



Appendix C

1042-1044 RICHARDSON STREET

Parking Study

A handwritten signature in black ink that reads "Tim Shah".

Author: Tim Shah, RPP, MCIP

A handwritten signature in blue ink that reads "Tania Wegwitz".

Reviewer: Tania Wegwitz, MCIP, RPP

September 15, 2020

File No. 2893



TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
1.1	Subject Site.....	1
1.2	Site Characteristics & Policy Context.....	2
2.0	PROPOSED DEVELOPMENT	7
2.1	Land Use.....	7
2.2	Proposed Parking Supply.....	7
3.0	PARKING REQUIREMENT	8
3.1	Vehicle Parking.....	8
3.2	Bicycle Parking.....	8
4.0	EXPECTED PARKING DEMAND	9
4.1	Market Rental.....	9
4.2	Affordable Rental.....	14
4.3	Visitor Parking.....	16
4.4	Summary of Expected Parking Demand.....	17
5.0	ON-STREET PARKING ASSESSMENT	17
6.0	TRANSPORTATION DEMAND MANAGEMENT.....	20
6.1	Carsharing.....	20
6.2	Additional Long-term Bike Parking.....	23
6.3	Shared Electric Bike Program.....	23
6.4	Electric Bike Parking.....	25
6.5	TDM Summary.....	26
7.0	CONCLUSIONS.....	27
8.0	RECOMMENDATIONS	28



1.0 INTRODUCTION

Watt Consulting Group (WATT) was retained by 1248330 BC Ltd. to conduct a parking study for the proposed development at 1042-1044 Richardson Street in the City of Victoria. The purpose of this study is to determine the parking demand for the site and identify transportation demand management strategies to help the applicant reduce the expected parking demand.

1.1 SUBJECT SITE

The proposed development is located at 1042-1044 Richardson Street in the City of Victoria (see **Figure 1**). It is currently zoned R-K (Medium Density Attached Dwelling District) and hosts two structures with five rental units.

FIGURE 1. SUBJECT SITE





1.2 SITE CHARACTERISTICS & POLICY CONTEXT

The following provides information regarding services and transportation options in proximity to the site at 1042-1044 Richardson Street. In addition, the City of Victoria’s planning policies pertaining to sustainable transportation and parking management are summarized.



CITY & NEIGHBOURHOOD PLANNING POLICY

The City of Victoria’s Official Community Plan (OCP) provides policies and objectives to guide decisions on planning and land management. Most recently updated in December of 2019, the OCP contains a number of 30-year goals in 17 distinct topic areas that give expression to Victoria’s sustainability commitment and work toward the achievement of long-term sustainability goals. Section 7 of the OCP (Transportation and Mobility) contains policy directions to reduce overall dependency on single occupancy vehicles and prioritize sustainable modes of travel including walking, cycling, and transit, among others.

The OCP also supports transportation demand management and parking management strategies as outlined in sections 7.11 and 7.12. Specifically, Section 7.12 indicates that reductions in the parking requirements should be considered where:

“7.12.1 Geographic location, residential and employment density, housing type, land use mix, transit accessibility, walkability, and other factors support non-auto mode choice or lower parking demand.”



The City also adopted the Fairfield Neighbourhood Plan¹ in September 2019. That Plan includes relevant policy direction pertaining to housing and transportation in the Fairfield neighbourhood. Developed in collaboration with the neighbourhood through an engagement process, one of the key plan directions is to “retain rental housing and add new rental and ownership housing”. Part of realizing this direction is to direct contributions from new development to create new, on-site affordable housing. In addition, the parking management section of the Plan includes direction to prioritize parking for bicycles, mobility devices, carshare vehicles, and electric transportation—all of which are included in the proposed development.



SERVICES

The site has direct access to commercial and retail amenities. Cook Street Village is within 550m (about a 5-minute walk) of the site, where several commercial amenities and personal services are located including a grocery store, medical, pharmacy, financial services, café, and restaurants. The site is also on the edge of downtown Victoria, where even more personal services and amenities are available.



TRANSIT

The subject site is within 50m (1-minute) walk of bus stops on Richardson Street and 100m of a pair of stops on Cook Street. The bus stops on Richardson Street are serviced by Route 1 (South Oak Bay / Downtown) and those on Cook Street by the Route 3 (James Bay / Royal Jubilee). Both routes provide 30-minute service during the weekday peak periods, with the Route 3 also providing service throughout the day seven days per week.

¹ City of Victoria. (2019). Fairfield Neighbourhood Plan. Available online at: https://www.victoria.ca/assets/Departments/Planning-Development/Community-Planning/Local-Area-Planning/Fairfield-Gonzales/Fairfield_NP_Final-web.pdf



The site is also less than 200m (2-minute walk) from Fairfield Road, which is designated as a Frequent Transit Corridor in the Victoria Regional Transit Future Plan.² All frequent transit corridors will see convenient, reliable and frequent (15 minutes or better between 7:00 a.m. and 10:00 p.m.) transit service seven days a week.



WALKING

The subject site has a walk score³ of 85, which means that it is situated in a very walkable area. This indicates that most errands can be accomplished on foot. Sidewalks are provided on both sides of Richardson Street and along Cook Street. There is also a crosswalk on the south side of the Cook Street / Richardson Street intersection, which provides a safe crossing for pedestrians.



CYCLING

The subject site is in an area where cycling is convenient for most trips. According to the City of Victoria's existing bike routes map, Richardson Street is designated as a 'signed bike route', which include the bicycle route sign (IB-23) and are typically found on quieter local streets.⁴ However, the cycling infrastructure on Richardson Street—and immediately in front of the subject site—is currently lacking. The site is also in proximity to Vancouver Street, which is another signed bike route, which provides north-south connectivity to other parts of Victoria's existing bike network including to the Fort Street and Pandora Avenue protected bike lanes.

² BC Transit. (2011). Transit Future Plan: Victoria Region. Available online at:

<https://www.bctransit.com/documents/1507213421003>

³ More information about the site's Walk Score is available online at: <https://www.walkscore.com/score/45-boyd-st-victoria-bc-canada>

⁴ City of Victoria. (2020). Current Cycling Network. Available online at:

<https://www.victoria.ca/EN/main/residents/transportation/cycling/current-cycling-network.html>



However, cycling infrastructure in the area is scheduled for improvement. Richardson Street is identified as one of the City’s All Ages and Abilities (AAA) cycling corridors, which will be part of the 32 kilometre AAA cycling network by 2023. The proposed design for Richardson Street is a shared use neighbourhood bikeway from Vancouver Street to Foul Bay Road. The construction of this facility will result in a number of infrastructure improvements along the corridor including new pedestrian amenities (e.g., new and upgraded pedestrian crossings, new sidewalks), traffic calming benefits (e.g., posted speed limit of 30 km/hr), additional landscaping and public realm opportunities, and a net gain of 51 on-street parking spaces with curb side space being repurposed at select locations along the corridor.⁵

According to the design overview, the recommended improvements in proximity to the subject site (between Vancouver Street and Cook Street) include [a] additional on-street parking [b] speed humps to alleviate speeding and [c] signaling the pedestrian crossing at the Cook Street / Vancouver Street intersection along with restricting southbound left turns and eastbound through movements.⁶

The Vancouver Street AAA corridor is also part of the future cycling network and will include a combination of enhanced cycling facilities including protected bike lanes and shared use lanes. Like the Richardson Street corridor, Vancouver Street will see a number of infrastructure

⁵ City of Victoria. (2020). Appendix D: Richardson Street Corridor. Available online at: <https://www.victoria.ca/assets/Community/Cycling/Appendix%20D%20-%20Richardson%20Street%20-%20approved%20design.pdf>

⁶ Ibid.



improvements including new pedestrian plazas, pedestrian crossings, traffic diversions, and up to 33 additional on-street parking spaces.⁷

In summary, the proposed AAA cycling facilities on Richardson Street and Vancouver Street are anticipated to improve the cycling conditions around the subject site and thereby increase the overall appeal of cycling among future residents of the site.



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 the most popular carsharing service in Greater Victoria. There are six Modo vehicles located within 450m (5-7 minute walk) of the subject site. The vehicles in proximity to the subject site are located at the following locations:

- Burdett Avenue and Vancouver Street
- Collinson Street and Quadra Street
- Rockland Avenue and Linden Street

⁷ City of Victoria. (2019). Appendix A – AAA Design Overview: Recommended Design for Vancouver Street. Available online at: <https://www.victoria.ca/assets/Community/Cycling/Appendix%20A%20-%20Vancouver%20-%20approved%20design.pdf>



2.0 PROPOSED DEVELOPMENT

2.1 LAND USE

The proposed development includes a 19-unit purpose-built rental building with market and affordable housing. A total of 5 affordable units are proposed (26% of the total units), which are intended for low to moderate income households. They will have rental rates that align with the City of Victoria’s Inclusionary Housing Policy and be secured by legal agreement. The proposed development will include a mix of bedroom types from bachelor to three-bedrooms (See [Table 1](#)).

TABLE 1. SUMMARY OF LAND USES

Housing Tenure	Bedroom Type	Quantity
Market Rental	One-bedroom	10
	Three-bedroom	4
Affordable Rental	Bachelor	1
	One-bedroom	4
Total		19

2.2 PROPOSED PARKING SUPPLY

2.2.1 VEHICLE PARKING

The proposed parking supply is nine (9) spaces, which includes visitor parking. This results in a parking ratio of 0.48 spaces per unit.

2.2.2 BICYCLE PARKING

The proposed bicycle parking supply includes 46 secured long-term spaces (2.4 spaces per unit) and six short-term spaces. Each long-term bicycle parking space will have access to a 120V wall outlet to facilitate charging for electric bike owners. All long-term bikes will be in a secure, weather protected location. In addition, 38 of 46 long-term spaces (83%) will be designed to accommodate larger bicycles such as electric cargo



bikes to make it easier to own an electric bike at the development. Lastly, a bike wash and bike repair station are also proposed.

The long-term bike parking area will be designed to accommodate parking for up to five electric mobility scooters, as well.

3.0 PARKING REQUIREMENT

3.1 VEHICLE PARKING

The City of Victoria's Zoning Bylaw No. 80-159 (Schedule C) identifies the bylaw parking requirements for the site. Schedule C specifies parking requirements based on several different factors for multi-family uses including:

- **Class of Use (i.e. Housing Tenure)** – Condominium (dwelling unit in a building owned by a Strata Corporation); Apartment (dwelling unit secured as a rental in perpetuity through a legal agreement); Affordable (affordable dwelling units secure in perpetuity through a legal agreement); All other multiple dwellings.
- **Location** – Core Area, Village/Centre and Other Area; and
- **Unit Size** – <45m² (< 485 sq.ft.), 45m² to 70m² (485 - 750 sq.ft.), and >70m² (>750 sq.ft.)

The subject building falls in the 'Other Area' category per Figure 1 of Schedule C and includes 'Apartment' and 'Affordable' uses per Table 1. Based on the Schedule C requirements, the site is required to provide a total of 17 off-street parking spaces comprising 15 residential spaces and 2 visitor spaces. Therefore, with 9 off-street parking spaces, the site is short 8 parking spaces per Schedule C.

3.2 BICYCLE PARKING

Per Table 2 of Schedule C, the subject site is required to provide one long-term bicycle parking space per unit that is less than 45m² in area and 1.25 spaces per unit for units that are 45m² or more. This results in a requirement of 24 long-term bicycle parking spaces.



The subject site is also required to provide 0.1 short-term bicycle parking spaces per unit, which results in 2 spaces. The applicant is currently exceeding these requirements.

4.0 EXPECTED PARKING DEMAND

Expected parking demand for the site is estimated in the following sections to determine if the proposed supply will adequately accommodate demand. Expected parking demand is based on [a] parking observations of the subject site to understand existing demand and [b] vehicle ownership data from the Insurance Corporation of British Columbia for several representative multi-family apartment sites and [c] research from recent past parking studies completed in the City of Victoria.

4.1 MARKET RENTAL

4.1.1 SITE SELECTION

Observations of parked vehicles were completed at 16 market rental buildings in the Fairfield neighbourhood and Cook Street Village representing a total of 516 units. Site selection was based on the following criteria:

- **Location.** Sites were selected in the Fairfield neighbourhood to ensure consistency in urban and transportation characteristics. Further, the Fairfield Neighbourhood Plan contains several guiding principles along with transportation and housing policy direction for the neighbourhood, which will result in changes to the urban fabric and transportation network. As such, selecting sites in the Fairfield neighbourhood provide an indication of what parking demand is today and how it might evolve as the recommendations in the Fairfield Neighbourhood Plan are implemented.
- **Walk Score.** Only sites that had a walk score of 80 and above were selected to resemble the walkability of the subject site.

4.1.2 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 and to ensure that it overestimated rather than underestimated demand, 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 0.42 vehicles per unit to 1 vehicle per unit, with an average parking demand of 0.60 vehicles per unit as shown in **Table 2**. Observations were conducted from 9:00-10:30pm on Tuesday September 8 and Wednesday September 9, 2020.

TABLE 2. PARKING DEMAND AT REPRESENTATIVE SITES

Address	Number of Units	Peak Observed Vehicles	Parking Demand (Vehicles/Unit)
777 Cook Street	41	41	1.00
820 Cook Street	21	18	0.86
1060 Pakington Street	33	16	0.48
1233 Fairfield Road	60	32	0.53
955 Cook Street	31	13	0.42
825 Cook Street	44	19	0.43
915 Cook Street	31	13	0.42
1150 Hilda Street	21	11	0.52
430 Chester Avenue	31	15	0.48
999 Southgate Street	31	20	0.65
715 Vancouver Street	46	21	0.46
350 Linden Avenue	39	17	0.44
505 Trutch Street	33	18	0.55
1208 Rockland Avenue	7	7	1.00
Average			0.60

4.1.3 ADJUSTMENT FACTORS

Observations are a useful method of assessing parking demand rates; however, there are limitations. One such limitation is the fact that an observation may not “catch” all



residents while they are home with their parked car on-site. On a typical weeknight in times prior to public health measures recently put in place due to COVID-19, it would be expected that some residents return home very late at night or in the next morning or have driven out of town for business or vacation.

For instance, a large scale apartment parking study commissioned by Metro Vancouver reported that observations of parking occupancy (percent of stalls occupied by a car or truck) increased later in the night. The study also suggested that occupancy surveys that start between 9PM – 10:30PM should have a 10% adjustment factor. Based on the available research, a conservative 10% adjustment factor is considered appropriate for the observations. For parking studies such as this one taking place during the gradual easing of social distancing, retaining the adjustment factor helps ensure that the parking demand estimates reflect a conservative (i.e. higher) estimation of demand.

Table 3 shows the difference between the observed parking demand and the adjusted parking demand rate, reflecting the 10% increase for “missed vehicles”. The average observed demand rate increased from 0.6 to 0.65 vehicles per unit (excluding visitor parking).

This finding is supported by the research that was undertaken as part of the Schedule C update for the City of Victoria. According to the multi-family residential parking demand analysis, which contained 126 buildings and 6,475 units across the City of Victoria, the average parking demand for market rental sites was reported as 0.54 vehicles per unit or 0.70 vehicles per unit as the 85th percentile demand.^{8,9}

⁸ WATT Consulting Group & City of Victoria. (2016). Working Paper no.3: Parking Demand Assessment, Review of Zoning Regulation Bylaw Off-Street Parking Requirements (Schedule C).

⁹ Some parking studies tend to plan for the 80th or 85th percentile demand rather than the average. This means 85% of sites will have peak parking at or below the rate of 0.70 vehicles per unit.



TABLE 3. ADJUSTED PARKING DEMAND AT REPRESENTATIVE SITES

Address	Number of Units	Parking Demand (Vehicles/Unit)	Adjusted Parking Demand (Vehicles/Unit)
777 Cook Street	41	1.00	1.10
820 Cook Street	21	0.86	0.94
1060 Pakington Street	33	0.48	0.53
1233 Fairfield Road	60	0.53	0.59
955 Cook Street	31	0.42	0.46
825 Cook Street	44	0.43	0.48
915 Cook Street	31	0.42	0.46
1150 Hilda Street	21	0.52	0.58
430 Chester Avenue	31	0.48	0.53
999 Southgate Street	31	0.65	0.71
715 Vancouver Street	46	0.46	0.50
350 Linden Avenue	39	0.44	0.48
505 Trutch Street	33	0.55	0.60
1208 Rockland Avenue	7	1.00	1.10
Average			0.65

4.1.4 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.¹⁰ As part of the Schedule C update, parking demand

¹⁰ 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.



was shown to differ by unit type among the 6,475 multi-family residential units that were included in the sample.¹¹ This research, in addition to the stakeholder consultation that was conducted as part of the Schedule C update, resulted in recommendations to amend the multi-family residential parking requirements in Schedule C to include rates by unit size.

Based on the research above, and the fact that the City of Victoria's Schedule C requirements differ rates by unit size, parking data collected for this study was assessed to reflect unit type using the following steps:

- Parking demand was calculated and adjusted by 10%;
- Existing breakdown of bedrooms per unit at each site was acquired from the Canada Mortgage and Housing Corporation (CMHC); and
- The assumed "ratio differences" in parking demand between each unit type was based on the 2018 Metro Vancouver Parking Study, which recommends, for market rental units, that one-bedroom units have a 117% higher parking demand than studio units; two-bedroom units have a 26% higher parking demand than one-bedroom units; and three plus-bedroom units have a 23% higher parking demand than two-bedroom units.¹²

As indicated in Section 2.1, the proposed development includes 10 one-bedroom and 4 three-bedroom units. Applying the Metro Vancouver ratios to the parking demand data, the one-bedroom rate is 0.60 vehicles (spaces) per unit.

As the 516 unit parking survey sample only includes 3 three-bedroom units (which is less than 1 percent), the three-bedroom rate could not be reliably derived from the data. As such, the three-bedroom ratio from the Metro Vancouver study was applied to the two-bedroom parking demand rate (0.80 vehicles per unit). With three-bedroom units

¹¹ WATT Consulting Group & City of Victoria. (2016). Working Paper no.3: Parking Demand Assessment, Review of Zoning Regulation Bylaw Off-Street Parking Requirements (Schedule C).

¹² Metro Vancouver. (2018). Regional Parking Study – Technical Report, pg. 18. Available online at: <http://www.metrovancouver.org/services/regional-planning/PlanningPublications/RegionalParkingStudy-TechnicalReport.pdf>



having 23% higher demand than two-bedrooms, the three-bedroom rate is 1 vehicle per unit.

In summary, based on the analysis above, the following are the recommended demand rates for the market rental units:

- One-bedroom (10 units) = 0.6 spaces per unit
- Three-bedroom (4 units) = 1 space per unit

4.1.5 PRECEDENT SITES

There have been other proposed market rental buildings proposed in the neighbourhood that have sought a parking variance. As an example, a 31-unit market rental building was proposed at 1015 Cook Street. The Schedule C parking requirement for the development was 19 parking spaces; however, through a combination of proposed transportation demand management measures including three carshare vehicles, carshare memberships for each unit, two long-term bike parking spaces above and beyond the bylaw, and an at-grade bike parking room with end-of-trip facilities, the applicant was able to secure a 15 space parking variance from the City. As such, the development was approved to provide three parking spaces for carshare vehicles and one visitor space—a total of four off-street spaces.^{13,14}

4.2 AFFORDABLE RENTAL

4.2.1 CONTEXT

As indicated in Section 2.1, a total of 5 affordable units are proposed, which are intended for low to moderate income households. They will have rental rates that align

¹³ City of Victoria. (2020). Council Report for Meeting of July 9, 2020, Update on Rezoning Application No. 00670 and Development Permit with Variance Application No. 00131 for 1015 Cook Street, Available online at: <https://pub-victoria.escribemeetings.com/filestream.ashx?DocumentId=57189>

¹⁴ Hillel Architecture. (2019). Multi-family Residential Proposal 1015 Cook Street, Victoria, BC. Available online at: <https://tender.victoria.ca/webapps/ourcity/Prospero/FileDownload.aspx?fileId=200BAF79-59E7-46BD-887C-0432F13A593C&folderId=75738C181031135335193179>



with the City of Victoria’s Inclusionary Housing Policy and be secured by legal agreement. The 5 units comprise 1 bachelor and 4 one-bedrooms.

To estimate the parking demand for the affordable units, research and data from past parking studies were utilized. As part of the research undertaken for the City of Victoria Schedule C update, it was determined that the parking demand for affordable units is lower than market rental units. Even though the demand data showed that the parking demand rates for affordable rental and market rental were similar on a per unit basis (0.50 vehicles per unit), the research reported that the affordable sites included in the sample had a higher proportion of larger multi-residential and townhouse units. Based on the sample, a parking demand rate of 0.25 vehicles per unit was estimated for an affordable bachelor unit.

In addition, a focus group was held on the topic of affordable housing and parking as part of the Schedule C update. The focus group participants confirmed that parking demand for affordable units is generally lower than market rental and that parking demand differs by unit type.

4.2.2 PARKING DEMAND BY UNIT TYPE

Based on the research above, it is recommended that the Schedule C rate of 0.20 spaces per unit (for units less than 45m²) be used for the bachelor unit.

To estimate the parking demand for one-bedroom units, parking demand data were reviewed from past parking studies completed by WATT for non-subsidized (i.e. with rentals fixed a lower rate but not further subsidized) affordable housing developments.

Table 4 presents the results from the sample. The sites below include a mix of bedroom types, but the majority of units are one-bedroom.^{15,16}

¹⁵ Data obtained by email from Greater Victoria Housing Society Executive Director on April 17, 2019.

¹⁶ Bedroom mix for 109 Wilson Street obtained online: https://pacificahousing.ca/portfolio_page/the-wing/



Notwithstanding the small sample size, the average vehicle ownership rate among the non-subsidized affordable sites is 0.55 vehicles per unit. Even though some of these sites contain a mix of units (including two- and three-bedrooms), a rate of 0.55 spaces per unit is conservative and recommended as the one-bedroom rate for the subject site.

TABLE 4. VEHICLE OWNERSHIP AT REPRESENTATIVE NON-SUBSIDIZED SITES

Address	Number of Units	Owned Vehicles	Parking Demand (Vehicles/Unit)
35 Gorge Road E	68	55	0.81
411 Sitkum Road	75	39	0.29
2558 Quadra Street	19	29	0.53
109 Wilson Street	51	43	0.84
2014 Government Street	25	68	0.24
1134 Queens Avenue	28	17	0.61
		Average	0.55

In summary, based on the analysis above, the following are the recommended demand rates for the affordable rental units:

- Bachelor (1 unit) = 0.2 spaces per unit
- One-bedroom (4 units) = 0.55 spaces per unit

4.3 VISITOR PARKING

Observations were conducted as part of a study by Metro Vancouver¹⁷ that concluded typical visitor parking demand is less than 0.1 vehicles per unit. This is similar to observations that were conducted for parking studies in the City of Langford and the

¹⁷ Metro Vancouver. (2018). The 2018 Regional Parking Study. Technical Report. Available online at: <http://www.metrovancouver.org/services/regional-planning/PlanningPublications/RegionalParkingStudy-TechnicalReport.pdf>



City of Victoria, and indicates that visitor parking demand is not strongly influenced by location. As part of the update to the City of Victoria off-street parking requirements (Schedule C), the consulting team recommended a rate of 0.1 spaces per unit for visitor parking based on extensive research and data collection. The rate of 0.1 spaces per unit was ultimately adopted as the supply rate for visitor parking in Schedule C.

A rate of 0.1 spaces per unit is recommended for the proposed development, which results in 2 parking spaces.

4.4 SUMMARY OF EXPECTED PARKING DEMAND

Based on the analysis, the total expected parking demand for the site is 15 spaces (see **Table 5**). Therefore, the expected parking demand is greater than the proposed supply by 6 spaces.

TABLE 5. SUMMARY OF PARKING DEMAND

Land Use		Units	Expected Parking Demand	
			Rate	Total
Market Rental	One-bedroom	10	0.6	6
	Three-bedroom	4	1.0	4
Affordable Rental	Studio	1	0.2	1
	One-bedroom	4	0.55	2
Visitor		19	0.10	2
Total Expected Parking Demand				15

5.0 ON-STREET PARKING ASSESSMENT

On-street parking observations were completed to determine parking availability nearby the subject site. The majority of the on-street parking segments observed have a parking restriction including residential parking only, 2-hour parking only (9:00am-



6:00pm), and no parking during the day. Counts were completed on the following streets:

- Richardson Street
 - Vancouver Street to Cook Street
 - Cook Street to Trutch Street
- Vancouver Street
 - Richardson Street to McClure Street
 - Collinson Street to Richardson Street

Observations were completed at 9:00pm on Tuesday September 8th and Wednesday September 9th, 2020 to determine peak residential parking conditions. Evenings represent peak parking conditions for both residents and visitors alike according to the Urban Land Institute’s Shared Parking manual.¹⁸

A total of 85 on-street parking spaces were observed. On-street parking utilization was observed to be consistent on both days with 57-59 spaces occupied. This represents a peak parking occupancy of 67-69%, which indicates that there are still approximately 25-28 spaces available during the peak times. However, the on-street parking conditions on Richardson Street between Vancouver Street and Cook Street were highly utilized with over 95% occupancy on both nights. This indicates that the on-street conditions in proximity to the subject site have high occupancy and cannot accommodate any spillover from the proposed development.

Table 6 presents a summary of the on-street parking assessment. In the table under “Restrictions,” “RPO” indicates “Residential Parking Only.”

¹⁸ Smith, M. (2005). Shared Parking, 2nd Edition. The Urban Land Institute.



TABLE 6. SUMMARY OF ON-STREET PARKING ASSESSMENT

Street		Side	Restrictions	Parking Supply	Vehicles Observed			
					(spaces)	Tues. 9/8/2020		Weds. 9/9/2020
				Vehicles Observed		Occupancy	Vehicles Observed	Occupancy
Richardson Street	Vancouver St - Cook St	N	RPO	19	19	100%	18	95%
		S	RPO	19	19	100%	18	95%
	Cook St - Trutch St	N	No Parking					
		S	RPO	12	11	92%	12	100%
Vancouver Street	Richardson St -- McClure St	W	No Parking, 9am-6pm, M-F	5	0	0%	2	40%
		E	2hr, 9am-6pm M-Sat	9	5	56%	3	33%
	Collinson St -- Richardson St	W	No Parking, 9am-6pm, M-F	7	2	29%	1	14%
		E	2hr, 9am-6pm M-Sat	14	3	21%	3	21%
				85	59	69%	57	67%
					69%	69%	67%	



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 several TDM measures that the applicant could pursue to reduce the amount of vehicle parking required for the development. All the TDM measures are recommended but the applicant will ultimately need to decide what they will commit to. An approximate reduction in parking demand is provided for each TDM measure.

6.1 CARSHARING

6.1.1 OVERVIEW

As indicated in Section 1.2, there are six Modo vehicles within 450m of the subject site and an even greater number of vehicles in the larger Fairfield neighbourhood.¹⁹ This is providing the area with adequate carsharing service and availability. Further, according to the 2017 CRD Regional Household Travel Survey, Victoria South—where the subject site is located—has one of the highest shares of households in the region with one vehicle (60%), which can make carsharing an even more viable option for families who may require a vehicle for only select trips.²⁰

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

¹⁹ The location of Modo vehicles is shown on the Modo car map, which is available online at: <https://modo.coop/car-map>

²⁰ 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



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 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.²¹
- 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 because of carsharing participation.²²

Other studies have specifically explored whether the placement and location of a carsharing vehicle can have a positive impact on utilization. One study reported that on-street carshare vehicles can contribute to the growth of carsharing in two ways: (1) the time savings and convenience of on-street spaces can attract new members to carsharing organizations and (2) the better visibility of carshare vehicles parked on the street can serve as advertising that can show the benefits of membership.²³

While a study has not yet been completed in Greater Victoria to understand the impacts of carsharing on vehicle ownership or the specific placement of the vehicle, the results

²¹ Clewlow, R.R. (2016). Carsharing and sustainable travel behaviour: Results from the San Francisco Bay Area. *Transport Policy*, 51, 158-164.

²² Engel-Yan, D., & D. Passmore. (2013). Carsharing and Car Ownership at the Building Scale. *Journal of the American Planning Association*, 79(1), 82-91.

²³ Osgood, A. (2010). On-Street Parking Spaces for Shared Cars. *Access Magazine*, available online at: <http://www.accessmagazine.org/wp-content/uploads/sites/7/2016/01/access-36sharedparking.pdf>



would likely be similar especially for households living in more urban areas such as Victoria where there is greater access to multiple transportation options.

6.1.2 RECOMMENDATION

The applicant is considering a carsharing program at the site. Based on the research above, it is recommended that the applicant commit to the following:

- Commit to providing Modo a one-time financial contribution of approximately \$30,450²⁴ (including taxes and fees) to be used for the purchase of one new shared vehicle.
- Based on the location of the proposed development, the carshare vehicle should be located on-street in a parking space designated for carsharing, which would be consistent with the placement of other carshare vehicles in Fairfield.²⁵
- Modo would provide the applicant with a Partnership Membership in Modo with a public value of approximately \$30,450, valid for the lifetime of the development and allowing 60 residents to benefit from Modo membership privileges and the lowest usage rates (\$30,450 divided by \$500). Memberships will make it easier for residents to take advantage of using other carshare vehicles in the neighbourhood.

A parking demand reduction of 20% would be supported if the applicant purchases a vehicle and locates it either on-street directly in front of the site or in an off-street parking space. Memberships would also need to be provided to each unit.

²⁴ This is based on the forecast of an average vehicle purchase price for a Modo vehicle in 2023. This figure was provided to the applicant by email on June 8, 2020.

²⁵ According to Modo's vehicle database, most of their vehicles in the Fairfield neighbourhood are located on-street including the following locations: (1) Trutch Street / Fairfield Road, (2) Rockland Avenue / Linden Avenue, (3) Burdett Avenue / Vancouver Street, and (4) Oscar Street / Chester Avenue.



6.2 ADDITIONAL LONG-TERM BIKE PARKING

6.2.1 OVERVIEW

The applicant is committing to provide 46 long-term bike parking spaces, which results in 2 spaces per unit. This exceeds the Schedule C requirement by 16 spaces. The provision of additional bicycle parking spaces can support residents to satisfy potential bicycle demand in the present and future. Insufficient bicycle parking is considered a key barrier to promoting cycling, with additional bicycle parking associated with an increase of cycling by 10 to 40%.²⁶

6.2.2 RECOMMENDATION

It is recommended that the applicant commit to providing 46 long-term bike parking spaces.

With the provision of additional long-term bike parking, a 5% reduction in resident parking demand is supported.

6.3 SHARED ELECTRIC BIKE PROGRAM

6.3.1 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.



²⁶ Hein, E. & Buehler, R. (2019). Bicycle parking: a systematic review of scientific literature on parking behaviour, parking preferences, and their influence on cycling and travel behaviour. *Transport Reviews*, 39(5).



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 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.²⁷ A more recent 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.²⁸

6.3.2 RECOMMENDATION

It is recommended that the applicant commit to a shared e-bike program with the following parameters:

- With 19 units included in the proposed development, it is recommended that three e-bikes (15% of total units) be provided.
- The shared e-bike program should be managed by the property manager.

²⁷ MacArthur, J., Harpool, M., & D. Scheppke. (2018). A North American Survey of Electric Bicycle Owners. National Institute for Transportation and Communities, NITC-RR-1041.

²⁸ Bigazzi, A & E Berjisan. (2019). Electric Bicycles: Can they reduce driving and emissions in Canada. Plan Canada Fall 2019.



- The process to reserve an e-bike should be done on a first come first serve basis but can be determined by the property manager later.
- 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.

6.4 ELECTRIC BIKE PARKING

6.4.1 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.²⁹ That same research found that prospective 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 Guide³⁰ 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

²⁹ 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

³⁰ 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



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.

6.4.2 RECOMMENDATION

Based on discussions with the applicant, they will be committing to the following:

1. **Cargo Bike Parking** | 83% of the long-term bicycle parking spaces (38 spaces) will be designed for 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** | 100% of the long-term bicycle parking spaces will have direct access to an 110V wall outlet to help facilitate charging for e-bike owners and/or prospective e-bike owners.
3. **Secured Location** | 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.

A 5% reduction in resident parking demand is supported if the applicant commits to both electric bike parking recommendations above.

6.5 TDM SUMMARY

A summary of the proposed TDM measures and parking reductions is provided in **Table 7**. A resident parking reduction of 40% is supported if all the proposed TDM measures are provided. This represents a reduction in the estimated resident parking demand by 5 spaces, which would only exceed the proposed supply by one space. This would result in one visitor vehicle seeking parking during the peak time.



TABLE 7. SUMMARY OF ESTIMATED PARKING DEMAND WITH TDM

TDM Measure	Parking Demand / Reduction
Estimated Resident Parking Demand, Baseline	13 spaces (per Table 5)
Total Resident Parking Demand Reduction	-40% (-5 spaces)
Carshare Vehicle	-20%
Additional Bike Parking	-5%
Shared Electric Bike Program	-10%
Electric Bicycle Parking	-5%
Estimated Resident Parking Demand with TDM	8 spaces
Estimated Visitor Parking Demand	2 spaces
Total Site Parking Demand with TDM	10 spaces (8 + 2)
Proposed Parking Supply	9 spaces

7.0 CONCLUSIONS

The proposed development at 1042-1044 Richardson Street is a 19-unit purpose-built rental building with market and affordable housing. A total of 9 vehicle parking spaces are proposed. In addition, the applicant is proposing 46 long-term bicycle parking spaces and six short-term spaces.

Expected parking demand for this development was estimated based on observational data collected from representative sites in the Fairfield neighbourhood, ICBC vehicle ownership data for affordable (non-subsidized) sites, and other parking studies completed in the City of Victoria. Based on these observations the peak parking demand is 15 spaces (13 resident, 2 visitor), which exceeds the proposed supply by 6 spaces.

Four TDM measures are recommended for the applicant's consideration. These include [a] a carshare program, [b] additional bike parking, [c] a shared e-bike program and [d] e-bike parking. Committing to all four TDM measures is anticipated to reduce resident parking demand by 5 spaces, which would bring the total site demand to 10 parking spaces (8 resident, 2 visitor) and exceed the proposed supply by one space. This would



result in all resident vehicles being accommodated off-street with one visitor vehicle required to park on-street. Based on the on-street parking assessment, there is available on-street parking on Vancouver Street during the peak period (6pm-10pm) when visitors are expected to visit the site. As such, this is not anticipated to result in a negative impact on the neighbourhood.

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. Discuss with the City of Victoria the option of locating the carshare vehicle in a designated on-street parking space in front of the site to increase visibility and promote carsharing use in the larger community;
3. Commit to providing a shared electric bike program and specifically:
 - a. Monitor e-bike utilization in the first year. If demand is consistently high, consideration should be given to adding more e-bikes to the fleet after year 1.
 - b. 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.
4. Commit to providing the 46 long-term bike parking spaces as proposed, which results in 2.4 spaces per unit; and
5. Commit to providing electric bike parking as proposed, which includes designing 83% of the total long-term spaces for cargo bikes, providing 100% of the total long-term spaces with an 110V outlet, and locating all spaces in a secure space to minimize theft.