

# Royal BC Museum Modernization

Royal British Columbia Museum Modernization  
-  
Museum Project

Appendix N – Parking Assessment Report

December 2021



# ROYAL BC MUSEUM

## Parking Assessment

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## 1.0 INTRODUCTION

Watt Consulting Group (WATT) was retained by HDR Inc. to conduct a preliminary parking demand study for the potential new museum building on the existing Royal BC Museum (RBCM) site in the City of Victoria. The purpose of this study is to estimate the required number of vehicle parking spaces for the site, as well as the number and type of loading spaces and bicycle spaces that need to be provided.

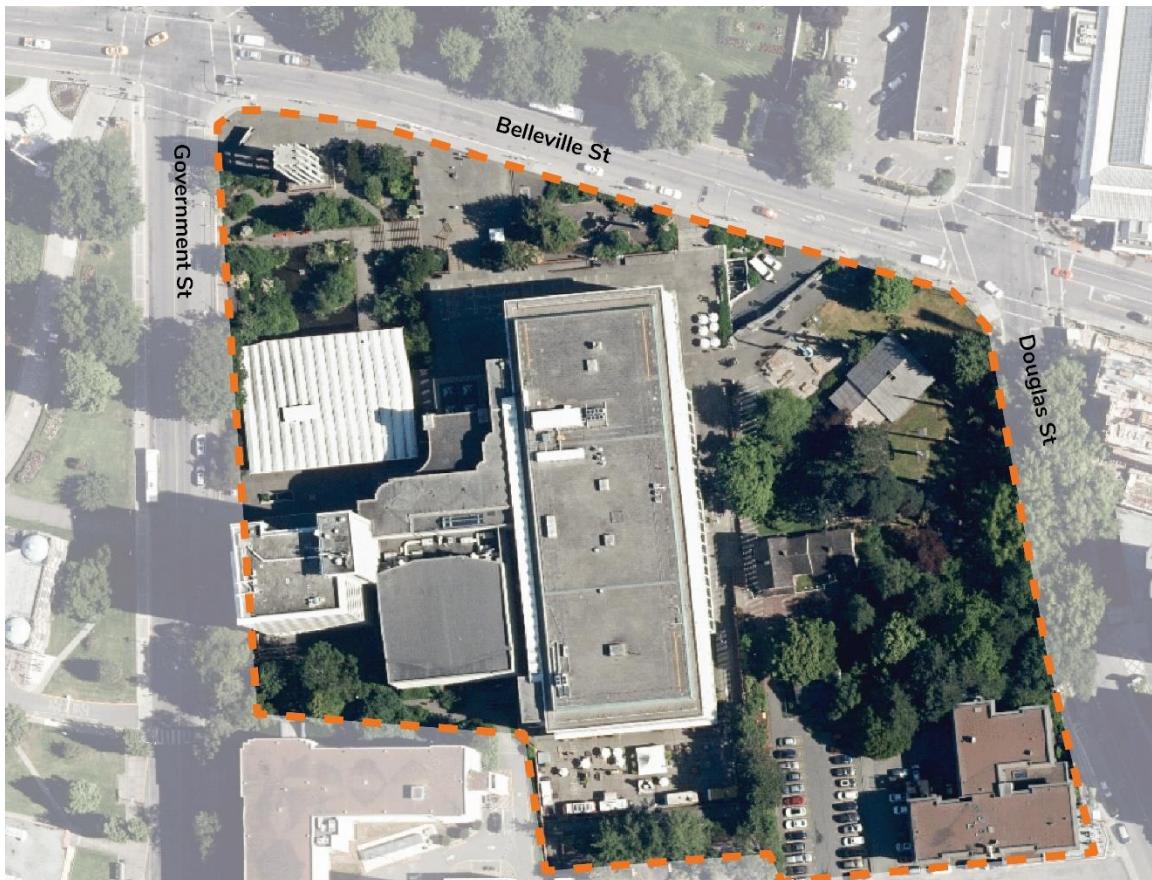
Note, while this study did analyze parking demand for employees of the Museum, there is an existing policy that does not allow for provincial organizations to provide parking for staff. In line with provincial government policy, RBCM does not provide vehicle parking for employees but instead encourages sustainable modes of transportation for commuting and work-related trips. The staff compliment at the RBCM presently consists of 140 employees. At opening of the new Museum, RBCM anticipates having approximately 60 employees. The reduction in staffing is due in large part to the number of staff who will report to the Collections and Research facility in Colwood.

### 1.1 SUBJECT SITE

The proposed development is located at 675 Belleville Street in the City of Victoria (see [Figure 1](#)). It is currently zoned CD-13, Royal British Columbia Museum Zone.



**FIGURE 1. SUBJECT SITE**





## 1.2 SITE CHARACTERISTICS & POLICY CONTEXT

The following provides information regarding services and transportation options in proximity to the site. In addition, the City's planning policies pertaining to parking management are summarized.



### CITY & REGIONAL PLANNING POLICY

The City of Victoria Official Community Plan (OCP)<sup>1</sup> contains specific policies on transportation and mobility with the goal of reducing fossil fuel dependence and prioritizing pedestrian, cycling, and transit modes. In particular, the plan includes the following relevant parking management policies:

- **7.10** – Maintain and implement a Parking Strategy to manage parking in the Downtown Core Area to give priority to short-term parking on-street and in City-operated parking facilities, and improve effective use of parking resources.
- **7.11** – Consider managing parking throughout the city, employing a broad array of parking management strategies including sharing of parking facilities, location-efficient regulations and pricing, unbundled parking, parking associations, overflow parking plans, improved user information, parking and mobility management, car-sharing, and reduced parking requirements, as appropriate.



### SERVICES

Located in the Core Inner Harbour/Legislative area of downtown Victoria, the subject site is steps away from a wide range of destinations and amenities. Restaurants, hotels, tourist attractions, parks, and retail stores are all within a 600 m radius and can be accessed by foot in 8 minutes or

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<sup>1</sup> City of Victoria Official Community Plan. Available online at:

[https://www.victoria.ca/assets/Departments/Planning~Development/Community~Planning/OCP/Up~to~date~OCP~and~Design~Guidelines/OCP\\_WholeBook.pdf](https://www.victoria.ca/assets/Departments/Planning~Development/Community~Planning/OCP/Up~to~date~OCP~and~Design~Guidelines/OCP_WholeBook.pdf)



less. It should be noted that at least 25 hotels are located within an 800 m radius from the site. The Royal BC Museum as part of the Downtown core of Victoria is frequented by tourists who are visiting not only the Museum, but other attractions in the area. As an example, the site is also adjacent to several landmark locations including the Legislative Assembly of British Columbia, the Fairmont Empress Hotel, the Inner Harbour Causeway, and the Victoria Conference Centre.



## TRANSIT

The subject site is very well-connected to transit. It is across the road from the Legislature Exchange that includes stops for 15 different bus routes, two of which are Regional Routes providing service every 15-60 minute with limited stops. These Regional Routes are summarized below:

- **Route 50: Langford / Downtown |** This route connects downtown Victoria with the Westshore via Highway 1 / Douglas Street, which is a key corridor in Victoria's developing Rapid Transit Network (RTN) and currently has priority bus lanes between downtown and the McKenzie Interchange. On weekdays, this route runs every 10-15 minutes between 5:30 am and 12:00 am (or 1:30 am on Fridays).
- **Route 70: Swartz Bay / Downtown |** This route provides a key connection between downtown Victoria and the Swartz Bay Ferry Terminal via Highway 17 (the Pat Bay Highway). It stops at major exchanges including Uptown and Royal Oak, connecting with several other routes serving Greater Victoria.

In addition to the above Regional Routes, buses serving the following areas stop at the Legislature Exchange:

- James Bay and Royal Jubilee Hospital (Routes 3 and 10)
- Royal Oak and Cordova Bay (Routes 30, 31, and 32)
- Goldstream Meadows and Happy Valley (Routes 47 and 48)



- Victoria General Hospital (Route 53)
- Sooke and Langford (Routes 61 and 65)
- Swartz Bay, Saanichton, and Royal Oak (Routes 71, 72, and 75)

The site is also 650 m (about a 9-minute walk) from **Route 15**, a Regional Route connecting Esquimalt and the University of Victoria (UVic) via downtown Victoria. It is also within 650 m of the following four Frequent Routes that provide 15 minute or better service 7am-7pm, Monday through Friday:

- **Routes 27 and 28: Gordon Head / Majestic / Downtown**
- **Route 4: UVic / Downtown**
- **Route 6: Royal Oak Exchange / Downtown**
- **Route 14: Vic General / UVic**

Given the multitude of routes serving the site, it is expected that the majority of the population residing in the Greater Victoria region would be able to access the Museum by transit.

The site will also benefit from more direct and frequent transit in the future. According to BC Transit's Victoria Regional RapidBus Implementation Strategy<sup>2</sup>, the future RapidBus will deliver connected, frequent, fast, and reliable transit service between areas of highest travel demands in the region. In the next three years, the Westshore-Downtown Victoria Line will be introduced (Phase 1), building on the priority bus lanes that have already been completed on Douglas Street. The Westshore Line will connect Langford Exchange with the Legislature Exchange and will provide a single transfer connection to UVic and the Saanich Peninsula at the Uptown Exchange.

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<sup>2</sup> Victoria Regional RapidBus Implementation Strategy, BC Transit. Available online at: <https://bctransit.com/victoria-regional-rapid-transit>



Phase 1 will be followed by implementation of the McKenzie and Peninsula Lines (Phase 2) and exploration of additional RapidBus lines (Phase 3). The McKenzie Line will connect Uptown and UVic as well as designated urban nodes and the Peninsula Line will travel along Highway 17 between Swartz Bay Ferry Terminal through Sidney, Uptown and downtown Victoria. The Peninsula Line will be especially important for museum visitors who travel by ferry from the mainland.

Other key features of the RapidBus strategy are street treatments to improve travel times and increase predictability, enhanced facilities, and transit stations (including an Uptown Mobility Hub, which will serve as a ‘Central Station’), and improved vehicles and fare collection. It is understood that BC Transit is in discussions with the City of Victoria about a potential relocation of the existing transit hub at the Legislature Exchange, however it is expected that if the transit hub changes location, it would still be easily accessible in a walkable distance from the RBCM.

The City of Victoria OCP also includes policies supporting public transit. These policies include prioritizing public transit over general purpose traffic in rapid and frequent transit corridors (7.14.4), undertaking a study of options to provide potential cross-town priority frequent transit service connecting major destinations (7.14.5), and working with BC Transit to integrate new local transit service into neighbourhoods (7.14.6). GO Victoria, the City’s mobility strategy, seeks to prioritize transit infrastructure investments and make transit the preferred choice for all trips, with the overarching target of doubling transit ridership to, from, and within the City by 2030.<sup>3</sup>

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<sup>3</sup> GO Victoria, City of Victoria. Available online at:  
[https://www.victoria.ca/assets/Community/Cycling/GoVictoria\\_2020DEC.pdf](https://www.victoria.ca/assets/Community/Cycling/GoVictoria_2020DEC.pdf)



## FERRY SERVICES

In addition to the Swartz Bay Ferry Terminal that can be accessed by transit, ferry terminals for Clipper Vacations (providing service to Seattle, Washington; passenger ferry) and the Black Ball Ferry Line (providing service to Port Angeles, Washington; vehicle and passenger ferry) are about 500 m away or a 7-minute walk. The BC Ferries Connector bus terminal is also 160 m away (about a 2-minute walk), providing charter bus service to Swartz Bay Ferry Terminal. These transportation options allow visitors from the United States and mainland BC to travel to and from downtown Victoria without a vehicle. Additionally, the Victoria Harbour Ferry has a terminal 300 m from the site (about a 4-minute walk) and provides water taxi service to various locations within the harbour and surrounding waterways.



## WALKING

With a walk score<sup>4</sup> of 95, the subject site is considered a “Walker’s Paradise”. It is centrally located and within walking distance of several key destinations and amenities. The surrounding streets have sidewalks on both sides and there are crosswalks at all major intersections (including 4-way signalized crosswalks at Belleville/Government Street and Belleville/Douglas Street in front of the site). There is also separated footpath around the entire Inner Harbour, extending to Victoria West (1.1 km from the site, about a 15-minute walk) and the Dallas Road waterfront in James Bay (1.4 km from the site, about an 18-minute walk).

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<sup>4</sup> More information about the site's Walk Score is available online at: <https://www.walkscore.com/score/675-belleville-st-victoria-bc-canada>



The City's OCP includes several policies for making the city-wide pedestrian network safer and more enjoyable. Priorities include sidewalk and crosswalk upgrades, public seating, and changes to improve the built environment for people with disabilities. The City's target for 2030 is for 55% of all trips made to, from, and within Victoria to be done by walking, rolling, or cycling (as outlined in the mobility strategy).



### CYCLING

The site is located on a signed bike route that connects with an all ages and abilities (AAA) protected bike lane one block to the north on Humboldt/Wharf Street. This bike lane is part of the City's growing AAA cycling network that also includes protected bike lanes on Fort Street, Pandora Avenue, and Vancouver Street. Painted bike lanes are also available on Johnson Street and Yates Street. The City is aiming to complete its AAA cycling network by 2022, when 95% of the municipality will be within 500 m of a AAA cycling route. This will provide safe and convenient access to village centres, parks, recreation centres and schools.<sup>5</sup>

The site is also 1.9 km (about an 8-minute bike ride) from the start of the Galloping Goose Regional Trail, an AAA off-street multi-use pathway that extends west to Sooke and connects at Uptown with the Lochside Regional Trail, which provides a northbound connection to Sidney. There is another AAA off-street multi-use pathway 400 m south of the site (about a 2-minute bike ride) in Beacon Hill Park, as well as along the Dallas Road waterfront (which can be reached in about 6 minutes by bike).

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<sup>5</sup> More information about the City's AAA cycling network is available online at:  
<https://www.victoria.ca/EN/main/residents/streets-transportation/walk-roll-transit/cycling/victoria-s-aaa-cycling-network.html>



## PUBLIC PARKING

The City has five parkades with over 1,800 parking spaces. These include the Broughton Street Parkade, View Street Parkade, and Yates Street Parkade, which are 600 m (about an 8-minute walk), 800 m (about an 11-minute walk) 850 m (about a 12-minute walk) from the site, respectively. There are also 2 City-operated surface parking lots nearby on Wharf Street (500 m, about a 7-minute walk) and Courtney Street (600 m, about a 9-minute walk). These lots have 150 and 38 stalls, respectively. Nearly 2,000 on-street pay parking spaces are also available throughout downtown. Additionally, WestPark operates a surface parking lot with 25 spaces 300 m (about a 4-minute walk) from the site, as well as one with 314 spaces 500 m (about a 6-minute walk) from the site. Lastly, there is a Robbins parking lot adjacent to the RBCM that provides a total of 26 spaces, of which 7 spaces are reserved for volunteers of the Museum.



## 2.0 PROPOSED DEVELOPMENT

### 2.1 LAND USE

The existing Royal BC Museum has 17,000 m<sup>2</sup> gross floor area (GFA) that is used as the programming area (public assembly area). The potential future expansion is looking to grow the total floor area for programming purposes to 21,300 m<sup>2</sup> and construction is anticipated to begin by 2025.

The proposed redevelopment also includes several commercial and institutional uses, as follows:

- A rooftop restaurant with a patio approximately 465m<sup>2</sup> in size
- Two retail units approximately 70m<sup>2</sup> each
- A child care centre with 56 spaces including 24 spaces for children 0-3 years of age and 32 spaces for children 3-5 years of age

A summary of the land uses is presented below.

**TABLE 1. SUMMARY OF LAND USES AT SUBJECT SITE**

| Use        | Quantity (m <sup>2</sup> ) |
|------------|----------------------------|
| Museum     | 21,300                     |
| Restaurant | 465                        |
| Retail     | 140                        |
| Daycare    | 738                        |



## 3.0 PARKING REQUIREMENT

### 3.1 VEHICLE PARKING

The City of Victoria's Zoning Regulation Bylaw (no. 80-159) identifies the parking requirements for the site, as it falls under CD-13 Zone. The minimum off-street parking requirement for this Zone, when the floor area of all buildings in this Zone exceeds 32,500 m<sup>2</sup>, is 160 vehicle parking spaces.

The City of Victoria's Off-Street Parking Regulations (Schedule C) could also apply to this site. As shown in the table below, the requirement for the proposed development would be 287 off-street parking spaces.

**TABLE 2. SUMMARY OF VEHICLE PARKING REQUIREMENT**

| Use                          | Quantity (m <sup>2</sup> ) | Schedule C Use<br>(Core Area) | Parking Rate<br>(Spaces per m <sup>2</sup> ) | Total Spaces |
|------------------------------|----------------------------|-------------------------------|--|--------------|
| Museum                       | 21,300                     | Arts and Culture              | 1 per 80m <sup>2</sup>                       | 266          |
| Restaurant                   | 465                        | Restaurant                    | 1 per 40m <sup>2</sup>                       | 12           |
| Retail                       | 140                        | Retail                        | 1 per 80m <sup>2</sup>                       | 2            |
| Daycare                      | 738                        | Care Facility                 | 1 per 100m <sup>2</sup>                      | 7            |
| <b>Total Required Spaces</b> |                            |                               |  | <b>287</b>   |

### 3.2 BICYCLE PARKING

As per the CD-13 Zone, the proposed development would need to provide bicycle parking in accordance with Schedule C. The total long-term and short-term bicycle requirements are 50 and 174 spaces, respectively, as shown in the table below.



**TABLE 3. SUMMARY OF BICYCLE PARKING REQUIREMENT**

| Use          | Long Term Bicycle<br>Parking<br>(Spaces per m <sup>2</sup> ) | Short Term Bicycle<br>Parking<br>(Spaces per m <sup>2</sup> ) | Total Long-Term<br>Spaces | Total Short-Term<br>Spaces |
|--------------|--|---|---------------------------|----------------------------|
| Museum       | 1 per 450m <sup>2</sup>                                      | 1 per 130m <sup>2</sup>                                       | 47                        | 164                        |
| Restaurant   | 1 per 400m <sup>2</sup>                                      | 1 per 100m <sup>2</sup>                                       | 1                         | 5                          |
| Retail       | 1 per 200m <sup>2</sup>                                      | 1 per 200m <sup>2</sup>                                       | 1                         | 1                          |
| Daycare      | 1 per 700m <sup>2</sup>                                      | 1 per 200m <sup>2</sup>                                       | 1                         | 4                          |
| <b>Total</b> |  | <b>50</b>   |                           | <b>174</b>                 |



## 4.0 PARKING DEMAND ANALYSIS

Approximate parking demand for the Royal BC Museum is estimated in the following sections and broken down by user group. The approximate parking demand is based on [a] travel survey data collected at the Royal BC Museum, [b] data provided by Royal BC Museum staff and [c] relevant research to support the findings.

### 4.1 MUSEUM VISITOR DEMAND

Visitor parking demand is based on travel survey data collected over two days on Wednesday, July 21<sup>st</sup> & Saturday, July 24<sup>th</sup>, 2021. The collection dates were after the BC Province announced Step 3 of BC's Restart Plan on July 1<sup>st</sup>. The travel survey took place over a weekday and a weekend to reflect typical mode share for visitors of the Museum.<sup>6</sup> WATT staff conducted the survey and were stationed at the admissions checkpoint (i.e., where visitors validate their tickets). The survey took place from 10:00am to 6:00pm on both days, which reflects the operating hours of the Museum. WATT staff asked one question to visitors of the Museum verbally and then recorded the visitors' response in a spreadsheet. The question was "How did you travel to the Royal BC Museum today?". A total of 1,982 answers were collected over the two days and more specifically 858 answers were collected on July 21<sup>st</sup> and 1,124 answers were collected on July 24<sup>th</sup>, indicating that the weekend is more likely busier. The response rate was not formally tracked, but most visitors were asked the survey question. The high number of responses was also attributed to Museum staff guiding the visitors to participate in the survey.

In addition, data on attendance was reviewed from 2019 and 2020 to better understand the number of people visiting the museum on a typical day and a peak day, and the attendance by time of day.

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<sup>6</sup> The survey results could change in the future as at the time of the study there was an international travel ban in effect due to the Covid-19 pandemic.



#### 4.1.1 MODE SHARE

Based on the responses received, the following table and graph summarize the information for the visitors' mode share profile.

**TABLE 4. TRAVEL SURVEY RESULTS**

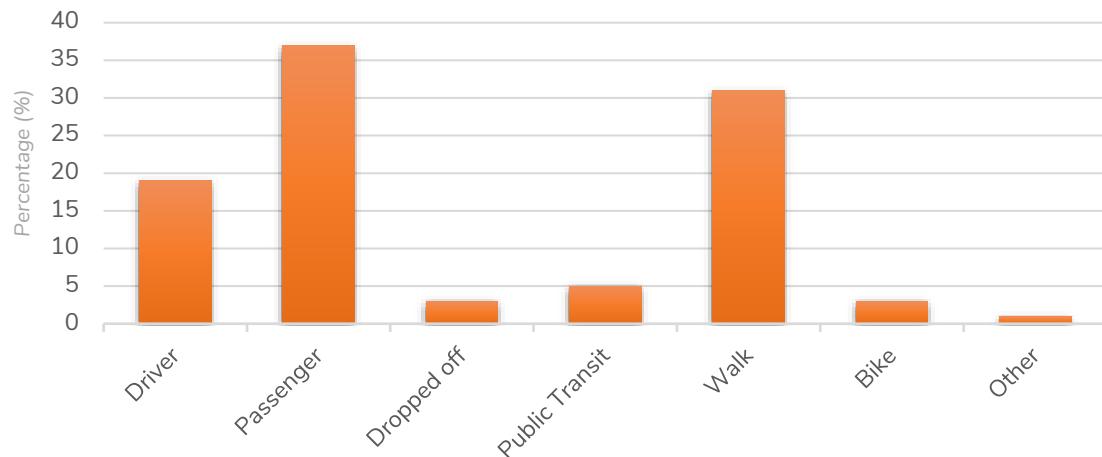
| Mode of Travel                               | Wednesday July 21 <sup>st</sup> , 2021 | Saturday July 24 <sup>th</sup> , 2021 | Average |
|--|--|---------------------------------------|---------|
| Driver                                       | 21%                                    | 18%                                   | 19%     |
| Passenger of a Personal Vehicle              | 37%                                    | 37%                                   | 37%     |
| Dropped off by Family / Friend / Taxi / Kabu | 2%                                     | 2%                                    | 2%      |
| Dropped off by Tour Bus*                     | 4%                                     | 0%                                    | 2%      |
| Public Transit                               | 4%                                     | 6%                                    | 5%      |
| Walk   | 26%                                    | 35%                                   | 31%     |
| Bike   | 7%                                     | 1%                                    | 3%      |
| Other  | 0%                                     | 1%                                    | 1%      |

\*This category was separated in the travel survey to understand whether there is a significant mode share for visitors being dropped off by tour buses. This category is grouped with the other visitors being dropped off by different users for the rest of the report.

As expected from reviewing the site characteristics, the majority of visitors to the museum either arrived as passengers of a personal vehicle or they walked to the site. Based on these results, 19% of the visitors drove a car to the museum and required parking, and 37% were passengers to these vehicles. In other words, on average, there were three visitors to every vehicle that required parking.



**FIGURE 2. SUMMARY OF MODE SHARE FOR VISITORS**



The results of this travel survey might not reflect the actual parking demand and might be overestimating vehicle parking demand as the survey was conducted during an international travel ban due to the Covid-19 pandemic. Feedback received from visitors during this survey indicated that people who are traveling and visiting Victoria for tourism purposes tend to walk from their hotels or take transit. However, this can be considered a conservative representation of mode share.

Further, as this assessment takes into consideration the potential expansion of the Museum that will take place 10 years from now, assumptions have to be made regarding how the improved cycling and transit network (described in [Section 1.2](#)), in conjunction with changes in travel behaviour, will impact parking demand.

GO Victoria, the City's mobility strategy, mentions that:

- **Walking, cycling or rolling:** Currently, 27% of all trips to, from and within the City are by walking, cycling or rolling. The City of Victoria has set a target to reach 55% of trips made to, from and within Victoria by these modes by 2030. That represents an increase of 103%.
- **Public transit:** In 2017, trips by transit made up approximately 12% of the total trips to, from, and within Victoria. The City of Victoria has set a target to double



transit ridership to 24% (increase of 100%) to, from, and within the City by 2030.

Based on these targets set by City of Victoria and the fact that this project will not be completed until at least 2030, a conservative 50% increase in walking, cycling and public transit was applied to reflect a more conservative travel behaviour change. **Table 5** below illustrates the adjusted mode share for 2030. The forecast assumes an even increase in cycling and walking trips (50%), in addition to an increase in the ‘dropped off’ category especially with the recent proliferation of ridesharing and ride-hailing services in Victoria. To account for that increase in walking, rolling, cycling, transit and the ‘dropped off’ category, a 35% reduction was assumed in vehicle parking demand. The reduction for vehicle parking demand, both driver and passenger, considers the insight that on average every vehicle seeking parking for the Royal BC Museum occupies three people (driver + two passengers).

**TABLE 5. ADJUSTED MODE SHARE 2030**

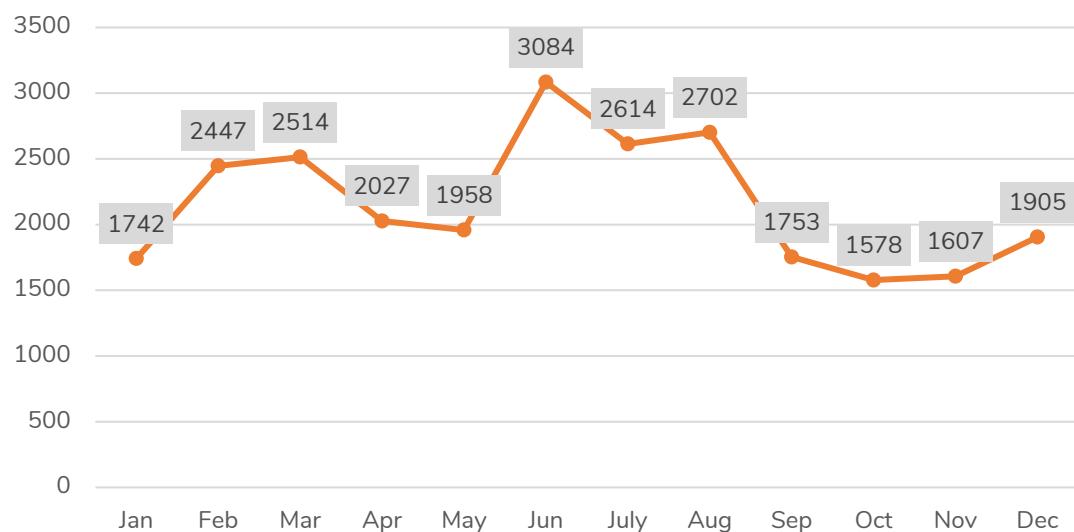
| Mode of Travel  | 2021 | 2030 | Absolute Change | Percentage Increase / Decrease |
|---|------|------|-----------------|--------------------------------|
| Driver  | 19%  | 12%  | -7%             | <b>-35%</b>                    |
| Passenger of a Personal Vehicle                         | 37%  | 24%  | -13%            | <b>-35%</b>                    |
| Dropped off by Family / Friend / Taxi / Kabu / Tour Bus | 3%   | 4%   | +1%             | <b>+35%</b>                    |
| Public Transit  | 5%   | 8%   | +3%             | <b>+50%</b>                    |
| Walk  | 31%  | 47%  | +16%            | <b>+50%</b>                    |
| Bike  | 3%   | 5%   | +2%             | <b>+50%</b>                    |
| Other   | 1%   | 0%   | -1%             | -                              |



#### 4.1.2 ATTENDANCE

Since the Covid-19 pandemic does not capture the typical peak number of visitors compared to pre-Covid years, historical data were used to understand the typical number of visitors attending the museum in a day. Admission data were used from 2019 to represent typical attendance volumes and are presented below.

**FIGURE 3. AVERAGE DAILY VISITORS BY MONTH**



The average daily number of visitors throughout 2019 was 2,161 people. Based on conversations with Royal BC Museum staff, spikes to visitor attendance are observed during statutory holidays, and especially on the occasions when the Museum has free entry. As a point of reference, in 2019 the Museum recorded 8,332 visitors during Family Day (RBCM offered free entry for Family Day in 2019). However, much like shopping centres and retail uses that experience a seasonal variation (i.e., peak parking demand is experienced the week prior to Christmas), it is not recommended that the site be planned to accommodate parking demand contained to only a small number of days each year.

The Royal BC Museum has indicated that the projected attendance volumes for 2030 (when the new Museum opens and attendance volumes stabilize) would see a 28%

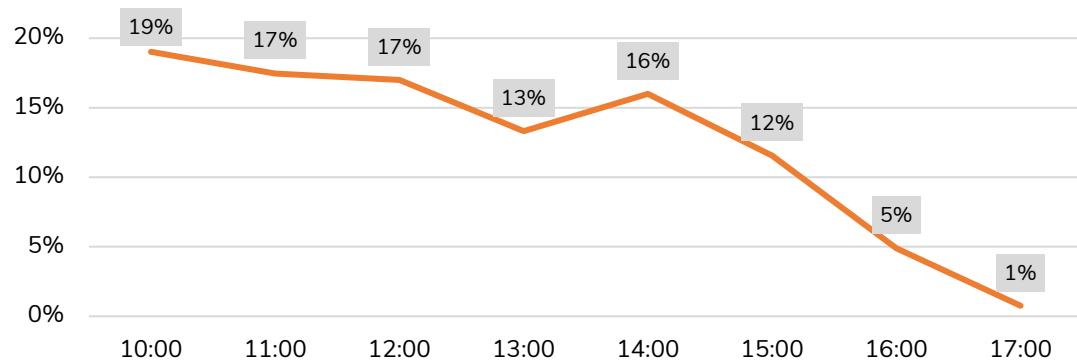


increase to the number of visitors compared to 2019 attendance volumes. Therefore, the expected average daily number of visitors post-expansion is estimated at 2,766.

#### 4.1.3 TIME-OF-DAY

Understanding the total number of visitors in a day is integral to evaluating how the number of visitors fluctuates across the day. The travel survey that was conducted during the days of July 21<sup>st</sup> & July 24<sup>th</sup> collected information on attendance arrival volumes by hour to understand how busy the Museum gets throughout a day. The [Figure](#) below shows the morning (10:00-12:00pm) as the busiest time for the Museum in terms of arrivals, with the late afternoon (after 4:00pm) significantly dropping in attendance. This is consistent with anecdotal data from Royal BC Museum staff that indicated the busier times were around 11:00am and 2:00pm.

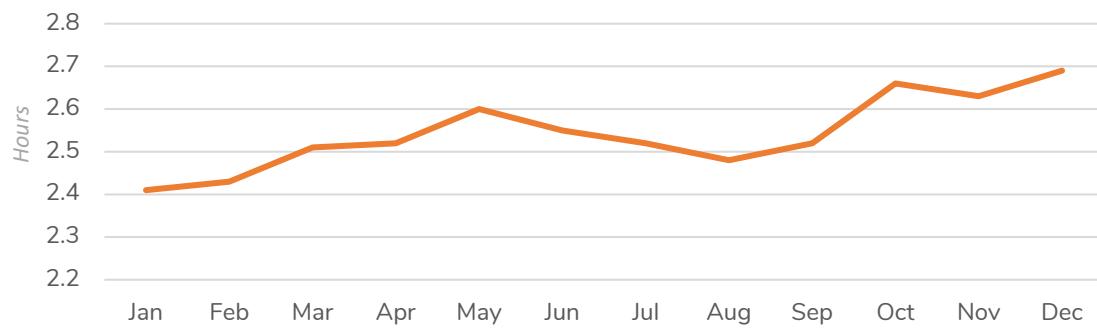
**FIGURE 4. DISTRIBUTION OF DAILY ATTENDANCE ARRIVALS**



Data on duration of stay were not available through the Museum directly, although anecdotally RBCM staff reported that visitors stay approximately 2-3 hours. Visitors parking at the parking lot operated by Robbins located adjacent to the Museum was used as a proxy for visitor duration of stay at the Museum. Using 2019 data, the entire calendar year was reviewed to identify the average parking duration time. Parking duration ranged from 1-10 hours (see [Figure 5](#)). Parking spaces that were registered to one vehicle for more than 8 hours were disregarded from this analysis as they were assumed to be employees and/or vehicles that are not associated with visitors of the Museum.

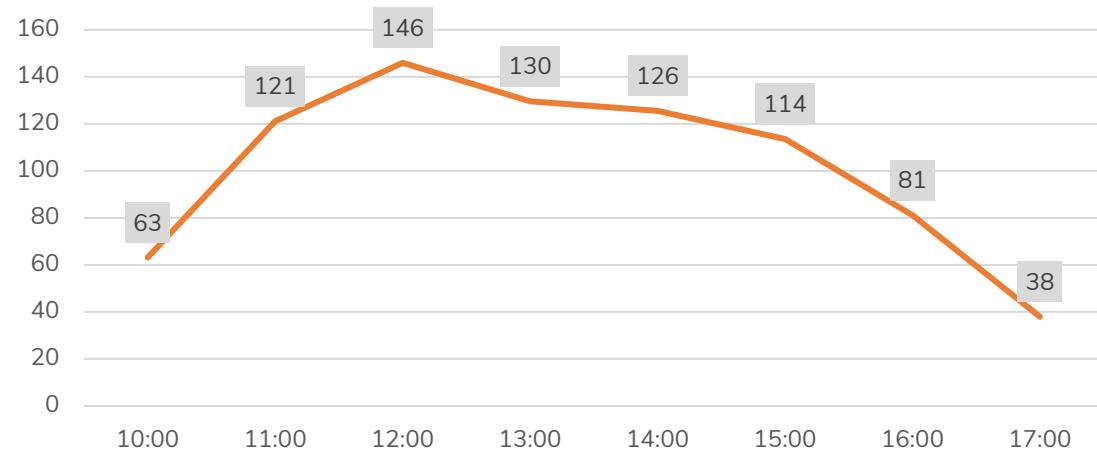


**FIGURE 5. AVERAGE PARKING DURATION (HOURS) FOR ROBBINS PARKING LOT**



The average parking duration was found to be 2.5 hours (150 minutes) and as such a 2.5 hour duration was used to estimate average duration of stay for visitors at the Museum. For the 2030 horizon year (forecasted average daily attendance of 2,766 people), applying the adjusted mode share of 12% for drivers (332 daily vehicles) to the information above (time of day distribution and duration of stay), the total number of drivers per hour is identified in [Figure 6](#). The peak for visitor parking demand takes place closer to noon and then significantly drops after 3:00pm. The peak number of visitor vehicles seeking for parking on an average day is 146.

**FIGURE 6. AVERAGE DAILY PARKING DEMAND BY TIME-OF-DAY**





#### 4.1.4 CAPTIVE MARKET FACTOR

Captive market refers to visitors to a land use that do not require a vehicle as they are already present on-site. Studies have shown some reduction in customer / visitor parking demand in mixed-use developments because of patronage of multiple land uses.<sup>7</sup> The term “captive market” describes people who are already present on-site or in the immediate vicinity and likely patrons of a second use. For example, a tourist visiting other destinations in Downtown Victoria might have already parked in a City parkade or another parking space and could walk to the various destinations, including the Royal BC Museum. Another example is a visitor in the building who is counted as parked at another land use will not generate any parking demand when they patronize the restaurant or retail establishment.

To provide a reference for potential captive market, visitors parking at the parking lot operated by Robbins located adjacent to the Museum was used as a proxy. Vehicles that parked longer than three hours (as mentioned earlier, parking spaces that were registered to one vehicle for more than 8 hours were disregarded from this analysis) accounted for 21% of the total average daily vehicles. In other words, approximately 20% of the vehicles parking at the Museum potentially used the same parking space for accessing other nearby destinations before or after their visit to the Museum.

A conservative 15% reduction in the approximate visitor parking demand is supported based on potential captive market conditions and professional judgement due to the location / site characteristics described in **Section 1.2**. For this reason, it is anticipated that the approximate peak parking demand for the Museum’s visitors is 124 parking spaces.

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<sup>7</sup> Urban Land Institute (2020). Shared Parking 3<sup>rd</sup> Edition

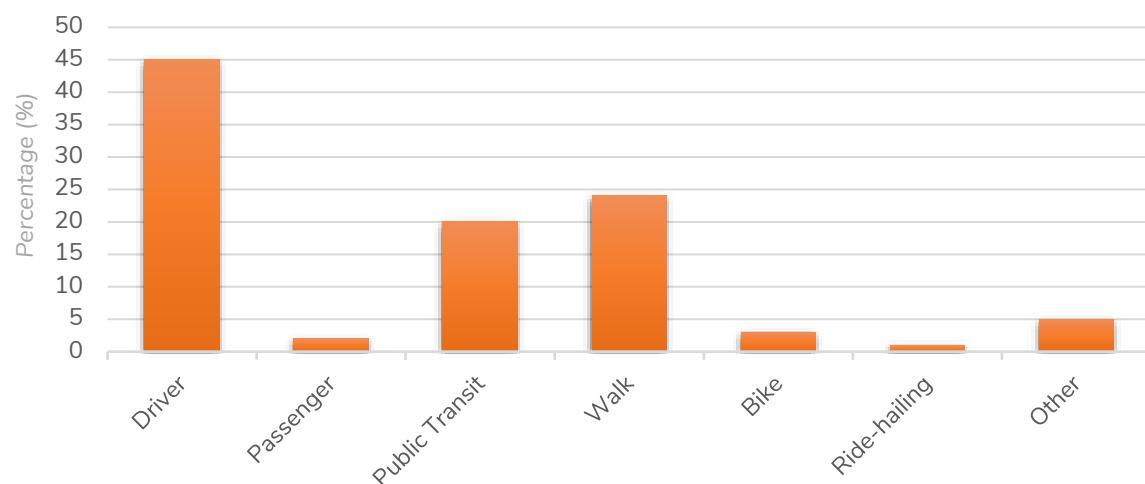


## 4.2 MUSEUM VOLUNTEER DEMAND

Volunteer parking demand is based on travel survey data that was collected via an online survey distributed to the volunteers of the Museum. The survey remained online for two weeks from June 25, 2021 to July 09, 2021 and a total of 214 volunteers took the survey. The online survey asked volunteers “please indicate the mode of travel you will most likely use most frequently when commuting to the Royal BC Museum once the Covid-19 pandemic is over.”

The results of the survey indicate that almost half (45%) of the volunteers drive to the Museum and therefore require some parking. Volunteer mode share for 2030 was conservatively assumed to be the estimated mode share post-pandemic.

**FIGURE 7. SUMMARY OF MODE SHARE FOR VOLUNTEERS**



Based on conversations with Royal BC Museum staff, the total number of volunteers (post-expansion) at the Museum during peak time will be 25. Therefore, applying the peak time number of volunteers with the mode share for drivers (45%), it is estimated that 11 volunteers will be seeking parking during the peak time.

In addition, Royal BC Museum staff indicated that the typical peak hours for volunteers is between 10:00am to 3:00pm, which aligns with the peak hours of visitors. For this



reason, the Museum cannot achieve any reductions from a shared parking perspective as both visitors' and volunteers' parking demand peak are at the same time.

### 4.3 MUSEUM EMPLOYEE DEMAND

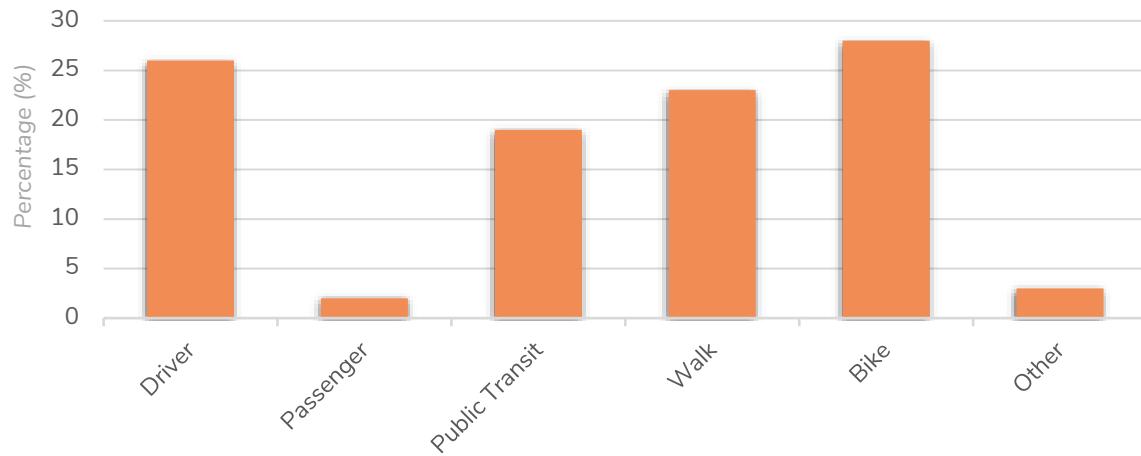
Employee parking demand is based on travel survey data that was collected via an online survey distributed to the employees of the Museum. The survey remained online for two weeks from November 22, 2021 to December 07, 2021 and a total of 97 employees took the survey. The online survey asked employees to identify which part of the region they lived in and to indicate the mode of travel they will use most frequently when commuting to the Royal BC Museum, once the Covid-19 pandemic is over.

The vast majority (86%) of respondents live in the Core Area of the Capital Region (Victoria, Saanich, Esquimalt, Oak Bay), followed by 7% in the West Shore (View Royal, Colwood, Langford, Highlands, Metchosin, Sooke), and 6% in the Saanich Peninsula (Central Saanich, North Saanich, Sidney).

The results of the survey indicate that the majority (70%) of RBCM employees use active transportation modes (walk, bike, transit) to commute to the Museum, and around a quarter (26%) of the employees drive to the Museum. Employee mode share for 2030 was conservatively assumed to be the estimated mode share post-pandemic.



**FIGURE 8. SUMMARY OF MODE SHARE FOR EMPLOYEES**



Based on conversations with Royal BC Museum staff, the total number of employees (post-expansion) will be reduced significantly with the opening of the new RBCM facility in the West Shore. The number of employees at the Museum on any given day was estimated as 60 employees. Therefore, applying the peak time number of employees with the mode share for drivers (26%), it is estimated that 16 employees will be driving to work.

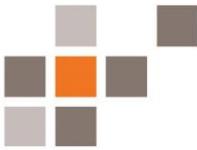
Given that Royal BC Museum staff will be working a full day schedule, the Museum cannot achieve any reductions from a shared parking perspective between Museum volunteers, employees, and visitors.

#### **4.4 RESTAURANT DEMAND**

The proposed development will also include a 465m<sup>2</sup> rooftop restaurant. The applicant has not determined the type of restaurant at this time; however, it will likely function like a high-turnover family restaurant.<sup>8</sup> The ‘restaurant’ use in Schedule C was utilized to

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<sup>8</sup> The Institute of Transportation Engineers (ITE) Parking Generation Manual 5<sup>th</sup> edition has a specific land use (932) called “high-turnover (sit-down) restaurant”. Based on the information provided by the applicant, the proposed restaurant use would function similarly to the ITE “high-turnover (sit-down) restaurant”, which is defined as a sit-down, full-service eating establishments with a typical duration of stay of 60 minutes or less. They are commonly referred to as



estimate the parking demand for the proposed use. In the Core Area, restaurants are required to provide 1 space per  $40\text{m}^2$ . With a floor area of  $465\text{m}^2$ , the expected parking demand for the restaurant is 12 parking spaces (11.6, rounded).

#### 4.4.1 CAPTIVE MARKET FACTOR

It is anticipated that at least half of the patrons of the restaurant will be visitors to the museum. Other patrons of the restaurant may include downtown visitors / tourists and local residents, many of whom would likely walk and not require vehicle parking. With these assumptions, a conservative 50% reduction in the approximate restaurant parking demand is supported based on potential captive market conditions and professional judgement due to the location / site characteristics. For this reason, it is anticipated that the approximate peak parking demand for the restaurant would be 6 parking spaces.

### 4.5 RETAIL DEMAND

The proposed development will also include a  $140\text{m}^2$  retail use. The applicant has not determined the type of use at this time; however, it will likely be a tourism related business / service that complements the museum. This could include a book store or art gallery, for example. The ‘retail use in Schedule C was utilized to estimate the parking demand for the proposed use. In the Core Area, retail units are required to provide 1 space per  $80\text{m}^2$ . With a floor area of  $140\text{m}^2$ , the expected parking demand for the retail use is 2 parking spaces (1.75, rounded).

#### 4.5.1 CAPTIVE MARKET FACTOR

Similar to the captive market rationale provided for the restaurant use in [Section 4.3.1](#), customers of the retail use would also largely comprise visitors to the museum. A

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casual dining. This type of restaurant is usually moderately priced and frequently belongs to a restaurant chain. Generally, these restaurants serve lunch and dinner; they may also be open for breakfast and are sometimes open 24 hours a day. These restaurants typically do not accept reservations. A patron commonly waits to be seated, is served by wait staff, orders from a menu, and pays after the meal.”



conservative 50% reduction in the approximate retail parking demand is supported. It is anticipated that the approximate peak parking demand for the retail use would be 1 parking space.

## 4.6 CHILD CARE DEMAND

The proposed development will also include a child care centre that is 738m<sup>2</sup> in size. It will include a total of 56 child care spaces with the specific breakdown as follows:

- Two 12 space programs for ages 0-3 (24 total)
- Two 16 space programs for ages 3-5 (32 total)

To estimate the parking demand for the child care centre, data from past parking studies completed by WATT were utilized. These data were deemed to be more reliable than using the Schedule C rate as they provide more nuance about how parking demand differs among child care staff and parents / guardians of the children.

### Staff Parking

At this time, the applicant has not determined the number of staff required for this facility. According to the BC government, for licensed child care facilities, the child-to-staff ratios differ considerably depending on the type of care and age group.<sup>9</sup> For group child care (under 3 years old), the ratio for 1 to 4 children is 1 staff member (infant toddler educator). Therefore, with 24 proposed spaces (0-3 aged children), the total number of estimated staff is 6.

For pre-school (3-5 years old), the child-to-staff ratio for 1 to 8 children is 1 staff member (early childhood educator). Therefore, with 32 proposed pre-school spaces, the total number of estimated staff is 4. Combined, the total number of estimated staff for the child care centre is 10 employees (6 + 4).

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<sup>9</sup> BC Government. (2021). Licensed Child Care. Available online at: <https://www2.gov.bc.ca/gov/content/family-social-supports/caring-for-young-children/how-to-access-child-care/licensed-unlicensed-child-care#licensed>



To estimate the staff parking demand, data was utilized from the 2017 CRD Origin-Destination Household Travel Survey.<sup>10</sup> For the City of Victoria, the travel mode share for ‘auto driver’ is 60% for “to District” trips. This captures trip that are made from neighbouring jurisdictions including Langford, Saanich West, Saanich East, and Oak Bay. To validate the travel mode share figure, data from a WATT daycare parking study in Central Saanich were reviewed.<sup>11</sup> The study surveyed daycare facilities in more suburban locations including Saanich and Central Saanich to understand travel mode share among staff. The study found that among the 8-day care facilities sampled, the average driving mode share was 0.71 (or 71 percent).

A rate of 71% is higher than the auto driver mode share for the City of Victoria. This is expected given that travellers have more transportation options available to them when travelling to Victoria including regional trails and more frequent and direct transit service. Therefore, applying a parking demand rate of 0.6 (60%) per employee to the estimated number of employees (10) results in 6 parking spaces.

### **Parent / Guardian Parking**

The parking requirements for daycare parents / guardians is subject to a range of factors including [a] when the daycare’s operating hours will be [b] whether there will be staggered drop-off and pick-up times [c] the land use characteristics of the location and whether trips could be made by a sustainable transportation mode and [d] the number of siblings who are attending (i.e., a family with two children attending the daycare only requires one parking space). However, for the purposes of this analysis, it was assumed that drop-off and pick-up would occur over an extended period (drop-off: 7:30am to 9:00am; pick-up: 3:30pm to 5:00pm). To estimate the number of vehicles, the following assumptions were utilized:

- With 56 child care spaces, the total number of families (baseline) is 56

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<sup>10</sup> Malatest. (2017). 2017 Capital Regional District Origin Destination Household Travel Survey. 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](https://www.crd.bc.ca/docs/default-source/regional-planning-pdf/transportation/crd-2017-od-survey-report-20180622-sm.pdf?sfvrsn=4fcbe7ca_2)

<sup>11</sup> WATT Consulting Group. (2021). 7925 East Saanich Road Parking Study.



- About 50% of the families will not require parking because they:
  - Live within walking / cycling distance or,
  - Work on-site or in the vicinity.
- About 20% of the families will have more than one child attending the day care (one in the 0-3 program and other in the 3-5 program)

With these stated assumptions, of the 56-day care spaces, approximately 17 ( $56 * 0.7$ ) will drive and require parking. Assuming drop-off and pick-up is staggered in 30-minute increments, then approximately 6 vehicles (families) are expected on site at any one time ( $17 / 3$ ). This means that the estimated parent / guardian parking is 6 spaces.

Based on data from the day care parking study conducted by WATT, most of the day care facilities reported that parents mostly utilize on-street parking for drop-off and pick-up. However, in the context of the Royal BC Museum, on-street parking will be limited as such, off-street parking spaces will need to be provided to accommodate parents.

In summary, a total of 12 parking spaces are expected (6 staff, 6 parents). This results in a demand rate of 1 space per  $62m^2$  ( $738m^2 / 12$  spaces).



## 4.7 SUMMARY OF PARKING DEMAND ANALYSIS

Based on the above analysis, the summary of approximate parking demand for the site is presented below.

**TABLE 6. SUMMARY OF PARKING DEMAND ANALYSIS**

| Land Use           | Expected Parking Demand |
|--------------------|-------------------------|
| Museum, Visitors   | 124                     |
| Museum, Volunteers | 11                      |
| Museum, Employees  | 16                      |
| Restaurant         | 6                       |
| Retail             | 1                       |
| Child Care         | 12                      |
| <b>Total</b>       | <b>170</b>              |

The total approximate parking demand is estimated at 170 parking spaces. The peak parking demand is expected to occur between 11:00am to 1:00pm.



## 5.0 SHARED PARKING ANALYSIS

In scenarios where two or more land uses have complementary parking demand patterns with differing peak parking demand times of day, they may opt to share a supply of parking to reduce overall parking supply for a site/area. This “shared parking” concept is often exemplified by office buildings and multi-family residential land uses having complementary parking demands. Office parking demand is typically highest during weekday working hours (10:00a.m.-5:00p.m.), while residential and visitor parking demand is highest during weekday evenings and weekends, reducing the likelihood of competition for parking spaces based on the time of day. Due to the mixed-use nature of the subject site and the various commercial uses that have been proposed, there is an opportunity for shared parking.

It was assumed that all of the land uses could share parking. The results of the time-of-day analysis suggests that the peak parking demand will be 163 vehicles if all of the uses are shared. This accounts for an approximate 4% reduction from unfactored expected parking demand of 170 vehicles (per [Table 6](#)). Peak demand will be experienced at 12:00pm when museum visitors, museum volunteers, museum employees, retail, restaurant, and child care employees are close to 100% of their parking demand (see [Figure 9](#)).

**FIGURE 9. SHARED PARKING DEMAND BY TIME-OF-DAY**





## 6.0 LOADING DEMAND ANALYSIS

### 6.1 MUSEUM LOADING SPACES

Loading demand for the Royal BC Museum was forecasted using loading counts submitted by Royal BC Museum staff. The delivery purpose, vehicle type, loading duration and frequency, and time-of-day data were collected.

Based on the loading demand analysis, in the absolute worst-case scenario, where all four activities occur simultaneously on a single weekday at 2:00pm, there would be a demand of 4 vehicles. However, it is expected that the three loading spaces would be able to accommodate all the loading demand, mainly since three out of four vehicles only require parking for a very short time (5 minutes) and their frequency is 2-3 days per week at the most. See [Table 7](#).

It is understood that the Museum hires contractors for various jobs and those would require a loading stall on an as needed basis. The infrequency of those instances is considered insignificant and regardless of time-of-day, they are expected to be accommodated if three loading spaces were provided.



**TABLE 7. SUMMARY OF LOADING DEMAND**

| Purpose                                      | Vehicle       | Schedule                      | Duration          | Time Period     |                  |                   |                   |                  |                 |                 |                   |                 |   |
|--|---------------|-------------------------------|-------------------|-----------------|------------------|-------------------|-------------------|------------------|-----------------|-----------------|-------------------|-----------------|---|
|  |               |                               |                   | 8 a.m. – 9 a.m. | 9 a.m. – 10 p.m. | 10 a.m. – 11 a.m. | 11 a.m. – 12 p.m. | 12 p.m. – 1 p.m. | 1 p.m. – 2 p.m. | 2 p.m. – 3 p.m. | 3 p.m. – 4 p.m.   | 4 p.m. – 5 p.m. |   |
| Waste / Recycling                            | Garbage Truck | 1-2 times a week              | 5-10 mins         |                 |                  | 1                 |                   |                  |                 |                 |                   |                 |   |
| Shred-it                                     | Truck         | 1 per month                   | N/A               |                 |                  |                   |                   | 1                |                 |                 |                   |                 |   |
| Old Victoria Water Co.                       | Truck         | 1 per month                   | 20-60 mins        |                 |                  |                   |                   |                  |                 |                 |                   |                 | 1 |
| BC Mail Plus                                 | Van           | 5 times a week                | 5 mins            |                 |                  |                   |                   |                  | 1               |                 |                   |                 |   |
| Purolator                                    | Truck or Van  | 2-3 times a week              | 5 mins            |                 |                  |                   |                   |                  |                 | 1               |                   |                 |   |
| FedEx  | Truck or Van  | 2-3 times a week              | 5 mins            |                 |                  |                   |                   |                  |                 | 1               |                   |                 |   |
| UPS  | Truck         | 1 per week                    | 5 mins            |                 |                  |                   |                   |                  |                 | 1               |                   |                 |   |
| Canada Post                                  | Truck         | 1 per week                    | 5 mins            |                 |                  |                   |                   |                  |                 |                 | 1                 |                 |   |
| Maximum Express                              | Van           | 1-2 times a month             | 5 mins            |                 |                  |                   |                   |                  |                 |                 | 1                 |                 |   |
| CUBE   | Van           | 5 times a week                | 20 mins           |                 |                  |                   |                   |                  |                 |                 | 1                 |                 |   |
| Publications pallet transfers                | Truck         | Infrequent (4-8 times a year) | 20 mins           |                 |                  |                   |                   |                  |                 |                 | No available data |                 |   |
| Exhibitions / Collections Transport Vehicles | Truck         | Infrequent (2-3 times a year) | 20 mins – 2 hours |                 |                  |                   |                   |                  |                 |                 | No available data |                 |   |



## 6.2 TOUR BUS LOADING ZONE

Currently, tour buses and school buses have a designated on-street parking space along Belleville Street with signage indicating 'Tour Bus Loading Zone – 15 Min. Max'. The length of this zone is approximately 37 m. Typical length of a long bus is between 12-13 m with seating capacity ranging from 40-80 seats. Two buses can comfortably park at any given time. A portion of this zone has an additional sign related to passenger pick-up/drop-off, with the signage being 'Passenger Zone – 3 Min. Max'.

Due to lack of data on number of buses attending the Museum at any given day, in addition to the Covid-19 pandemic limiting the number of tour buses arriving at the Museum, this analysis was based on anecdotal data received from Royal BC Museum staff. Staff did not report any issues with the number of parking spaces available to tour buses, however they did indicate that the on-street spaces are designated for both tour buses and passenger pick-up/drop-off, which can result in periodic conflicts. For this reason, it is in the Museum's best interest to separate these zones and allocate 30 m for the tour bus loading zone and 7 m for the passenger loading zone. In the future, if the number of tour bus spaces becomes an issue, which is understood as unlikely, the Museum could engage with the City to explore opportunities to provide additional on-street space for tour buses. One option could be the removal of some or all of the paid parking adjacent to the existing tour bus loading zone.



## 7.0 BICYCLE PARKING ANALYSIS

Based on the data and the analysis conducted above, an estimate of the bicycle parking demand was completed to determine if the Royal BC Museum's bicycle parking supply will meet the demand. For the additional (non-museum) uses, the bicycle parking requirements as per Schedule C were used. For the Museum, it is assumed that visitor parking demand can be accommodated with short-term parking spaces, whereas volunteer and employee bicycle parking demand would warrant long-term bicycle parking spaces.

### 7.1 MUSEUM VISITORS

Based on the analysis completed in [Section 4.1](#), it is assumed that 5% of the total visitors will ride their bike to the Museum. With an average daily attendance of 2,766, this results in 138 daily visitors seeking for bicycle parking. Utilizing the time-of-day attendance distribution and assuming a 2.5 hour stay at the museum, 61 bicycle parking spaces will be required to meet the peak demand that is expected to occur around noon.

### 7.2 MUSEUM VOLUNTEERS

Based on the analysis completed in [Section 4.2](#), it is assumed that 3% of the total volunteers will ride their bike to the Museum. With the peak number of volunteers being 25 in a day, this translates into one (1) bicycle parking space.

### 7.3 MUSEUM EMPLOYEES

Based on the analysis completed in [Section 4.3](#), the results of the survey indicate that approximately one out of five (22%) employees ride their bike to the Museum. Applying that mode share to the number of employees who will be present at the site post-expansion (60 employees), it is estimated that 13 bicycle parking spaces would be the employee bicycle parking demand.



## 7.4 SUMMARY OF BICYCLE PARKING ANALYSIS

Based on the above analysis, the summary of approximate bicycle parking demand for the Museum is presented in the **Table** below. The total approximate parking demand is estimated at 75 bicycle parking spaces, with 61 spaces designated for visitors, one space for volunteers, and 13 spaces for employees.

**TABLE 8. SUMMARY OF BICYCLE PARKING ANALYSIS - RBCM**

| Land Use           | Expected Parking Demand |
|--------------------|-------------------------|
| Museum, Visitors   | 61                      |
| Museum, Volunteers | 1                       |
| Museum, Employees  | 13                      |
| <b>Total</b>       | <b>75</b>               |



## 8.0 CONCLUSIONS

The proposed redevelopment of the Royal BC Museum is looking to increase the programming area from 17,000 m<sup>2</sup> floor area to 21,300 m<sup>2</sup> and construction is anticipated to begin by 2025. The proposed development also includes a restaurant, two retail units and a child care centre.

The approximate parking demand for the Museum is estimated based on various data sources such as travel survey data collected at the Royal BC Museum for visitors, volunteers, and employees, attendance data from 2019, additional data provided by Royal BC Museum staff, and relevant research to support the findings. Parking demand for the additional land uses was based on Schedule C's parking requirements and past parking analyses completed by WATT. The rates were adjusted based on captive market analysis.

Total parking demand for the site is estimated at 170 vehicle parking spaces, with 124 spaces designated for museum visitors, 11 spaces for museum volunteers, 16 spaces for museum employees, 6 spaces for the restaurant, 1 space for the retail spaces, and 12 spaces for the child care centre. The approximate parking demand is 10 spaces greater than what could be the minimum parking requirement of 160 spaces for the subject site based on the CD-13 Zone, or 117 spaces less than the requirement under Schedule C.

A shared parking analysis was conducted for the site to identify potential reductions in parking from sharing the off-street parking supply. An approximate reduction of 4%, resulting in 163 vehicle parking spaces, could be achieved from sharing parking between the various land uses. Peak demand will be experienced at 12:00pm when museum visitors, museum volunteers, museum employees, retail, restaurant, and child care employees are close to 100% of their parking demand.

The loading demand analysis identified that demand for the Museum is expected to be accommodated with the provision of three loading spaces. The tour bus loading zone is



considered appropriate, but it is recommended that a separate space be created for a passenger zone to minimize conflicts.

Total bicycle parking demand for the museum (accounting for visitors, volunteers, and employees) is estimated at 75 bicycle parking spaces, with 61 spaces designated for visitors, one space for volunteers, and 13 spaces for employees. This is significantly lower (149 spaces fewer) than the total required number of bicycle parking spaces for this use (47 long-term spaces + 164 short-term spaces). Bicycle parking demand for the additional land uses was based on the Schedule C requirements, which would require a total of 3 long-term spaces and 10 short-term spaces for the restaurant, retail spaces, and child care centre. Based on the Schedule C requirements and the bicycle parking analysis, the total bicycle parking demand for the site is estimated at 71 short-term spaces and 17 long-term spaces.