WATT Consulting Group

734 SEA TERRACE

Parking Study

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Date: March 5, 2021
File No.: 2927.B01

WATT Consulting Group

TABLE OF CONTENTS

1.0 INTRODUCTION

Watt Consulting Group (WATT) was retained by Scala Development Consultants Ltd. to conduct a parking study for the proposed development at 734 Sea Terrace in the Township of Esquimalt, BC. The purpose of this study is to [a] conduct parking demand observations to determine the adequacy of the proposed parking supply, and [b] to provide and comment on transportation demand management (TDM) tools and their impact on parking demand that may be suitable for the site.

1.1 SUBJECT SITE

The proposed development is located at 734 Sea Terrace Road in the Township of Esquimalt and is currently zoned as RD-3: Single-Family Residential (See **Figure 1**).

FIGURE 1. SUBJECT SITE

1.2 SITE CHARACTERISTICS AND POLICY CONTEXT

The following provides information regarding services and transportation options in proximity to the subject site. In addition, the Township of Esquimalt's Official Community Plan (OCP) and other community policies pertaining to sustainable transportation and parking management are summarized.

COMMUNITY POLICIES

The Esquimalt OCP contains a series of policies that provide direction on future planning and land use management within the Township.[1] Per Schedule B of the OCP (Proposed Land Use Designations), the subject site is designated as 'Medium Density Residential.'[1] According to Section 5.3 of the OCP (Medium/High Density Residential Development, the Township supports compact, efficient medium density residential development that integrates with existing and proposed adjacent uses. One of the policies in Section 5.3 reads "prioritize medium density and high density residential development in proposed land use designated areas that: [a] reduce single occupancy vehicle use, [b] support transit service, [c] are located in proximity to employment centres, and [d] accommodate young families."

Section 11 of the OCP (Transportation) and Section 13.3 (Reduction of Greenhouse Gas Emissions) contain a series of policies focused on promoting multi-modal and low-carbon transportation. The most relevant policies for the subject site are as follows:

- Support densification along frequent and regional transit routes.
- Consider prioritizing transit along frequent and regional transit corridors.
- Where feasible, improve the continuity of the bike network by linking existing and future bikeways and trails.

[1] Township of Esquimalt (2018). Corporation of the Township of Esquimalt Official Community Plan. Available online at: https://www.esquimalt.ca/sites/default/files/docs/business-development/OCP/Esqimalt_OCP_2020-01-09.pdf

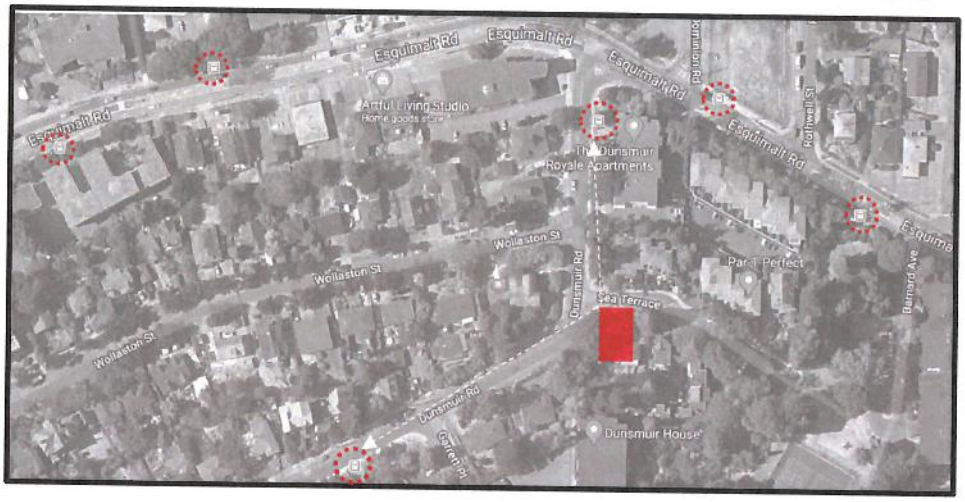
SERVICES

The site is located 120m from the intersection of Esquimalt Road and Dunsmuir Road. About 550m from site, at the intersection of Esquimalt Road and Head Street, there are several retail stores including a Shoppers Drug Mart, a liquor store, and several small-scale restaurants. Additionally, the development is within 1.8 kilometres of Esquimalt Plaza and around 2.6 kilometres from downtown Victoria, allowing access to a number of services that residents may require.

TRANSIT

The site is well-positioned with respect to transit. There are stops along Dunsmuir Road as well as along Esquimalt Road that are easily accessible from site. Along **Dunsmuir Road**, there are two stops that can be used to access Route 25 within 150 m of site. Along **Esquimalt Road** four stops that can be used to access Route 15 are within 350 m of site.

FIGURE 2. BUS STOP LOCATIONS IN PROXIMITY TO SUBJECT SITE



Route 15 | Esquimalt/UVic travels west to CFB Esquimalt and east to Downtown Victoria, then north to the University of Victoria (UVic). This route is classified as a regional route.

Weekday service starts at ~6:00am and continues to 12:00am, except on Fridays when the service runs late. Service runs at a 15-minute frequency all day, except during peak periods in the morning (7:00am to 9:00am) and afternoon (3:00pm to 5:00pm), when it runs at 10-minute frequency.

Route 25 | Maplewood/Admirals Walk is a neighbourhood route that connects Esquimalt to Saanich through Downtown Victoria. Weekday service starts at 6:30am and ends at 10:00pm. Service runs at an hourly frequency except during peak hours 6:30am to 7:30am and 4:00pm to 5:00pm it runs at a half hour frequency.

BC Transit's Transit Future Plan identifies Esquimalt Road as a "Frequent Transit Corridor" with the goal of providing frequent service (15 minutes or better between 7am and 10pm, 7 days/week). Another goal of Frequent Transit Corridors is to enhance bus stop infrastructure. Thus, the subject site will benefit from frequent, reliable, and convenient transit service. In addition to the above, the Township's OCP contains policy direction to enhance transit specifically along Esquimalt Road. Under Section 11.4 of the OCP, the following policies are identified: [2]

- Consider the designation of Esquimalt Road as a future rapid bus route.
- Consider including transit priority measures such as transit signal priority and queue jump lanes along Esquimalt Road. This should ensure the transition from frequent transit to rapid transit can occur and transit is prioritized through the corridor.

[2] Township of Esquimalt (2018). Corporation of the Township of Esquimalt Official Community Plan. Available online at: https://www.esquimalt.ca/sites/default/files/docs/business-development/OCP/Esqimalt_OCP_2020-01-09.pdf

WALKING

The streets immediately adjacent to the site are Sea Terrace and Dunsmuir Road. Both provide a reasonably safe pedestrian environment for walking. Sea Terrace has a sidewalk on the north side of the street, while Dunsmuir Road has sidewalks on both sides. The closest arterial, Esquimalt Road, has sidewalks on both sides and crosswalks at major intersections and mid-block locations. The site is also a short walk from the Westsong Walkway, which is a waterfront trail used by residents for recreational and commuting purposes to downtown Victoria.

CYCLING

According to the Capital Regional District Regional Bike Map, Dunsmuir Road is identified as a 'local street bikeway', which is considered a Class II bike facility suitable for most users. The local street bikeway on Dunsmuir Road provides connectivity to Esquimalt Road, where unbuffered bike lanes are present on both sides of the street providing a direct connection to downtown and the Esquimalt and Nanaimo [E&N] Rail Trail and Galloping Goose Regional Trail. The site is also near the future Kimta Road / E&N bike network improvement project, which is part of the City of Victoria's All Ages and Abilities bike network. This will include an off-street bike facility on Esquimalt Road from Robert Street to Catherine Street, which is anticipated to improve safety and connectivity for future residents of 734 Sea Terrace who cycle to downtown Victoria.

CARSHARING

Carsharing programs are an effective way for people to save on the cost of owning a vehicle while having access to a convenient means of transportation. The Modo Car Cooperative (Modo) is a popular carsharing service in Greater Victoria with about 87 Modo vehicles and 3,040 members across the Greater Victoria region. There is one Modo vehicle within 300m or a 5-minute walk of the subject site, at 826 Esquimalt Road. The next closest Modo vehicle is available at Esquimalt Road and Carlton Terrace; a 9-minute walk from the subject site.

2.0 PROPOSED DEVELOPMENT

2.1 LAND USE

The proposed development will include 21 Multi-family residential (condo) units with a breakdown as follows:

- 7 - studio units
- 4 - one- bedroom unit
- 8 - two-bedroom units
- 2 - three-bedroom units

2.2 PROPOSED PARKING SUPPLY

2.2.1 VEHICLE PARKING

The development proposes 18 vehicle parking spaces of which 16 are underground with two (2) surface spaces. Based on the above number this will result in a parking rate of 0.86 spaces per unit.

2.2.2 BICYCLE PARKING

An enclosed bicycle parking space will be included with the development, accessible at the back of the underground parking lot. There will be 20 bike storage lockers provided, many of which will have access to an electrical outlet and all of them will be secured. In addition, short-term bike parking at the surface level is also proposed in the form of a 6-space bike parking rack near the entrance of the building.

3.0 PARKING REQUIREMENT

Based on Part 5 – Table 1 of the Esquimalt Parking Bylaw, a RM-4 and RM-5 class building (Medium and High-Density Apartment) is required to provide 1.3 parking spaces per dwelling unit. In addition to this, one of every four required parking spaces must be designated as a visitor space. By applying this rate to the proposed development, the required parking supply is 28 spaces (21 resident spaces, and 7 visitor

spaces). This means that the development is 10 spaces short of the Township's parking requirement.

4.0 EXPECTED PARKING DEMAND

Expected parking demand for this site was estimated in the following sections to determine if the proposed supply will adequately accommodate the parking demand. Expected demand is based on [a] parking observations collected from representative sites in the Township of Esquimalt, and [b] research based on previous parking studies.

4.1 RESIDENTIAL PARKING

Observations of parked vehicles were completed at 13 condo buildings in the Township of Esquimalt representing a total of 335 units. A summary of the representative sites is outlined in **Table 1**. Each location was chosen based of the following criteria:

- Proximity of Frequent Transit Network (FTN). The proposed location of this development is in proximity to the FTN on Esquimalt Road. The BC Transit Future Plan describes the FTN as receiving reliable and frequent service (every 15 minutes or better) between 7:00am and 10:00pm seven days a week. Representative sites were selected based on the criteria that they were either on the FTN or within 400m.
- Walk Score. This is a tool that ranks the walkability of a location based on its proximity to seven types of amenities: Dining and drinking, groceries, shopping, errands, parks, schools/education, and culture and entertainment. It is a useful tool for determining if a trip will require a vehicle, and may inform parking needs. The Walk Score of this development is 59, and the average Walk Score of the chosen representative sites is **59.6**.
- Countable Parking Spaces. To accurately collect observational data, parking lots must be accessible to a data collector. Sites with gated or underground parking were ruled out as they prohibited data collection.

TABLE 1. SUMMARY OF REPRESENTATIVE SITES

Site / Address	Walk score	Proximity to FTN (m)	Units
955 Dingley Dell	36	400	29
853 Selkirk Avenue	55	152	38
885 Ellery Street	62	730	20
726 Lampson Street	75	555	33
614 Fernhill Place	68	100	21
1121 Esquimalt Road	65	20	20
1124 Esquimalt Road	66	20	29
477 Lampson Street	39	347	44
848 Esquimalt Road	62	45	50
830 Esquimalt Road	63	30	21
826 Esquimalt Road	65	20	30
Average	**59.6**	**219**	

4.1.1 OBSERVATIONS

Observations of parking utilization were conducted at representative sites during the typical weekday peak hour period for residential land uses. For the purposes of this study, the greater number of observed vehicles between each data collection exercise were used for the representative peak demand at each location. Parking demand ranged from 0.65 vehicles per unit to 1.05 vehicles per unit, with an average parking demand of 0.87 vehicles per unit as shown in **Table 2**.

Observations were conducted at the following times:

- 3 November, 2020 at 9:30pm
- 4 November, 2020 at 9:30pm

TABLE 2. OBSERVATIONS AT REPRESENTATIVE SITES

Site / Address	Units	Observed Vehicles	Parking Demand (Vehicles/Unit)
955 Dingley Dell	29	27	0.97
853 Selkirk Avenue	38	36	0.97
885 Ellery Street	20	20	1.00
726 Lampson Street	33	28	0.91
614 Fernhill Place	21	22	1.05
1121 Esquimalt Road	20	12	0.65
1124 Esquimalt Road	29	26	0.97
477 Lampson Street	44	39	0.89
848 Esquimalt Road	50	31	0.68
830 Esquimalt Road	21	16	0.76
826 Esquimalt Road	30	20	0.70
		Average	**0.87**

4.1.2 ADJUSTMENT FACTORS

Observations are a useful method of assessing parking demand rates; however, there are limitations to this method. The main limitation is that resident(s) vehicles may not be present at the time of observation. To mitigate this factor, observations were conducted after 9:30pm to maximize likelihood of residents being present. There is still a chance that residents' vehicles may not be present for a multitude of factors including being out of town.

This would typically by addressed with a 10% adjustment in accordance with a Metro Vancouver Apartment Parking Study.[3] This resulted in an adjusted parking demand ranging from 0.72 vehicles per unit to 1.15 vehicle per unit, with an average parking demand of 0.95 vehicles per unit or 1 vehicle per unit (rounded) as shown in **Table 3**.

[3] Metro Vancouver. (2012). The Metro Vancouver Apartment Parking Study, Technical Report. Available online at: http://www.metrovancouver.org/services/regional-planning/PlanningPublications/Apartment_Parking_Study_TechnicalReport.pdf

TABLE 3. ADJUSTED OBSERVATIONS AT REPRESENTATIVE SITES

Site / Address	Units	Parking Demand (Vehicles/Unit)	Adjusted Parking Demand
955 Dingley Dell	29	0.97	1.06
853 Selkirk Avenue	38	0.97	1.07
885 Ellery Street	20	1.00	1.10
726 Lampson Street	33	0.91	1.00
614 Fernhill Place	21	1.05	1.15
1121 Esquimalt Road	20	0.65	0.72
1124 Esquimalt Road	29	0.97	1.06
477 Lampson Street	44	0.89	0.98
848 Esquimalt Road	50	0.68	0.75
830 Esquimalt Road	21	0.76	0.84
826 Esquimalt Road	30	0.70	0.77
	Average	**0.87**	**1.0**

4.1.3 PARKING DEMAND BY UNIT TYPE

Unit size type refers to the number of bedrooms provided within a residential unit. Research has shown that larger units will generally have more occupants or a family, therefore increasing the likelihood that additional vehicles will be owned by occupants and growing the parking demand.[4] Parking data collected for this study was assessed to reflect unit type using the following steps:

- Parking demand was calculated and adjusted by 10%;
- Parking Demand by unit type was calculated based on the demand ratios of bedrooms per unit at each site acquired from the Metro Vancouver Parking Study from 2018; and

[4] Potoglou, D., & Kanaroglou, P.S. (2008). Modelling car ownership in urban areas: a case study of Hamilton, Canada. *Journal of Transport Geography*, 16(1): 42–54.

- The assumed "ratio differences" (from 2018 Metro Vancouver Parking study) for parking demand between each site was applied to unit data and vehicle observations. These "ratio differences" are as follows.[5]
    - 1-Bedroom units' parking demand rates will be 19% higher than studio units rates;
    - 2-Bedroom units' parking demand rates will be 30% higher than 1-Bedroom rates; and
    - 3-Bedroom units' parking demand rates will be 23% higher than 2-Bedroom rates.

Table 4 illustrates the average parking demand by unit type.

TABLE 4. PARKING DEMAND BY UNIT SIZE AT REPRESENTATIVE SITES

Site / Address	Adjusted Parking Demand	Studio	1-Bedroom	2-Bedroom	3-Bedroom
955 Dingley Dell	1.06	--	0.83	1.08	--
853 Selkirk Avenue	1.07		0.82	1.07	1.32
885 Ellery Street	1.10	0.77	--	1.18	--
726 Lampson Street	1.00	0.72	--	1.11	-
614 Fernhill Place	1.15	--	--	1.15	--
1121 Esquimalt Road	0.72	--	0.58	0.76	0.93
1124 Esquimalt Road	1.06	--	--	0.91	1.12
477 Lampson Street	0.98	--	--	0.80	0.98
848 Esquimalt Road	0.75	0.60	0.71	0.93	--
830 Esquimalt Road	0.84	0.59	0.70	0.91	--
826 Esquimalt Road	0.77	--	0.68	0.89	--
Average	**1.0**	**0.7**	**0.75**	**1.0**	**1.10**

[5] Metro Vancouver. (2018). Regional Parking Study – Technical Report, pg. 18. Available online at: http://www.metrovancouver.org/services/regional-planning/PlanningPublications/RegionalParkingStudy-TechnicalReport.pdf

Results show that the average parking demand when factored for number of bedrooms and applied to the proposed development, are as follows:

- Studio Units | 0.7 spaces per unit X 7 units = 4.9 (5 spaces, rounded)
- 1-Bedroom Units | 0.75 spaces per unit X 4 unit = 3 spaces
- 2-Bedroom Units | 1.0 spaces per unit X 8 units = 8 spaces
- 3-Bedroom Units | 1.10 spaces per unit X 2 units = 2.2 (3 spaces, rounded)
- **Total Resident Parking Demand = 19 parking spaces**

4.2 VISITOR PARKING

Observations of visitor parking were conducted at each of the representative sites. The findings showed that average rate was 0.10 vehicles per unit. This is similar to what has been reported in other studies such as the 2012 Metro Vancouver Apartment Parking Study which concluded that visitor parking typically has a demand of less than 0.10 vehicles per unit.[6] Additional findings from similar studies conducted by WATT in the City of Langford and the City of Victoria also support these findings and suggest that visitor parking is not strongly linked to location. A recently completed development near to this location, 826 Esquimalt Road, is a 30-unit condo building where the developer provided three visitor parking spaces, a rate of 0.1 spaces per unit.[7]

Based on the available research and observational data, a rate of 0.1 is recommended. With 21 units and applying a visitor demand rate of 0.1, the visitor parking demand is 3 spaces. The applicant is proposing two surface parking spaces intended for visitors. Visitor parking demand typically peaks after 7:00pm on weekdays and weekends. Therefore, if the two visitor spaces are occupied during the peak time, the third visitor vehicle could park in the Barnard Park parking lot, which is expected to have much lower parking demand after 7pm and is less than a 1-minute walk from the subject site.

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[6] Metro Vancouver. (2012). The Metro Vancouver Apartment Parking Study, Technical Report. Available online at: http://www.metrovancouver.org/services/regional-planning/PlanningPublications/Apartment_Parking_Study_TechnicalReport.pdf

[7] More information about the 826 Esquimalt Road Parking Study is available online at: https://esquimalt.ca.legistar.com/LegislationDetail.aspx?ID=3663&GUID=B883D3FE-6D24-4C02-9550-0339E2D847A4

4.3 SUMMARY OF EXPECTED PARKING DEMAND

Based on the analysis, total expected parking demand for the site is 22 spaces (see Table 6). The proposed parking for this development per the site plan is 18 spaces. Therefore, the expected parking demand is greater than the proposed supply by 4 spaces.

TABLE 6. SUMMARY OF EXPECTED PARKING DEMAND

Land Use		Units	Expected Parking Demand	
			Rate	Rounded up
Multi-family Residential (Condominium)	Studio	7	0.7	5
	One-Bedroom	4	0.75	3
	Two-Bedroom	8	1	8
	Three-Bedroom	2	1.1	3
Visitor		21	0.1	3
	Total Expected Parking Demand			**22**

5.0 ON-STREET PARKING ASSESSMENT

An on-street parking analysis reported 29 on-street parking spaces in proximity to the subject site. Two count were completed at 9:30pm. The following streets were observed:

- Dunsmuir Street (north curb)
- Wollaston Street (north curb)
- Sea Terrace (north and south curb)

Peak occupancy was observed on Thursday November 4, 2020 at 9:30 pm when on-street parking was 73% occupied, with 9 spaces unoccupied. This indicates that there is limited on-street parking available during weekday evenings, which is the peak period for both residential and visitor parking demand.

6.0 TRANSPORTATION DEMAND MANAGEMENT

Transportation demand management (TDM) is the application of strategies and policies to influence individual travel choice, most commonly to reduce single-occupant vehicle travel. TDM measures typically aim to encourage sustainable travel, enhance travel options and decrease parking demand. The following sections present a number of TDM measures that the applicant could pursue to reduce the amount of vehicle parking required for the development. All of the TDM measures are recommended but the applicant will ultimately need to decide what they will commit to. For all of the TDM measures, an approximate reduction in parking demand is provided.

6.1 CARSHARING

6.1.1 OVERVIEW

As indicated in Section 1.2, there are two Modo vehicles within walking distance of the subject site, one at Esquimalt Road and Dominion Road and the other at Esquimalt Road and Carlton Terrace. Further, according to the 2017 CRD Regional Household Travel Survey, Esquimalt has one of the highest shares of households in the region with one vehicle (54%), which can make carsharing an even more viable option for families who may require a vehicle for only select trips.[8]

Part of the reason why carsharing is expanding locally and being supported by municipalities is because of its ability to reduce household vehicle ownership and parking demand. A recent 2018 study from Metro Vancouver analyzed 3,405 survey respondents from carsharing users in the region and found that users of Car2go and Modo reported reduced vehicle ownership after joining a carsharing service. The impact was larger for Modo users; households joining Modo reduced their ownership from an average of 0.68 to 0.36 vehicles. Further, Modo members were close to five times more

[8] Capital Regional District. (2017). CRD Origin-Destination 2017 Household Travel Survey, pg. 105. Available online at: https://www.crd.bc.ca/docs/default-source/regional-planning-pdf/transportation/crd-2017-od-survey-report-20180622-sm.pdf?sfvrsn=4fcbe7ca_2

likely to reduce car ownership compared to Car2go users. Additional research has found the following:

- A 2016 study in San Francisco reported that the potential for carsharing to reduce vehicle ownership is strongly tied to the built environment, housing density, transit accessibility, and the availability of parking.[9]
- A 2013 study from the City of Toronto looked at the relationship between the presence of carsharing in a residential building and its impact on vehicle ownership. The study surveyed residents of buildings with and without dedicated carshare vehicles. The study found that the presence of dedicated carshare vehicles had a statistically significant impact on reduced vehicle ownership and parking demand. Specifically, 29% of carshare users gave up a vehicle after becoming a member and 55% of carshare users forgone purchasing a car as a result of carsharing participation.[10]

While a study has not yet been completed in Greater Victoria to understand the impacts of carsharing on vehicle ownership, the results would likely be similar especially for households living in more urban areas such as Esquimalt and Victoria where there is greater access to multiple transportation options.

6.1.2 RECOMMENDATION

Modo is supportive of providing a vehicle at the subject site, but it would need to meet the following conditions:

- The applicant would provide, at no cost to Modo, one designated parking space at the proposed development, compliant with Modo Construction Standards For Shared Vehicle Parking Space and accessible to all Modo members on a 24 hour basis every day of the year;

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[9] Clewlow, R.R. (2016). Carsharing and sustainable travel behaviour: Results from the San Francisco Bay Area. *Transport Policy*, 51, 158-164.

[10] Engel-Yan, D., & D. Passmore. (2013). Carsharing and Car Ownership at the Building Scale. Journal of the American Planning Association, 79(1), 82-91.

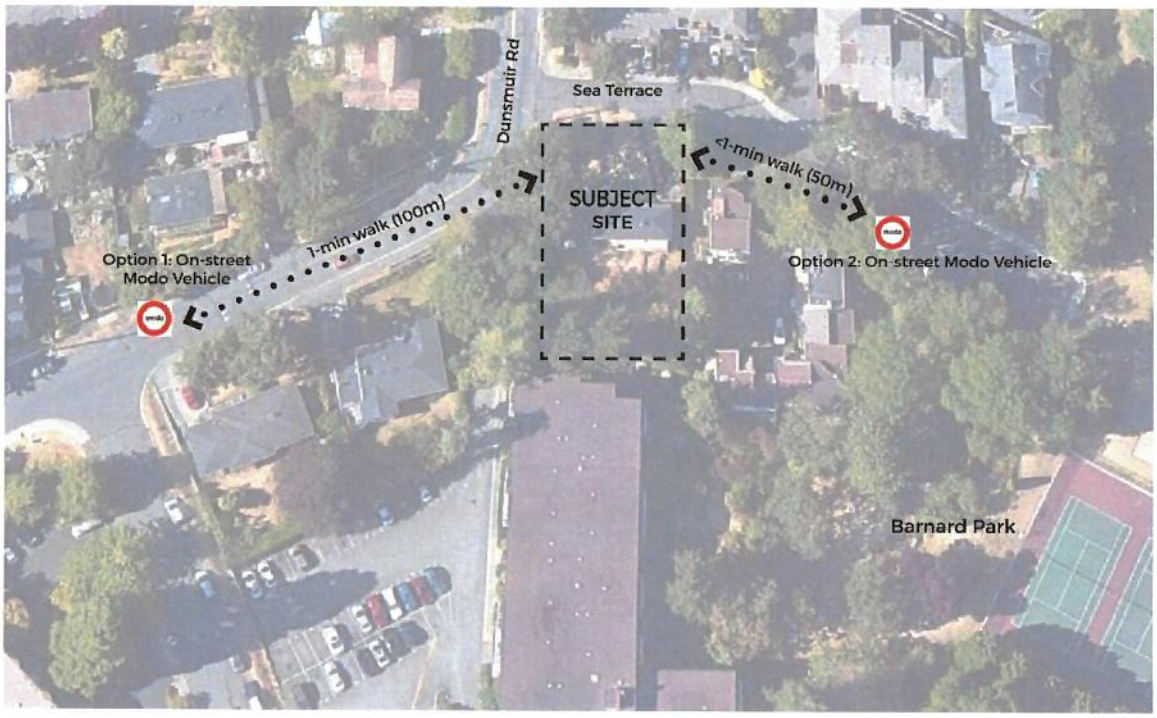
- The applicant would provide to Modo a one-time financial contribution of $29,500 including taxes and fees to be used for the purchase of one new shared vehicle to be located in the parking space designated for carsharing;
- Modo would provide the applicant with a Partnership Membership in Modo with a public value of $29,500, valid for the lifetime of the development and allowing a maximum of 59 units[11] of the development to benefit at any given time from Modo membership privileges and lowest usage rates without the need to themselves pay a $500 membership fee. This would cover all of the 21 units;
- Modo would provide a promotional incentive worth $100 of driving credits to each resident of the development joining Modo for the first time; and
- Sign-up fees and security deposits would be waived for businesses operating on-site to open Modo business accounts and register employees on their accounts.

Based on the conditions above, it is recommended that the applicant provide a carshare vehicle on-street so it is visible to residents of the site and those in the surrounding community. Figure 3 shows two potential locations for the on-street Modo vehicle. One location is in the parking lot of Barnard Park (in the City of Victoria). The other potential location is on the north side of Dunsmuir Road at Garrett Place. Both locations are within 100m (1-minute walk) of the site. Locating the vehicle on-street will allow the applicant to allocate all of the off-street parking spaces for residents and visitors. This is also consistent with the Township's OCP policy (Section 13.3.6), whereby Esquimalt will "Support the reservation of on-street parking for car share vehicles."

A 15% reduction would be supported if the applicant purchases a vehicle and locates it on-site or on-street nearby the site.

[11] $29,500 divided by $500, rounded down to the closest whole number. This figure was based on the cost of a Modo vehicle in October 2020 and may not reflect the public value cost in 2021.

Figure 3. Potential Locations for the On-street Modo Vehicle



6.2 SHARED ELECTRIC BIKE PROGRAM

6.2.1 OVERVIEW

E-bikes are electric bicycles with an electric motor of 500 watts or less and functioning pedals that are limited to a top speed of 32 km/h without pedalling. They are an emerging transportation phenomenon that are gaining popularity worldwide. With supportive cycling infrastructure in place, E-bikes have the potential to substitute for, or completely replace, almost all trips taken by a gasoline powered car, which could address congestion issues and mitigate parking challenges within urban areas.

The applicant is considering the provision of a shared electric bike program in the proposed development, which will make cycling more attractive for residents and help them complete a variety of trips that would otherwise be done by car, transit, or another

mode. The applicant is proposing 2 shared e-bikes in the site, which represents about 10% of all residential dwelling units.

The provision of electric bikes is anticipated to have an impact on vehicle ownership at the site; however, as electric bikes are an emerging form of mobility, there is limited research that has quantified the impact of these bikes on vehicle ownership / parking demand. A recent study presented results of a North American survey of electric bike owners. The study reported that e-bikes have the capacity to replace various modes of transportation commonly used for utilitarian and recreational trips including motor vehicles, public transit, and regular bicycles.

The study reported that 62% of e-bike trips replaced trips that otherwise would have been taken by car. Of these trips previously taken by car, 45.8% were commute trips to work or school, 44.7% were other utilitarian trips (entertainment, personal errands, visiting friends and family, or other), and 9.4% were recreation or exercise trips. The average length of these previous car trips was 15 kilometres.[12] Another study found that approximately 39 kilometres of driving per week is displaced by the average e-bike adopter along with 14 kilometres of travel by conventional bicycle.[13] Lastly, a September 2020 study reported that people who purchased an e-bike increased their bicycle use from 2.1 to 9.2 km per day on average, allowing them to rely on an e-bike for more of their daily travel needs.[14] All of the studies suggest that e-bikes are becoming a reliable form of transportation and a viable substitute for private motor vehicles.

The applicant's objective of providing the shared e-bike program is to provide a transportation option to residents who may not own a vehicle or for residents who own a vehicle but may not require it for all trip purposes.

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[12] MacArthur, J., Harpool, M., & D. Scheppke. (2018). A North American Survey of Electric Bicycle Owners. National Institute for Transportation and Communities, NITC-RR-1041.
[13] Bigazzi, A & E Berjisian. (2019). Electric Bicycles: Can they reduce driving and emissions in Canada. Plan Canada Fall 2019.
[14] Fyhri, A & H.B. Sundfor. (2020). Do people who buy e-bikes cycle more? *Transportation Research Part D: Transport and Environment*. Vol 86, 1-7.

The e-bike program would include the following:

- A total of 2 electric bicycles would be provided;
- The e-bikes would be owned and maintained by the strata corporation;
- The cost to use (i.e., reserve) an e-bike will be determined by the strata; and
- The process to reserve an e-bike will most likely be on a first come first serve basis, but will be determined by the strata

6.2.2 RECOMMENDATION

As the applicant continues to determine the operational and logistical details for the proposed shared e-bike program, it is recommended that they consider the following:

- Overall e-bike utilization should be carefully monitored in the first year. If demand is consistently high, consideration should be given to adding more e-bikes to the fleet after year 1.
- Building tenants should be discouraged from using the e-bikes for work trips. The e-bikes should be intended for various trip purposes including errands, shopping, appointments, etc., which are all shorter duration trips and would allow the e-bikes to be more available to the site for other residents.

With the provision of a shared electric bike program, a 10% reduction in resident parking demand is supported.

6.3 ELECTRIC BIKE PARKING

6.3.1 OVERVIEW

As stated previously, electric bicycles can displace trips made by private vehicles and in some cases, substitute for private vehicles altogether. Equally important, though, is the provision of parking facilities to accommodate electric bike users. According to research completed in Greater Victoria, one of the top barriers facing prospective e-bike users is the fear that their bicycle might be stolen.[15] That same research found that prospective

[15] WATT Consulting Group. (2018). Capital Region Local Government Electric Vehicle + Electric Bike Infrastructure Backgrounder. Available online at: https://www.crd.bc.ca/docs/default-source/climate-action-pdf/reports/electric-vehicle-and-e-bike-infrastructure-backgrounder-sept-2018.pdf?sfvrsn=a067c5ca_2

e-bike users would feel more comfortable if they could park their bicycle in a locked or supervised area.

The Capital Region Local Government Electric Vehicle + Electric Bike Infrastructure Planning Guide[16] includes e-bike parking design guidelines to help address the concerns of current and prospective e-bike owners as well as to increase overall e-bike ownership in the Capital Region. The guide recommends that new developments provide 50% of the long-term bicycle parking with access to an 110V wall outlet. Further, 10% of the long-term spaces are recommended to be provided as cargo racks to accommodate e-bikes.

6.3.2 RECOMMENDATION

It is recommended that the applicant commit to the following:

1. **Cargo Bike Parking** | Design up to 10% of the long-term bicycle parking spaces (2 spaces) to accommodate cargo bicycles (2.6m stall depth), which are harder to fit in a standard bike rack where the stall depth is 1.8 metres. Cargo bikes are typically longer than regular bicycles because they can carry cargo and/or multiple passengers and can be a popular option for young families.
2. **Access to Charging** | Provide at least 50% of the long-term bicycle parking spaces with direct access to an 110V wall outlet to help facilitate charging for e-bike owners and/or prospective e-bike owners.
3. **Secured Location** | Ensure that all long-term bike parking spaces will be in a secure access-controlled location, which is especially important for e-bike users to minimize bike theft.

[16] WATT Consulting Group. (2018). Capital Region Local Government Electric Vehicle + Electric Bike Infrastructure Planning Guide. Available online at: https://www.crd.bc.ca/docs/default-source/climate-action-pdf/reports/infrastructure-planning-guide_capital-region-ev-ebike-infrastructure-project-nov-2018.pdf?sfvrsn=d767c5ca_2

6.4 TDM SUMMARY

A summary of the proposed TDM measures and parking reductions is provided below. Table 7 presents the recommended TDM package, which includes carshare vehicle, memberships, a shared e-bike program, and e-bike parking. This would result in a resident parking reduction of 30%. This represents a reduction in the estimated parking demand by 7 spaces, resulting in a parking demand of 16 spaces (13 resident, 3 visitor), which would be 2 spaces less than the proposed supply.

TABLE 7. SUMMARY OF ESTIMATED PARKING DEMAND, WITH TDM

TDM Measure	Parking Demand / Reduction
Estimated Resident Parking requirement per Bylaw	21 spaces
Estimated Resident Parking Demand, Baseline	19 spaces
Total Parking Demand Reduction	–30%
Carsharing Vehicle (includes memberships)	–15%
Shared Electric Bike Program	–10%
Electric Bicycle Parking	–5%
Total Parking Demand Reduction	6 spaces
Estimated Resident Parking Demand with TDM	13 spaces
Total Site Parking Demand with TDM (including 3 visitor)	16 spaces
Proposed Parking Supply	18 spaces

7.0 CONCLUSIONS

The proposed development at 734 Sea Terrace is a 21 unit for-sale multi-family (condo) building with 18 proposed parking spaces. In addition, the applicant is proposing 20 long-term bicycle parking spaces.

Expected parking demand for this development was estimated based on observational data collected from representative sites in Esquimalt and was informed by previously conducted studies. To account for missing vehicles and to improve the rigor of analysis, the observational data was adjusted by 10%. Based on these observations the peak

parking demand rate is determined to be 22 spaces (19 resident, 3 visitor spaces), which exceeds the proposed supply (18 spaces) by 4 spaces.

Three TDM measures are recommended for the applicant's consideration. These include [a] a carshare program and [b] electric bike parking (c) electric bike share program. **With the adoption of all three TDM measures, the parking demand at this site parking is expected to meet the proposed parking supply.**

8.0 RECOMMENDATIONS

It is recommended that the applicant:

1. Commit to purchasing a Modo carshare vehicle for the site and providing memberships to each unit, which will provide a viable mobility option for residents and reduce dependency on vehicle ownership.
2. Provide electric bike parking, which includes designing 10% of the total long-term spaces for cargo bikes, and 50% of the total spaces with an 110V outlet.
3. Provide two e-bikes as part of an e-bike share program.

March 23, 2021

Sea Terrace Developments Ltd.
203 - 737 Goldstream Avenue
Victoria, BC,
V9B 2X4

Attention: Doug Makaroff

Dear Doug,

Re: Carshare arrangements at 734 Sea Terrace in Esquimalt

This letter confirms that Modo sees the location of the proposed residential development at 734 Sea Terrace in Esquimalt as having good potential for carsharing. Under the following arrangements, Modo would be willing to enter into an agreement with Sea Terrace Developments Ltd. (the "Developer") to provide carsharing services:

1. The Developer will arrange, at no cost to Modo, one (1) on-street parking stall within a two-minute walk from 734 Sea Terrace to be designated for the exclusive use of Modo;

2. The Developer will provide to Modo a one-time financial contribution of $30,000.00 including taxes and fees (the "Project Fee") to be used for the purchase of one new shared vehicle to be located in the parking stall designated for carsharing mentioned hereinabove;

3. Modo will provide the Developer with a Partnership Membership in Modo with a public value of $30,000.00, valid for the lifetime of the development and allowing a maximum of 60 residents of the rental dwelling units in the development to benefit at any given time from Modo membership privileges and lowest usage rates without the need to themselves pay a $500 membership fee; and,

4. Modo will provide a promotional incentive worth $100 of driving credits to each resident of the development joining Modo for the first time.

Modo will deliver the shared vehicle upon issuance of an occupancy permit for the proposed development.

Regarding the Partnership Membership, only residents of the development would be able to benefit from Modo membership privileges under the umbrella of the Partnership Membership and become "Partner Users". Residents would apply directly to Modo to become Partner Users. The right to become a Partner User would be available on a first come, first serve basis. The rental property owner(s) would not be involved in the sign-up process of participants. Their sole administrative obligation regarding the Partnership

Membership would be to confirm, every six months, who, if anyone, among the list of Partner Users provided by Modo is no longer a resident of the development.

As part of its mission to transform communities by connecting people with places in a way that is affordable, convenient, inclusive and sustainable and help develop cost effective public policies, Modo will share data with the Township of Esquimalt on the utilization of the shared vehicle, including the ratio of hours booked by development occupants vs non-occupants.

Modo is interested in working with Sea Terrace Developments Ltd. and be part of the proposed development at 734 Sea Terrace whose occupants and nearby residents may no longer need to own a car of their own for their personal and business needs.

Thank you for your support of carsharing in the Township of Esquimalt.

Regards,

Sylvain Celaire
Director of Business Development

Enclosure: as mentioned above