MT. SEYMOUR PROVINCIAL PARK
ACCESS AND DEVELOPMENT OPTIONS STUDY

OCTOBER 2018



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Acknowledgements

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1.0 Introduction

1.1 Access & Development Options Study Purpose

The purpose of this report is to provide guidance and a direction for the improvement of parking and access at Mount Seymour Provincial Park, with a focus on the capacity issues being faced during the winter season. Mount Seymour Provincial Park currently experiences approximately 20-30 peak days per winter season. On peak days parking demand exceeds available parking, which impacts visitor satisfaction, threatens visitor safety as it relates to congested parking areas, and impacts ski area profitability.

The goal of the improvements recommended by this report are to create separation between backcountry users and resort clientele, providing access to backcountry areas from parking lots outside of the ski resort's Controlled Recreation Area (CRA) as tenured to and managed by Mount Seymour Resorts.

This report:

- Details the existing conditions at Mount Seymour Provincial Park as they pertain to access and development;
- Outlines the existing park capacity for snowshoeing trails and backcountry access;
- Provides a comprehensive review of opportunities and constraints as they pertain to access and development;
- Outlines the means to increase park capacity; and
- Contains recommendations to improve parking and access while maintaining the ecological integrity and quality of experience of Mount Seymour Provincial Park.

While similar issues are being faced at Cypress Provincial Park, this report focuses on site-specific solutions for Mount Seymour Provincial Park.

It should be noted that the recommendations in this report address capacity issues as they relate to parking demand and access. The report does not speak to the comfortable carrying capacity of the park. It is recognized that the provision of parking capacity must align with the environmental, cultural, and recreational goals and objectives of the park. The recommendations detailed below can be incorporated into any forthcoming Park Management Plan for Mount Seymour Provincial Park.

1.2 Project Background

Each winter Mount Seymour Provincial Park becomes a popular destination for downhill skiers, snowshoers, and backcountry skiers. The Mount Seymour Ski Resort offers lift serviced downhill skiing in the Park's centre, while a network of trails that crosses between lands managed by the Ski Resort, BC Parks, and the Metro Vancouver Regional District provides snowshoeing and backcountry skiing experiences for backcountry users.

In recent years, the exponential growth of snowshoeing, and to a lesser extent backcountry skiing, has adversely affected the visitor experience in Mount Seymour Provincial Park and at Mount Seymour Ski Resort. The increased numbers of backcountry park visitors (i.e. non-resort clients) have led to greater traffic congestion on Mount Seymour Road, lengthy parking wait times, and parking congestion within and outside the CRA. This has resulted in ski resort clients and backcountry users being turned away, particularly on peak winter days, ultimately leading to increased frustration and lower satisfaction among all park users.

Managing the increased visitor traffic has placed additional pressure on Mount Seymour Resorts. They estimate their costs to manage vehicle traffic are over $12,000 annually. Despite this investment and effort, there have been days when traffic line-ups have generated waits more than one hour. To help address the congestion and long waits, Mount Seymour Resorts has offered their shuttle service free of charge over the Christmas holidays for both paying clients and park visitors, at the resort operator's expense.

As a result of resort clients being displaced due to traffic congestion and limited parking availability, as well as the added costs of managing increased volume of park and ski resort clients, Mount Seymour Resorts estimates it has lost $150,000 in revenue in recent years.

Mount Seymour Provincial Park, like all parks in BC, was created for the enjoyment of all British Columbians. Public access is an important part of BC Parks' mandate, providing valuable experiences for the public. Similarly, to remain a vibrant and viable recreation area, Mount Seymour Ski Resort relies on visitors being able to easily access its activities and services. A clearly defined management direction is needed to address the issues around parking capacity and area access. Only then can BC Parks ensure the quality of visitor experience, continued public access to the park, and the viability of the Mount Seymour Ski Resort.

1.3 Study Area

Mount Seymour Provincial Park is located in the North Shore Mountains, at the southern tip of the Pacific Range, overlooking the Metro Vancouver Region. The park is approximately 3,509 hectares in size, and includes alpine lakes, subalpine meadows, and a mixture of old and second growth forests. The park borders Say Nuth Khaw Yum (Indian Arm) Provincial Park, while Cypress, Pinecone Burke, and Golden Ears Provincial Parks are within 60kms (Fig. 1). The Lower Seymour Conservation Reserve and Lynn Headwaters Regional Park, operated by the Metro Vancouver Regional District, lie just west of the park.

Visitors can access the park via Mount Seymour Road, which connects to Mount Seymour Parkway in the District of North Vancouver. Alternatively, areas in the southern end of the park can be accessed by a comprehensive trail network that spans the lower elevations of the North Shore Mountains (Fig. 2). The park is adjacent to the District of North Vancouver, and 15 kilometers from downtown Vancouver.

Mount Seymour Resorts operates Mount Seymour Ski Resort, an 81ha Controlled Recreation Area (CRA) within the Provincial Park. The ski resort offers skiing, snowboarding, snowshoeing, and tubing during the winter season. In the summer season the ski resort is host to a range of day hikes and wildlife viewing opportunities.

1.4 Recreation Values

Mount Seymour Provincial Park is a haven for outdoor enthusiasts and nature lovers. The trails, lakes, and viewpoints located in and around Mount Seymour Provincial Park draw people from around the Metro Vancouver region to take part in hiking, camping, horseback riding, mountain biking, snowshoeing, and backcountry skiing.

During the summer months, the park is a popular destination for hikers, campers, sightseers, and mountain bikers. Hikers utilize a network of trails, ranging from short, scenic trails, to longer, more challenging experiences that straddle the park and adjacent lands managed by the Metro Vancouver Regional District and the District of North Vancouver. Viewpoints at Dog Mountain, the Deep Cove Lookout, First Pump Peak, and from the top of Mount Seymour offer spectacular views of Metro Vancouver.

Visitors seeking a multiday experience can make use of the group camping area, a short walk from the end of Parking Lot 1. Alternatively, backcountry camping is permitted beyond Brockton Point, and is supported by an emergency shelter at Elsay Lake.

Mountain biking has become a popular recreational activity in Metro Vancouver, in part due to the development of an extensive network of mountain bike trails along the North Shore Mountains. The network of mountain bike trails in lands adjacent to Mount Seymour Provincial Park is extensive. Mountain bikers make use of trails, roads, and parking facilities in the park to access the trail network. In the park itself, mountain

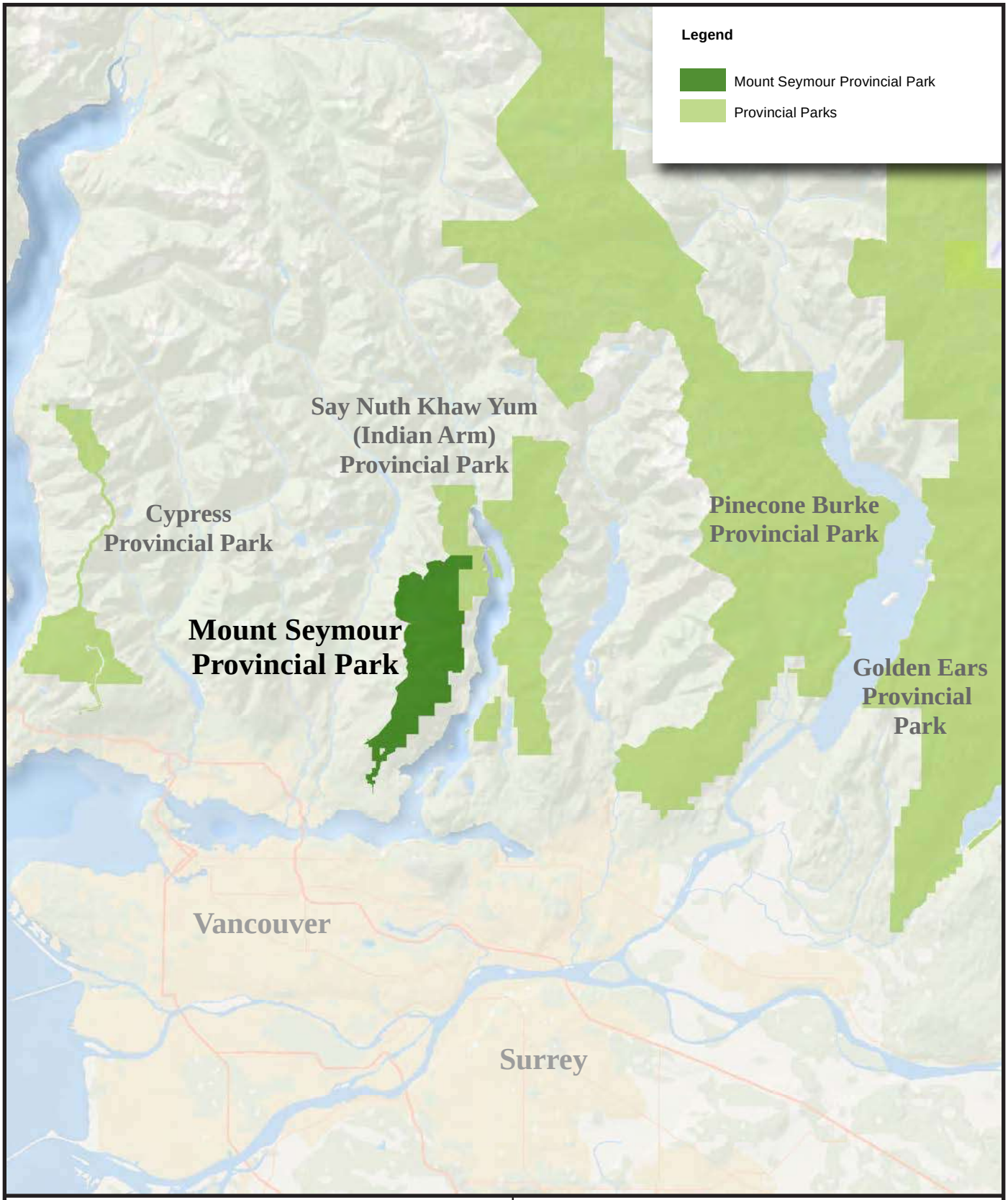
biking is currently restricted to 6 trails. Presently, numbers for mountain bike use within the park are unavailable, but it can be assumed that trail use at the lower elevations is intensive.

For those looking to explore on horseback, horseback riding is permitted in Mount Seymour Provincial Park. However, it is restricted to Old Buck Trail as far as the historic Mushroom Parking Lot, and managers note that horseback riders should exercise caution due to the growing number hikers and mountain bikers.

Unlike most Provincial Parks, Mount Seymour receives a sizeable proportion of its visitors during the winter months. This is large part due to the presence of Mount Seymour Ski Resort. During a typical year, the resort offers skiing, snowshoeing, and snowplay experiences from early December to early April. Visitors to either the resort or the park can use the restaurant, bar, and heated seating area in the Three Peaks Lodge, as well as the other services and amenities.

The trails and peaks outside the ski resort also receive intensive use during the winter season. The trails accessed from the Mount Seymour Ski Resort are used extensively by snowshoers and backcountry skiers. Of the visitors using the backcountry areas, half are accessing the trails to Dog Mountain and Dinky Peak on lands that belong to the Metro Vancouver Regional District. The remaining backcountry users seek out trails to Mount Seymour, First Pump Peak and Elsay Lake that are within the Provincial Park.

The park can be accessed by car via Mount Seymour Road which runs from the District of North Vancouver in the south to the Mount Seymour Ski Resort parking lot in the centre of the Park. Numerous trails branch off from the road, and parking facilities exist at the base of the mountain (Old Buck Parking Area and Lot 0), along the road (Baden Powell Parking Area, Deep Cove Lookout Parking Area, Vancouver Picnic Parking Area, and Lot 1), and at the terminus of the road (Lots 2-5). In addition to road access, a substantial trail network connects the Park to adjacent forest areas. Notably, the popular Baden Powell Trail transects the southern end of the park.



Mount Seymour Provincial Park

Access and Development Options Study
Regional Context Map (Figure 1)
March 2017

0 5 10 20 Kilometers

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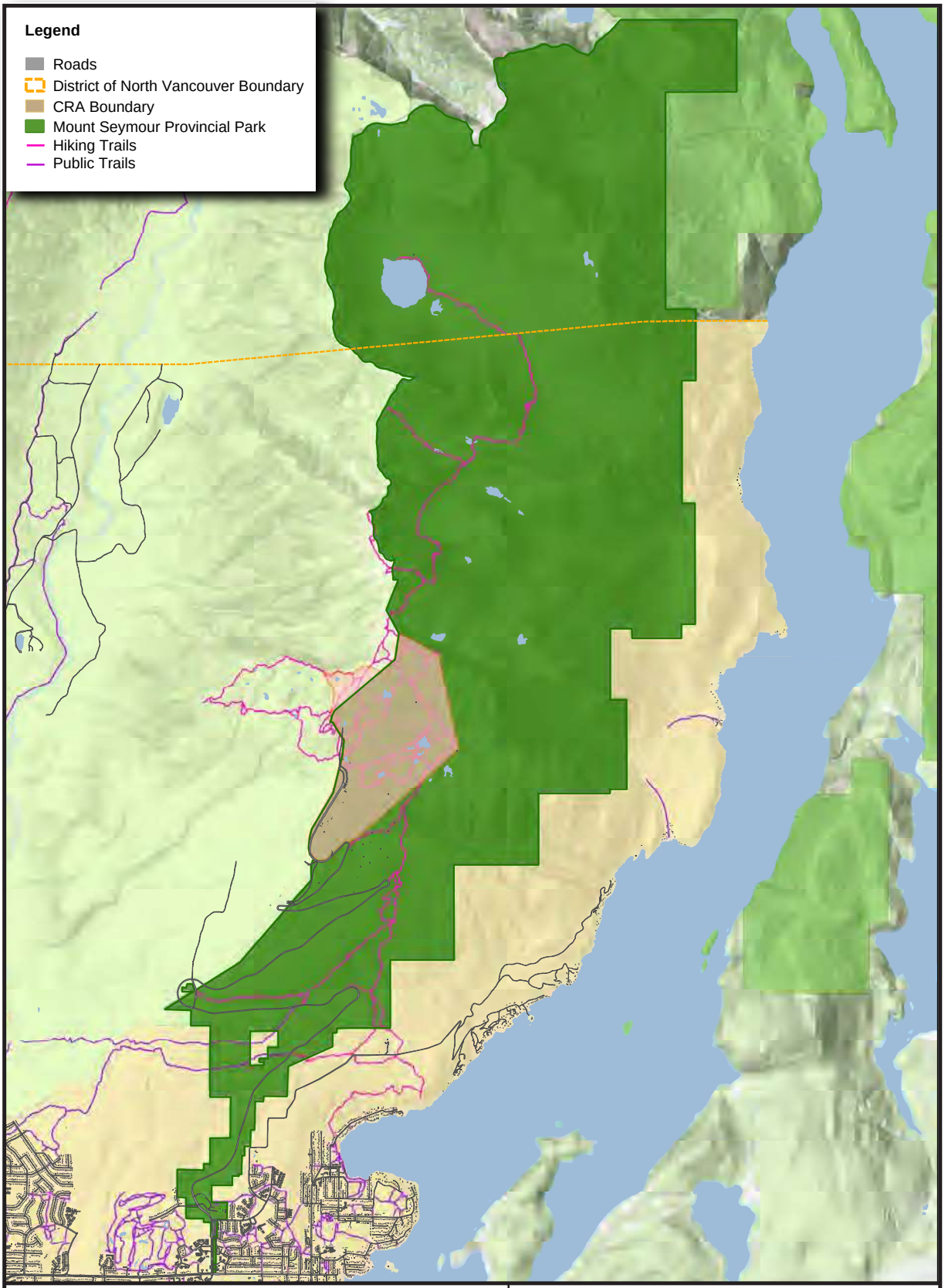
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Mount Seymour Provincial Park

Access and Development Options Study
Study Area (Figure 2)
March 2017

0 250 500 1,000 1,500 2,000 Meters

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2.0 Development Analysis

2.1 Commuter Experience Survey

An online Commuter Experience Survey was conducted in December 2016 and January 2017. This survey was used to gather information from park users to better understand the impacts of parking and access issues on visitors to the park. In addition, the survey was used to gain an understanding of public support for several proposed management directions designed to address existing parking and access issues.

The following management directions were outlined to survey respondents:

- Improvements to the existing shuttle service;
- A registration system for park visitors;
- A vehicle access fee;
- Construction of additional parking lots;
- Construction of a gondola from the base area;
- Implementation of a ride-share program.

A clear preference emerged for improvements to the existing shuttle service, followed by the construction of additional parking lots.

In addition, the need for improved communication was expressed by survey respondents. Many felt that signage at the bottom of the mountain and additional staff managing traffic stoppages along Mount Seymour Road would be beneficial.

For a full summary of findings from the Commuter Experience Survey, please see Appendix A.

2.2 Existing Capacity

The following is a summary of the existing conditions at Mount Seymour Provincial Park with a focus on parking and access. This section first reviews historic visitor numbers on peak days and the existing parking capacity and shuttle service. It then calculates the current deficit of parking stalls using the historic visitation numbers, and rates of visitor turnover and average number of visitors per vehicle established from the user survey. Trends in visitation are then used to predict future growth in demand for parking stalls. Finally, this section reviews the current backcountry access routes in Mount Seymour Provincial Park.

2.2.1 Peak Days and Visitor Experience

On peak winter days during the 2016/2017 season, Mount Seymour Provincial Park saw up to 1,796 non-ski resort visitors using backcountry winter trails. These are the days when the capacity issues were the most pronounced. While the overall capacity of the park is determined by parking availability, hiking and backcountry trails may also be congested on peak days. Any discussion of parking, capacity, and access must consider the experience of visitors and ski resort clients on the trails, ski runs, and in the backcountry.

2.2.2 Existing Parking and Shuttle Service

The following is a summary of the existing parking facilities in Mount Seymour Provincial Park (see Figure 3):

- **Lot 0**: This lot is located at the base of Mount Seymour Provincial Park, adjacent to a transit stop. Parking capacity: 80 vehicles.
- **Old Buck Parking Lot**: This lot is mainly used by mountain bikers and can be accessed from Anne Macdonald Way. Overflow parking from this lot spills out into the surrounding neighbourhood along Anne Macdonald way, creating tension with the community. Parking capacity: 20 vehicles.
- **Baden Powell Parking Area**: This is the small pullout where the Baden Powell Trail crosses Mount Seymour Road. Parking capacity: 10 vehicles.
- **Deep Cove Lookout**: This small parking area provides an access point to the existing trail network. Parking capacity: 10 vehicles.
- **Vancouver Picnic Area**: This small parking area is adjacent to the top of several popular mountain biking trails and offers access to the Old Buck Trail. Parking capacity: 8 vehicles.
- **Lot 1**: This lot sits at the edge of the reliable snow line. Overnight parking is permitted in this lot. Parking capacity: 90 vehicles.

- **Lot 2**: This lot is currently used for resort snowplay visitors who are accessing the tubing or tobogganing facilities. Parking capacity: 150 vehicles.

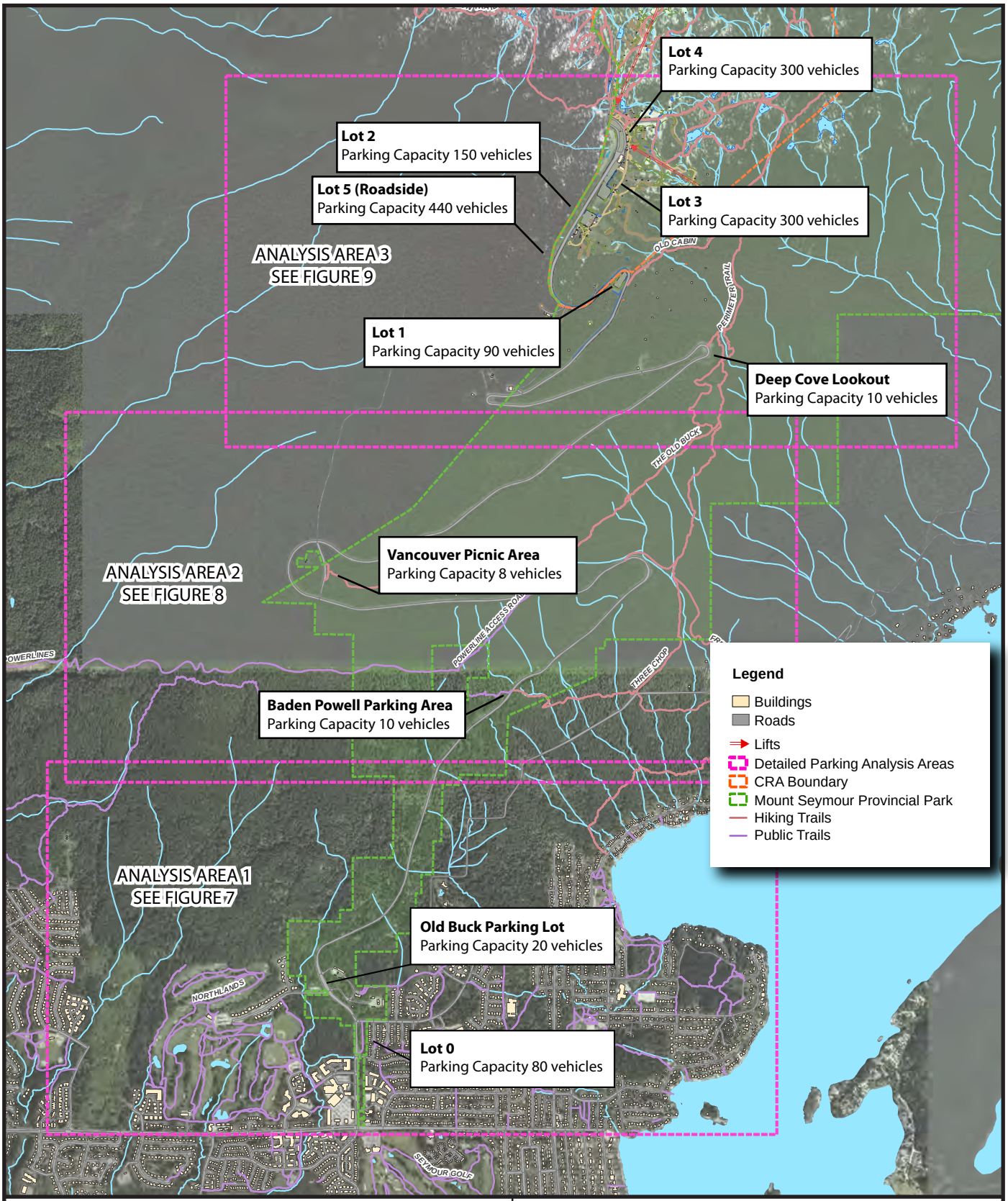
- **Lot 3**: This lot is currently used as parking for downhill skiers and snowboarders in the wintertime. Parking capacity: 300 vehicles.

- **Lot 4**: This is the main parking lot used by resort clients. Parking Capacity: 300 vehicles in the wintertime.

- **Lot 5**: As a solution to overcapacity issues, angled parking has been developed along the west side of the road, which is used on peak winter days. The lower portion of this parking is used for backcountry park visitors, while the upper portion is used by Mount Seymour Resorts. Parking capacity: 444 vehicles (Upper 140, Lower 304).

Winter parking designations are in place from November to April, which dictate that park visitors accessing the backcountry and snowshoe trails are restricted to parking in Lot 1, and the lower portion of Lot 5. Lots 2-4 and the upper portion of Lot 5 are restricted to resort clientele. The total number of winter parking spaces currently available for backcountry park visitors is 394.

Mount Seymour Resorts currently operates a shuttle that picks up at Rupert SkyTrain Station and the Parkgate Community Centre. The pickup point at Parkgate Community Centre has created some tension with the surrounding community, as some resort visitors park in the community centre parking lot.



Mount Seymour Provincial Park

Access and Development Options Study
Existing Parking Plan (Figure 3)
March 2017

0 125 250 500 750 1,000 Meters

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2.2.3 Visitor Turnover

Visitor length of stay in Mount Seymour Provincial Park varies. The length of stay, and subsequently the rate of visitor turnover, impacts the number of parking spaces available throughout the day.

Responses to the survey indicated that 57% of survey respondents stay in the park for 2-4 hours per visit, 28% stated that they stay for 4-6 hours, 7% indicated that they stay for 1-2 hours, and 7% indicated that they stay for 6 hours or more. From this, it can be inferred that with the park gates open from 7am to 11pm, approximately 90% of the parking stalls will have four cycles of visitor traffic per day (7am – 11am, 11am – 3pm, 3pm – 7pm, 7pm – 11pm). The remaining 10% of parking stalls should be allocated to long-term stays (full day or overnight parking).

While there are four cycles per day, the survey results indicated that the cycles are not proportionate. The cycle with the largest number of visitors is in the morning, when 65% of survey respondents indicated that they are using the park. This is an important consideration when determining parking capacity.

2.2.4 Visitors per Vehicle

The number of visitors in each vehicle will affect the total number of visitors in the park, which in turn will impact trail congestion and the trail user's experience. The results of the survey indicated that most park visitors drive a personal vehicle to come to the park, and that there is an average of 2.5 people per vehicle. However, an analysis of peak visitor numbers and parking capacity indicates that this number should be lowered to 2 people per vehicle for planning purposes. This is lower than the number of people per vehicle typically seen in a Provincial Park setting, but better reflects the urban context and ease with which city residents access Mount Seymour Provincial Park.

There is a growing urban population in Metro Vancouver, many of whom are seeking an opportunity to simply play in the snow. A free winter experience is conveniently located and easily accessible at Mount Seymour Provincial Park. Most park visitors with snowshoes are seeking an easily-accessible opportunity to put on their snowshoes and walk a moderate distance in a natural setting. This differs from the relatively small number of park visitors that are seeking a true "backcountry" destination for ski touring in a more remote setting. It is the former that stay for less than 6 hours, and the latter who require full-day or overnight parking options.

2.2.5 Existing Visitor Capacity

Considering the existing parking facilities, visitor turnover numbers, and the average number of visitors per vehicle, it is possible to determine the current visitor capacity of Mount Seymour Provincial Park. Improvements to parking and access have the potential to create additional capacity.

For the purposes of this calculation, only those lots used in the winter by park visitors were considered (Lot 1 and lower Lot 5).

The existing backcountry and snowshoe visitor capacity is 788 people at any given time, including those who are staying for a full-day or overnight trip (Table 1). Removing the 10% of visitors who stay long-term, visitor capacity decreases to 709 people at any given time. While there are four cycles per day, which would give 2,836 people, the survey indicated that most respondents (65%) visited the park from opening to 11am. Therefore, we can establish that even though demand on a peak winter day can reach 1,760 visitors, variation in parking demand throughout the day creates a gap between available parking capacity and the demand for parking stalls. On a 1,760-visitor day, with 65% of visitors coming to the park at the same time, it should be anticipated that there may be upwards of 1,134 people looking to park at during the peak morning period (7am – 11am).

Table 1. Parking Capacity, Demand, and Deficit

Year	Parking Capacity (Stalls)	Visitor Capacity at Any One Time†	Day-use Visitor Capacity*	Peak Day Total Visitors (2016/2017)	Peak Daily Demand‡	Required Parking Capacity (Stalls)	Parking Deficit (Stalls)
2016/2017	394	788	709	1,760	1,134	567	174
	Anticipated Growth (10% per year)						
2017/2018	-	-	-	1,936	1,258	629	235
2018/2019	-	-	-	2,130	1,385	693	346

† 2 visitors per car
* 90% of visitor capacity. 10% of visitors are full-day or overnight.
‡ 65% of peak day visitors

On peak days, resort clientele may also park in Lower Lot 5 and Lot 1. Though this number is currently unknown, these visitors undoubtedly reduce the number of parking stalls available for park visitors further exacerbating the parking capacity issues.

2.2.6 Anticipated Visitor Growth

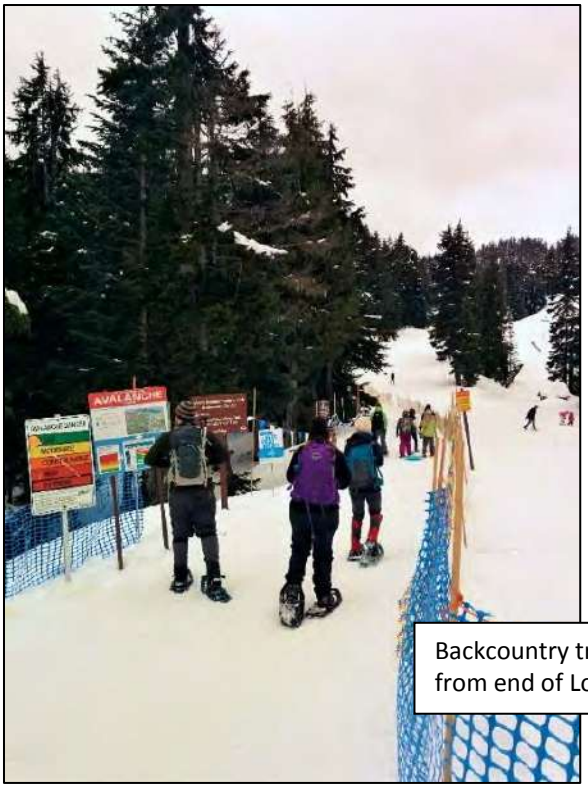
Based on winter trail numbers from the 2015/2016 winter season and the 2016/2017 winter season, Mount Seymour Provincial Park is currently seeing visitor numbers increase at a rate of 25% per year. Even when the relatively poor conditions of the 2015/2016 season are considered, it is reasonable to assume that future annual growth of backcountry users will average 10% per year. If growth in peak day visitation follows at 10% per year, Mount Seymour Provincial Park will see more than 2,100 backcountry users on peak days within 3 years (Table 1). With 65% of visitors using the park during the peak morning period, this gives a peak daily demand of 1,365 people, or 682 parking spaces, approximately double what is currently available. It is recommended that this anticipated growth be considered as a preferred parking and access solution is developed and refined.

2.2.7 Existing Backcountry Access

Currently, all backcountry users stage from the same point at the far end of Lot 4, where there is an Information Shelter. From here, a pathway leads to the backcountry trail network.

To provide access to the main staging point, Mount Seymour Resorts maintains a groomed snow road on the west side of Mount Seymour Road from Parking Lot 1 to the Information Shelter. However, the distance from Lot 1 to the backcountry access point along this road is approximately 1.5 kilometers, which is undesirable from the perspective of a park visitor. Typically, the distance pedestrians are willing to travel to key attractions is approximately 400 meters. In addition, this pathway is directly adjacent to the road and does not offer any positive experiential elements to visitors.

To address the issues mentioned above, there is a desire to create more separation between backcountry users and resort clientele. This will be explored in Section 3.0: Findings and Recommendations.



Backcountry trailhead from end of Lot 4.

2.3 Slope Analysis (Development Suitability Analysis)

To better understand the potential for parking and access within Mount Seymour Provincial Park, a detailed Slope Analysis with a focus on development suitability was conducted (Figure 4). The terrain is broken into the following categories:

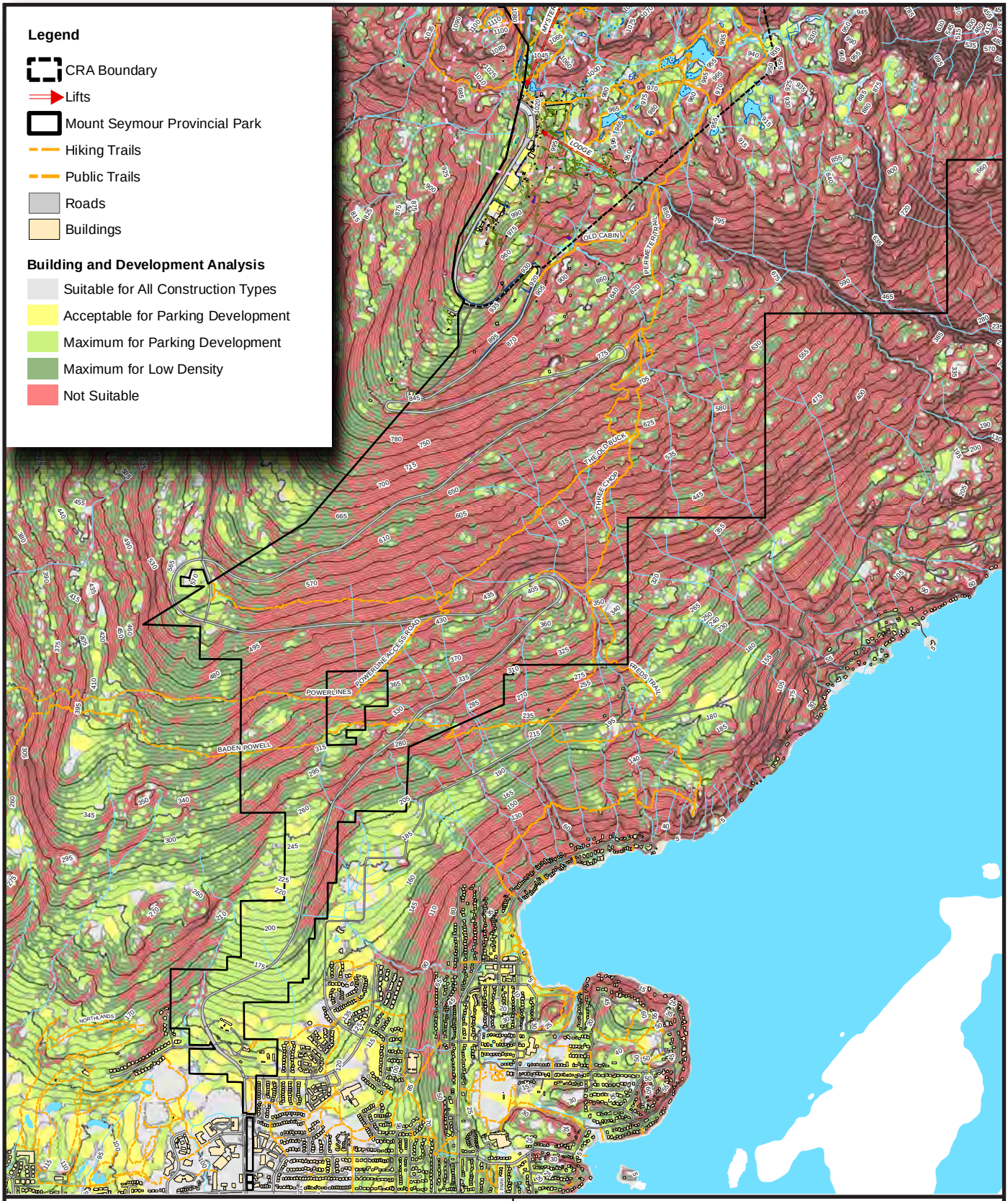
Table 2. Slope Analysis Key

Suitable for all construction types	
Acceptable for parking development	
Maximum for parking development	
Maximum for low density	
Not suitable	

Terrain that falls into the first three categories was considered for future parking development.

2.4 Elevation Analysis

The Elevation Analysis (Figure 5) provides critical information about the climactic limitations that exist regarding winter access and parking issues. Currently, the reliable snow line at Mount Seymour Provincial Park sits at approximately 900-920 meters. Parking options below this elevation would require regular shuttle service, while those above could make use of groomed access routes for backcountry visitors.



Mount Seymour Provincial Park

Access and Development Options Study
Development Suitability Analysis (Figure 4)
March 2017

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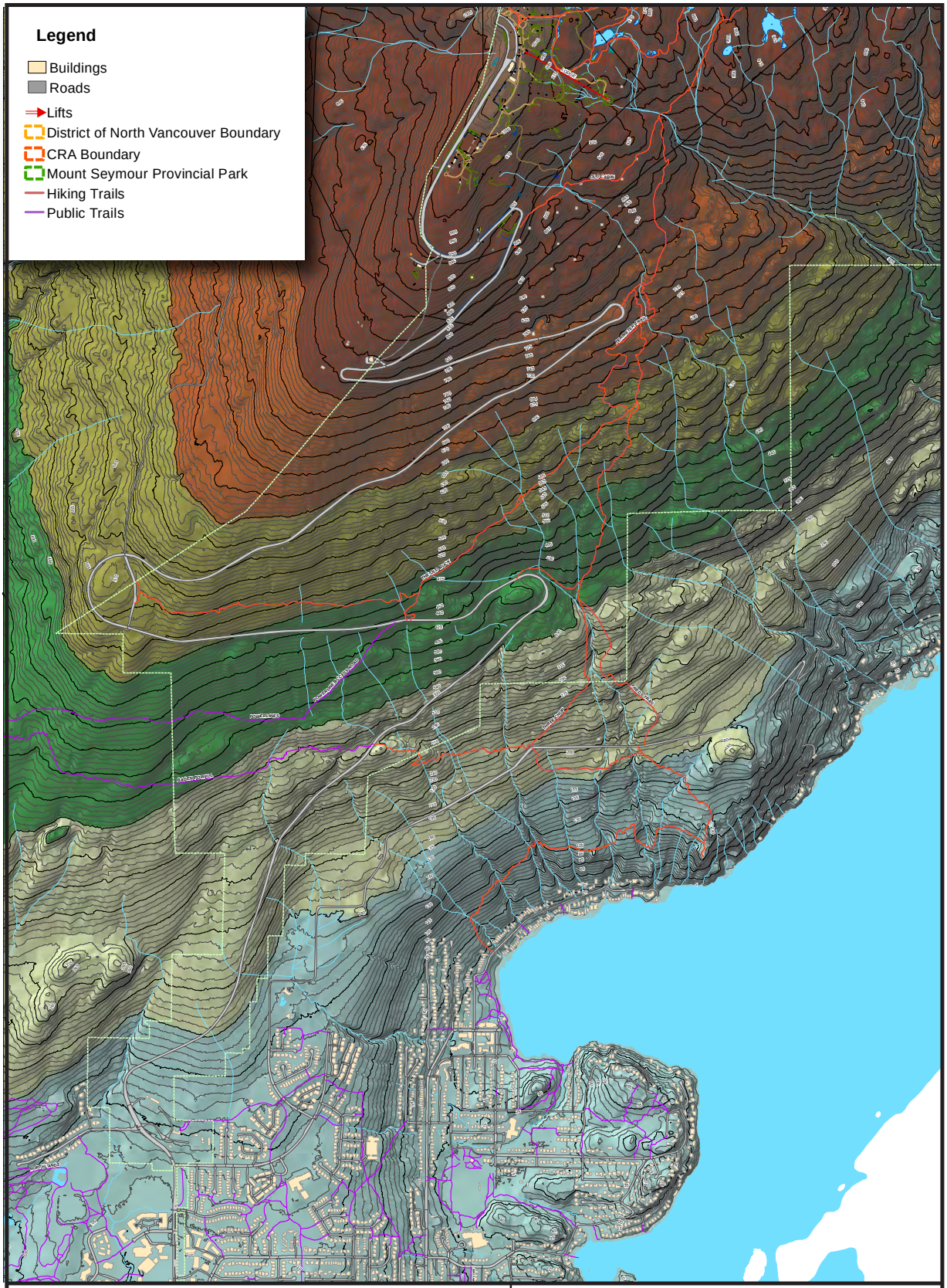
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Mount Seymour Provincial Park

Access and Development Options Study
Elevation Analysis (Figure 5)
March 2017

0 250 500 1,000 1,500 2,000 Meters

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2.5 Opportunities and Constraints

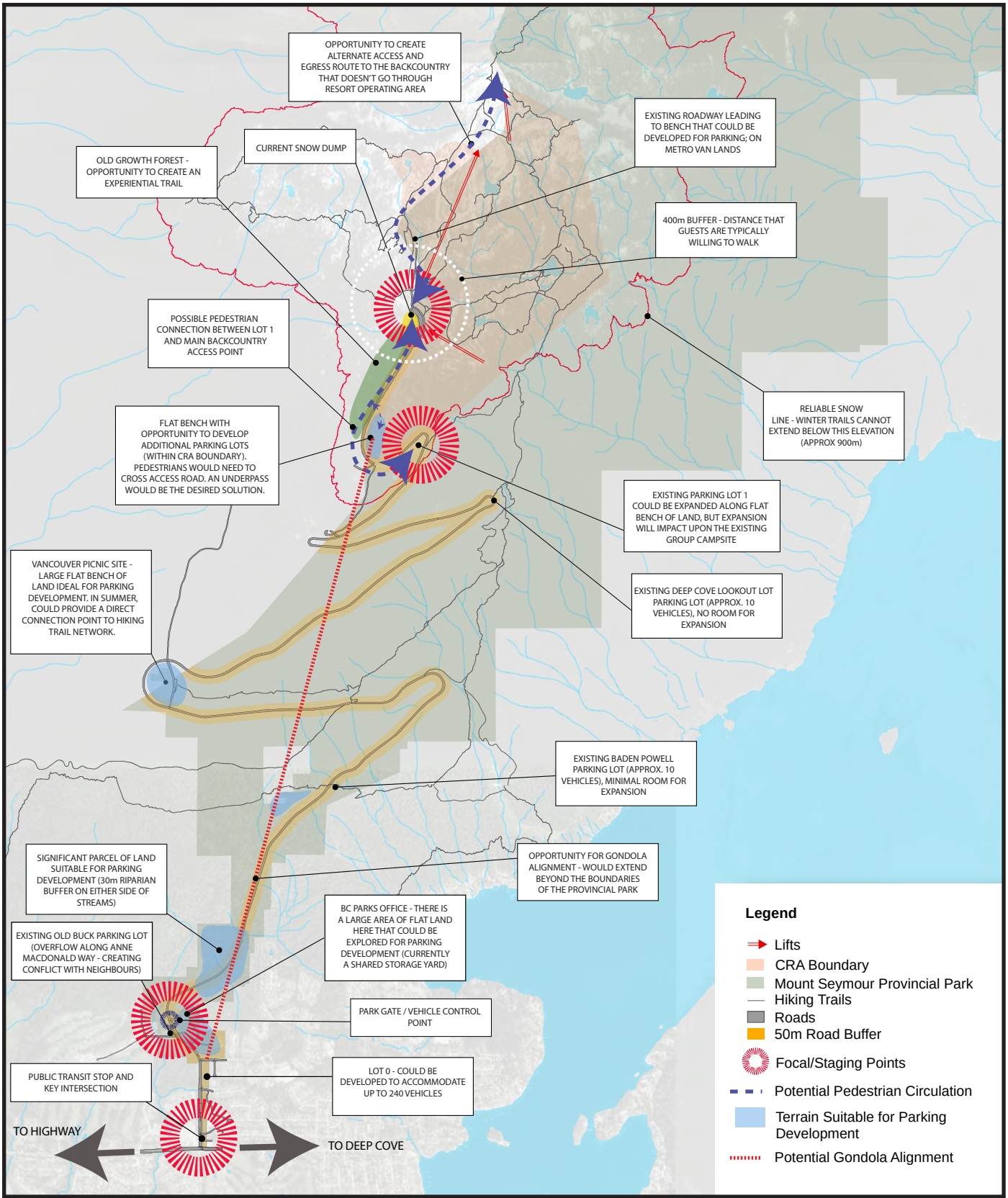
See Figure 6

Building on the Slope Analysis, the Elevation Analysis, and findings from site visits to Mount Seymour Provincial Park, the Opportunities and Constraints plan was developed. This plan identifies several options for improvements to parking and access in Mount Seymour Provincial Park.

While the solutions detailed below have been prepared for BC Parks, the recreation opportunities that create high demand for parking stalls cross between lands managed by BC Parks, the Metro Vancouver Regional District, and Mount Seymour Resorts. To be successful, any parking and access solution must be a joint effort between BC Parks, Metro Vancouver Regional District, and Mount Seymour Resorts.



Clockwise from top left: Traffic Management near Lot 2; Lot 5 parking for backcountry visitors; Lot 4 for Mount Seymour Ski Resort visitors; Backcountry area snow road.



Mount Seymour Provincial Park

Access and Development Options Study
Opportunities and Constraints Plan (Figure 6)
March 2017

0 200 400 800 1,200 1,600 Meters

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2.6 Opportunities and Constraints – Parking and Trails

A more detailed summary of the opportunities and constraints for the areas identified as having potential for parking development follows. In Section 3.0: Findings and Recommendations, these options will be further analysed, and preferred options will be arrived at.

Of note, parking expansion options that are not adjacent to existing washroom facilities must include an all-season washroom facility (water, power, sewage connection) suitable for 2,000 visitors per day.

2.6.1 Potential Parking - Option A (Expansion of Lot 0)

See Figure 7

Lot 0 is an existing parking lot at the base of Mount Seymour Provincial Park, which currently accommodates up to 80 vehicles. An expanded Lot 0 parking lot could be designed to accommodate up to 240 vehicles at a time.

The site is well-situated with a public transit stop nearby. This would enable public transit users and private vehicles alike to take advantage of improved shuttle service. A shuttle stop with covered shelter, a drop-off zone, and lighting should be integrated into Lot 0 if expansion is pursued. Moving the shuttle pick-up to the east side of Mount Seymour Road, as opposed to a point adjacent to the Parkgate Community Centre, will help to prevent park visitors from using the parking lots designated for mall and community centre patrons.

This site would require the development of an all-season washroom facility, but proximity to existing development would limit the cost of connecting to existing power, water, and sewage infrastructure. Further, to accommodate increased vehicle traffic, the intersection of Mount Seymour Road and Indian River Drive may require improvements to traffic management signage and infrastructure.

As part of a Lot 0 expansion, BC Parks and Mount Seymour Resorts could consider implementing a parking fee for some or all the upper parking lots (Lots 1 – 5) to incentivise carpooling and shuttle services. The implementation of a fee was poorly received in the Commuter Survey, with 27% of respondents strongly opposed. However, a fee in limited lots paired with improved shuttle service was not proposed in the survey and is likely to be received more positively.

The expansion of Lot 0 would have reduced environmental impact relative to other options as much of the area is already cleared. Further, the trees in Lot 0 are infected with laminated root rot and should be removed regardless of whether the parking lot is expanded. This represents an opportunity to provide a landscaped buffer that is scaled to the adjacent residential neighbourhood, expand parking capacity, and help to address some of the overflow issues with mountain bikers along Anne Macdonald Way.

2.6.2 Potential Parking - Options B1 - B3 (Old Buck South Parking Lot, Old Buck Alternative 1, Old Buck Alternative 2)

See Figure 7

The BC Parks office is located on a large flat bench of land suitable for parking development. Currently, this land houses storage facilities, staff parking, and is shared with other users.

The area to the west side of Mount Seymour Road (B1) also has potential for additional parking development to the south of the existing Old Buck Parking Lot. However, this area contains a stand of high value trees and wetlands and as such development will be costlier and may not be publicly acceptable.

The lands adjacent to the existing BC Parks office hold two areas which may be suited for parking development (B2 & B3). These areas are easily accessed from Mount Seymour Road via existing the road and parking network. However, the proximity to existing residential development may create conflicts with residents.

If visitor parking were to be developed at all three of these sites, they could accommodate up to 690 vehicles. The expansion of parking in any of these locations would require a shuttle stop with a covered shelter, drop-off area, and lighting, but they are within 400m walking distance of public transit should visitors wish to leave their cars at home.

2.6.3 Potential Parking - Option C (Potential Camping Site)

See Figure 7

This location contains a significant parcel of land suitable for development as additional parking. However, this option would require careful planning to minimize environmental impact. The land in this area is heavily forested and there are several streams that would require a 30m riparian buffer.

This area has previously been explored as a potential location for a campground. If pursued, a new campground could be developed in conjunction with parking and would provide a new overnight accommodation option for park visitors.

If parking were fully developed here, it could accommodate up to 900 vehicles. However, a mix of parking and camping or a smaller parking area would be more desirable than a very large parking lot. The expansion of parking to this location would require a shuttle stop.

2.6.4 Potential Parking - Options D1 & D2

See Figure 8

The Vancouver Picnic site currently has a small parking area suitable for 8 vehicles. The site has become overgrown, and no longer has the city view it once had. From a topographic standpoint, this site is well-suited to the development of parking. However, this parcel of land is heavily forested. Parking development here would require a shuttle stop due to both distance from the main staging area for backcountry access and the fact that it is located at too low an elevation to have a reliable snowpack. However, the proximity of these sites to popular mountain biking trails may make them attractive to mountain bikers, in turn alleviating pressure on the Old Buck Parking Area.

A portion of the land suitable for development lies outside the park boundary on Crown lands (D2). Crowns land are subject to First Nations land claims, so development of this option would require consultation with local First Nations. Option D1, which is contained within the park boundary, shows the potential to develop parking for up to 240 vehicles. Option D2 takes advantage of the flat land beyond the park boundary and could add 90 more parking spaces, for a total of 330.

2.6.5 Potential Parking - Option E (Parking Lot 1 Expansion)

See Figure 9

Parking Lot 1 currently provides parking for 90 vehicles. It is adjacent to the Mount Seymour Provincial Park group campsite, though the campsite is currently underutilized. This parking lot is used as winter parking for visitors who are coming to snowshoe or backcountry ski. Mount Seymour Resorts maintains a packed snow road along the west side of Mount Seymour Road from Lot 1 to the main trailhead at the far end of Lot 4.

The flat bench of land that the group campsite is located on is well-suited to the expansion of the existing parking lot and could add approximately 200 additional parking spaces. Further, Lot 1 sits at the edge of the reliable snow line, and therefore would not require regular shuttle service.

The forest surrounding the proposed Lot 1 expansion is high value but near the end of its natural life. Several trees would have to be removed to create a buffer around the expanded parking area to reduce the threat of trees falling on the parking area. To limit the number of trees removed, parking expansion should not extend beyond the existing group campsite food shelter. Grading of steeper slopes at the north end of the expansion site would increase the size of the parking area, and the fill used to backfill in the snow dump at the eastern end of the existing parking lot.

The current entrance/exit to Lot 1 is insufficient to handle the added traffic volume associated with parking lot expansion. Its location on the apex of a switchback limits

sightlines and creates safety hazards. Accordingly, a new entrance should be constructed on the south side of the parking area, with visitors entering from the road below Lot 1, while a new exit should be constructed on the north side of the expanded parking area, with visitors merging into downhill traffic. Finally, signage and traffic calming measures would be needed to aid in safety and traffic circulation.

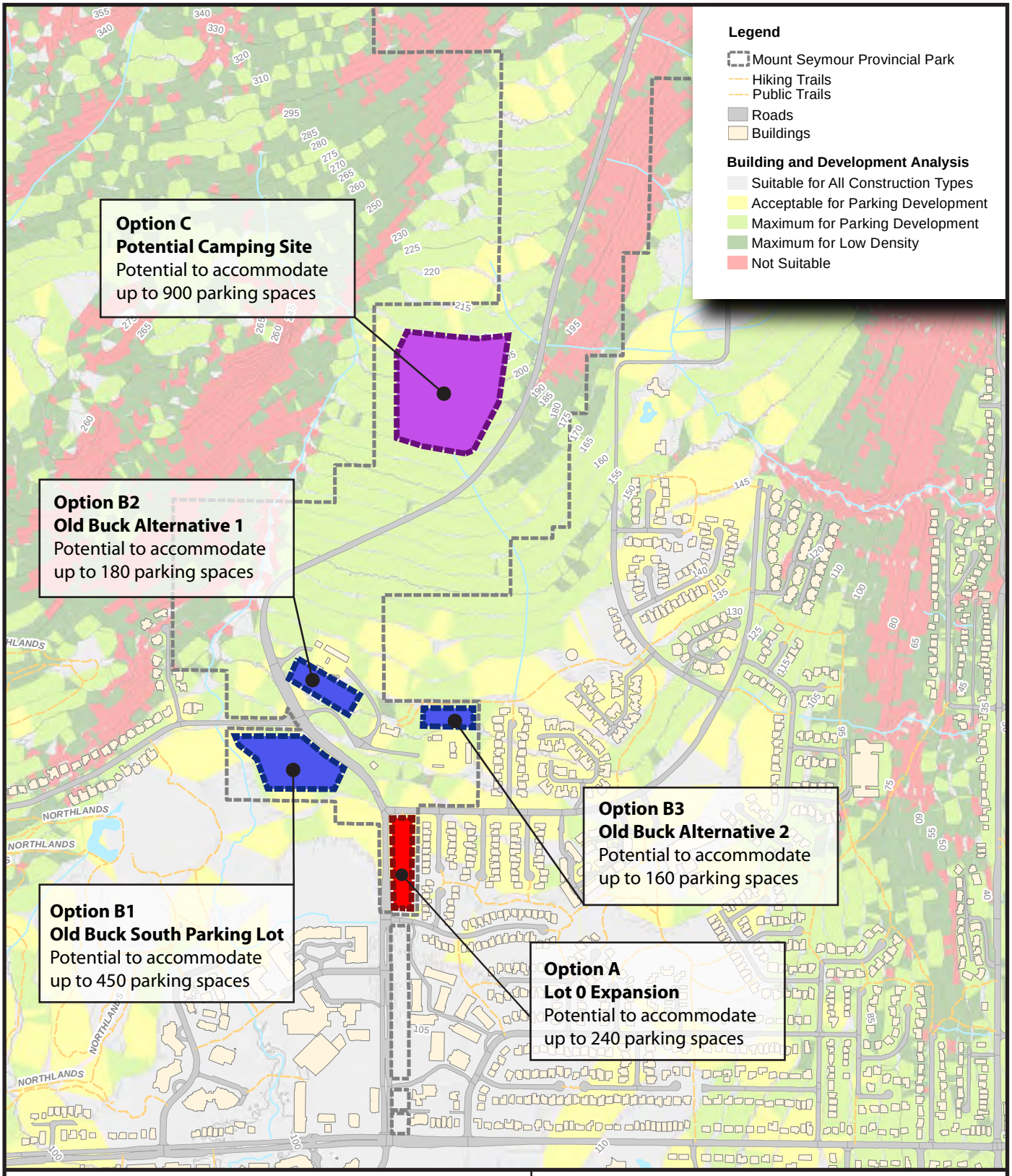
The expansion of parking at Lot 1 would require a new washroom facility with the capacity for 2,000 visitor per day. Power and water could be connected from the sewage treatment facility to the north of the Lot and sewage would need to be pumped up to the treatment facility. The necessary pipes and cables could be routed through existing rain water culverts which run under Mount Seymour Road, reducing construction costs and traffic disturbance.

2.6.6 Potential Parking - Option F (Site within CRA Boundary)

See Figure 9

A preliminary design was previously prepared for this location in September of 2016 (Appendix B) and has the potential to add approximately 200 additional parking spaces. This site has the double advantage of access to water and power utilities needed for a washroom facility and is within 400m of the proposed Old Growth Access Trail. Road access to the proposed parking area could be via a new entrance from Mount Seymour Road as detailed in the original plans, or via the existing entrance to Lot 2 with vehicle traffic routed along the existing snowcat track. Using the existing entrance to Lot 2 would allow visitors to make use of the food and beverage services, and existing washroom facilities at Enquist Lodge. If a shuttle service were pursued it could connect to the expanded parking lot itself, Enquist Lodge, or a purpose-built pull-out area on Mount Seymour Road across from the Old Growth Access Trail.

While the site has advantages, it also presents challenges. Option F sits within the Controlled Recreation Area (CRA) boundary managed by Mount Seymour Resorts, and the terrain is well-suited to the development of recreational amenities. Further, as this parking area is located on the east side of Mount Seymour Road, it would require the construction of a crosswalk, and associated lights, signage, and traffic management, to allow pedestrians to safely reach the access trail on the west side of the road. Finally, this area has the maximum acceptable slope for parking development and would require extensive regrading to make it suitable for parking.



Mount Seymour Provincial Park

Access and Development Options Study
Potential Parking Development Areas - Analysis Area 1
(Figure 7)
March 2017

N

0 100 200 400 600 800 Meters

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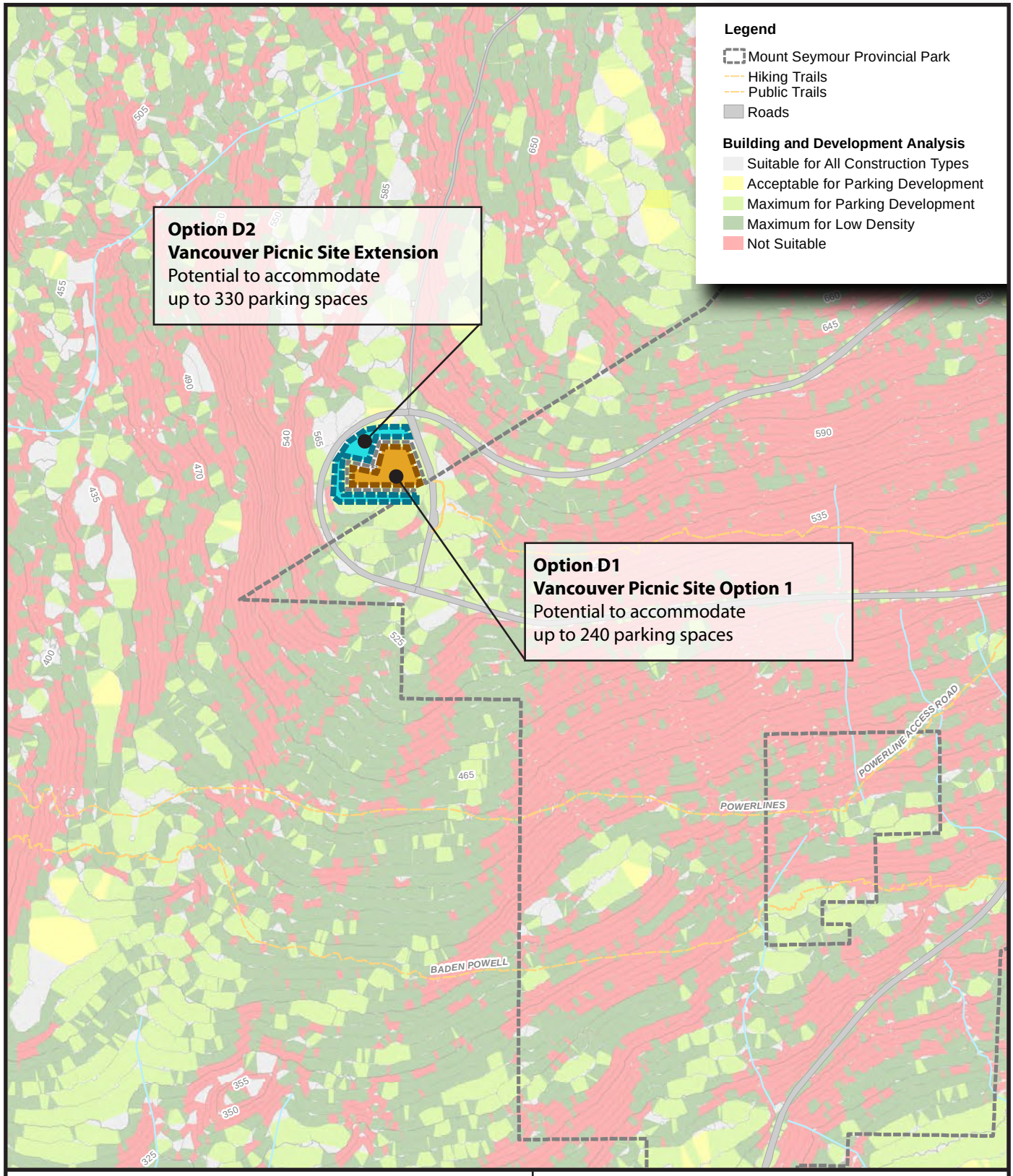
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Mount Seymour Provincial Park

Access and Development Options Study
Potential Parking Development Areas - Analysis Area 2
(Figure 8)
March 2017

N

0 100 200 400 600 800 Meters

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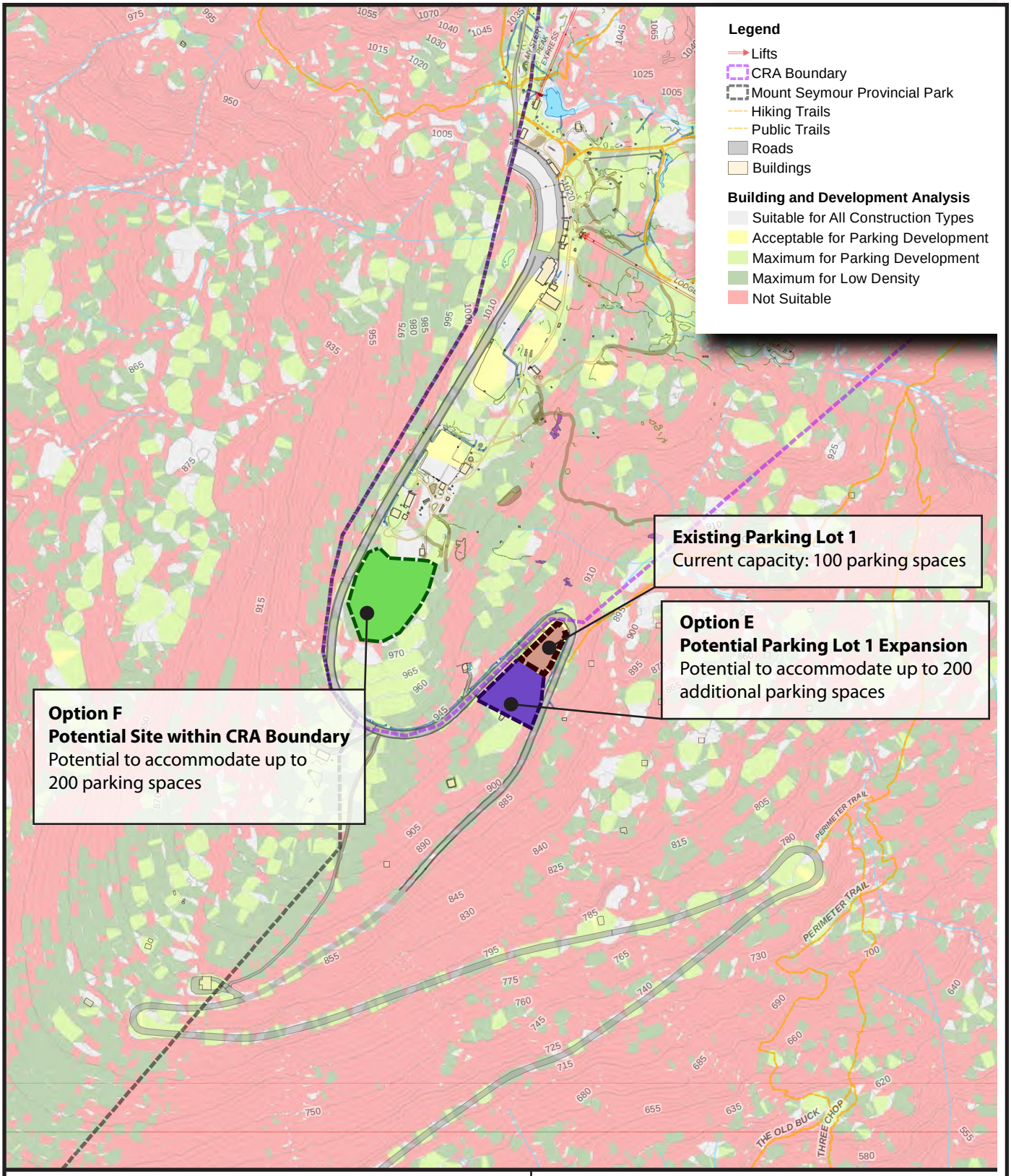
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Mount Seymour Provincial Park

Access and Development Options Study
Potential Parking Development Areas - Analysis Area 3 (Figure 9)
March 2017

N

0 100 200 400 600 800 Meters

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2.6.7 Existing and Potential Access Trails to the Backcountry Areas

See Figure 12

Improved access to and egress from the backcountry is desirable from the perspective of park visitors. Of those surveyed, 29% indicated that they were dissatisfied with the distance from backcountry parking to the backcountry trailhead. Additionally, improving backcountry access and moving backcountry users away from the Ski Resort would address liability and safety concerns expressed by Mount Seymour Resorts.

An informal snowshoe trail currently runs through a pocket of old growth forest on the west side of Mount Seymour Road. It connects the trail to First Lake and Dog Mountain with Lot 5 but is outside both the CRA and park boundary. While it is not actively managed by BC Parks or the Metro Vancouver Regional District, the trail still proves popular with snowshoers. This trail could be formalized as the Old Growth Access Trail.

If parking is expanded at Lot 1, this trail could be extended to a dedicated backcountry staging point at Lot 1 (shown as Backcountry Access Trail on plans). This would allow park visitors to avoid the road altogether on their way to the backcountry trailhead. For some visitors (inexperienced or younger visitors) the journey along this new route may be sufficient as a backcountry experience.

For more details on proposed access trails and access improvement recommendations, see Section 3.1.2.

3.0 Findings and Recommendations

3.1 Preferred Management Strategies

Based on the feedback regarding potential management strategies that emerged out of the survey, the analysis focused on two primary strategies: the implementation of a shuttle service and the development of an additional parking lot. Additional management strategies will be addressed in Section 3.1.3.

3.1.1 Parking Capacity Expansion Recommendations

Based on the analysis of parking capacity for park (i.e. non-ski resort) visitors, and the current number of park visitors, it is recommended that a new parking lot for park visitors be developed with a minimum of 220 additional parking spaces, with 20 of those spaces dedicated to long-term parking. This increase in parking capacity will enable all visitors on peak days to park without having to wait at current visitor numbers. This will have a positive impact on Mount Seymour Ski Resort, as resort visitors will be able to access parking near the resort facilities more readily and there will be a lesser need for traffic control.

However, it is important to note that if the anticipated growth in the number of visitors coming to the park on peak days continues, it may be desirable to look at phasing the development of additional parking and building two new lots to achieve a total of 425 new parking spaces. Phasing the two preferred options outlined in this section would achieve this number.

Below is a table summarizing the identified parking capacity expansion options their evaluation through criteria developed in collaboration with BC Parks (Table 3). The criteria used are:

- Outside of Existing CRA Boundary: Mount Seymour Resort operates a Controlled Recreation Area within Mount Seymour Provincial Park. While the Resort is supportive of backcountry recreation in the Park, the land within the CRA has been allocated to the successful operation of the Resort and should not be relied upon to address current parking and access challenges.

- Inside Existing Park Boundary: Parking options that require development outside of the park boundary would require new or revised legal agreements with the District of North Vancouver or the Metro Vancouver Regional District. While feasible, this adds time, cost, and complexity to these options.

- No Shuttle Service: While improved shuttle service was favoured by respondents to the survey, it would be an added cost to BC Parks. As such, options that do not require a shuttle service are preferred.

- Minimal Environmental Impact: Environmental impact is a consideration for BC Parks and stakeholders alike, and those options that require minimal tree removal or only impact low value (second growth) forests and require minimal grading will likely proceed quickly and with greater support from the public.

- Potential Capacity (+200 Spaces): Given the wide gap between current parking capacity and demand, options that provide more than 200 spaces are preferred.

- Limited Impact to Residents: Parking options that have a limited impact on residents surrounding the Park, both during construction and operation, are preferred to those that have a negative impact. This is evaluated based an option's proximity to existing residential and community developments.

- No Snow Clearing Required: The added challenge and cost of snow clearing must also be taken into consideration as it requires additional space for a snow dump, creates additional costs for BC Parks, and may present operational challenges.

- Integration with Public Transit: With the goal of reducing the total parking spaces required and promoting environmentally friendly modes of transportation to the Resort, the feasibility of integrating each option with regional transit is an important criterion.

- Traffic Safety: The ability for Mount Seymour Resort to safely manage vehicle traffic was a key consideration. This includes the ability for staff to efficiently and safely turn away traffic on peak visitation days and considers potential to easily and safely integrate the parking area with the existing road infrastructure, safely reroute vehicles, prevent traffic delays, and avoid stranding vehicles on icy or snow-covered roads.

- Distance from Backcountry Trailhead: This criterion is a proxy measure of the time needed to get from a parked vehicle to the trailhead, with shorter distances preferred over longer. However, it is moderated by the potential for a shuttle service which can drop-off visitors near the trailhead and opportunities to transform the journey to the trailhead into an experience in its own right (see Sec. 3.1.2).

TABLE 3. PARKING OPTIONS ANALYSIS MATRIX

	Outside of Existing CRA Boundary	Inside of Existing Park Boundary	No Shuttle Required	Minimal Tree Removal	Potential for 200+ Additional Parking Spaces	Limited Impact to Residents	No Snow Clearing Required	Integration with Public Transit	Traffic Safety	Distance from Existing Backcountry Trailhead (km)
Option A *Lot 0 on Mt. Seymour Rd., opposite of Parkgate Comm. Ctr.*	✓	✓		✓	✓		✓	✓	✓	12.5
Option B1 *Old Buck South, on Anne MacDonald Way.*	✓	✓			✓		✓	✓	✓	12.5
Option B2 *Old Buck Alternative 1. Just North of Park HQ.*	✓	✓		✓			✓	✓		12.5
Option B3 *Old Buck Alternative 2. Just East of Park HQ.*	✓	✓		✓			✓	✓		12.5
Option C *Potential Camping Site, along Mt. Seymour Rd.*	✓	✓			✓	✓	✓			12
Option D1 *Vancouver Picnic Site (within Park).*	✓	✓			✓	✓				7.5
Option D2 *Vancouver Picnic Site (inside and outside Park).*	✓				✓	✓				7.5
Option E *Lot 1 Expansion. Replaces Group Camping Site.*	✓	✓	✓	✓	✓	✓				1.5
Option F *Within CRA, adjacent to Lot 2.*		✓	✓		✓	✓				0.4

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Based on this matrix, the options with the greatest number of positive attributes are A and E. As such, these are recommended for adoption within Mount Seymour Provincial Park:

1. Option A (Lot 0 Expansion)

See Figure 10

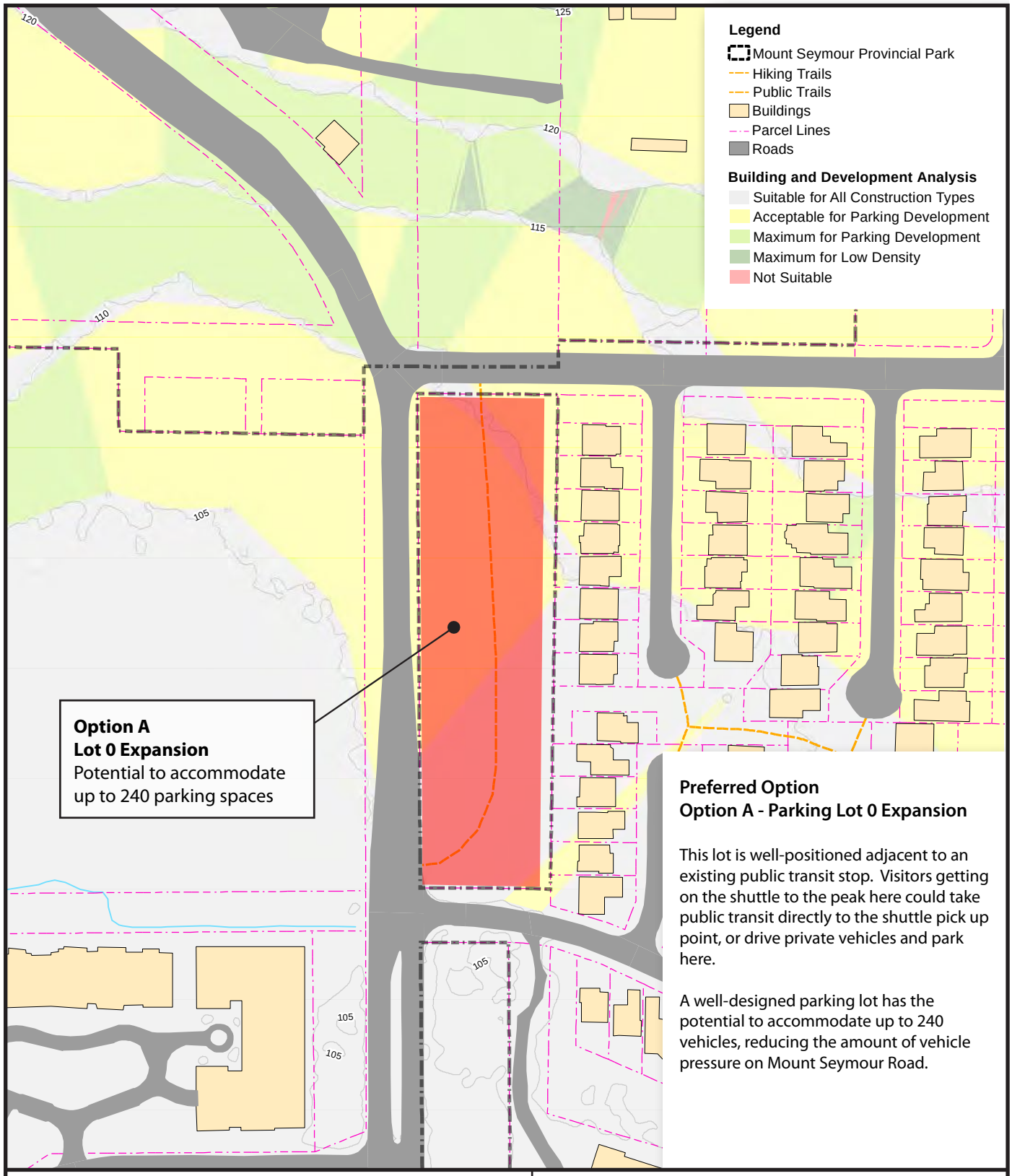
Expand Lot 0 to accommodate up to 240 vehicles. Outdoor lighting, a shuttle pull-out on Mount Seymour Road, and visitor shelter would be integrated into the parking lot.

Pros:

- Existing parking area – minimal regrading required which limits costs;
- Proximity to existing public transit stop;
- Proximity to water and power utilities, needed for washroom facilities;
- Requires minimal clearing of trees, most of which are infected with laminated root rot;
- No snow clearing required;
- Can be safely integrated into existing traffic patterns on Indian River Drive, Hamber Place, and Mount Seymour Road;
- Can act as overflow parking for the existing Old Buck Parking area.

Cons:

- Adjacent to residential neighbourhood; lot has previously been closed due to noise complaints.
- May require improvement to signage and traffic management at the intersection of Mount Seymour Road and Indian River Drive.



Preferred Option
Option A - Parking Lot 0 Expansion

This lot is well-positioned adjacent to an existing public transit stop. Visitors getting on the shuttle to the peak here could take public transit directly to the shuttle pick up point, or drive private vehicles and park here.

A well-designed parking lot has the potential to accommodate up to 240 vehicles, reducing the amount of vehicle pressure on Mount Seymour Road.

Mount Seymour Provincial Park

Access and Development Options Study
Potential Parking Development - Lot 0 (Figure 10)
March 2017

0 10 20 40 60 80 Meters

N

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2. Option E (Lot 1 Expansion)

See Figure 11

Expand Lot 1 to accommodate 200 additional vehicles. The existing packed snow road could be maintained to the lower portion of Lot 5, and from here snowshoers and backcountry users would connect to the proposed Old Growth Access Trail (See 3.1.2). Maintaining the existing backcountry access trail would also allow backcountry skiers to ski out to their vehicles at the end of their day. In addition, a dedicated backcountry staging point could be developed here, connecting to the Old Growth Access Trail via the proposed Backcountry Access Trail.

Pros:

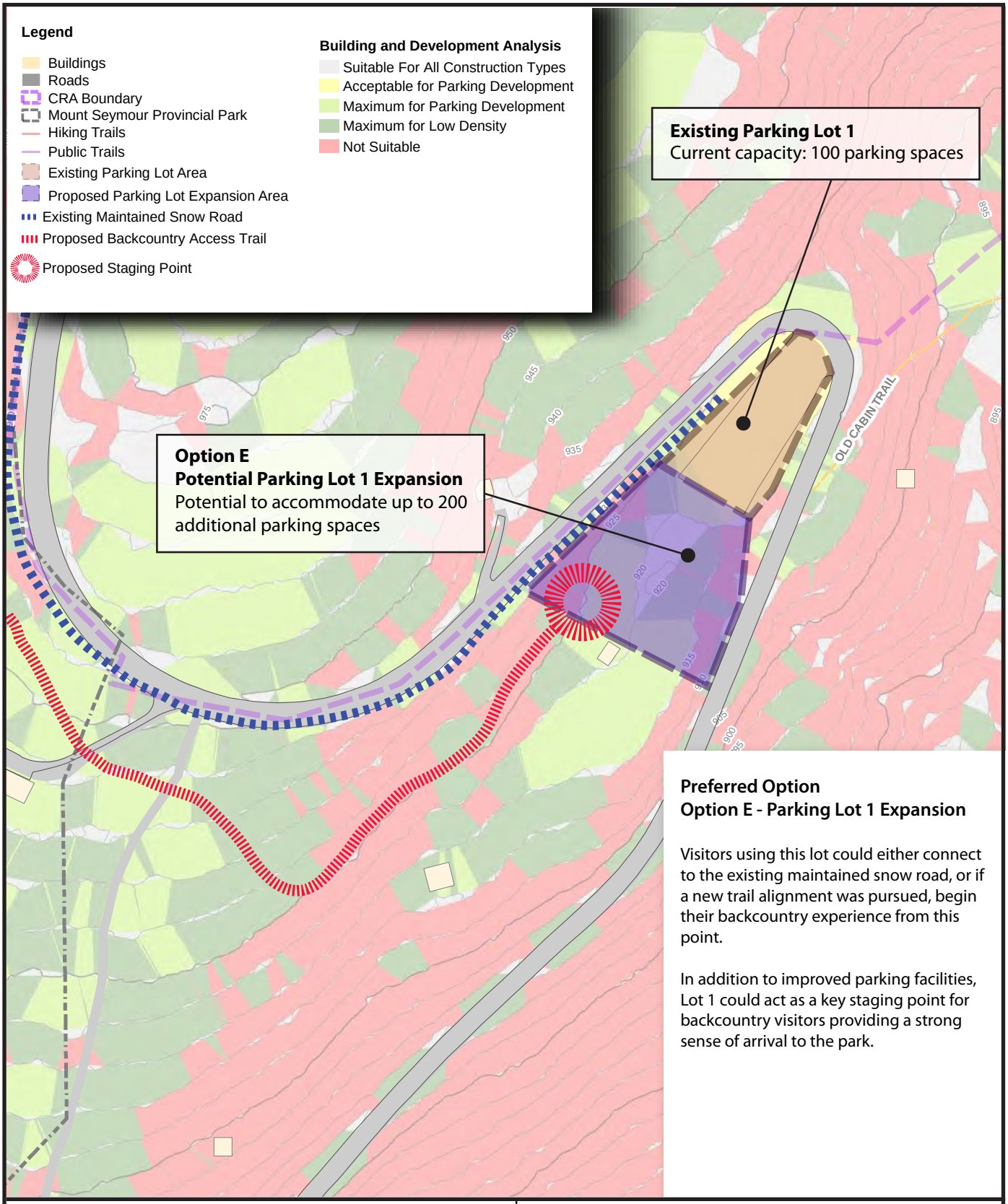
- A regular shuttle service would not need to be implemented (but may be desirable from a visitor's perspective);
- Location eliminates impacts to residents at the entrance to Mount Seymour Provincial Park;
- Limited tree removal required to expand the existing parking area;
- Lot 1 is at the edge of the reliable snowline, and it is possible for visitors to snowshoe directly from the parking lot to the trailhead.

Cons:

- The existing group campsite would be impacted by the expansion of this parking lot, depending on the design.
- To offer washroom facilities, this area would need to be connected to existing water and power utilities higher on the mountain.
- New parking lot would require regular snow clearing to optimize operations;
- New entrance and exit would be needed to accommodate the increased traffic and ensure the safety of visitors.

Both recommended options divert people away from the Mount Seymour Ski Resort base area and will reduce parking congestion. Further, an expansion of Lot 0 would intercept visitors as they enter the park and reduce car traffic on Mount Seymour Road, and in the park overall.

Detailed design and environmental analyses will be necessary to determine the preferred order of phasing for Options A and E.



Preferred Option
Option E - Parking Lot 1 Expansion

Visitors using this lot could either connect to the existing maintained snow road, or if a new trail alignment was pursued, begin their backcountry experience from this point.

In addition to improved parking facilities, Lot 1 could act as a key staging point for backcountry visitors providing a strong sense of arrival to the park.

Mount Seymour Provincial Park

Access and Development Options Study
Existing Parking Plan (Figure 11)
March 2017

0 15 30 60 90 120 Meters

N

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3.1.2 Access Improvement Recommendations

To complement the development of additional parking capacity, backcountry access should also be improved. While the existing snow road that connects with Lots 1 and 5 provides access to the backcountry trailhead in Lot 4, backcountry visitors still must travel through the CRA over a distance some visitors felt was too far. While the distance to Lot 1 and Lot 5 cannot be reduced, efforts can be made to reduce travel times and/or make the journey more enjoyable.

1. **Option 1 (Old Growth & Backcountry Access Trails)**

See Figure 12

Formalize the existing trail that connects Lot 5 to the trail network just beyond Lot 4. To pursue this option, BC Parks would have to coordinate with the Metro Vancouver Regional District. However, the development of this option would provide visitors with an experiential trail that connects to the existing trail network (Figure 9). This proposed trail alignment would also help to create distance between backcountry skiers and the resort operating area.

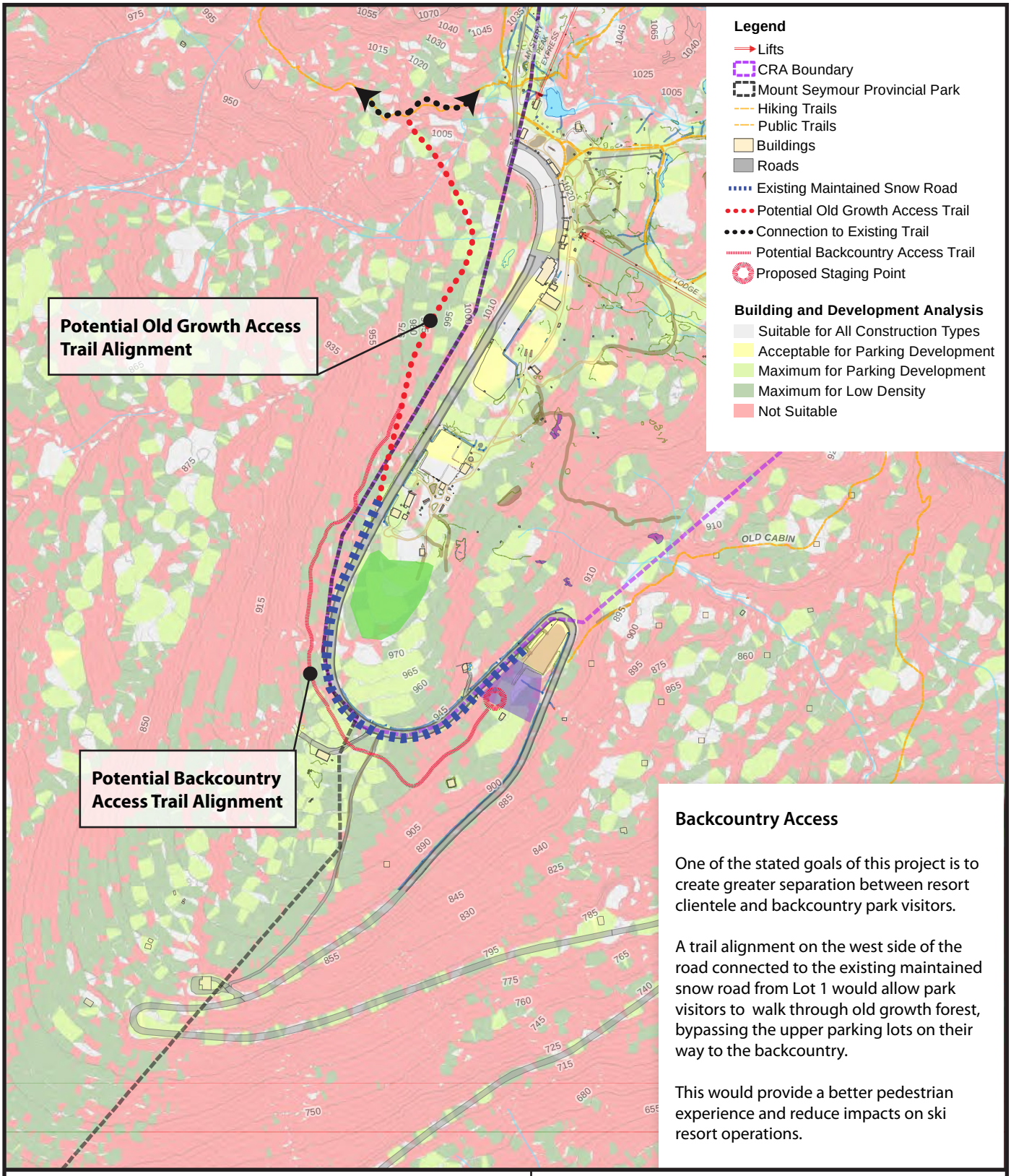
In addition to formalizing this snowshoe trail, it is recommended that BC Parks consider the development of an Backcountry Access Trail from a main backcountry staging point at Lot 1, as shown on Figure 12.

Pros:

- Offers visitors a new wilderness experience through old growth forests. The trail becomes part of the trail network, rather than an access route to get to the trails.
- Creates separation between backcountry users and Mount Seymour Ski Resort.
- Provides management for an informal trail, mitigating trail degradation.

Cons:

- It lies outside of the Park boundaries and would require coordination or land exchange with the Metro Vancouver Regional District.
- Environmental concerns stemming from development in old growth forest.
- Limited snowfall on the proposed experiential trail would require compaction by snowcat and increase costs.



Backcountry Access

One of the stated goals of this project is to create greater separation between resort clientele and backcountry park visitors.

A trail alignment on the west side of the road connected to the existing maintained snow road from Lot 1 would allow park visitors to walk through old growth forest, bypassing the upper parking lots on their way to the backcountry.

This would provide a better pedestrian experience and reduce impacts on ski resort operations.

Mount Seymour Provincial Park

Access and Development Options Study
Potential Old Growth Access Trail
(Figure 12)
March 2017

N

0 100 200 400 600 800 Meters

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2. Option 2 (Shuttle Service)

See Figure 13

Expand shuttle service to include a stop at Lot 1 and Lot 0 (if pursued). The shuttle service could be run in partnership with or independently of Mount Seymour Resorts' existing shuttle service. The shuttle would connect Lot 0, Lot 1, and the Mount Seymour Ski Resort base area (Enquist Lodge and/or Three Peaks Lodge), with the possibility to expand to the Vancouver Picnic Area if parking is developed there. To be effective, the shuttle must visit each stop once every 30mins with sufficient capacity. Assuming a trip up the mountain takes 20 – 25mins, plus time for loading and unloading, the shuttle service will require a minimum of two shuttle buses operating at any one time. Further, to service both recommended parking options, each bus should have a capacity for at least 60 park users. This equates to 120 park users per hour, which translates to 60 parking stalls assuming 2 people per car. At this frequency and capacity, both Lot 1 and Lot 0 could see vehicle turnover every 4 hours (every cycle). Experience will dictate how many bus seats should be reserved for visitors in Lot 1. To provide incentive and limit travel times, the shuttle would use the lane reserved for ski school patrons and by-pass traffic stops along Mount Seymour Road. Of note, operation of the shuttle service and shuttle dependent parking lots could be limited to weekends and holidays, but the shuttle schedule will need to be clearly communicated to potential park users to prevent disappointment and frustration.

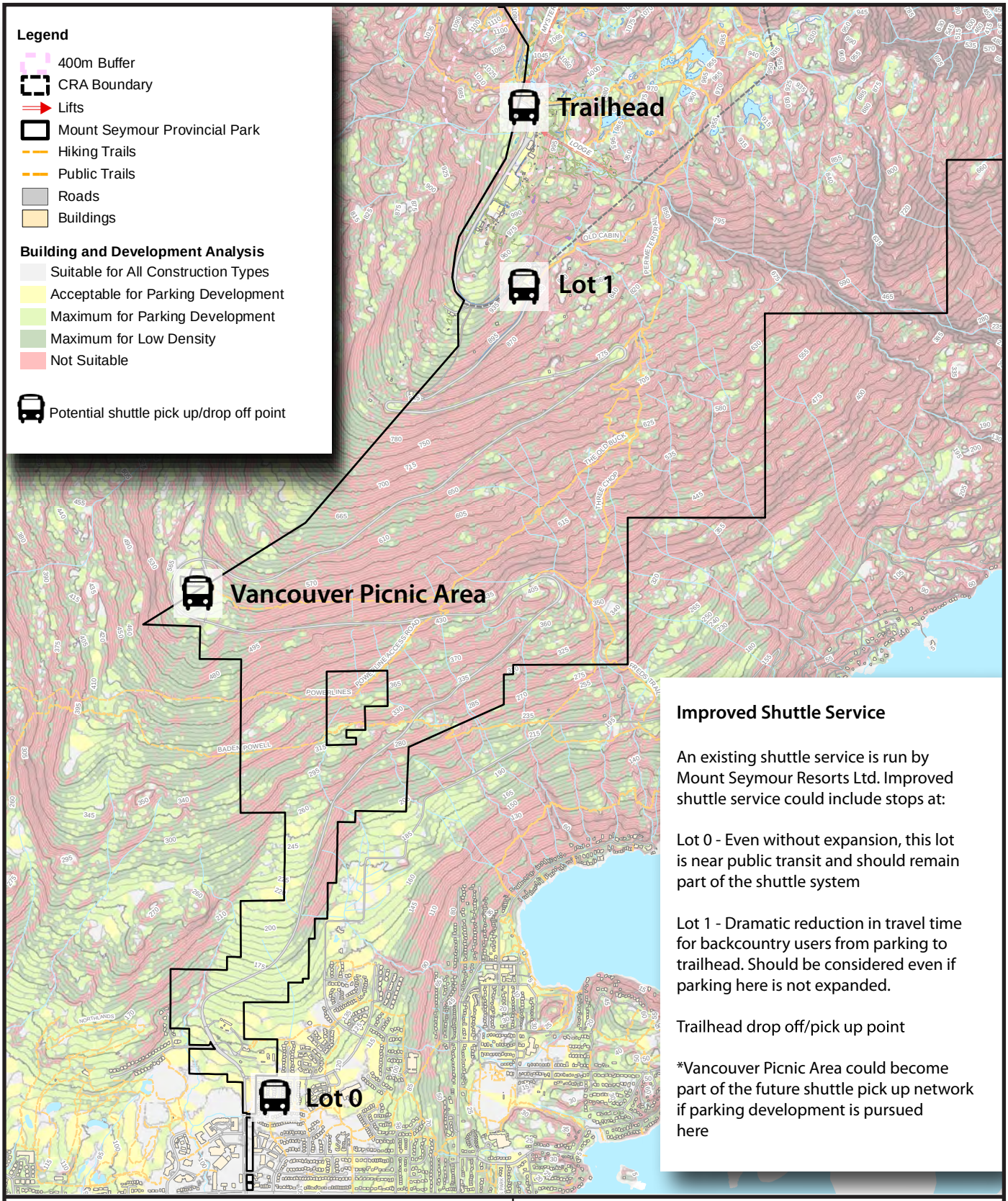
Pros:

- Requires little additional infrastructure.
- Dramatically reduces travel time between Lot 1, the proposed Lot 0 expansion, and the backcountry trailhead, making Lot 1 and Lot 0 more attractive to park visitors.

Cons:

- Additional operating costs associated with adding a shuttle pick-up/drop-off and shuttle service.
- Lot 1 is already serviced by snow road on the west side of Mount Seymour Road.

While these two options are presented separately, they are not mutually exclusive. The development of both may be the preferred approach to addressing backcountry access concerns.



Improved Shuttle Service

An existing shuttle service is run by Mount Seymour Resorts Ltd. Improved shuttle service could include stops at:

Lot 0 - Even without expansion, this lot is near public transit and should remain part of the shuttle system

Lot 1 - Dramatic reduction in travel time for backcountry users from parking to trailhead. Should be considered even if parking here is not expanded.

Trailhead drop off/pick up point

*Vancouver Picnic Area could become part of the future shuttle pick up network if parking development is pursued here

Mount Seymour Provincial Park

Access and Development Options Study
Potential Improved Shuttle Service (Figure 13)
March 2017

0 125 250 500 750 1,000 Meters

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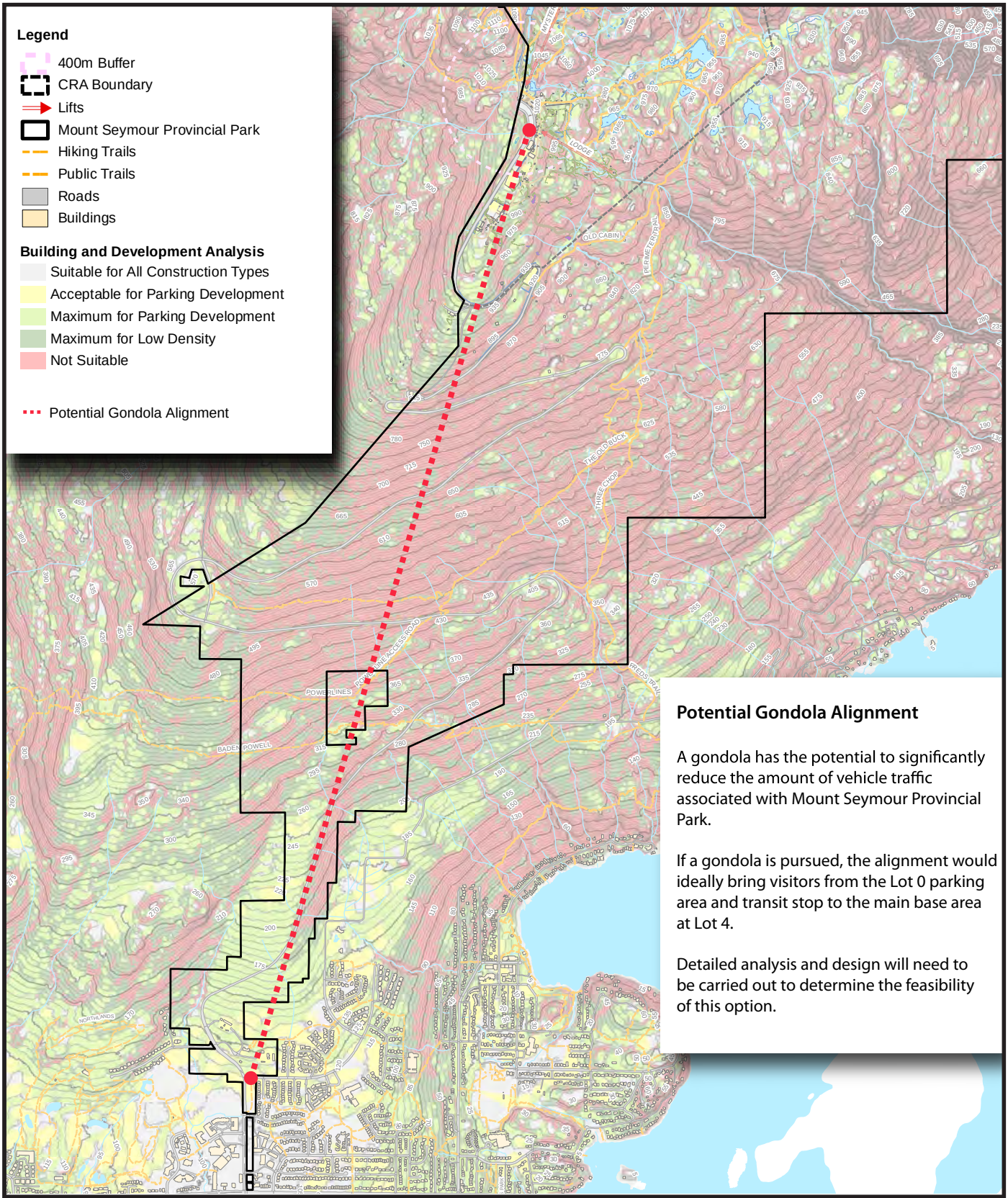
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3.1.3 Management Strategies for Future Consideration

See Figure 14

A gondola from the base of Mount Seymour Provincial Park to the parking area in Mount Seymour Ski Resort was presented to survey respondents. While it proved to be a polarizing management strategy, it should be given further consideration in the future. Aside from the expense and operational responsibilities, a gondola would have a relatively light environmental footprint, and has the potential to significantly reduce the amount of vehicle traffic associated with Mount Seymour Provincial Park and Mount Seymour Ski Resort. Due to the existing transit infrastructure, it would be possible for resort and park visitors to access the gondola directly from public transit.



Potential Gondola Alignment

A gondola has the potential to significantly reduce the amount of vehicle traffic associated with Mount Seymour Provincial Park.

If a gondola is pursued, the alignment would ideally bring visitors from the Lot 0 parking area and transit stop to the main base area at Lot 4.

Detailed analysis and design will need to be carried out to determine the feasibility of this option.

Mount Seymour Provincial Park

Access and Development Options Study
Potential Gondola Alignment (Figure 14)
March 2017

0 125 250 500 750 1,000 Meters

N

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4.0 Conclusion

This report provides a detailed summary of the parking, access, and development options available to Mount Seymour Provincial Park. Parking and access on peak winter days has been a long-standing issue for the park but has become a high priority with the phenomenal growth of backcountry use in the last several years.

To understand the parking and access challenges in Mount Seymour Provincial Park, a visitor survey was conducted to solicit the management preferences of park visitors. This was supported by spatial analysis of the park, and a review of existing parking and transportation systems, which identified areas within the park that would be suitable to expand parking capacity and trail access options. The results of the survey and research efforts were integrated, and several capacity and access options were developed. These were then evaluated, and recommended management options were presented for consideration.

The findings and recommendations of the Access and Development Options Study provide guidance for the management of parking and access within Mount Seymour Provincial Park. The recommended management strategies presented will inform, and in turn be refined by, the development of future management goals and objectives for the park. In addressing access and parking capacity issues, the ecological integrity and recreation opportunities in Mount Seymour Provincial Park will be preserved for the enjoyment of future generations.

Appendix A: Commuter Experience Survey

The following pages contain the findings from the Commuter Experience Survey conducted by Marjan Navab-Tehrani in December 2016 and January 2017.

Commuter Experience to Mt. Seymour Provincial Park

Written by Marjan Navab-Tehrani, BA, MCRP Candidate

For Brent Harley and Associates Inc., BC Parks

February 2nd, 2017

CONTEXT

Snowshoeing and winter hiking have become increasingly popular at Mt. Seymour Provincial Park over the last 15 years with a 9-fold increase in users per annum. With the growth in winter use, Mt. Seymour Provincial Park has experienced heavy traffic congestion and over-capacity parking lots, which result in park closures on peak days. This adversely affects the commercial viability of the ski hill operators who originally built the parking lots, and creates frustration in park users overall.

To address these issues, an opinion research survey (hereon referred to as the survey) was launched over the winter of 2016/2017. The purposes of this research have been to assess current conditions experienced by the public in regard to their commute to and from the park, along with determining public opinion on different management practices in consideration by BC Parks. This report will review and analyze the data gathered through the survey to provide recommendations to best address Mt. Seymour's overcapacity issues.

METHODOLOGY

The survey was first constructed in an online platform called Typeform (www.typeform.com) in the winter of 2015/2016 for both of Mt. Seymour Park and Cypress Park. In the following winter, the survey was edited to focus primarily on Mt. Seymour Park.

The target audience for this survey is individuals who use the park on peak days for snowshoeing or winter hiking. Peak days are defined as the busiest days of the season, typically falling on weekends or holidays. Data from previous years indicating peaks days was used to extrapolate to this winter season, in order to predict which days would be the busiest. Over the 2015/2016 season, the busiest days were the weekend post boxing day, prior to New Year's eve, and the second weekend of January after New Year's eve weekend. For the 2016/2017 season, the busiest days were predicted to be December 29th-30th, and January 7th- 8th. From this, two days with the best weather conditions were picked for fieldwork: December 30th, 2016, and January 7th, 2017.

The fieldwork involved the use of a sign-up sheet to gather the participant's names, and email addresses. Afterward, the participants were emailed a link to the survey for them to complete online. Participation was incentivized with the opportunity to be included in a draw to win one of five prizes, including $50 gift cards to Mountain Equipment Co-Op, and a combination of various parks passes.

On both days, fieldwork was conducted from mid-morning until late afternoon to reach a range of park users who are starting or finishing their hike.

In total, 193 emails were collected over the two days. There was a bounce-back rate of roughly 20%, meaning that less than a quarter of the emails were undecipherable and as such, did not receive the survey. In total, there were 188 responses, with nine responses discounted, as those individuals were not users of Mt. Seymour Park. 179 responses are

used for the analysis provided in this report. This survey was likely shared amongst participants, which would explain the high response rate.

In total, there are 44 questions on the survey. The bulk of these questions are nested, which means that they will be asked if a certain answer is given in a preceding question. For instance, if a respondent indicates that they either drive their own vehicle or carpool with others, then they will be asked about traffic and parking conditions. 43 out of the 44 questions are quantitative, and one question is qualitative. This means that the bulk of the survey was either in multiple-choice format, or in an opinion scale format where a numerical answer is given, and one question was answered as an open-ended paragraph. The data was analyzed in Stata and in Excel.

The questions are divided up into six sections: (1) demographic; (2) personal transportation practices; (3) usage of the park; (4) commute to and from the park; (5) management practices; and, (6) user recommendations. The data received from each section will be explored under the “results” section.

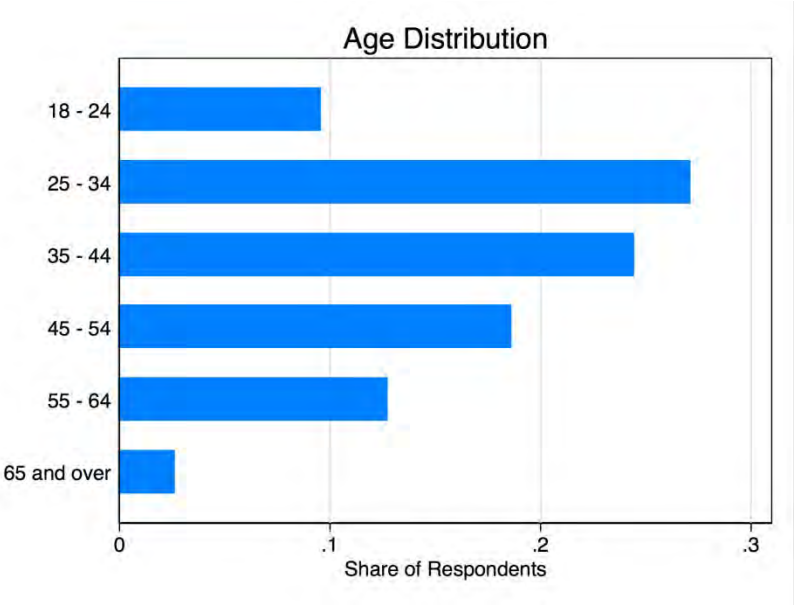
The research is guided by the following outcomes: (1) identification of user groups; (2) current commuting experience; (3) current modes of commute to and from the park; (4) relationship between park use discouragement and commute experience; (5) relationship between user groups and experience; (6) preferences for traffic management; (7) relationship between management initiatives and user groups; (8) flexibility of users towards different commuting patterns; and, (9) recommendations derived from park users.

Finally, the report will conclude with a discussion on the outcome measures to provide evidence-based recommendations for parking and traffic congestion problems faced by Mt. Seymour Park.

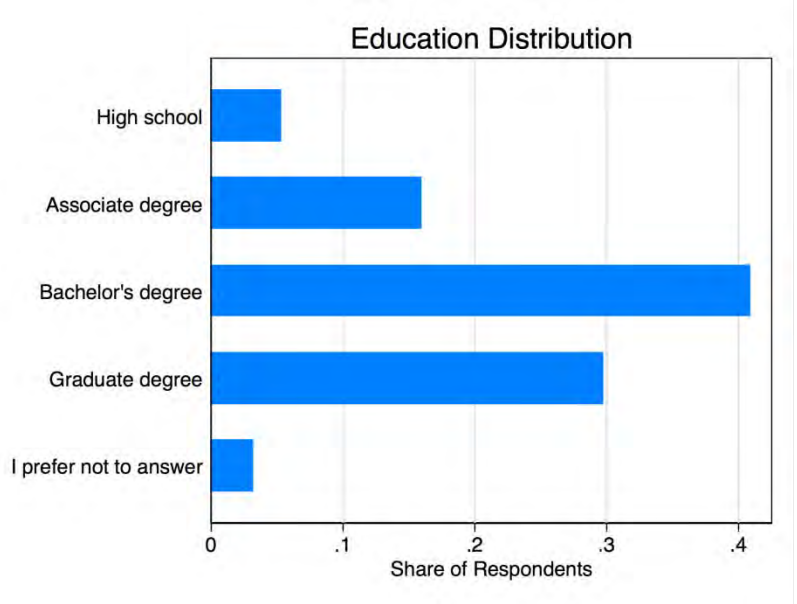
RESULTS

I. DEMOGRAPHIC

The respondents were roughly equally divided between male and female, with 51% female, 47% male, and 2% stating other/prefer not to say. 74% of participants were between the ages of 25-54, with a gradual decline in numbers as age increased within that range. 13% were aged 55-64, 10% were aged 18-24, and 3% were aged 65 and over. This sample is younger than the larger population of the lower mainland of BC.

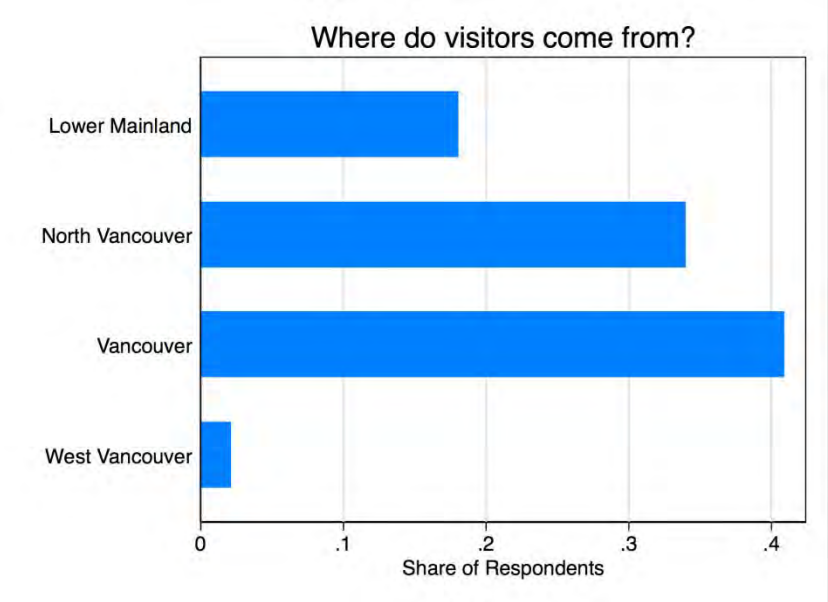


The bulk (74%) of the respondents were university educated, with 43% having a bachelor's degree, and 31% having a graduate degree. The sample gathered here is likely more educated than the general public.



Respondents were asked their household income before taxes for 2015. A range of income was captured: 26% made between $50,000 and $99,000, 24% made between $100,000 and $199,999, 13% made between $20,000 and $49,999, 13% made over $200,000, 5% made under $19,999, and 20% preferred not to answer.

All of the respondents for this survey are from British Columbia, with the bulk traveling from Vancouver (43%). 36% of park users were from North Vancouver, 19% were from the Lower Mainland, with only 2% hailing from West Vancouver.



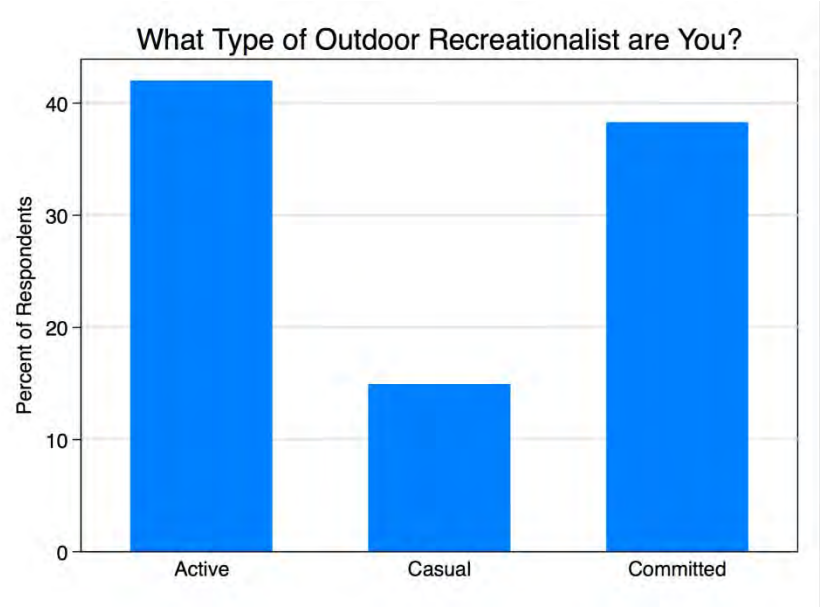
Individuals were asked about what kind of outdoor recreationalist they are, with options such as (1) committed outdoor recreationalist, (2) active outdoor recreationalist, and (3) casual outdoor recreationalist.

A committed outdoor recreationalist is a person who frequently travels away from home to participate in outdoor recreation activities, who is a member of outdoor recreation clubs, who purchases increasing amounts of outdoor recreation gear, and for whom outdoor recreation is a major activity in life. 40% indicated that they are committed outdoor recreationalists.

An active outdoor recreationalist is a person who occasionally travels away from home to participate in outdoor recreation activities, who may be a member of an outdoor recreation club, who may purchase some outdoor recreation gear, and for whom outdoor recreation is an important but not exclusive pastime. 44% indicated that they are active outdoor recreationalists.

Lastly, a casual outdoor recreationalist is a person who infrequently travels away from home to participate in outdoor recreation activities, who is not a member of any outdoor recreation clubs, who purchases very little outdoor recreation gear, and for whom outdoor recreation is an enjoyable yet infrequent outdoor activity. The remaining 16% indicated that they are casual outdoor recreationalists.

It is important to note that the majority of users consider themselves to be at least an active user of the park. This indicates that the sample gathered here is comprised of individuals who spend more time in the outdoors than would someone of the general public. This could imply a variety of different things, such as that this sample is more likely to have individuals with strong opinions based on numerous experiences with parks. As well, this indicates that this sample is comprised of those who are most likely to notice changes made to the parks as engaging with parks is a significant aspect of their lives.



Although a criterion listed above for being an active or committed outdoor recreationalist is to be a part of recreational groups, the data shows that almost half (47%) of the respondents do not identify with any such group. The table below displays the distribution of recreational group membership for the participants in this survey.

Table 1. Participant Membership with Recreational Groups

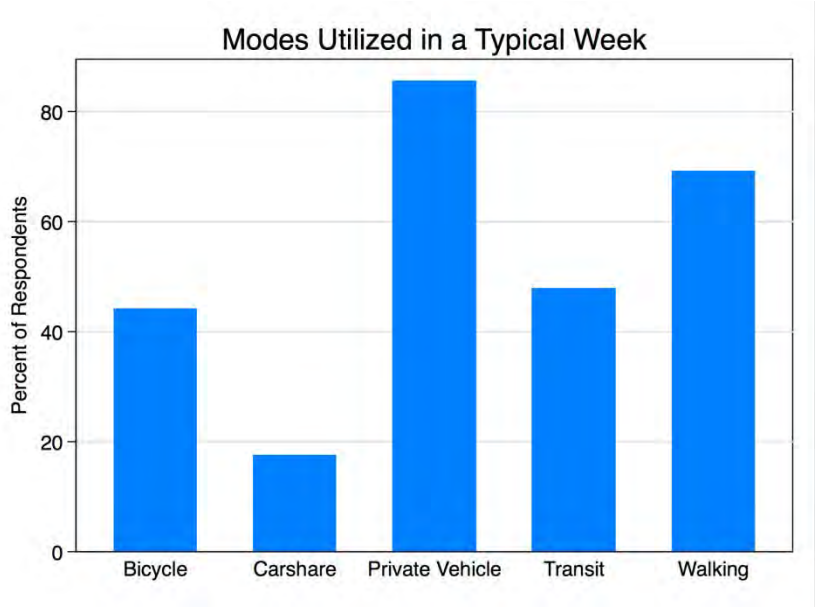
Membership with Recreational Group	Number of respondents	
None	85	47%
Hikers club or group	32	18%
Meet Up Group	22	12%
BC Mountaineering Club	20	11%
Alpine Club of Canada	16	9%
"Other"	16	9%
Club Treat	13	7%
BC Wildlife Federation	7	4%
Federation of Mountain Clubs	7	4%
Naturalist Group	7	4%
Sierra Club	7	4%
Girl Guides	5	3%
Scouts Canada	5	3%
Search and Rescue Organization	5	3%
Varsity Outdoor Club	5	3%
North Shore Hikers	4	2%
Trails BC	4	2%
Wilderness Committee	4	2%
Friends of Cypress	2	1%

Overall, the sample of individuals is younger, more educated, and more outdoorsy than the general population.

II. PERSONAL TRANSPORTATION

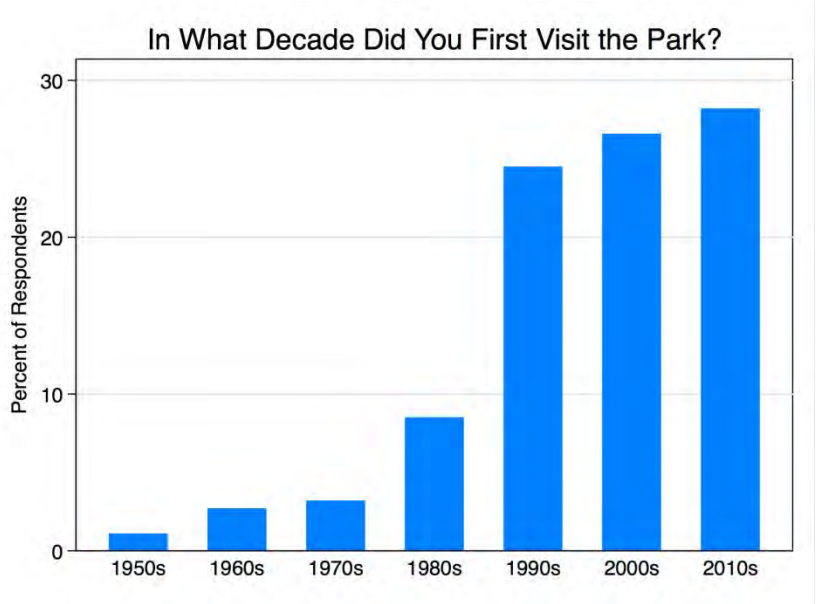
A series of questions were asked to determine personal transportation choices for the participants in this survey. The vast majority of respondents own a personal vehicle (90%), a portion is subscribed to a car-share program (29%), and almost a quarter have a monthly transit pass (23%).

In a typical week, respondents travel in a variety of ways: 90% of respondents use their personal vehicle, 73% walk, 50% use transit, 46% use a bicycle, and 18% use a car-share program. The majority of park users have a personal vehicle, however, a large portion engages in active transportation such as walking, transit, and riding a bicycle as a means of getting around. This indicates that this sample could be amenable towards transportation options that are non-car based.



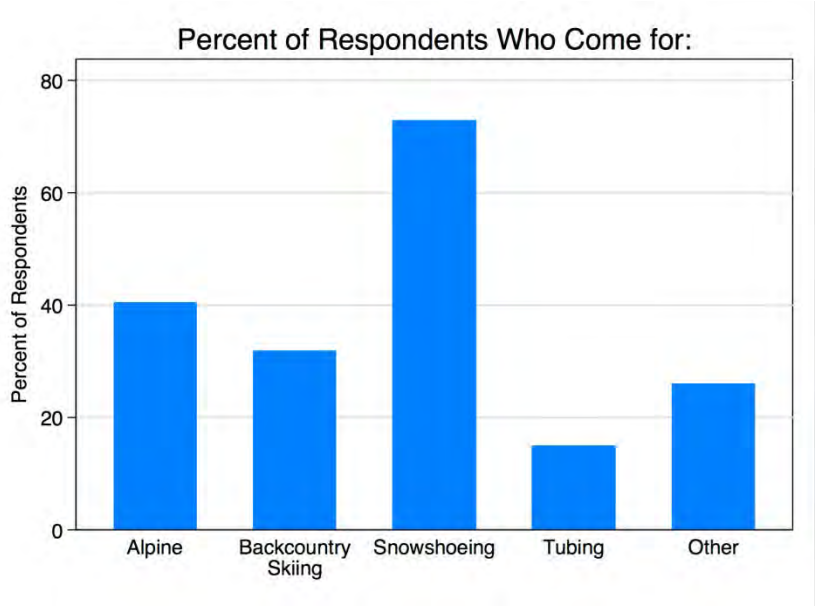
III. USAGE OF THE PARK

The survey was able to capture individuals who have been users of Mt. Seymour Park from several different decades. In general, most park users first visited Mt. Seymour from the 1990s onward, with some who have been attending the park since the 50s, 60s, 70s, and 80s. This is beneficial for the strength of the results, as those both with long-term experience with the park have been captured along with newer users of the last decade where the exponential growth in users is seen.



Users are categorized as either snowshoer, backcountry skiers, alpine skiers or snowboarders, snow gliding/tubing users, or other winter recreational users. The figure below indicates the distribution of these user types. Important to note that there are

overlaps amongst user types for individuals as people may come to the park multiple times for various activities.



The majority of the participants in this survey come to the park for snowshoeing (77%). During fieldwork, a bias was given towards those who were there for snowshoeing as this is the target audience for the purposes of this research. For snowshoeing specifically, the majority (61%) of users come to the park 1-5 times per season, 32% come to the park 6-10 times per season, 7% come to the park 11-20 times per season, and 1% come to the park 20 times or more per season.

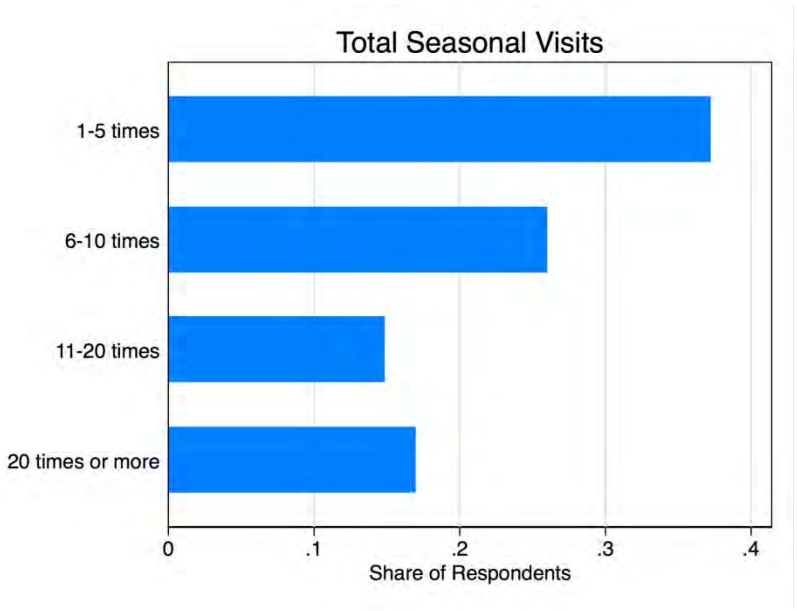
34% of the participants come to the park for backcountry skiing. Out of this user group, 46% come to the park 1-5 times per season for this activity, 25% come 6-10 times per season, 20% come 11-20 times per season, and 10% come 20 times or more per season.

42% of participants come to this park for alpine skiing or snowboarding. Out of this user group, 68% come to the park for this activity 1-5 times per season, 21% come 6-10 times per season, 7% come 20 times or more per season, and 4% come 11-20 times per season.

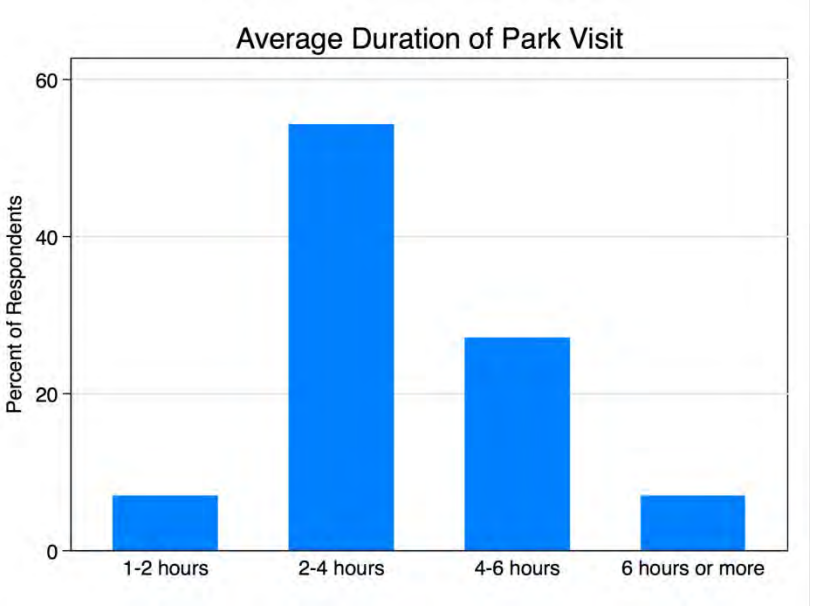
Only 16% of participants come to this park for snow gliding/tubing per season. The vast majority (86%) of this user group comes to the park 1-5 times per season for this activity, with 14% coming 6-10 times per season for this activity.

Lastly, 27% of participants indicated that they come to the park for other winter activities not listed above. 64% come 1-5 times for other activities, 18% come 6-10 times, 10% come 11-20 times, and 8% come 21 times or more per season.

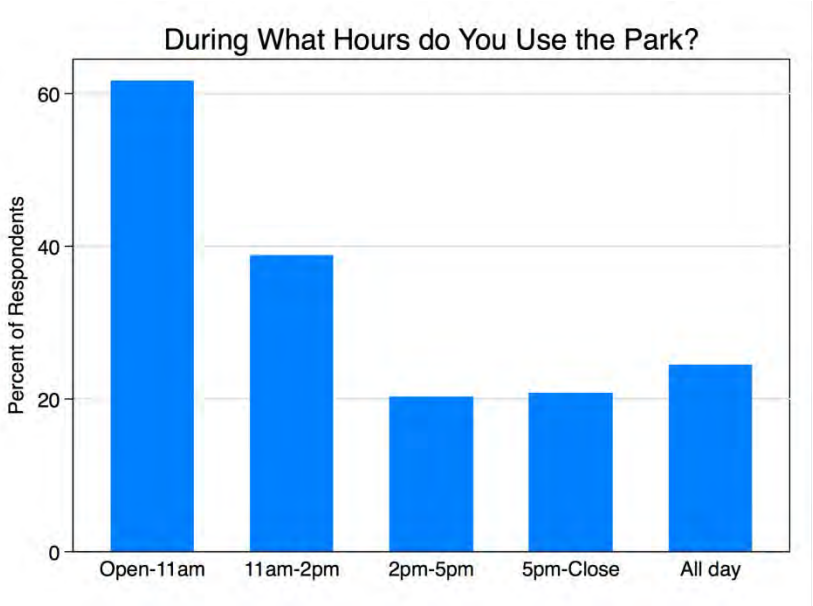
Participants were then asked their total visits to the park per season. 39% indicated that they visit the park 1-5 times per season, 27% said that they visit 6-10 times, 18% indicated that they visit 20 times or more, and 16% indicated that they visit 11-20 times. Overall, the majority of this sample (61%) visits the park more than 5 times per season.



Respondents were asked the duration of their visit while at Mt. Seymour Park. The majority (57%) of respondents stated that they stay 2-4 hours, 28% stated that they stay for 4-6 hours, 7% indicated that they stay 1-2 hours, and 7% stated that they stay for 6 hours or more.



The peak visitor time is during the morning with 65% of respondents stating that they utilize the park during this time. 41% use the park from mid-morning until afternoon, with 26% coming for all day activities, 22% coming for evenings, and 21% coming for afternoons only. Important to note is that the majority of respondents to this survey are active and committed recreationalists, and as such, are likely aware of congestion occurring later in the day so they come as early as they can. Visual observation occurring during fieldwork indicated that the busiest time for traffic and congestion was slightly later in the day, from late morning to mid-afternoon.

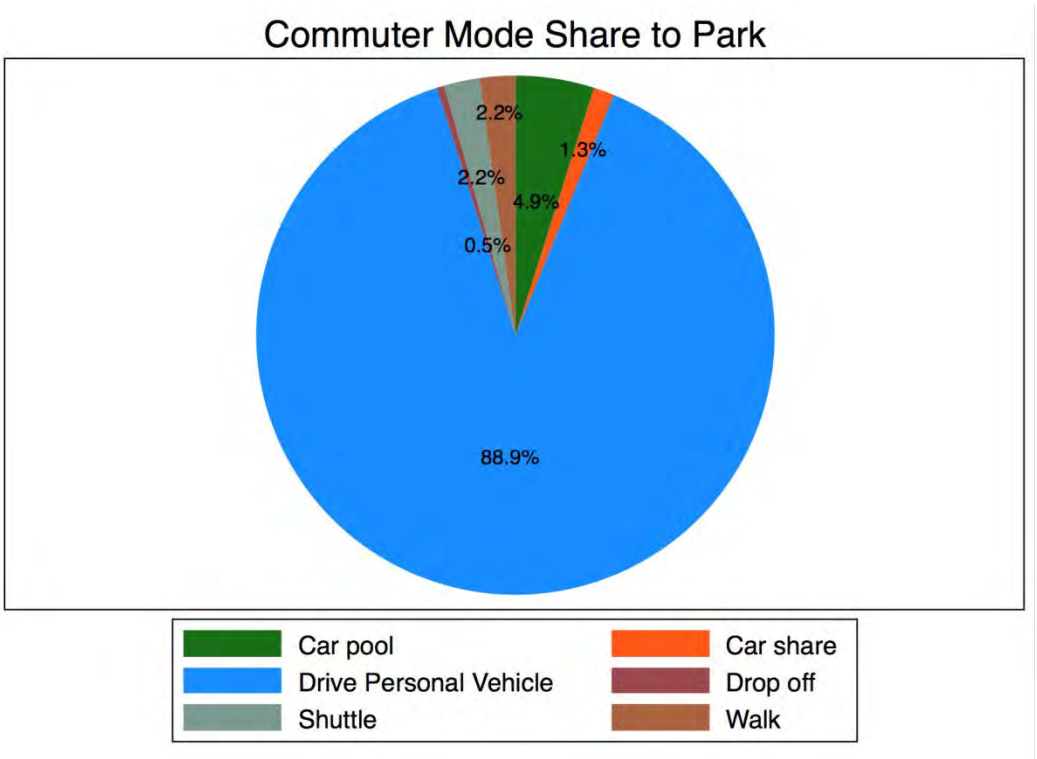


When asked which days participants come to the park, 46% indicated that they come for both peak days (holidays and weekends) and weekdays. 34% stated peak days only, with 20% stating weekdays only.

IV. COMMUTE TO AND FROM THE PARK

In general, the vast majority (89%) of participants drive to come to Mt. Seymour Park. 48% stated that they have two people in their car, 25% stated that they have 3 people in their car, 19% stated to have 4+ people, and only 8% stated to come by themselves with their car to the park. This makes sense, as attending the park is more likely to be a group activity, rather than a solitary one.

The 11% who stated that they do not drive their personal vehicle to the park, where then asked about how they do get to the park. Out of this 11% from the total sample, 55% stated that they carpool with others. 25% stated "other," which could mean that they live close enough to walk to the trailhead. 25% stated that they take the shuttle service, 20% stated that they use a car-share program, and 10% stated that they get dropped off and picked up later on. Out of the total commuter mode share to the park, these numbers are rather small. Regardless, the data indicates that carpooling is a common practice taken by park goers as most who drive their personal vehicle have a passenger or more, and most of those who do not drive their own car, carpool with others.



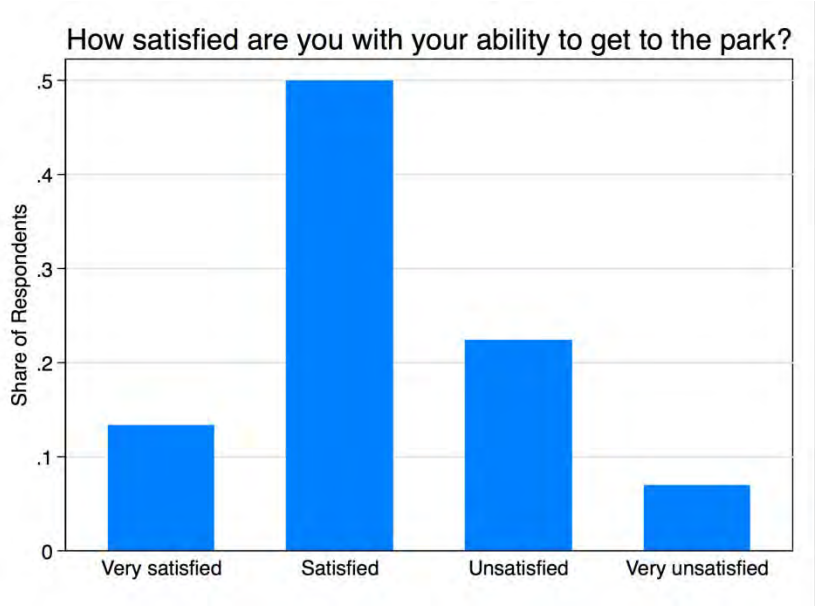
If participants indicated that they drove to the park or carpooled with others, then they were asked a series of questions to determine how they have been affected by parking congestion. Exactly half of the participants stated that they have left the park due to traffic congestion and difficulty parking. From those who have left due to traffic difficulties, 95% stated that this has happened 1-3 times per season, 2% stated that this has happened 4-6 times per season, and 2% stated that this has happened 7 times or more per season. Further, the majority (67%) stated that turning away due to difficulties with parking has discouraged them from coming to the park, with 19% being unsure about whether or not they felt discouraged, and 14% stating that they were not discouraged.

Participants were then asked if congestion limited their ability to get to the park, would they consider alternative modes of transportation to the park. 61% said that they would consider other modes, whereas 39% said that they would not.

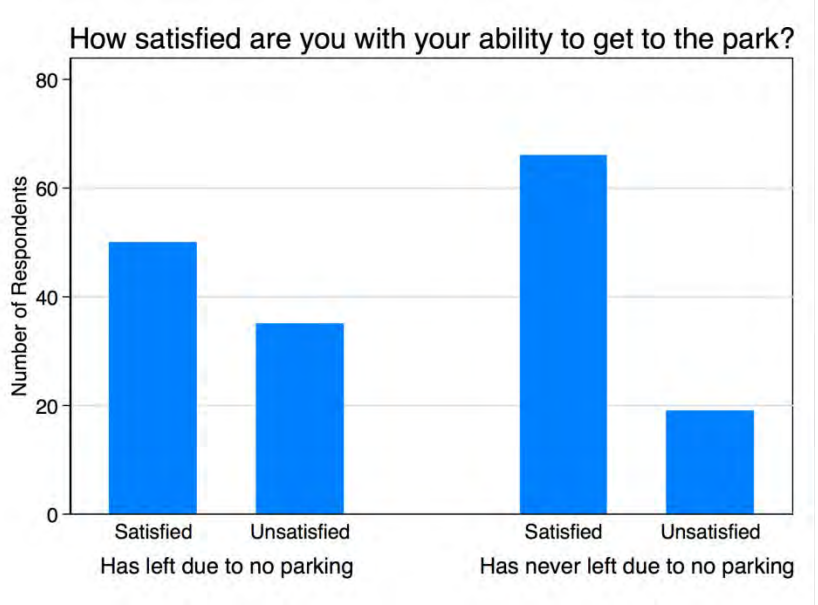
Participants were asked how long they are willing to wait to park their vehicles. 48% stated that they would wait 10 minutes or less, 26% stated that they would wait 20 minutes or less, 22% stated that they would wait 5 minutes or less, and 5% stated that they would wait longer than 20 minutes to park.

Next, participants were asked a series of questions to determine their level of satisfaction with current commuter conditions. The majority (71%) of the participants were at least satisfied to very satisfied with the distance of where they were usually parked to the ski facilities or trailhead, with 29% of participants being unsatisfied to very unsatisfied.

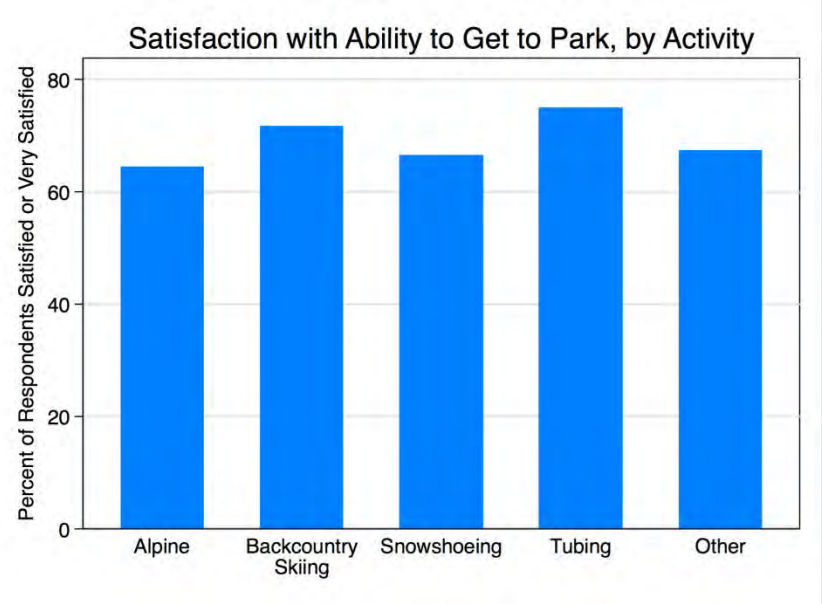
67% of participants stated that they are satisfied to very satisfied with their ability to get to the park, with the remaining 33% stating that they are unsatisfied to very unsatisfied.



The data was then divided between those who left the park due to parking issues and those who have never left the park as result of parking issues, to determine the level of overall satisfaction. Here, very satisfied and satisfied were grouped together, and unsatisfied and very unsatisfied were grouped together. Out of those that have left due to parking issues, 50 individuals (or 59%) identified as satisfied, whereas 35 (49%) stated they were unsatisfied. Conversely, for those who have never left due to parking issues, 66 (78%) individuals stated that they were satisfied, with only 19 (22%) stating that they were unsatisfied. This indicates that user satisfaction is related to parking ability.



Next, the level of satisfaction was split amongst user groups. The level of satisfaction was greatest amongst tubers (75%), followed by backcountry skiers (72%), other winter recreational users (67%), snowshoers (66%), and lastly alpine skiers (64%). Overall, there isn't too much variation and so activity type does not seem to have much of an effect on commuting satisfaction levels.



V. MANAGEMENT PRACTICES

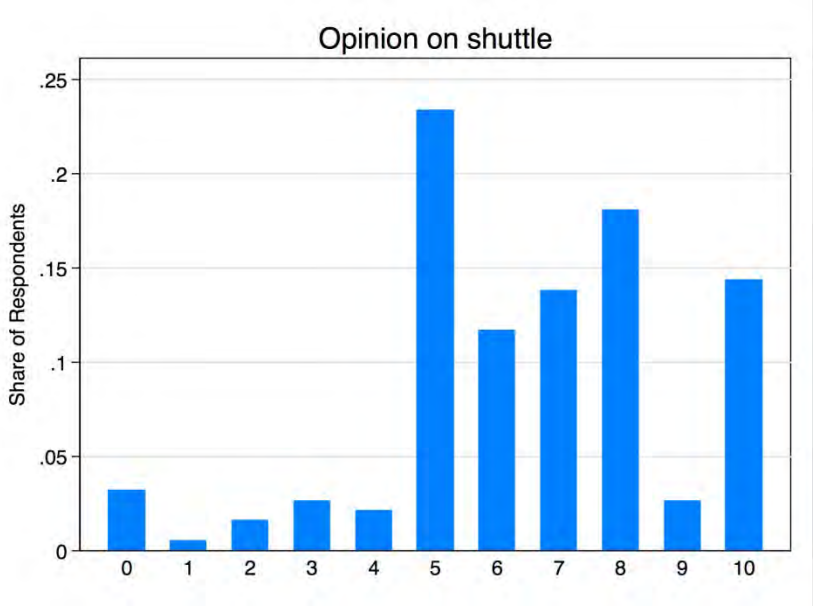
The next section assesses participant opinion on a number of management initiatives currently under consideration by BC Parks. These practices are (1) shuttle service; (2) reservation system; (3) vehicle access fee; (4) parking lot; (5) gondola; and, (6) a ride-share program. Participants were able to rate how they felt about each practice from 0 to 10, with 0 indicating that they "hate it," 5 indicating that they are "neutral about it," and 10 indicating that they "love it." An average will be provided for each practice to give an overview of how well it was received.

This section was prefaced with the following information:

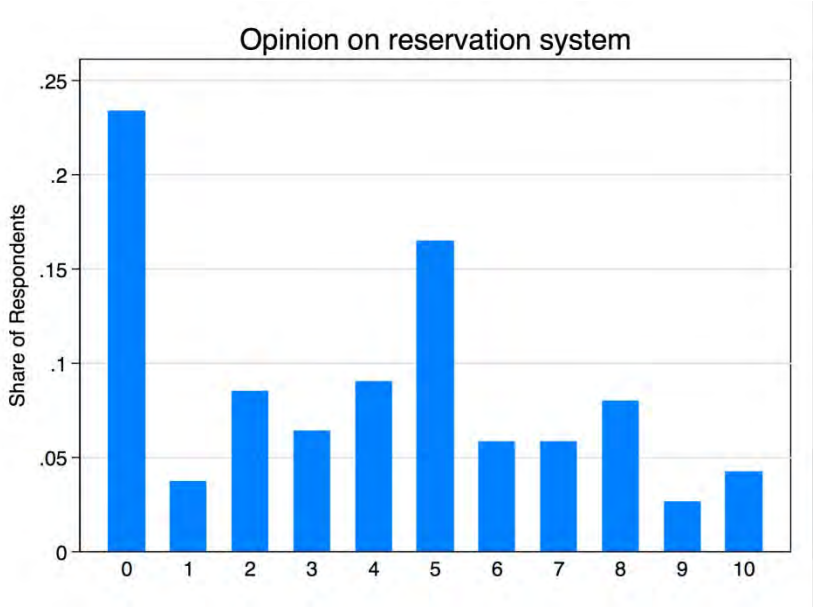
> "BC Parks has completed a review of other parks and jurisdictions offering similar recreational opportunities and how they manage vehicle overcapacity challenges. BC Parks is considering using one or more of these management initiatives to alleviate the vehicle overcapacity challenges at Mt. Seymour Park.
>
> The following questions are to assess your viewpoint on the various management initiatives that may help reduce the parking over-capacity problem."

The description provided for the shuttle service practice is as follows: “a shuttle service already exists, however improving accessibility to this service from the bottom of the mountain to the base area could be pursued. BC Parks would have to develop a business case for this to source funding and recover costs.”

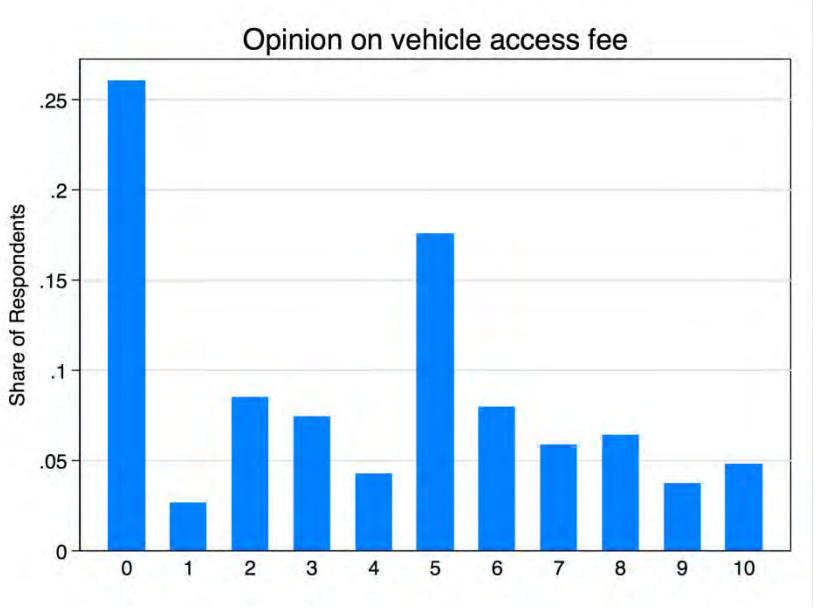
In general, this was well received by the participants, with an average score of 6.55. 25% of participants felt neutral about it, with 61% in support of this initiative.



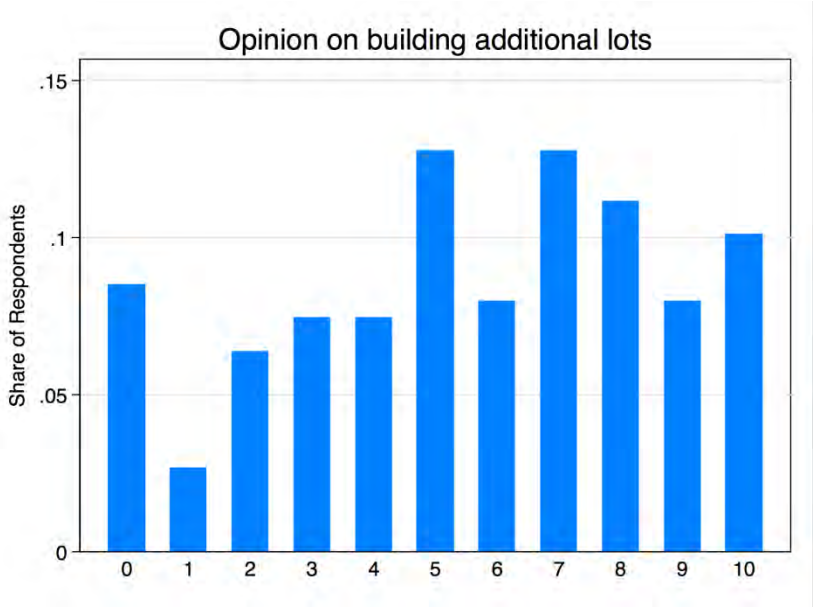
Second, participants were asked about a reservation system. The description for this practice is as follows: “Park visitors can register online for a vehicle day pass. All vehicles must have a day pass to access the park, and the number of passes would be based on available parking capacity.” This management practice was poorly received with 25% of participants indicating that they hate the idea. The average for this was 3.88, which falls below neutral.



Third, participants were asked about a vehicle access fee. The description for this initiative is as follows: "A method used by National Parks, individual vehicles are charged to access the parks. This would likely encourage park users to carpool and/or take the shuttle service to the park." Similar to above, this management practice was poorly received with an average of 3.87. 27% of participants hate the idea, and 18% feel neutral about it.

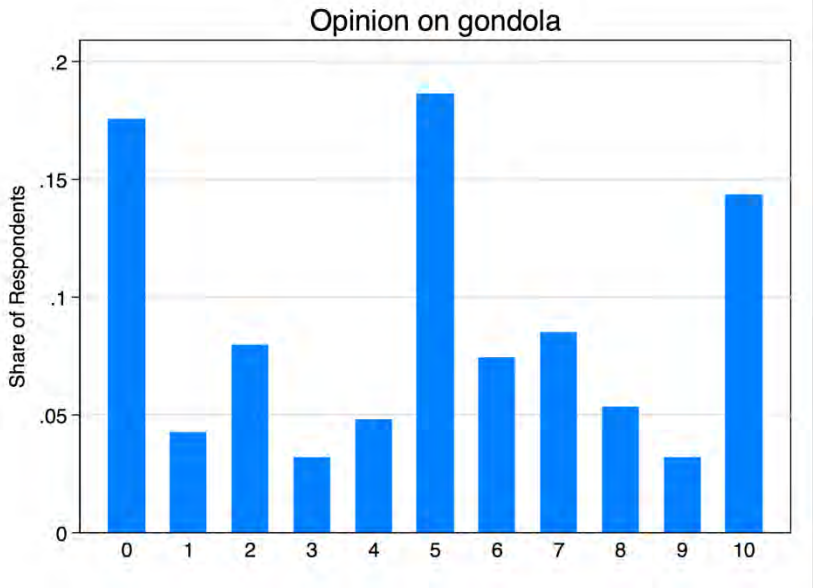


The fourth management practice was to build additional parking lots. The description for this practice is: "An Environmental Impact Assessment must be done and passed to ensure minimal impact on the park's ecology. Additionally, this requires a significant financial investment. BC Parks would have to develop a business case to source the funding and recover costs."

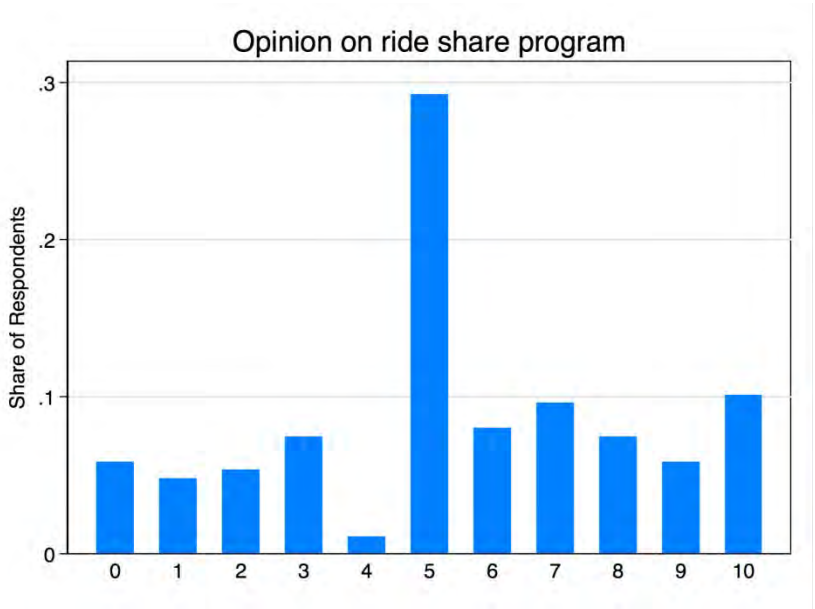


The average for building additional parking lots is 5.58, meaning that overall people are slightly more supportive of building parking lots than they are not. However, the top five most picked numbers from highest to lowest are 5, 7, 8, 10, and 0. Given this, it appears that most people are generally in favor of building additional parking lots, however, some people are firmly against it.

Next, participants were asked their opinion on building a gondola to the base area. The description is as follows: "A gondola from the bottom of the mountain up to the base area. BC Parks would have to develop a business case for this to source funding and recover costs." This had an average score of 4.84, meaning that overall, people were slightly less interested than they were neutral. However, the top three numbers picked are 5, 0, and 10, which shows how polarizing this practice is.

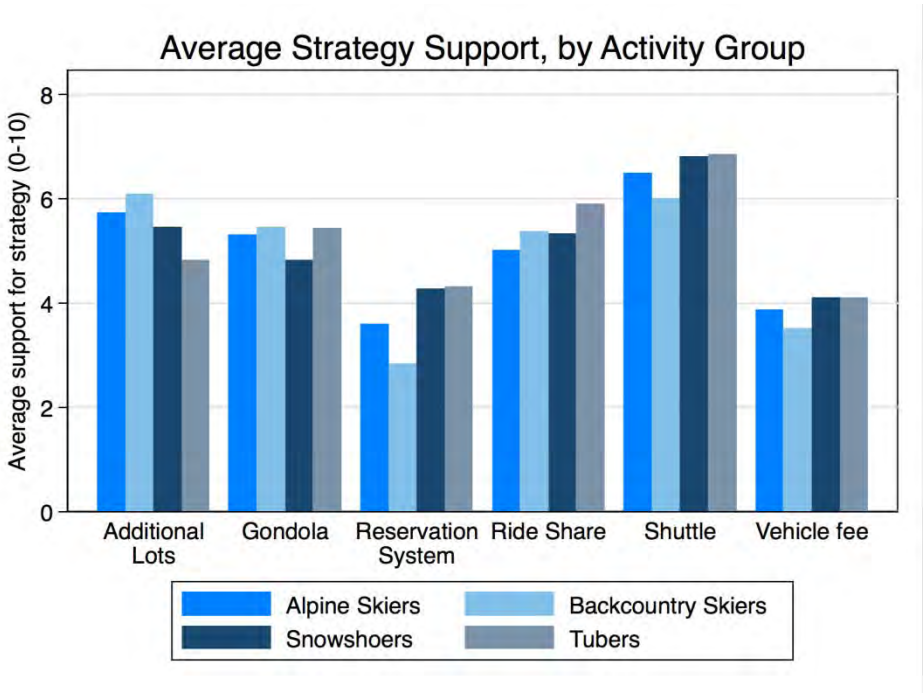


Lastly, participants were asked about the implementation of a ride-share program, which was simply described as "launching or using an existing application to connect park goers with each other to carpool to the park." This had an average of 5.46, indicating that participants were slightly more interested than they were neutral about this management practice. With that said, a significant (31%) amount of participants indicated that they are simply neutral about it.



The following figure compares the averages each management practice received, separated by user group. This allows for any biases present between user groups to become apparent. In general, the user groups follow similar preferences with the management practices provided here.

The shuttle service is the most popular, followed by building additional lots. The least popular is the vehicle access free, and the second least popular is the reservation system. Backcountry skiers most preferred the shuttle service and the additional lots. Alpine skiers preferred the shuttle service the most, followed by additional lots. Snowshoers and tubers most preferred the shuttle service. Snowshoers also like the additional lots and ride share, whereas tubers preferred the ride share followed by the gondola.



VI. USER RECOMMENDATIONS

The final question of the survey asks, “Do you have any further comments or feedback?” Respondents are able to free-write a response up to 800 characters. 105 individuals responded to this question. 21 of these responses are irrelevant to the purposes of this report, and state either a non-response (e.g. "no" or "N/A"), a love for the park, thanking for the survey, or complimenting the style of the survey. The remaining 84 responses were coded to determine overarching patterns, which will be further explored in this section.

i. EARLIER PARK OPENING

The most commonly repeated request was for the park to be opened earlier, either at 4:00 am, 5:00 am, or 6:00 am if weather conditions permit so. 22 respondents or 26% of those who provided feedback to this question requested this. As this was not mentioned anywhere in the survey, it is clear that this is a common and strong desire amongst park users irrelevant of the information that has been provided for them. Many requested this so that they could utilize the backcountry earlier in the morning to alleviate traffic congestion later in the day. Some indicated that they wished to access the park during weekdays prior to work, which could result in reduced congestion on weekends and holidays by redirecting users to other days of the week.

ii. IMPROVE SHUTTLE SERVICE

The second most commonly mentioned topic was the shuttle service. 16 respondents or 19% of respondents to this section requested an improvement of shuttle service. Improvement included things such as more frequent shuttles, more stops, along with

free or cheaper shuttle service. Some individuals recommend incentivizing shuttle usage by providing a "prize," or discount for snowshoeing with a shuttle pass. Notably, one respondent made the recommendation that Translink should provide a bus service to and from the mountain to reduce the fee.

Five individuals explained that they would take the shuttle service if they would be able to bring their dogs with them. This was also mentioned several times in informal conversations during fieldwork.

iii. IMPROVE COMMUNICATION

Next, nine respondents (10%) asked for better communication through the park's website, signage at the bottom of the mountain, and through more staff managing the traffic and car roadblock in regard to a few different things. It is important to note that this was the issue that came up most frequently during informal conversations while fieldwork was conducted.

First, respondents wished to be informed of the reasoning behind the car roadblock on the website for Mt. Seymour. Many indicated that they found this frustrating and almost turned away as they had thought the car lineup went all the way up to the mountain.

Second, respondents asked to be informed of parking wait-times with live updates through social media, on Mt. Seymour's website, and most importantly through an electronic sign posted at the base of the mountain. Many expressed that this information would reduce their frustration with the congestion at the park as they could adequately prepare themselves for traffic conditions.

Third, some individuals asked for better advertisement of the shuttle service to the mountain, as they either did not know about it or have little knowledge on how and where it operates. This was a frequent sentiment amongst individuals during informal conversations occurring during fieldwork.

Lastly, respondents asked for more staff to manage the traffic flow and to speak with park users, car by car, explaining the situation, and providing live updates on traffic and weather conditions.

iv. PARKING LOT

Although the addition of a parking lot was referenced earlier in the survey, a few respondents added comments in regard to it in this section. One individual explained that another parking lot will not help the congestion problem. Two recommended that an annual parking pass should be made available, similar to what some other parks currently have. Two respondents recommended that the new parking lot be made exclusive to backcountry users with a new trailhead nearby. The remaining four respondents simply asked for a new lot to be built.

v. SPILLOVER INTO NORTH VANCOUVER

Out of 179 respondents, only 64 are from North Vancouver and could speak to park user spillover into their neighbourhoods. Five individuals expressed grave concern over the parking spillover into the communities that are at the base of the mountain or at shuttle bus stops. One individual asked that there be a dedicated lane for the park users, with the ability of residents to pass this lane. Another mentioned that improving shuttle or car-sharing would be a solution to this problem. Three individuals who live on Ann Macdonald Way, Indian River Road, or more generally the Parkgate area specifically asked for traffic improvement in those areas, whereas one of these individuals recommended the shuttle service start at the sea-bus to alleviate parking in their neighbourhood. One individual made recommendations for improving the street design with roundabouts, crosswalks, and sidewalks at Anne Macdonald Way and Indian River Road to allow greater mobility for pedestrians and local traffic.

vi. MISCELLANEOUS COMMENTS

There were some comments made by individuals that did not fit into the above categories. These comments will be listed here.

One individual mentioned the difficulty of accessing the park with young children if they had to park far away from the trailhead. They requested that parking be made available closer to the trailhead.

Two individuals asked for stricter enforcement for dogs to be on-leash, whereas one individual asked for areas where dogs can be off-leash. This topic frequently came up in the informal conversations that occurred during fieldwork, however, it was infrequently mentioned in this survey.

One person recommended creating a "NEED A LIFT" designated pickup zone to be created at the base of the mountain to encourage carpooling.

A number of individuals expressed their firm opposition to incurring costs to use the park. In general, they mentioned that they are already paying for the park through their taxes, and would find it deeply unfair if ski hill users were prioritized, or if they had to pay for parking to access the park.

DISCUSSION & RECOMMENDATIONS

The results of this survey indicate that Mt. Seymour Park users are not wholly unsatisfied as hypothesized prior to conducting this research. In fact, roughly one-third of users expressed dissatisfaction with their ability to get to the park (33%), and with how far away they were parked from the trailhead or ski facilities (29%). Only half of the respondents have been turned away for parking overcapacity, and the majority of these people (95%) have been turned away 1-3 times only. This is likely occurring on the few busiest days of the season. Committed and active users know to come early to avoid the rush and have their hikes finished before the congestion starts to build, or they avoid coming in on peaks days overall. Within this context, flexible, easier to achieve, and cheaper management practices are recommended, as a major investment does not

seem necessary at this time. As well, major investment options were not well received by the general public, such as the gondola.

In general, it is recommended that creating added costs for backcountry access to the park should be avoided, as there may be an unfavourable public backlash. However, with the results of this research, it does not seem necessary to do so as many other options exist to alleviate parking and traffic congestion.

The most prominent request from park users is to open the park earlier in the morning, between 4:00 am and 6:00 am. The peak time for usage during the day is in the morning, as that is when the majority (65%) of users come to the park. Although to reiterate an earlier point, those who responded to the survey are committed and active users of the park and as such know to come earlier, whereas the busiest time with traffic and congestion was slightly later in the day (late morning to mid-afternoon).

Regardless, this peak could be shifted up earlier to alleviate congestion later in the day. The majority of park users consider themselves to be at least an active outdoor recreationalist, with 40% indicating that they are committed outdoor recreationalists. Those who are committed are likely to wake up earlier to access the park, potentially diverting up to 40% of users to weekday mornings prior to work. As well, the bulk of visitors are at the park for only 1-4 hours (64%), and so turnaround time could be as short as 2 hours for those visiting in the morning. Here it is strongly recommended that the park open at 5:00 am over the winter season to divert users from peak days to weekdays before work, and from peak times during mid-morning to early morning.

Shuttle service was the most popular management practice offered in the survey. Although a large portion of users has personal vehicles, they still utilize active transportation (walking, transit, biking) as a means of getting around. The data here indicates that this sample could be amenable toward non-car based transportation options as a way of getting to and from the park. As well, snowshoers preferred improving shuttle service the most out of any other group. This could be incentivized by allowed for cheaper rental for snowshoes, or by providing a discount for snowshoe trails. One thing to note is that those who are renting snowshoes are likely new or newer to the sport, and as well, less likely to come early in the morning. Providing an incentive to take the shuttle and receive a discount on snowshoes could be a strong management practice as those who are coming en masse during the most congested times would be inclined towards the shuttle service. It is highly recommended that shuttle service be enhanced with more stops and more frequent shuttles, with an incentive provided specifically for snowshoers.

A source of great frustration for users was the lack of communication from the park for traffic and parking conditions. 61% of respondents stated that if they knew that there would be traffic congestion, they would consider taking other modes to get to the park, such as the shuttle. As well, if users are aware of how long they are waiting or why they are waiting then they could more adequately prepare themselves and alleviate frustrations associated with the wait. Here it is recommended that Mt. Seymour install a prominent electronic sign near the base of the mountain stating parking wait times with

live updates. On Mt Seymour's website, parking wait times should be listed as well, along with a brief explanation as to why cars are held lower down on the mountain. To further better communication, several participants requested that more staff be posted at where cars are held to speak with individuals about the conditions and to better manage traffic flow.

A new parking lot was the second most favoured management practice offered in the survey. This could reduce the number of people who have turned away on peak days, which is related to overall satisfaction levels. For those who have never been turned away due to parking or congestion problems, satisfaction levels were 19% higher. It is recommended that one new parking lot be built to help manage park user volumes, if this is ecologically and economically feasible.

Building a new trailhead for snowshoers was not offered as a management practice in the survey, however as 29% of respondents were dissatisfied with the distance of where they were parked and the trailhead, this could be a viable option. As well, expanding the size of the park may be a good measure to account for future growth in park users. Therefore, it is recommended that the park pursue this option if it is ecologically and economically feasible.

The ride-share program was the third most liked management practice offered in the survey. Although there wasn't a large support for this, there may be a way to pursue this option with the least amount of financial and time investment from Mt. Seymour. The majority of cars are not filled to capacity (48% only have two people in their car, 25% have three people, and 8% have one person), which allows for carpooling to be a viable initiative. One participant recommended that a "NEED A LIFT" station be built at the base of the mountain. This is a station, similar to a bus station, but for individuals to be picked up by other park users who are driving up the mountain. This is a common thing on several of the Gulf Islands in BC, although not so much on the mainland. Regardless, this could be a fun way to connect park users, build a stronger park culture, and an easy way to supplement shuttle service to get users into the park.

Lastly, it is recommended that a combination of the above be pursued by Mt. Seymour Park. Opening the park earlier, enhancing the shuttle service, and improving communication could be pursued right away, as these are the cheapest and easiest options that provide the greatest overall benefit. Building a new trailhead, constructing a parking lot, and constructing a carpool stop could be as part of a secondary phase, as they require greater planning, finances, and are a stronger commitment.

Appendix B: Proposed Parking Improvements

The following pages contain proposed parking improvement concepts developed by Pacific Rim Management Services (2016).



KEY MAP
GREATER VANCOUVER AREA

INSET MAP
SKI AREA PARKING

SUBJECT AREA
SATELLITE VIEWS

SCALE = 1:1500

0m 25m 50m 75m 100m
0' 50' 100' 150' 200' 250' 300'

BCParks

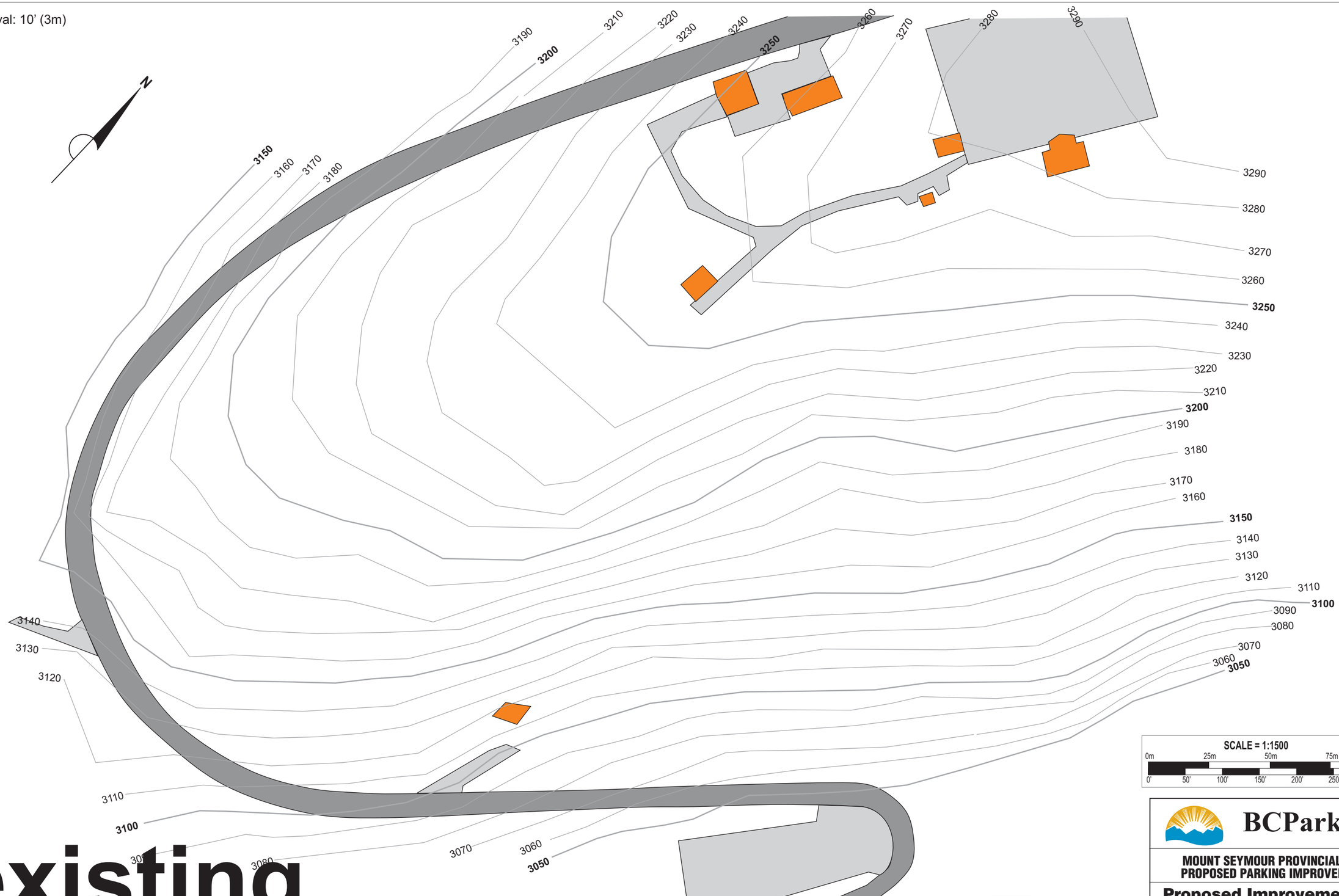
MOUNT SEYMOUR PROVINCIAL PARK
PROPOSED PARKING IMPROVEMENTS

Proposed Improvement Area Satellite View

PACIFIC RIM MANAGEMENT SERVICES

Date: Sept. 16, 2016 | Scale: as shown

Contour interval: 10’ (3m)



existing

SCALE = 1:1500

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0’ 50’ 100’ 150’ 200’ 250’ 300’

BCParks

MOUNT SEYMOUR PROVINCIAL PARK
PROPOSED PARKING IMPROVEMENTS

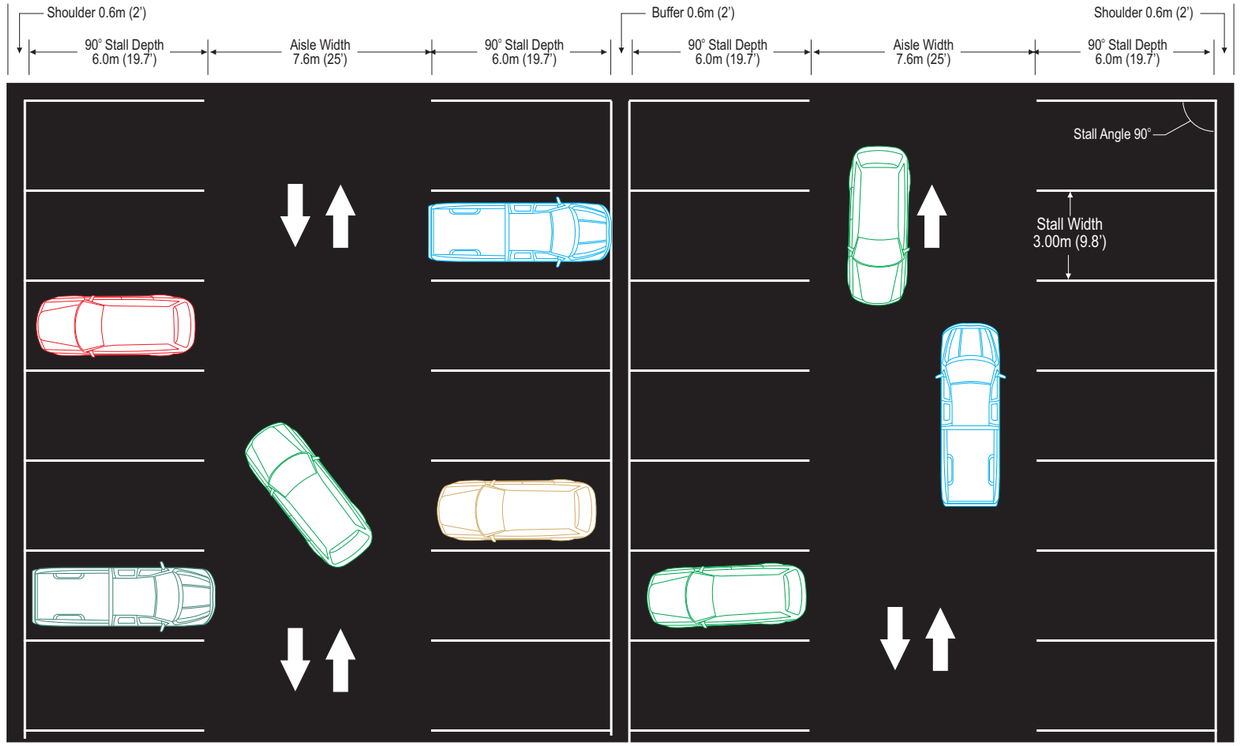
Proposed Improvement Aea Satellite View

PACIFIC RIM MANAGEMENT SERVICES

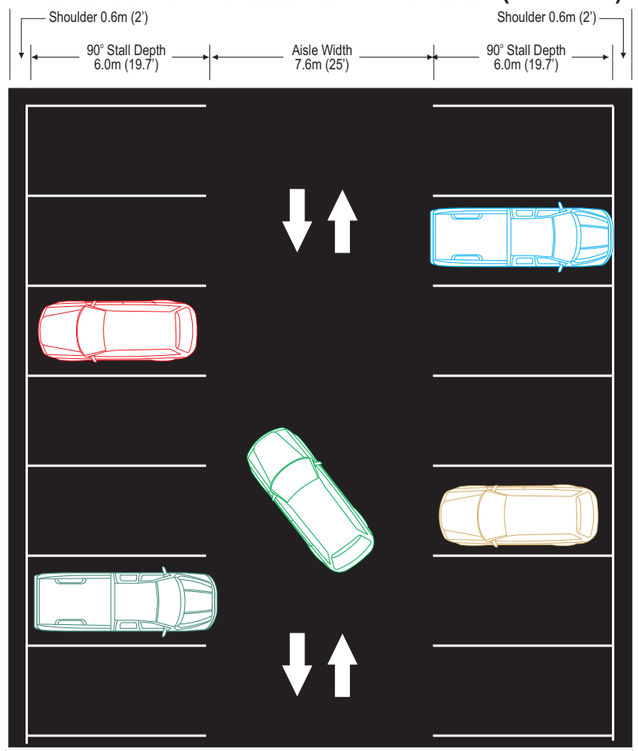
Date: Sept. 16, 2016

Scale: as shown

PARKING LOT DESIGN CRITERIA USED IN CONCEPTS PRESENTED



ALTERNATE SMALLER LOT CRITERIA (not used)



Alternate dimensions using single aisle to reduce cuts and fills.
This increases the number of lots, and may make snow storage more challenging.
Overall Width
20.8m (68')

Design Notes

The concepts presented were developed based on the following information or criteria:

1. Note that these are not engineered drawings. Material quantity or cost estimates have not been developed. The objective is to provide concepts for consideration and possible further development.

2. Mount Seymour Road is a provincial highway under jurisdiction of the Ministry of Transportation and Infrastructure. Posted speed limit is 60 km/h. Access will require permit from Ministry having jurisdiction.

3. Required sight distance at the highway intersection 85 m based on posted speed limit, based on TAC Manual or Geometric Design Standards for Canadian Roads Table B4.2.2. Location is on a curve and 7% grade, thus possibly compromising stopping sight distances in winter conditions;

4. Maximum slope in parking areas of 4% used in concepts (at greater slopes in any direction in a parking area it becomes difficult to open and close doors, and sliding hazards are increased in a snow/ice condition prevalent at this location;

5. Road grades with concepts are limited, where possible, to 5%. Actual grades noted on the profile drawings, as are actual original ground grades for comparison.

6. Minimizing cuts and fills where possible, though in such a sloping site, significant cuts and fill are a given;

7. Road widths, turning radii, parking stall dimensions, bus or large vehicle turning templates, are all based on prevailing Park standards and Transportation Association of Canada standards, in addition to standard parking lot design criteria.

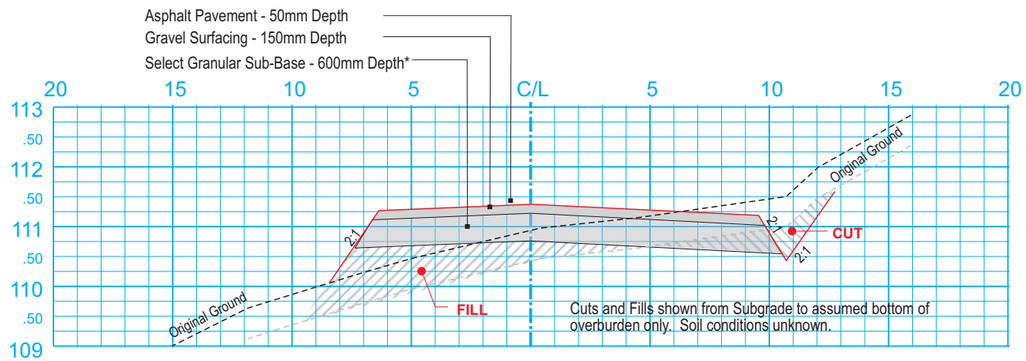
8. No design included for how parking users access recreational facilities;

9. All concepts include approximately parking space for 200 passenger vehicles.

10. Initial request included bus parking, but no indication of amount of busses to be accommodated, or how bus passengers will access recreational facilities.

11. All design work is conceptual, and based on low reliability elevation and slope data as well as unsupported estimates of overburden depth. Detailed ground survey work and geotechnical investigation is required if the project is to proceed to a further design stage.

12. Elevations derived from Google Earth.



TYPICAL STRUCTURAL CROSS SECTION FOR ROAD AND PARKING AREAS

BCParks

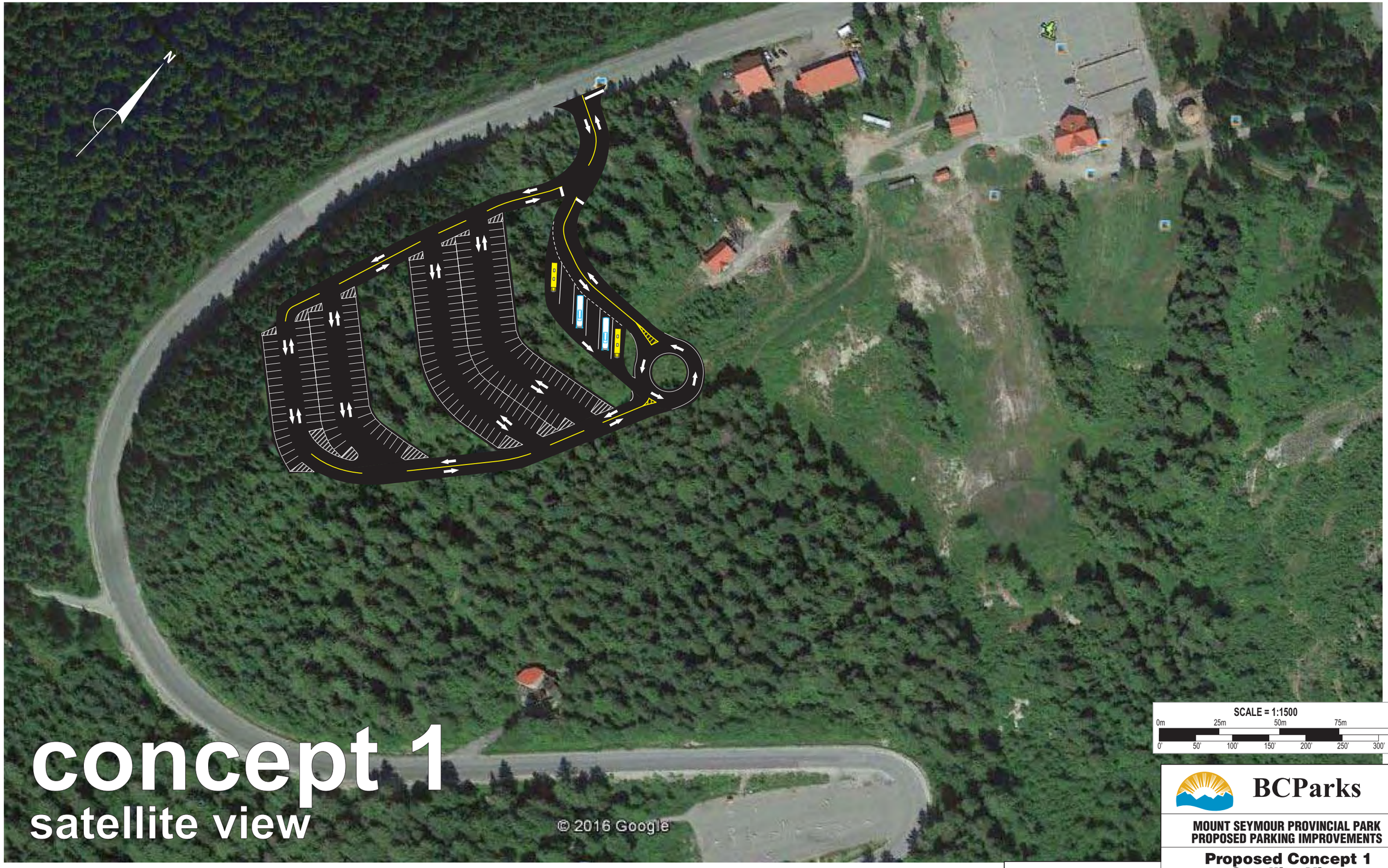
MOUNT SEYMOUR PROVINCIAL PARK
PROPOSED PARKING IMPROVEMENTS

Design Criteria and Notes

PACIFIC RIM MANAGEMENT SERVICES

Date: Sept. 16, 2016

Scale: as shown



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BCParks

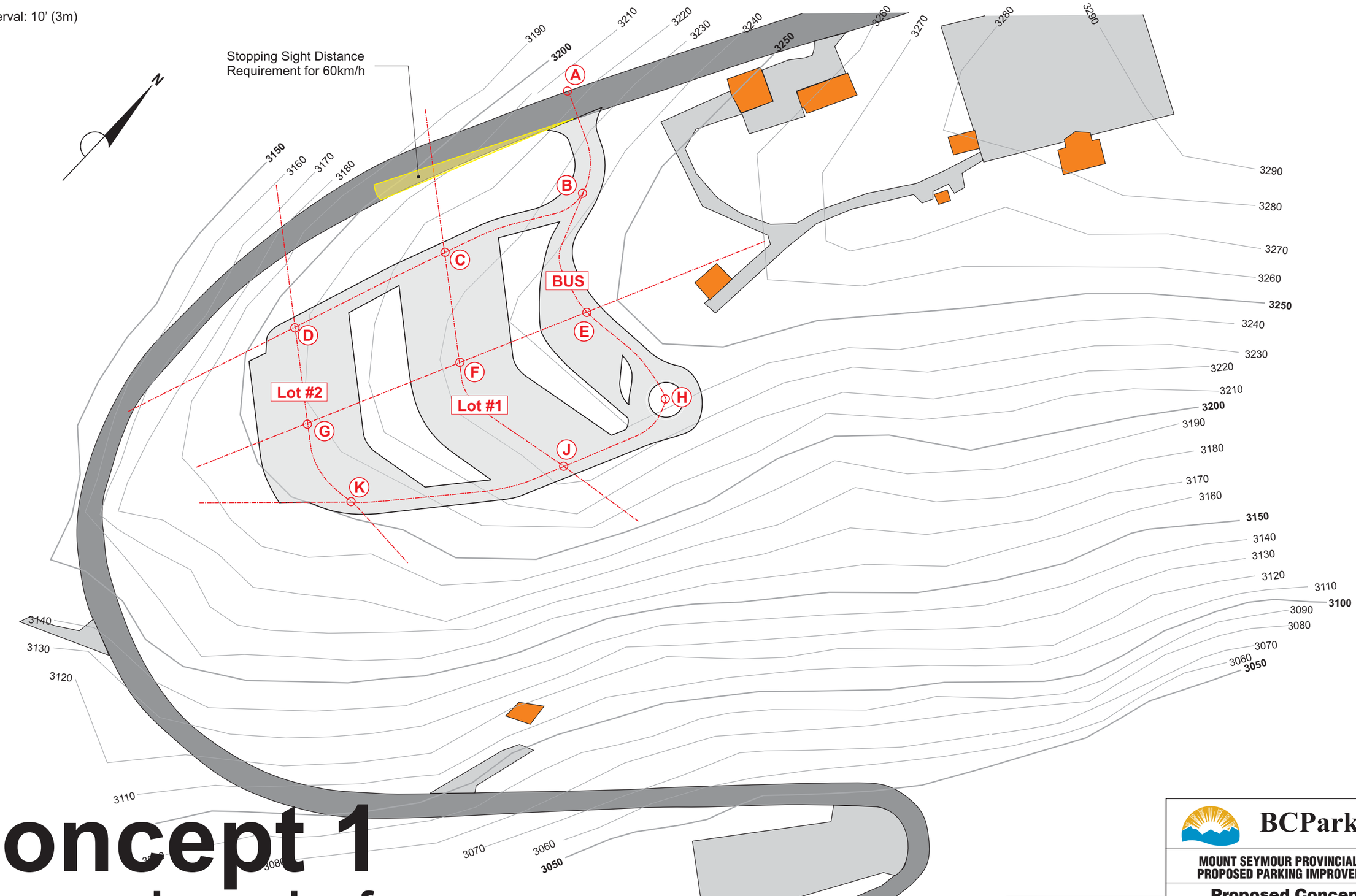
MOUNT SEYMOUR PROVINCIAL PARK
PROPOSED PARKING IMPROVEMENTS

Proposed Concept 1
Satellite View

Date: Sept. 16, 2016 | Scale: as shown

PACIFIC RIM
MANAGEMENT SERVICES

Contour interval: 10’ (3m)



concept 1

topography and references

BCParks

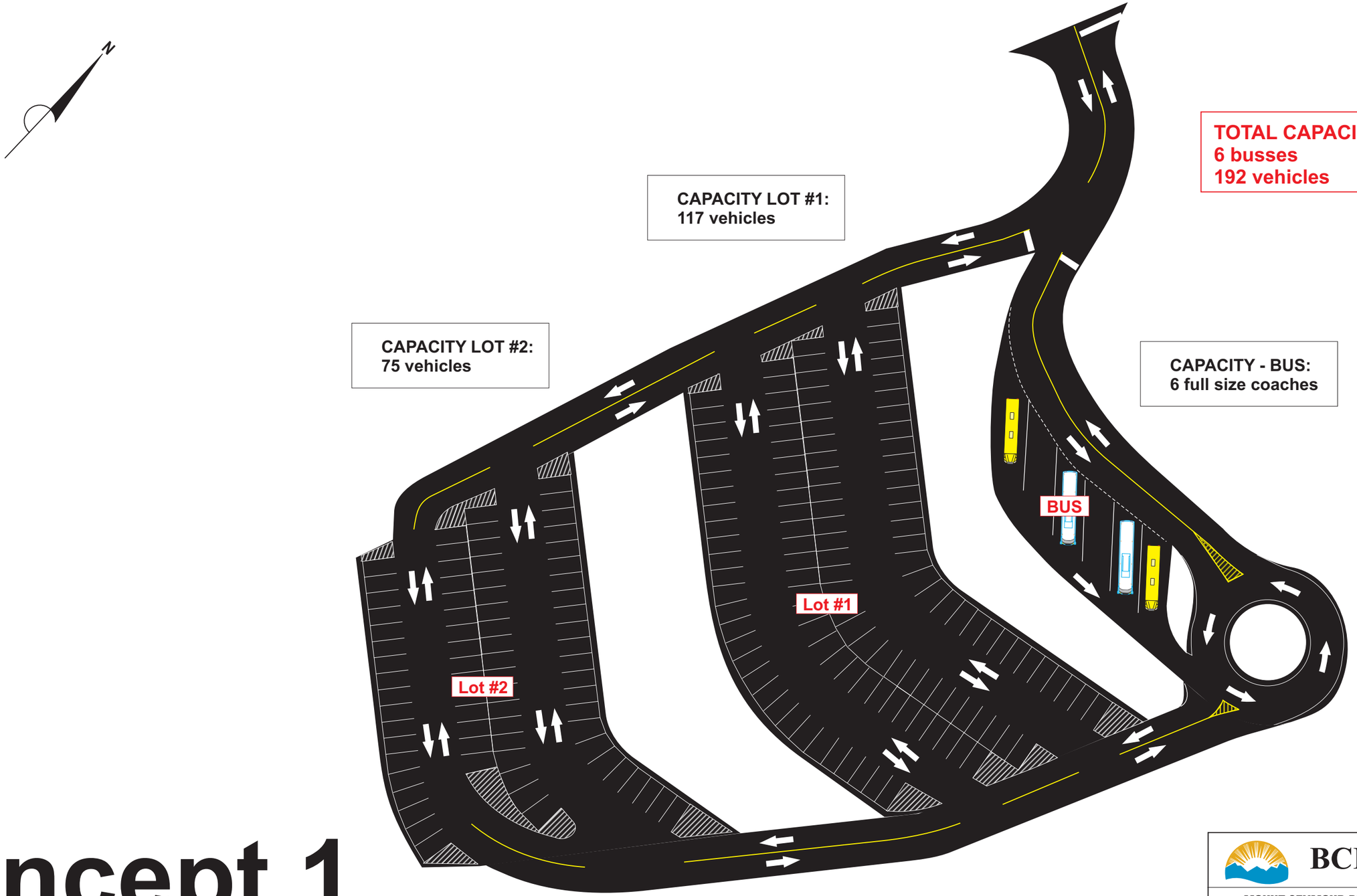
MOUNT SEYMOUR PROVINCIAL PARK
PROPOSED PARKING IMPROVEMENTS

Proposed Concept 1
Topography and References

PACIFIC RIM MANAGEMENT SERVICES

Date: Sept. 16, 2016

Scale: as shown



concept 1
proposed layout

BCParks

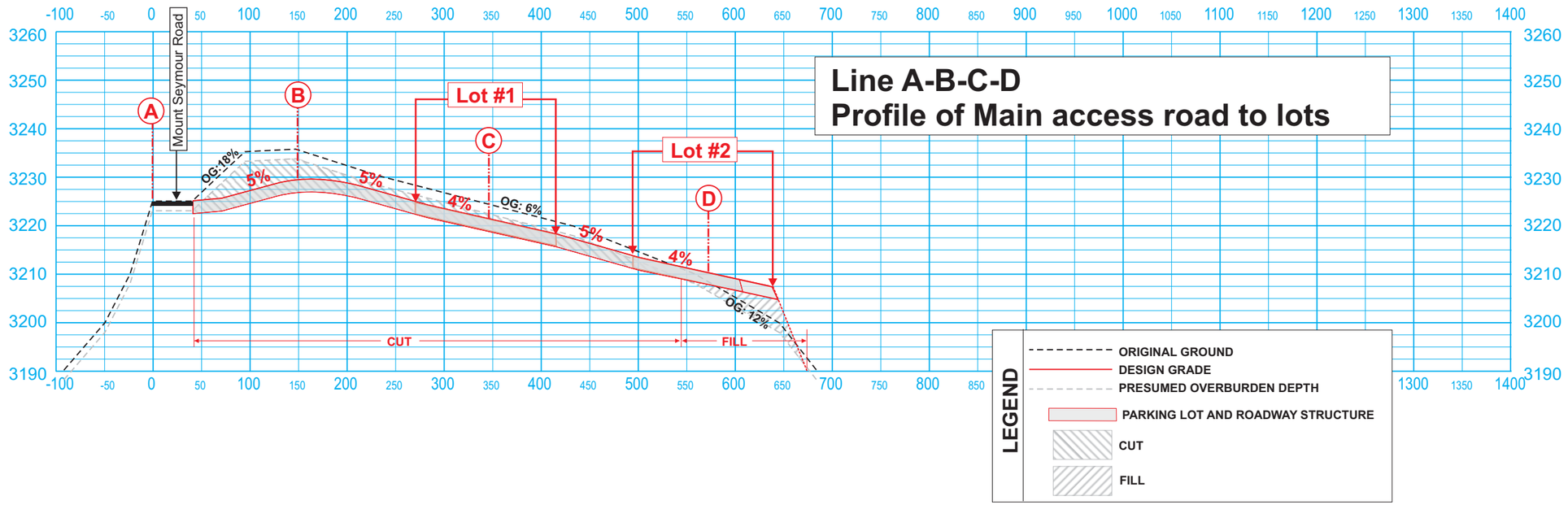
MOUNT SEYMOUR PROVINCIAL PARK
PROPOSED PARKING IMPROVEMENTS

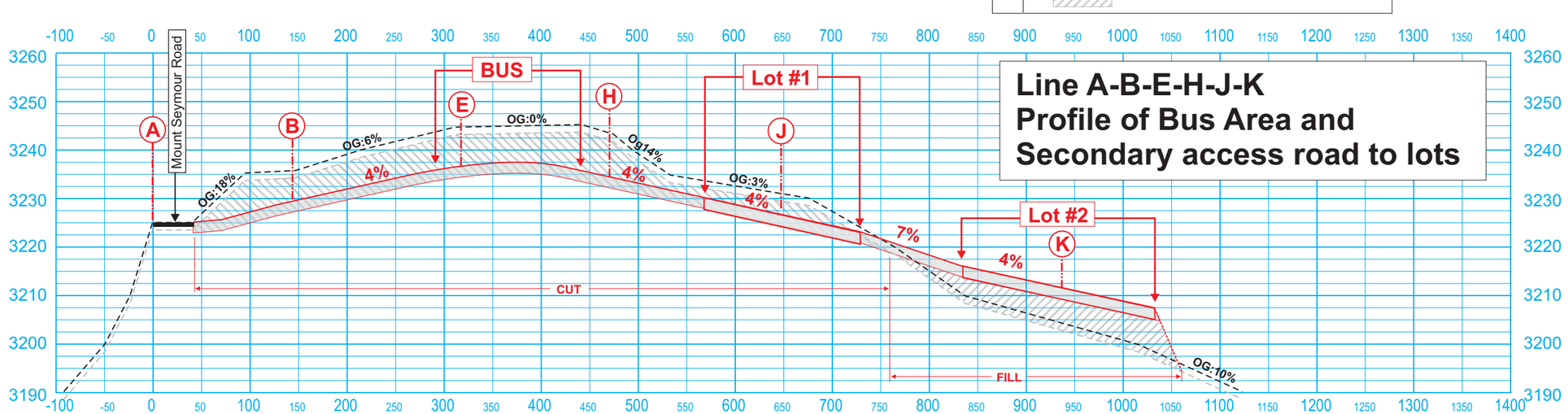
Proposed Concept 1
Layout and Marking

PACIFIC RIM
MANAGEMENT SERVICES

Date: Sept. 16, 2016

Scale: as shown





concept 1
profiles and sections

VERTICAL SCALE EXAGGERATION: 5X

SCALE (horizontal) = 1:1500

0m 25m 50m 75m 100m

0' 50' 100' 150' 200' 250' 300'

SCALE (vertical) = 1:300

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0' 10' 20' 30' 40' 50' 60'

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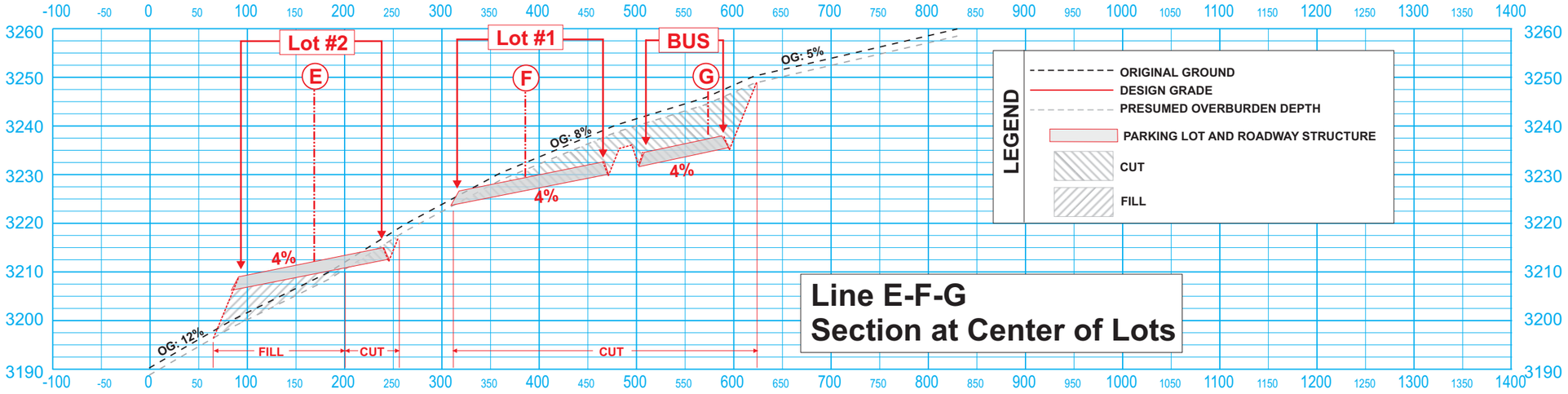
MOUNT SEYMOUR PROVINCIAL PARK
PROPOSED PARKING IMPROVEMENTS

Proposed Concept 1
Profiles and Sections

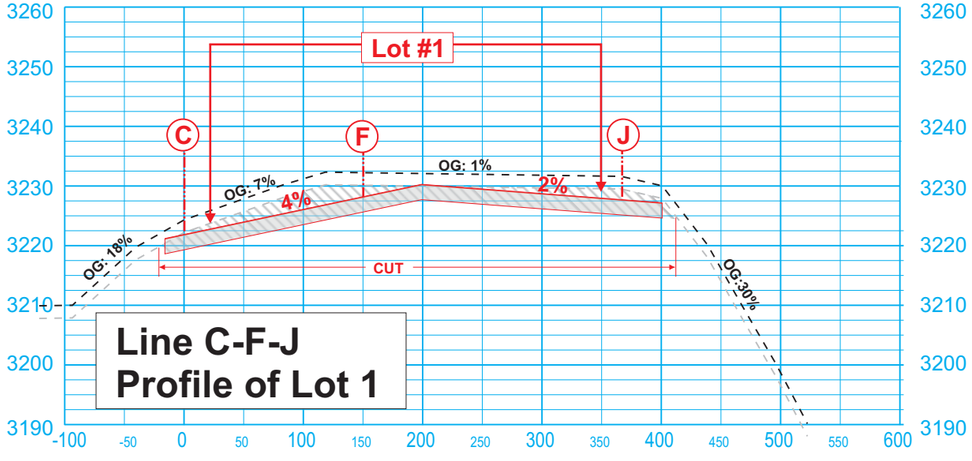
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Date: Sept. 16, 2016

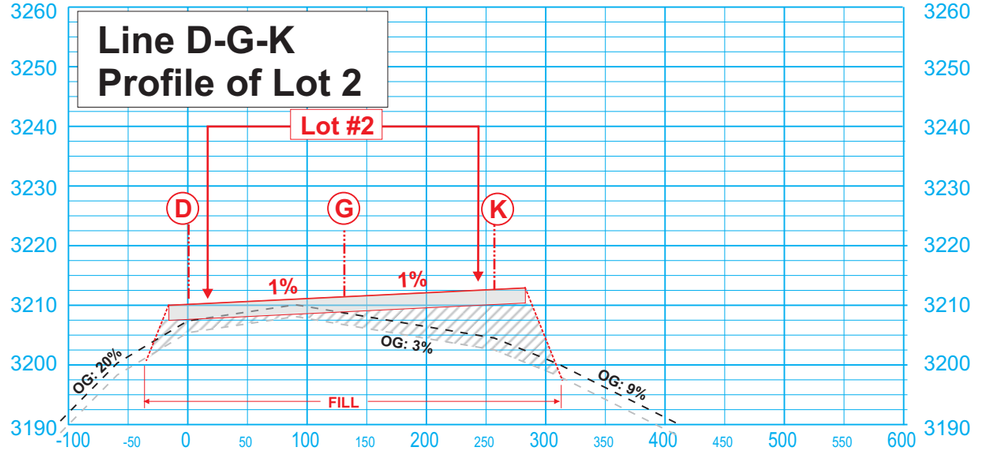
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Line E-F-G
Section at Center of Lots



Line C-F-J
Profile of Lot 1



Line D-G-K
Profile of Lot 2

concept 1
profiles and sections

VERTICAL SCALE EXAGGERATION: 5X

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SCALE (vertical) = 1:300

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BCParks

MOUNT SEYMOUR PROVINCIAL PARK
PROPOSED PARKING IMPROVEMENTS

Proposed Concept 1
Profiles and Sections

PACIFIC RIM MANAGEMENT SERVICES

Date: Sept. 16, 2016

Scale: as shown



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BCParks

MOUNT SEYMOUR PROVINCIAL PARK
PROPOSED PARKING IMPROVEMENTS

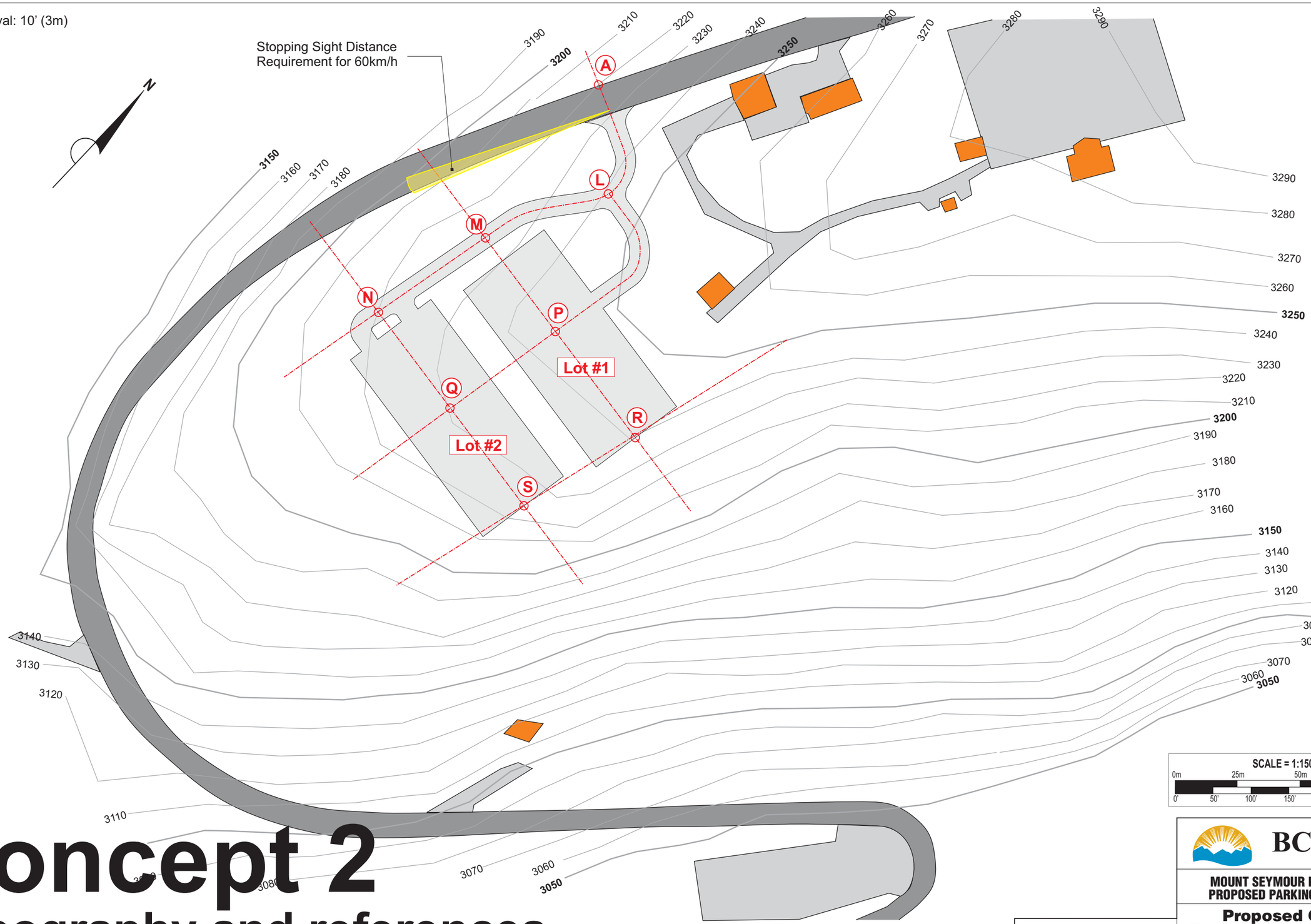
Proposed Concept 2
Satellite View

PACIFIC RIM MANAGEMENT SERVICES

Date: Sept. 16, 2016

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Contour interval: 10' (3m)



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concept 2

topography and references

BCParks

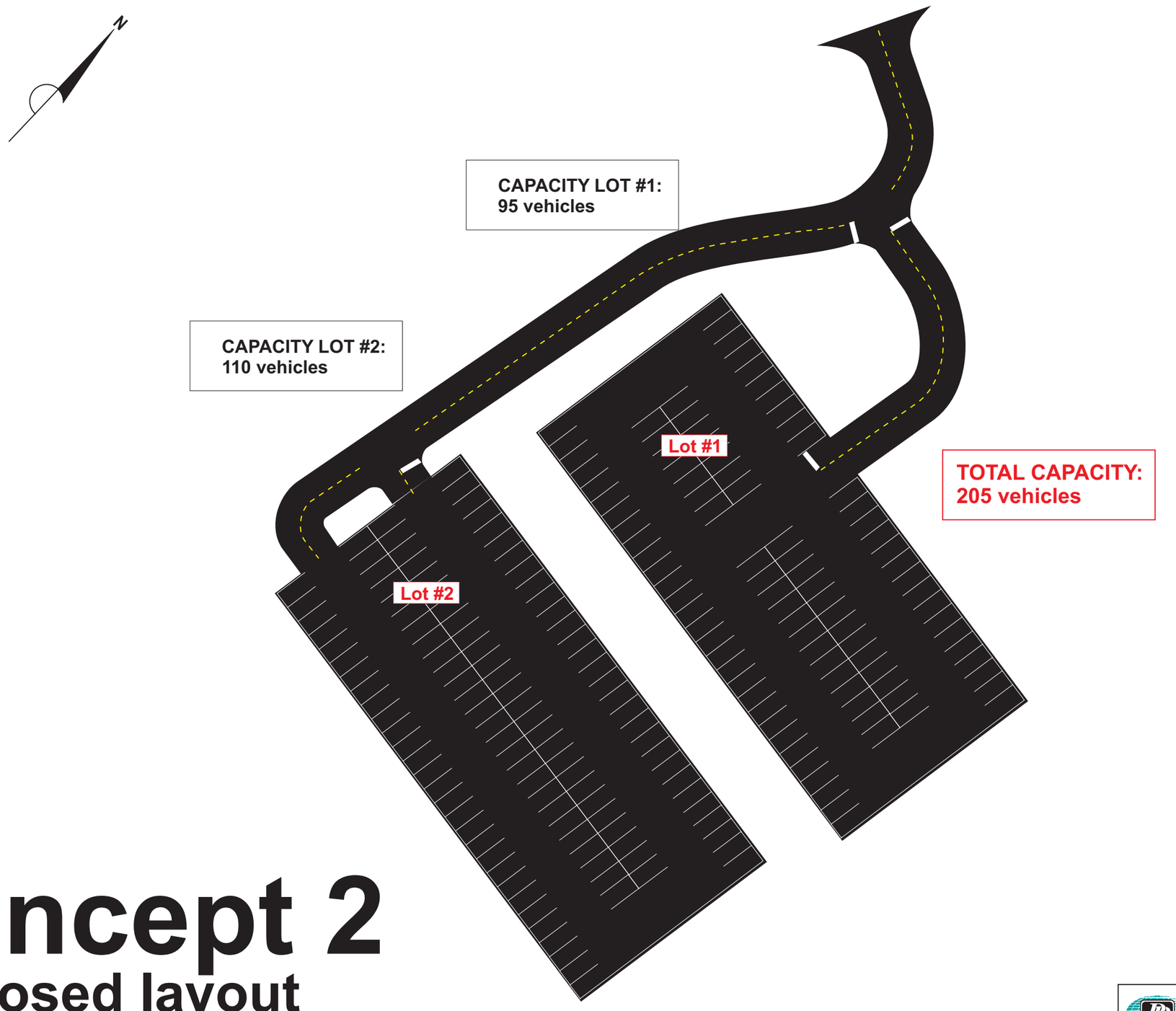
MOUNT SEYMOUR PROVINCIAL PARK
PROPOSED PARKING IMPROVEMENTS

Proposed Concept 2
Topography and References

PACIFIC RIM MANAGEMENT SERVICES

Date: Sept. 16, 2016

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concept 2
proposed layout

BCParks

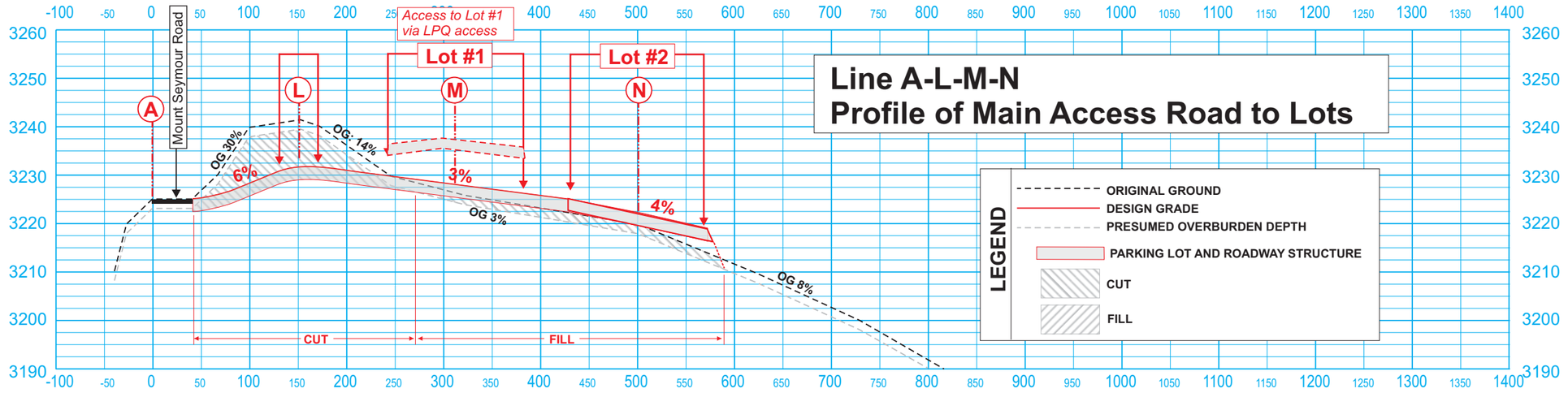
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PROPOSED PARKING IMPROVEMENTS

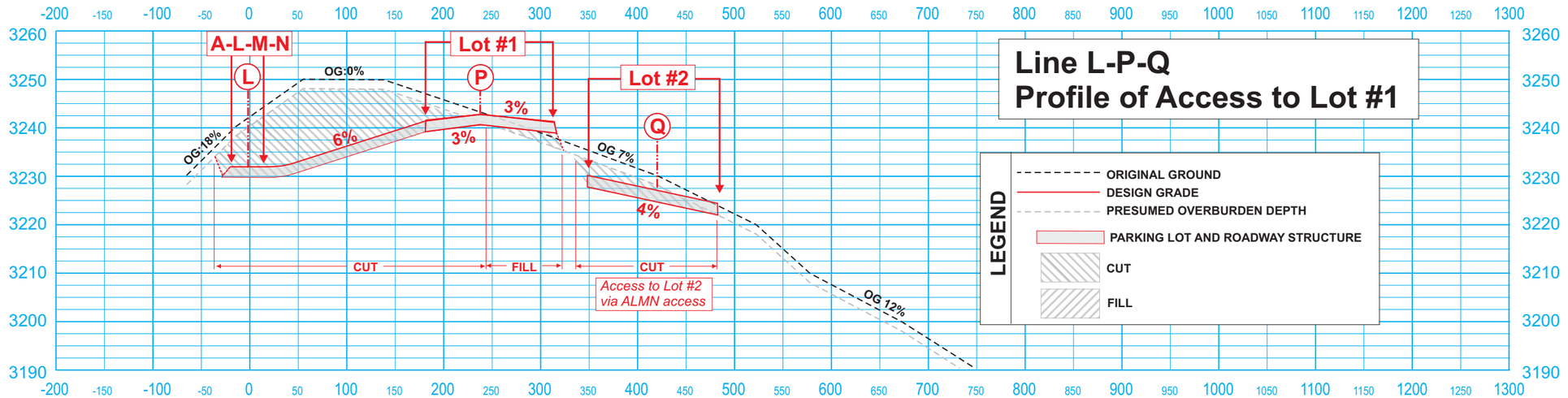
Proposed Concept 2
Layout and Marking

PACIFIC RIM MANAGEMENT SERVICES

Date: Sept. 16, 2016

Scale: as shown





concept 2

profiles and sections

VERTICAL SCALE EXAGGERATION: 5X

SCALE (horizontal) = 1:1500

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SCALE (vertical) = 1:300

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BCParks

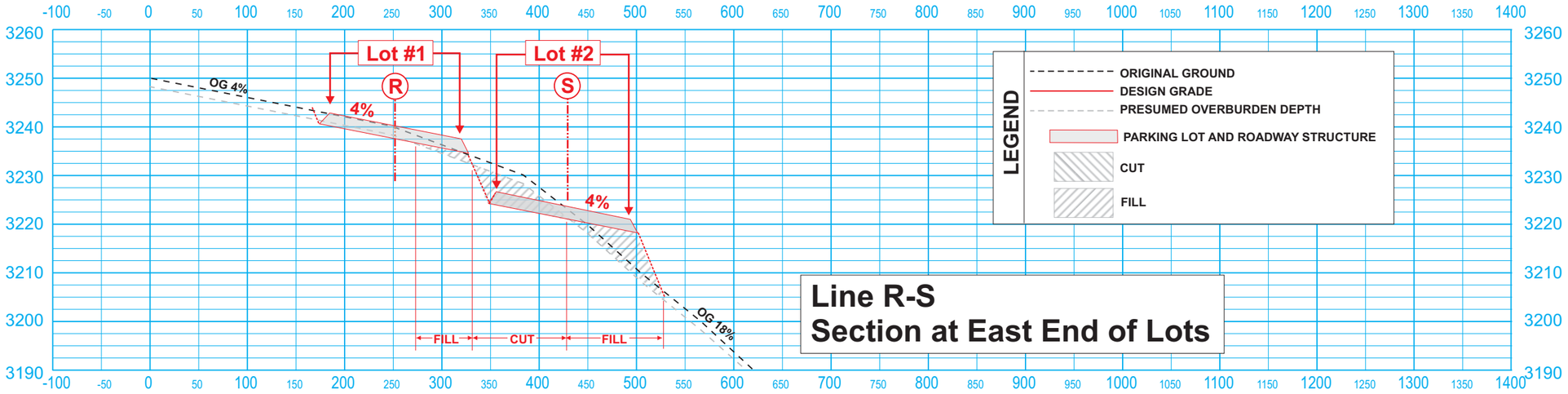
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PROPOSED PARKING IMPROVEMENTS

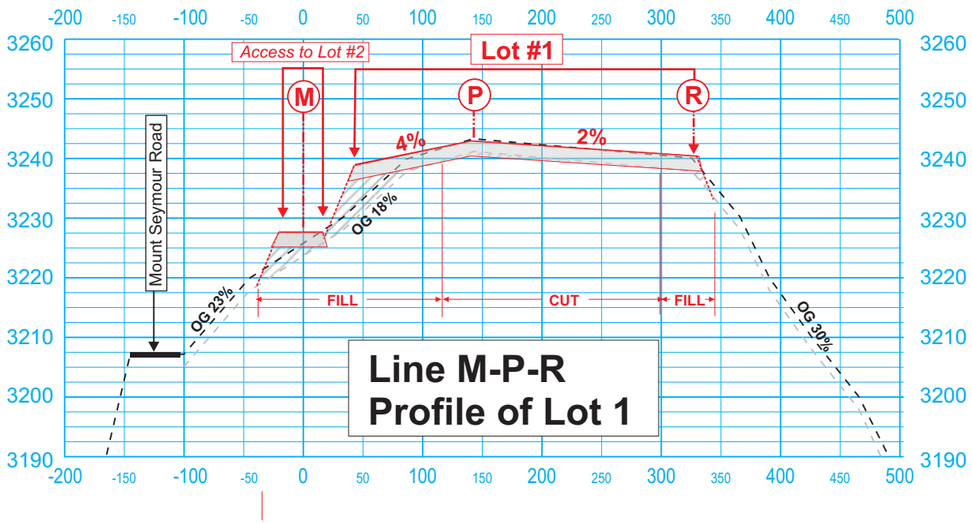
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Profiles and Sections

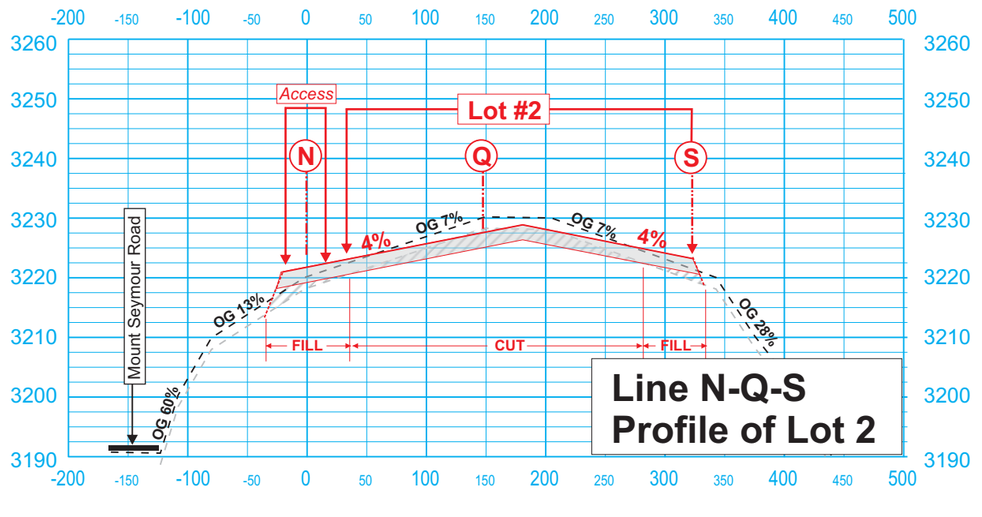
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Date: Sept. 16, 2016

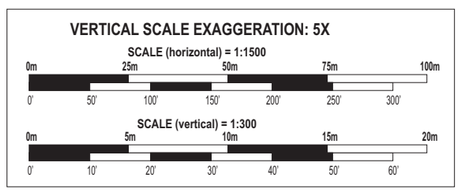
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concept 2
profiles and sections



BCParks

MOUNT SEYMOUR PROVINCIAL PARK
PROPOSED PARKING IMPROVEMENTS

Proposed Concept 2
Profiles and Sections

PACIFIC RIM MANAGEMENT SERVICES

Date: Sept. 16, 2016

Scale: as shown



SCALE = 1:1500

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BCParks

MOUNT SEYMOUR PROVINCIAL PARK
PROPOSED PARKING IMPROVEMENTS

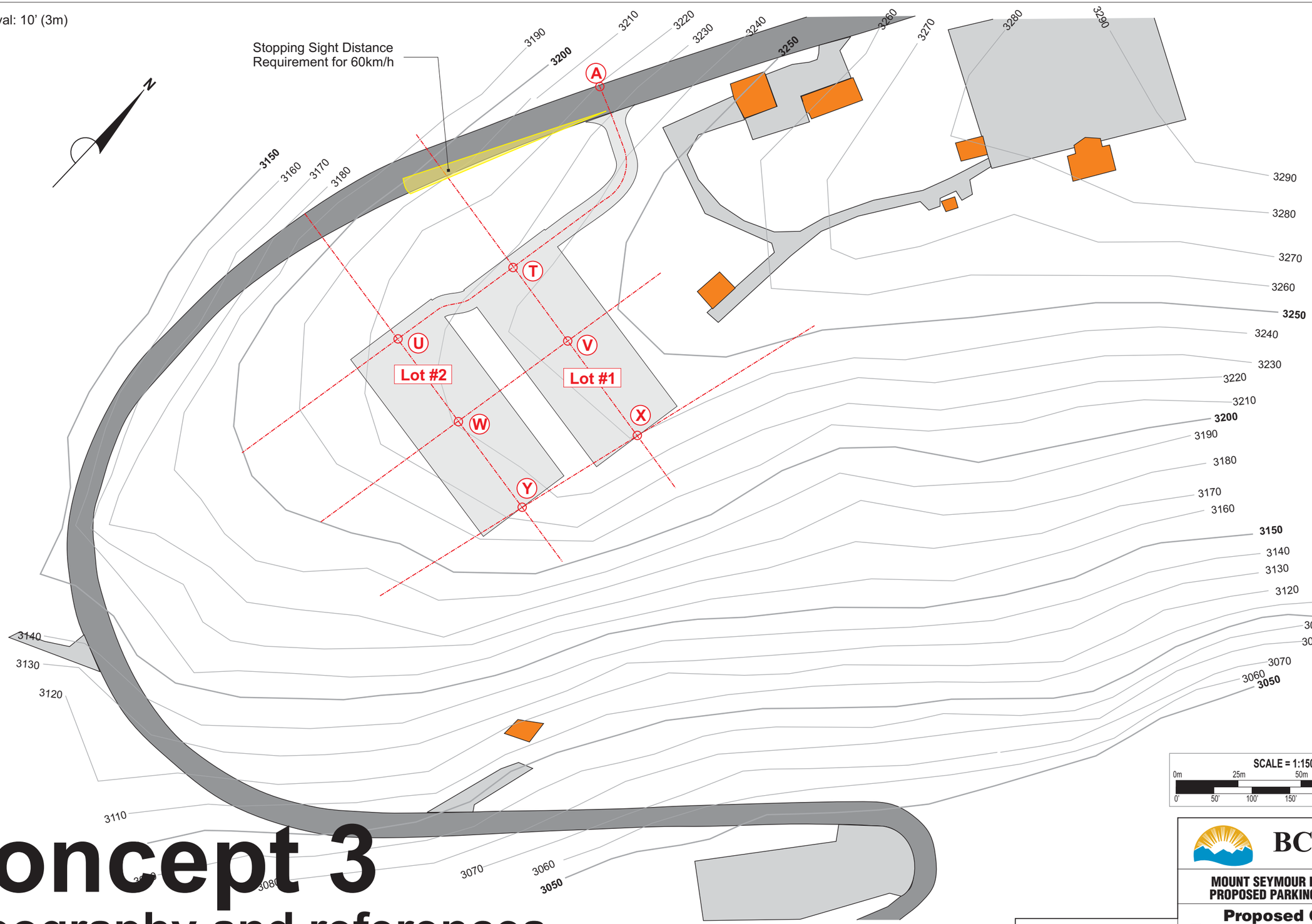
Proposed Concept 3
Satellite View

PACIFIC RIM MANAGEMENT SERVICES

Date: Sept. 16, 2016

Scale: as shown

Contour interval: 10’ (3m)



concept 3

topography and references

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BCParks

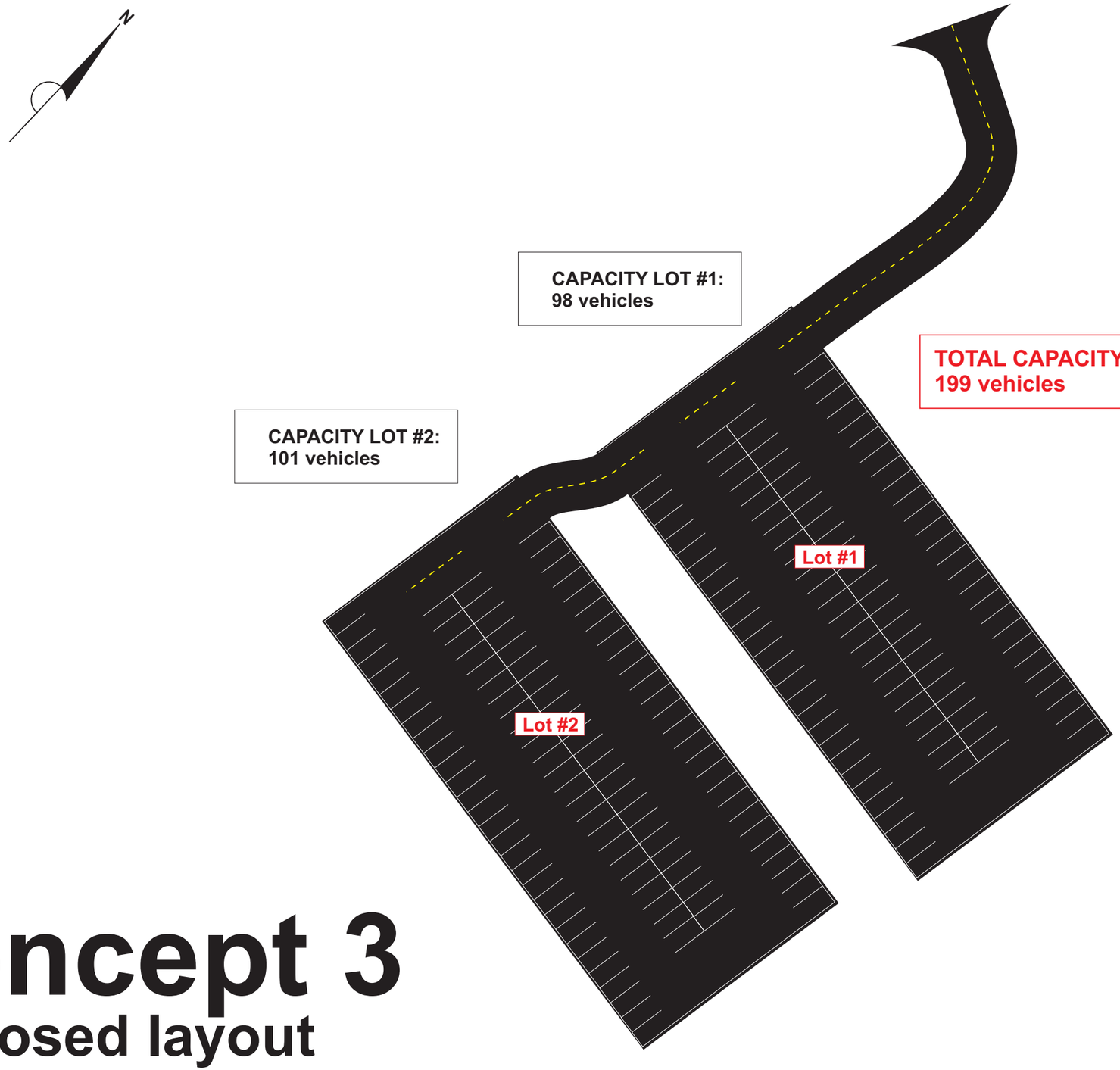
MOUNT SEYMOUR PROVINCIAL PARK
PROPOSED PARKING IMPROVEMENTS

Proposed Concept 3
Topography and References

PACIFIC RIM MANAGEMENT SERVICES

Date: Sept. 16, 2016

Scale: as shown



concept 3
proposed layout

BCParks

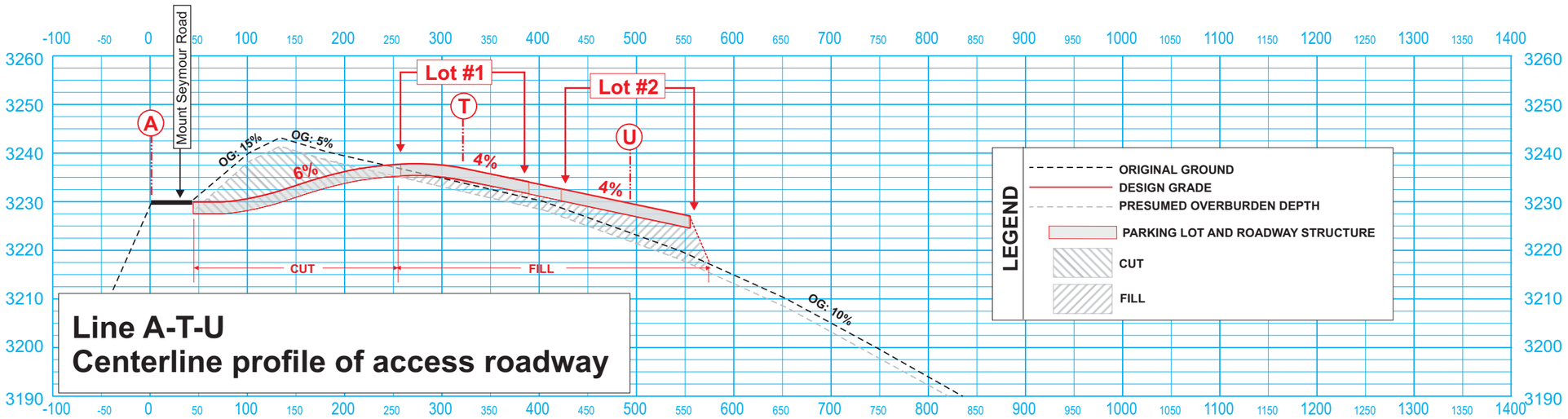
MOUNT SEYMOUR PROVINCIAL PARK
PROPOSED PARKING IMPROVEMENTS

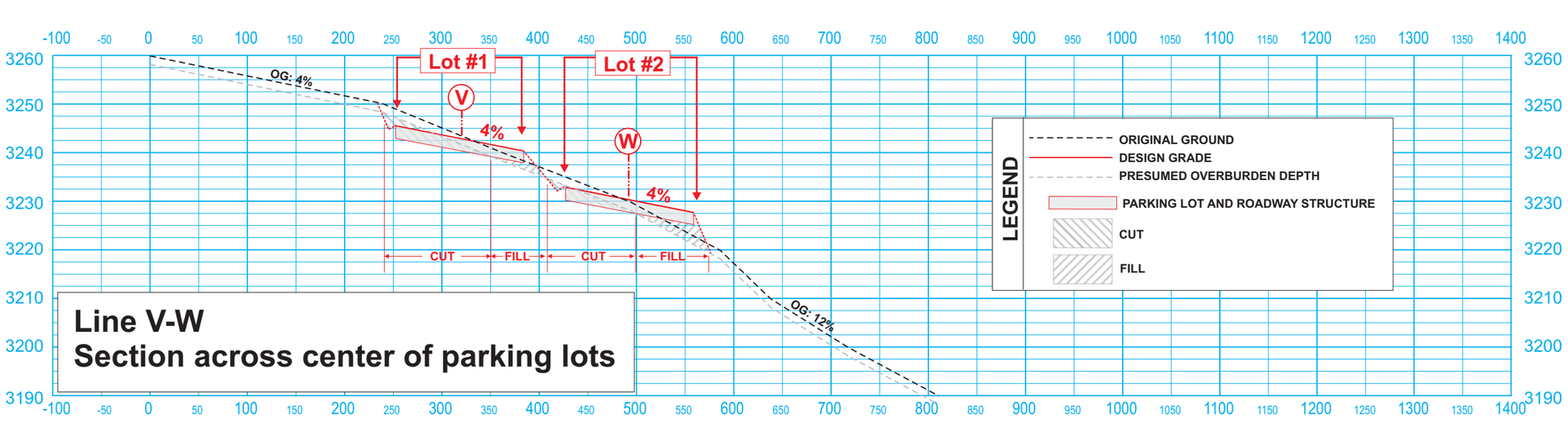
Proposed Concept 3
Layout and Marking

PACIFIC RIM MANAGEMENT SERVICES

Date: Sept. 16, 2016

Scale: as shown





concept 3
profiles and sections

VERTICAL SCALE EXAGGERATION: 5X

SCALE (horizontal) = 1:1500

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0' 50' 100' 150' 200' 250' 300'

SCALE (vertical) = 1:300

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PACIFIC RIM MANAGEMENT SERVICES

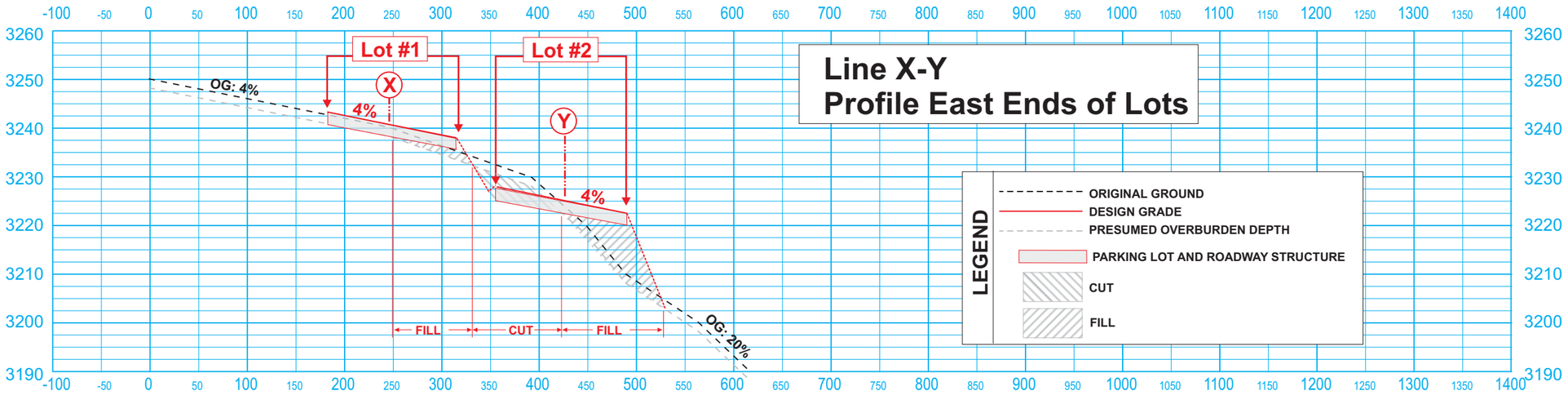
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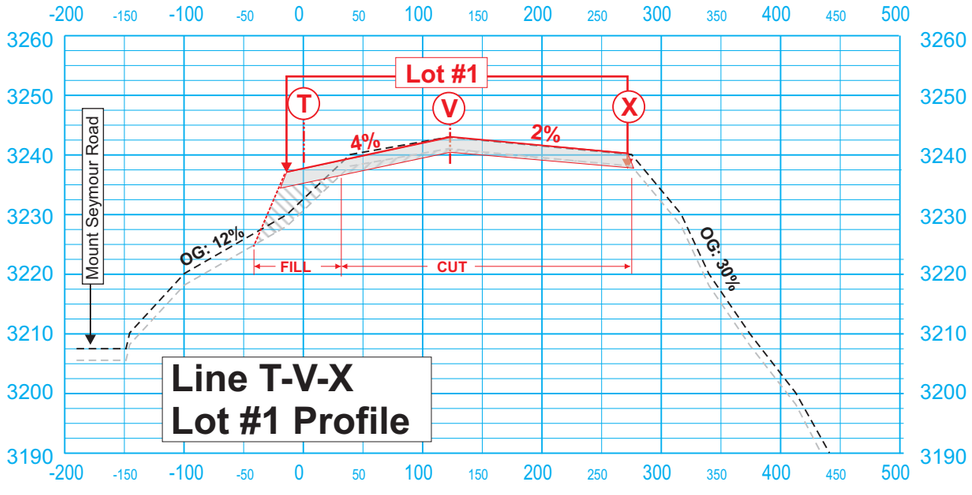
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PROPOSED PARKING IMPROVEMENTS

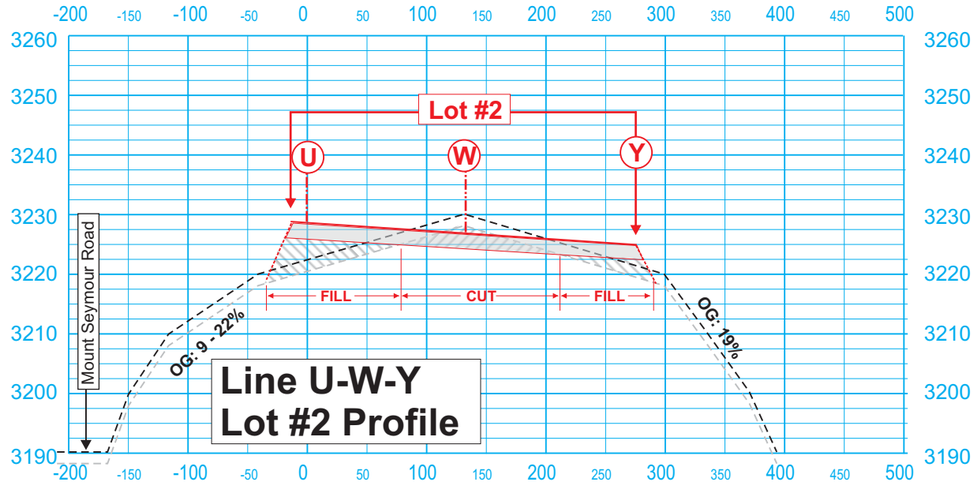
Proposed Concept 3
Profiles and Sections

Date: Sept. 16, 2016

Scale: as shown







concept 3

profiles and sections

VERTICAL SCALE EXAGGERATION: 5X

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0' 50' 100' 150' 200' 250' 300'

SCALE (vertical) = 1:300

0m 5m 10m 15m 20m

0' 10' 20' 30' 40' 50' 60'

BCParks

MOUNT SEYMOUR PROVINCIAL PARK
PROPOSED PARKING IMPROVEMENTS

Proposed Concept 3
Profiles and Sections

PACIFIC RIM MANAGEMENT SERVICES

Date: Sept. 16, 2016

Scale: as shown

Appendix C: Mile 0 Parking Analysis

The following drawings and designs were completed by the District of North Vancouver following the recommendation to pursue the development of a parking lot at the Mile 0 location (Option A). The intent of the design exercise was to examine how the proposed parking area could best fit in with existing traffic patterns and explore ways to safely integrate private vehicles, public transit, and pedestrians.



BENCH MARK :	No.	DATE	REVISION	DR.	CHK.	DESIGN : DB	SCALE :
						DRAWN : DB	HOR. 1 : ???
						CHECKED : ???	VERT. 1 : ??
						APPROVED : ???	DATE : ???

NORTH VANCOUVER DISTRICT

NORTH VANCOUVER DISTRICT
MUNICIPAL ENGINEERING DEPARTMENT

SEAL

PEER REVIEW

MILE 0–PARKING OPTIONS
90 DEGREE STALLS

REF DWG

SURVEY BOOK

DRAWING No.

DF????

SHEET 1 OF 1

NOTE: METRIC DRAWING

File : S:\ENG\TRAFFIC\Daniel's Work Folder\20180808_Mile 0 Parking Lot Concept\Option 1 – Perpendicular_Parking.dwg

Published : Aug '0, 2018



BENCH MARK :	No.	DATE	REVISION	DR.	CHK.

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APPROVED : ???

SCALE :
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VERT. 1 : ??
DATE : ???

NORTH VANCOUVER DISTRICT
MUNICIPAL ENGINEERING DEPARTMENT

SEAL

PEER REVIEW

MILE 0
PARKING OPTIONS

REF DWG

SURVEY BOOK

DRAWING No.
WF????
SHEET 1 OF 1
NOTE: METRIC DRAWING

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