



Columbia Shuswap Regional District
Fire Services Review: Kicking Horse Resort

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1. Introduction

Kicking Horse Mountain Resort (the “Resort”) is a major ski resort located 15 kilometres west of Golden, accessible by way of a single two-lane paved road. The Resort’s commercial and residential development is clustered around the base of the ski hills. There is a central, public plaza around which hotel and commercial development has been (and will continue to be) located, with single family residential and townhouse complexes located away from, but still proximate to, this central core. Based on the current master plan (the “Master Plan”)¹, all residential development will occur within several kilometres of the central plaza.

There are nearly 1,600 “bed units” in the Resort, with about half accounted for by hotels and bed & breakfast operations, and the rest by residential townhouses and single family homes. At present, there are essentially no staff accommodations at the Resort, so employees are based in Golden and the surrounding area. The next development phase (to 2018) contemplates the construction of employee housing.² There are an estimated 15-20 full time residents in the Resort.

There currently is no fire service at the Resort and, in general, no fire department which will respond to a fire event.³ Both people and property are therefore at risk, and fire insurance costs are significant. The Resort’s developer (the “Developer”)⁴ commissioned a study by CGI Municipal Consulting Services (“CGI”) in 2006, to examine the available options for developing a fire service.⁵ At the time, CGI noted that the lack of full time residents made it financially and logistically impractical to establish a fire service that would be recognized for insurance purposes. Their recommendation at the time was that an industrial fire brigade be created, with an essentially fulltime fire chief/Resort safety officer, until such time as there were sufficient local residents and employees in residence at the Resort to establish a more traditional volunteer or composite fire department.

¹ Pheidias Project Management Corporation, *Kicking Horse Mountain Resort 2008 Master Plan* (2008).

² Pheidias Project Management Corporation, *Kicking Horse Mountain Resort 2008 Master Plan: Executive Summary* (2008), at p. 18 (the “Executive Summary”).

³ The Ministry of Forests and Range would respond only to a forest fire; any protection for residential or commercial structures would be purely ancillary. Otherwise, it would take the use of emergency powers by one or more levels of government to direct other jurisdictions’ fire response units to the Resort.

⁴ Kicking Horse Mountain Resort Limited Partnership.

⁵ CGI Municipal Consulting Services, *Development of a Fire Protection Plan for Kicking Horse Mountain Resort* (July 2006) (the “CGI Report”).

The Resort and some local property owners have again indicated that they would like to develop a fire department. Their aim is to establish a fire service which would meet the minimum requirements of the Fire Underwriters Survey (“FUS”) to lower fire insurance rates. The lower insurance rates would, for a time, be offset by significantly higher taxes for existing property owners, but the taxation levels would drop over time as further development occurs. In the interim, residents and property owners would enjoy the protection of a functioning fire department. The Developer has indicated that it is prepared to assist with the development of the fire department, including providing the land upon which a fire hall (or emergency services building) can be constructed.

This report reviews the requirements for establishing a qualified fire department based on both National Fire Protection Association standards and the expectations of the FUS, identifying the key challenges to be overcome and recommending approaches for successfully addressing these issues. In addition, the report considers the manner in which this new fire suppression area should relate to the proposed merged fire suppression area operating in other parts of the CSRD.

2. Executive Summary

The Resort is both a major tourist destination and growing residential community. It poses a number of unique challenges in terms of developing and maintaining a fire service, which, if they are to be overcome, will require close coordination between the CSRD, the Developer, other commercial entities and the local community.

The Resort presents a number of significant fire risks: there is clustered, high-density development; many of the buildings are three storeys or over⁶; both the commercial and residential buildings have significant replacement cost values; as a tourist destination, there is a large transient population; and there is a significant interface risk. In addition, there is a very small permanent population, and Resort employees living off the mountain will be too far away to provide an effective volunteer fire response. Against this, there is a hydrant system throughout the developed portions of the Resort, and the compact nature of the layout means that response times from a centrally-located fire hall will be good.

The aim in developing a fire service is two-fold: to reduce the risk to life and property; and to develop a service which meets the standards required by the FUS so that reductions in insurance costs off-set some or all of the increased taxation that will be needed to cover the costs of establishing and operating a fire department.

Establishing, staffing and training a fire department, however, will require close coordination between the various stakeholders. The CSRD and the Developer should establish a firm understanding of their respective commitments in this regard. This understanding should cover matters such as: employment opportunities for volunteer fire fighters; employee housing; development and maintenance of a compliant water supply; sharing of costs in relation to a part-time Fire Chief; and implementation of rules or bylaws governing construction standards and managing course-of-construction fire risks.

The CSRD has well-developed standards and a program for overseeing fire service training, which will be important as the new department is launched. The CSRD is also in the process of upgrading and improving administrative support provided to its regional departments, which will assist in matters such as equipment procurement, development of operational guidelines, maintenance of training records, occupational health and safety issues and similar matters.

⁶ The maximum planned height is four to five storeys. There currently are buildings as high as five storeys, when lofts are included. The underwriters look at all buildings in excess of 10.7 metres when considering whether a community requires an aerial apparatus.

The recommendations flowing from this report are set out in section 7 and cover (1) Staffing and Training; (2) Fire Hall, Equipment/Apparatus and Budget; (3) Resort Development Issues; and (4) Implementation.

3. Kicking Horse Mountain Resort – Overview

The Resort is a “Controlled Recreation Area” under the *Resort Timber Administration Act* (B.C.), and is about to enter its second major phase of development. Development at the Resort is closely controlled, and subject to the terms of a master development agreement with the provincial government. It is located some 15 kilometres west of Golden, with access by a single paved, two-lane roadway. Travel time from Golden is approximately 20 minutes with good conditions and potentially longer during bad weather. Residential and commercial development is concentrated in a relatively small area, at about the 1,300 metre level on the mountain. The Resort itself extends less than two kilometres east and west of the central commercial plaza, though its size will increase significantly over the next planned phases of development. Even at full planned build out, however, the distance from the approximate centre of the Resort (near to which an emergency services building/fire hall is most likely to be established), will not exceed five kilometres.

The Resort’s road system is to be constructed to a two-lane local standard, with design speeds of 40-50 km/h, and a maximum grade of 12%.⁷ While winter weather is obviously an issue, the Resort is well equipped with the snow clearing and other heavy equipment.

The Resort currently has some 1,600 “bed units”, comprised of a mix of hotels, “condotels”, bed & breakfast establishments and private housing units. While the aim of the Resort is to become a “four seasons” destination, at present it is heavily weighted towards the winter ski season, with a less well developed summer season, and two distinct “shoulder” periods in between. During peak season, as many as than 2,800 skiers per day currently use the Resort’s facilities.

There are approximately 15-20 permanent residents, and a core staff of about 75 at the Resort, plus an additional 25 employees of other commercial operations. During the winter season, Resort staffing levels increase to about 200 (plus an additional 100 or so staff at local, tourist-oriented businesses). Estimated seasonal staffing levels are set out in Appendix A.

The current Resort infrastructure does not include any employee housing, though several hundred bed units are planned for the next phase of development.⁸ Until such housing is available, whether either as part of an emergency services building or otherwise, the vast majority of staff will commute to the Resort from Golden. The

⁷ Master Plan at p. 93.

⁸ Executive Summary at p. 18.

commute is too far for off-Resort employees (or residents of Golden) to be included in providing an initial response for a Kicking Horse Volunteer Fire Department (“KHFD”).

Construction at the Resort is subject to the terms of the Developer-established planning and design guidelines, in addition to the requirements of the BC Building Code and BC Fire Code. Although the CSRD does not conduct building construction plan reviews or inspections, or issue building permits, all single family homes must be approved by the Developer from an architectural design context. In addition, the Developer has instituted a coordinated registered professional review process, to ensure that there is confirmation each single family dwelling is compliant with the BC Building Code and BC Fire Code.

Most of the single family housing units currently are located to the west of the central plaza, with townhouse/condominium complexes to the east. The central plaza itself consists of mixed commercial use / hotel – “condotel” construction. Maximum planned building height is four to five storeys. The major buildings in the Resort, as of 2008, are set out in Appendix B. The major commercial buildings in the Resort are sprinklered, and the Developer has advised that all commercial properties are subject to Parts 3 (fire protection), 4 (structural), 5 (Environmental separation), and 6 (HVAC) of the BC Building Code.

In relation to fire risks, the 2006 CGI Report noted:⁹

“Fire risks and hazards are primarily associated with the profile of the community’s building stock, property values, property replacement values and the transient nature and concentration of resident and tourist visits. In addition, parts of the built community have high forest interface exposures - particularly residential subdivisions.”

Fire risks are considered further in section 5.5 below.

There are fire hydrants located throughout the Resort, in all built-up areas. The water and hydrant system is planned to be expanded as further development occurs. The Master Plan indicates that water flows and supplies, as well as design, will be in accordance with FUS water supply requirements and will be expanded as the Resort is built out.¹⁰ It will be necessary to have the water system and hydrants professionally reviewed, however, to ensure that there is the necessary water flows and hydrant arrangement to meet FUS requirements. The issue of whether the water system meets

⁹ CGI Report, at p. 17.

¹⁰ Master Plan, at pp. 112-13.

all of the FUS requirements will impact the insurance grading that the community will be able to receive.

The Master Plan also notes that in developing the Resort, planners have actively considered and addressed the potential issues arising from the interface risk. The Master Plan includes guidelines related to defensible space, building location, roofing materials, vents, siding materials, restrictions on additional structures and sprinklers.¹¹ In relation to sprinklers, the Master Plan indicates that additional requirements in this regard may be introduced (including for residential construction). Given the overall fire risks faced by the community, this move would be favourably regarded by the FUS. Other communities which have introduced such bylaws or requirements, have received improved overall fire ratings as a result.¹² As a minimum, larger residential dwellings (over 3,600 square feet) should have this requirement imposed on them (as that is the maximum size for a “typical” dwelling for insurance industry purposes – see footnote 13 below).

¹¹ Master Plan, at pp. 120-21.

¹² For example, Sechelt has a sprinkler bylaw which has been favourably considered by the underwriters. (Information from discussions with Chief Higgs in September 2008.) In general, having such bylaws in place tends to mitigate other requirements (such as fire flow calculations, issues related to fire department equipment and other factors). The 2006 CGI Report also recommended that the Developer look at instituting such a requirement.

4. Requirements for Establishing a Compliant Volunteer Fire Department

4.1. Fire Underwriter Survey and NFPA Requirements

The aim is to establish at the Resort a volunteer fire department which meets FUS standards, in addition to those established by the Province and the CSRD. By meeting FUS standards, residents will enjoy a significant decrease in the cost of obtaining insurance, in addition to enjoying the safety benefits of having such a service available. By and large, many of the FUS standards are based on or derived from those established by the National Fire Protection Association (the “NFPA”).¹³ The requirements of both the FUS and the NFPA will be considered.

4.1.1. FUS Requirements – General

Insurance companies utilize two different FUS rating systems when setting insurance rates for a particular community (or property within a community): the “Dwelling Protection Grade” (“DPG”), which generally applies to single family detached residences¹⁴; and the “Public Fire Protection Classification” (“PFPC”), which evaluates the ability of a community’s fire defences to prevent and control major fires that may occur in commercial, industrial and institutional buildings and/or districts, and generally is applied by the “commercial lines” arm of the insurance industry or to multi-family residential complexes.¹⁵

The DPG is a five-point numerical scale, while the PFPC is a 10 point scale. In both cases, a “1” is the highest rating achievable. In general, significant reductions in insurance rates can be expected for residential property owners where the DPG rating is either 3A or 3B or better¹⁶; while for commercial operations, a PFPC rating of 7¹⁷ or

¹³ For example, the FUS refers NFPA standards for various equipment, apparatus, training and operational standards.

¹⁴ Under the FUS definitions, the DPG ratings generally apply to the following: “One- and Two-Family Detached Dwellings (buildings containing not more than two dwelling units) in which each dwelling unit is occupied by members of a single family with not more than three outsiders, if any, accommodated in rented rooms.” Also under this system, a “typical” detached dwelling is a maximum of 3,600 square feet in size. Fire Underwriters Survey website, “Terms of Reference”, http://www.fireunderwriters.ca/dpg_e.asp accessed on 5 April 2010.

¹⁵ Fire Underwriters Survey website, “What is the PFPC” at http://www.fireunderwriters.ca/pfpc_e.asp , accessed on 5 April 2010.

¹⁶ The DPG 3B rating is essentially the same as the 3A rating, but without an FUS-approved water supply and additional equipment requirements. Based on Fire Underwriters Survey, “Synopsis: Feasibility of Fire Protective Services within Apex Mountain Resort” (undated [2006?]) (at p. 3), and other publicly available CGI or FUS documents, a 3B rating generally falls into the semi-protected category for insurers. A “semi-protected” classification still produces significant insurance cost savings. The “Synopsis” is based on a

better generally is needed. It should be emphasised that the system is quite fluid, and individual insurers can and will set rates based on considerations other than the FUS ratings (either higher or lower, depending on the insurer's perception of actual risk, competitive concerns and other factors).¹⁸

Dwelling Protection Grade. The FUS minimum requirements for an insurance industry-recognized fire service at "Dwelling Protection Grade 3A" (which is the grade at which insurance costs for homeowners is materially reduced), are as follows:¹⁹

Water Supply. The community must have an FUS-recognized water supply system. The FUS stipulates that the "absolute minimum water supply volume requirements recognized" include a hydrant system capable of delivering 200 Imperial gallons per minute ("g.p.m.") for 2 hours or 400 Imperial g.p.m. for 1 hour, in conjunction with domestic consumption at maximum daily rate. There must be a minimum of 24,000 Imperial gallons of water in available storage, certain residual pressure maintained and other qualifications met. The water supply system and hydrant arrangement has not been fully reviewed against FUS requirements (including fire flow calculations). This effort should be undertaken to determine the adequacy of the existing system.

Fire Department. For each fire hall with a Dwelling Protection Grade 3A, the credited available responding fire force will include, at a minimum:

- 1 Fire Chief (required to respond but not required to be on-duty); and
- 15 auxiliary fire fighters scheduled to respond.

Fire department volunteer members must work and reside within a reasonable travel distance to the fire station thus avoiding undue delay when responding to fires.

2006 FUS report prepared for the Regional District of Okanagan Similkameen ("RDOS") in relation to the potential establishment of a volunteer fire department at the Apex Mountain resort.

¹⁷Based on FUS, "Synopsis", at p. 7. PFPC ratings of "8" and above are generally treated as unprotected.

¹⁸ See a list of other factors on the Fire Underwriters Survey website, "How the PFPC affects individual insurance policies" at http://www.fireunderwriters.ca/pfpc_e.asp , accessed on 5 April 2010.

¹⁹ Source: This information is drawn from the CGI Report, a document entitled "Dwelling Protection Grades", prepared by the Fire Underwriters Survey (undated), and the Fire Underwriters Survey website, "Dwelling Protection Grade 3A", at http://www.fireunderwriters.ca/dpg_e.asp accessed on 5 April 2010. Reference was also made to the "Synopsis" report by FUS cited above.

Apparatus. For each fire hall, fire apparatus must include a minimum of one triple combination pumper rated at not less than 840 Imperial g.p.m.²⁰ at 150 p.s.i. and designed in accordance with:

- Underwriters' Laboratories of Canada (ULC) S515 Automobile Fire Fighting Apparatus, or
- NFPA 1901 Standard for Automotive Fire Apparatus.

Fire Hall. Equipment must be housed in a well designed and located fire station.

Training. Training drills must be held regularly (preferably weekly). Adequate training records must be maintained.

Emergency Communications. An adequate and reliable means of receiving alarms of fire and dispatching fire fighters is necessary (e.g., public fire number, pagers etc.).

Boundaries. The boundary of the protected area must be clearly established and registered with the Provincial Government.

The DPG rating applies to dwellings within 8 kilometres of a fire hall and 300 metres of a fire hydrant.

If a community's water supply is not fully FUS-compliant, in general the maximum achievable DPG rating is "3B" (which provides "semi-protected" status). This classification requires the addition of a tanker truck to the mandatory fire department apparatus. The tanker truck must:

- have a 210 Imperial g.p.m. (at 150 p.s.i.) permanently mounted pump;
- meet either ULC S515 or NFPA 1901 standards, and
- have a water-carrying capacity (when combined with the pumper unit) of not less than 1500 Imperial gallons.

In addition, there must be:

- a transfer system capable of supplying the pumper, which may be accomplished by pump or dump valve to a portable tank of at least 1000 Imperial gallons capacity; and

²⁰ Note: there is a difference between the information on the FUS website (which stipulates a triple pumper with a capacity of 625 Imperial g.p.m.) in comparison with the CGI report and the separate "Dwelling Protections Grades" document, both of which stipulate the higher number (840 Imperial g.p.m.) referred to above. Out of an abundance of caution, we have used the higher number.

- a refill capacity from a hydrant system or using a portable or major pump of not less than 100 Imperial g.p.m. minimum capacity at 40-60 p.s.i. on each unit.²¹

A community using tankers for water supply, can receive the equivalent of a DGP 3A rating if it obtains “Superior Tanker Shuttle Service Accreditation” from FUS (the actual rating is “DGP 3B(S)”). The requirements for achieving this status are quite detailed: in general, it requires a fire department to prove that it can flow 200 imperial gallons of water per minute for two hours by shuttling water back and forth from a hydrant or other source of “infinite” water from a location at least 5 kilometres away.²² Within the CSRD, the Sorrento-Blind Bay Volunteer Fire Department achieved this accreditation in 2006 (with a corresponding improvement in their FUS survey rating, and drop in insurance rates).

Both DPG 3A and 3B ratings are independent of the PFPC rating. So, a community can have a PFPC rating of 9 or 10, but still have a DPG rating that results in a reduction in fire insurance costs for residential homeowners.²³

PFPC Rating. The PFPC rating, which is determined at the same time as the DPG rating, is based on similar, but less specific factors. As indicated above, insurance premium relief generally becomes significant once the PFPC rating drops to 7 or below. The following factors are integrated into the PFPC assessment:²⁴

1. Fire Risk, including analysis of required fire flows for individual buildings, building groups and zones of similar risk (Fire Flow Demand Zones) of the community. The overall fire risk appears to be factored into each of four succeeding factors by FUS (so, one consideration for how the fire department is rated, is how well it can deal with the assessed fire risks in the community);
2. Fire Department, including apparatus, equipment, staffing, training, operations and administration, and geographic distribution of fire companies/fire hall

²¹ Again, there are some minor differences between the requirements as set out in the 2006 CGI Report versus those set out on the Fire Underwriters Survey website. In each case, the more stringent requirements have been cited.

²² FUS, “Alternative Water Supplies for Public Fire Protection” (2009); Sharon McInnes, “Extinguishing the Cost of Cottage Insurance,” *Cottage Magazine* (Sept-Oct 2009), 39-41, at p. 40.

²³ This appears to have been the experience at other mountain resorts, including Sun Peaks and Panorama – which had DPG ratings of 3A and 4, respectively, but whose corresponding PFPC ratings were 8 and 9, respectively (in each case, in 2006). CGI Report, at p. 36

²⁴ From: Fire Underwriters Survey website, “How the PFPC grading system works”, at http://www.fireunderwriters.ca/pfpc_e.asp, accessed on 5 April 2010.

location. This involves an analysis of the fire department's ability to effectively extinguish fires in all parts of the community and counts as 40% of the weighting in the FUS survey. In reviewing other FUS surveys, it is obvious that high occupancy, multi-storey structures significantly impact the apparatus required by a community, if it is to obtain a favourable review. [See the discussion in section 5.3, and at the end of Appendix B];

3. Water Supply system, including source to distribution analysis, redundancy factors, condition and maintenance of various components, and storage volume. The analysis of the water supply system starts at source and follows through to the hydrants. FUS examines representative areas of the community to determine water flow requirements and conducts flow tests to determine the adequacy of supply. In reviewing some available FUS surveys, it is obvious that fire load calculations materially affect water supply requirements. When building out the water supply, the Developer should get advice from the FUS as to the likely fire load factors that it will need to address. Water supply counts as 30% of the weighting in the FUS survey;
4. Fire Prevention and Fire Safety Control programs including public education, codes/bylaws implementation (e.g., fire inspections) and use of codes/bylaws in managing the level of fire risk throughout communities. This covers matters such as building codes and inspections, the presence of sprinklering bylaws, proper fire controls during construction phases of development, and similar matters. One benefit of having a fire department will be that it can take responsibility for public education on fire safety and prevention – including the Fire Smart program, which is aimed at interface situations such as are faced by the Resort. These factors count as 20% of the weighting in the FUS survey; and
5. Emergency Communication systems, including telephone systems, telephone lines, staffing, radio communications, and dispatching systems. CSRD departments are now being dispatched by the Surrey Fire Department, which has a modern and professional operation. Other issues will include the paging system and local (tactical) radio communications. Communications count as 10% of the weighting in the FUS survey.

The PFPC rating is essentially a benchmarking against various standards or requirements in each category (and in relation to other communities).

As noted above, the PFPC rating is largely independent of the DPG rating²⁵. In the 2006 CGI Report, it is described as follows (Appendix B, p.2):

“Public Fire Protection Classification refers to the ability of the fire department to effectively respond to fires in “commercial” properties (all properties other than detached dwellings including but not limited to condos, hotels, lodges, restaurants, shops, assembly occupancies, etc.).

If the PFPC grade is 8 or above, “commercial” properties (all those other than detached dwellings) are **unlikely** to receive a significant cost reduction in their fire insurance rates. It would be very onerous for the KHMR community to support a fire protective service that would qualify for a PFPC of below 8. The community would need a well established fire department with a high level of staffing, apparatus and organization. Once the community has achieved a Dwelling Protection Grade of 3A, they may wish to commit to increased levels of fire protection and staffing to work towards a PFPC of 7. (Emphasis added)

4.1.2. NFPA Requirements – General

The general requirements for an NFPA-compliant volunteer department are set out in NFPA 1720.²⁶ The NFPA also sets standards applicable to other aspects of fire department operations, ranging from training and operations to emergency communications.

NFPA 1720 establishes basic standards for organizational and operational aspects of volunteer fire departments, including staffing levels and deployment goals. In relation to staffing and deployment, section 4.3:

- Requires that a fire department “identify minimum staffing requirements to ensure that a sufficient number of members are available to operate safely and effectively” (s. 4.3.1);
- Establishes staffing and response time objectives for residential structural fires (s. 4.3.2); and
- Requires that a fire department have the capability of safely commencing an initial attack on a fire within 2 minutes, 90% of the time, following assembly of the necessary resources at an emergency scene (s. 4.3.3).

²⁵ This is true to DPG 3A. To achieve higher DPG ratings, however, also requires specific PFPC classifications.

²⁶ National Fire Protection Association, “Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments,” 2010 edition.

The staffing and response time objectives in section 4.3.2 vary with the classification of the community in question. In general, it requires that more densely populated areas have more fire fighters respond, more quickly, than in less densely populated areas. It is not clear, however, how the Resort (with a large day time and much reduced night time population – even during its peak season) would be classified under the demographic calculations that are used.²⁷ Assuming that it would be considered a “Rural Area” demand zone, it would suggest that a fire department would need to assemble a six person team at the emergency scene within 14 minutes, 80% of the time. In general, however, a six person team so assembled would be able to commence significant work at a structure fire, including a potential interior attack.

4.2. Benchmarking with other Mountain Resorts

In connection with the review being conducted, we contacted several other ski-resort based fire departments, including those at Big White, Sun Peaks, Apex Mountain, Silver Star and Panorama. Unless otherwise noted, the information cited below comes from our discussions with the respective fire services, whose assistance is gratefully noted.

Big White. Fire protection at the Big White Ski Resort is provided by the Big White Fire Department (“BWFD”). Big White Ski Resort has a daily use capacity of 25,000 people, with on-resort accommodations for 20,000. The BWFD has been in existence for about 20 years. It has some 30 paid on call fire fighters under the direction of 3 full time paid officers. In addition to fire suppression services, BWFD also provides vehicle extrication/rescue, rope rescue, first medical responder, fire investigation, hazardous materials, juvenile fire setter intervention, fire inspection, and fire prevention. This range of services is far broader than those offered by CSRD fire departments (which are currently only providing fire suppression and a certain amount of fire education services).

To deal with its recruitment issues, BWFD has established a Work Experience Program (“WEP”) under which it recruits individuals who have already achieved the NFPA 1001 certification and pays them a modest on-call wage to act as paid-on-call firefighters for the department. These members (six in total) are provided with housing at the fire station at no cost and are assigned to two separate shifts of 4 nights (1800 – 0800 hrs) on duty and 4 nights off. These members commit to a 10 month contract.

²⁷ According to the notes to NFPA 1720, the demographic designations are those determined by the US Census Bureau, which would suggest they are referring to a permanent or ordinarily resident population. See NFPA 1720, Annex A, note A.4.3.2.

The WEP helps to ensure some of the required staffing levels are always met, with the balance of staffing being the other paid-on-call volunteer members who do not have to have the full NFPA 1001 certification when they join as members. The WEP members are paid at the same rate as paid on call volunteers for attending calls and practices, but also have a training allowance of \$1,500, which they can apply to obtain various certifications. Alternatively, they can opt to receive this amount as a payment at the completion of their WEP. In addition to their free accommodation, there is a commitment from Big White Ski Resort to give priority to the WEP crew in finding suitable job positions in the community while off duty. The BWFD also commits to assisting WEP candidates in searching for career fire fighting positions.

BWFD members get \$18.00 per hour (2 hour minimum) for call outs on each call.

The BWFD's total budget is somewhat in excess of a million dollars, with straight operational costs being \$434,000. The Big White resort is large, and well established, however: the basic tax rate is only about \$1.28/\$1,000 of assessed value. The resort has ratings from the FUS of DGP 3A and PFPC 7.

Sun Peaks Resort. Sun Peaks Resort was established in the early 1990s, and like most ski resorts, reflects a clustered development around the base of the ski hill. It currently has about 500 permanent residents, with accommodations for about 7,000 over-night visitors. Like BWFD, the Sun Peaks Fire & Rescue ("SPFR") is a composite department with three full time officers and 25-30 paid on call volunteers. In addition to fire suppression, SPFR provides medical first responder, wildland firefighting, auto extrication and rescue, embankment rope rescue, fire prevention, fire inspections and investigations, and public fire education services.

The SPFR operates somewhat differently than BWFD. They also have a large volunteer group (25 – 30 members) but their emphasis is on paying the members for their attendance at training and not for paid-on-call service. Their volunteer ranks receive a small honorarium for calls attended (lunch money), but primarily are paid to train. They find this a very good approach to retaining their volunteer members, while ensuring that members enhance and improve their skills. They have a work experience program, with a total budgeted cost of about \$12,000 / year.

The SPFR is a composite department, with 3 full time fire officers and one full time administrative support position. As such, its operational costs are significant. In 2009, its operating budget for fire suppression was nearly \$520,000; with administrative costs and overheads, capital expenditures and debt servicing factored in, the total for the year was nearly \$730,000. However, the tax base is large, as Sun Peaks is well established and has seen significant development (total assessed values for properties at the resort

have increased nearly 20-fold since 1996). The tax rate for residential properties relating to fire suppression is about \$1.25/\$1,000 of assessed value. Sun Peaks resort currently has a DPG rating of 3A and a PFPC rating of 7 (the latter being an improvement since the 2006 CGI Report). The SPFR Chief noted that achieving the PFPC rating provided a significant benefit to the resort's commercial operations, making the effort well worth the time, effort and money invested.

Panorama Resort. The Panorama Resort has had a form of fire service since 1980. However, the service was not taken over by the Regional District of East Kootenay ("RDEK") until 2005; prior to that it was privately funded (and essentially ineligible for an FUS rating). Since 2005, it has been funded through municipal taxes. A new fire hall was completed in 2008 and apparatus acquired, at a total cost of approximately \$2.5 million, financed through the Municipal Finance Authority on a 20-year debenture. The fire hall itself appears to have cost about \$1.0 million to build.²⁸ The annual budget of the Panorama Volunteer Fire Department ("PVFD) is in the range of \$460,000 per year, of which nearly 40% is applied to debt service. The department serves about 300 homes and condominium units, mostly vacation use, with between 35 - 40 year-round residents. The basic tax rate is \$1.51/\$1,000 of assessed value.

The PVFD has 33 paid-on-call members who get paid \$20.00 per hour for call outs along with one hour per week for the weekly training session. In addition to fire suppression, the PVFD also provides medical first responder service.²⁹ All additional training is paid at \$20.00 per hour. The members usually stay on for 2 to 3 years as most are trying to achieve as much training and certification in courses that can be used to move to a career fire position. The Panorama Resort has employee housing available on the mountain itself.³⁰

The PVFD was initially unsuccessful in its attempt to get an acceptable rating from the FUS. That FUS review, however, pre-dated the construction of the fire hall (the department used to share space in the resort's snow making facility building) and acquisition of new apparatus and other equipment. Concerns were also expressed at that time about a high turn-over rate amongst fire department members and about limitations in the water supply (which lacked redundancy: there was a single point of failure risk). The PVFD has indicated that they have successfully addressed the majority

²⁸ Minutes of the Regional District of East Kootenay Administration, Finance & Engineering Committee Meeting held at the Regional District Office on July 5, 2007, at p. 3. The contract was for \$997,731.

²⁹ Minutes of the Regional District of East Kootenay Administration, Finance & Engineering Committee Meeting held at the Regional District Office on July 5, 2007, at p. 2.

³⁰ See: <http://media.intrawest.com/panorama/pdf/StaffHousing.pdf>, accessed on 21 April 2010.

of the issues raised in the first FUS report, and the department anticipates seeking a further FUS review in the near future.

Other Resorts. Other resorts, such as Apex Mountain, have also attempted to develop a resort fire protection organization but have been unable to, in part as they did not have sufficient staff and/or full time residents from which to recruit to meet the volunteer staffing requirements for a department. In addition, when the RDOS took the issue of establishing a fire service to referendum, the local tax payers voted the initiative down.³¹ Apex has gone on to create a fire brigade that relies on ad hoc fund raising efforts (with an initial endowment of some \$12,000 that came from a previous effort to establish a fire department). These funds were used to purchase equipment (hose, nozzles, etc.) that they keep in several “fire boxes” next to some of the fire hydrants and to train a small group of volunteers. While the brigade mitigates certain of the fire risk faced by the community, it would not be rateable for insurance purposes.

Silver Star also has developed a fire protection service, which is operated by the Regional District of North Okanagan but at this time we understand that they do not meet the staffing requirements of the FUS. In 2006, Silver Star was rated PFPC 9 and DGP 4 (likely as a result of staffing issues). The latest reports indicate that they are deemed to be understaffed as many of the volunteer firefighters live off the mountain. In addition, the official community plan for the area notes that the hydrant system is “the responsibility of the strata corporation and the Regional District has no effective mechanism to ensure proper maintenance.”³² The latter is an issue that should be clarified in relation to the Resort as well. As noted in the financial analysis, a DPG 4 rating would still result in a “semi-protected” status and savings for residential homeowners on their insurance costs.

4.3. CSRD Issues

The CSRD currently is responsible for 13 volunteer fire departments, each in its own, separate fire suppression area. It is in the process of merging the existing fire suppression areas, amending the governance structure and updating its operational criteria bylaw to reflect changes in how its departments operate (including, for example, to address the role played by the CSRD Fire Services Coordinator). It is anticipated

³¹ As noted in the Apex Property Owners Association Newsletter, December 2007 from <http://www.apexpropertyowners.com/category/news/>, accessed on 8 April 2010.

³² Regional District of North Okanagan, *Silver Star: Official Community Plan* (2004?), at p. 9 (Background Report), at: http://www.rdno.ca/publications/bylaws/1925_silver_star_ocp_schedule_a.pdf, accessed on 15 April 2010.

that the changes will be implemented beginning in 2011.³³ Under the new structure, there will be a single, uniform tax rate for the merged service areas for ongoing operational costs, and future capital expenditures. Previously incurred debt will remain a separate charge on the individual suppression area's tax base (only the Falkland Fire Suppression Area has a material sum of outstanding capital debt³⁴).

The existing fire departments are reasonably long established and structurally similar. Their Chiefs and officers are paid relatively nominal stipends and the departments have substantial permanent resident populations from which to draw their recruits, without significant local housing issues. While all volunteer departments have recruitment, retention and training challenges, none of the other CSRD departments faces the unique circumstances of the Resort.

Ensuring that the new fire protection area is properly integrated into the CSRD fire services is crucial, but care must be taken to not unduly burden other taxpayers with the costs attendant on operating a service with highly specialized requirements. This covers a number of areas, including the need to have a full or half-time Fire Chief, a specialized fire hall with accommodations and similar matters.

In planning the merger of the existing fire suppression areas (the "Merger"), it was determined that it was more equitable to keep existing capital debt separate (and charged only against the taxpayers in the region where the debt was first incurred). In keeping with this approach, the initial capital costs for establishing the KHFD would be the responsibility of the local ratepayers. That being said, it likely will be materially more expensive to operate the KHFD than the other departments, given the higher costs for recruitment, retention and benefits (including accommodations and a part time fire chief) that likely will be necessary. Those additional costs should really be localized to the Kicking Horse service area. Kicking Horse residents would therefore pay the general fire service tax, plus an amount reflecting the capital costs of establishing their fire department and additional operating expenses peculiar to the department. Overall, even structured in this fashion, the integration with the larger CSRD regional fire service area will almost certainly be of benefit to Kicking Horse taxpayers (as opposed to operating as an entirely separate fire suppression area).

In relation to the Merger, we have been advised by the Ministry that the only way to keep the existing debt segregated is to (1) retain the existing fire suppression area, while (2) expanding the boundaries of the merged service area to encompass the

³³ Implementation is subject to a number of pre-conditions, including approval of the Ministry Community Development, Area Director approval, Board approval and the results of public feedback.

³⁴ Eagle Bay has a small amount of debt outstanding that will be repaid in 2011.

retained area. In essence, it requires creating two co-existing fire suppression service areas.

On that basis, it will be necessary to create a fire suppression area for the Resort. This “Kicking Horse Fire Suppression Area” would be used to incur the capital costs involved in establishing a new fire department. Once established, the boundaries of the merged CSRD Regional Fire Service Area would be expanded by adding in the area around the Resort to be serviced by the KHFD. Subject to Ministry approval, it may also be possible to localize to the Kicking Horse Fire Suppression Area the additional operational costs expected to be incurred for running the KHFD.

Approval of this process would follow the same path as creating and adding to other fire suppression areas in the past: local voter assent through a petition process or referendum, and relevant Area Directors’ approval of the necessary bylaw creation and amendment.

Regardless of the structure, this service area should be made subject to the Operational Criteria Bylaw, and to the extent possible, should participate in the new Regional Fire Services Advisory Committee. Additionally, it will need to participate in the CSRD’s fire services’ Occupational Health & Safety Committee.

As noted above, issues such as responsibility for the water supply and hydrant system also will need careful consideration. Some jurisdictions (such as Alberni-Clayoquot Regional District), have bylaws requiring that private hydrants must be properly maintained in accordance with regional district (or NFPA or equivalent) requirements – including construction, maintenance and testing. A similar approach here, or some other arrangement negotiated with the Developer (one which reflects the on-going development that is planned to take place), will need to be established.

5. Challenges and Solutions

5.1. Staffing

Recruiting and retaining sufficient volunteer firefighters is perhaps the most significant challenge to developing a fully operational fire department – one that will meet insurance industry standards. Overcoming this challenge will require close cooperation between the CSRD and the Developer (and other commercial entities at the Resort). It is essential that the “volunteer members/firefighters” are not only trained in the basic skills but are also available for service year round in accordance with FUS and NFPA requirements. For the medium term, at least, until the permanent population increases, most of the fire fighters and officers therefore will have to be drawn from amongst the employees at the Resort.

As noted above, to achieve a DPG 3A rating, each fire hall must have available a responding fire force that will include, at a minimum:

- 1 Fire Chief (required to respond but not required to be on-duty); and
- 15 auxiliary fire fighters scheduled to respond.

Fire department volunteer members must work and reside within a reasonable travel distance to the fire station thus avoiding undue delay when responding to fires. All fire fighters will need to be trained to an acceptable level, in a fashion consistent with CSRD policy (as overseen by the Fire Services Coordinator).

The KHFD will require a Chief to oversee the organization and its operations. The role of this individual will be to manage the organization (administration, community safety needs, bylaw enforcement, recruitment etc.), in consultation with the Fire Services Coordinator, train the members to the desired level (or oversee the hiring of others to accomplish this training), oversee the operational aspects of the service including record keeping, recruitment and budgeting, and to act as the incident commander at emergencies to ensure safe operations. For this department, the Chief must have experience with managing a small fire service, conducting basic fire service training and managing the emergency incident operations that the community wishes to provide. Other skills that may be useful, would include experience with fire inspections and bylaw enforcement.

These duties and responsibilities likely do not require a full time position, though there will clearly be a period during the initial establishment of the KHFD, when this will be close to a full time position. There is an opportunity, however, to partner with the Developer, potentially by making the fire chief the “Resort Safety Officer” or some

similar role. In such a role, the individual would advise on overall safety planning, including “course of construction”/development fire risks and similar matters. This, of course, may affect the skills required, and familiarity with ski-resort operations may also become a factor.

We note that other resorts which have successfully developed FUS-compliant fire services, have tended to do so on the composite model. These resorts, however, are significantly larger and busier than Kicking Horse. If the salary could be divided between the Developer (for “safety officer” role) and the taxpayers (for the fire service role), it may be possible to create an attractive package for a properly qualified and motivated individual.

In addition to the fire chief, the service also requires additional members (at least 15 volunteers) to meet the fire insurance grading requirements. Given that there currently is a very small permanent population at the Resort, the majority of the volunteers will have to be drawn from employees. The FUS residency requirement (that volunteers live/work in reasonably close proximity to the fire hall), means that it will not be possible to create a compliant fire department until employee housing becomes available.

Even then, to minimize turnover (with its attendant costs in recruitment and training), it likely will be necessary to provide either year-round employment at the Resort (including related commercial operations) or to pay the fire fighters wages and/or benefits during the “off season”, when they are not working. Given that there are between 75 – 100 jobs available year round, the best approach would be to develop a partnering arrangement with the Developer and other commercial operations to ensure that jobs are available for individuals who are acting as fire fighters.

Attracting recruits to the KHFD will require that it be made affordable for them to live at the Resort as well as providing benefits to attract and retain these members to stay on even when there may not be jobs at the Resort during the “slow” season. The following are some things to consider in attracting and retaining these members for extended periods of time, particularly through the “off & shoulder seasons”:

- Make the requirement of belonging to the fire protection service a condition of employment for some of the resort positions, such as ski patrol, search and rescue, equipment operation and maintenance personnel, etc.
- Seek to recruit employees who already have some basic fire fighter training (with the added benefits of employee housing and commitment to make available additional training).

- Provide opportunities to those who wish to achieve the NFPA 1001 or higher certification and who make the commitment to remain in the service for an agreed-upon period of time. These individuals could cover the costs of this additional training and be reimbursed at pre-determined time intervals upon successful completion of courses. Should they leave the program prior to completing their agreed-upon time commitment they would not be reimbursed for that portion of the training costs.
- Offer on-site employee housing at low or no cost (near the fire station). This may be in lieu of, or in addition to wages. The situation will need careful assessment as plans to recruit volunteers are developed. Initially, at least, it likely will be necessary to ensure housing is available for most volunteers. Such housing will need to be provided at a minimal/competitive cost to allow the members to afford to reside at the Resort rather than seeking less expensive housing in Golden, as it is too far away to respond to a page in a timely manner. It should be located near or at the fire station as employees may not have transportation on the mountain. We note that the proposed fire hall location and employee housing are proximate to one another, and would probably satisfy FUS requirements in this regard.
- Offer similar benefits (employment, inexpensive housing and more advanced training) to those members who join the service, have already achieved the NFPA 1001 certification and commit to the required time obligation. This likely will require commitment from the Resort (or other commercial operations) to provide employment through the “off/shoulder” season to attract and retain such members.
- Provide a living (food) allowance for some or all members.

It is during this “slow or off” season that much of their training could take place. This would particularly apply to those taking part in a full certification training program should one be offered. This season would also be better staffed if members are recruited who already have the certification and are assigned to shift duties through this period (as with the Big White Work Experience Program). For those who have the NFPA 1001 certification, a program similar to Big White’s could be developed: such firefighters could be assigned to work 4 shifts on and 4 off to ensure a better response – at least 6 members within 14 minutes 80% of the time – as this would be the time of year it will be more difficult to get the required turnout of members within the 14 minutes. This could mean they are on shift at the fire hall doing routine work there or on shift work in some other capacity with the Resort so as to ensure a more timely response.

The added benefit of implementing such an employment – training – benefit package as contemplated above is that it will better enable the KHFD to have available to it from the outset, fully or partially trained fire fighters. Training is discussed in greater detail below – suffice to say that achieving a full NFPA 1001 certification is a time consuming prospect for a new recruit. By offering the benefits described above, the KHFD will be better positioned to attract potential recruits who are already partially or fully trained to NFPA standards.

Another variation on recruitment is utilized by the PVFD and Panorama Resort. The Resort has several of the volunteer fire fighters hired as night security. For Kicking Horse, this approach would work well with individuals who live off-mountain. With the majority of volunteers likely to be drawn from Resort employees, day-time availability of responders will not be an issue (which is the converse of the situation for most volunteer departments)³⁵. Coverage at night, however, is a greater challenge. By having several “night shift” employees who are also volunteer fire fighters, it will increase the number of available responders after regular business hours.

5.2. Training

Training of volunteer/paid-on-call firefighters (minimum 15 members, available 24/7) is another issue to be addressed for the Resort to establish a “recognized” fire protection service which would qualify for a fire insurance grading that would result in reduced insurance premiums.

In British Columbia, by a Minister’s Order dated 18 December 2002, made under section 3(3)(b) of the *Fire Services Act* (BC), the training standards for all fire service personnel in BC are “those published by the National Fire Protection Association”.³⁶ In addition, the FUS defines a volunteer fire fighter, in relevant part, as follows:

“fire fighter, auxiliary: A person who is not employed full time, for monetary compensation, for fire fighting, but is trained and equipped as a fire fighter and available to respond to fire calls through a defined arrangement (ex. on-call).

Minimum requirements:

1. Training/Fitness: Fire Fighter I per NFPA 1001 (as relates to providing structural fire protection) or equivalent AND trains a minimum of 48 hrs per year (documented),

³⁵ The majority of volunteer departments struggle to get adequate turn-out during day time hours, when most of their members are at work. That will not be the situation for the Resort.

³⁶ Resume of Orders in Council, volume 29, number 41: Ministerial Order 368, Minister of Community, Aboriginal and Women’s Services, 18 December 2002, with effect as of 1 January 2003.

2. Equipment: Personal Protective Clothing as defined in NFPA 1001.”

The training program for the fire departments in the CSRD is overseen by the Fire Services Coordinator. There is a well-developed program, and a major training facility located in Salmon Arm. In addition, the Nicholson Volunteer Fire Department has recently established a live-fire training structure. The training program for the KHFD would be developed in consultation with the Fire Services Coordinator, and have available to it the benefits offered by the CSRD’s training sites.

Overall, it will be necessary to ensure that the KHFD members have or receive the specific training and development needed to function safely under the supervision of a trained fire officer. The process should ensure the firefighters possess at least the minimum firefighter skills needed to operate safely on a fire ground, within NFPA 1001.

It is worth noting that, the FUS and Ministerial order notwithstanding, not all volunteer fire departments in the province meet the full NFPA 1001 requirements for all of their members; however, they do attempt to achieve the “basic” level of firefighter training to ensure both competency and safety on the fire ground. Where fire fighters are not fully NFPA qualified, they can still operate both safely and effectively; however, their roles (and intervention at a fire scene) will necessarily be limited to the levels of their training.

The British Columbia Basic Fire Fighting Certificate is a program developed by the Certification Task Force of the British Columbia Fire Safety Advisory Council. The task force consisted of representatives from the BC Fire Chief’s Association, BC Fire Training Officers Association, BC Volunteer Fire Fighter’s Association, the Justice Institute of British Columbia, and the Office of the Fire Commissioner.

It is intended that the Basic Fire Fighting Certificate be obtainable by all British Columbia Fire Department members and provide them with the basic training to serve their communities. This certificate provides recognition to individuals from departments who have demonstrated that their firefighters possess the minimum firefighter skills within NFPA 1001 identified by the Task Force to safely conduct basic fire ground operations.

To achieve the Basic Fire Fighting Certificate, individuals must successfully complete the applicable written examinations and practical evaluations administered by the Justice Institute of British Columbia (JIBC), Fire & Safety Division for the courses from the NFPA 1001 Standard, Fire Fighter I. Upon completion of the program, the firefighter is awarded a Certificate of Achievement.

Note – this program does not meet the requirements for full NFPA 1001 certification for firefighter I & II and therefore does not meet the requirements of the Office of the Fire Commissioner as outlined above and is not an accredited program (such as ProBoard or IFSAC³⁷).

The other option is to train the firefighters to meet the full NFPA 1001 requirements. This process will ensure the firefighters achieve the full NFPA 1001 certification and thereby meet the requirements of the Office of the Fire Commissioner. This could also be a very attractive perk or benefit as there are many individuals who would like to acquire this certification and pursue a full-time career in the fire service, but for a variety of reasons are unable to do so. The costs of this training could be carried solely by the KHFD as a method of recruiting and retaining fire fighters.³⁸ As the department develops and the permanent population at the Resort grows, the department could move to whatever is the standard approach of other CSRD departments.

Another option would be to combine the two training concepts and train all members to the “basic” level and offer the additional training to those that will make the commitment to live on the mountain (employee housing) and remain in the service for an agreed upon period of time to help ensure the staffing levels required. The initial approach would be to train the firefighters to the “basic firefighter” level first so the service is up and running, then to augment that with additional training as deemed beneficial to the community and then provide the additional training to achieve the NFPA 1001 certification for those members who wish to make that commitment through the “off & shoulder” seasons.

Sending firefighters to take this NFPA 1001 training at a local institution would not be practical so the members would have to be trained at the Resort (supplemented using the CSRD’s training facilities). One program that is available to accomplish this is the College of the Rockies Fire Service Training NFPA 1001 Firefighter I & II Challenge Program.

This program is designed to assist:

- Fire departments that have trained in house to full NFPA 1001 standards but have not completed formal assessment for certification.

³⁷ Both organizations are involved in providing accredited training programs: Proboard Fire Service Professional Qualification System and the International Fire Service Accreditation Congress.

³⁸ As noted above, care should be taken to ensure that individuals receiving this benefit commit to the Department for an agreed period of time. This could be done through a reimbursement scheme, whereby the training costs are repaid at scheduled intervals after it is received – having been paid for up front by the trainee.

- Fire departments that have the desire to train and fully certify members of their departments to NFPA 1001

Basic information on this program is set out in Appendix D.

5.3. Required Infrastructure and Apparatus

Fire Hall

The construction of a fire hall is the largest, single capital expenditure that the new fire department will have to incur. There are three issues to be considered in relation to a fire hall at the Resort:

- (i) the location
- (ii) the size and use to which the hall is to be put; and
- (iii) based on the foregoing, how responsibility for construction costs are to be shared or paid.

In the Master Plan, a suggested location for an “emergency services building”, which includes the fire hall, has been identified. The Developer has agreed to donate the land on which the building will be constructed, and the location seems appropriate based on the current planning: it is central to the Resort, and proximate to both the densely built central plaza area, as well as to the planned employee housing. The suggested location means that response times will be good to all areas of the Resort. In addition, it means that the majority of responding volunteers will be close at hand, whether they are at work or at “home”. As this process develops, the final location should be reviewed and confirmed with the Fire Services Coordinator.

Based on our discussions with the Developer, however, it appears that there is a desire to create a larger, multi-service emergency building. In addition, unlike the fire halls in the other CSRD fire suppression areas, it is likely that some form of housing may need to be provided for some of the fire fighters. In respect of the latter, we would suggest that accommodations for up to 6 volunteers be included in the planning. While the requirement of providing housing for volunteer fire fighters can properly be included in taxation for providing a fire service, expanding the building to include other emergency services potentially complicates the issue. This matter should be discussed and agreed between the Developer and the CSRD.

Accommodations and “multi-purpose” uses aside, the fire hall will need to meet the guidelines provided by the Fire Commissioner’s Office.³⁹ Those design guidelines

³⁹ Fire Commissioners Office, *Fire Station Location and Design*.

cover issues such minimum door sizes, location and hall access issues, minimum size requirements depending on number and type of apparatus, the need for a sound proof clean room for filling SCBAs, and similar matters. The Fire Services Coordinator should be involved in the design, layout and configuration of the new hall. The Developer has indicated that it is willing to provide architectural design support, in addition to donating the land upon which the fire hall will be constructed.

Based on the CSRD's recent experience in Falkland, the cost of constructing a basic fire hall will be in the range of \$750,000 - \$800,000. The RDEK's recently constructed fire hall at Panorama Mountain Village cost just under \$1,000,000 (this hall did not include accommodations). Adding the accommodations for volunteers will materially increase the overall cost – for the purposes of this report, based on discussions with CSRD staff, we have allowed for \$1.3 million to construct the fire hall and required live-in accommodation for six volunteer firefighters. The size (and cost) of the fire hall will also be affected by apparatus numbers and types. In addition, the fire hall should be constructed in a manner that permits future expansion based on changed community needs, as the Resort's development proceeds.

Apparatus and Equipment

The selection of appropriate apparatus is driven by the fire exposures and requirements of the Resort. The minimum requirements noted in the FUS rating system are subject to variation based on actual exposures and risks. In a number of their reports, the underwriters have indicated that specific communities require the ability to have an elevated water flow. The cost of an aerial unit – both in terms of capital outlay and staffing/training – are significant. As the process proceeds, some consultation with FUS likely is in order prior to commencing procurement or finalizing fire hall design. For present purposes, after discussions with the Fire Services Coordinator, we are assuming that a standard pumper unit meeting FUS requirements and a compressed air foam CAF vehicle (for interface situations), will be required. At present, we are assuming that the hydrant and water system is FUS-compliant and that a water tanker is not required. The capital cost of the major apparatus will be in the range of \$500,000. If a tanker is required, it would likely cost an additional \$200,000.

The equipment required for the KHFD, including SCBA's, personal protective equipment and other required equipment, will be in line with the requirements of other fire departments in the CSRD. As the department initially will only be providing fire suppression services, it will not require vehicle extrication or medical first responder equipment. Required communications equipment includes mobile radios, a base station

and paging equipment. The estimated initial capital cost of the required equipment (including communications equipment) is in the range of \$200,000.

5.4. Financial Implications

In establishing a fire department, a community needs to consider two issues:

1. **Safety.** The presence of an operational and effective fire department does much to reduce the risk to lives and property. In a development such as the Resort, where there are high property values and a relatively close aggregation of buildings (even though care has been taken in layout and design), a structural fire at any one location can put other properties (and lives) at risk. Through fire prevention measures, education and effective, early intervention if a fire does break out, a fire department is a critical risk management tool for any community.
2. **Cost.** Operating a modern fire service, even one which is largely based on volunteers, is an expensive undertaking. Initial capital outlays and operating costs are significant. These costs are reflected in an increased taxation burden for local residents and businesses. The trade-off, however, is that there can be significant cost savings on insurance. These cost savings, in time, can easily exceed the taxation cost of developing, operating and maintaining a fire department.

From the perspective of supporting a fire service, the total assessment value of all properties at the Resort is approximately \$176.8 million. The tax bases which historically supported fire departments in other CSRD fire suppression areas were, on average, about half this size, ranging from a low of about \$9.0 million, to a high of about \$125.0 million.⁴⁰ Indeed, when viewed in this fashion, the Resort's tax base would have been the second largest, when compared to the original 13 fire suppression areas for which the CSRD is responsible.

On that basis, the Resort is well-positioned to support a fire service. That being said, there are certain factors peculiar to the Resort that will, in the medium term, at least, increase the costs of establishing and maintaining a fire department. Some of those challenge are identified above, but it is worth listing them here:

1. The start up costs for a fire department involve a material capital expenditure. Those costs are summarized in Appendix C and are

⁴⁰ All figures are based on 2008 assessments. The smallest tax base was White Lake; the largest was Sorrento-Blind Bay. In 2008, the average size of the tax bases of the 13 individual fire suppression areas was about \$32.0 million.

estimated to be in the range of \$2.0 million. Assuming a 20 year debenture through the Municipal Finance Authority (“MFA”), the carrying costs will be in the range of \$170,141 per year⁴¹ – which at the present assessed value, translates into a tax cost of about \$0.93 per \$1,000 of assessed value for a residential property;

2. The Resort has a small permanent population. Consequently, it will have to offer various benefits to its fire chief and volunteer fire fighters in order to maintain the necessary complement to meet FUS and NFPA standards. Those additional benefits and challenges of volunteer retention are discussed in sections 5.1 and 5.2 above. Those costs will increase the annual operating cost of the fire department and it is reasonable to expect that the cost of operations will be higher than similarly staffed and equipped departments operating within the CSRD. After discussions with the Fire Services Coordinator, we have assumed an annual operating cost for the KHFD of approximately \$169,028. Of this amount, approximately \$50,000 will reflect the “additional” costs of operating this department, given its particular circumstances and challenges, over and above operating the other regional fire departments.
3. There will be a lag between incurring the additional taxation expense to create the fire department, and seeing any reduction in insurance rates. Thus, a number of the upfront capital costs (for example, construction of the fire hall/emergency services building) will be expended in advance of the department being operational. Property owners will, therefore, have a period of time when they are incurring additional tax costs without an offsetting decrease in insurance rates.
4. Once the fire department is established and operational, it may take some time for the benefits (in terms of an improved insurance rating from FUS) to be realized. This is particularly true on the commercial side, where there clearly are challenges in obtaining the necessary PFPC 7 rating. (In the 2006 CGI Report, it noted (at p. 36) that Sun Peaks, Panorama and Silver Star each had DPG ratings which benefited owners of detached dwellings, but had PFPC ratings of 8 or 9, which are unlikely to produce much insurance cost relief for commercial property owners. Since that report, Sun Peaks has achieved a PFPC rating of 7, and reportedly seen significant drops in commercial line insurance costs). There is, therefore, a risk that some or all of the property owners would have to bear the

⁴¹ Based on the current 5% rate for a 20 year debenture with the MFA.

additional taxation costs for a period of time, without a material decrease in insurance costs.

Offsetting these above challenges, the taxation cost of maintaining the fire department will drop over time, as further development occurs (spreading the cost across a larger tax base) and the permanent population grows (thereby reducing the cost of attracting and retaining volunteers); in addition the net cost to property owners will drop as the FUS rating improves.

As noted, the two major variables involved are tax costs and fire insurance costs. CSRD staff have developed a draft capital and operating budget based on the CSRD's experience with its other departments. The principal assumptions are set out below.

Initial outlay

Capital Expenditures: \$ 2.0 million
(MFA 20 year debenture)

Annual Operating Costs

Debt Repayment: \$170,141
Operating Costs/capital reserve \$169,028
Total: \$339,169

For a residential homeowner, this translates into a tax levy of approximately \$1.86/\$1,000 of assessed value, assuming that the KHFD remains a separate fire suppression area. It is anticipated that the KHFD fire suppression area would be integrated into the larger CSRD Regional Fire Service Area which is being created, and that such integration will likely have the effect of reducing the overall tax rate for fire suppression services. See the discussion in section 4.3 above.

The following table shows the amount of the levy for fire services based on different converted assessed values.

Assessed Value	Tax Rate	Payable
100,000	\$1.86	\$186
500,000	\$1.86	\$930
600,000	\$1.86	\$1,116
700,000	\$1.86	\$1,302
800,000	\$1.86	\$1,488
900,000	\$1.86	\$1,674
1,000,000	\$1.86	\$1,860

For every \$100,000 increase in assessed value, the tax levy increases by \$186.00.

Against this tax increase, insurance costs for residential homeowners will fall by a significant amount provided that a DPG of 4 or better is obtained. As noted above, a rating of DPG 3A is necessary for a fully protected status to be obtained. Nevertheless, even with a rating of DPG 3B or DGP 4, material cost savings likely will be experienced. It must be stressed that there is great variation in insurance rates – insurers will often offer homeowners discounts based on business volume, long standing relationships, claims history and similar matters, rather than on strict underwriting criteria. The following figures should be treated as representative only; property owners would need to check with their own insurers to determine what discounts they would enjoy from the establishment of a compliant fire service.

In general, for residential homeowners, FUS estimates that moving from an “Unprotected” classification to a “Semi-protected” rate, will result in savings of approximately 60%. Moving from “Semi-protected” to “Fully protected” will see a further 30% decrease in insurance costs. The following information was included in the 2006 CGI Report, showing representative insurance costs for single family properties with specified replacement values⁴²:

Replacement Cost	Unprotected Rate	Semi-protected Rate	Protected Rate
	<i>DPG 5</i>	<i>DPG 4 or DPG 3B</i>	<i>DPG 3A or 3B(S)</i>
100,000	\$1,165	\$465 (save \$700)	\$315 (save \$850)
125,000	\$1,470	\$585 (save \$885)	\$400 (save \$1,070)
150,000	\$1,750	\$700 (save \$1,050)	\$475 (save \$1,275)
175,000	\$2,040	\$815 (save \$1,225)	\$555 (save \$1,485)
200,000	\$2,300	\$915 (save \$1,385)	\$625 (save \$1,675)
250,000	\$2,790	\$1,110 (save \$1,680)	\$755 (save \$2,035)
300,000	\$3,290	\$1,310 (save \$1,980)	\$890 (save \$2,400)
350,000	\$3,750	\$1,495 (save \$2,255)	\$1,015 (save \$2,735)
400,000	\$4,200	\$1,675 (save \$2,525)	\$1,140 (save \$3,060)
450,000	\$4,655	\$1,855 (save \$2,800)	\$1,260 (save \$3,395)

A similar calculation was made in relation to Apex Mountain resort: (see the “Newsletter” sent to property owners by RDOS in 2007⁴³). In that Newsletter, though, they also appear to have obtained representative quotes for actual properties in the community, which showed decreases of about 52% (going to semi-protected status) and a further 26% (going from semi-protected to protected status).

⁴² CGI Report, Appendix B, p. 4. The CGI Report noted that the numbers cited were base coverage rates (comprehensive, all risk) and that most policies included options that increased the cost of coverage.

⁴³ See: www.rdosmaps.bc.ca/min_bylaws/finance/FireProtection/Apex_InformationNewsletterJan07.pdf.

We have been advised by the Developer that residential property owners in the Resort are paying between \$5,000 - \$6,000 per year for insurance. On that basis, all other factors being equal, a “semi-protected” rating (DPG 3B or DGP 4) would see insurance rates fall by between \$2600 - \$3,000 at the low end, and between \$3,200 - \$3,600 per year at the high end.⁴⁴ If the community achieved a DPG 3A rating, the rates would fall even further.

As noted above the actual insurance cost savings will vary, depending on a number of factors (including, for example, whether an individual is insuring more than one property with the same insurer – which can often produce a significant discount). It also must be stressed that a home’s replacement cost is different than its assessed value. Replacement cost is simply the determination of how much it would cost to rebuild a comparable home and replace personal items lost, and does not include the underlying value of the real estate. A \$450,000 “replacement cost” home could easily have an assessed/market value of more than twice that amount. Nevertheless, even by moving to a semi-protected status, the potential insurance savings are significant for residential homeowners, and will offset much of the additional taxation required to establish and operate a fire department.

Fire insurance costs for commercial property owners are significant. The Kicking Horse Resort itself is paying in the range of \$90,000 – \$100,000 per year for fire insurance alone, while condo-hotels such as Glacier and Mountaineer are paying approximately \$45,000 per year. However, in relation to commercial property owners, it is best to be conservative. Based on the 2006 CGI Report, we would not expect to see the PFPC rating for the Resort achieve the “semi-protected” status (PFPC 7), for a period of time after the KHFD is established. As such, while some cost reductions might be negotiated (as underwriters can take their own views on risk, independent of the FUS survey), it should not be assumed to occur automatically, at least in the short term.

An additional consideration is that, as the Resort expands, the tax base will grow larger. Assuming that the Developer realizes the expansion set out in the Master Plan, the cost of the KHFD will be spread across a significantly larger tax base within the next 7-8 year period (a tax base that will continue to grow through subsequent phases as well). Operational and maintenance costs will grow slowly by comparison, meaning that the effective tax rate will fall over time.

⁴⁴ The range is based on the rates which were quoted for Apex Mountain (52%) versus the estimated reductions in the 2006 CGI Report (60%).

5.5. Fire Risks

The Resort faces a number of specific, identifiable fire risks which will need to be addressed as more detailed planning for the KHFD and related fire protection measures, are developed. Three of the principal risks are noted below:

Interface Risks – the resort has a high forest interface exposure, primarily with the residential subdivisions. Like most fire protection services they will not be able to manage these interface fires on their own, and should coordinate response planning with the BC Forest Service. The KHFD and the Resort will need to maintain a close working relationship (training and pre-incident planning) with the BC Forest Service as well as providing an initial response to wildland fires. Appropriate fire apparatus suitably equipped to deal with the early stages of an interface situation will be required, as well as training programs.

Construction Risks – as the community continues to develop, building projects under construction pose a significant additional risk as they generally do not have any of the fire protection systems in place until completion and occupancy is granted. As such the community, the Developer and the CSRD should cooperate to develop, implement and enforce a construction code or bylaw to minimize fire risks during construction. One approach to this would be to review and implement the standards and approaches described in NFPA 241 Standard on Safeguarding Construction, Alterations and Demolition Operations. One of the roles that could be played by a Fire Chief/Resort Safety officer would be ensuring that these codes or bylaws are being adhered to by builders.

High-Occupancy Risks – Given that the Resort presently has, and is expanding, a core community of multi-storey, high density structures/occupancies, all buildings within the community should utilize appropriate construction and design standards, beyond the bare minima set out in the BC Building Code and BC Fire Code. This would include passive and reactive building controls and any other means to aid in fire protection, such as careful selection of exterior cladding, passive fire protection systems, detection and alarm systems, automatic suppression systems, etc. Mandatory use of sprinkler systems in all large (over 3,600 sq. ft.) residential dwellings, as well as multifamily and commercial structures should be required.⁴⁵ Again, this will require coordination between the Developer and the CSRD, and involve revisions to both design guidelines/requirements and potentially bylaws. With the interface risks noted above,

⁴⁵ Sprinkler requirements already exist; however, given the nature of the fire risks and concentration of high occupancy buildings in the central core of the Resort, it is advisable to go beyond the minimum requirements.

incorporation of aspects of NFPA 1144 (“Standard for Reducing Structure Ignition Hazards from Wildland Fire”) also should be considered.

5.6. Emergency Communications

All fire departments within the CSRD are currently dispatched by Surrey Fire Department dispatch. The service provided includes answering 911 calls from the public, creating a dispatchable event, then toning out the fire department personnel and monitoring their radio channel as required.

The requirement for the KHFD would be to provide pagers as well as mobile and portable radios sufficient to meet the needs of the department, in accordance with NFPA and FUS requirements. The paging range should include at a minimum the Town of Golden and the CSRD fire department at Nicholson, and any immediately surrounding areas, as volunteers at any particular time may be away from the Resort, but within a recallable area. There is also a requirement for a base station as well as mobile and portable radios with fire frequencies for the KHFD as well as their mutual aid partners, the BC Forest Service and others, as determined by the Fire Services Coordinator for the CSRD.

An additional requirement will be to ensure that an emergency response zone (ESZ) has been created by Telus so that 911 calls from the Resort are recognized as distinct from other areas, and that call routing should be to the Kelowna Operational Communications Centre.

The radio equipment should be interoperable with the systems currently in use by the Nicholson and Golden Fire Departments and its implementation should be effected in consultation with the Fire Services Coordinator.

6. Conclusions

The establishment of a fire department in any community involves a trade-off between safety and cost. The presence of a properly trained and equipped fire service protects lives and can significantly limit property damage, and the additional taxation costs incurred to support such a service are usually offset by a reduction in property insurance costs. The cost of establishing and operating an FUS-compliant fire department would likely involve an initial residential tax cost of about \$1.86/\$1,000 of assessed value; however, such a department could save residential dwelling owners \$3,600 a year in insurance costs or more, depending on circumstances. Commercial operations may see insurance cost decreases as well, although in the short term, these likely would have to be negotiated (as it will take some time to achieve the necessary PFPC rating to qualify the community as a whole in the “semi-protected” status).

The Resort, however, is challenged by a number of issues, and in particular by its small permanent population, which raise the cost of establishing, operating and maintaining an FUS-compliant fire department. At the same time, property values are relatively high, there is a significant building density, particularly in the central plaza, and a material interface fire risk. A recent fire in a home under construction, although contained to the one property, starkly underlined the nature of the risks that the community is facing.

Meeting the capital requirements for establishing a fire department, while challenging, are certainly manageable – communities with much smaller tax bases have successfully addressed this in the past. There are some specific areas where additional costs may need to be incurred – including in providing some form of on-site housing (potentially at the fire hall itself) – but the tax base is reasonably sized and should be able to support these initial capital outlays.

Recruitment and retention of sufficient volunteers, however, will remain the largest challenge facing the establishment of the KHFD. This will require a high degree of cooperation between the CSRD and the Resort’s operator (and other commercial operations), to ensure that it is possible to establish and maintain a department. Given the small permanent population, the majority of the volunteers initially will have to be drawn from employees working at the Resort. The time and costs involved in training up fire fighters are significant, so those employees will need to be assured of work year-round and will need to be housed in on-Resort accommodation. The CSRD should arrive at a firm arrangement with the Resort’s operator to ensure that there is in place an agreement to assist in this fashion.

Even with such inducements, there is a risk of high turnover in the volunteer ranks. This perhaps could be mitigated somewhat by requiring recruits to commit to a period of service in exchange for their training (failing which they would be required to pay the cost of that training), and by recruiting volunteers who already have NFPA Fire Fighter 1 training (or a significant portion of it).

7. Recommendations

The development of an insurance-industry compliant fire service, one which will both protect life and property, and reduce insurance costs, will require close coordination between the various stakeholders, including the CSRD, the Developer, other commercial operations at the Resort and the local homeowners and residents. As this process develops, the parties would do well to involve the FUS in their planning for the department, in order to be able to address any concerns that may exist. The recommendations are grouped into four areas: (1) Staffing and Training; (2) Fire Hall, Equipment/Apparatus and Budget; (3) Resort Development Issues; and (4) Implementation.

(1) Staffing and Training

- a. Recruitment / Retention. Recruitment and retention is a challenge for all volunteer departments, and will be a particular challenge at the Resort given the small permanent population. A compliant department must have at least 15 members available to it, in addition to its Chief. For the medium term, most of the volunteers will have to be drawn from amongst Resort employees, and the KHFD will likely have to hire a part-time fire chief. As a result, the CSRD will need to have a firm understanding with the Developer and other commercial operations regarding the following issues:

- The provision of employee housing at the Resort for volunteer firefighters;
- Year-round employment opportunities for volunteer firefighters to reduce turn-over and ensure continuous availability of volunteers;
- Sharing costs of constructing an emergency building, if that building is to serve as more than simply a fire hall; and
- An arrangement to share costs on hiring a Fire Chief by having him or her split duties with the Resort as a safety or security officer (or similar position).

Recommendation 1: The CSRD should establish an agreement with the Developer and/or other commercial operations at the Resort related to job opportunities and housing for KHFD volunteers, and sharing the cost of hiring an individual into a dual role of Fire Chief and Resort Safety or Security Officer.

Recommendation 2: Hire a part time Fire Chief to establish and operate the KHFD. The timing of this hire will need to be considered. Depending on the role taken by the Fire Services Coordinator in establishing the new KHFD, it may be advisable to hire the

chief several months prior to the completion of the fire hall's construction, to enable him or her the time to develop a recruitment program and deal with other administrative tasks. The timing of this hiring should be determined by the Fire Services Coordinator.

b. Training. The CSRD has a well developed fire fighter training program, which will be of assistance in establishing the department. The KHFD's training program will be closely tied to its recruitment and retention needs. Our recommendations related to training are as follows:

- The Fire Chief will need to recruit a training officer and establish and conduct, in consultation with the Fire Services Coordinator, the necessary training to ensure the volunteers meet or exceed the skills requirements for volunteer firefighters in British Columbia.
- The regular crew training should occur weekly and will need to be documented in accordance with NFPA and WorkSafe BC requirements, and the members evaluated accordingly.
- This training may need to be initiated some time (a year or more) before the actual implementation of the fire protection service, unless it is possible to attract sufficient trained personnel through a coordinated employment program with the Developer and other commercial operations at the Resort.
- Ideally, the recruitment processes will be designed to attract and retain firefighters who already hold NFPA 1001 or greater levels of training. KHFD will need to be prepared to offer a training program that will enable volunteers to achieve NFPA 1001 certification and higher at minimal cost to themselves.
- Where additional certification and training is offered, the program should be developed in such a way to ensure that the volunteers agree to serve for a minimum period of time. This can be done by reimbursing training/certification costs over an agreed period of time after the training is received.

Recommendation 3: Develop a recruitment program designed to attract pre-qualified volunteers for the KHFD. The program will need to offer additional training and certification opportunities, as well as benefits such as available employment and low-cost or free employee housing. Volunteer recruitment should commence prior to the completion of the fire hall.

Recommendation 4: Once established, the KHFD should train its volunteers regularly throughout the year (weekly is preferred), maintaining appropriate records in accordance with WorkSafe BC requirements and NFPA standards.

(2) Fire Hall, Equipment/Apparatus and Budget

The establishment of the KHFD will require significant capital outlays to construct a centrally located fire hall, and procure the necessary apparatus and equipment for the department. There are significant lead times for both the fire hall construction and apparatus acquisition. In addition, the CSRD and Developer will need to agree on the roles and contributions of each in relation to developing this service.

Recommendation 5: The Fire Services Coordinator should agree with the Developer on an appropriate location for the construction of the fire hall.

Recommendation 6: The CSRD should establish an agreement with the Developer relating to the donation of the land for the fire hall and the contribution of architectural assistance in designing the fire hall. If the fire hall is to be a multi-purpose emergency services building, the CSRD and the Developer will need to determine how the additional costs of construction are to be paid.

Recommendation 7: The fire hall should include some accommodations for volunteer fire fighters. Ideally, it will have space for six, which would help ensure the minimum response requirements as set out in NFPA 1720 (six fire fighters in 14 minutes). It will also have to provide space for essential fire service functions including but not limited to storage and maintenance of apparatus and all equipment such as hose, air packs, etc.

Recommendation 8: Once the fire service is approved, and capital funds available, the Fire Services Coordinator should initiate the procurement process for apparatus and equipment. The identification of the appropriate apparatus and equipment (including communications equipment) should include consultation with the FUS (who often make recommendations based on community hazards and fire exposures). In the event that the water supply does not meet FUS standards, a water tender will be required, which will increase the capital budget by approximately \$200,000.

(3) Resort Development Issues

The Resort has the advantage of a unified and well controlled development process, overseen by the Developer. As recommended in the 2006 CGI Report, and discussed above, design guidelines and requirements should be imposed to maximize the passive and active fire resistance in the community. In addition to improving safety, these

measures will have the effect of reducing water flow requirements and other FUS requirements for a compliant fire service.

Recommendation 9: The Developer should amend its design guidelines to improve requirements for passive and active fire resistance, including requiring sprinklering of larger residential and multi-residential buildings, in addition to commercial structures. In addition, NFPA 1144 standards should be reviewed and adopted where possible. In accordance with the Master Plan, the Resort's layout should include appropriate measures to limit or manage the interface risk.

Recommendation 10: The Developer should adopt and implement construction requirements designed to limit the fire risk during development, in accordance with NFPA 241.

Recommendation 11: Once the KHFD is established, part of its mandate should include reviewing new construction against the mandated guidelines and course of construction requirements as recommended above. The KHFD also should be consulted as new development occurs, to ensure that the department is aware of and able to deal with the planned expansion.

Recommendation 12: The actual flows of the existing water supply should be measured against FUS requirements in light of the existing fire exposures. As the Resort is developed, the water supply – including issues such as reservoir size, redundancy and flows – will need to be expanded to meet FUS requirements.

Recommendation 13: The CSRD and the Developer will need to agree long term ownership and management issues related to the water supply.

(4) Implementation/Coordination Issues

The implementation of a new fire suppression area will require the assent of the local electors. It will also be necessary to coordinate the operation and oversight of this new fire suppression area with the processes and procedures governing other fire suppression areas within the CSRD.

Recommendation 14: Develop a time line for implementation, and a reasonable estimate on the budgetary requirements of establishing and operating a KHFD. With that information available, it will be necessary to conduct information meetings with local property owners, and get their approval to the establishment of a local fire service in accordance with the LGA.

Recommendation 15: The new fire service will need to be integrated into the existing CSRD model. Based on our current understanding from the Ministry of Community and Rural Development, this will involve a separate establishment bylaw under which capital costs for setting up the department will be incurred. The CSRD Regional Fire Service area will then be expanded to include the fire suppression area covered by the KHFD establishment bylaw. A view will have to be taken regarding how the additional operating costs for the KHFD service are to be covered (since those costs will necessarily be higher than in other fire services funded through the CSRD). It may be that a portion of the extra operating costs for the KHFD can be charged under the original establishment bylaw.

Recommendation 16: The KHFD should be subject to the CSRD's Operational Criteria Bylaw for fire departments and oversight by the Fire Services Coordinator, and have the right to participate in the regional governance structure that is being established. The KHFD should participate in the CSRD's Occupational Health & Safety committee for fire departments, in accordance with WorkSafe BC requirements.

Appendix A: Seasonal Staffing Levels at Kicking Horse Mountain Resort

Season	Period (approx)	Resort staffing level	Other Commercial Operations
Ski Season	15 Nov-15 Apr	200+	100
Off Season I	16 Apr – 15 June	~75 (largely maintenance)	25
Summer Season	16 June – Sept Long Weekend (LW)	80	50
Off Season II	Sept LW – 14 Nov	~75 (largely maintenance)	25

Appendix B: Major Buildings/Developments in Kicking Horse Mountain Resort and Potential Impact on Apparatus Requirements

As of the date of the 2008 Master Plan, the following major buildings and facilities at the Resort were as follows:

Eagles Eye Restaurant (7,700 sq. ft.)

New Daylodge (8,600 sq. ft.)

Glacier Lodge (Central Plaza) – 4 storeys, plus one level of parking below grade. Occupancy – 80,309 sq. ft.; parking – 29,105 sq. ft.; total – 109,415 sq. ft.

Mountaineer Lodge Buildings (Central Plaza 4 storeys plus one level of parking below grade. Occupancy – 50,782 sq. ft.; parking – 23,136 sq. ft.; total size is 83,918 sq. ft.

Palliser Lodge building – 6 storeys, one story being only for lofts and one story for parking. Occupancy – 53,847 sq. ft.; parking – 14,919.59 sq. ft; total size – 68,767 sq. ft.

Whispering Pines townhomes – 6 buildings, 22 units. Total area – 33,392 sq. ft. Five buildings are three storeys (one building is considered a walk out) and one building has two storeys.

Selkirk Resort Townhomes (Phase 1) – 6 buildings, with 18 units, comprising a total of 28,443 sq. ft., is divided into two types of units:

1. 4 buildings of type 1, each building is 3 storeys, total size of each building is 4,916 sq. ft. (so 14,748 sq. ft) in all; and
2. 2 buildings of type 2, each building is 2 storeys with 1 walk out below grade, total size of each building is 4,565 sq. ft. (so, 13,695 in all).

Cache Close Bed & Breakfast subdivision – 3 bed & breakfast operations as follows:

- Vagabond – 2 storeys plus one below grade, total size is 11,081 sq. ft
- Copper Horse – 2 storeys plus one below grade, total size is 9,236 sq. ft
- Highland lodge – 2 storeys plus one below grade, total size is 8,880 sq. ft

Purcell Woods Subdivision (29 lots)

Golden Avenue Subdivision (15 lots)

Dogtooth Subdivision (16 lots)

Resort Administration building

Resort Maintenance building

Child care facility

Water Reservoir and distribution facility

Sewage Treatment facility

Propane distribution facility

Resort Operations Building

Grizzly bear habitat

Various commercial enterprises integrated with the condo/hotel buildings facing the central Plaza.

Potential Impact on Apparatus Requirements

In reviewing a fire department's ability to combat structural fires within its community, the FUS looks at, among other things, the number of 3-storey or higher buildings, to determine apparatus requirements (as well as water supply/flow issues). In reviewing publicly available materials, we considered a letter from Michael Currie, of CGI Risk Management Services (the consulting arm of the FUS), to Mayor and Council on Bowen Island. The letter is dated 28 February 2008, and refers to the planned construction of a major new, four-storey building on the island. The letter states in relevant part:

"Building Height

Due to the proposed height of the building, a reasonable level of response to a fire would include an aerial apparatus. Within the fire insurance grading a community is deemed to need an aerial apparatus once the response area has 5 buildings that:

- are 3 storeys or 10.7 or more in height, or
- have a required fire flow greater than 15,000 LPM, or
- any combination of these criteria."

Given that approach, and on the basis solely of the number of structures which are 3 or more storeys in height (and not on fire flow calculations), it seems likely that FUS will state that aerial apparatus is warranted for the proposed KHFD. In addition to the capital cost of such equipment, it materially impacts staffing and training requirements. It is unlikely that the KHFD would include such apparatus in its inventory in the near to medium term. For the purposes of this report, we have not included this apparatus in our calculations – but it is important to note the risk the FUS may require something of this nature when it conducts its survey. It is likely that the size and height of the major buildings, particularly those clustered around the central plaza, will also significantly impact required water supplies – an issue that should be confirmed as the Developer moves to upgrade water supplies in the future. Fire flows should be calculated under NFPA 1142 (“Standard on Water Supplies for Suburban and Rural Fire Fighting”), and the water supply/flow designed accordingly.

Appendix C: Draft Financial Information—Budget & Taxation Estimates

20 Year Term

4% Capitalization Rate

Principal: **2,035,624.00** Interest Rate: **5.00%** S/F Factor: 0.03358175

	Principal Pymnt	Interest Pymnt	Total Pymnt	Actuarial	Reducing Balance
					2,035,624.00
Yr 1 Semi Annual		50,890.60	50,890.60		2,035,624.00
Yr 1 Annual	68,359.82	50,890.60	119,250.42		1,967,264.18
Yr 2 Semi Annual		50,890.60	50,890.60		1,967,264.18
Yr 2 Annual	68,359.82	50,890.60	119,250.42	2,734.39	1,896,169.97
Yr 3 Semi Annual		50,890.60	50,890.60		1,896,169.97
Yr 3 Annual	68,359.82	50,890.60	119,250.42	5,578.16	1,822,232.00
Yr 4 Semi Annual		50,890.60	50,890.60		1,822,232.00
Yr 4 Annual	68,359.82	50,890.60	119,250.42	8,535.68	1,745,336.50
Yr 5 Semi Annual		50,890.60	50,890.60		1,745,336.50
Yr 5 Annual	68,359.82	50,890.60	119,250.42	11,611.50	1,665,365.18
Yr 6 Semi Annual		50,890.60	50,890.60		1,665,365.18
Yr 6 Annual	68,359.82	50,890.60	119,250.42	14,810.35	1,582,195.01
Yr 7 Semi Annual		50,890.60	50,890.60		1,582,195.01
Yr 7 Annual	68,359.82	50,890.60	119,250.42	18,137.16	1,495,698.04
Yr 8 Semi Annual		50,890.60	50,890.60		1,495,698.04
Yr 8 Annual	68,359.82	50,890.60	119,250.42	21,597.04	1,405,741.18
Yr 9 Semi Annual		50,890.60	50,890.60		1,405,741.18
Yr 9 Annual	68,359.82	50,890.60	119,250.42	25,195.31	1,312,186.05
Yr 10 Semi Annual		50,890.60	50,890.60		1,312,186.05
Yr 10 Annual	68,359.82	50,890.60	119,250.42	28,937.52	1,214,888.72
Yr 11 Semi Annual		50,890.60	50,890.60		1,214,888.72
Yr 11 Annual	68,359.82	50,890.60	119,250.42	32,829.41	1,113,699.49
Yr 12 Semi Annual		50,890.60	50,890.60		1,113,699.49
Yr 12 Annual	68,359.82	50,890.60	119,250.42	36,876.98	1,008,462.69
Yr 13 Semi Annual		50,890.60	50,890.60		1,008,462.69
Yr 13 Annual	68,359.82	50,890.60	119,250.42	41,086.45	899,016.42
Yr 14 Semi Annual		50,890.60	50,890.60		899,016.42
Yr 14 Annual	68,359.82	50,890.60	119,250.42	45,464.30	785,192.30
Yr 15 Semi Annual		50,890.60	50,890.60		785,192.30
Yr 15 Annual	68,359.82	50,890.60	119,250.42	50,017.27	666,815.21
Yr 16 Semi Annual		50,890.60	50,890.60		666,815.21
Yr 16 Annual	68,359.82	50,890.60	119,250.42	54,752.35	543,703.05
Yr 17 Semi Annual		50,890.60	50,890.60		543,703.05
Yr 17 Annual	68,359.82	50,890.60	119,250.42	59,676.84	415,666.39
Yr 18 Semi Annual		50,890.60	50,890.60		415,666.39
Yr 18 Annual	68,359.82	50,890.60	119,250.42	64,798.30	282,508.27
Yr 19 Semi Annual		50,890.60	50,890.60		282,508.27
Yr 19 Annual	68,359.82	50,890.60	119,250.42	70,124.63	144,023.82
Yr 20 Semi Annual		50,890.60	50,890.60		144,023.82
Yr 20 Annual	68,359.82	50,890.60	119,250.42	75,664.01	0.00
TOTALS:	1,367,196.34	2,035,624.00	3,402,820.34	668,427.66	

Total principal repaid plus total actuarial earnings equal amount originally borrowed

CAPITAL COSTS	
Building (min 5,000 ft2)	\$ 1,300,000
Land	\$ -
Pumper (Engine)	\$ 300,000
Interface/CAFF	\$ 200,000
Turnout Gear (16 suits)	\$ 24,000
Equipment	\$ 146,000
Radios	\$ 30,000
Total	\$ 2,000,000

Note: In the event that the Resort's water supply initially did not meet FUS standards, the Interface/CAFF vehicle would be replaced by a water tender vehicle. The capital costs of both vehicles are substantially the same.

Appendix D: College of the Rockies – NFPA Certification Program

(Source: College of the Rockies)

Process

For Departments Requesting Immediate Challenge

- Fire departments work together with the Coordinator for the program to review training progress, determine needs, focuses and timelines to ensure candidates are prepared.
- Formal written and practical exams coordinated and delivered through the College (Pro-Board Accredited) and Fire Services Evaluators.
- Exams and Practical Assessments delivered at your hall and at your convenience.

For Departments Requesting Eventual Challenge

- Fire departments work with program Coordinator to assess needs for training and completion of theory and practical components.
- College can deliver instruction to departments in their halls if requested.
- College can provide resources to departments for either IFSTA or Jones and Bartlett curriculum materials (Manuals, Instructor resources, Chapter exams, Skill sets, supplementary study aids).
- When departments are prepared, exams and practical assessments can be delivered at your hall and at your convenience.

Advantages of the Program

- Full NFPA certification opportunities at your convenience
- Full assistance and guidance from instructors and evaluators
- Program delivered to you at your department
- Program fully meets or exceeds all appropriate NFPA standards
- Program delivery flexibility
- Cost effectiveness (sending members away to a training program is extremely costly. Your costs are for the program to come to you.)

This process will ensure the firefighters achieve the full NFPA 1001 certification and meet the requirements of the Fire Commissioners Office of BC.

Note – the tuition costs for persons wishing to attend TCOR and take the full firefighter I & II program (22 weeks) for the NFPA 1001 certification are approx. \$12,900.00. The cost of a similar program (13 weeks) at the JIBC is approx. \$8,000.00 and when the additional sessions and expenses that are not included in this base program are added, the entire program costs are approx. 10 to \$12,000.00.

Appendix E: Consultants' Backgrounds

Wayne Humphry

Wayne Humphry is recently retired from the Vancouver Fire/Rescue Department after a career spanning 31 years. During this time, Wayne served in fire suppression, rising to the rank of acting Battalion Chief. He also worked extensively with Vancouver Fire's training division where he was seconded as an instructor between 1996 and 2009.

Based on his work in both roles he has extensive experience in fire rescue emergency operations, specialty teams, logistical planning and budgeting, training and development, facilitation, and project creation and management. In addition to his work with Vancouver Fire he has been an instructor at the Justice Institute of BC, at UBC's Sauder School of Business as well as for Capilano University.

Wayne has developed in-house Officer Development seminars including ProBoard certified programs for various career fire departments throughout the province, for Capilano University and the Justice Institute of BC as well as a High-Rise Firefighting Manual and Operational Guidelines.

He is an accredited instructor with the Fire Academy and his subject expertise includes Fire Officer Level 1, 2 and 3 programs – Emergency Incident Management (BCERMS/ICS, Command Post and EOC operations, fire behaviour, strategies and tactics); Incident Safety Officer; and Live Fire Exercises Levels 1, 2 & 3. Wayne is also Fire and Rescue Services Subject Matter Expert for the JI's Critical Incident Simulation Centre's program development for multi-agency, multi-jurisdictional incident management training.

Ian MacDonald

Ian MacDonald is a former lawyer who practiced international corporate law in Canada and the United Kingdom. Ian started as a lawyer with Davies Ward & Beck in Toronto in 1990 and worked on large corporate transactions in Canada, including the Strait Crossing Inc. project which put the financing and development agreements in place for the construction of the bridge linking Prince Edward Island with New Brunswick. He also advised extensively on other financings, shareholder agreements and corporate restructurings and corporate acquisitions. Ian became a partner in Davies Ward & Beck in 1994 and an equity partner in 1996.

After moving to England in 1998, Ian became managing partner of Amander, Irvine & Zietman, an intellectual property/litigation firm, and had a varied practice advising clients in respect of company formation, shareholder and members' agreements, corporate

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financing, governance issues, and privacy matters. He also did extensive work on litigation files related to corporate fraud.

Ian retired as a lawyer in January 2004 and returned to Canada, since which time he has acted as a volunteer director on two boards, acting as the chair of the governance committee for one, and assisted various community groups in developing long term strategic and business plans.

His consulting work since 2004 has mainly been focused on governance and bylaw issues for fire departments and regional districts. These projects have included the review of the CREST radio system in Victoria, and fire service reviews for Comox Strathcona, Columbia Shuswap and Squamish Lillooet Regional Districts, Pitt Meadows and Lethbridge. He has also advised on governance and structuring issues related to the proposed establishment of a province-wide emergency radio network in Saskatchewan, and is currently assisting Columbia Shuswap Regional District in revising the structure and governance of its regional fire services (including regional mutual aid arrangements).

Ian received an honours BA in history at Simon Fraser University in 1983, a masters degree in history from the University of North Carolina (Chapel Hill) in 1986 and an LLB from Dalhousie University in 1990.

John Vokes

John Vokes has worked in the fire service for 34 years in various position including Director of the Justice Institute of BC's Fire & Safety Division, the British Columbia Office of the Fire Commissioner – including nine years as Deputy Fire Commissioner in charge of Policy and Operations, and nine years as a career fire fighter with the City of Hamilton Fire Department. Since 2005 John has worked as a fire service consultant and specializes in technical, interpretive, and administrative advice related to administration and interpretation of codes, standards, and legislation that affects fire safety, enforcement of fire regulations, and the development of fire training strategies.

John has assisted many local governments and organizations throughout British Columbia to establish and improve their fire protection systems. This experience has led to an in-depth understanding of fire protection systems, fire service culture, and operational needs related to fire safety that is reflected in the interpretation and advice that is offered to clients.

John has a Master of Arts degree (RRU) in Leadership and Training along with a Bachelor of General Studies degree (SFU) with a focus on Leadership in Justice and

Public Safety Organizations, and a Fire Science Certificate (Mohawk College). John is also a member of the Institution of Fire Engineers (MIFireE).

Dave Mitchell

Dave Mitchell retired as Division Chief, Communications in 1998 from Vancouver Fire & Rescue Services following a career spanning 32 years. During this time he was responsible for managing the emergency call taking and dispatch for the Vancouver and Whistler Fire Departments. In 1997 he managed the transition of dispatch service for the five Fire Departments on the Sunshine Coast from an independent contractor, to Vancouver Fire/Rescue.

In 1998 Mr. Mitchell was hired by E-Comm, Emergency Communications for Southwest BC as its first Director of Operations. In this role he was a member of the founding senior management team, and was responsible for the transition of the Vancouver Police Department dispatch staff as well as the 9-1-1 call takers for Whistler, Metro Vancouver and the Sunshine Coast Regional District to its current location at 3301 East Pender in June 1999. Dispatch services for the RCMP in the Sunshine Coast, Whistler and Pemberton were added in October 1999.

He left E-Comm in June 2000 to work as a consultant, and since that time has worked with provincial, regional and municipal governments on a range of issues including the Hon. Gary Filmon's review of the 2003 Firestorm for which he reviewed all the testimony taken and provided advice and recommendations regarding emergency communications systems and interoperability issues. In addition, along with other members of the firm, he has worked with local and regional governments conducting a series of fire services reviews that considered governance, operations, organization, finance and interoperability including mutual aid. These include studies for the Columbia Shuswap Regional District in 2008/09, the Comox-Strathcona Regional District in 2007 and the Squamish Lillooet Regional District in 2006.

Other areas of work include master fire plans, strategic plans and fire hall location studies for a range of clients including Port Moody, West Vancouver, Saanich, Fort St John, Pitt Meadows, North Vancouver District, North Vancouver City, Burnaby, View Royal and Sidney. The firm also specializes in technology related projects including quality assurance reviews of communications centres as well as procurement and implementation of computer aided dispatch and record management systems for fire departments such as Whistler, Vancouver, Richmond, Delta, New Westminster, Prince George, Lethbridge, Whitehorse, the Kootenay Boundary Regional District, the Regional District of Fraser-Fort George, and Toronto.

Mr. Mitchell holds a Bachelor of Arts Degree from Simon Fraser University in addition to a diploma from their Executive Management Development Program. He is past Chair of the Board of Directors of the Vancouver General Hospital and University of British Columbia Hospital Foundation and is a member of the National Fire Protection Association (NFPA), the National Emergency Number Association (NENA), the Association of Public-Safety Communications Officials (APCO), the Fire Chiefs' Association of British Columbia (FCABC), the Canadian Association of Management Consultants (CAMC) and is a member of the Public Safety Communications Advisory Committee of Kwantlen College.