

MEMO

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 PROJECT NO: 04-24-0320
 PROJECT: Pacific Nazarene Housing Society
 SUBJECT: TIA Summary

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1. INTRODUCTION

The Pacific Nazarene Housing Society is proposing to construct a mixed-use development at 1991 49 Avenue in Langley City, BC. The proposed land uses are summarized in **Table 1**.

Table 1: Proposed Land Uses

LAND USE	DENSITY
Church	906 m ²
Childcare	783 m ²
Retail	598 m ²
Residential Market Rental	302 Dwelling Units (DU)

2. TRAFFIC REVIEW

2.1 Traffic Volumes

Bunt collected traffic data in November 2024 at the study area intersections. Volumes were grown by 1% per year to determine the Opening Day + 10 Years (2037) traffic volumes.

Site trips were generated for the AM and PM peak hours using the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition*, trip rates. Trips were then adjusted to account for pass-by trips, where vehicles already on the road network detour to the site before continuing their journey. **Table 2** summarizes the net peak hour site vehicle trips by land use.

Table 2: Net Peak Hour Site Vehicle Trips

LAND USE	AM PEAK HOUR			PM PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Residential	26	86	112	72	46	118
Church	2	1	3	2	3	5
Retail	3	2	5	7	7	14
Childcare	18	14	32	14	17	31
TOTAL	49	103	152	95	73	168

As shown, the proposed development is estimated to generate 2-3 vehicle trips every minute during the peak hours, distributed over the two site accesses. The site trips are anticipated to increase the traffic at the study intersections by approximately 3-6%.

2.2 Operational Analysis Summary

Existing and Opening Day + 10 Years operations of the study area intersections were assessed using the performance measures of Level of Service (LOS) and volume-to-capacity (v/c) ratio.

The LOS rating is based on average vehicle delay and ranges from “A” to “F” based on the quality of operation at the intersection. LOS “A” represents optimal, minimal delay conditions while a LOS “F” represents an over-capacity condition with considerable congestion and/or delay. Delay is calculated in seconds and is based on the average intersection delay per vehicle.

Table 3 below summarizes the LOS thresholds for the six Levels of Service, for both signalized and unsignalized intersections.

Table 3: Intersection Level of Service Thresholds

LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)	
	SIGNALIZED	UNSIGNALIZED
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

Source: Highway Capacity Manual

The volume to capacity (V/C) ratio of an intersection represents ratio between the demand volume and the available capacity. A V/C ratio less than 0.85 indicates that there is sufficient capacity to accommodate demands and generally represents reasonable traffic conditions in suburban settings. A V/C value between 0.85 and 0.95 indicates an intersection is approaching practical capacity; a

V/C ratio over 0.95 indicates that traffic demands are close to exceeding the available capacity, resulting in saturated conditions. A V/C ratio over 1.0 indicates a very congested intersection where drivers may have to wait through several signal cycles. In downtown and Town Centre contexts, during peak demand periods, V/C ratios over 0.90 and even 1.0 are common.

Overall intersection operations for the Existing and Opening Day + 10 Years Background and Total scenarios are summarized in **Tables 4 - 6**. Note that the Opening Day + 10 Years scenarios includes the alignment of 50 Avenue across 200 Street in the background and total, and the addition of the site access at 200 Street & Grade Crescent with a northbound left turn lane in the total. All traffic signal timings have been optimized in the Opening Day + 10 Years scenarios.

Table 4: Existing Traffic Operations

INTERSECTION/ TRAFFIC CONTROL	AM			PM		
	LOS	AVERAGE DELAY (SEC)	V/C	LOS	AVERAGE DELAY (SEC)	V/C
48 Avenue & 200 Street <i>Traffic Signal</i>	B	11	0.69	B	13	0.76
200 Street & 49 Avenue <i>Minor Street Stop Control</i>	C	27	-	D	45	-
200 Street & Grade Crescent <i>Traffic Signal</i>	D	51	0.88	C	30	0.88
200 Street & 50 Avenue West <i>Traffic Signal</i>	B	19	0.67	B	15	0.74

Table 5: Opening Day + 10 Years Background Traffic Operations

INTERSECTION/ TRAFFIC CONTROL	AM			PM		
	LOS	AVERAGE DELAY (SEC)	V/C	LOS	AVERAGE DELAY (SEC)	V/C
48 Avenue & 200 Street <i>Traffic Signal</i>	B	14	0.77	B	20	0.86
200 Street & 49 Avenue <i>Minor Street Stop Control</i>	D	45	-	E	68	-
200 Street & Grade Crescent <i>Traffic Signal</i>	B	21	0.84	B	20	0.86
200 Street & 50 Avenue <i>Traffic Signal</i>	C	25	0.84	C	26	0.89

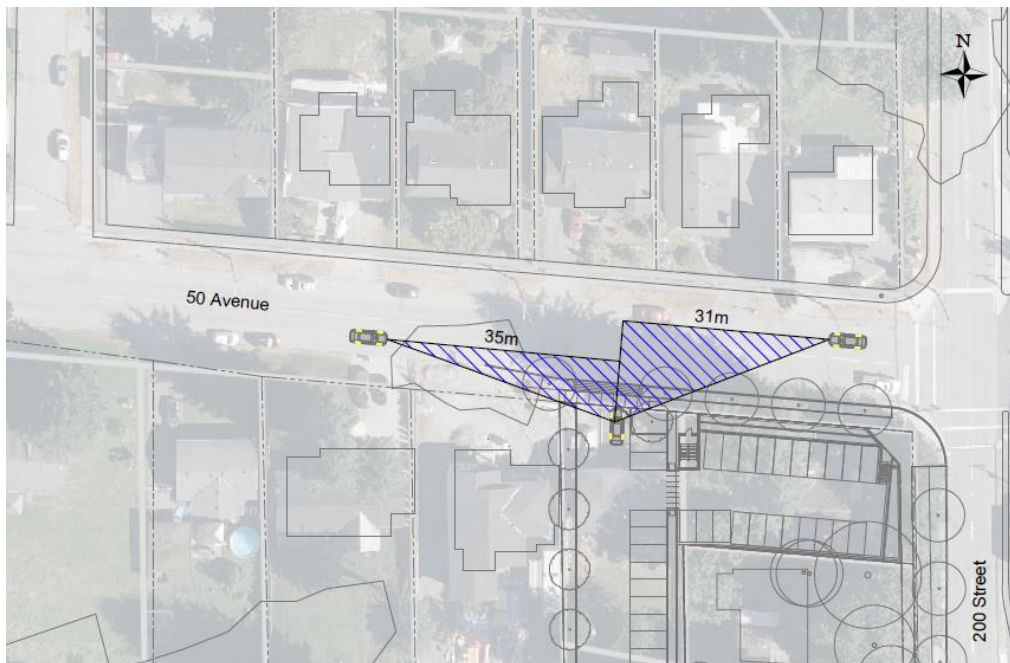
Table 6: Opening Day + 10 Years Total Traffic Operations

INTERSECTION/ TRAFFIC CONTROL	AM			PM		
	LOS	AVERAGE DELAY (SEC)	V/C	LOS	AVERAGE DELAY (SEC)	V/C
48 Avenue & 200 Street <i>Traffic Signal</i>	B	16	0.80	B	18	0.85
200 Street & 49 Avenue <i>Minor Street Stop Control</i>	D	45	-	E	68	-
200 Street & Grade Crescent <i>Traffic Signal</i>	C	27	0.83	B	31	0.82
200 Street & 50 Avenue <i>Traffic Signal</i>	C	30	0.92	C	30	0.92

3. SIGHT DISTANCE

Sightlines for the Stopping Sight Distance were reviewed at the 50 Avenue site access.

Stopping Sight Distance (SSD) is the minimum distance a driver of a vehicle on the road needs to stop before a collision. **Figure 2** illustrates the minimum sight distance and sight triangles for the 50 Avenue access.

Figure 2: 50 Avenue Access Sight Distance

Within the illustrated sight triangles, vegetation should be of a narrow width and/or limited to approximately 1.1 metres high. However, site visits confirmed that the sight distance to the west exceed the minimum 35 metres illustrated. Should the site access be converted to a right-in, right-out access in the future, it would not significantly affect vehicle operations.