, with an average delay of 80 seconds of delay per vehicle (s/veh) and must operate with a v/c ratio of less than or equal to 0.85. Furthermore, the County's TIA Guidelines state that 95th percentile queue lengths must not exceed the storage capacity of existing auxiliary lanes.

Given that the Future Total traffic analysis conforms to the County's TIA Guideline standards, our previously stated conclusions remain.

[New] Comment 10 – The actual peak hours used should be discussed. Also, was a common peak hour across all intersections derived/assumed for each period?

NEXTRANS RESPONSE: Appendix B of our previous reporting provided the detailed traffic data collection sheets. Morning peak period data was collected between 7AM and 10AM, and afternoon peak period traffic data was collected between 4PM and 7PM. The AM and PM peak hours varied per intersection, and as noted in our previous reporting, the peak hour factor (PHF) was calculated per intersection, per peak hour. The Synchro reports enclosed in Appendices C, D and E all detail the PHF used per intersection.

[New] Comment 11 – Future scenarios and horizon years should be identified.

NEXTRANS RESPONSE: A 5-year horizon from the baseline year was used. Given that the original report was prepared in early 2024, a horizon year of 2029 was assessed for future traffic scenarios.

[New] Comment 12 – AADT data within the study area that has been used to identify the growth rate to be referenced, also Suggest adding that 2% growth rate as per County TIA guidelines and clarify if the 2% is compounded as per guidelines.

NEXTRANS RESPONSE: As noted in our original reporting, a 2% growth rate, compounded per annum was utilized to project future traffic growth in the area.

[New] Comment 13 – It is recommended that Figure 3.1 be relocated under this section, or ther should be a reference that Fig 3.2 is attached at the end of the report.

NEXTRANS RESPONSE: Acknowledged. It is noted that this comment has no bearing on the findings of our previously stated conclusions and recommendations.

[New] Comment 19 – What is the split of the lots between east and west parcels?

NEXTRANS RESPONSE: As noted previously in our reporting, there is an environmental feature that separates the east and west parcels.

[New] Comment 20 – In Table 4.1 what are gross rates different between east/west parcels if LUC 210 is being used for both?

NEXTRANS RESPONSE: It is to be noted that trip generation was calculated separately for the east and west parcels, resulting in a difference of gross rate.

[New] Comment 21 – Please relocated Figure 4.1 after Table 4.2, or there should be a reference that Fig 4.1 is attached at the end of the report.

NEXTRANS RESPONSE: As noted previously in our reporting, there is an environmental feature that separates the east and west parcels.

[New] Comment 22 – It is recommended to relocated Figure 5.1 before Table 5.1, or there should be a reference that Fig 5.1 is attached at the end of the report.

NEXTRANS RESPONSE: Acknowledged. It is noted that this comment has no bearing on the findings of our previously stated conclusions and recommendations.

[New] Comment 28 – Have or will these 59 spaces be provided (i.e. 1 per residence)?

NEXTRANS RESPONSE: Acknowledged. The detailed parking supply will be confirmed at SPA.

[New] Comment 30 – There should be a reference to Fig 7.1 is attached at the end of the report.

NEXTRANS RESPONSE: Acknowledged. It is noted that this comment has no bearing on the findings of our previously stated conclusions and recommendations.

[New] Comment 31 – Please include a section to discuss the sight distances for the accesses.

NEXTRANS RESPONSE: Acknowledged. Sight lines are discussed in Section 2.0 this Addendum.

[New] Comment 33 – Add split of lots between east and west parcels.

NEXTRANS RESPONSE: It is to be noted that the analysis was undertaken with the assumption that there would be east and west parcels, and the trip distribution was done accordingly.

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

Yours truly,

NEXTRANS CONSULTING ENGINEERS

Prepared by:

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Approved by:

Richard Pernicky, MITE
Principal

Issues and Revisions Registry

Identification	Date	Description of issued and/or revision
Transportation Impact Study	February 16, 2024	For first submission
TIS Addendum Letter	October 17, 2024	Response to comments

1.0 EXISTING TRAFFIC CONDITIONS

1.1. Existing Road Network

The existing road network, lane configuration and existing traffic control for the study area are described below.

- **County Road 49/East Street N** is classified as a north-south arterial road under the jurisdiction of Peterborough County. County Road 49/East Street N operates with a two (2)-lane cross section (one (1)-travel lane per direction) in the vicinity of the study area. It generally maintains an assumed and unposted speed limit of 50 km/h. County Road 49 has a paved road width of approximately 11m.
- **Peterborough County Road 36** is an east-west arterial road under the jurisdiction of Peterborough County. Peterborough County Road 36 operates with a two (2)-lane cross section (one (1)-travel lane per direction) in the vicinity of the study area. It generally maintains a posted speed limit of 50 km/h. Peterborough County Road 36 has a paved road width of approximately 11m.
- **Moon Line Road North** is a north-south local road under the jurisdiction of the Town of Trent Lakes. Moon Line Road North operates with a two (2)-lane cross section (one (1)-travel lane per direction) in the vicinity of the study area. It generally maintains a posted speed limit of 35 km/h. Moon Line Road North has a paved road width of approximately 8m.
- **Ranch Road** is an east-west local road under the jurisdiction of the Town of Trent Lakes. Ranch Road operates with a two (2)-lane cross section (one (1)-travel lane per direction) in the vicinity of the study area. It generally maintains an assumed and unposted speed limit of 50 km/h. Ranch Road has an unpaved road width of approximately 7m.
- **Anderson Line** is an east-west local road under the jurisdiction of Kawartha Lakes. Anderson Line operates with a two (2)-lane cross section (one (1)-travel lane per direction) in the vicinity of the study area. It generally maintains an assumed and unposted speed limit of 50 km/h. Anderson Line has a paved road width of approximately 7m.

2.0 SITE PLAN REVIEW

2.1. Sightline Analysis

2.1.1. Stopping Sight Distance

For the purpose of sight distance assessment, a design speed of 60 km/hr (posted speed limit plus 10 km/hr) was considered for the accesses on County Road 49 and a 45 km/h design speed was considered for the access onto Moon Line Road North. Sight distance requirements were considered for passenger vehicles approaching the existing access onto Robinson Street. 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.

The effect of the road grade on both County Road 49 and Moon Line Road North were considered in calculating the stopping sight distance requirement. Elevation and distances were obtained from Google Earth. The grade for vehicles approaching Street B were calculated as -2.4% approaching from upstream and +1.6% for vehicles approaching from downstream. The grade for vehicles approaching Street A were calculated as -1.3% for vehicles approaching from

upstream and +4% approaching from downstream. The grade for vehicles approaching Street C were determined as -2.8% approaching from upstream and 0% approaching from downstream.

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 is determined using the following equation:

$$d_b = V^2 / 254[(a/9.81) +/- G)]$$

Where:

d_b = Braking distance (m);
V = design speed (km/h);
a = Deceleration rate (m/s^2), 3.4 m/s^2
G = the percent grade divided by 100

Then:

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

Minimum stopping sight distance for eastbound approach = $0.278 \times 2.5 \times 60 + 60^2 / 254 ((3.4/9.81) - 0.024)$
= 86 m say **90 m**

Existing sight distances approaching the proposed site access have been determined through a Google Maps Streetview. Stopping sight distance at the proposed site access is detailed in **Table 2.1**.

Table 2.1 – Stopping Sight Distance Assessment

Approach	Required	Achieved	Difference
County Road 49 & Street B			
Southbound Approach	90 m	+150 m	+60 m
Northbound Approach	85 m	+150 m	+65 m
County Road 49 & Street A			
Southbound Approach	85 m	+100 m	+65 m
Northbound Approach	80 m	+100 m	+70 m
Moon Line Road N & Street C			
Southbound Approach	55 m		
Northbound Approach	55 m		

Based on the achieved sight distances approaching Street B and Street A, there are adequate stopping sight distances available. It is to be noted that Google Streetview is not available on Moon Line Road N; however, given that there are insignificant grade changes approaching the proposed location of Street C, and given that there is no curvature along Moon Line Road N in the vicinity of the proposed location of Street C, and finally given that Moon Line Road N is an existing local road with a low speed limit and a number of existing single family homes that have driveways fronting onto Moon Line Road N, it is our opinion that adequate stopping sight distances are available.

2.1.2. Departure Sight Distance

To assesses scenarios where vehicles are departing from the location of the proposed driveways, 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 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 driveway onto Sideroad 20:

$$ISD = 0.278 \times 60 \times 7.5$$
$$= 125.1 \text{ m say } \mathbf{130\ m}$$

As previously mentioned, actual departure sight distances at the proposed site access have been determined through an on-site visit. The departure sight distances at the proposed site access are summarized in **Table 2.2**.

Table 2.2 – Departure Sight Distance Assessment for Left Turning Vehicles

Approach	Required	Achieved	Difference
County Road 49 & Street B			
Southbound Approach	130 m	+150 m	+20 m
Northbound Approach	130 m	+150 m	+20 m
County Road 49 & Street A			
Southbound Approach	130 m	+150 m	+20 m
Northbound Approach	130 m	+150 m	+20 m
Moon Line Road N & Street C			
Southbound Approach	95 m		
Northbound Approach	95 m		

In comparing the achieved departure sight distances of 150 m with the required departure sight distance of 130 m, there is a minimum surplus of 20 m in departure sight distance for vehicles turning left from proposed Street A and Street B onto County Road 49. As noted previously, Google Streetview is not available on Moon Line Road N; however, given the factors previously stated, it is our opinion that adequate departure sight distances are available on Moon Line Road N.