



August 25, 2023
07-23-0006

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VIA E-MAIL: hnahal@lakecitylaw.ca

Dear: Harpreet

**Re: 1607 43 Avenue
Trip Generation and Impact Analysis Letter**

The following letter outlines what Bunt believes is an appropriate trip generation and impact analysis study for the development located at 1607 43 Avenue, Vernon. The study has taken into consideration the road classification of 43rd Avenue and has reviewed the impact of a low number of trips on a road network.

We hope you find the outcome of the study satisfactory and that it will enable you to move forward with the Development. Please contact us if you have any questions.

Yours truly,
Bunt & Associates

A handwritten signature in blue ink that reads "Erin Tattie".

Erin Tattie, RSE, GradTech
Transportation Technologist

A handwritten signature in blue ink that reads "Christopher Cheng".

Christopher Cheng, P.Eng.
Principal

1. INTRODUCTION

Lake City Law, on behalf of its client 1247845 Ltd., is undertaking a 160-unit multi-family low-rise development at 1607 43rd Avenue, Vernon. Lake City Law has retained Bunt & Associates Engineering Ltd. (Bunt) to review the trip generation and the associated impacts on the current traffic network.

1.1 Scope of Work

The scope of work includes:

- Trip Generation analysis using the 11th Edition ITE Trip Generation Manual; and,
- Assessment of Impact on the road network based on road classification.

1.2 Site Context

The site is located on the north side of 43rd Avenue 80 km west of Pleasant Valley Road. The site plan is shown in **Exhibit 1.1**.

1.3 Background

This letter has been prepared to provide a “Trip Generation Letter” to support the contemplated development. **Table 1.1** summarizes the development based on the information provided by Lake City Law.

Table 1.1: Development Content

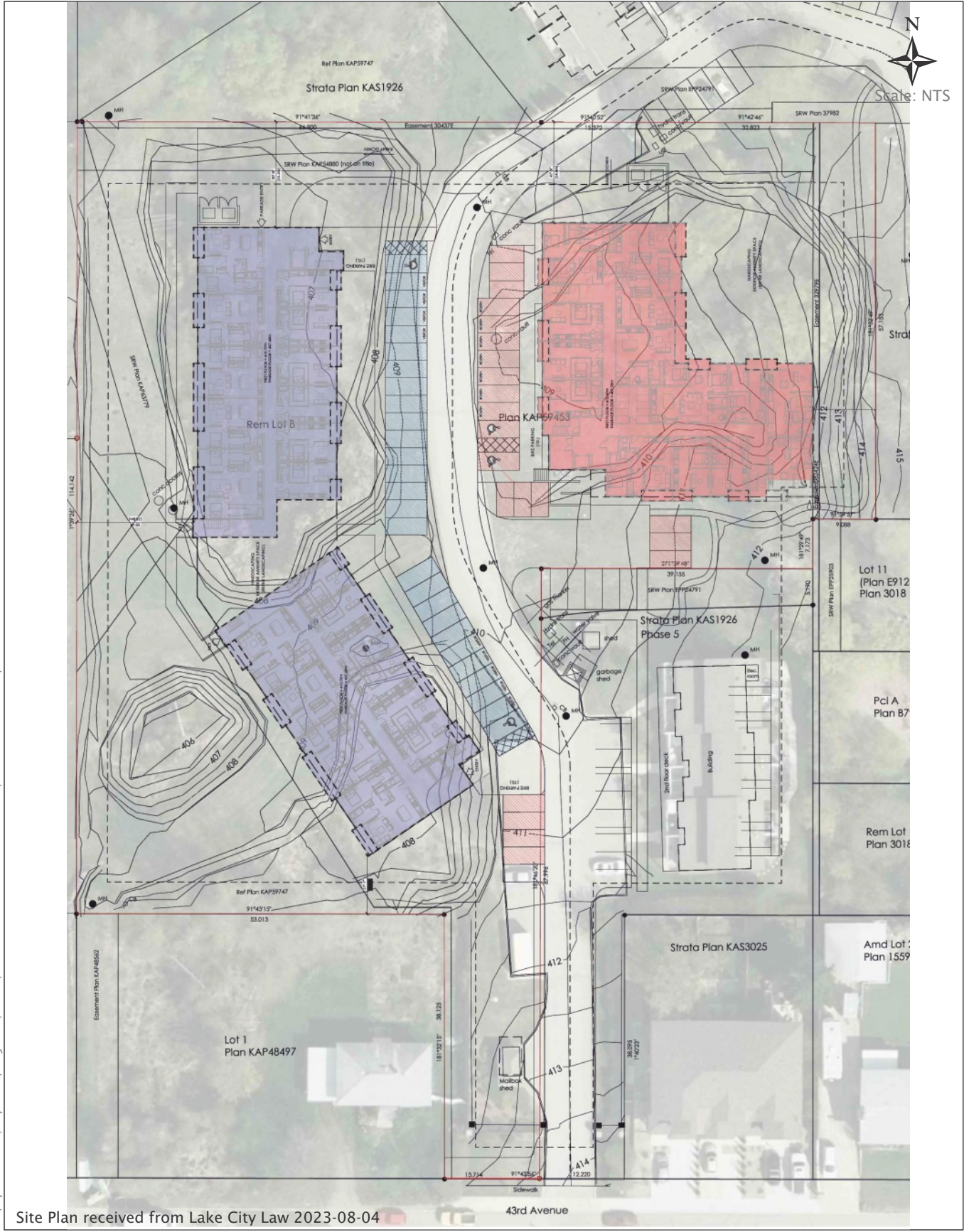
LANDUSE	QUANTITY
Multi-family residential (low-rise)	160 DU

1.4 Organization

This letter is organized as follows:

- Section 1: Introduction
- Section 2: Trip Generation
- Section 3: Impact Analysis
- Section 4: Conclusion

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Site Plan received from Lake City Law 2023-08-04

Exhibit 1.1 Site Plan

1607 43 Ave
August 2023

07-23-0006



2. TRIP GENERATION

2.1 Concept

Trip Generation is a measure of travel behaviour based on the idea people regularly travel to and from various sites with specific land uses such as residential, retail, office, etc. The location of the sites impacts the number of trips entering and exiting, particularly regarding the mode of transportation (transit, walking, cycling, and personal vehicle).

An example of trip generation is a person leaving their home to go to work. Each departure from the home is a trip and each arrival at the home is a trip. If the number of trips to and from the house are counted over a period of time, say 3 hours, then the number of trips counted over that period can establish a trip generation rate.

2.2 Calculated Trip Generation

For the purposes of this analysis, Bunt is focusing on the estimated trip generation of a 160-unit multi-family low-rise development. The ITE 11th Edition Trip Generation Manual provides an average rate for the AM and PM peak-hour periods, summarized in **Table 2.1**. The average rates are based on the ITE Trip Generation Database which includes studies conducted throughout the United States and Canada. To be conservative Bunt used the General Urban/Suburban trip rate.

Table 2.1: ITE 11th Edition Trip Generation Rates

LAND USE	LUC ¹	QUANTITY		AM			PM		
				Average Rate	% Enter	% Exit	Average Rate	% Enter	% Exit
Multi-family low-rise	220	160	DU ²	0.40	24%	76%	0.51	63%	37%

Note(s): 1 - LUC = Land use code; an identifying reference number in the ITE Trip Generation Manual
 2 - DU = Dwelling Unit

Table 2.2 summarizes the calculated trip generation using the ITE rates.

Table 2.2: ITE 11th Edition Trip Generation Rates

LAND USE	LUC ¹	QUANTITY		AM PEAK HOUR TRIPS			PM PEAK HOUR TRIPS		
				IN	OUT	TOTAL	IN	OUT	TOTAL
Multi-family low-rise	220	160	DU ²	15	49	64	52	30	82

Note(s): 1 - LUC = Land use code; an identifying reference number in the ITE Trip Generation Manual
 2 - DU = Dwelling Unit

As shown in Table 2.2, the planned development is anticipated to generate 64 trips in the AM and 82 trips in the PM peak hours.

3. IMPACT ANALYSIS

A traffic impact assessment (TIA) is used for assessing potential impacts on the surrounding transportation network from the trips generated by a proposed development. The purpose of a TIA is to indicate if or how to make the transportation network operate safely and efficiently with a design horizon of study.

3.1 Analysis Thresholds for a TIA

Typically, 100 vehicle trips or more added new trips generated in the peak hour is considered the industry thresholds for when a full Transportation Impact Assessment is required¹. A hundred vehicles per hour (vph) is a magnitude that can change the level of service of an intersection approach; and left or right-turn lanes may be needed to satisfactorily accommodate site traffic without adversely impacting through (non-site) traffic.

In the case of the proposed development as shown in Table 2.2, the trips generated by the development are anticipated to be under 100 vehicle trips in both the AM and PM peak hours. Given this, it is anticipated that the development will not generate enough trips to impact the level of service or require left or right-turn lanes.

However, there are still additional considerations to keep in mind when the proposed development generates less than 100 vehicle trips in the peak hours such as:

- A change in the type of access operation; or
- The access being relocated.

These considerations are to make sure the development access does not adversely impact the operation of the access point or the road.

Based on the site plan, shown previously in **Exhibit 1.1**, the access location and operation will remain the same as the existing conditions.

3.2 Analysis by Road Classification

3.2.1 General Road Classification

Roads are assigned different classifications such as local, collector, and arterial based on traffic volume (veh/day), design speed, right-of-way width and other characteristics. **Table 3.1**

¹ ITE (2010). *Transportation Impact Analyses for Site Development*. Chapter 2.

summarizes some of the characteristics by road classification, based on the TAC *Geometric Design Guide for Canadian Roads*.

Table 3.1: TAC Road Classification Information

	LOCALS		COLLECTORS		ARTERIALS	
	Residential	Industrial / Commercial	Residential	Industrial / Commercial	Minor	Major
Traffic Service Function	Traffic movement secondary consideration		Traffic movement and land access of equal importance		Traffic movement major	Traffic movement primary consideration
Land service / access	Land access primary function		Traffic movement and land access of equal importance		Some access control	Rigid access control
Traffic Volume (veh/day)	<1,000	<3,000	<8,000	1,000 - 12,000	5,000 - 20,000	10,000 - 30,000
Design speed (km/h)	30 - 50		50 - 80		50 -70	60 - 100
Right-of-way Width (m)	15 - 22		20 - 24		20 - 45	

3.2.2 Nearby Road Network

Bunt has applied the TAC Traffic volumes by road classification, in Table 3.1, to the surrounding road network for a high-level understanding of the existing traffic on each road. The high-level road volumes are summarized in Table 3.2.

Table 3.2: Existing Road Network Volumes

ROAD	CLASSIFICATION	TAC VOLUME
43 Avenue	Collector	<8,000
Pleasant Valley Road	Collector	<8,000
17 Street	Local	<1,000
18 Street	Local	<1,000
20 Street	Collector	<8,000

If the maximum daily volume for a collector road is assumed to follow a similar distribution of vehicles per hour as noted in the *Vehicle Time of Day Distribution* table in the *ITE Trip Generation Manual* (11th Edition), then the AM peak hour (i.e. the busiest hour between 7:00 AM and 9:00 AM) can be expected to carry approximately 12% of the day’s trips (i.e. 8,000 x 12% = 960 vehicles). For the PM peak hour (i.e. the busiest hour between 3:00 PM and 6:00 PM) would represent 23% of the daily volume and therefore can potentially carry 1,840 vehicles (i.e. 8,000 x 23% = 1,840) during the peak hour period.

Assuming the existing road network has not exceeded the TAC Volumes per road classification, the development would add 64 trips to the road network in the AM peak hour and 82 trips in the PM peak hour. The small number of trips generated would likely not impact the overall operational performance of the road network nor cause the road classification to change.

4. CONCLUSION

The site will generate less than 100 trips during the AM and PM peak hours. Therefore, it is below the generally accepted threshold of 100 or more added (new) peak direction trips and therefore will not impact the road network. Additionally, the trips will not cause the road classification to change.