



Inglewood Campus of Care Redevelopment Transportation Impact Assessment

Draft Version 2

Prepared for
ZGF Architects

Date
September 23, 2021

Project No.
04-20-0028

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Andrew Thomson
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Dear Andrew:

**Re: Inglewood Campus of Care Redevelopment
Transportation Impact Assessment**

Bunt & Associates Engineering Ltd. has prepared a draft transportation assessment for a proposed Seniors' care centre development at 725 Inglewood Avenue in the District of West Vancouver, BC. The attached report provides an analysis of the existing transportation conditions and the potential transportation impacts of the proposed development, and recommended impact mitigation measures.

We trust that the information provided in the attached report will be of assistance to you and your team for the development application. Please contact us should you have any questions.

Yours truly,
Bunt & Associates



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EXECUTIVE SUMMARY

Baptist Housing is proposing to redevelop the Inglewood Care Centre at 725 Inglewood Avenue in the District of West Vancouver. The existing 235 bed Inglewood Care Centre senior's care facility will be upgraded into a new facility with 699 beds / units. It will provide a full range of seniors' care options including assisted living, long term care, affordable seniors' rental, and residential rental for seniors, along with team member and workforce housing.

These uses will be contained within four buildings which will be constructed over two phases. The existing long term care centre will be retained during the first phase of the redevelopment, while the new assisted living and long-term care centre is being constructed. Parking will be provided beneath the new buildings in a two-level connected underground parking structure.

The site is located at the corner of Inglewood Avenue & Taylor Way, and extends west to Burley Drive. Two vehicle access driveways are proposed for the development: one on Inglewood Avenue, and a right-in/right-out only access on Taylor Way. The planned Taylor Way access will be combined with the existing access to the Congregation Har El, the Centre for Jewish Life on the North Shore (Har El).

The proposed development features several active transportation improvements both within and adjacent to the site including a central courtyard with connected walkways between each of the buildings. A new sidewalk and bike lane will be provided along the Inglewood Avenue and Burley Drive frontages of the site, and a new pedestrian crosswalk will be provided on Burley Drive to connect the site to the existing sidewalk on the opposite (west) side of the street.

Bunt compiled and collected traffic data at the existing site access, the Inglewood Avenue & Taylor Way intersection, the existing Har El site access on Taylor Way, and the Highway 1 interchange at Taylor Way. A background traffic growth rate of 1.1% was assumed based on the growth observed in available traffic data collected in 2013 and 2016.

The proposed development is anticipated to generate approximately 140 weekday AM and 170 weekday PM peak hour vehicle trips at full-build out, based on trip generation rates reported in the Institute of Transportation Engineers (ITE) Trip Generation Database (10th Edition). These vehicle trip rates are consistent with generation rates observed by Bunt for comparable sites in Metro Vancouver, including the existing Inglewood Care Centre site.

The site accesses and immediately adjacent intersection at Inglewood & Taylor way were forecasted to operate acceptably during all future horizon years tested. Note that due to the extents of the study area, and spillback of queues from downstream intersections such as Marine Drive & Taylor Way and the southbound approach to the Lions Gate Bridge would not be accounted for in this model.

Traffic operations issues were noted at the Taylor Way & Highway 1 interchange in all existing and future traffic scenarios. The site traffic generated by the Inglewood site contributed and 1-2% AM / 2-3% PM increase in traffic volumes at the interchange which does not have a material impact on the operations.

As a potential improvement to the Highway 1 and Taylor Way interchange, Bunt recommends that there be consideration toward construction of dual eastbound right turn lanes from the eastbound Highway 1 off-ramp to Taylor Way southbound, replacing the existing yield control with signal control on this approach. This results in substantial capacity and delay improvement on this movement. Additionally, this change in operation creates a safer condition for pedestrians and bikes passing through this ramp junction intersection by providing a protected phase and improves safety for the right-in/out driveway by better controlling the entry of the traffic turning off the highway onto southbound Taylor Way. This potential change is outside of the scope of the Inglewood Care Centre redevelopment.

Bunt reviewed the parking requirement for the site taking into consideration the off-street parking supply rates identified in the West Vancouver Zoning Bylaw and observed parking demand at comparable facilities. The proposed parking vehicle parking supply meets the Bylaw requirements for all uses except the affordable team member and workforce housing, where Bunt recommends permitting a reduction in the Bylaw required vehicle parking supply from 56 stalls to 42 stalls (a 14 stall reduction resulting in a supply rate of 0.39 stalls per unit). This reduced vehicle parking supply should be supported by Transportation Demand Management (TDM) measures including 2.0 secured bicycle parking spaces per unit, access to one car share vehicle on site, and paid car share memberships tied to the units.

Noting that the West Vancouver Bylaw bicycle parking requirements are not specific to Senior's facilities, the development plan proposes variances in the bicycle parking supply requirements for all uses except the affordable team member and workforce housing. Bunt recommends providing secured bicycle parking at a rate of 0.75 spaces unit for the affordable seniors' rental housing and the residential rental for seniors, and at a rate of 0.10 spaces per bed / unit for the assisted living and long term care. For short term bicycle parking, Bunt recommends a rate of 2 spaces + 0.05 spaces per bed / unit for these uses. These reduced bicycle parking supply rates are based on the City of Vancouver Bylaw which includes bicycle parking requirements specific to seniors' housing.

Bicycle parking demand data was collected at several seniors' care facilities, and the observed demand rate ranged from 0.01 to 0.08 occupied stalls per bed / unit. These recommended bicycle parking supply rates exceed the observed bike parking demand at comparable sites, and therefore by comparison the proposed bicycle parking supply includes substantial buffer to accommodate potential future increases in bicycle use.

The District of West Vancouver does not provide any specific Bylaw requirements for the number and size of loading stalls or pick up drop off stalls. Although there are no specific requirements, to accommodate operational requirements a facilitate transportation needs for the site, the development proposes 4 loading stalls sized primary for large trucks including 3 stalls for WB-12 semi-trailers and 1 stall for a Heavy Single-Unit (HSU) truck, 2 stalls for HandyDart staging along with 3 HandyDart pick-up and drop off locations at the entrances to the buildings serving seniors, and 6 at-grade short term parking spaces.

Bunt reviewed the site plan and confirmed based on a review of vehicle swept paths that the proposed design could accommodate the turning path requirements of the design vehicles described above.

1. INTRODUCTION

1.1 Study Purpose & Objectives

Baptist Housing is proposing to redevelop the Inglewood Care Centre at 725 Inglewood Avenue in the District of West Vancouver. The site is located at the corner of Inglewood Avenue & Taylor Way, and extends west to Burley Drive, as shown **Exhibit 1.1**. The 235 bed seniors' care facility has been in operation for nearly 60 years and Baptist Housing is now proposing a comprehensive redevelopment of the entire site to feature the following located in several new buildings.

The new Inglewood Campus of Care facility will require new parking and loading facilities and anticipated changes to the site access driveways and internal traffic circulation patterns. With the increased density, there will be additional site traffic added on the area street network along with additional transit trips, particularly for staff but also for visitors and some of the future residents of the development.

As part of the Rezoning application the District of West Vancouver (DWV) and the British Columbia Ministry of Transportation and Infrastructure (MoTI) require a Transportation Impact Assessment study (TIA) be completed to assess the impacts of the proposed development on the existing transportation infrastructure, recommend mitigation measures, and confirm the suitability of the transportation design for the new development.

Baptist Housing retained Bunt & Associates (Bunt) to conduct this study. The purpose of this report is to document the development details, site context, transportation data collection and analysis, key findings, and recommendations in relation to the proposed development.

1.2 Study Scope & Area

The scope for this study is based on typical requirements from DWV for TIA studies, along with MoTI guidelines. The Terms of Reference (ToR) for this study is attached in **Appendix A**. The ToR was reviewed by DWV and MoTI and the comments received were incorporated into the study scope.

Exhibit 1.2 highlights the study area intersections for the traffic analysis which includes the following:

- Inglewood Avenue & Taylor Way;
- Site Access & Inglewood Avenue
- Proposed north access on Taylor Way (*shared with the Congregation Har El North Shore Jewish Community Centre*); and,
- Taylor Way Interchange traffic signals at the eastbound and westbound on and off ramps.

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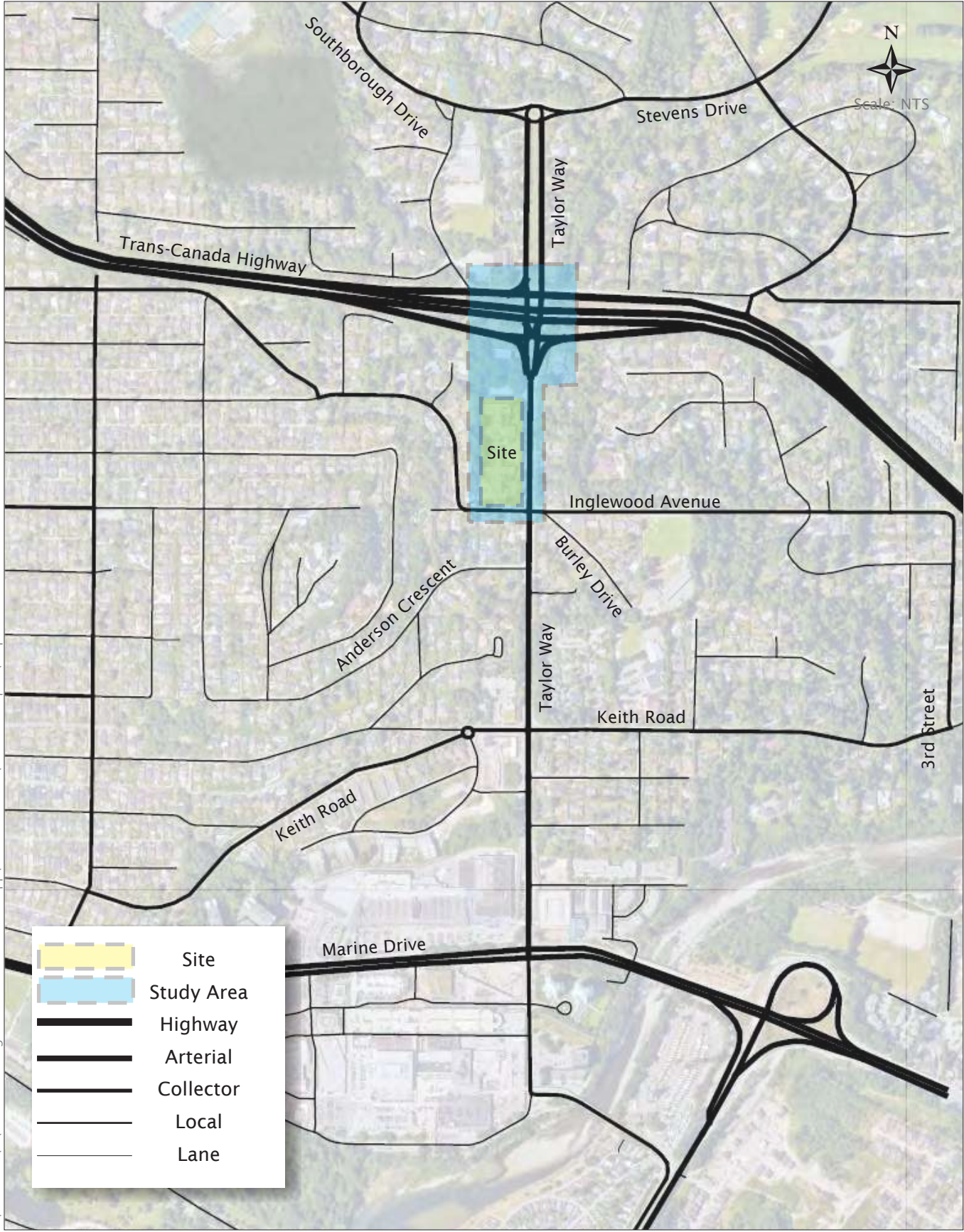


Exhibit 1.1 Site Location & Study Area

04-20-0028 Inglewood Care Centre
September 2021



Traffic counts were collected at the study area intersections during the following time periods:

- Weekday AM (7:00–9:00); and,
- Weekday PM (2:00–6:00).

Traffic analysis was conducted period traffic for the following horizon years:

- Opening day of the development (2024);
- Opening date of the development plus 5 years (2029); and,
- Opening date of the development plus 10 years (2034).

The project will be constructed over two phases. The 2024 horizon year includes only Phase 1 traffic, while the 2029 and 2034 horizon years include traffic generated at full-build out of the development.

Supply recommendations were provided for the following:

- Vehicle parking spaces;
- Bicycle parking spaces;
- Loading spaces; and,
- Pick-up / drop-off spaces.

Vehicle swept path analysis was undertaken to confirm the feasibility of the following transportation design elements:

- Passenger vehicle access and circulation;
- Loading access and stall configuration;
- HandyDart access;
- Waste collection vehicle operations; and,
- Emergency vehicle access and egress.

1.3 Organization of Report

The report is organized in the following manner:

- **Section 2** provides a review of the existing street network and traffic conditions in the study area;
- **Section 3** provides analysis of forecasted future traffic conditions;
- **Section 4** provides a review of the proposed site plan; and,
- **Section 5** provides a summary of the key conclusions and recommendations.

1.4 Proposed Development

The proposed development will provide a full range of seniors' care options. These will be contained within four buildings which will be constructed over two phases. The size of the proposed development in terms of both floor area and the number of beds and units is summarized in **Table 1.1**.

Table 1.1: Proposed Development

DEVELOPMENT PHASE	BUILDING	FACILITY TYPE	BEDS / UNITS	FLOOR AREA
Phase 1	LTC	Long Term Care	240 beds	20,902 m ² (224,985 ft ²)
Phase 2	AL/LTC	Long Term Care	104 beds / units	10,816 m ² (116,426 ft ²)
		Assisted Living		
	AH	Affordable Seniors Rental Housing	48 units	10,909 m ² (117,423 ft ²)
		Team Members & Workforce Housing	107 units	
	RRS	Residential Rental for Seniors	200 units	22,742 m ² (244,794 ft ²)
		TOTAL	699 BEDS / UNITS	65,369 M² (703,628 FT²)

Exhibit 1.2 illustrates the proposed site plan.

Two vehicle access driveway are proposed for the new development: one on Inglewood Avenue, and a right-in/right-out only access on Taylor Way. The addition of the Taylor Way accesses minimizes pressure at any one access point and will facilitate an efficient on-site circulation, particularly for the larger delivery trucks. The planned Taylor Way access will be combined with the existing access to the Congregation Har El, the Centre for Jewish Life on the North Shore (Har El). This also serves as a fire lane access to the existing Inglewood Care Centre and is located on its property. Parking is distributed throughout the site beneath the new buildings in a connected underground parkade.

Two preliminary technical memorandums were prepared for the development regarding the proposed site access point configuration. The first memo was regarding truck access at the Inglewood Avenue site access, which is attached in **Appendix B**. The memo concluded that the Inglewood Access was an appropriate location for truck access to and from the site. The second memo was regarding the proposed Taylor Way access, which concluded that the proposed access was supportable from a transportation design and traffic operations perspective. This memo is attached in **Appendix C**.

The proposed development features several active transportation improvements both within and adjacent to the site:

- A central courtyard will be provided with connected walkways between each of the buildings;
- A new sidewalk and bike lane will be provided along the Inglewood Avenue and Burley Drive frontages of the site.
- A new pedestrian crosswalk will be provided on Burley Drive to connect the site to the existing sidewalk on the opposite (west) side of the street.



Exhibit 1.2 Site Plan



2. EXISTING CONDITIONS

2.1 Land Use

The site is currently occupied by a 235 bed seniors' care facility that has been in operation for nearly 60 years. The Congregation Har El, the Centre for Jewish Life on the North Shore (Har El) is located immediately north of the site, which also includes a Montessori school. An elementary School is located east of Taylor Way and South of Inglewood Avenue along Burley Drive. Aside from these uses, the site is primarily surrounded by single family residential land use. **Exhibit 2.1** shows the existing land uses surrounding the site.

2.2 Existing Transportation Network

2.2.1 Road Network

The site is bordered by Burley Drive to the West, Inglewood Avenue to the South, and Taylor Way to the east. **Table 2.1** identifies the key transportation characteristics of these streets.

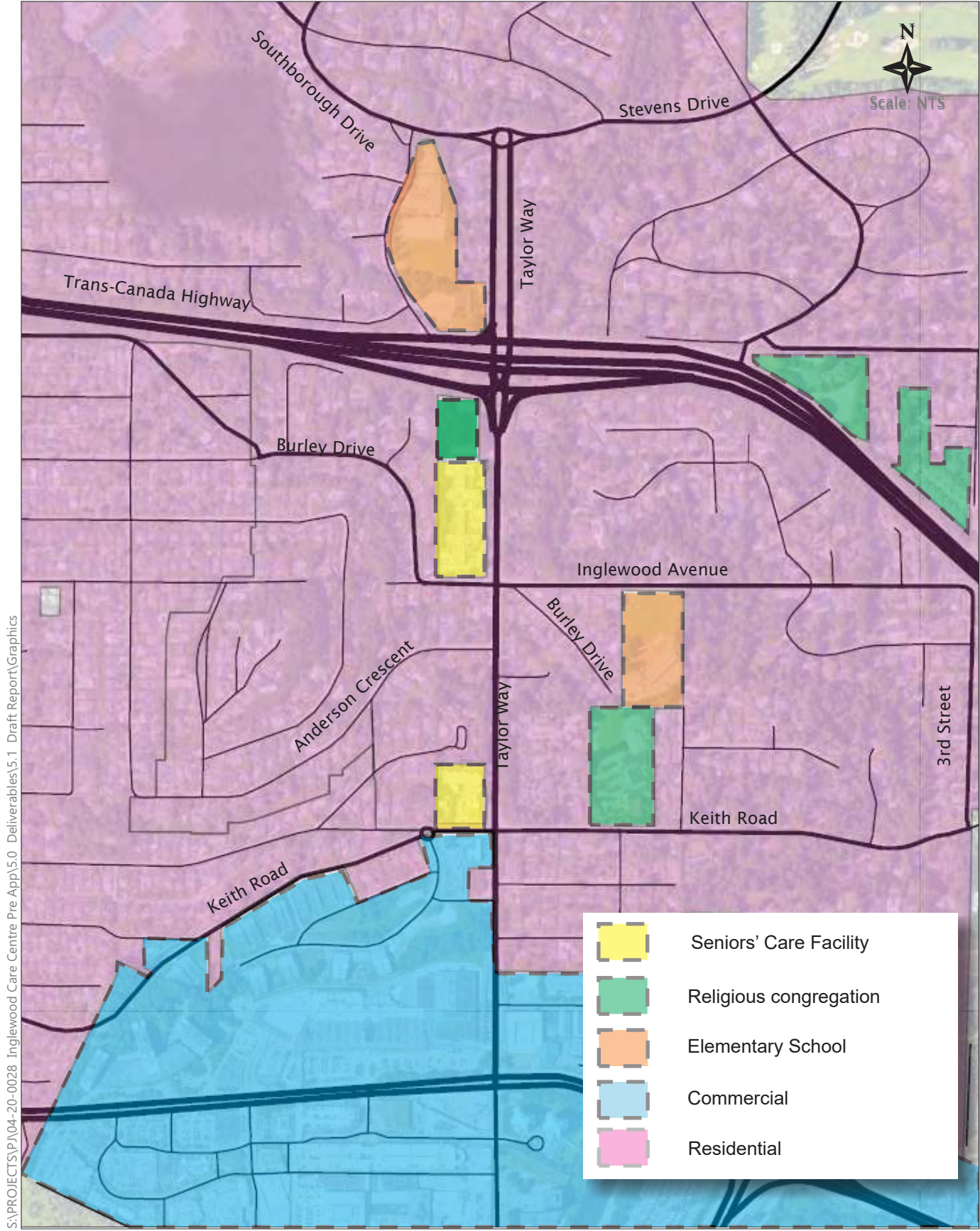
Table 2.1: Existing Street Characteristics

STREET	CLASSIFICATION	NUMBER OF TRAVEL LANES	POSTED SPEED	PARKING FACILITIES
Taylor Way	Arterial Road	4	50 Km/Hr	None
Inglewood Avenue	Collector Road	2	50 Km/Hr	None
Burley Drive	Collector Road	2	50 Km/Hr	On street

Taylor Way is part of Highway 99 and operates under the jurisdiction of MoTI. It provides north-south connectivity between Highway 1 to the north and Marine Drive to the south and is part of the West Vancouver truck route network. The Taylor Way interchange is located just north of the site.

Burley Drive turns into Inglewood Avenue at the southwest corner of the site. To the northwest of the site, Burley Drive merges into Mathers Avenue which provide east-west connectivity through West Vancouver. Inglewood Avenue continues east of the site for a short distance before terminating at 3rd Street.

Exhibit 2.2 shows the existing road network, laning, and traffic control within the study area.



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Exhibit 2.1 Existing Land Uses

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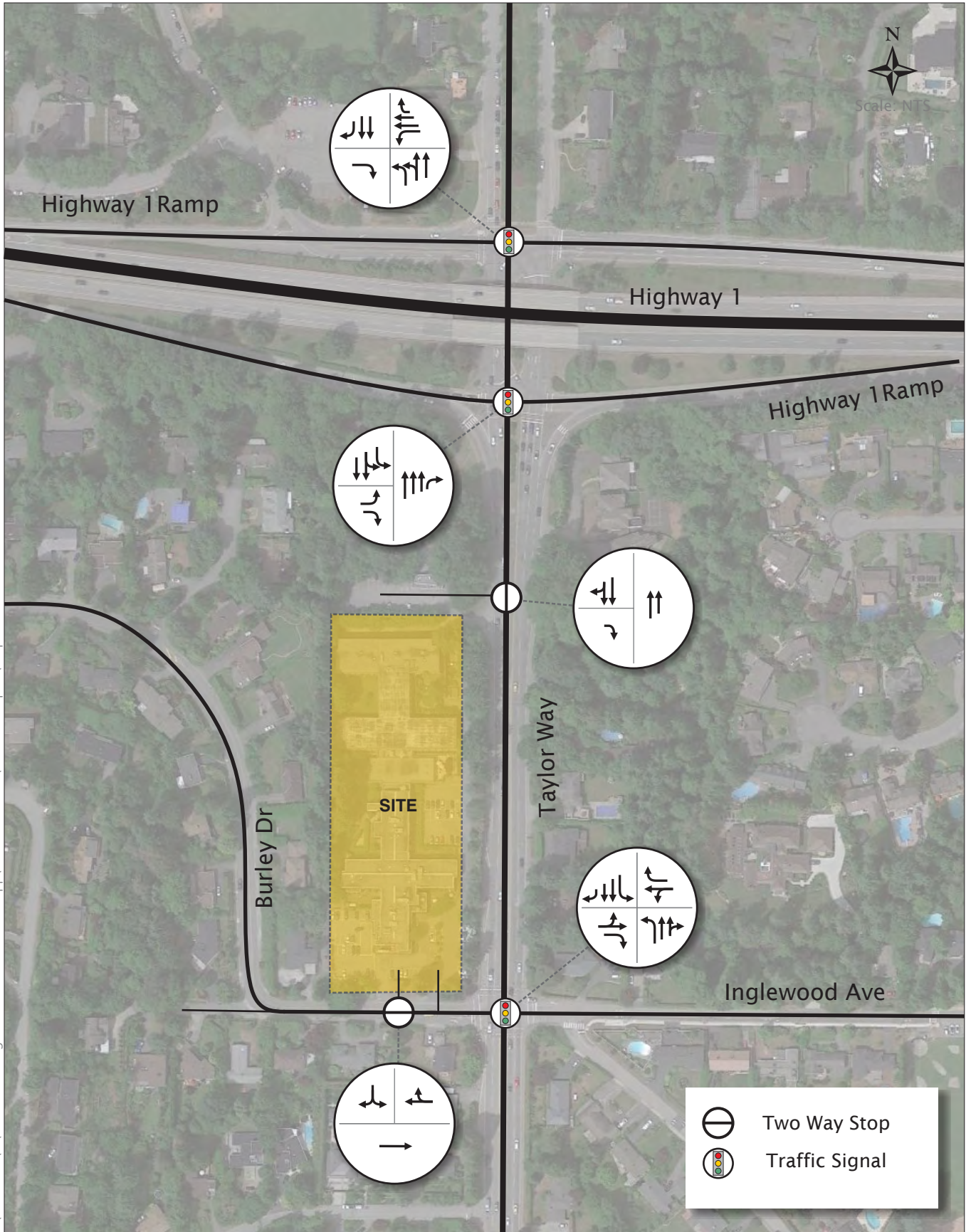


Exhibit 2.2 Existing Laning & Traffic Control

04-20-0028 Inglewood Care Centre
September 2021



2.2.2 Transit Network

The proposed development is accessible by transit, with existing bus stops located near the Inglewood Avenue & Taylor Way intersection. **Table 2.2** identifies the transit stop locations within walking distance of the site. **Table 2.3** describes the transit services available at these stops and all are illustrated in **Exhibit 2.3**.

Table 2.2: Transit Stops within 800m Walking Distance of Site

STOP LOCATION	DIRECTION	STOP #	AMENITY	ROUTES SERVICED	WALKING DISTANCE
Taylor Way & Inglewood Ave	NB	54731	Bench, Shelter	254	170 m
Inglewood Ave & Taylor Way (Flag)	WB	60927	None	254	75 m
Taylor Way @ Anderson Cres	SB	54776	Bench, Shelter	254	170 m
Taylor Way & Hwy 1 Overpass	SB	54775	None	254	550 m
Taylor Way & Hwy 1 Overpass	NB	54732	None	254	550 m
Burley Dr @ 800 Block (Flag)	WB	60926	None	254	450 m
Taylor Way @ Keith Rd	NB	54730	Bench, Shelter	254,256	450 m
Taylor Way @ Keith Rd	SB	54777	Bench, Shelter	254	550 m

Table 2.3: Existing Transit Service Frequency

ROUTE		STOP	WEEKDAY SERVICE SPAN		HEADWAY (MIN.)				
#	DIRECTION		START	END	AM	MID-DAY	PM	EVENING	WEEKEND
256	Park Royal/Whitby Estates	54730	6:06	21:06	60	60	60	60	60
254	Park Royal/British Properties/Vancouver		6:54	22:58	12-30	60	30	60	60
254	Park Royal/British Properties/Vancouver	54731	6:55	22:59	12-30	60	30	60	60
		54732	6:55	23:00	12-30	60	30	60	60
		60927	7:25	8:29	30	-	-	-	-
		54776	9:04	21:57	-	60	30	60	60
		54775	7:24	21:56	30	60	30	60	60
		60926	7:26	8:30	25	-	-	-	-
		54777	9:05	21:57	-	60	30	60	60

2.2.1 Cycling & Pedestrian Networks

Adjacent to the site, sidewalks are provided along Taylor Way, Inglewood Avenue, and the west side of Burley Drive. Cycling facilities adjacent to the site are limited. Burley Drive is designated as a cycling route, although this is a shared lane and no separated cycling facilities are provided.

Exhibit 2.4 illustrates the existing cycling and pedestrian facilities.

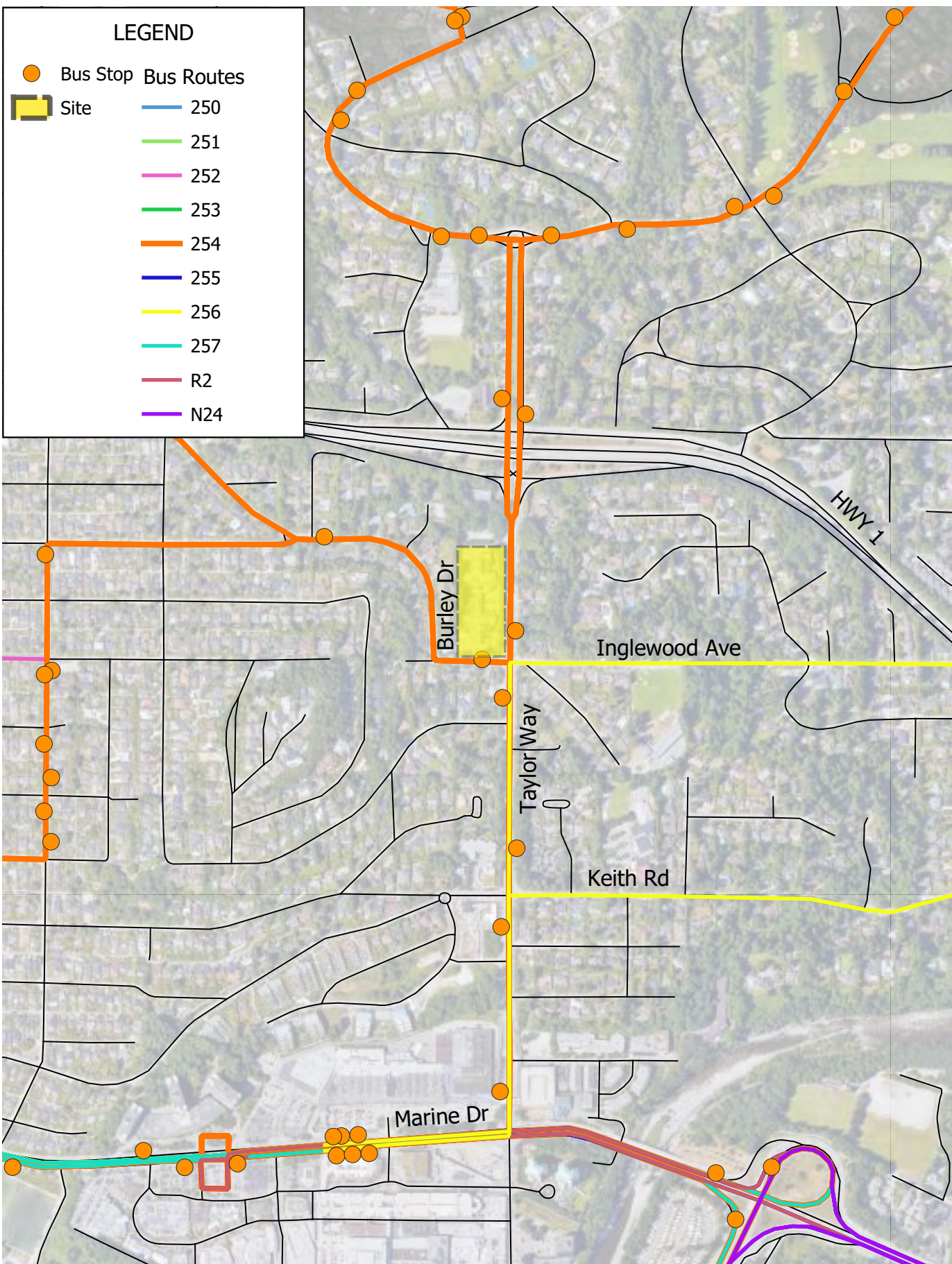


Exhibit 2.3 Existing Transit Routes & Stops

Inglewood Care Centre
September 2021

04-20-0028



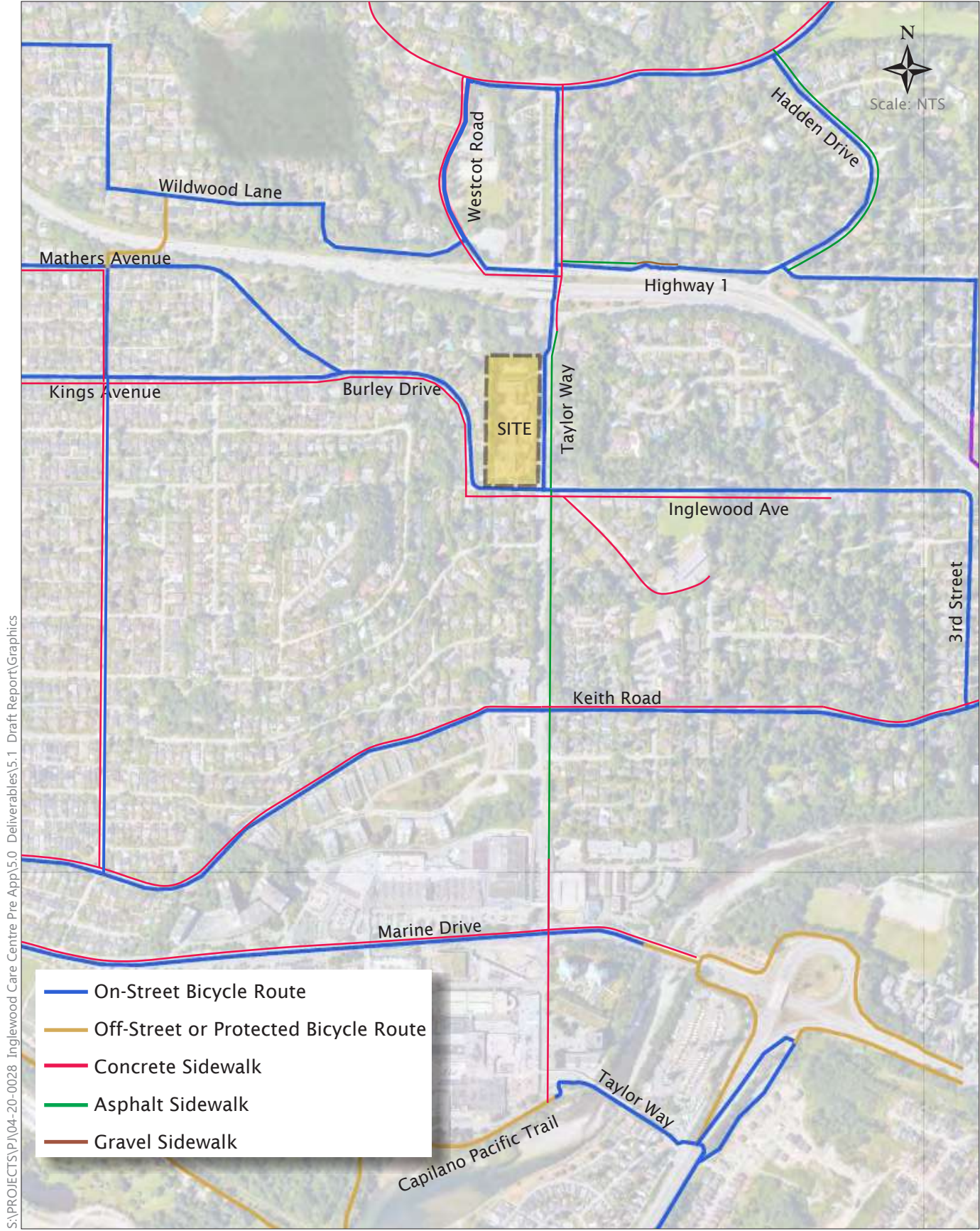


Exhibit 2.4 Existing Pedestrian & Cycling Facilities

2.3 Current Relevant Policies & Plans

2.3.1 District of West Vancouver Official Community Plan

The Official Community Plan, last updated in 2018, provides objectives and policies to guide future planning and land uses changes. The plan designates the site as within the “General Urban Area.” Taylor Way is shown as a heavy vehicle access road. Adjacent to the site, Inglewood Avenue and Burley Drive are designated as Major Pedestrian Routes and Major Bike Routes.

2.3.2 Upper Levels Highway Corridor Study

A corridor study of the Upper Levels Highway between Lynn Valley Road and Horseshoe Bay Ferry Terminal is currently underway. Although no information was available from this study, it was indicated by MoTI that no information or decisions are anticipated from the study that would have a material impact on the Inglewood Care Centre TIA.

2.4 Existing Traffic Volumes

2.4.1 Traffic Data Collection Program

To document the existing traffic conditions in the vicinity of the proposed development, Bunt conducted new traffic count surveys and compiled other available traffic data. **Table 2.4** summarizes the data collection information. The detailed traffic count sheets are provided in **Appendix E**.

Table 2.4: Summary of Available and Counted Traffic Data

INTERSECTION	SOURCE	DATE OF COUNT	PEAK HOURS	
			AM	PM
Taylor Way & Inglewood Avenue	Bunt	January 22, 2020	8:00 - 9:00	2:30 - 3:30
Taylor Way & Har El access (turning only)	Bunt	November 10, 2020	8:30 - 9:30	2:30 - 3:30
Inglewood Avenue Site Access (turning only spot count)	Bunt	March 5, 2020	-	(spot count)
Highway 1 on/off ramps at Taylor way interchange	MoTI	February 28, 2017	7:30 - 8:30	2:15 - 3:15
OVERALL STUDY AREA PEAK HOUR			8:00 - 9:00	2:30 - 3:30

Note: the overall study area peak hour was determined based on the traffic data at the Taylor Way & Inglewood Avenue intersection

The traffic data collected by at the Inglewood Avenue & Taylor Way intersection, along with the spot count conducted at the existing site access, were conducted prior to the traffic patterns changes resulting from the Covid-19 pandemic. Additionally, the traffic data provided to Bunt by MoTI at the Taylor Way interchange was collected before the pandemic and therefore are considered representative of more normal traffic conditions.

The data and time for the traffic counts at the Har El driveway were selected as all uses located on site were in operation (not closed for Covid) during this time. It was also confirmed prior to conducting the count that the uses located on site were operating at normal capacity and with a normal event schedule.

This was important to ensure given the current Covid-19 pandemic. It was also observed that the Har El parking lot was full or nearly full at peak times

2.4.2 Peak Hour Traffic Volumes

Exhibit 2.5 shows the existing peak period traffic volumes at the study area intersections. Traffic volume balancing was undertaken to determine through traffic volumes where turning counts were conducted. Traffic volumes at the Taylor Way interchange were increased to balance with the arriving and departing volumes observed on the north leg of the Inglewood Avenue intersection. Some assumptions were required to estimate the specific volumes throughout the Taylor Way interchange, as not all required information was available.

Pedestrian volumes were found to be low, and no cyclists were observed. The detailed traffic count sheets in **Appendix E** provide the pedestrian and cyclist volumes.

Table 2.5 presents a summary of the two-way peak-hour vehicle movements for the streets in the study area.

Table 2.5: Existing Peak Hour Roadway Link Volumes

ROAD LINK	PEAK LINK VOLUMES (VEH/HR)	
	AM	PM
Taylor Way	2,670	2,850
Inglewood Avenue	460	430
Burley Drive	430	400

2.4.3 Existing Site Vehicle Trip Generation

The existing site was found to generate 50 peak hour vehicle trips, based on data collected at the site during the weekday PM peak period. Given that the existing facility contains 235 beds, this equated to a peak hour generation rate of approximately 0.21 vehicle trips per bed. Detailed directional information was not collected, and therefore basic assumptions were made about specific turning movements. Weekday AM data was not collected, so for the analysis purposes the existing site trips were assumed to be roughly equivalent during the weekday AM and PM peak periods.

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Exhibit 2.5 Existing Peak Hour Traffic Volumes

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2.5 Existing Operations

2.5.1 Performance Thresholds

The existing operations of study area intersections and access points were assessed using the methods outlined in the 2000 Highway Capacity Manual (HCM), using the Synchro 9 analysis software (Build 914). The traffic operations 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 2.6 below summarizes the LOS thresholds for the six Levels of Service, for both signalized and unsignalized intersections.

Table 2.6: 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.

The performance thresholds that were used to trigger consideration of roadway or traffic control improvements to support roadway or traffic control improvements employed in this study are listed below:

Signalized Intersections:

- Overall intersection Level of Service = LOS D or better;
- Overall intersection V/C ratio = 0.85 or less;

- Individual movement Level of Service = LOS E or better; and,
- Individual movement V/C ratio = 0.90 or less.
-

Unsignalized Intersections:

- Individual movement Level of Service = LOS E or better, unless the volume is very low in which case LOS F is acceptable.

In interpreting of the analysis results, note that the HCM methodology reports performance differently for various types of intersection traffic control. In this report, the performance reporting convention is as follows:

- For signalized intersections: HCM 2000 output for overall LOS and V/C as well as individual movement LOS and V/C is reported. 95th Percentile Queues are reported as estimated by Synchro.
- For unsignalized two-way stop controlled intersections: HCM 2000 V/C output is reported just for individual lanes as the HCM methodology does not report overall performance. SimTraffic estimated queues have also been reported, as the HCM 2000 methodology does not directly take into account the gaps afforded by adjacent signalized intersections. The reported LOS are based on SimTraffic delays.

The performance reporting conventions noted above have been consistently applied throughout this document and the detailed outputs are provided in **Appendix G**.

2.5.2 Existing Conditions Analysis Assumptions

Signal Timing:

Existing timing plans for the study area traffic signals were provided by the MoTI and used in the traffic operations analysis. The signal timing plans used for the analysis are provided in **Appendix F**.

Synchro Parameters

The existing conditions Synchro analysis accounts for the following parameters:

- Existing heavy vehicle percentages;
- Existing pedestrian and cyclist volumes; and
- Existing overall intersection peak hour factors.

Aside from these adjustments, defaults Synchro parameters were applied for the analysis. Where these values were not known, the default Synchro values of a 2% heavy vehicle percentage and peak hour factor of 0.92 were assumed. These were comparable to the observed values where traffic data was available.

2.5.3 Existing Operational Analysis Results

Table 2.7 summarizes the existing traffic conditions at each of the study intersections.

Table 2.7: Existing Traffic Operations

INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM			PM		
		LOS	V/C	95TH Q (M)	LOS	V/C	95TH Q (M)
Taylor Way & Highway 1 Interchange – North Ramp Junction Intersection (signalized)	OVERALL	D	0.58	-	C	0.59	-
	EBR	C	0.10	20	C	0.05	6
	WBL	D	0.58	118	D	0.62	121
	WBTL	D	0.41	73	D	0.40	69
	WBR	D	0.28	49	D	0.19	35
	NBL	E	0.50	93	B	0.53	15
	NBTR	E	0.49	76	B	0.53	14
	SBT	E	0.75	92	E	0.72	70
Taylor Way & Highway 1 Interchange – South Ramp Junction Intersection (signalized)	SBR	D	0.46	58	E	0.24	31
	OVERALL	E	0.91	-	C	0.64	-
	EBL	D	0.33	78	E	0.66	56
	EBR	*F	1.21	352	B	0.59	129
	NBT	E	0.70	86	C	0.42	106
	NBR	D	0.23	27	C	0.49	66
	SBL	C	0.65	89	C	0.69	58
Taylor Way & Har el Congregation Access (unsignalized)	SBLT	C	0.73	96	C	0.72	48
	OVERALL	-	-	-	-	-	-
	EBR	B	0.11	3	B	0.07	2
	NBT	A	0.34	0	A	0.50	0
	SBT	A	0.68	0	A	0.51	0
Taylor Way & Inglewood Ave (signalized)	SBTR	A	0.38	0	A	0.28	0
	OVERALL	B	0.70	-	B	0.69	-
	EBLT	D	0.70	64	D	0.68	57
	EBR	C	0.02	2	C	0.04	9
	WBLT	C	0.25	25	C	0.11	14
	WBR	C	0.08	14	C	0.04	9
	NBL	B	0.32	9	A	0.28	11
	NBTR	B	0.47	72	B	0.72	155
	SBL	A	0.44	21	B	0.33	8
	SBT	B	0.71	139	B	0.53	98
Inglewood Ave & Site Access (unsignalized)	SBR	A	0.12	11	A	0.10	8
	OVERALL	-	-	-	-	-	-
	EBLT	A	0.00	0	A	0.00	0
	WBLT	A	0.16	0	A	0.14	0
	SBLR	B	0.05	12	B	0.05	1

*When using SimTraffic, the microsimulation module of Synchro, the LOS for this movement was found to be C. This indicates that the HCM analysis procedures do not accurately capture the true traffic operations at this location and overstate the resulting vehicle delay.

The site accesses and immediately adjacent intersection at Inglewood & Taylor way were determined from the Synchro traffic modeling and analysis to operate acceptably. Note that due to the extents of the study area, and spillback of queues from downstream intersections such as Marine Drive & Taylor Way and the southbound approach to the Lions Gate Bridge would not be accounted for in this model.

Several other movements at the Highway 1 & Taylor Way interchange were found to operate at a LOS E, nearing their acceptable operational thresholds. During the AM peak period, the right turn movement from the eastbound off-ramp to Taylor Way was found to operate at a LOS F, although as noted previously, this modelled issue may have been due to the limitations of the HCM analysis procedures, rather than a true operational concern. By observation vehicle queues do occasionally build along this eastbound off-ramp particularly during periods of surge traffic from arriving ferries at the Horseshoe Bay Ferry Terminal and vehicle queues extending back from the Lions Gate Bridge through the Marine Drive/Taylor Way intersection and southbound up Taylor Way from the Marine Drive intersection.

3. FUTURE TRAFFIC CONDITIONS

3.1 Traffic Forecasts

3.1.1 Background Traffic Forecasts

Background traffic is traffic that would be present on the road network regardless of whether or not the development proceeds.

To estimate background traffic growth rates, Bunt obtained short count traffic data from MoTI at Taylor Way & Inglewood Avenue which was collected in September 2013 and in September 2016. Both data collection periods included a Friday AM peak period count. A traffic growth rate of 1.1% per annum was calculated based on the recorded volumes. Although this growth rate is based on limited traffic data, it is consistent with the traffic growth rates typically used by local municipalities.

This growth rate was applied for the overall study area road network. The resulting background traffic forecasts are shown in **Exhibits 3.1 to 3.3** for the 2024, 2029, and 2034 horizon years.

3.1.2 Site Traffic

Trip Generation

For the facilities proposed at the Inglewood Care Centre, there are several comparable land use categories with trip generation rates reported in the Institute of Transportation Engineers (ITE) Trip Generation Database (10th Edition). The ITE trip rates were found to be generally consistent with the data collected by Bunt at comparable sites in Metro Vancouver. Given this finding, the ITE rates were used as the basis for this analysis. The trip rates used in this analysis were proposed in the Technical Memorandum attached in **Appendix D**, and confirmed by the MoTI and West Vancouver to be acceptable.

Table 3.1 summarizes the proposed trip generation rates used to forecast site generated vehicle traffic volumes from each component of the development.

Table 3.1: Vehicle Trip Generation Rate Summary

FACILITY TYPE	ITE LAND USE CODE	UNITS	AM PEAK HOUR			PM PEAK HOUR		
			IN	OUT	TOTAL	IN	OUT	TOTAL
Assisted Living / Long Term Care	245 & 620	Beds	0.12	0.07	0.19	0.09	0.16	0.25
Seniors Rental Housing	252	Units	0.07	0.13	0.20	0.14	0.12	0.26
Team Members & Workforce Housing	221	Units	0.02	0.18	0.20	0.13	0.05	0.18

For the Assisted Living and Long-Term Care components of the proposed development, the ITE 254 *Assisted Living* and ITE 620 *Nursing Home* land uses were combined into a single trip rate by calculating a weighted average based on the number of studies referenced.. These land uses have few supporting data points, but are within a comparable range of trip rates. The spot count collected at the existing Inglewood Care Centre assisted living facility found a somewhat lower trip rate of 0.21 trips per bed during the weekday PM peak hour.

The “Senior Adult Housing – Attached” land use category was used for both market rate and affordable senior’s rental units. Although the ITE Trip Generation Database includes an *Affordable Housing for Seniors* land use category, only a single data point during the AM peak period is available.

The proposed development also includes Team Members & Workforce Housing, for which the ITE Trip Generation Database does not have a comparable land use. Mid-rise multi-use housing in a dense multi-use urban setting was proposed as a substitute. This would be representative of a site where fewer people drive to and from work than in a general urban/suburban setting, and is a highly conservative assumption for the Inglewood application as the workforce living at this facility would also be working on-site.

Table 3.2 summarizes the anticipated future site generated vehicle trips from the proposed development based on the above rates.

Table 3.2: Estimated Peak Hour Site Vehicle Trips

PHASE	FACILITY	DENSITY	AM PEAK HOUR			PM PEAK HOUR		
			IN	OUT	TOTAL	IN	OUT	TOTAL
1	LTC	240 Beds	29	17	46	22	38	60
	AL/LTC	104 Beds	12	7	20	10	16	26
2	AH	107 *ATMH 48 **ASH	6	26	31	21	11	32
	RSS	200 Units	14	26	40	29	23	52
TOTAL			61	76	136	81	89	170

*ATMH = Affordable Team Member and Workforce Housing

**ASH = Affordable Senior’s Housing

Based on a peak hour spot count collected at the site during the weekday PM Peak Hour period, the existing Inglewood Care Centre facility was found to generate approximately 50 vehicle trips (inbound and outbound combined). Based on the relative proportions of AM and PM peak hour vehicle trip rates, approximately 40 existing vehicle trips would be expected in the AM peak hour. **Table 3.3** estimates the net new trips generated by the development taking this into account.

Table 3.3: Estimated Peak Hour New Site Vehicle Trips

TRIP TYPE	AM PEAK HOUR	PM PEAK HOUR
Existing Vehicle Trips	40	50
Total Vehicle Trips	136	170
NET NEW TRIPS	96	120

This equates to an increase in traffic of approximately 120 vehicles during the critical PM peak hour, or 2 vehicles trips per minute on average added to the area road network.

During Phase 1 of the re-development, the existing long term care facility will remain in operation. Additionally, only the driveway access on Inglewood Avenue will be open until completion of Phase 2. For The analysis of Phase 1, the existing site traffic was added to the Phase 1 development traffic. During Phase 2, the existing site traffic was removed from the network.

Trip Distribution & Assignment

The trip distribution for the new site generated traffic was estimated based on observed traffic patterns in the study area. The estimated trip distribution is presented in **Table 3.4**.

Table 3.4: Estimated Trip Distribution

ORGIN/DESTINATION	AM PEAK HOUR		PM PEAK HOUR	
	IN (%)	OUT (%)	IN (%)	OUT (%)
Taylor Way (north)	5	5	5	5
Taylor Way (south)	30	30	30	30
Inglewood Ave	0	0	0	0
Burley Dr	10	10	10	10
Highway 1 (west)	15	15	15	15
Highway 1 (east)	40	40	40	40
TOTAL	100%	100%	100%	100%

Vehicle trips were assigned to the road network based on logical routings and engineering judgment. The resulting site traffic forecasts for Phase 1 and full build-out are shown in **Exhibit 3.4** and **3.5**, respectively.

Table 3.5 presents the 'net change' in future intersection vehicle volumes with the new site trips added.

Table 3.5: Net Change in Future Intersection Vehicle Volumes with New Site Trips

INTERSECTION	AM PEAK HOUR VOLUMES			PM PEAK HOUR VOLUMES		
	BACK-GROUND	SITE	% CHANGE	BACK-GROUND	SITE	% CHANGE
Taylor Way & Highway 1 Interchange (north)	2,894	42	1 %	2,780	62	2 %
Taylor Way & Highway 1 Interchange (south)	3,674	81	2 %	3,787	102	3 %
Taylor Way & Congregation Har el Access	3,126	88	3 %	3,230	107	3 %
Taylor Way & Inglewood Ave	3,335	93	3 %	3,423	98	3 %
Inglewood Ave & Site Access	533	100	19 %	499	110	22 %

3.1.1 Total Traffic

Total traffic was estimated by summing the background and site traffic forecasts. Existing site trips were included in the Phase 1 traffic forecasts and removed from the network in Phase 2. The resulting total traffic forecasts are shown in **Exhibits 3.6, 3.7, and 3.8** for the 2024, 2029, and 2034 horizon years, respectively. The year 2024 traffic forecasts include the Phase 1 development traffic, while the year 2029 and 2034 includes the full build-out development traffic forecasts.

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Exhibit 3.1 Opening Day (Year 2024) Background Traffic Forecasts

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Opening Day +5 (Year 2029) Background Traffic Forecasts

Exhibit 3.2



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Opening Day +10 (year 2034) Background Traffic Forecasts

Exhibit 3.3

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Exhibit 3.4 Phase 1 Site Traffic Forecasts

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Exhibit 3.5 Phase 2 (Build-out) Site Traffic Forecasts

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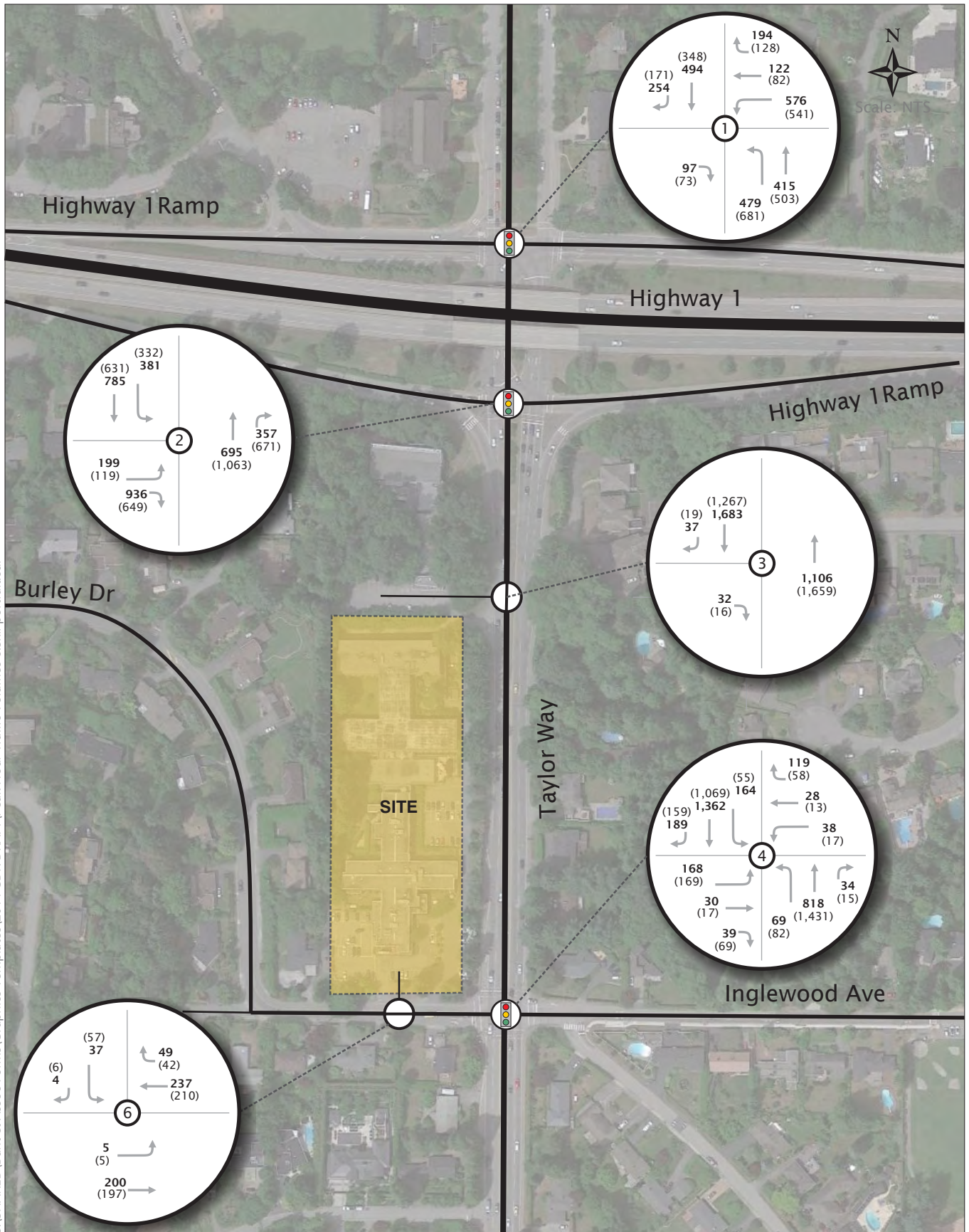


Exhibit 3.6 Opening Day (Year 2024) Total Traffic Volumes

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Opening Day +5 (Year 2029) Total Traffic Volumes

Exhibit 3.7



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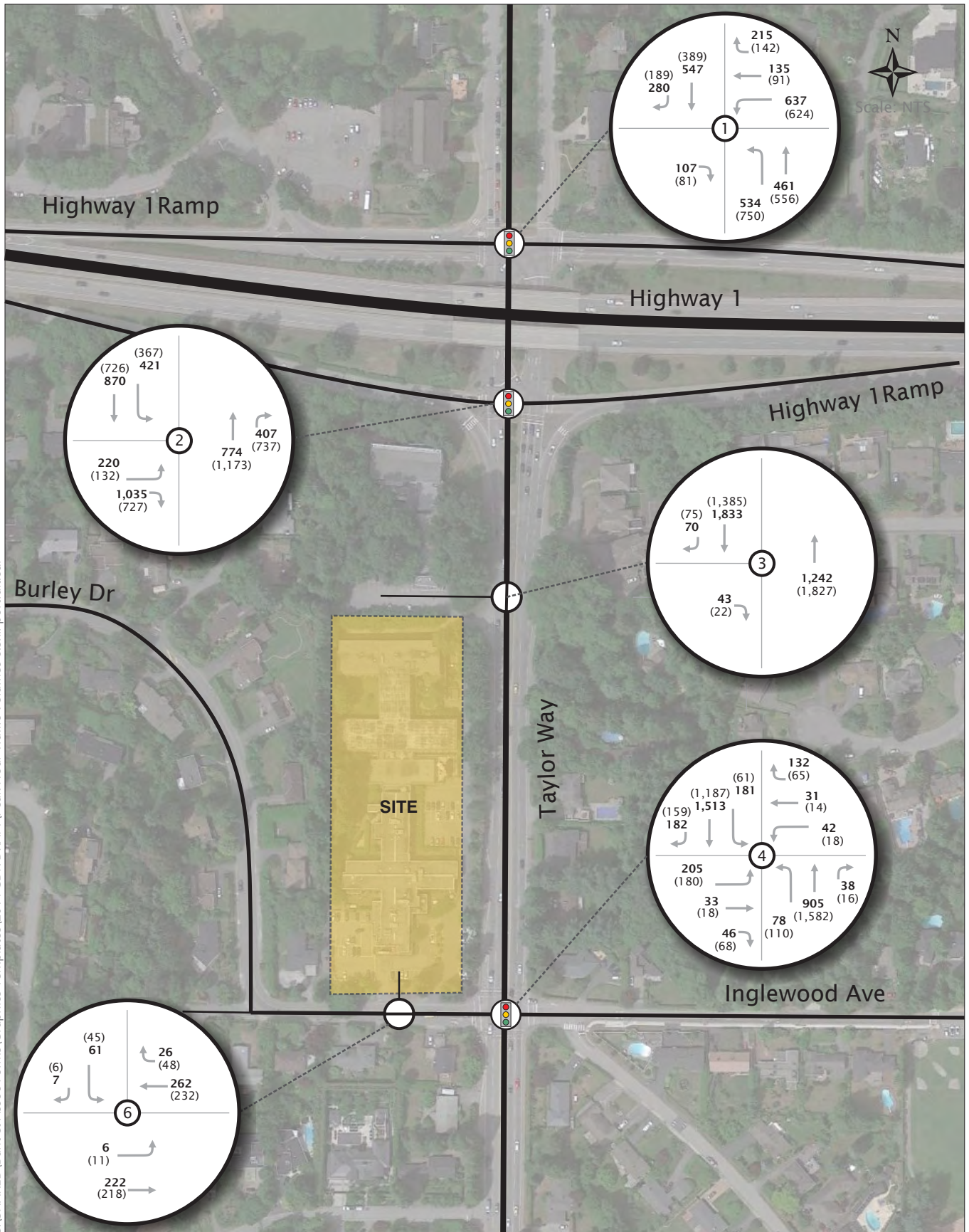


Exhibit 3.8 Opening Day +10 (Year 2035) Total Traffic Volumes

3.2 Future Traffic Operations

3.2.1 Future Conditions Analysis Assumptions

The Synchro traffic model parameters used in the analysis of existing traffic conditions were also applied to the future traffic operations analysis.

3.2.2 Future Background Traffic Operations

The results of the future background traffic operations assessment are summarized in **Tables 3.6 to 3.8**. The site accesses and immediately adjacent intersection at Inglewood Avenue & Taylor Way were found to operate acceptably, while the traffic operations issues previously noted at the Highway 1 & Taylor Way interchange become incrementally more pressured.

3.2.3 Future Total Traffic Operations

The results from the future total traffic operations assessment are summarized in **Tables 3.9 to 3.111**. The results of the analysis show that the site accesses and the Inglewood Avenue & Taylor Way intersection still operate acceptably with the addition of the site generated traffic. The traffic operations issues noted at the Highway 1 & Taylor Way interchange remain but are not materially impacted by the addition of the site generated traffic.

Table 3.6: Opening Day Background Vehicle Operations

INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM			PM		
		LOS	v/c	95th Q (m)	LOS	v/c	95th Q (m)
Taylor Way & Highway 1 Interchange – North Ramp Junction Intersection (signalized)	OVERALL	D	0.61	-	C	0.61	-
	EBR	C	0.11	21	C	0.05	9
	WBL	D	0.58	127	D	0.62	144
	WBTL	D	0.41	78	D	0.40	73
	WBR	D	0.29	54	D	0.20	38
	NBL	C	0.55	53	B	0.58	12
	NBTR	C	0.54	37	B	0.58	11
	SBT	E	0.76	97	E	0.71	72
Taylor Way & Highway 1 Interchange – South Ramp Junction Intersection (signalized)	OVERALL	D	0.95	-	C	0.67	-
	EBL	E	0.72	87	E	0.67	58
	EBR	*F	1.09	414	C	0.63	152
	NBT	D	0.39	86	C	0.45	115
	NBR	C	0.24	26	C	0.53	84
	SBL	C	0.65	84	C	0.69	23
	SBLT	C	0.73	89	C	0.72	23
	OVERALL	-	-	-	-	-	-
Taylor Way & Har el Congregation Access (unsignalized)	EBR	B	0.12	3	B	0.08	2
	NBT	A	0.35	0	A	0.52	0
	SBT	A	0.71	0	A	0.53	0
	SBTR	A	0.39	0	A	0.29	0
	OVERALL	B	0.73	-	B	0.72	-
Taylor Way & Inglewood Ave (signalized)	EBLT	D	0.71	65	D	0.69	57
	EBR	C	0.02	0	C	0.04	9
	WBLT	C	0.25	25	C	0.12	14
	WBR	C	0.08	14	C	0.04	9
	NBL	B	0.36	10	A	0.31	11
	NBTR	B	0.52	88	B	0.76	170
	SBL	A	0.45	23	B	0.38	9
	SBT	B	0.75	155	B	0.57	107
	SBR	A	0.14	14	A	0.11	9
Inglewood Ave & Site Access (unsignalized)	OVERALL	-	-	-	-	-	-
	EBLT	A	0.00	0	A	0.00	0
	WBLT	A	0.17	0	A	0.15	0
	SBLR	B	0.05	1	B	0.05	1

*When using SimTraffic, the microsimulation module of Synchro, the LOS for this movement was found to be C. This indicates that the HCM analysis procedures do not accurately capture the true traffic operations at this location and overstate the resulting vehicle delay.

Table 3.7: Opening Day + 5 Background Vehicle Operations

INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM			PM		
		LOS	V/C	95TH Q (M)	LOS	V/C	95TH Q (M)
Taylor Way & Highway 1 Interchange – North Ramp Junction Intersection (signalized)	OVERALL	D	0.64	-	C	0.65	-
	EBR	C	0.12	22	C	0.06	11
	WBL	D	0.59	137	D	0.64	165
	WBTL	D	0.42	84	D	0.42	80
	WBR	D	0.30	59	D	0.21	42
	NBL	C	0.60	61	B	0.62	11
	NBTR	C	0.60	49	B	0.62	9
	SBT	E	0.78	102	E	0.72	75
SBR	D	0.52	68	E	0.30	37	
Taylor Way & Highway 1 Interchange – South Ramp Junction Intersection (signalized)	OVERALL	E	1.00	-	C	0.70	-
	EBL	E	0.70	91	E	0.69	60
	EBR	*F	1.20	461	C	0.69	183
	NBT	D	0.46	94	C	0.49	127
	NBR	D	0.25	28	C	0.59	111
	SBL	C	0.65	57	C	0.69	20
	SBLT	C	0.73	63	C	0.72	20
Taylor Way & Har el Congregation Access (unsignalized)	OVERALL	-	-	-	-	-	-
	EBR	B	0.14	4	B	0.08	2
	NBT	A	0.37	0	A	0.55	0
	SBT	A	0.75	0	A	0.56	0
	SBTR	A	0.41	0	A	0.31	0
Taylor Way & Inglewood Ave (signalized)	OVERALL	B	0.76	-	B	0.75	-
	EBLT	D	0.74	68	D	0.73	61
	EBR	C	0.02	0	C	0.04	10
	WBLT	C	0.28	26	C	0.12	14
	WBR	C	0.09	15	C	0.05	11
	NBL	B	0.42	10	A	0.35	12
	NBTR	B	0.54	96	B	0.79	185
	SBL	A	0.49	24	B	0.42	10
	SBT	B	0.77	168	B	0.59	115
SBR	A	0.15	15	A	0.12	10	
Inglewood Ave & Site Access (unsignalized)	OVERALL	-	-	-	-	-	-
	EBLT	A	0.00	0	A	0.00	0
	WBLT	A	0.17	0	A	0.15	0
	SBLR	B	0.05	1	B	0.05	1

*When using SimTraffic, the microsimulation module of Synchro, the LOS for this movement was found to be D. This indicates that the HCM analysis procedures do not accurately capture the true traffic operations at this location and overstate the resulting vehicle delay.

Table 3.8: Opening Day + 10 Background Vehicle Operations

INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM			PM		
		LOS	V/C	95TH Q (M)	LOS	V/C	95TH Q (M)
Taylor Way & Highway 1 Interchange – North Ramp Junction Intersection (signalized)	OVERALL	D	0.67	-	C	0.68	-
	EBR	D	0.13	10	C	0.07	13
	WBL	D	0.61	93	D	0.71	189
	WBTL	D	0.43	62	D	0.46	86
	WBR	D	0.32	33	D	0.24	46
	NBL	D	0.66	52	B	0.64	12
	NBTR	C	0.65	52	B	0.64	5
	SBT	E	0.78	88	E	0.73	78
Taylor Way & Highway 1 Interchange – South Ramp Junction Intersection (signalized)	OVERALL	E	1.06	-	C	0.74	-
	EBL	E	0.69	97	E	0.70	62
	EBR	*F	1.32	508	C	0.76	219
	NBT	D	0.52	100	C	0.54	140
	NBR	D	0.26	29	D	0.66	154
	SBL	C	0.65	24	C	0.69	16
	SBLT	C	0.73	26	C	0.72	16
Taylor Way & Har el Congregation Access (unsignalized)	OVERALL	-	-	-	-	-	2-
	EBR	B	0.15	4	B	0.09	0
	NBT	A	0.39	0	A	0.58	0
	SBT	A	0.78	0	A	0.59	0
	SBTR	A	0.43	0	A	0.33	0
Taylor Way & Inglewood Ave (signalized)	OVERALL	D	0.80	-	B	0.79	-
	EBLT	D	0.77	72	D	0.75	64
	EBR	C	0.03	0	C	0.05	11
	WBLT	C	0.30	28	C	0.12	15
	WBR	C	0.09	15	C	0.05	11
	NBL	B	0.46	12	B	0.38	12
	NBTR	B	0.57	102	B	0.83	204
	SBL	B	0.54	24	B	0.45	12
	SBT	B	0.81	179	B	0.63	129
Inglewood Ave & Site Access (unsignalized)	OVERALL	-	-	-	-	-	-
	EBLT	A	0.00	0	A	0.00	0
	WBLT	A	0.18	0	A	0.16	0
	SBLR	B	0.05	1	B	0.05	1

*When using SimTraffic, the microsimulation module of Synchro, the LOS for this movement was found to be D. This indicates that the HCM analysis procedures do not accurately capture the true traffic operations at this location and overstate the resulting vehicle delay.

Table 3.9: Opening Day Total Vehicle Operations

INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM			PM		
		LOS	V/C	95TH Q (M)	LOS	V/C	95TH Q (M)
Taylor Way & Highway 1 Interchange – North Ramp Junction Intersection (signalized)	OVERALL	D	0.61	-	C	0.62	-
	EBR	C	0.11	21	C	0.05	8
	WBL	D	0.57	130	D	0.62	147
	WBTL	D	0.40	79	D	0.39	75
	WBR	D	0.29	54	D	0.20	38
	NBL	C	0.57	57	B	0.59	12
	NBTR	C	0.56	42	B	0.59	12
	SBT	E	0.76	96	E	0.71	72
Taylor Way & Highway 1 Interchange – South Ramp Junction Intersection (signalized)	OVERALL	D	0.96	-	C	0.67	-
	EBL	E	0.72	87	E	0.67	58
	EBR	*F	1.11	423	C	0.64	157
	NBT	D	0.40	87	C	0.45	116
	NBR	C	0.24	27	C	0.55	91
	SBL	C	0.64	80	C	0.69	22
	SBLT	C	0.73	86	C	0.73	22
	OVERALL	-	-	-	-	-	-
Taylor Way & Har el Congregation Access (unsignalized)	EBR	B	0.08	2	B	0.03	1
	NBT	A	0.35	0	A	0.53	0
	SBT	A	0.72	0	A	0.54	0
	SBTR	A	0.39	0	A	0.28	0
	OVERALL	B	0.74	-	B	0.74	-
Taylor Way & Inglewood Ave (signalized)	EBLT	D	0.72	67	D	0.73	65
	EBR	C	0.03	3	C	0.07	12
	WBLT	C	0.25	25	C	0.11	14
	WBR	C	0.08	14	C	0.04	9
	NBL	B	0.41	11	B	0.35	12
	NBTR	B	0.53	91	B	0.78	174
	SBL	A	0.45	24	B	0.39	9
	SBT	B	0.76	162	B	0.58	110
	SBR	B	0.16	16	A	0.12	10
Inglewood Ave & Site Access (unsignalized)	OVERALL	-	-	-	-	-	-
	EBLT	A	0.00	0	A	0.00	0
	WBLT	A	0.18	0	A	0.16	0
	SBLR	B	0.08	2	B	0.12	3

*When using SimTraffic, the microsimulation module of Synchro, the LOS for this movement was found to be D. This indicates that the HCM analysis procedures do not accurately capture the true traffic operations at this location and overstate the resulting vehicle delay.

Table 3.10: Opening Day + 5 Total Vehicle Operations

INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM			PM		
		LOS	V/C	95TH Q (M)	LOS	V/C	95TH Q (M)
Taylor Way & Highway 1 Interchange – North Ramp Junction Intersection (signalized)	OVERALL	D	0.65	-	C	0.70	-
	EBR	C	0.12	22	C	0.07	12
	WBL	D	0.60	149	E	0.76	205
	WBTL	D	0.42	86	D	0.48	90
	WBR	D	0.30	60	D	0.24	48
	NBL	C	0.62	65	B	0.65	13
	NBTR	C	0.61	50	B	0.64	5
	SBT	E	0.77	101	E	0.73	78
	SBR	D	0.52	67	E	0.33	40
Taylor Way & Highway 1 Interchange – South Ramp Junction Intersection (signalized)	OVERALL	E	1.02	-	C	0.77	-
	EBL	E	0.70	91	E	0.70	62
	EBR	*F	1.23	472	C	0.80	242
	NBT	D	0.47	96	C	0.55	142
	NBR	D	0.26	29	D	0.69	179
	SBL	C	0.64	44	C	0.66	13
	SBLT	C	0.73	52	C	0.73	14
Taylor Way & Har el Congregation Access (unsignalized)	OVERALL	-	-	-	-	-	-
	EBR	B	0.11	3	B	0.04	1
	NBT	A	0.38	0	A	0.58	0
	SBT	A	0.74	0	A	0.59	0
	SBTR	A	0.42	0	A	0.35	0
Taylor Way & Inglewood Ave (signalized)	OVERALL	C	0.80	-	C	0.82	-
	EBLT	D	0.79	80	D	0.78	70
	EBR	C	0.03	0	C	0.06	12
	WBLT	C	0.26	26	C	0.11	15
	WBR	C	0.09	14	C	0.05	11
	NBL	B	0.47	14	B	0.45	17
	NBTR	B	0.56	98	C	0.84	204
	SBL	B	0.51	25	B	0.46	12
	SBT	C	0.80	177	B	0.68	136
SBR	B	0.15	16	B	0.14	13	
Inglewood Ave & Site Access (unsignalized)	OVERALL	-	-	-	-	-	-
	EBLT	A	0.01	0	A	0.01	0
	WBLT	A	0.18	0	A	0.18	0
	SBLR	B	0.14	4	B	0.11	3

*When using SimTraffic, the microsimulation module of Synchro, the LOS for this movement was found to be C. This indicates that the HCM analysis procedures do not accurately capture the true traffic operations at this location and overstate the resulting vehicle delay.

Table 3.11: Opening Day + 10 Total Vehicle Operations

INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM			PM		
		LOS	V/C	95TH Q (M)	LOS	V/C	95TH Q (M)
Taylor Way & Highway 1 Interchange – North Ramp Junction Intersection (signalized)	OVERALL	D	0.68	-	C	0.70	-
	EBR	D	0.13	22	C	0.07	12
	WBL	D	0.63	170	E	0.76	205
	WBTL	D	0.44	93	D	0.48	90
	WBR	D	0.33	65	D	0.24	48
	NBL	D	0.67	54	B	0.65	13
	NBTR	C	0.66	44	B	0.64	5
	SBT	E	0.78	107	E	0.73	78
	SBR	D	0.54	74	E	0.33	40
Taylor Way & Highway 1 Interchange – South Ramp Junction Intersection (signalized)	OVERALL	F	1.07	-	C	0.77	-
	EBL	E	0.70	98	E	0.70	62
	EBR	*F	1.34	518	C	0.80	242
	NBT	D	0.53	101	C	0.55	142
	NBR	D	0.28	30	D	0.69	179
	SBL	C	0.64	20	C	0.66	13
	SBLT	C	0.73	23	C	0.73	14
Taylor Way & Har el Congregation Access (unsignalized)	OVERALL	-	-	-	-	-	-
	EBR	B	0.12	3	B	0.04	1
	NBT	A	0.40	0	A	0.58	0
	SBT	A	0.78	0	A	0.59	0
	SBTR	A	0.44	0	A	0.35	0
Taylor Way & Inglewood Ave (signalized)	OVERALL	C	0.83	-	C	0.82	-
	EBLT	D	0.82	91	D	0.78	70
	EBR	C	0.03	0	C	0.06	12
	WBLT	C	0.29	28	C	0.11	15
	WBR	C	0.09	15	C	0.05	11
	NBL	C	0.55	17	B	0.45	17
	NBTR	B	0.59	105	C	0.84	204
	SBL	B	0.55	25	B	0.46	12
	SBT	C	0.83	185	B	0.68	136
SBR	B	0.16	16	B	0.14	13	
Inglewood Ave & Site Access (unsignalized)	OVERALL	-	-	-	-	-	-
	EBLT	A	0.01	0	A	0.01	0
	WBLT	A	0.18	0	A	0.18	0
	SBLR	B	0.14	4	B	0.11	3

*When using SimTraffic, the microsimulation module of Synchro, the LOS for this movement was found to be D. This indicates that the HCM analysis procedures do not accurately capture the true traffic operations at this location and overstate the resulting vehicle delay.

3.2.4 Summary of Traffic Impacts & Recommended Mitigations

The results of this analysis show that the site access can accommodate the anticipated increase in traffic volumes resulting from the redevelopment of the Inglewood Care Centre site.

The eastbound queue for the intersection of Inglewood Avenue & Taylor Way is anticipated to periodically block access to the development on Inglewood Avenue. A painted box and signage should be provided to mitigate blocking of the entrance.

Traffic operations at the Highway 1 & Taylor Way interchange were nearing traffic capacity/operational thresholds for several movements, and potentially exceeding the acceptable thresholds for the right turn movement from the Highway 1 eastbound off-ramp to Taylor Way southbound. These traffic operations concerns are present under existing traffic conditions and are not materially impacted by the Inglewood Care Centre redevelopment which is expected to contribute to a 1% - 3% increase in traffic volumes at the interchange.

Although this improvement is outside of the scope of the Inglewood Care Centre redevelopment, a potential mitigation measure that was considered to improve traffic operations at the Highway 1 & Taylor Way interchange was a second right turn lane from the Highway 1 eastbound off-ramp to Taylor Way southbound. The existing yield control would be replaced by signal control.

This mitigation measure was tested during the critical Year 2034 AM peak hour period. Table 3.11 shows the results of this analysis and compared the operations to existing geometry. It was found in improve the modelled LOS on the movement from F to C, and improve the overall intersection LOS of F to D.

Table 3.12: Mitigation Test at Highway 1 & Taylor Way South Ramp Junction Intersection

INTERSECTION/ TRAFFIC CONTROL	MOVEMENT	AM (YEAR 2034) EXISTING CONFIGURATION			AM (YEAR 2034) DUAL EASTBOUND RIGHT TURN LANE		
		LOS	V/C	95TH Q (M)	LOS	V/C	95TH Q (M)
Taylor Way & Highway 1 Interchange - South Ramp Junction Intersection (<i>signalized</i>)	OVERALL	<i>F</i>	<i>1.07</i>	-	<i>D</i>	<i>0.77</i>	-
	EBL	E	0.70	98	D	0.52	103
	EBR	*F	<i>1.34</i>	518	C	0.74	207
	NBT	D	0.53	101	D	0.67	100
	NBR	D	0.28	30	D	0.28	29
	SBL	C	0.64	20	C	0.64	21
	SBLT	C	0.73	23	C	0.74	25

In addition to the operational benefits, this change in operation creates a safer condition for pedestrians and bikes passing through this ramp junction intersection by providing a protected phase and also improves safety for the right-in/out driveway by better controlling the entry of the traffic turning off the highway onto southbound Taylor Way.

4. SITE PLAN DESIGN REVIEW

4.1 Parking and Loading Supply

4.1.1 Vehicle Parking

Base Bylaw Requirements

Table 4.1 outlines the base West Vancouver vehicle parking Bylaw requirements applicable to the proposed development.

Table 4.1: Bylaw Vehicle Parking Supply Rates

USE	BYLAW CLASSIFICATION	BYLAW REFERENCE	BYLAW RATE
Assisted Living Long Term Care	Institutional – Private Hospital Zone 1	551.09	1 parking space for every 3.3 beds, minimum
Affordable Senior's Rental	Senior citizens' low rental apartment buildings	305.12 (2)	A minimum of the greater of: (a) 1 parking space shall be provided for every multiple of 3 dwellings, or (b) 1 parking space for every 93 square metres of dwelling floor space
Affordable Team member and workforce housing Residential Rental for Seniors	Apartment buildings	305.12 (1)	A minimum of the lesser of: (a) 1 parking space for each dwelling, or (b) 1 parking space for every 84 square metres of gross floor area
Community Assembly Space	Community Use Zone 3	503.10 (2)	A minimum of: (a) 1 parking space for every 9.5 square metres of assembly area, or (b) 1 parking space for every 37.5 square metre of gross floor area if the building does not contain floor area used for assembly

Observed Parking Demand Data

Bunt previously completed a study of parking demand ratios at 13 different seniors' facilities located in the Lower Mainland. **Table 4.2** summarizes the key findings of the study. Notably, the observed peak parking demand was equal to or higher than the West Vancouver Bylaw rate, which equates to approximately 0.30 parking stalls per bed.

Table 4.2: Summary of Observed Parking Ratios for Seniors' Housing

PARKING DEMAND TYPE	OBSERVED PEAK PARKING DEMAND BY FACILITY TYPE (STALLS / BED)		
	INDEPENDENT LIVING ¹	SUPPORTIVE HOUSING / ASSISTED LIVING ²	LONG TERM CARE ³
Residents	0.25	0.18	0.00
Staff	0.02	0.11	0.27
Visitors	0.05	0.05	0.03
TOTAL	0.32	0.34	0.30

1. For residents of generally good health and mobility with staff typically limited to building management and maintenance. Residents cook for themselves.
2. Congregate care, caters to generally healthy but more elderly residents. A greater degree of personal care assistance is offered (self-contained units although with communal dining and recreation facilities available) although no full-time licensed nursing
3. Nursing homes, intermediate and extended care hospitals, typically catering to elderly and infirm residents with continuous licensed, health care available.

Based on these findings, Bunt has previously recommended providing parking for the *Assisted Living* and *Long Term Care* facilities at a rate of 0.35 stalls per bed. This recommended supply rate could be reduced through the provision of Transportation Demand Management (TDM) measures.

Transportation Demand Management (TDM)

To reduce the demand for automobile ownership and use, Bunt recommends providing bicycle parking and a car share vehicles.

For the provision of bicycle parking, the recommended reductions to the vehicle parking supply requirements are based on that permitted by the West Vancouver Bylaw, as shown in **Table 4.3**.

Table 4.3: Bylaw Vehicle Parking Supply Reductions

USE	BYLAW CLASSIFICATION	BYLAW REFERENCE	BYLAW RATE
Affordable Team Member and Workforce Housing	Apartment	305.12 (1)	The minimum vehicle parking requirement otherwise required by this bylaw shall be reduced by for the provision of those secure bicycle parking spaces required under 143.1(3) of this bylaw.
Residential Rental for Seniors			
Affordable Senior's Rental	Senior citizens' low rental apartment buildings	<i>Bylaw rate from 305.12 (1) assumed to apply</i>	A vehicle parking space reduction of 0.17 space for each secure bicycle parking space required is permitted.

For the *Affordable Team Member and Workforce Housing*, a bicycle parking supply rate of 2.0 stalls per unit is recommended, which exceeds the Bylaw supply requirement of 1.5 stalls per unit. This is comparable to City of Vancouver TDM policy which allows for reductions in vehicle parking for providing up to 40% additional secured bicycle parking spaces above the base Bylaw requirement. The Bylaw vehicle parking supply reduction noted in Table 4.2 was applied to the additional bicycle parking provided.

For the *Residential Rental for Seniors* and the *Affordable Senior's Rental*, a reduced bicycle parking provision was recommended based on City of Vancouver rates for comparable seniors' uses. The Bylaw vehicle parking reduction was applied to this reduced rate, rather than to the Bylaw required spaces.

For the *Affordable Team Member and Workforce Housing*, the rate of vehicle ownership will be naturally lower than a typical apartment, because the residents live where they work. To further reduce the need for private vehicle use, Bunt recommends the provision of 1 car share vehicles to be located on site. These car share services allow people to have short term access to a vehicle without having to buy or maintain their own vehicle. This Transportation Demand Management (TDM) measure is expected to be particularly effective for team member and workforce housing because trips to work would not require the use of a vehicle.

The City of Surrey's TDM policies allow for a net 5 stall parking reduction per car share vehicle provided. The recommended reduction in the number of required vehicle parking spaces for this site is based on this policy (i.e. for the provision of 1 car share vehicles 5 other vehicle parking spaces can be eliminated).

Car share memberships are provided with the purchase of a MODO (the primary two-way car share provider in Metro Vancouver) car share vehicle for a site. These memberships are connected to the dwelling units rather than individuals. These memberships are recommended for the *Affordable Team Member and Workforce Housing*.

Table 4.4 compares the West Vancouver Bylaw vehicle parking rates for Bunt's recommended rates for each use.

Table 4.4: Residential Vehicle Parking Supply Rate Comparison

USE	BYLAW PARKING SUPPLY RATE	BUNT RECOMMENDED PARKING SUPPLY RATE WITH TDM	SUPPORTING TDM MEASURES
Assisted Living	0.30 spaces per bed	0.30 spaces per bed	<ul style="list-style-type: none"> Access to 1 car share vehicles on site 0.10 secure bicycle parking spaces per unit
Long Term Care			
Affordable Senior's Rental	*0.54 spaces per unit (0.42 with bicycle parking provision)	0.42 spaces per unit	<ul style="list-style-type: none"> Access to 1 car share vehicles on site 0.75 secure bicycle parking spaces per unit
Affordable Team member and workforce housing	*0.77 spaces per unit (0.43 with bicycle parking provision including additional)	0.39 spaces per unit	<ul style="list-style-type: none"> Access to 1 car share vehicles on site Paid car share memberships linked to units 2.0 secure bicycle parking spaces per unit
Residential Rental for Seniors	*1.00 space per unit (0.87 with bicycle parking provision)	0.875 spaces per unit	<ul style="list-style-type: none"> Access to 1 car share vehicles on site 0.75 secure bicycle parking spaces per unit

*A reduction of 0.17 vehicle parking spaces per bicycle parking space required is permitted by the applicable Bylaws.

Table 4.5 outlines the vehicle parking requirements and recommendations and compares these to the development’s proposed supply.

Table 4.5: Vehicle Parking Supply Requirement & Provision

BUILDING (PHASE)	LAND USE	DENSITY	BYLAW SUPPLY REQUIREMENT	BUNT RECOMMENDED SUPPLY WITH TDM	PROVIDED	DIFFERENCE FROM BYLAW
LTC (Phase 1)	Long Term Care	240 beds	73	73	75	+2
AL/LTC (Phase 2)	Long Term Care	104 beds / units	32	32	42	0
	Assisted Living					
	Community Assembly Space	95 m ² GFA	10	10		
AH (Phase 2)	Affordable Senior’s Rental	48 units / 2,424 m ² dwelling floor space	26 <i>*(20 with bicycle parking)</i>	20	65	-44 <i>*(-11 with bicycle parking)</i>
	Affordable Team member and workforce housing	107 units / 6,962 m ² GFA	83 <i>*(56 with bicycle parking at bylaw rate of 1.5 stalls per unit)</i>	42		
RSS (Phase 2)	Residential Rental for Seniors	200 units / 22,742 m ² GFA	200 <i>*(175 with bicycle parking)</i>	175	178	-22 <i>*(+3 with bicycle parking)</i>
TOTAL			424 <i>*(366 with bicycle parking)</i>	352	360	-64 <i>*(-6 with bicycle parking)</i>

*A reduction if 0.17 vehicle parking spaces per bicycle parking space provided in permitted by the applicable Bylaws.

The proposed supply provides only 6 fewer vehicle parking stalls than the base Bylaw requirements, taking into consideration with reduction for the provision of bicycle parking permitted by the Bylaw. This reduction meets Bunt’s recommended parking supply and is supported with the provision of TDM measures.

If the provided vehicle parking stalls are designated between residents, visitors, and staff, the allocation of these stalls can be determined based on the rates observed by Bunt. As per Section 142.09 (1) of the Zoning Bylaw, a maximum of 30% of parking spaces may be designated as small car spaces.

Table 4.6 shows the required provision of parking for persons with disabilities as per Section 142.09 (1) of the Zoning Bylaw.

Table 4.6: Required Parking for Persons with Disabilities

TOTAL REQUIRED PARKING SPACES	REQUIRED SPACES FOR PERSONS WITH DISABILITIES
10-75	1
76-125	2
126-200	3
Over 200	3 spaces plus one space for every 100 spaces or fraction thereof in excess of 200

Aside from the *Long Term Care* facilities, most of the parking will be for the Inglewood Care Centre residents who are seniors. Given this, Bunt recommends that accessible parking be provided above the minimum rate. **Table 4.7** compares the provision of accessible parking to the required number of stalls for each building.

Table 4.7: Provision for Parking for Persons with Disabilities

BUILDING (PHASE)	REQUIRED PARKING SPACES	REQUIRED SPACES FOR PERSONS WITH DISABILITIES	PROVIDED SPACES FOR PERSONS WITH DISABILITIES	DIFFERENCE FROM BYLAW
LTC (Phase 1)	73	1	6	+5
AL/LTC (Phase 2)	42	1	4	+3
AH (Phase 2)	76	2	2	-
RSS (Phase 2)	175	3	3	-
TOTAL		7	15	+8

The proposed accessible parking provision considerably exceeds the minimum requirements of the Zoning Bylaw.

4.1.2 Bicycle Parking

Table 4.8 outlines the base West Vancouver vehicle parking Bylaw rates applicable to the proposed development.

Table 4.8: Bylaw Bicycle Parking Supply Rates

USE	BYLAW CLASSIFICATION	SECURED BICYCLE PARKING		SHORT TERM BICYCLE PARKING	
		BYLAW REFERENCE	BYLAW RATE	BYLAW REFERENCE	BYLAW RATE
Assisted Living Long Term Care	Commercial and Institutional	143.01 (3)	0.3 per 100 m ²	143.02 (2)	0.4 per 100 m ²
Affordable Senior's Rental Affordable Team Member and Workforce Housing Residential Rental for Seniors	Townhouse or Apartment	143.01 (3)	1.5 per dwelling	143.02 (2)	0.2 per dwelling

The classifications in the West Vancouver parking Bylaw for bicycle parking calculation are based on broad land use categories that are not specifically related to facilities for seniors. Based on data collected by Bunt, supply requirements from other municipalities, and Baptist Housing's observations of their facilities, the bicycle parking supply requirements based on these rates are substantially higher than the expected demand.

To provide a comparison, Bunt reviewed the City of Vancouver Bicycle parking requirements for the proposed facility types. The City of Vancouver Parking Bylaw contains specific land uses related to assisted living, long term care, and senior's rental housing, as shown in Table 4.9.

Table 4.9: Comparison City of Vancouver Bylaw Bicycle Parking Supply Rates

USE	CITY OF VANCOUVER BYLAW CLASSIFICATION	SECURED (CLASS A) BICYCLE PARKING		SHORT TERM (CLASS B) BICYCLE PARKING	
		BYLAW REF	BYLAW RATE	BYLAW REF	BYLAW RATE
Assisted Living Long Term Care	Seniors Supportive or Assisted Housing	6.2.1.5	A minimum of 0.10 spaces for every residential unit.	6.2.1.5	A minimum of 2 spaces for any development containing at least 20 dwelling units, and one additional space for every additional 20 dwelling units.
Affordable Senior's Rental Residential Rental for Seniors	Three or more dwelling units designated solely for senior citizens housing.	6.2.1.3	A minimum of 0.75 spaces for every dwelling unit, except that where designated spaces are provided for the purpose of parking mobility scooters, these designated spaces may form part of the required minimum	6.2.1.3	A minimum of 2 spaces for any development containing at least 20 dwelling units, and one additional space for every additional 20 dwelling units.

Additionally, Bunt collected bicycle parking demand data at comparable seniors' facilities for a previous study, which is summarized in **Table 4.10**.

Table 4.10: Bicycle Parking Demand Data at Comparable Sites

SURVEY LOCATION	CITY	NUMBER OF UNITS	UNIT TYPE	OBSERVED BICYCLE PARKING DEMAND			BICYCLE PARKING RATE PER UNIT		
				STAFF	RESIDENTS	VISITORS	STAFF	RESIDENTS	VISITORS
Tapestry - Arbutus Walk	Vancouver	183	Independent and supportive living	6	0	0	0.03	0.00	0.00
Tapestry - Wesbrook Village	Vancouver	200	Independent and supportive living	3	5	0	0.02	0.03	0.00
Summerhill Retirement Residence	North Vancouver	108	Independent and supportive living	0	1	0	0.00	0.01	0.00
Sunrise of Lynn Valley	North Vancouver	92	Assisted living	3	0	5	0.03	0.00	0.05
Hollyburn House	West Vancouver	46	Independent living	7	0	0	0.07	0.00	0.00
		56	Assisted and private care						
Average demand rate per unit							0.03	0.01	0.01

The observed bicycle parking demand rates were found to be substantially lower than the applicable West Vancouver Bylaw rates (which are not specific to Senior's housing) and the City of Vancouver Bylaw rates. Although these low rates of bicycle parking demand were observed, the project is proposing to meet the requirements based on City of Vancouver policies to accommodate potential increases in bicycle use.

Table 4.11 presents the West Vancouver Bylaw rates and the rates recommended by Bunt for comparison.

Table 4.11: Bicycle Parking Supply Rate Comparison

USE	SECURED (CLASS A) BICYCLE PARKING		SHORT TERM (CLASS B) BICYCLE PARKING	
	BYLAW RATE	BUNT RECOMMENDED RATE	BYLAW RATE	BUNT RECOMMENDED RATE
Assisted Living	0.3 per 100 m ²	0.10 per bed	0.4 per 100 m ²	2 spaces + 0.05 per dwelling/bed
Long Term Care				
Affordable Senior's Rental	1.5 per dwelling	0.75 per dwelling	0.20 per dwelling	2 spaces + 0.05 per dwelling
Affordable Team Member and Workforce Housing	1.5 per dwelling	2.00 per dwelling	0.20 per dwelling	0.20 per dwelling
Residential Rental for Seniors	1.5 per dwelling	0.75 per dwelling	0.20 per dwelling	2 spaces + 0.05 per dwelling

Table 4.12 outlines the bicycle parking requirements based on these rates and compares it to the proposed supply.

Table 4.12: Bicycle Parking Supply Requirement & Provision

BUILDING (PHASE)	LAND USE	DENSITY	BYLAW SUPPLY REQUIREMENT	BUNT RECOMMENDED SUPPLY	PROVIDED	DIFFERENCE FROM BYLAW
LTC (Phase 1)	Long Term Care	240 beds / 20,902 m ² GFA	63 secured 84 short term	24 secured 14 short term	26 secured 14 short term	-37 secured -70 short term
AL/LTC (Phase 2)	Long Term Care	104 beds / 10,816 m ² GFA	32 secured	10 secured	10 secured	-22 secured
	Assisted Living		43 short term	7 short term	7 short term	-36 short term
AH (Phase 2)	Affordable Senior's Rental	48 units	72 secured 10 short term	36 secured 4 short term	36 secured 4 short term	-36 secured -6 short term
	Affordable Team member and workforce housing	107 units	161 secured 21 short term	214 secured 21 short term	214 secured 21 short term	+54 secured 0 short term
RSS (Phase 2)	Residential Rental for Seniors	200 units	300 secured 40 short term	150 secured 12 short term	150 secured 12 short term	-150 secured -28 short term
TOTAL			628 secured 198 short term	434 secured 58 short term	436 secured 58 short term	-192 secured -140 short term

The proposed bicycle parking supply meets Bunt recommended provision, which is based on a combination of District of West Vancouver and City of Vancouver Bylaw rates. Except for the *Team Member and Workforce Housing*, the proposed bicycle parking supply does not meet the applicable West Vancouver Bylaw rates, however these rates are not specific to Senior's housing which is expected to generate relatively minimal bicycle parking demand.

4.1.3 Loading

The District of West Vancouver does not provide any specific Bylaw requirements for the number and size of loading stalls, except in some CD zones. The proposed loading supply was based on the loading requirements generated by the existing Inglewood Care Centre and the increased demand anticipated from the expansion. **Table 4.13** indicates the proposed loading provision.

Table 4.13: Loading Supply Provision

DESIGN VEHICLE TYPE	SPACES PROVIDED
Small Semi-Trailer (WB-12)	3
Heavy Single-Unit Truck (HSU)	1
TOTAL	4

Several of West Vancouver's CD Zones that include loading requirements specify minimum length of 9.1 metres, width of 3 meters, and clear height of 3.7 metres. The dimensions of the proposed loading stalls exceed these requirements.

4.1.4 Pick-up / Drop-off and Short Term Parking

The required number and size of pick-up drop off stalls is not specified in the applicable District of West Vancouver Bylaws. **Table 4.14** indicates the proposed pick-up drop-off and short term parking provision, which was based on the anticipated operational needs of the facility. These short term parking spaces are included in the overall counts.

4.1.5 Table 4.14: Pick-up / Drop-off and Short Term Parking Provision

DESIGN VEHICLE TYPE	SPACES PROVIDED
Passenger Car Short Term Parking	6
TransLink HandyDart	3 Pick-up Drop-off Locations (shared with passenger cars) 2 Stalls for Staging

4.2 Site Access Design

The site design provides an unsignalized full movement driveway access along Inglewood Avenue and an unsignalized right-in/right-out only access on Taylor Way. This second access relieves traffic pressure from the Inglewood access and facilitates improved on-site traffic circulation.

Two preliminary technical memorandums were prepared for the development regarding the proposed site access point. The first memorandum, attached in **Appendix B**, reviewed truck access at the Inglewood Avenue. The memo concluded that the Inglewood Access was an appropriate location for truck access to and from the site.

The second memorandum reviewed the proposed Taylor Way access and concluded that the proposed vehicle access was supportable a transportation design and traffic operations perspective. This memorandum is attached in **Appendix C**.

Exhibit 4.1 to 4.3 review passenger vehicle and truck turning paths at the site access point and confirm that they can adequately accommodate the design vehicles for the site. The WB-12 was used as a design vehicle as it is the largest truck size that is planned to serve the facility.

4.3 Parking Layout & On-Site Vehicle Circulation

Two levels of underground parking are proposed. The parkade is designed to generally provide circulation loops or turnaround facilities for staff and visitor parking, allowing for good on-site vehicle circulation. Where dead end aisles are planned, these are reserved for resident parking and designated for use by only that resident. **Exhibit 4.4 to 4.5** provide an AutoTurn review of the on-site vehicle circulation. **Exhibit 4.6 to 4.7** review the parking layout to confirm the functionality of any parking stalls that are potentially

difficult to access. The results of this analysis show that the proposed parking layout can accommodate the turning path requirements of the different design vehicle types anticipated.

4.4 Passenger Pick-Up and Drop-Off

Pick-up and drop-off facilities are provided near the two site entrances around or next to on-site traffic circles to provide convenient access and egress. **Exhibit 4.8** confirms the feasibility of passenger vehicle pick-up and drop-off manoeuvres.

Passenger pick-up and drop-off with TransLink's HandDart vehicles is planned at the LTC, RSS, and AL/AH buildings. Additionally, two on-site staging stalls are provided for these vehicles. **Exhibit 4.9 to 4.10** confirm the feasibility of the HandyDart manoeuvres, although it is noted that a repositioning manoeuvre is required for the HandyDart to circulate the north roundabout.

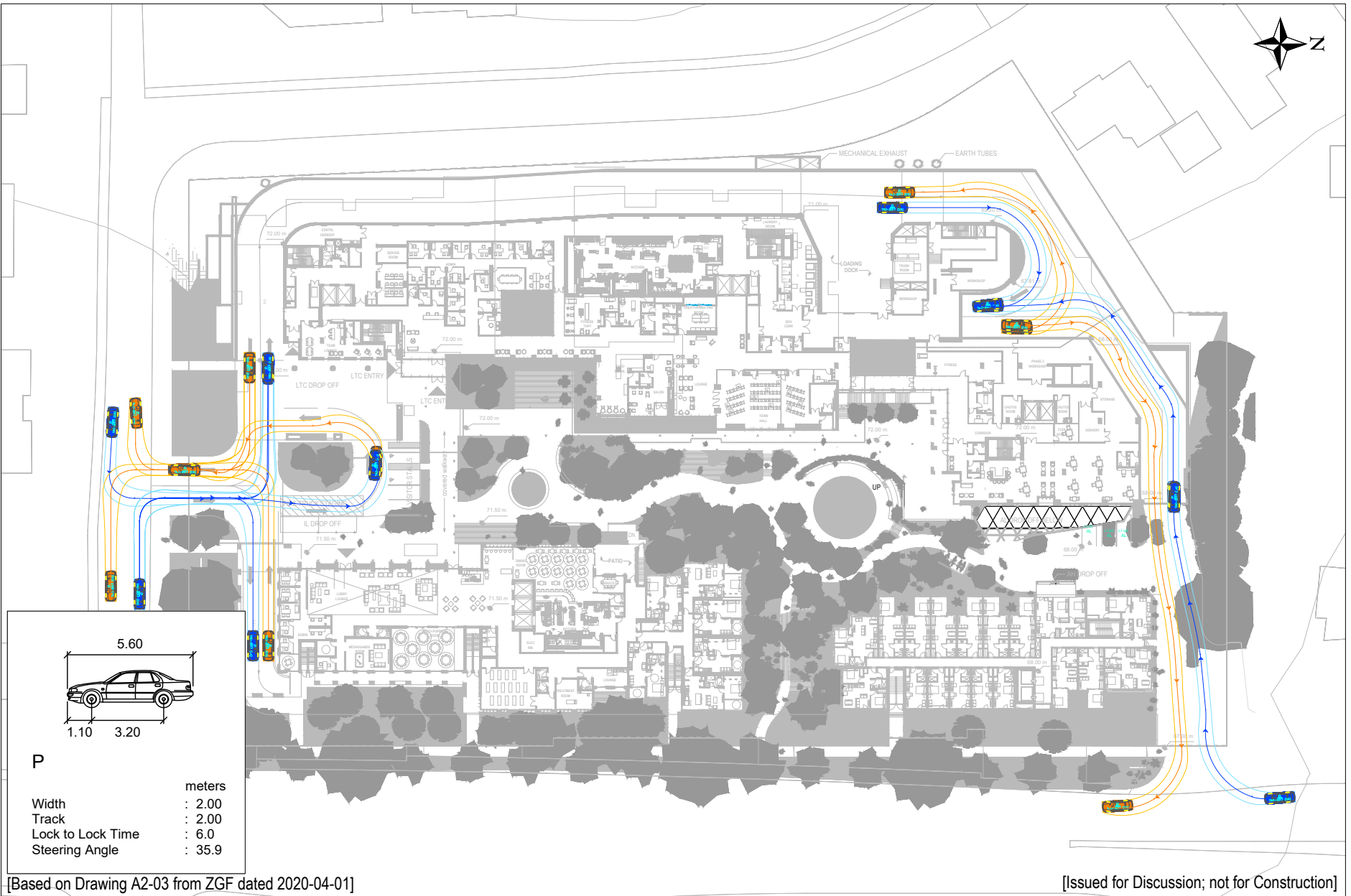
4.5 Service Vehicle Operations

Exhibit 4.11 to 4.14 confirm the feasibility of loading manoeuvres at the two loading courts planned on site.

The loading courts are also used for waste collection. An HSU design vehicle (a heavy single unit delivery truck) was used to test these waste collection manoeuvres. **Exhibit 4.15 to 4.18** confirm the feasibility of the waste collection manoeuvres. Target Zero Waste confirmed that the 5.5m of vertical clearance is required to allow for tipping of the low-profile bins, which should be provided in the waste collection area.

Two fire truck staging areas are located at site, one near the south end of the site and the other near the north end. **Exhibit 4.19 to 4.21** confirm the feasibility of the fire trucks manoeuvres.

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	5.60	
	1.10	3.20

	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

[Based on Drawing A2-03 from ZGF dated 2020-04-01]

[Issued for Discussion; not for Construction]

Exhibit 4.1 Passenger Vehicle Site Access

