

August 28, 2014
4782-05

Oliver Webbe
President, DARWIN Properties (Canada) Ltd.
220-18 Gostick Place
North Vancouver, BC V7M 3G3

Dear Oliver:

**Re: The Residences on Mathers, West Vancouver, BC
Final Letter Report**

Bunt & Associates (Bunt) has completed a Transportation Assessment for the proposed 17-unit residential development at 370 & 380 Mathers Avenue in West Vancouver, BC. The study has covered changes with the development in respect to vehicle movements and parking activity, specifically in the context of the current use of the church, pre-school and daycare as well as the future use as residential. It has also considered specific design features proposed and how servicing and emergency vehicles are accommodated on-site.

We found that future development traffic will have a nominal impact on traffic on weekdays but on Sundays will be significantly less. Parking for the development plan will be fully contained on the site and hence parking on-street currently associated with the church will be removed. The internal layout will be able to accommodate the needs of the development for servicing and emergency vehicles.

Overall, our view is that the development will have a positive benefit to the area and is consistent with neighbouring forms of development.

Sincerely,
Bunt & Associates

A handwritten signature in black ink, appearing to read "Tyler Thomson".

Tyler Thomson, M.Urb, PTP
Transportation Planner

A handwritten signature in black ink, appearing to read "Paul Dorby".

Paul Dorby, M.Sc
Senior Transportation Planner

1. INTRODUCTION

1.1 Our Understanding

Bunt was engaged by Darwin Properties (Canada) Ltd. to conduct a transportation review for the proposed redevelopment of 370 and 380 Mathers Avenue in West Vancouver, BC into a 17-unit mixed residential (single-family detached and duplex) development called Hugo Ray Townhomes. The proposed development will consolidate a single-family residential lot and the North Shore Unitarian Church (which includes a daycare and preschool) to provide 17 residential housing units.

This change in land use from institutional (church, daycare, and a preschool) to residential has the potential to change the nature of existing vehicle patterns in the local area.

The site is proposed to be accessed from two locations, the primary access is in the proximity of the existing North Shore Unitarian Church driveway at 370 Mathers Avenue, while the existing single-family home access to 380 Mathers Avenue will be maintained as an access for one of the homes, and access to the church lot from Lawson Avenue is proposed to be closed off. The layout of the development has been formed to take special consideration of existing trees and landscaping much of which will be retained on site.

While the development plan is modest in scale, it is important that the development's effect on parking and vehicle operations in the local neighbourhood is clearly articulated within the existing context. In addition, it will be important to consider the nature of surrounding land uses such as the churches, a park and playing fields, a municipal cemetery, and other dwellings in the area to address concerns in the community.

As well, the site plan's layout is addressed for servicing requirements for the appropriate types of design vehicles, which needs to be clearly demonstrated to the District of West Vancouver. Due to the proximity of the development site to Hwy 99, the Ministry of Transportation and Infrastructure (MoTI) may need to be consulted.

1.2 Further Background

The site was previously proposed to be developed with 40 townhouse units (Elliot Court Residential Development) for which a traffic study was prepared by BWW Consulting. The plan was not progressed due to design concerns. The current proposal for 17-units has been scaled back from the previous Hugo Ray Townhome development proposal (February 2013) of 19-units and the original Hugo Ray Townhome development proposal (July 2012) which called for 24-units.

Bunt conducted traffic studies for planned improvements to playing field facilities at Hugo Ray Park in 2006 and 2007. These improvements have not been realized due to community concerns, regarding increased traffic and parking demands that could have resulted. We also understand that there have been legal actions taken which have contributed to halting this project.

The report has given reference to these previous studies to provide contextual information on existing traffic and parking issues that may exist and neighbourhood concerns more generally in the local area.

1.3 Report Layout

Based on our proposed scope of work for this project and further developments regarding our understanding of the project background, the report will proceed with the following sections:

- Section 2 – Existing Conditions;
- Section 3 – Development Proposal;
- Section 4 – Operational Assessment;
- Section 5 – Conclusions

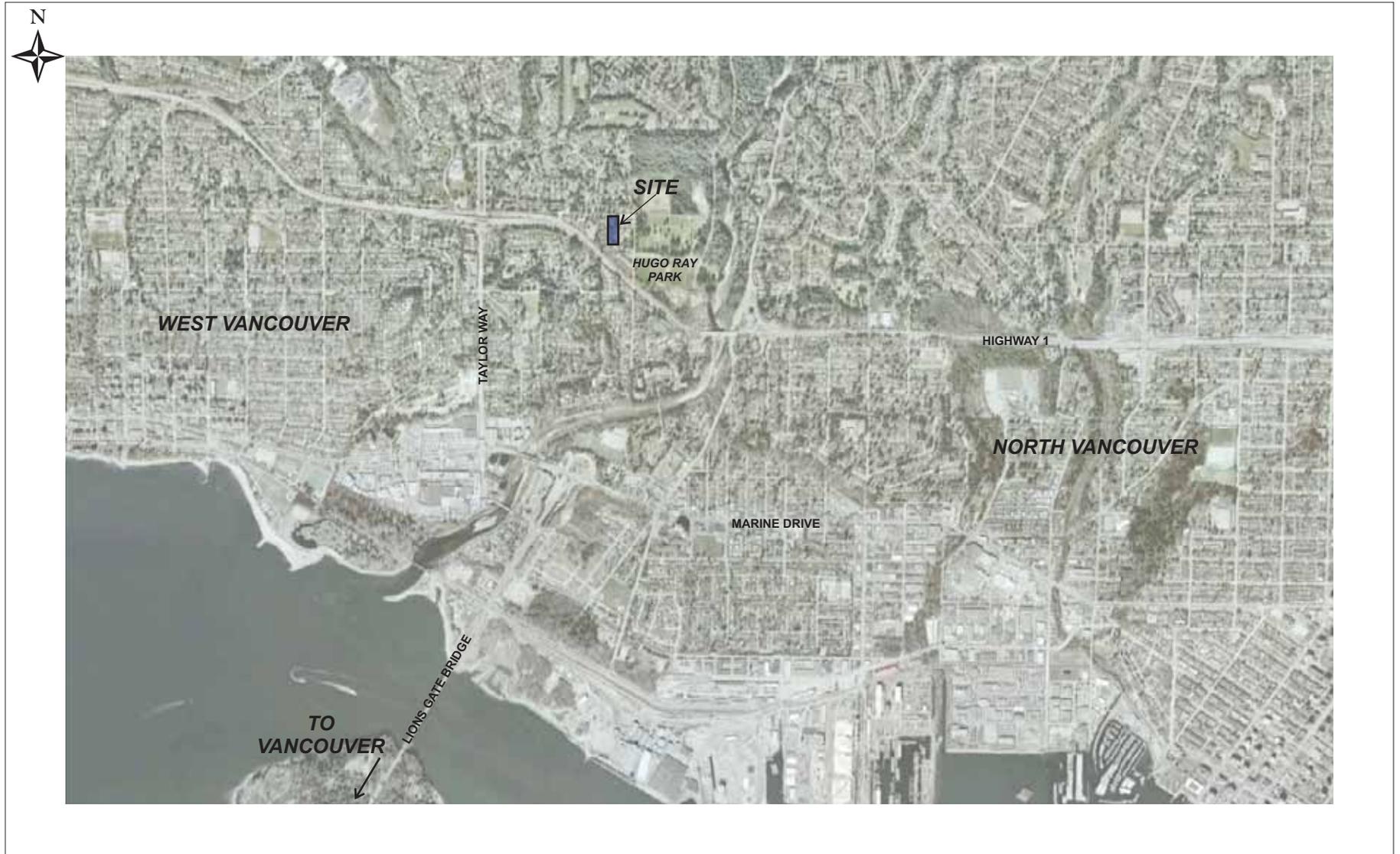


Exhibit 1.1 Site Location

2. EXISTING CONDITIONS

Existing conditions for the study area were documented during site visits on Wednesday June 13th (weekday PM traffic and parking counts), Thursday June 14th (weekday AM traffic and parking counts), and Sunday June 17th, 2012 (traffic counts for before and after church service, and parking counts during church service). This included weekday AM, PM and Sunday peak period traffic counts at the intersection of Hadden Drive and Mathers Avenue, and parking demand counts at the North Shore Unitarian Church and on the surrounding street network.

The following describes the existing study area conditions and summarizes the existing operational vehicle conditions at Hadden Drive and Mathers Avenue as well as other general transportation related observations such as parking around the proposed site.

2.1 Study Area

The proposed site is located at 370 and 380 Mathers Avenue, in West Vancouver, BC as shown in the context of the surrounding study area at **Exhibit 2.1**. 370 Mathers is currently occupied by the North Shore Unitarian Church.

Hadden Drive is a two-lane collector street with some on-street parking and provides access between Mathers Avenue and Highway 1 westbound off-ramp (for Taylor Way), Taylor Way to the south, and Stevens Drive and the British Properties to the north. The posted speed limit is 50km/h.

Mathers Avenue is a two-lane local street with some on-street parking (no-parking on Sundays) and provides access to the proposed site as well as to residences, churches (West Vancouver Baptist Church, North Shore Unitarian Church, and Kingdom Hall of the Jehovah's Witnesses), Capilano Cemetery, and Hugo Ray Park (via 3rd St) in the study area. Mathers is a no exit route to the east (cul-de-sac at south end of 3rd Street) and has a posted speed limit of 50km/h.

The intersection of Hadden Drive and Mathers Avenue is un-signalized and controlled by stop control on the minor approach (i.e. Mathers Avenue). Mathers Avenue's intersection with Hadden Drive is located close to the off-ramp from Hwy 1. The posted speed limit is 50 km/h.

2.2 Existing Site

The existing site is occupied by a single-family home (the driveway of which will be maintained as an access for one of the homes) at 380 Mathers, and the North Shore Unitarian Church at 370 Mathers. The church operates its Regular Session from the end of September to the beginning of June, which typically draws about 175 to 185 people, while the Summer Session (June – September) is less busy and draws about 50 to 70 people. Church service is on Sunday from 10:30 to 11:30 and is normally the busiest time of operation.

About two-thirds of North Shore Unitarian Church members are from North Vancouver and the remaining one-third of its members live in West Vancouver. There are also a few members and friends from outlying communities in the region.

The church is also quite active Monday through Friday (mostly in the evenings) as it operates as a daycare (Kuddles Early Infant Stimulation Centre) and a preschool (Chelsea House Preschool), in addition to holding regular choir rehearsals, committee meetings, and meditations. The church also occasionally holds concerts, weddings, memorial services and funerals.

The church driveway, which is planned as the primary site access, has good sightlines to the east, but partially restricted to the west due to low shrubbery.



Exhibit 2.1 Study Area

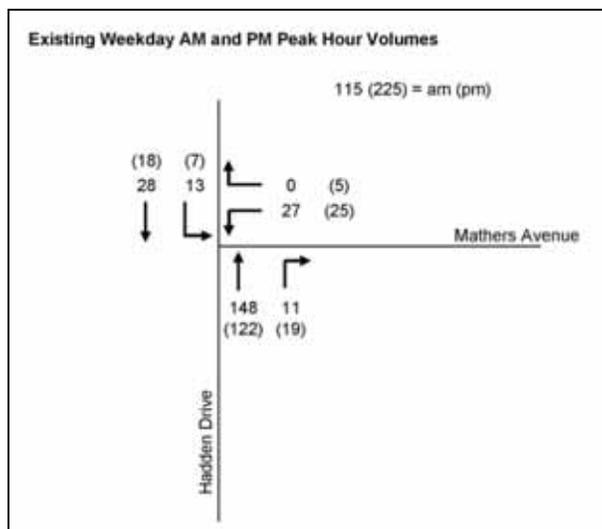
2.3 Existing Traffic Conditions

The following describes the existing traffic conditions for weekday AM and PM peak hours as well as for the Sunday peak period (to account for the busiest use of Mathers Avenue). It also describes existing parking demands both on-street in the study area and on the existing church site.

2.3.1 Observed Vehicle Movements

AM and PM peak period traffic conditions were recorded on a typical weekday and the peak hours were observed to be 7:45am to 8:45am and 3:30pm to 4:30pm. During these periods, there were no sports activities (Hugo Ray Park), funeral (Capilano View Cemetery) or church services taking place. **Figure 2.1** highlights the existing peak hour vehicle movements.

Figure 2.1: Existing Weekday Peak Hour Vehicle movements – Hadden Drive and Mathers Avenue



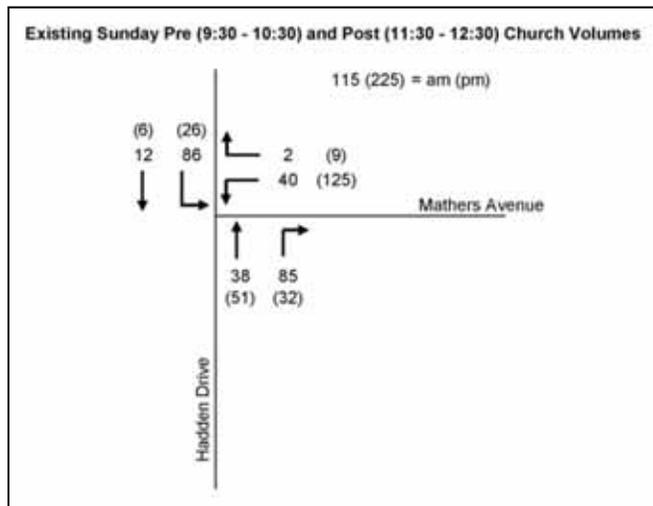
The main flow of vehicle movement during the weekday AM and PM peak-hour is in the northbound direction (entering the British Properties). The number of vehicles travelling on Mathers Avenue is similar for both the weekday am and pm peak-hours at approximately **50 – 55 vehicles** (or less than 1-vehicle per minute).

Vehicle volumes are typical for a local residential street even with the multiple land uses nearby (i.e. churches, cemetery, playing fields).

On the Sunday, observations were made both before and after the church service for the North Shore Unitarian Church, which takes place from 10:30am – 11:30am (i.e. 9:30am – 10:30am; and 11:30am – 12:30am). Vehicle volumes are presented at **Figure 2.2**.

Over the period when the church services were taking place at West Van Baptist Church (10:00am – 11:00am), North Shore Unitarian Church, and Kingdom Hall of Jehovah’s Witness (10:00am – 11:00am), no sports activities (Hugo Ray Park), or funeral services (Capilano View Cemetery) were taking place.

Figure 2.2: Existing Sunday Peak Hour Vehicle movements – Hadden Drive and Mathers Avenue



The main flow of vehicles on a Sunday during the pre-church period is entering Mathers Avenue from Hadden Drive and during the post-church period is exiting Mathers with 2-way volumes at approximately **200 vehicles**. This is consistent with the expected vehicle patterns for Mathers on a Sunday with multiple church services taking place on a Sunday morning. With the Unitarian Church operating its summer schedule, it is expected that these flows are higher during the winter months given attendance increases from 50/70 to 175/185 people.

The vehicle volumes observed during all study periods (AM, PM and Sunday) are typical flows for residential streets. The Transportation Association of Canada (TAC) outlines in its guidelines that typical vehicle flows for a local residential street are in the range of 1,000 – 2,000 vehicles per day and this typical equates to 100 to 200 vehicles in the peak-hour.

2.3.2 Vehicle Operations

Vehicle operations at the intersection of Hadden Drive and Mathers Avenue were analyzed for the observed vehicle movements using Trafficware’s Synchro/Simtraffic 8.0 traffic analysis software. This software uses standard industry procedures to establish delay-based traffic Level of Service (LOS) for intersections.

For un-signalized intersections, the Level of Service ranging from LOS ‘A’ conditions with minimal delay (< 10 sec per vehicle) through to LOS ‘E’ ‘near capacity’ conditions (> 35 sec to ≤ 50 sec per

vehicle) and LOS 'F' 'over-saturated' conditions (> 50 sec per vehicle). The results of the Synchro analysis are highlighted in **Table 2.1**.

Table 2.1: Existing Peak Hour Traffic Operations – Hadden Drive & Mathers Avenue

Critical Approach	AM		PM		Sunday (Pre-Church)		Sunday (Post-Church)	
	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
Westbound	10	B	9.6	A	10.8	B	10.1	B
Southbound	2.5	A	2.1	A	6.8	A	6.1	A

Note – There are no operational results for northbound vehicles as there are no control delays for this approach.

No operational issues were observed for the existing weekday AM and PM, and Sunday peak-hour conditions at the Hadden Drive and Mathers Avenue intersection. The Sunday pre- and post-church peak hours (9:30am – 10:30am; and 11:30am – 12:30pm) experience slightly longer control delays due to the increased turning movements to/from Mathers Avenue, but delays are still considered minor.

2.3.3 Observed Parking Demand

Existing on-street and on-site (North Shore Unitarian Church) parking demand spot counts were conducted during the weekday AM and PM, and Sunday (10:30am – 11:30am during church service) peak periods. Parking is generally unrestricted on Hadden Drive and Mathers Avenue, except for 'no parking' on Sundays. 3rd Street has no parking restrictions on the west side and parking is not allowed on the east side for most sections. Observed parking demands and on-street parking restrictions are illustrated at **Exhibit 2.2**.

Of note, there were around 5 to 7 vehicles parked in the North Shore Unitarian Church parking lot during the weekday AM and PM peak hours. These vehicles are likely associated with pick-up and drop-off for the daycare and preschool. On Sunday the church lot was full (62 vehicles) and there were vehicles parked on the driveway. Also, on Mathers Avenue there were only a few vehicles parked during the AM and PM periods and approximately 13 vehicles on the Sunday.

Overall, parking on-street and on-site is not an issue during the weekday peak periods, however, during Sunday peak periods, parking on-site is full (and over-flowing onto the driveway) even during a summer session, while parking on Mathers Avenue, 3rd Street, and Lawson Avenue is more noticeable.



Exhibit 2.2 Parking Demand

3. DEVELOPMENT PROPOSAL

3.1 Development Content

The development proposal for Hugo Ray Townhomes calls for 17 residential units on just over 2-acres of land with a Floor Area Ratio (FAR) of 0.36. The proposal is more modest in scale compared to previous development plans for the site and is consistent with similar development forms nearby like Mathers Mews and Esker Lane.

A detailed breakdown of units by type and area is shown at **Table 3.1**. The development site plan is highlighted at **Exhibit 3.1**.

Table 3.1: Development Content

Unit Type	Units	Unit Area (ft ²)	Total Area (ft ²)
A/A1 (Detached)	5	2,126	10,630
B (Detached)	3	2,106	6,318
C (Detached)	1	2,475	2,475
D (Duplex)	8	1,834	14,672
Total	17	-	34,095

The development is linear with two rows of homes with a mews down the centre, with single family-homes concentrated towards the middle and north of the site and duplexes to the south. There is a concentration of existing trees and greenery, which will be retained at the north end of the site, and will maintain the existing character and interaction with the street frontage on Mathers Avenue.

The development plan will help facilitate the transition of the neighbourhood to a more residential character. Vehicle patterns in the area with this development are expected to become more “typical” with its peak traffic occurring during the weekday morning and afternoon peak periods.



Exhibit 3.1 Development Plan

3.2 Site Layout Review

The proposed site plan layout has been reviewed to ensure that service and emergency vehicles are able to access the site and can maneuver safely and efficiently within the site. The primary site access will be in the same proximity as the existing driveway for the North Shore Unitarian Church and the centre mews within the site will be two-way. This access will have less intensity of use at peak times compared to existing operations and the shrubbery to the west will be trimmed to improve visibility. There will also be a secondary access at the location of the existing single-family home driveway which will provide access to a single home at the northwest of the site.

The existing connection to Lawson Avenue will be closed to contain site traffic to two accesses on Mathers Avenue, but will remain as an emergency access connection.

All units, except for the northwest unit will be accessed via the centre mews. A vehicle turnaround area will be located on the east side near the lower-mid section of the site (in line with Lawson Avenue) and which will be used mainly by large vehicles as a hammerhead turnaround to exit the site. This will also act as an emergency access that connects to Lawson Avenue for fire trucks exiting the site, which is done by removing bollards.

Service and emergency vehicles would access the site and drive down the centre mews to their destination and then reverse to the vehicle turnaround on the east side of the site to perform a three-point turn in order to exit the site. Fire trucks would exit the site via the emergency access to Lawson Avenue.

The following vehicles were used to assess truck turning paths on-site:

- SU9 – 9m Single unit commercial truck;
- HSU – 11.5m Single unit commercial truck; and,
- Fire Truck – West Vancouver ladder truck (custom design)

Truck turning paths were developed to illustrate how these vehicles would access the site and maneuver on-site and are included at **Appendix A**.

Overall, the site layout is efficient to accommodate expected service and emergency vehicles, while minimizing the amount of paved surface and maximizing green space. There are no operational concerns in terms of service or emergency vehicle access to the site or within the site.

3.3 Parking & Loading

3.3.1 Parking Requirements

The District of West Vancouver requires a minimum of 1 off-street parking space per single-family and duplex dwelling for this area. There is no requirement for providing visitor parking. Therefore, with 17 residential units proposed (both single-family and duplexes) the development would be required to provide a minimum of 17 off-street parking spaces.

The development is proposing to provide resident parking on-site with each unit having its own two-car garage, as well as room for 2 vehicles on each driveway. Visitors would be accommodated on driveways (18-20 feet in length) or garages of each residence or in one of the proposed visitor parking areas located at the north and south ends of the site (2 visitor stalls at the north, 2 visitor stalls near the center and 1 visitor stall at the south for a total of 5 stalls).

3.3.2 Loading Requirements

The District of West Vancouver does not have off-street loading requirements for single-family or duplex residential developments. Therefore, no loading stalls are planned on-site.

The site layout has been designed to accommodate service (i.e. delivery trucks) and emergency vehicles on-site even though they won't be required to have loading stalls.

4. OPERATIONAL ASSESSMENT

Future background and total traffic (background plus development vehicle movements) conditions were analyzed for the weekday AM and PM peak hours for the Opening Day 2016 and 5-Year Horizon (2021) scenarios. The Sunday peak-period was not analyzed for future scenarios as this will not be relevant for the development site traffic.

4.1 Future Background Traffic Conditions

Future background traffic is traffic that would be present in the future if the proposed development did not proceed. This component of traffic was estimated with assuming a 1% annual growth rate applied against existing peak hourly volumes (which is considered conservative given the little amount of development in the area). Background 2016 (2 years of growth for anticipated Opening Day) and Background 2021 (5-year Horizon) scenarios were considered for the purposes of this analysis.

Figures 4.1 and 4.2 illustrate the Background 2016, and Background 2021 weekday peak hour vehicle movements, respectively, at the intersection of Hadden Drive and Mathers Avenue.

Figure 4.1: Background 2016 Weekday Peak Hour Vehicle Movements – Hadden Drive/Mathers Avenue

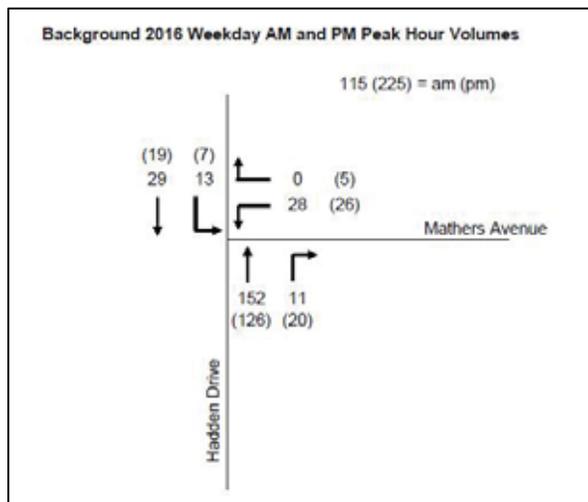
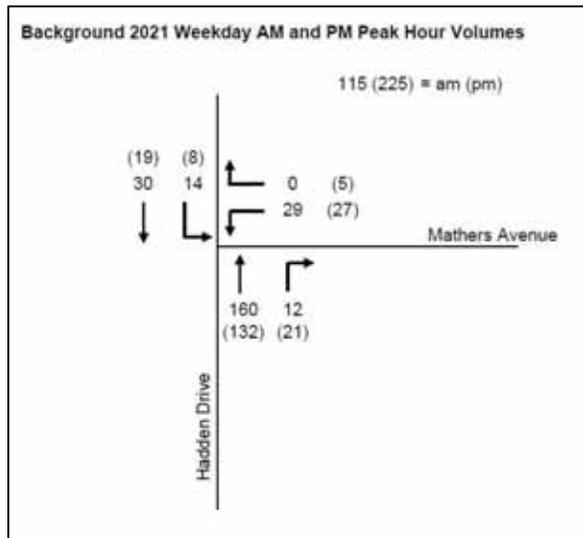


Figure 4.2: Background 2021 Weekday Peak Hour Vehicle Movements – Hadden Drive/Mathers Avenue



Due to the relatively low existing volumes at the intersection today, background traffic growth is expected to be relatively unchanged from existing volumes.

Operational assessment was undertaken using Synchro software. **Table 4.1** summarizes the traffic analysis results for the 2016 and 2021 future weekday background peak hour traffic operations at the intersection of Hadden Drive and Mathers Avenue.

Table 4.1: Future Background Weekday Peak Hour Traffic Operations – Hadden Drive/Mathers Avenue

Critical Movement	Background 2016				Background 2021			
	AM		PM		AM		PM	
	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
Westbound	10	B	9.6	A	10.1	B	9.7	A
Southbound	2.4	A	2.1	A	2.5	A	2.3	A

No operational issues were identified in 2016 and 2021 for the weekday AM and PM peak hours at Hadden Drive and Mathers Avenue. Delay on the westbound approach is slightly higher than for the southbound approach due to the presence of the stop control, but is still considered nominal.

4.2 Development Site Movements

To evaluate the impact of the traffic generated by the site, vehicle movements were estimated for the weekday AM and PM peak hours. The site traffic generation for the proposed development was estimated based on the ITE trip rate for Single-Family Detached Housing (210) from the 8th edition of the ITE Trip Generation Manual. Even though the development consists mainly of duplexes, the development is expected to be high end and in a somewhat remote location so this rate was considered appropriate.

The trip generation rates and resulting site-generated vehicle movements are detailed in **Tables 4.2**, and **4.3**, respectively.

Table 4.2: Trip Generation Rates

Land-Use	Variable	Source	AM			PM		
			In	Out	Total	In	Out	Total
Single-Family Residential	Per Unit	ITE (210) Single-Family Detached Housing	0.19	0.56	0.75	0.64	0.37	1.01

Table 4.3: Estimated Peak Hour Traffic Generation

Development Component	# of Units	AM			PM		
		In	Out	Total	In	Out	Total
Single-Family Detached	9	2	5	7	6	3	9
Duplex	8	2	4	6	5	3	8
<i>Total</i>	<i>17</i>	<i>4</i>	<i>9</i>	<i>13</i>	<i>11</i>	<i>6</i>	<i>17</i>

As noted in the above table, the development site is expected to generate about 13 vehicles per hour during the AM peak hour and about 17 vehicles per hour in the PM peak hour. These levels equate to 1 vehicle every 3 to 4 minutes and would be significantly less outside these periods.

4.3 Trip Distribution

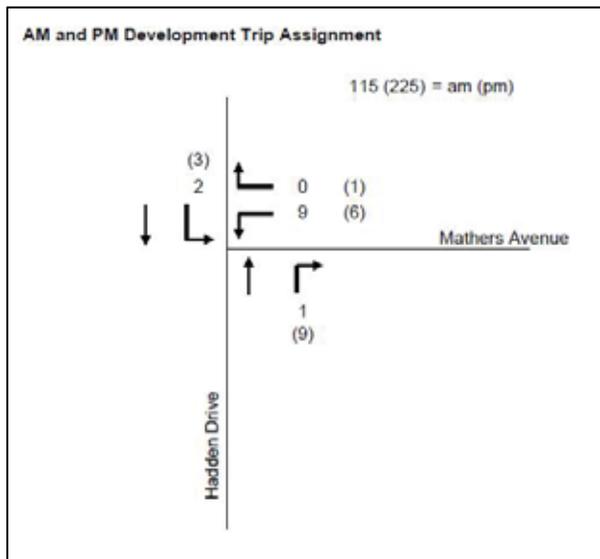
Trip distribution for site traffic was based on the observed vehicle movement patterns at Hadden Drive and Mathers Avenue. **Table 4.4** summarizes the assumed traffic distributions for the peak hours.

Table 4.4: Trip Distribution

Origin/Destination	Distribution (%)			
	Entering Mathers		Exiting Mathers	
	AM	PM	AM	PM
North of Site	55%	25%	5%	15%
South of Site	45%	75%	95%	85%
Total	100%	100%	100%	100%

Development traffic was therefore assigned to the road network accordingly, as shown in **Figure 4.3**.

Figure 4.3: Peak Hour Development Trip Assignment



4.4 Total Future Traffic Conditions

Total future traffic conditions were developed for the Opening Day 2016 and 5-Year Horizon 2021 by combining future background vehicle movements with development site generated vehicle movements. **Figures 4.4** and **4.5** illustrate total future weekday peak hour vehicle movements at the intersection of Hadden Drive and Mathers Avenue for these scenarios.

Figure 4.4: Opening Day 2016 Total Vehicle Movements

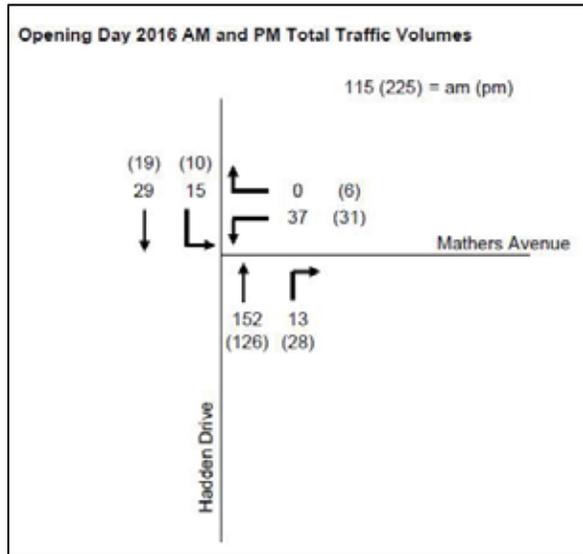


Figure 4.5: 5-Year Horizon 2021 Total Vehicle Movements

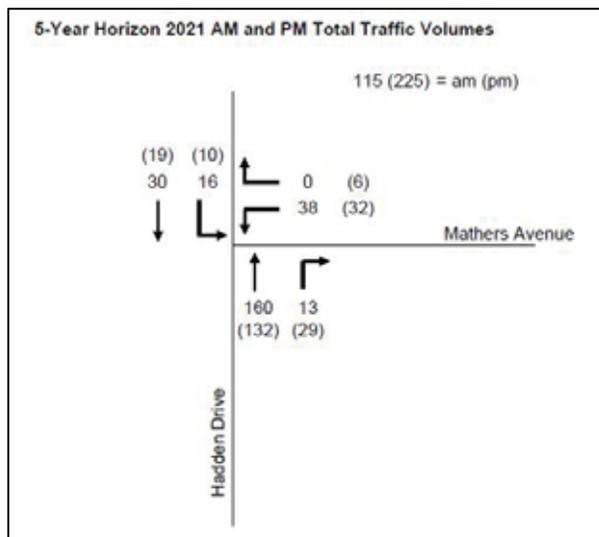


Table 4.7 summarizes the Synchro traffic analysis results for the Opening Day 2016 and 5-Year Horizon 2021 future weekday peak hour traffic operations at Hadden Drive and Mathers Avenue.

Table 4.7: Future Total Weekday Peak Hour Traffic Operations – Hadden Drive/Mathers Avenue

Critical Movement	Opening Day 2016				5-Year Horizon 2021			
	AM		PM		AM		PM	
	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS	Delay (s)	LOS
Westbound	10.1	B	9.7	A	10.2	B	9.8	A
Southbound	2.7	A	2.6	A	2.7	A	2.7	A

The intersection of Hadden Drive and Mathers Avenue is expected to operate well in the future. Further, due to the moderate development vehicle movements being considered there is no material difference between the average vehicle delays at the intersections for existing and future conditions.

4.5 Future Operations on a Sunday

One of the key factors of this development is that peak vehicle movements for the site will not occur on a Sunday as with the existing church, but rather during the AM and PM peak periods which is consistent with other residential developments.

Our surveys indicated that there are approximately 60 vehicles parked at the church on Sunday and 10-15 vehicles on the street which could be considered church-related. This would equate to approximately 75 vehicle movements during the Sunday peak-hour which would be removed with the development plan.

Further, during regular church sessions outside of summer (see Section 2); vehicle movements are higher, which would mean an even greater reduction in traffic on a Sunday in the future with the development plan. Overall, there will be a reduction in vehicle movements generated by the development in the future. Further, street parking associated with the church would be removed as all parking would be contained on-site.

5. CONCLUSIONS

Bunt was engaged by Darwin Properties to conduct a transportation review for the proposed Hugo Ray Townhome development at 370 and 380 Mathers Avenue in West Vancouver, BC. The proposal is for the consolidation of a single-family residential lot and the North Shore Unitarian Church (which includes a daycare and preschool) to allow for 17 residential housing units (a mix of single family detached and duplex).

Site access is planned in the proximity of the existing church access (primary access) as well as the access for the existing residential property at 380 Mathers Avenue (access for a single home). Sightlines at Mathers Avenue will be improved with the removal of low-lying shrubbery to the west of the planned primary access. The internal street will operate as a mews and has been designed to efficiently accommodate service and emergency vehicles on-site. The design minimizes the amount of pavement surface and maximizes the retention of existing trees.

Current peak vehicle movements around the site (i.e. Hadden Drive and Mathers Avenue) are busiest during Sunday mornings between 9am and 12pm, when all three churches in the neighbourhood are active (with overlapping services). There is also the potential for sporting activities at Hugo Ray Park and funeral services at Capilano View Cemetery at the same time.

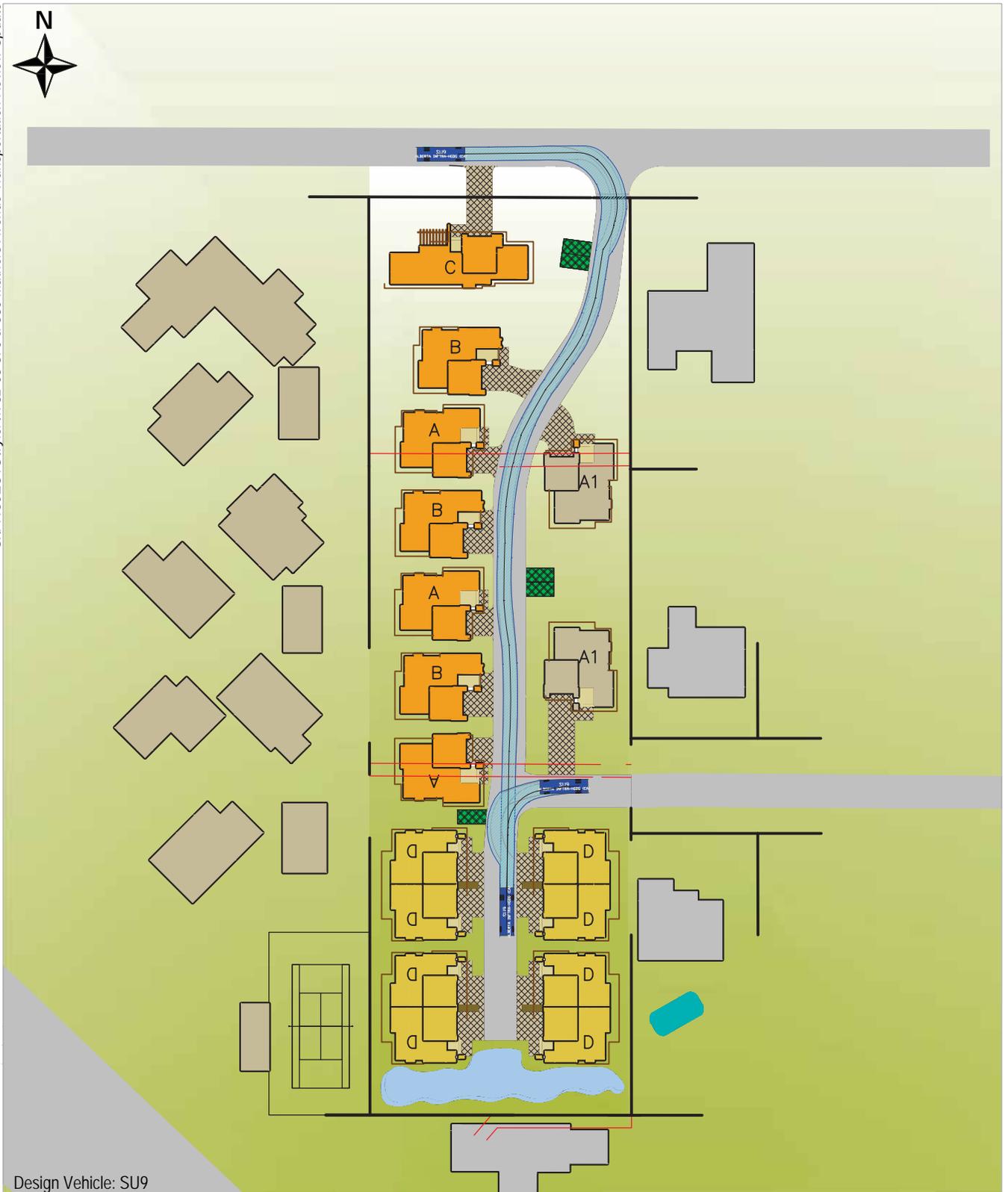
The observed peak vehicle movements for Mathers Avenue was around 200 vehicles per hour on a Sunday morning, while on the weekday the peak-hour movements were significantly lower at around 50 / 55 movements (AM / PM).

Expected new vehicle movements with the development plan are projected at around 13 in the weekday AM peak hour and 17 in the weekday PM peak hour. These equate to 1 vehicle every 3 to 4 minutes. The site currently generates little activity with the existing operations (e.g. pre-school, day-care, etc.) and thus the increase during weekdays is expected to be modest. Further, on Sundays about 70 vehicles in the summer months will be removed and this reduction will be higher in the winter period, with the increased activity at the church.

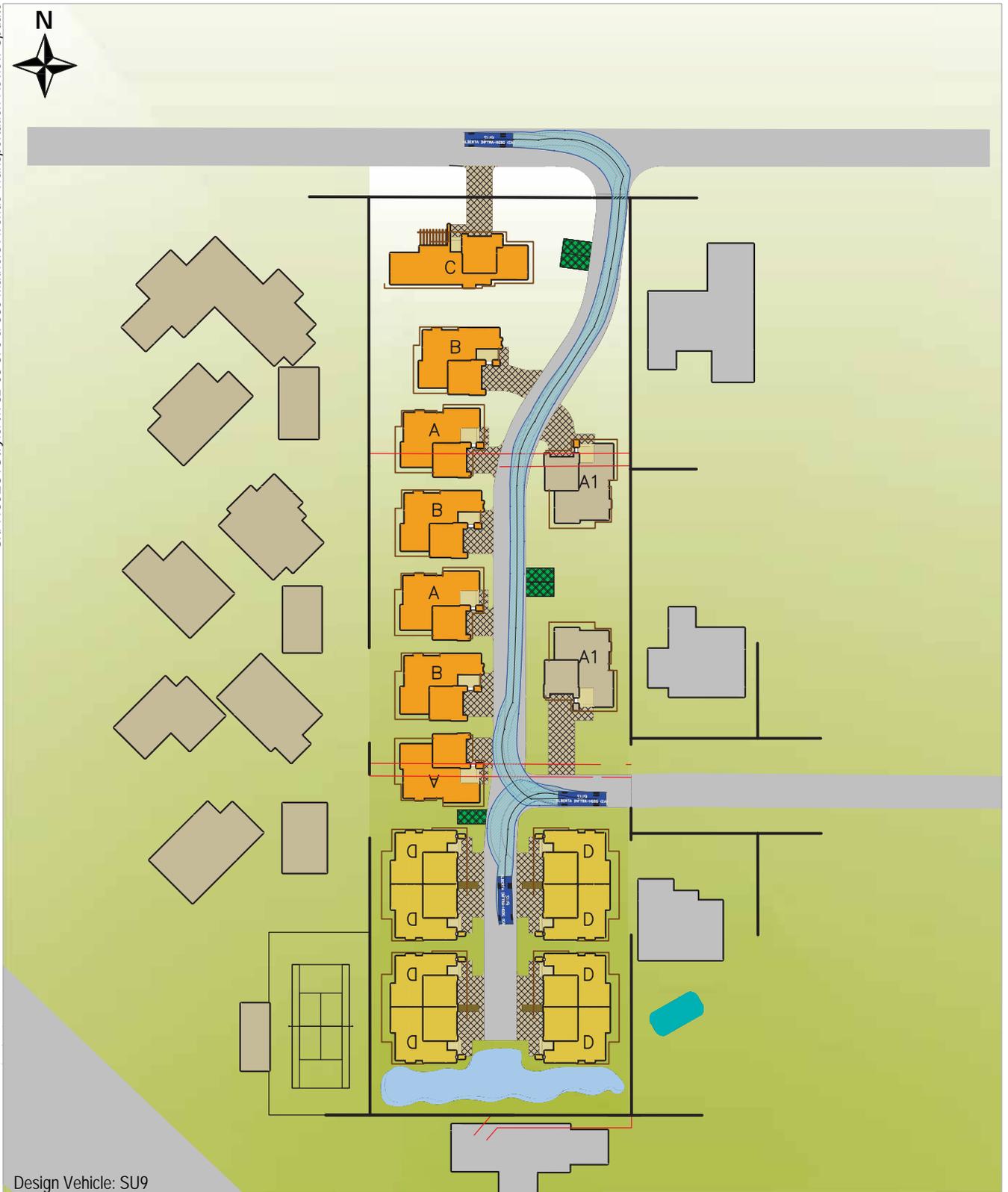
Operational performance at the intersection of Hadden Drive and Mathers Avenue was satisfactory with minimal delays given the low volume on Hadden Drive (even on the Sunday). Operational performance during the weekday AM and PM peak hours is very good with minimal delays for both existing and future scenarios.

Parking for the development will comply with the bylaw requirements and, in addition, visitor parking will be provided (which is not required in the bylaw). On-street parking on Mathers Avenue on Sunday was around 13 vehicles parked and this will be removed with the development plan.

Overall, the development can be accommodated with the layout proposed and will have a nominal effect on the street environment on weekdays, and a significantly reduced impact on Sundays.



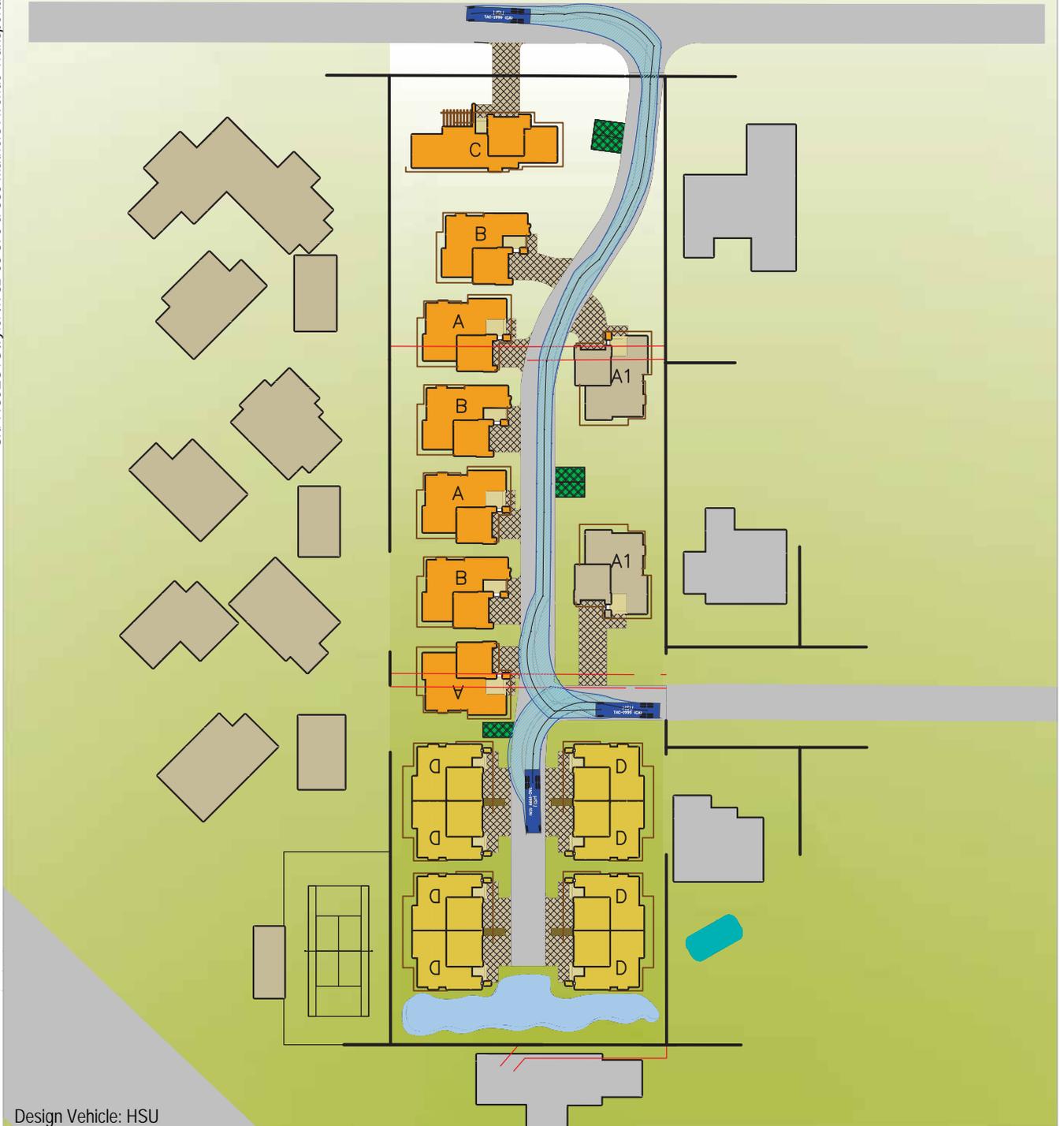
Appendix A 1.1 SU9 Entering Site



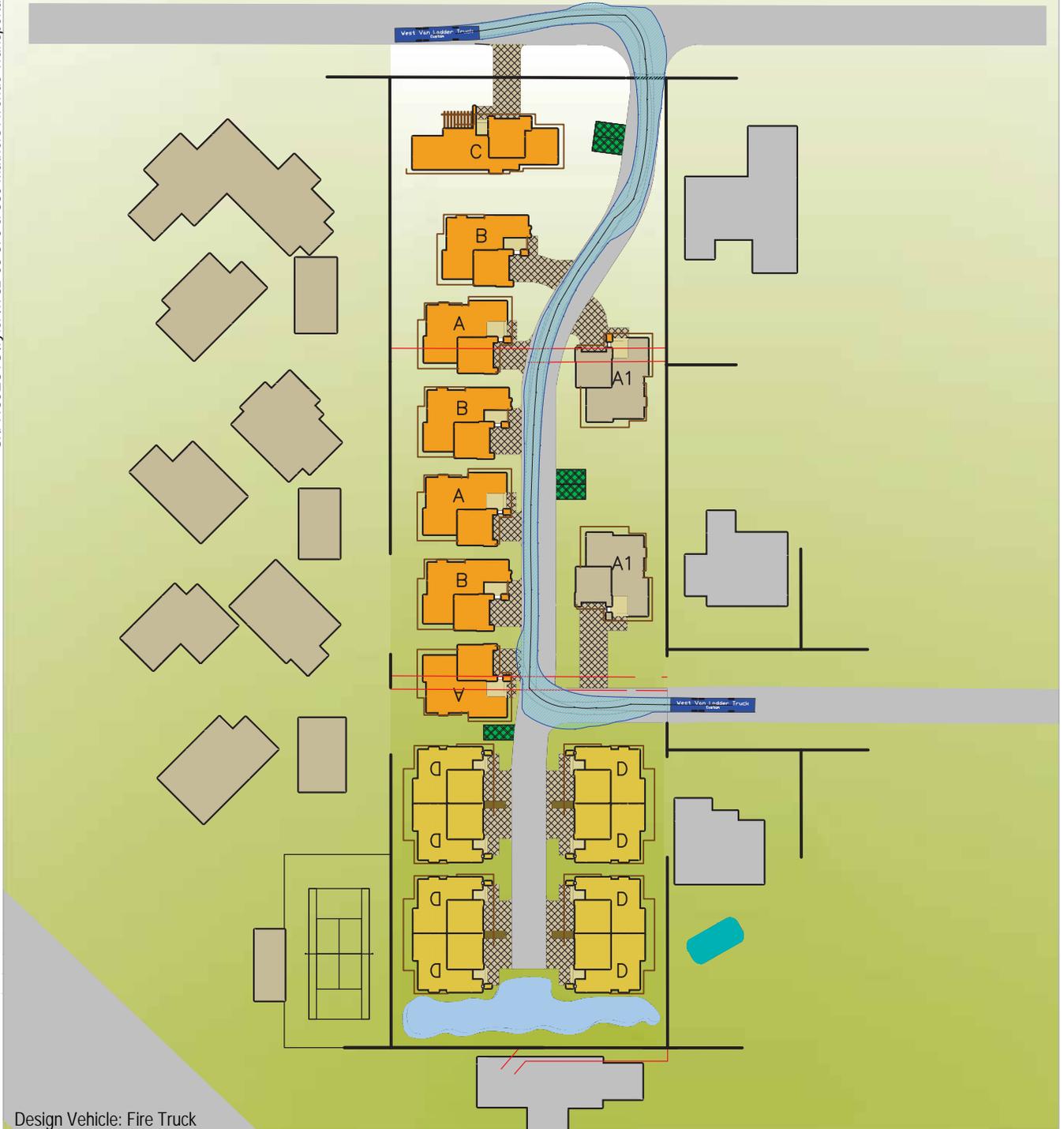
Design Vehicle: SU9

Appendix A 1.2 SU9 Exiting Site





Appendix A 2.2 HSU Exiting Site



Appendix A 3.1 Fire Truck Accessing Site