Would the Castlegar British Columbia, Selkirk College campus be an appropriate location for the development of an accessible trail?

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1. Abstract

This report looks into whether the Selkirk College, Castlegar BC Campus would be an appropriate location for an accessible trail. It researches the supply and demand of accessible trails in the Castlegar area, and if the college campus grounds are suitable for such a trail. IT gathers information from regional districts and municipalities to determine the supply and uses data from the 2016 Canada Census as well as data from the Ministry of Social Development and Poverty Reduction to better understand the population dynamics, and statistics for people who have a disability in the West Kootenay Region. It used digital mapping to find suitable areas for an accessible trail and identified two possibilities. One possibility is an already excising trail that is 900m and would need upgrading to the surface material, and the other is a combination of upgrading existing trail and building new trail that would total 1450m.

2. Acknowledgments

I would like to thank my research partner Robin Jones for helping conduct our research. I would like to thank Brenda Beckwith who played a major role in editing, advising and guiding us through the process. And finally, I would like to thank Tim Thurston and the Ground Committee as well as Jim Lietch and the Adult Special Education program for providing advice and guidance through out the process.

3. Introduction

Currently, in British Columbia, there are 926,100 people over the age of 15 who have some form of a disability (Government of BC 2019). It could be said, therefore, that 24.7% of the population are often forgotten about when it comes to outdoor recreation as most recreational opportunities are created for able-bodied people (William et al. 2004). Making recreational opportunities available for the public is included in the mandates of Parks Canada (Parks Canada 2002), BC Parks (BC Parks 1996), and Recreation Sites and Trails BC (Ministry of Forests, Lands, Natural Resource Operations and Rural Development), in one form or another. A large portion of the public are not able to take advantage of these recreational opportunities because of their disabilities. This is not to say that recreation providers are intentionally marginalizing this group of people, but it is happening, inadvertently, as a result of a common layout and design of recreational areas that includes financial considerations. For example, building trails for

accessibility is often costly as the pathways need more groundwork to make them level, are wider, and need specific surface materials such as asphalt, concrete, or aggregates that are able to be compacted creating a harder and smoother pathway (Montembeault and York 2014).

Designing parks and trails for accessibility is not an easy task, especially in a mountainous province like British Columbia were elevations are constantly changing and slopes are often greater than the standards for accessibility. The standard for allowable gradient for a length of a trail is less than 8% (US Access Board 2019). It is even more challenging in the West Kootenay region because of the widespread, rural population and large mountain ranges. One pathway only services a small portion of the population in the BC Interior; however, in a larger metropolis, where there are higher concentrations of people, a single pathway can provide recreational opportunities for more people which is easier to justify. After a review of the websites of the Regional District of Central Kootenay (RDCK) (2020) and the Regional District of Kootenay Boundary (RDKB) (2020), it appears these two jurisdictions do not have legislation or mandates for accessibility when it comes to recreation. Other regional districts, such as the Capital Regional District (CRD) on southern Vancouver Island and which includes Victoria, has a smaller land mass but much higher population. The CRD has created a Universal Access Plan for CRD Parks (CRD 2003), a document that helps the CRD to be intentional with creating accessible outdoor recreation areas and connecting people with these areas. This consideration is lacking in the West Kootenay and, as a result, it must be difficult for someone with a disability to know if accessible trails exist regionally, let alone use them.

Policies to ensure the freedom of movement and self-resilience for people with disabilities is an underdeveloped concept. For example, the Government of British Columbia is currently working on creating their first legislation for accessibility (Government of British Columbia 2019). The concept of accessibility remains subjective, but the CRD defines it as: "Accessibility enables a person with a disability to make use of an area and its facilities without assistance" (CRD 2003:). Quebec-based company, Keroul, a key consultant for Tourism Quebec regarding accessibility, describes three levels of accessibility: basic, intermediate, and universal access (Keroul 2008). Only Intermediate and universal access refer to trails. Intermediate access is defined as full use

of a facility by people who struggle with mobility or visual impairment. Universal access means that anybody, no matter their disability, would be able to use the facility (Keroul 2008).

Our research purpose is to determine if part of the extensive network of recreational trails on the Castlegar Campus of Selkirk College would be an appropriate location for the installation of an accessible trail. Whether it be creating a new trail or upgrading an existing trail to meet with accessible standards. The trails at Selkirk College is used by both college students and staff, and by members of the community. Moreover, the college Grounds Committee has expressed interest in developing an accessible trail. The objectives for our study are:

- Determine the supply of current Accessible Trails in the Castlegar Area
- Determine the demand for such trails
- Find existing trails, or new locations on Selkirk College grounds that would need minimal alteration to become an accessible trial

4. Methods

This research project was completed with Robin, with advice and guidance from Tim Thurston, Chair of the Selkirk College grounds Committee, and Jim Lietch, the instructor for the Adult Special Education Program at Selkirk College. Our research was conducted from October 2019 to April 2020 and was based both in the lab and in the field on the Campus Grounds

4.1 Study Area

Castlegar is located in the West Kootenay region of southeastern British Columbia (BC), and is the location for the central campus of Selkirk College. It is part of the RCDK but on the border with the RDKB, so residents in both regions would benefit from an increase in accessible trails at Selkirk College. The college is located adjacent to the southeast of the confluence of the Columbia and Kootenay rivers (Figure 1), and across the Columbia River from the City of Castlegar as shown in Figure 1. Selkirk College is a community college with multiple campuses in both the West Kootenay and Boundary regions and it has 2,771 full time students (Selkirk College 2020),



Figure 1. Google Earth Pro Photo showing location of Selkirk College, Castlegar Campus.

The Castlegar Campus is located on a broad peninsula and surrounded by largely undeveloped land with 9.8 km of an established trail system (Gillis 2010). The trails are multi-purpose and are used for hiking, dog-walking, and mountain biking. Trailforks (2019), a mountain bike app, rated the trails as a mix of easy and moderate. The peninsula is made up of a raised plateau with forest at lower elevations, and meadows around the flood plains of the Columbia River. The trails are maintained by a trail crew made up of Selkirk College students and overseen by the college Grounds Committee.

4.2 Supply and Demand

To determine the demand for an accessible trail, my research partner Robin and I, used the 2016 Canada census data accessed from the Statistics Canada website to determine regional population numbers including people with disabilities. We used this data to find general information, such as population, average age, and number of people with disabilities, for the West Kootenay region and the three main cities, Trail, Castlegar and Nelson in the Castlegar Area. We also used British Columbia data from the Ministry of Social Development and Poverty Reduction, to gain a better understanding of the statistics for people who suffer with disabilities. The supply aspect was determined by contacting the Regional Distrct of Central Kootenay (RDCK) and the Regional District of Kootenay Boundary (RDKB), the municipalities of Trail, Castelgar and Nelson, and local trail societies, asking for any available information on existing accessible trails in the Castlegar area, and if there were any plans to develop more. The trail societies that we contacted were the Kootenay Adaptive Sport Association, the Castlegar Parks and Trail Society, and the Columbia Kootenay Trails Society.

4.3 Lab Methods

The School of Environment and Geomatics at Selkirk College has a four-year GIS program, and, because of this on-site resource, there has been extensive mapping of the Castlegar Campus. We obtained use of this information and gathered additional information on the physical characteristics of the trails using ArcGIS 10.7. We then created maps that differentiate the trails based on gradient (%) and width (m), using a digital elevation model with an aerial photo overlaid on top, to determine the trail sections most appropriate for upgrading for accessibility. An accessible trail should be no greater than 5% unless there are flat resting areas every 15m and they need to be at least 92cm wide but 120cm is preferred (Keroul 2008). The data was only available at low resolution, $25m^2$, we were not able to get precise gradients and widths of the existing trails but it allowed us to gain further understanding of what areas of the campus grounds had trails that would be most suitable for upgrading.

Google Earth Pro was then used as it is more user friendly and offers higher resolution data which allows for more precise measurements and more accurate elevation slope profile. This allowed for eliminating trials that were undesirable and looking for potential locations for a new trail. The reason a new trail is being considered is because one of the desires expressed by the Grounds Committee was to have a trail that would allow for access down to the river and by going through this process it was determined that upgrading an existing trail would not be realistic for reaching this goal. A desirable path for the new trail was identified on Google Earth Pro that appeared to be within the desired slope gradient and linked up sections of existing trail. Once we identified the most desirable existing trail, and a desirable location for a new trail we surveyed them in the field.

4.4 Field Methods

To groundtruth the desirable existing campus trail, based on our map projections, we used a Garmin hand-held GPS unit and a Suunto clinometer to determine the actual gradient of the proposed trails. To do this we would start at one end of the trail and would take a waypoint. One researcher would stay at the waypoint and the second researcher would walk along the trail until there was a noticeable change in the gradient of the trail or they were about to lose sight of the previous waypoint. Once either of these happened the second person would mark a waypoint on their GPS. Then both researchers used their clinometers to record an agreed upon slope gradient while facing each other. This was repeated until the entire trail was surveyed.

To determine if the new trail location would be possible, it consisted of exploring the identified area that would start at the northern parking lot with a clinometer and GPS to find and record possible pathways that were less than 5% and would connect to existing trails that would eventually make its way to the river.

5. Results

5.1 Demand

By looking through the data from the 2016 Canadian Census from the Statistics Canada website we determined that there are 78,463 people who live in the Kootenay-Boundary area of British Columbia, of which 32,370 or 41 (%) people live in either Trail, Castlegar or Nelson. Our research found that 22% of the Canadian population have at least one form of a disability and 10% of the population reporting having a mobility related disability. The British Columbia Government reported that 24.7% of the population had at least one form of a disability (Ministry of Social Development and Poverty Reduction 2019). The average age in Canada in 2016 was 41 and the average age for the Kootenay-Boundary Health region was 45.8 which means more elderly people and with greater age comes more disabilities (United Nations 2015). By sticking with the more conservative Canadian Government numbers we estimate that the population of people with a mobility-related disability in the Kootenay-Boundary region, or those people who may need use of an accessible trail, is approximately 7,850 people, of which, 3,240 live in either Trail, Castlegar or Nelson

5.2 Supply

We contacted the cities of Trail, Castlegar, and Nelson, Regional District of the Central Kootenay (RDCK), and non-profit trail societies, Kootenay Adaptive Sport Association, Castlegar Parks and Trails Society, and the Kootenay Columbia Trail Society to find information about accessible trails in the region. In Trail, trails at Gyro Park and the Esplanade walkway are determined to be accessible to people with mobility-related disabilities. Castlegar has one accessible trail in Millennium Park called the Millennium Walkway. The RDCK is currently working on two projects. In Winlaw, the RDCK is repairing a portion of the Slocan Rail Trail, as well as conducting another repair to the Galena Trail, a historic trail from Sandon to Nakusp. The RDCK also has a long-term plan of making the Cottonwood Lake Regional Park, just south of Nelson, into a fully accessible park. The other organizations we contacted either did not respond or did not have valuable information.

5.3 Potential Trial Location

The Selkirk College Grounds Committee and Jim Lietch, an Instructor for the Adult Special Education Program at the College, both have a desire to build an accessible trail that would allow access to the river for everyone. They were also interested in looking into the old orchard that surrounds the Mir Center because there was already a management plan in place for this area to help maintain and improve it. The old orchard at the Mir Centre on campus already has an 800m loop trail with an optional shortcut that is 100m long that makes the trail 470m, for a total of 900m of trail. The benefit of having this shortcut is that if someone does not feel comfortable being far away from there vehicle, or from help, they do not have to be.

There is a parking lot at the trailhead which offers easy access. This trail is wide, 1-2m, and relatively flat, a goes along the edge of a plateau that overlooks the Kootenay River to the North and the Columbia River to the South. On the inside of the loop is the old orchard which has spaced out fruit trees with tall grass and brush in between. The vegetation along the edge of the trail is mostly grass with the odd clump of brush. As mentioned, the trail is relatively flat but there are two sections on the east portion of the trail, shown on the map in figure..., were the

trail gradient is on the border of what is acceptable for accessibility. To make these sections more comfortable for the user, when a slope gradient is between 5.1 and 8.3, which these sections are, a flat platform would have to be installed every 15m to allow for resting.

A second potential location for a trail was identified that would provide access down to the shoreline of the confluence of the Columbia River and Kootenay River. This trail would be a combination of upgrading existing trails, as well as construction of new sections of the trail. The construction of new sections of the trail would be necessary to avoid parts of the existing trails that are too steep for accessibility. This new trail would start at the lower parking lot at the north end of the campus which can be seen on the map in Figure 1. This would be the highest point on the trail. From there it would join up with an already existing trail that walks along the top edge of a short hill that runs down to the river.

When the existing trail goes down the hill to the river it becomes too steep for an accessible trail so the new trail will cut southeast through a forested patch. Some trees would have to be removed for the construction of this section of trail. It then goes through a small open grass area and crosses an ATV access trail before entering another patch of forest continuing southeast. It then enters an open meadow where the trail has a junction with a detour that goes north that goes to a viewpoint at the confluence of the Columbia and Kootenay rivers. Part of this detour goes through thick brush which some would need to be removed for the path. Once it crosses the brush it joins up with an existing trail before it cuts through some more brush and finally ends up the viewpoint. From the junction the trail continues southeast through the meadow with and has a short spur straight east the goes to another viewpoint that goes along the Oxbow. Further southeast the trail joins up with an existing trail that goes along the Oxbow. The trail finishes at Welsh Road, but before it reaches the road there is a mellow hill that is too steep for accessibility so the new trail would go through the meadow to the south and meet back up with the existing trail before ending at the road. Altogether the trail would be around 1550m of which 870m would be upgrading existing trail and 680m would be constructing new trail.

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Figure 2. A map of a proposed accessible trail for the Mir Centre at Selkirk College, Castlegar Campus



Figure 3. Map of proposed accessible trail at Selkirk College, Castlegar Campus.

6. Discussion

6.1 Demand

The saying goes "if you build it, they will come" but, determining how willing someone is to travel to a trail is difficult. A higher quality and accessible trail could entice a broader demographic people but would be more costly to construct. Building a single accessible trail at Selkirk College could pull in the area's residents but it might not be enough to convince someone from Nelson or Trail to drive out and use the trail. Starting with this one trail could potentially lead to the building of more trails on the college grounds, creating a larger system that would be more likely to attract a greater number of users.

To determine the demand, we used demography statistics from the Province of British Columbia as well as Canada, although these numbers only give us a general idea of the amount of people who have a disability in the area, there are other demographics of people who would benefit from an accessible trail such as parents with kids in a stroller, or the elderly. A greater amount of research should be conducted to gather more accurate numbers for these demographics and see if they are interested in accessible trails and what opinions and suggestions they may have, such as possible amenities that could be incorporated into he trail project. Furthermore, a survey could be conducted to see what the likelihood of people using the trail and what other factors might limit access to trail, for example, if a bus stop is not close enough.

6.2 Supply

One main reoccurring theme that has come up in the research is that there is minimal information on accessible trails especially in the West Kootenay region. It was hard to find information on any as a researcher and I am sure it would be very difficult for someone who is just simply looking for an accessible trail near to them. If an accessible trail is to be built at Selkirk College, it would be beneficial to advertise it and make sure it is easy for the public to find.

We based our information of the supply of accessible trails on what the municipalities and regional district told us, but we did not assess them in person. A further assessment of these trails should be done to determine if they have been maintained so that they to keep up with the standards of accessibility. And, if they are older trails it is possible that the standards for

accessibility have evolved and they no longer fit that category. This would help gain a better understanding of what the true supply of accessible trails are in the Castlegar area.

6.3 The Trails

The benefits of the Mir Centre trail is that there is already an existing trail which means less environmental disturbance, it is already used and know by students and the community, and it has an option of a shortcut for those who are not comfortable being far from there vehicle. Keroul, the consulting company whose standards we used to guide us, says that a trail that is universally accessible should be no longer than 300m. By having the shortcut, this is possible as the user would never be more than 300m away from the trail head. The benefit of upgrading an already existing trail is that, even though it would have to be resurfaced, is that is provides a solid, already compacted base to work off of. This would mean that there would be less of need for using large machinery which lowers the cost, and there is less of an environmental impact because most of the impact already happened with the original trail.

The benefits of building the trail down to the river is that getting down to the river was a desire mentioned by both the Grounds Committee and Jim Lietch. It is longer, which might be more attractive for people as it is not just a short walk but being longer might deter someone who do not want to be too far from there vehicle. The trail connects two places together which means it could be benefit commuters as well. One of the Trail Heads is right by the college so this could encourage more use by students and staff. Some of the negatives of this trail is that is that to construct the new sections of the trail would have a greater environmental impact as some trees and bushes would have to be removed, and there would be ground disturbance in order to make the path level and smooth. I would suggest an environmental impact assessment be completed before there is a commitment to this trail, to better understand the impacts it may have.

Being a longer trail with sections that would need to be built from scratch means it will be a more costly project compared to the Mir Centre trail. Using a cost analyse done by the City of Guelph Ontario they determined that constructing a new trail with an asphalt surface would cost \$70 per linear meter (lm) and to upgrade an existing trail to asphalt would cost \$45 per lm. Using these numbers, the trail down to the river would cost around \$87,000 to build were as the Mir Centre trail would cost around \$41,000. Although the Mir Centre trail is much cheaper and is

scenic, the trail is very uniform with not much variety were as the trail to the river goes through forest, meadows, brush and along the river which would offer a greater variety of ecosystems to the user.

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