Community Wildfire Resiliency Plan

Regional District of Central Kootenay
Electoral Area E

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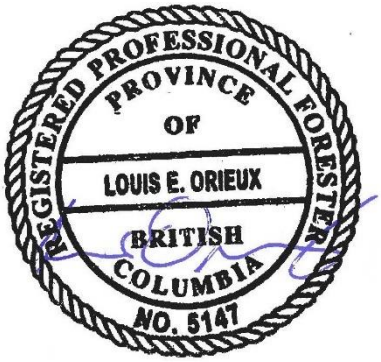
I certify that the work described herein fulfills the standards expected of a member of the Association of British Columbia Forest Professionals and that I did personally supervise the work.	
Registered Professional Forester Signature and Seal	
	

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- Cheryl Graham (RDCK Director for Area E)
- Nora Hannon (RDCK Disaster Mitigation and Adaptation Senior Advisor)
- Dan Seguin (RDCK Manager Community Sustainability)

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EXECUTIVE SUMMARY

In June 2023, B.A. Blackwell and Associates Ltd. was retained by the Regional District of Central Kootenay (RDCK) to assist Electoral Area E (EA-E) in developing a new Community Wildfire Resiliency Plan (CWRP). A CWRP is both a localized risk assessment and an action plan to improve wildfire resiliency within EA-E's Wildland-Urban Interface (WUI). This Plan replaces the previous Community Wildfire Protection Plan (CWPP) completed for EA-E in 2016, accounting for changes that have occurred in the last seven years and taking advantage of the newest community wildfire planning framework in BC. The CWRP is founded on the application of the seven FireSmart™ disciplines (Education, Legislation and Planning, Development Considerations, Interagency Cooperation, Cross-training, Emergency Planning, and Vegetation Management).

EA-E has made full or partial progress with 11 of 36 of the 2015 CWPP recommendations. The recommendations addressed primarily related to delivering public FireSmart and wildfire education and prescribing and implementing proposed treatment units. As the Electoral Area's communities (and associated WUI) are spread out over a significant distance along the northern and western shores of the West Arm of Kootenay Lake, community wildfire resiliency is strongly tied to the actions of the communities and their residents, the Provincial government, and the relevant stakeholders managing the timber harvest land base. Communities and their respective servicing fire departments adjacent to the City of Nelson should look to join meetings of the Nelson Community FireSmart Resiliency Committee; eastern electoral area communities should get Local Government support to establish their own Committees, especially as they self-organize for FireSmart Initiatives. Community and Local Government led interagency cooperation will be essential to implementing this plan and achieving effective wildfire risk reduction throughout EA-E.

EA-E's WUI communities are all in a provincially defined Wildland Urban Interface polygon that has a Risk Class of "1", which reflects the highest wildfire risk rating. The Provincial Strategic Threat Analysis assigns a "High" or "Extreme" threat rating to much of the surrounding area. Fieldwork for this CWRP allowed for verified and updated fuel types and wildfire threat assessments to be combined with an office-based analysis to provide a local wildfire risk assessment for the communities. The local analysis determined that, for the assessable area, 41% of EA-E's WUI is classified as a High or Extreme fire behavior threat – mostly located on the middle and upper slopes on the north side of Kootenay Lake, largely reflecting steeper slopes on southerly aspects with conifer-dominated fuel types. The analysis cannot be performed on private land, which covers approximately 45% of EA-E's WUI. This highlights the need to implement risk mitigation programs on private land if community resilience is to be achieved. Conditions on private land can often result in the fire hazard being much higher than in the forest adjacent if there is low compliance with FireSmart principles – which is an issue that was frequently observed through field work. It is important to recognize that in WUI fires, wildland fuels (trees, shrubs, branches, etc.) are not the only fuel available to the fire – houses and their exterior construction materials and landscaping vegetation, cars, barbeque propane tanks, and more (anything that is flammable or combustible) is available fuel.

Rural areas without fire services, or dependent upon small volunteer fire services, rely heavily on the coordination of local resources and the uptake of FireSmart initiatives to be prepared for a wildfire event.

It has been found that during extreme wildfire events, most home destruction has been a result of low-intensity surface fire flame exposures, usually ignited by flying embers (firebrands). Firebrands can be transported long distances ahead of the wildfire, across fire guards and fuel breaks, and accumulate in densities that can exceed 600 embers per square meter. Combustible materials found on the exterior of and surrounding homes (the FireSmart Home Ignition Zone) combine to provide fire pathways allowing spot surface fires ignited by embers to spread and carry flames or smoldering fire into contact with structures.

Because ignitability of structures and landscaping vegetation is the main factor driving structure loss, the intensity and rate of spread of wildland fires beyond the community has not been found to necessarily correspond to loss potential. For example, FireSmart homes with low ignitability may survive high-intensity fires, whereas highly ignitable homes may be destroyed during lower intensity surface fire events. Increasing ignition resistance would reduce the number of homes simultaneously on fire; extreme wildfire conditions do not necessarily result in WUI fire disasters.[1] It is for this reason that the key to reducing WUI fire structure loss is to reduce structure ignitability. Mitigation responsibility must be centered on structure owners, with support from Local Government.

EA-E's WUI communities can be considered as largely intermix[2], with areas/neighbourhoods of interface[3]. Wildfire poses a threat to the communities from either a human ignition (which can happen almost anywhere – forest trail, highway, backyard), or lightning ignition (most often in the adjacent forests near higher points of land), but also from a residential fire that then spreads into surrounding vegetation and landscaping. Because of the rural character, remote or isolated locations, and the observed low adherence to FireSmart residential vegetation management and exterior building materials for many structures within EA-E, an emphasis on FireSmart education and FireSmart residential risk reduction policies is made within this Plan. Risk communication, education on the range of available activities, and prioritization of activities should help homeowners to feel empowered to complete simple risk reduction activities on their property. Additional emphasis is placed upon the Provincial government and local timber harvest land base stakeholders to manage potentially hazardous fuel conditions within EA-E's WUI – either through fuel treatments recommended as part of this plan, or by using appropriately targeted harvesting and slash management practices.

A total of 46 recommendation and action items are presented in Table 1 within this Executive Summary and are more thoroughly discussed in their appropriate sections within this Plan. Ultimately, the recommendation and action items within this Plan should be considered as a toolbox of options to help reduce the wildfire risk and consequence to communities with EA-E. RDCK and EA-E will have to further

[1] Calkin, D., J. Cohen, M. Finney, M. Thompson. 2014. *How risk management can prevent future wildfire disasters in the wildland-urban interface*. Proc Natl Acad Sci U.S.A. Jan 14; 111(2): 746-751. Accessed online 1 June, 2016 at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3896199/.

[2] Homes and structures are largely situated within the vegetated/forested landscape.

[3] Homes and structures are largely situated adjacent to vegetated/forested landscapes surrounding the community/neighbourhood.

prioritize implementation based on resources, strengths, constraints, and availability of funding, and regularly update the prioritization and course of actions as variables change over time.

This Plan was developed concurrently with CWRPs for adjacent RDCK Electoral Areas D, F, I, and the Village of Kaslo. As such, there are synergies between these plans that should be utilized and capitalized upon, such as similar/matching recommendations, adjacent or adjoining proposed fuel treatment units, and overlapping fire department response areas.

Table 1: EA-E's Community Wildfire Resiliency Action Plan

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
Education - Section 5.2							
Residents							
1	High	Continue to apply for funding and employ an EA-E FireSmart Coordinator/Mitigation Specialist.	To provide a continuous, local FireSmart program, delivered by local professionals with local knowledge and connections, to their community. Having a FireSmart Coordinator will provide a lead person with dedicated time to coordinate, manage, and implement the program, especially as it grows.	RDCK	2 years	EA-E has its own FireSmart program being managed by a local FireSmart Coordinator.	CRI FCFS up to cost maximums.
2	High	RDCK FireSmart Coordinators should plan regular meetings to discuss their successes, failures, and learnings. Consider adding, or having specific meetings with, FireSmart Community Neighbourhood Champions.	So that they can continue to improve the RDCK's FireSmart program and tailor it to their respective communities. Adding in Community Champions will allow them to further support their EA's communities, as well as get FireSmart messaging and opportunities back into the communities faster.	FireSmart Coordinators (RDCK)	ASAP and ongoing	RDCK FireSmart Coordinators are meeting more than once a year.	CRI FCFS funding as part of FireSmart Coordinator salaries.
3	High	Continue to promote FireSmart to EA-E residents at community events, public spaces, and through workshops using FireSmart branded material and printed manuals (Home and Landscaping) and/or a FireSmart Canada Community Preparedness Day. Show a united front by having local government, fire department members, and FireSmart coordinators at events together as much as possible.	Observed adherence and uptake of FireSmart principles on private property and many homes/structures in EA-E is lacking. Landscaping (conifer hedges), firewood and combustible materials storage, and external building materials are the biggest issues. FireSmart BC resources help present a unified message. Print resources are popular and easy to distribute. FireSmart branded tents, banners, and t-shirts can be purchased with CRI FCFS funding.	EA-E / RDCK	Annually	Quantity of resources distributed/number of times used at events.	CRI FCFS up to cost maximums.
4	High	Update RDCK's FireSmart webpage with the most recent FireSmart graphics and language. Provide links to the current fire danger rating, or better yet, have that posted on the front of this page (making sure to keep it updated during the fire season).	To continue to provide to most recent and up to date FireSmart information, language, and principles to residents (and visitors).	RDCK	Annually	RDCK FireSmart webpage is showing current FireSmart information and graphics.	CRI FCFS up to cost maximums.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
5	High	Continue the FireSmart social media campaign, with updated FireSmart graphics and language, through various RDCK/EA-E social media platforms (i.e., Facebook, Twitter, Instagram), including those from Volunteer Fire Departments.	To promote FireSmart information to residents (and visitors). Include links to graphics, videos, pdf information/pamphlet downloads, etc.	EA-E / RDCK	Annually	An organized FireSmart social media campaign is delivered throughout RDCK.	CRI FCFS up to cost maximums.
6	High	Continue to promote FireSmart in EA-E schools using the FireSmart Education Kit and other resources.	Great success has been made through BC schools with FireSmart outreach. Engaging with the community's younger population may increase uptake with all residents.	RDCK / School District 8	Annually	One FireSmart lesson delivered each year (minimum).	CRI FCFS; e.g. FireSmart Magnetic Board for $1,710.
7	High	Continue to promote free FireSmart Home Ignition Zone assessments and/or Home Partners Program assessments to residents.	FireSmart Home Ignition zone and Home Partners Program assessments introduce residents to FireSmart, its principles, fire and wildfire risks associated with their home and property, and how they can be mitigated. These assessments are primarily an educational exercise, and can be funded completely through CRI FCFS. They are a requirement to qualify for the FireSmart rebate program (see Section 5.7).	EA-E / RDCK	2 years	FireSmart Home Ignition Zone assessments are being completed within EA-E.	CRI FCFS up to cost maximums.
8	Moderate	Consider door-to-door knocks in neighbourhoods that have communication constraints to discuss wildfire risk and FireSmart principles that they can apply to their home and property.	Although wildfire can affect all areas of EA-E's WUI, some communities are more at risk due to risks/constraints not associated to wildfire – such as no cell service and low community turnouts at public FireSmart events. Door to door knocks by Fire Chiefs, fire department personnel, and FireSmart Coordinators have been successful in other communities.	RDCK / EA-E fire departments / FireSmart Coordinators	2 years	Visits to homes in these WUI neighbourhoods from local government/ FireSmart/ fire department members (with FireSmart information left at their door) have started.	In-house personnel time. CRI FCFS for FireSmart materials.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
9	Moderate	Increase public awareness of this Community Wildfire Resiliency Plan.	Increasing awareness of wildfire risk also increases community resiliency through household emergency planning, and support for FireSmart.	EA-E / RDCK	1 year from CWRP completion	Awareness by residents - consider a survey.	Staff time to update website, and media posts. Newspaper ads ~$300 each.
Visitors							
10	High	Lobby BC Parks to install FireSmart educational signage at all BC Park camp and recreation sites within EA-E, starting at Kokanee Creek. RDCK should follow suit for all regional parks.	These signs provide both visitors and residents a quick snapshot of how their actions and activities can inadvertently increase wildfire and ignition risks, as well as introduces visitors to FireSmart – a message they can take home with them.	EA-E / RDCK / BC Parks	5 years (signs installed)	Wildfire risk signs at the highest traffic parks have signs.	Sign cost ~$800 for purchase and installation per sign.
Legislation, Planning and Development - Section 5.3							
11	High	Upon the roll-out of the new BC Building Code in 2024, RDCK should review and assess what FireSmart principles are included and compare them to the draft Wildfire Development Permit Areas (DPAs). Update the draft DPAs as required. Initiate a process to implement the wildfire DPAs, if still required, to manage for risks not addressed in the new Code.	FireSmart construction and landscaping policies manage for wildland-to-structure fire transfer (and vice versa). Over time, resiliency will be built up at the interface and intermix areas.	EA-E / RDCK (Consultant)	Upon BC Building Code roll out	All new development complies with the policy.	CRI FCFS: up to $10,700 available to apply to incremental staff hours or contract cost.
12	High	Update references to “fire risk” in EA-E’s OCP (e.g., sections 13.1 and 13.6) to include referencing the Local Wildfire Risk Analysis developed as part of this plan, as it more accurately reflects current fire risk for EA-E’s WUI than currently available provincial data.	EA-E should look to the most recent and accurate wildfire risk analysis for its WUI to be used to determine areas of Moderate and High wildfire threat for reducing wildfire threat through community planning and development purposes.	EA-E / RDCK (Consultant)	Upon next OCP review and update	OCP update that includes FireSmart construction/development policies for single home and lot development and major renovations.	CRI FCFS: up to $10,700 available to apply to incremental staff hours or contract cost

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
13	High	Consider adopting a Wildfire Landscaping Bylaw to restrict flammable landscaping. Example: prohibit conifer vegetation in the Immediate Zone of a residence or structure (0-1.5 m) and prohibit the planting of new conifer vegetation in Priority Zone 1 (1.5-10 m). Highly flammable landscaping plants (ex., cedar hedges) were noted throughout the Township, especially on more densely populated streets. This can be an effective communication tool regardless of enforcement capacity.	Highly flammable landscaping plants (ex., cedar hedges) were noted throughout EA-E, especially on more densely populated streets. Landscaping vegetation can act as a wick, moving fire to homes/structures and throughout communities.	EA-E / RDCK (Consultant)	5 years	A Wildfire Landscaping Bylaw is in effect.	CRI FCFS: up to $10,700 available to apply to incremental staff hours or contract cost
14	High	Continue to conduct FireSmart Critical Infrastructure Assessments for public works and community/ government buildings. Conduct FireSmart mitigation as soon as possible (vegetation management, material upgrades). Set a priority sequence for assessment based on wildfire response and post-wildfire recovery. Encourage and support privately owned community halls that act as community shelters, and private or community owned critical infrastructure, to do the same.	Protecting water systems, emergency shelters, and community infrastructure is critical to wildfire response and recovery. Assessments have already been completed for EA-E fire halls.	EA-E / RDCK (Local FireSmart Representatives ; FireSmart Coordinator; and/or Consultant)	Ongoing	Number of assessments completed and mitigation hours/investment	CRI FCFS: up to $800 per assessment and up to $50,000 for mitigation per structure (publicly owned only)
Cross Training & Fire Department Resources - Section 5.4							
Training							
15	High	Continue to support 'train-the-trainer' programs so that required courses (e.g., S-231, WSPP-115) can continue to be delivered in-house to EA-E fire department members.	To continue providing an opportunity to expand in-house wildland specific training, and potentially train adjacent fire departments or community groups.	RDCK / EA-E / EA-E fire departments	Annually	Number of fire response personnel with wildland training maintains or increases.	Staff time; CRI FCFS funding is available for training. Columbia Basin Trust funding.
16	High	Support FireSmart specific training to EA-E fire departments. Examples include: FireSmart 101, Local FireSmart Representative (LFR), and FireSmart Home Partners Mitigation Specialists.	To continue building an understanding and knowledge of FireSmart principles within fire response personnel and the community. To certify fire response members so they can implement various FireSmart assessments within the community.	RDCK / EA-E / EA-E fire departments	3 years	Number of fire response personnel with FireSmart training increases.	Staff time; CRI FCFS funding is available for training.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
17	High	EA-E fire departments should continue seeking out (and being supported by RDCK/EA-E in doing so) opportunities to perform wildfire response and structure protection drills - using hydrants, standpipes, and natural water sources, *with* BCWS.	Fast and effective deployment of available Structure Protection Units (two are owned by RDCK) and any additional equipment that the fire departments have will be crucial in any interface fire scenario. Equipment compatibilities and/or differences between those available and what equipment BCWS uses should be identified and addressed ahead of time.	RDCK / EA-E / EA-E fire departments	Annually	A Drill is performed with BCWS and one EA-E fire department annually.	Staff time as required.
Water							
18	High	Identify and map natural and artificial water sources useable for fire suppression across the entire regional district. Having a digital map would allow it to be uploaded into response vehicles' CAD systems, shared with BCWS response personnel, as well as included in the pre-planning of emergency community water delivery systems connecting major natural water sources with interface communities, to facilitate deployment of a structural protection system. Include important details such as: estimated water volume and access point notes. Share this information to all mutual aid fire response partners, and update over time.	Most firefighting service in EA-E requires water shuttling. Wildfire fighting response almost always relies upon local water sources. This impacts EA-E's wildfire resilience. Shuttling or pumping water from lakes and rivers to fill bladders can be pre-planned, including tender access points, traffic control, permanent large-volume pumps, and piping.	RDCK GIS department/ EA-E fire departments (to aid in identification for their service areas or share data already acquired) (BCWS)	5 years and ongoing	A fire suppression water source plan and map are produced and shared.	CRI FCFS Community Water Delivery Assessment funding available for incremental staff hours or contract cost.
19	High	In coordination with recommendation #18, create opportunities for BCWS to work with independent water systems to identify assets. Assist those communities in retrofitting their systems to be compatible, if required.	Reducing barriers to BCWS for accessing water sources in the WUI increases opportunities to fight WUI fires.	RDCK / FireSmart Coordinator (BCWS)	Annually	Communities with self-managed water systems are meeting with BCWS	RDCK/EA-E, BCWS, and community time.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
20	Moderate	EA-E fire departments should seek (or continue to uphold, if accredited already) Superior Tanker Shuttle Service accreditation from Fire Underwriters Survey.	This accreditation certifies that the fire department can supply enough water to have some areas without fire hydrants within a certain distance of their structures qualify as having a fire hydrant within 300m of it (this can also potentially lower insurance rates for property owners within the EA-E fire response areas). Note: this does not increase the overall water supply already available under automatic and mutual aid agreements.	EA-E fire departments/ RDCK	5 years	Superior Tanker Shuttle Service accreditation achieved by EA-E fire departments.	Fire department staff time as required (and RDCK budget for equipment upgrades and purchases, if needed).
Equipment & Staff							
21	High	In coordination with Recommendations #17 and #18, the EA-E fire departments should continue (or begin, if not done already) annual inspections by BCWS of their wildland firefighting equipment. Any gaps should be addressed, as required.	To ensure proper equipment is available to respond to interface wildfire events, and that equipment is compatible with BCWS's. CRI FCFS funding is available for incremental equipment purchases.	EA-E fire departments (RDCK; BCWS)	Annually	Annual inspection of wildland firefighting equipment from BCWS; gaps filled as practicable.	Fire department and RDCK staff time; CRI FCFS equipment funding up to cost maximums.
Interagency Cooperation - Section 5.5							
22	High	Continue to engage with the established local Community FireSmart Resiliency Committee (CFRC) to plan, implement, and coordinate FireSmart initiatives, including fuel management treatments. Look to include EA-E volunteer fire department Fire Chiefs.	To provide a platform for information sharing. All parties have indicated a willingness for collaboration, which will allow for greater management of wildfire risk both within and surrounding EA-E's WUI.	Nelson CFRC	Ongoing	CFRC FireSmart meeting takes place at least once annually.	At least 8 hours per meeting to prepare, participate and debrief. CRI FCFS up to $2,000 per meeting.

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23	High	As communities self-organize for FireSmart initiatives, and even take up the FireSmart Canada Neighbourhood Recognition Program (see Recommendation #45), RDCK and EA-E should look to support their inclusion in a Community FireSmart Resiliency Committee (CFRC), or develop local sub-committees, as required.	To further community involvement in FireSmart and wildfire risk reduction activities at the community level.	RDCK / EA-E FireSmart Coordinator	Ongoing	Additions to existing CFRCs are made, as required, or new ones are established, as needed.	Cost and time dependent upon level of effort required.
24	High	Work with RDCK, CFRC members, and MOF to develop a fuel treatment/fuel break tracking system to spatially manage proposed and completed fuel management areas both within EA-E's WUI and outside it at the regional level.	It is imperative that all land managers know what adjacent or overlapping jurisdictions have identified as fuel breaks, so that time and money is not wasted reassessing or re-prescribing an area.	Nelson CFRC / MOF / RDCK	As soon as possible	A regional GIS tracking system is established, or a provincial one is developed that CFRC members can access.	Cost and time dependent upon level of effort required.
25	High	Lobby forest land licensee/managers (e.g., BC Timber Sales, Woodlots, Harrop-Proctor Community Forest) to be aware of where their tenure overlaps EA-E's WUI and to develop and implement (or continue implementing) forest planning, harvesting, slash management, and reforestation plans that reduce wildfire behaviour in these areas.	Cutblock placement can break up the forest continuity across the landscape – with proper slash and reforestation management, they can remain as areas of low wildfire behaviour for many years. However, if not managed properly, they can increase wildfire behaviour.	RDCK / EA-E / MOF / Forest Licensees and Managers / Local Government elected officials/ Community members	Ongoing	Forest licensees/ managers are aware of their tenure overlaps with the WUI and are actively working towards forest management plans to reduce wildfire behaviour in those areas.	RDCK/EA-E staff time for discussions.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
26	High	Lobby and work with the electrical power providers in and influencing the community's WUI, MOTI for Provincial highways, and rail line owners/operators to regularly maintain their right-of-way's vegetation.	Transmission lines can provide excellent fuel breaks and access for first responders in the event of a wildfire – if the vegetation on them is regularly managed and kept in a low-hazard state. They can also be the source of fire ignitions - trees and other vegetation intruding into power lines can cause fires in multiple ways. Highways can also provide excellent fuel breaks if the vegetation on them is regularly managed and kept in a low-hazard state. If not, they can act as wicks moving fire along them, or ignition sources for fires from burning cars, cigarette butts, sparks, etc. Additionally, highways are a main access/egress route during an emergency – these routes should be kept at as low risk of state as possible.	RDCK / EA-E (MOTI; Local Government elected officials Electrical Providers; Rail line operators)	Yearly and ongoing	Right-of-way maintenance discussions are open and ongoing; right-of-ways are kept in low-risk states.	RDCK/EA-E staff time for discussions.
Emergency Planning - Section 5.6							
27	High	Continue tabletop wildfire scenario tabletop exercises with emergency management and CFRC partners. Yearly, pre-fire season is best. Move the "WUI fire" to a different area of EA-E's WUI each time.	Tabletop exercises provide an opportunity to identify weak spots in a plan and collaborate.	RDCK (Nelson CFRC; RCMP; BCWS)	5 years	Knowledge of 'pinch points' in an evacuation scenario and understanding of roles and responsibilities.	CRI FCFS Emergency Planning: up to $2,000 per meeting. Possibly CRI / CEPF / Columbia Basin Trust

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
28	High	Consider updating EA-E's OCP with guidelines stating private roads that access forest lands should be of adequate design to allow for the safe movement of logging and fire-fighting equipment. Discuss with the Ministry of Transportation and Infrastructure (MOTI) possible means supporting/enforcing that private roads that access forest lands should be of adequate design to allow for the safe movement of logging and fire-fighting equipment.	Access by emergency responders to the WUI is paramount towards both defending communities from WUI fire events, but also for aiding in fuel treatment practicability. This constraint is recognized in EA-F's Rural Community Official Plan in section 18.3.8 which, "Encourages that private roads that access forest lands should be of adequate design to allow for the safe movement of logging and fire-fighting equipment."	RDCK (MOF; BCWS; Local Fire Response Area Departments)	5 years	OCP updated as required and access roads through private land to the interface forest are maintained.	RDCK/EA-E time for planning and discussions. CRI FCFS: up to $10,700 with estimated incremental staff hours or contract cost.
29	High	RDCK and EA-E should continue to promote the Voyent Alert! System to residents and visitors.	Clear, consistent, concise, and quick communication during an emergency event and evacuation are integral to the prevention of loss of life. A lack of this was identified as an issue during recent WUI fire disasters, such as that in Lahaina, Maui, USA and Fort McMurray, Alberta.	RDCK (FireSmart Coordinator)	Ongoing	Continued update of the Voyent Alert! System (can track downloads from app providers).	RDCK for promotion.
30	High	RDCK should have appropriate signage designating shoreline access routes for secondary boat egress for those communities that rely on ferry or private boat for access/egress (e.g., Harrop and Procter).	To expedite egress during an emergency evacuation in areas already significantly constrained.	RDCK / EA-E	5 years	All public shoreline access/egress routes are marked (a series of signs from main roads to access points is best).	RDCK. Cost/time dependent on number of access points and signs required.
31	High	Invest in back-up generators for any critical infrastructure that does not have one. Encourage private businesses that provide critical services, like gas stations and grocery stores, to follow suit.	Back-up generators for pumphouses, treatment plants, and community buildings (especially those designated as emergency shelters) would facilitate both emergency response (water supply for suppression) and rapid community return and recovery following a fire.	RDCK / EA-E (Private Industry)	ASAP	A budget and purchase plan for back-up generators is implemented, starting with the most critical infrastructure.	Cost varies - ~$10,000

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32	High	Initiate a roof-top sprinkler program for residential properties. Investigate bulk orders from wildfire protection or irrigation companies or commercial gutter-mount kits. Consider sprinkler kits as an incentive to communities/neighbourhoods for FireSmart participation. Discuss with local Fire Departments and BCWS what mounting/sprinkler types are best. This can be directly led by RDCK, or RDCK can offer support to local fire departments and community organizations to assist doing so.	Rooftop sprinklers reduce the time and resources needed to set up a structural protection system in a community threatened by wildfire. Sprinkler installation/acquirement could be paired with a free FireSmart Assessment.	RDCK / EA-E (EA-E fire departments; BCWS)	3 years and ongoing	Establish an efficient and effective system. Track the number and location of sprinklers purchased and installed annually.	Bulk sprinklers $40 - $100 each; gutter mount kits ~$100-200 for one home
33	High	Schedule regular updates of this Community Wildfire Resiliency Plan: target every 5 years.	A current and acceptable CWRP is required for funding under the CRI FCFS program. Update the wildfire threat for areas with completed fuel treatments and identify additional areas for treatment.	RDCK / EA-E	5 years – 2028 update	EA-E always has a current and acceptable CWRP.	~$32,000; CRI FCFS funding
34	Moderate	Pre-plan emergency community water delivery systems to connect major natural water sources with interface communities/neighbourhoods to facilitate deployment of a structural protection system. This can be supported by Recommendation #18. The Argenta Emergency Preparedness Group has been working on this since 2023 (see Section 5.4).	RDCK has many large natural water bodies and streams/creeks to draw from in the event of a wildfire. Shuttling or pumping water from lakes and rivers to fill bladders may be planned in advance, including tender access points, traffic control, permanent large-volume pumps and piping.	RDCK / EA-E (BCWS)	5 Years	Assess community water delivery for each neighbourhood. Develop and test neighbourhood specific plans.	CRI: Assessment of Community Water Delivery Ability - incremental staff hours or contract cost
35	Moderate	Promote the installation of visible and reflective addresses in EA-E Consider and explore how to regulate addressing across the District. Note: RDCK has requested a program to support standardized address signage, but stated that if building permits are not applied for then there is no street address. There are no regulations on addressing.	To allow for faster and more direct response to specific properties by first responders during an emergency.	EA-E / RDCK	5 years	Majority of properties have reflective, visible addresses.	Promotion campaign; consider providing discounted signs. 40-60 hours and $40-60 per sign

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
Vegetation Management - Section 5.7							
Fuel Management Treatments							
36	High	Develop fuel management prescriptions for the identified Potential Fuel Treatment Units (PTUs), starting with those identified as High priority. Continue with treatment implementation when possible.	To reduce wildfire threat and risk to interface and intermix communities within the WUI. Also, to provide FireSmart vegetation management examples to the public that can be implemented on their own properties. See "Rationale" column in Table 24 for more detailed treatment rationales.	EA-E / MOF / BCWS	5 years	Approved FMP(s) for identified High priority areas.	CRI FCFS funding available for prescription and treatments; ~$425/hectare for a ~20 ha prescription
37	High	Lobby Provincial Government (Ministry of Forests) and other potential funding organizations for grant funds to implement landscape level fuel treatment on private land.	Much of EA-E's communities' structures are surrounded by undeveloped, forested private land. Current funding streams for fuel reduction at the landscape level are targeted, and thus limited, to public land. However, the interface wildland does not stop at the public/private land border.	Local Government (Provincial Government)	5 years	Discussions initiated and ongoing	Time and cost dependant upon level of engagement required.
Residential FireSmart							
38	High	In conjunction with provided home FireSmart Assessments (see Recommendation #7) Continue offering a local rebate program to property owners that have completed a FireSmart home assessment (Home Ignition Zone assessment or Home Partners Program Mitigation assessment. RDCK, EA-E, and FireSmart coordinators should advertise that the amount eligible for rebate has increased to $5000 for the CRI FCFS 2024 application program.	FireSmart home assessments encourage action in the FireSmart Home Ignition Zone of a community. Offer a rebate program (funded through CRI FCFS) to residents who have a pre- and post-work FireSmart assessment conducted. Focus on removal of conifer hedges and upgrading exterior structure materials.	RDCK / EA-E FireSmart Coordinator	Annually	Number of properties participating annually.	50% of costs per property up to $5,000, plus 2 hours administration time per property (CRI FCFS).
39	High	Continue providing regional district-led options for the disposal of yard waste. Currently, this includes having tipping fees waived (May and October) for yard waste at the RDCK transfer stations.	Yard waste burning restrictions limit options for debris disposal. Free debris disposal may be used as an incentive to participate in other FireSmart activities, like assessments or workshops.	RDCK	Annual	Municipally funded yard waste disposal continues.	CRI FCFS funding is available for tipping fee coverage.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
40	High	Consider implementing a community chipper program. Education of FireSmart yard and landscaping principles, including chipping specifications, should be incorporated into the program.	To reduce fire and wildfire hazards on private property within the WUI, especially those long distances from RDCK landfills/transfer stations, and to promote FireSmart vegetation management knowledge and education. The intent is for landscaping/yard vegetation to be included, not farm or agriculture vegetation. This could assist with more uptake of residential FireSmart landscaping principles as the disposal method is brought to the resident, especially for those older and less mobile.	RDCK / EA-E FireSmart Coordinator	Annual (pre-fire season is best)	Number of properties who elect to have debris disposed.	CRI FCFS funding; ~$100-150 per chipper crew hour.
41	Moderate	Consider releasing an annual RDCK FireSmart report to the public that tracks community-specific uptake in various FireSmart initiatives, as well as tracks fuel management at all scales.	As the program grows, reporting allows the RDCK FireSmart program to track challenges and successes, further promote the program, and tailor outreach methods to achieve the most uptake.	RDCK / EA-E FireSmart Coordinator	Annual	An annual report is published.	Eligible for CRI funding – FireSmart staff time. Estimate 40-80 hours.
42	Moderate	Engage with local garden centers to implement the FireSmart BC Plant [Tagging] Program.	FireSmart BC introduced a plant tagging program in 2021 that has been implemented with great success by over 34 nurseries and garden centres to date. The Plant Program is an easy way to provide information at the point of purchase for homeowners and landscapers. See: https://firesmartbc.ca/landscaping-hub/plant-program/	Local Garden Centres (RDCK; EA-E FireSmart Coordinator)	5 years	Local garden centres have been notified of the program.	Staff time for engagement (2-4 hours per garden centre).
Community and Critical Infrastructure FireSmart							
43	High	Implement recommended vegetation management recommendations from FireSmart Critical Infrastructure Ignition Zone Assessments (see Recommendation #14), when completed, on a priority basis.	To reduce fire behavior and risks to critical infrastructure most important to fire and wildfire fighting and post-wildfire recovery.	RDCK / EA-E FireSmart Coordinator	5 years	High priority critical infrastructure has had FireSmart vegetation management completed.	CRI FCFS funding up to $53,500 per municipal infrastructure (vegetation management included).

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
44	High	As part of fuel treatment implementation, RDCK/EA-E should develop interpretive signage to demonstrate pre- and post-fuel treatment forest stands conditions.	Interpretive signage could include text explaining the purpose of the fuel management treatment, connection to the CWRP, and FireSmart practices residents nearby can take to reduce wildfire hazards around their yards and homes.	RDCK / EA-E FireSmart Coordinator	5 years	Signage installed during implementation phases.	Eligible for UBCM CRI funding.
45	High	Continue to support and promote the FireSmart Canada Neighbourhood Recognition Program to communities within EA-E. Identify community champions to spearhead organization for those communities not already organized, and support those communities that have been recognized in the past to continue working towards being so.	There are many small communities throughout EA-E that, by working together, could reduce their community-scale wildfire risk easily and substantially. The program supports a small-scale approach for neighbourhoods consisting of 5-50 homes, with the intent to implement achievable FireSmart goals	RDCK / EA-E FireSmart Coordinator	Ongoing	Increase in number of recognized communities.	FireSmart Canada $500; RDCK FireSmart Champion Grant up to $3000
46	Moderate	As part of the FireSmart Canada Neighbourhood Recognition Program (FCNRP), apply to CRI FCFS for funding to develop Neighbourhood FireSmart Plans.	To help guide FireSmart Canada Neighbourhood Recognition Program communities and their community champions to complete wildfire risk reduction measures.	RDCK / EA-E FireSmart Coordinator	In line with FCNRP Community program uptake.	Communities working towards FCNRP status have a Neighbourhood Plan	Eligible for UBCM CRI funding.

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FREQUENTLY USED ACRONYMS

AOI	Area of Interest
BC	British Columbia
BCWS	British Columbia Wildfire Service
BEC	Biogeoclimatic Ecosystem Classification
CFFDRS	Canadian Forest Fire Danger Rating System
CRI	Community Resiliency Investment
CWPP	Community Wildfire Protection Plan
CWRP	Community Wildfire Resiliency Plan
DPA	Development Permit Area
EA-E	RDCK Electoral Area E
FBP	Fire Behavior Prediction System
FCFS	FireSmart Community Funding and Supports: Stream 1 of the UBCM CRI Program
HIZ	Home Ignition Zone
MOF	Ministry of Forests
MOTI	Ministry of Transportation and Infrastructure
NDT	Natural Disturbance Type
PSTA	Provincial Strategic Threat Assessment
PTU	Proposed Treatment Unit
RDCK	Regional District of Central Kootenay
UBCM	Union of British Columbia Municipalities
WRR	Wildfire Risk Reduction: Stream 2 of the UBCM Community Resiliency Investment Program, administered by the Ministry of Forests
WTA	Wildfire Threat Assessment
WUI	Wildland Urban Interface

SECTION 1: INTRODUCTION

In June 2023, B.A. Blackwell and Associates Ltd. was retained by the Regional District Central Kootenay (RDCK) to assist Electoral Area E (EA-E) in developing a new Community Wildfire Resiliency Plan (CWRP). A CWRP has its roots in the Community Wildfire Protection Plan (CWPP) framework, which was originally established in BC in response to the series of devastating wildfires in 2003. This plan replaces the previous 2015 EA-E CWPP. Recent wildfire disasters like those experienced in Oregon State (2020), Washington State (2014, 2015, 2020, 2023), Fort McMurray, Alberta (2016), BC (2017, 2018, 2021, 2023), and California (2017, 2018, 2020) continue to display the vulnerability of communities and the potential toll of wildfires on families, neighbourhoods, public health, and the economy of entire regions. These events, along with important advances in loss prevention programs, have spurred the need for greater consideration and due diligence concerning fire risk in the wildland-urban interface (WUI).[4] CWRPs are an invaluable opportunity to proactively manage wildfire risk and increase community resilience to wildfire.

CWRPs are currently being developed at many jurisdictional and geographic scales, and are individually tailored to address the needs of different communities in response to their size, their capacity, and the unique threats that they face. Despite these differences, the goals of a CWRP remain the same and are founded in the seven FireSmart™ disciplines: Education, Legislation & Planning, Development Considerations, Interagency Cooperation, Cross-Training, Emergency Planning and Vegetation Management.

CWRPs are funded in BC by the Union of BC Municipalities (UBCM) under the Community Resiliency Investment (CRI) FireSmart Community Funding and Supports (FCFS) Program. As per funding requirements, this CWRP is completed according to the 2022 CRI template.

1.1 PLAN PURPOSE AND GOALS

This plan accounts for changes that have occurred since EA-E's last CWPP and takes advantage of the most recent community wildfire planning framework in BC. This CWRP identifies the interface wildfire risk within EA-E's WUI communities, and gives the Town a current and accurate understanding of the threats to human life, infrastructure, and values at risk from wildfire. This CWRP is intended to serve as a framework to guide the implementation of specific actions and strategies to:

- Increase the efficacy of fire suppression and safety of emergency responders,
- Reduce potential impacts and losses to property and critical infrastructure from wildfire, and
- Reduce potential wildfire behavior and threat within the community.

To help guide and accomplish the above strategies, this CWRP will provide RDCK and EA-E with:

- An assessment of wildfire risk to the communities,
- An assessment of values at risk and potential consequences from wildfire,

[4] Wildland urban interface is defined as the presence of structures in locations in which conditions result in the potential for their ignition from flames and firebrands/embers of a wildland fire (National Fire Protection Association).

- Maps of fuel types and recommended areas for fuel treatments,
- An assessment of emergency response capacity, and
- Options and strategies to reduce wildfire risk through the seven FireSmart disciplines.

1.2 PLAN DEVELOPMENT SUMMARY

The CWRP development process consisted of five general phases:

1) Formation or confirmation/continuation of the Community FireSmart Resiliency Committee(s) (CFRC – see Section 5.5). Consultation with the CFRC(s) and information sharing with stakeholders and First Nations occurred throughout.
2) Review of relevant plans and legislation regarding emergency response and wildfire (Section 2).
3) Description of the community and identification of values at risk (Section 3).
4) Assessment of the local wildfire risk (Section 4).
5) Analysis and action plan for each of the seven FireSmart disciplines (Section 5).

The following next steps are a suggested route towards operationalizing the recommendations detailed in this CWRP:

1. RDCK, EA-E, and CFRC(s) should continue to meet periodically, as needed to coordinate the fulfillment of this report's recommendations (consider annually or bi-annually, before or during the fire season – per Recommendation #22).
    a. Meetings could include some or all of the parties identified in Section 5.5.
2. The next meeting could be held in Spring-2024. Consider identifying recommendations to allocate resources to, and pursue funding for, from the 2024 UBCM CRI funding intake at this time.
    a. Consider meeting well in advance of the UBCM CRI application deadline (early October 2024), in order to discuss upcoming projects and align activities and initiatives where possible.
    b. RDCK will apply for UBCM CRI funding and compile final reporting.
    c. Continued meetings of the CFRC(s) would be a suitable venue to identify if additional support is needed to fulfill the targeted recommendations.
        i. Additional support might be required in order to coordinate activities that will bridge more than one funding year (i.e., prioritizing, prescribing and supervising implementation of vegetation management; coordinating plan and policy review) or that require more time and resources currently available to any one CFRC member (e.g., potentially some FireSmart education recommendations).
        ii. Consultant support or a term contract salary could be incorporated into the UBCM CRI application accordingly.
3. In subsequent meetings, members from different agencies could share information about actions taken to fulfill recommendations.

Documentation of the status of CWRP recommendations could be compiled and maintained alongside these meetings.

SECTION 2: RELATIONSHIP TO OTHER PLANS AND LEGISLATION

Wildfires can affect all aspects of a community. As a result, there are many plans specific to or including EA-E that relate to this CWRP. This section reviews all relevant plans, policies, bylaws, guidelines, and provincial legislation to identify sections within that are relevant to community wildfire planning and response.

2.1 LINKAGES TO CWPPS/CWRPS

Regional District of Central Kootenay Area E Community Wildfire Protection Plan Update - 2015[5]

In 2015, B.A. Blackwell & Associates completed a Community Wildfire Protection Plan update for the Regional District of Central Kootenay Area E. The scope of this plan was a two-kilometer buffer around all residences and critical infrastructure based on WUI density criteria. A tabularized review of the 2016 recommendations and their implementation status is presented in Appendix A. Overall, completed activities have primarily fallen within the FireSmart Education discipline, but some recommended fuel treatments have been prescribed and/or treated, and there is now an active Community FireSmart Resiliency Committee.

Listed below are jurisdictions adjacent EA-E that have been involved in community wildfire planning. *Strategic opportunities exist between these plans and should be considered.*

- *RDCK Electoral Area D CWRP 2023* – concurrently in development.[6]
- *RDCK Electoral Area F CWRP 2023* – concurrently in development.[6]
- *City of Nelson CWRP 2022* – recently completed.[6]

2.2 LOCAL PLANS AND BYLAWS

The sections and policies of Electoral Area E's Rural Official Community Plan (OCP) listed in Table 2 are directly relevant to proactive wildfire resilience in EA-E. The OCP was reviewed as part of this CWRP to address any gaps or limitations that inadequately address fire hazards or risk mitigation. A major gap that was identified in the EA-E's OCP as it relates to wildfire is the lack of fire management policies (beyond "recommending") specific to single home/lot development or renovations.

[5] https://www.rdck.ca/assets/Services/Emergency~Management/Documents/RDCK%20Area%20E%20CWPP%20FINAL%20131220 16.pdf

[6] By B.A. Blackwell & Associates Ltd and Cathro Consulting Ltd.

Table 2: Summary of Electoral Area E's Rural Official Community Plan emergency and wildfire-related objectives and policies and their relationship to this CWRP.

Section [EA-E Rural Official Community Plan Bylaw No. 2260, 2013[7]]	Policy Description / *Relationship to CWRP*
7.1 General Residential Policies	The general regional board will assess and evaluate proposed residential development based on the following criteria, irrespective of land use designation: ➢ susceptibility to natural hazards including but not limited to flooding, slope instability, or wildfire risk. *Embedding FireSmart subdivision principles into development design is paramount to lowering wildfire and emergency evacuation risks in neighbourhoods. Addressed in Section 5.3.*
8.0 Community services and administration	**8.5: Objective:** To ensure that land use decisions accommodate emergency response through provision of adequate access to developments and facilities for fire protection services and emergency first response.
	8.8: Policy: Will consult with the local fire department(s) to determine needs for access to new developments and for the filling of tankers to support local fire service to unincorporated communities within the Plan area where appropriate. *Embedding FireSmart subdivision principles into development design is paramount to lowering wildfire and emergency evacuation risks in neighbourhoods. Addressed in Section 5.3.*
10.0 Infrastructure and Transportation	**10.5: Objective:** To support that new development be subject to the requirements of adequate water supply for both domestic and fire protection purposes.
	10.12: Policy: Encourages the identification and maintenance of public access points to the Kootenay River and the West Arm of Kootenay Lake to facilitate emergency egress via water in the event of forest fire, spills, slides and other disasters, most particularly in constricted areas such as Harrop and Procter where few opportunities exist for egress via roads and highway. *Having a constrained primary evacuation route is a major risk for ferry and private boat access only communities. Having shoreline public evacuation points mapped, signed, and maintained is important for secondary access/egress. Addressed in Section 5.6..*

[7] https://www.rdck.ca/assets/Government/Bylaws/Land~Use-Planning/2260-E_OCP_Consolidated_2751.pdf

13.0 Hazard Lands and Fire Management	**13.1: Fire Management Policies:** The regional board may request that the Regional Subdivision Approving Authority require the developer to undertake a fire hazard risk assessment at the time of submitting a subdivision application where the Province indicates that a property may be subject to a moderate or high fire risk. The Regional Board may request the same assessment during a land use designation amendment or development permit process. The assessment will provide a recommended fire hazard mitigation strategy, that will be submitted to both the RDCK and the Province, and is recommended to include, but is not limited to the following: A. incorporating fuel breaks adjacent to or on the residential subdivision; B. establishing zones around potential structures and homes which are clear of debris, highly combustible material, or trees; C. utilizing fireproofing techniques and fireproof materials in building design, requiring at a minimum a fire rated roof; D. designing roads that provide evacuation routes and facilitate movement of fire fighting equipment; E. ensuring all roads are named and signed; F. ensuring availability of water supply facilities adequate for fire suppression; G. ensuring the provision of access to local water sources, lakes and watercourses as part of access requirements; H. implementing setbacks, interface fire protection standards, and building material standards pursuant to the Provincial publications The Home Owners Fire Smart Manual and Fire Smart: Protecting Your Community From Wildfire. *Develops communities of defensible space and safe access/egress during an emergency (and wildfire) event. Addressed in Section 5.3.*
	13.2: Directs the Regional Subdivision Approving Authority to require that where a fire hazard mitigation strategy has been prepared the developer enter into a restrictive covenant to ensure the strategy is followed. *To continue existing, lowered wildfire risk into the future. Addressed in Section 5.3.*
	13.3: Supports protection of accesses to water sources such as hydrants, standpipes, lakes, and streams to remain free of obstructions for fire protection purposes. *Access to reliable, local water sources is paramount for first responder and BCWS firefighting effectiveness. Addressed in Section 5.4.*
	13.4: Encourages local volunteer fire departments to work with the RDCK to keep up to date with emergency preparedness and with the identification of increased risk as a result of natural or man-made events. *Furthers inter-agency cooperation (see Section 5.4) and wildfire emergency preparedness (see Section 5.6).*

	13.5 Encourages voluntary efforts to reduce fire risk to existing buildings and developments by residents and community members through educational materials and appropriate Fire Smart programs. *Private property FireSmart Home Ignition Zone and structure risk reduction is the #1 avenue towards homes and structures surviving a wildfire event. Addressed in Section 5.3.*
	13.6: Supports the development and implementation of Interface Fire Management Plans and associated adjacent forest management strategies in areas of high to moderate wildfire risk. *Lowers wildfire behaviour in the riskiest (interface) community areas. Also addressed in Section 5.3.*
	13.7: Will evaluate opportunities to assist in Interface Fire Fuel Reduction treatments. *Can be accomplished through prescription development and treatment of Potential Treatment Units within this Plan (see Section 5.7).*
17.0 Community Specific Policies	**Queen's Bay: 17.5:** Encourages RDCK to support the development and implementation of a community wildfire interface plan. *Can be considered accomplished through this Plan.*
	Bealby Point/Svoboda Road: 17.62: Recognizes the importance of the area for wildfire interface management for the community and City of Nelson. *Can be accomplished through prescription development and treatment of Potential Treatment Units within this Plan and those already completed (see Section 5.7), as well as those proposed in the City of Nelson's 2022 CWRP.*

The local bylaws listed in Table 3 are directly relevant to proactive wildfire resilience in EA-E. These bylaws were reviewed as part of the CWRP to address any gaps or limitations that inadequately address fire hazards or risk mitigation.

Table 3: Summary of local bylaws and their relationship to the CWRP.

Bylaws	Section	Description and *Relation to CWRP*
Building Bylaw No. 2200 (2010)	18.4	Fire stopping components must be in place before insulation and exterior sheathing are installed. *- Addresses the need for fire protection in new construction to manage room-to-room and structure-to-structure fire transmission.* *- To manage wildland-to-structure fire transfer (and vice versa), FireSmart principles were developed to address this gap. Currently, to mandate exterior construction materials and landscaping beyond the BC Building*

Bylaws	Section	Description and *Relation to CWRP*
		Code and the building bylaw, a Development Permit Area can be implemented (see Section 5.3). Note: the BC Building Code is currently being updated, with roll out planned for late-2024, and may include FireSmart standards.
Emergency Management Regulatory Use Bylaw No. 2210 (amended by Bylaw No. 2758 in 2021)	5.1	Outlines administrative structure and roles of Emergency Program *- Provides structure and guidelines in times of emergency.*
	Amended Bylaw No. 2758	Adds "mitigation" into the description of the Emergency Program and Emergency Management Plan *- RDCK to develop, coordinate and manage emergency mitigation, preparedness, response, and recovery. This would include from wildfires.*
Manufactured Home Parks Bylaw No. 1082 (1995)	8.8.3	Fires shall be made only in stoves, incinerators, or other structures designed for that purpose. *- Limits fire ignition and propagation risks in structures made largely from ignitable and combustible materials.*
	8.8.4	If no approved fire hydrant is available to provide protection, a minimum of one (1) stagnant water supply at a minimum of 15,539 litres (6000 Igal) shall be provided on site in order to be accessed in case of emergency for fire protection purposes on properties serviced by Fire Protection. *- Increases assurance of useful water supply systems in the event of a fire to responding fire departments.*
Parks Regulation – Consolidated Bylaw No. 2173	22	No person shall start or maintain a fire in a park, except in facilities provided at a park for that purpose. *- Limits fire ignition and propagation risks.*
	24	No person shall leave a fire in a park unattended. *- Limits fire ignition and propagation risks.*
	25	No person shall burn any unsuitable materials including but not limited to organic yard waste, household waste, plastic, rubber, flammable or combustible liquid, or any treated lumber or construction debris, or toxic waste. *- Limits fire ignition and propagation risks.*
	52	No person shall possess or discharge Fireworks, firecrackers or explosive materials of any kind in a park, except for an event authorized by a park use permit. *- Limits fire ignition and propagation risks.*

Bylaws	Section	Description and *Relation to CWRP*
Resource Recovery Facilities Regulatory Bylaw No. 2905	8 (15)	No person other than the Site Operator or Service Personnel or their representative shall start any fires at any Resource Recovery Facility. *- Limits fire ignition and propagation risks.*
Volunteer Fire Service Regulation Bylaw No. 2769	4.1	Jurisdiction of each Fire Department, and the powers granted to each Fire Department and its Fire Chief and Members under this Bylaw, is restricted to the boundaries of the Fire Department's particular Fire Protection Service Area as set out in its establishment bylaw. A Fire Department shall not respond to any Incident under this Bylaw outside of the boundaries of its Fire Protection Service Area except as specified in Section 4(2)(a) to (f) of this Bylaw. *- Outlines jurisdictional limits of fire departments, which may impact rural communities with no immediate fire service (see Section 5.6).*
	4.2	Apparatus and Fire Department Equipment shall not be taken beyond the geographical limits of the jurisdiction for reasons other than repair, maintenance, or training unless: (a) a written agreement, approved by the Regional District, authorizes the supply of Members, Apparatus, Fire Department Equipment, Fire Protection Services and Associated Services to another jurisdiction; or (b) under the authority of the CAO, the Regional Fire Chief, or the Emergency Operations Center Director; or (c) in connection with a request for assistance by a the Office of the Fire Commissioner, or a Federal or Provincial emergency response Agency; or (d) in connection with an Incident near the boundaries of the Fire Service Protection Area which, if left untended, may threaten the Fire Service Protection Area or other such Service area; or (e) In the event of a Federal or Provincial State of Emergency; or (f) Under the provision of a bylaw for Associated Services. *- Outlines jurisdictional limits of fire departments, which may impact rural communities with no immediate fire service (see Section 5.6).*
	9.4	No person shall grow shrubs, hedges, plants or trees so as to obstruct the visibility or use of a fire hydrant, standpipe or sprinkler connection. *- Provides linkage to FireSmart activities and property preparedness.*
	10.1	Where this bylaw applies within a municipality the Regional District is authorized to enforce municipal open burning regulations. *- Limits fire ignition and propagation risks.*
	12.2	The Occupier of a Public Building in which any of the Alarm System, Fire Protection Equipment, or emergency power system is not operating must institute and maintain a Fire Watch until those systems or equipment are operational. *- Limits fire ignition and propagation risks.*

Bylaws	Section	Description and *Relation to CWRP*
Water Bylaw No. 2894	10.4.1	All fire hydrants and standpipes directly connected to Regional District Water Mains are the property of the Regional District. *- Outlines RDCK ownership and responsibility relating to water sources.*
	11.6.2 (f)	Notwithstanding the prohibitions in this Section, the Manager may authorize in writing the discharge of Regional District supplied water for the purposes of: training programs for fire fighters. *- Supports training opportunities for local fire fighters (see Section 5.4).*

The local plans listed in Table 4 are directly relevant to proactive wildfire resilience in EA-E. These plans were reviewed as part of the CWRP to address any gaps or limitations that inadequately address fire hazards or risk mitigation.

Table 4: Summary of local plans that are directly relevant to the CWRP.

Plan	Description and *Relationship to CWRP*
EMERGENCY RESPONSE AND RECOVERY PLAN for the Regional District of Central Kootenay	Outlines structural and organizational requirements for coordinated response and recovery from emergencies in the RDCK, including: decision-making tools for evacuation or shelter in place; EOC levels and activation protocols; hazard and evacuation planning; fire planning including industrial, wildfire and structural fires; and, recovery planning. *Section 3.10 specifically deals with interface fires/wildfires, indicating that interface fires will be managed using unified command with the Ministry of Forests and local fire department(s) and other local fire departments, where applicable.*
West Arm Provincial Park Fire Management Plan (2016)	This Fire Management Plan comprehensively analyzes social and environmental values at risk within West Arm Provincial Park, *discusses the potential impacts to those values as a result of a wildfire burning through the park, and recommends management strategies and locations of fuel management treatments to mitigate the risk of adverse impacts*.
City of Nelson **Water Master Plan Update (2017)**	This plan provides an update to the City of Nelson's Water Master Plan developed in 2007, summarizing infrastructure upgrades to date, and makes recommendations for the allocation of resources in the future. The plan includes a 'Source Evaluation', an analysis which includes characteristics of source watersheds and associated risks to them. Water contamination from forest fire is identified as a 'loss of source scenario.' The Source Evaluation analysis also includes the effect of climate change on the watershed yield. *Discussion of available fire flow is an additional component of this report. The report notes that there are some areas, including at the CPR track line near the airport, where available fire flow is less than the acceptable specifications in the City of Nelson zoning bylaw.*

Plan	Description and *Relationship to CWRP*
City of Nelson **Source Water Protection Plan (2021)**	The Source Water Protection Plan is part of a "multi-barrier approach to drinking water protection." The development of this plan was mandated as a condition of the City of Nelson's operating permit by the Interior Health Authority. Plan findings relevant to this report include: ➢ The main issues and possible impacts to source water quality were identified and include wildfire, forest health impacts, and climate change. ➢ A "Phase 1 Source Assessment" identified the following key hazards to water quality, and rated the risk associated with them as "*Very High*": ○ "Changes in watershed hydrology associated with forest health changes." ○ "Sedimentation and hydrology effects associated with wildfire and with wildfire fighting efforts." ○ "Potential loss of control /access or damage at the intake due to wildfire." *Recommendations made in the Source Water Protection Plan, relevant to this report include:* ➢ *"Implement the high priority recommendations of the CWPP, including maintaining the Interface Working Group to coordinate risk reduction efforts"* ➢ *"Continue to implement fuel mitigation projects to mitigate fire risk around sensitive infrastructure."*
Nelson Hydro **Vegetation Management Best Practices (2021)**	This plan identifies vegetation management procedures and best practices to protect the public, infrastructure, and values adjacent to Nelson Hydro transmission distribution lines. The plan identifies wildfire as an important consideration for vegetation management planning in the Nelson Hydro operating area, noting that within the drier ecosystems of this area, there is a possibility of frequent recurrence of fire. *Debris disposal specifications are identified, in order to prevent hazardous accumulations of woody debris after manual and mechanical vegetation treatments. A monitoring program is proposed in order to ensure debris disposal specifications are adhered to.*

2.3 HIGHER-LEVEL PLANS AND LEGISLATION

Table 5 lists higher-level plans and legislation that are relevant to wildfire planning and risk mitigation within EA-E and the surrounding area. These plans help guide where and how activities like resource extraction occur on the landscape, which can affect both wildfire threat and consequence. Depending on the location of any proposed fuel management treatment units from this Plan, fuel management prescriptions and prescribed / cultural burn plans may need to address these plans as they relate to on-the-ground restrictions and policies for forest modification.

Table 5: Description of higher-level plans and legislation and their relationship to the CWRP.

Plan/Legislation	Description and *Relationship to CWRP*
FRPA – Government Action Regulations (GARs)	Multiple GARs are present within EA-E's WUI. These should be considered and managed for appropriately, where present, at the site level through associated site level plans (e.g., Fuel Management Prescriptions). These include: ➢ *Non-legal Old Growth Management Areas* ➢ *Ungulate Winter Range partial-harvest* ➢ *Significant fish streams and rivers* ➢ *Community watersheds* ➢ *Regionally significant visual areas*
BC Provincial Open Burning Smoke Control Regulation	The Open Burning Smoke Control Regulation came into effect in September 2019 and governs open burning relating to land clearing, forestry operations and silviculture, wildlife habitat enhancement, and community wildfire risk reduction. ➢ *The entire wildland-urban interface of EA-E is within a High Smoke Sensitivity Zone.* ➢ *All proposed treatment units are within the High Smoke Sensitivity Zone.*
Kootenay Boundary Higher Level Plan	The Kootenay Boundary Land Use Plan Implementation Strategy was completed in 1997, and was discussed in the previous CWPP. *Legal, spatially defined objectives for 'Connectivity Corridors', and 'Water Intakes Used for Human Consumption' apply within the AOI. A non-legal objective for fire-maintained ecosystem restoration also applies - this provision targets NDT4 ecosystems, which constitute 18% of EA-E's WUI.*
Selkirk Resource District Fire Management Plan	The Selkirk Resource District Kootenay Lake Fire Management Plan (FMP) (MFLNRORD, 2016) identifies values at risk on the landscape and prioritizes broad categories of values as 'themes' for categorizing response through the Resource Strategic Wildfire Allocation Protocol (RSWAP). The four themes are 1) Human Life and Safety, 2) Property and Critical Infrastructure, 3) High Environmental and Cultural Values, and 4) Other resource values (timber, rangelands, etc.). *The organization of values is intended to provide the information needed to make appropriate fire response decisions in complex emergency situations. This CWRP identifies values within the Plan area with the intent of using this information to make appropriate fire response decisions.*
BC Wildfire Act and Wildfire Regulation	The Wildfire Act and Wildfire Regulation define the legal responsibilities and obligations to which everyone in British Columbia is subject. When

Plan/Legislation	Description and *Relationship to CWRP*
	the BCWS places bans or restrictions in an area, the Wildfire Act and Regulation make them enforceable. [8] *Its key goal is to specify responsibilities and obligations on fire use, wildfire prevention, wildfire control, and rehabilitation.*[8]
Fire Chiefs' Association of BC and BC Wildfire Service MEMORANDUM OF AGREEMENT for INTER-AGENCY OPERATIONAL PROCEDURES AND REIMBURSEMENT RATES	Guides and facilitates the collaboration between the Province and fire departments or by outlining key information regarding resource requests, deployment and response procedures, remuneration guidelines, and other necessary details to effectively manage the partnership. The intent of this Agreement is to further improve the operating procedure, strengthening capacity while providing increased flexibility to share resources in British Columbia, with clear rules of engagement and reimbursement requirements. *Mutual aid agreements exist between BCWS and RDCK fire services. RDCK fire departments (including those in EA-E) routinely work with BCWS in response to incidents within and outside of Fire Protection and Response Areas.*

SECTION 3: COMMUNITY DESCRIPTION

This section defines the planning area for this CWRP and provides general demographic information about EA-E. An understanding of population trends, land use patterns, and values at risk can help effectively direct FireSmart outreach and risk mitigation activities.

3.1 WILDLAND-URBAN INTERFACE

The Wildland-Urban Interface (WUI) is defined by FireSmart Canada as the zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. For the purpose of the FireSmart Community Funding and Supports (FCFS) program, the 'eligible WUI' is considered as the area one kilometer from a structure density class greater than six structures per square kilometer. BC Wildfire Service generates WUI Risk Class maps and associated spatial data to assist with initiatives related to wildfire risk reduction, including the FCFS program.[9]

Field work, GIS analysis, and the recommendations for this CWRP cover only this one kilometer 'eligible WUI' which is entirely within EA-E and covers a total of 12,013 hectares (which includes foreshore areas of Kootenay Lake and Kootenay River, as well as the periphery of Nelson) and includes residential,

[8] https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/governance/legislation-regulations
[9] Wildland Urban Interface Risk Class Maps - Province of British Columbia (gov.bc.ca)

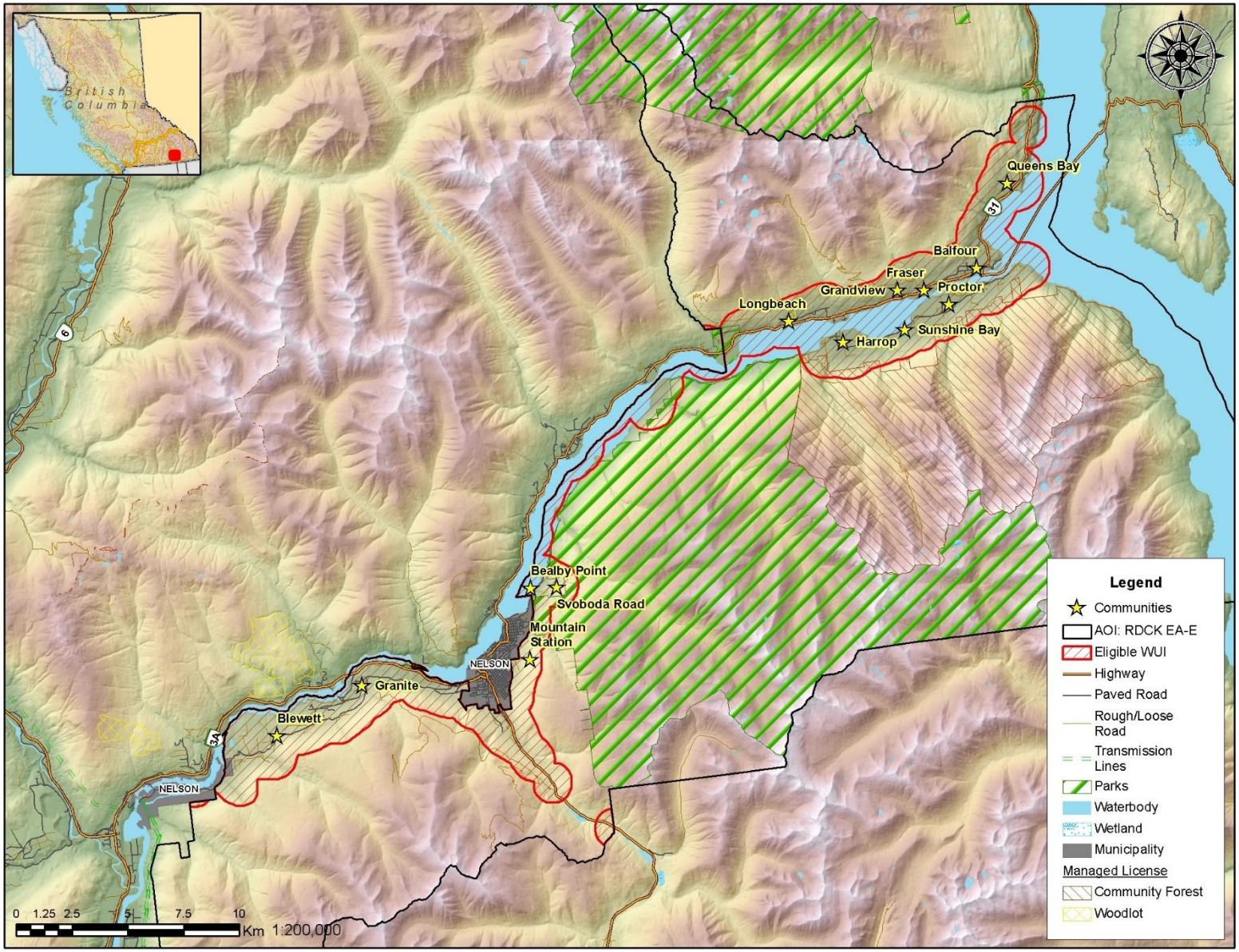
industrial, agricultural, recreational, and forested areas. Land use is guided by EA-E's Rural Official Community Plan Bylaw as discussed in Section . Importantly, as outward development occurs from the existing footprint, it is possible that the WUI will change with it.

Map 1 shows an overview of EA-E's WUI and the communities within. The map shows the geographical breadth of the communities and the area this Plan covers – approximately 50 kilometres from Queens Bay in the northeast to Blewett in the southwest. Successful wildfire resilience efforts will need to be applied to all communities. An approximate breakdown of land ownership type by area is listed in Table 6, and shown on Map 2 and Map 3. Nearly half (45%[10]) of EA-E's WUI is private land, while RDCK municipal and Crown provincial land make up almost all the rest of the WUI's ownership.

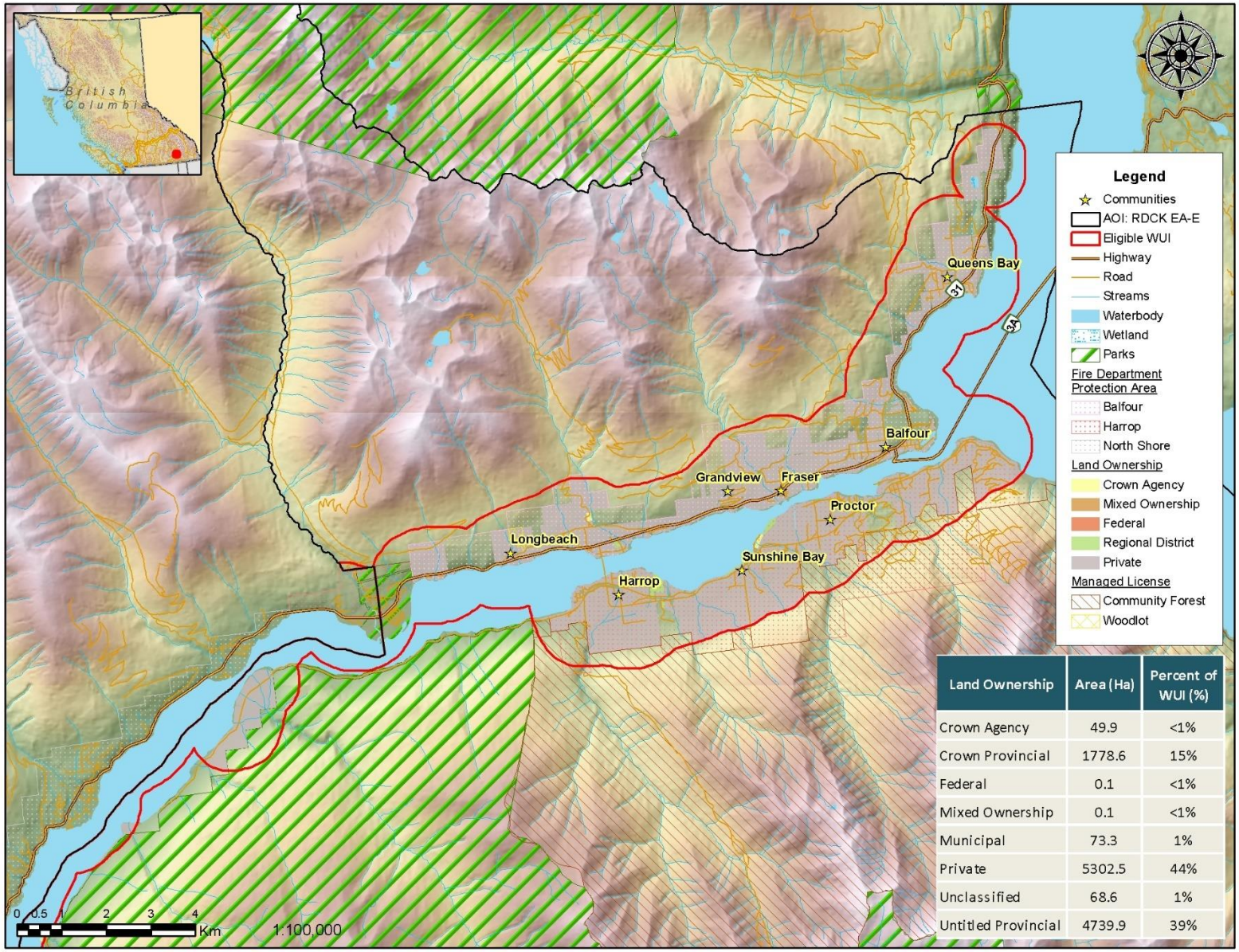
Table 6: Land Ownership within EA-E's WUI.

Land Ownership	Area (Ha)	Percent of WUI (%)
Crown Agency	50	<1%
Crown Provincial	1779	15%
Federal	0	<1%
Mixed Ownership	0	<1%
Municipal	73	1%
Private	5303	44%
Unclassified	69	1%
Untitled Provincial	4740	39%
Total	**12013**	-

[10] Private land total area equals Private Land plus Unclassified (strata land).

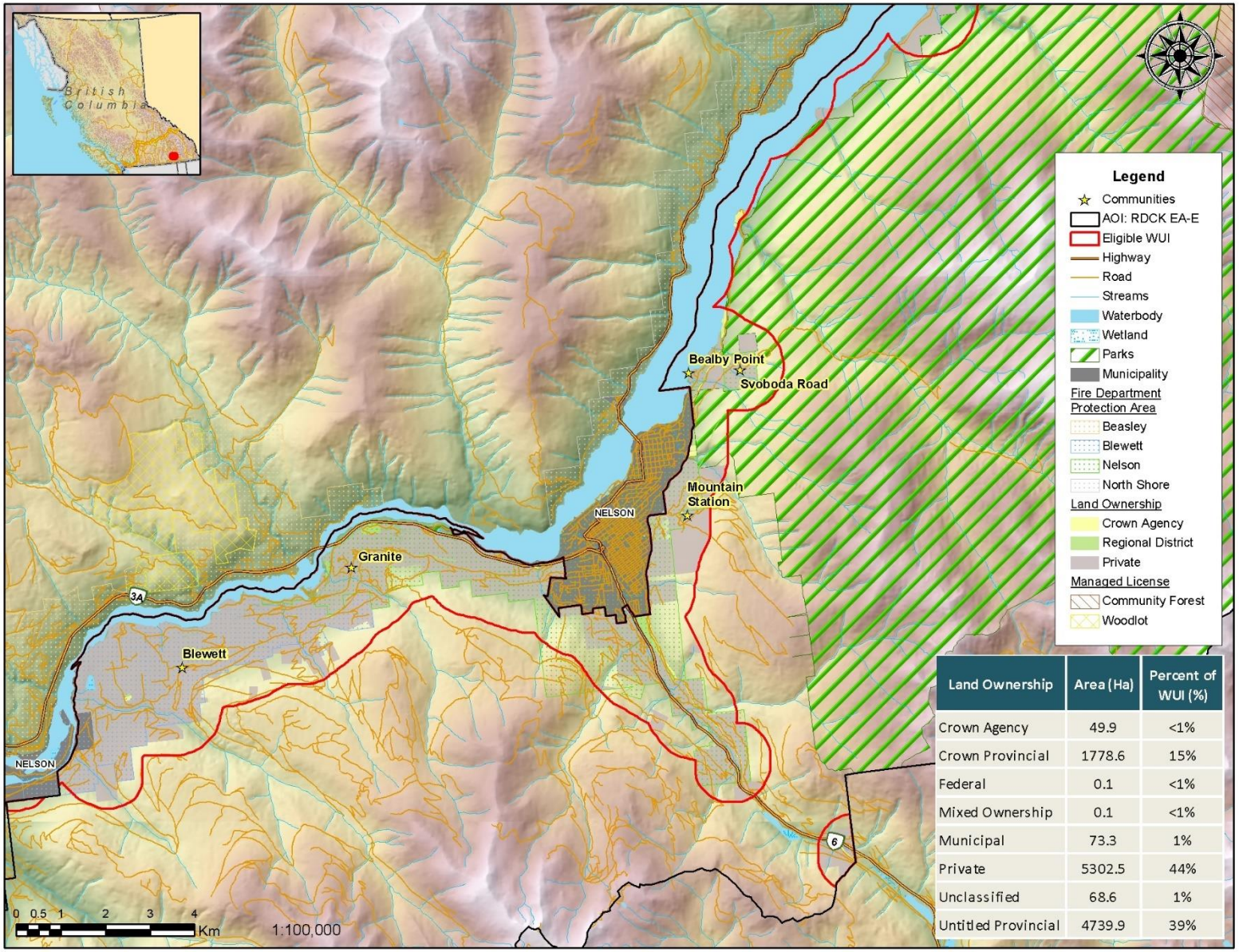


Map 1. Overview of RDCK Electoral Area E's Wildland Urban Interface (WUI). The 'eligible WUI' is the red diagonally lined polygon.



Land Ownership	Area (Ha)	Percent of WUI (%)
Crown Agency	49.9	<1%
Crown Provincial	1778.6	15%
Federal	0.1	<1%
Mixed Ownership	0.1	<1%
Municipal	73.3	1%
Private	5302.5	44%
Unclassified	68.6	1%
Untitled Provincial	4739.9	39%

Map 2: Overview of RDCK Electoral Area E's eastern communities' WUI, with land ownership.



Land Ownership	Area (Ha)	Percent of WUI (%)
Crown Agency	49.9	<1%
Crown Provincial	1778.6	15%
Federal	0.1	<1%
Mixed Ownership	0.1	<1%
Municipal	73.3	1%
Private	5302.5	44%
Unclassified	68.6	1%
Untitled Provincial	4739.9	39%

Map 3: Overview of RDCK Electoral Area E's western communities' WUI, with land ownership.

3.2 COMMUNITY DESCRIPTION

Electoral Area E is adjacent to the West Arm of Kootenay Lake within the RDCK and includes the communities of (from northeast to southwest) Queens Bay, Balfour, Harrop, Procter, Longbeach, rural Nelson as far south as Cottonwood Lake, and Blewett (including Taghum Beach). Home to several former sternwheeler landings, the area continues the tradition with the longest free ferry ride in the world, connecting the community of Balfour to Kootenay Bay on the east shore of the lake.[11]

At approximately 3,897 residents, EA-E is the fourth most populous of the 11 Electoral Areas in the RDCK. There has been a slow but steady growth over the years, with a 1% increase from 2006 to 2016, and projected growth of 2% to 2025, potentially reaching 3,995 people (see Figure 1). Senior growth will potentially increase the median age to 53.7.[12] Relevant socio-economic statistics on population, employment, housing, and education in EA-E are summarized in Table 7. They are not available for separate communities.

Table 7: Socio-economic statistics for RDCK Electoral Area E, as per the 2019 RDCK Community Profile Report. Bolded values will be discussed below as they have special relevance to the CWRP.

Metric in 2021 Census	Value
Population	
Total Population in 2021	3,897
Total Population in 2016	3,772
Population Density (people/km^2)	4.8
Population percentage change between 2016 to 2021	3.3
Number of people <14 years old	485
Number of people 15-64 years old	2,360
Number of people >65 years old	1,055
Median Age (years)	51.2[13]
Housing	
Total private dwellings	**1,800**
Private dwellings permanently occupied	**1,800**
Single detached house	1,580
Average Taxable Property Value	n/a
Average household size	2.2
Income and Employment	
Median Total Income of Households[14]	$70,500
Employment Rate	54.4%
Unemployment Rate	8.2%
Education	
No certificate, diploma or degree	425
Secondary school or equivalent	975
Post-secondary	2,000

[11] https://www.rdck.ca/EN/main/government/board-of-directors/electoral-areas.html
[12] https://www.rdck.ca/assets/Government/Documents/13_Electoral_Area_E_Community_Summary.pdf
[13] The median age for BC is 43.0.
[14] In 2015, pre-tax. BC median is $69,995.

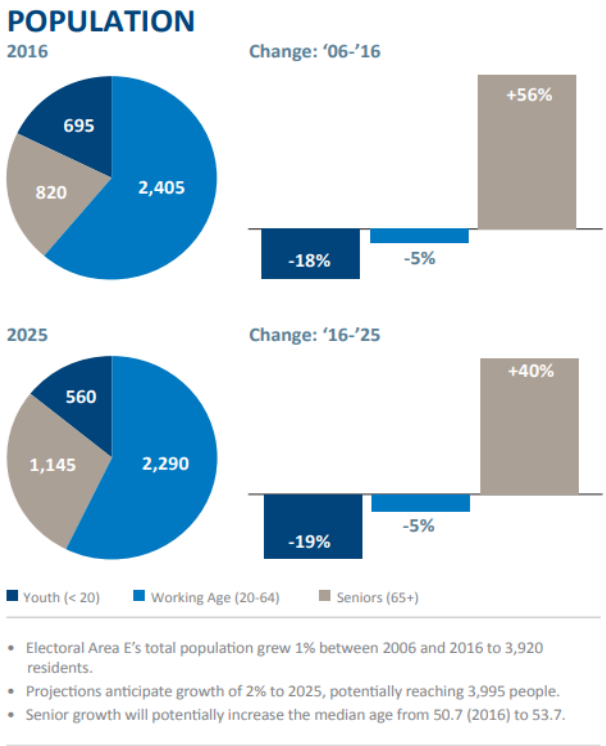


Figure 1: RDCK EA-E population change statistics - 2006-2016 and projected 2016-2026.

As shown in Table 7, most residents live in single-detached homes in rural communities. Some communities may have both full time and seasonal residents, so population is likely to be higher in the summer. However, the data indicates the majority of homes are permanently occupied – this provides an opportunity for a proactive FireSmart education program as those being educated can keep and apply that education within the community itself.

Population growth in EA-E and nearby municipalities increases wildfire risk within the RDCK. More summer visitors increase the likelihood of a human-caused wildfire (increased ignition potential), and the consequence of a wildfire (more people to evacuate). The RDCK is home to several tourism hotspots with a focus on outdoor recreation, camping, and boating.

Fire protection services are provided throughout defined portions of EA-E (except private boat access properties) by the Balfour-Harrop, Nelson, and Blewett volunteer fire departments (also displayed on Map 2 and Map 3). Further, North Shore and Beasley volunteer fire departments provide mutual aid services to the departments servicing EA-E. The Kootenay Lake Hospital, located in Nelson, is a Level 1 Community Hospital in the Kootenay Boundary health service area managed by Interior Health.[15] The RDCK Emergency Program oversees the planning and implementation of emergency management in Area E.

The following section gives a brief description of some of the main communities covered by this plan, including number of residents and services provided. Each community can be seen in Map 1 – Map 3 in the previous section.

Queens Bay

Queens Bay is located on the west shore of Kootenay Lake, off Highway 31, approximately 38 kilometres northeast of Nelson. In 2015, Queens Bay was one of the first BC communities and the first in the Kootenays to be awarded with the FireSmart designation for local wildfire protection efforts.[16] The community is characterized by moderate to large sized lots, including some resort properties. The upper portion of the neighbourhood is often referred to as the Queens Bay townsite. These properties serve as

[15] https://www.interiorhealth.ca/search?type=All&search_api_fulltext=EA-E&f%5B0%5D=content_type%3Alocation
[16] https://en.wikipedia.org/wiki/Queens_Bay

weekend retreats or as a bedroom community for Nelson. Fire protection services are provided by the nearby Balfour Harrop Volunteer Fire Department.

Figure 2. Google Earth screen-capture of Queens Bay, looking north[17]

Balfour

Balfour is a community of approximately 500 residents located on Highway 3A just south of Queens Bay, 33 kilometres northeast of Nelson, on the north shore of West Arm of Kootenay Lake. The Kootenay Lake Ferry terminal is located in Balfour, which has become the commercial centre for the community comprising of a bakery, pub, marina restaurant, gas station and two retail stores. The community also has a post office, golf course and recreation centre, and auto mechanic shop. Many of the residential lots are located along the lake shore, with some of the community extending uphill on the east-facing slope above the highway. Fire protection services are provided by the Balfour Harrop Volunteer Fire Department, with one fire hall in Balfour. The RDCK operates a water system in the community, with Kootenay Lake acting as the water source. The water system has 265 active connections, includes a water treatment plant, and supports a fire hydrant network.[18]

[17] Screen-capture image from Google Earth
[18] https://www.rdck.ca/EN/main/services/water/rdck-water-systems/balfour-water-system.html

Figure 3. Balfour Golf Course looking over Kootenay Lake[19]

Harrop-Procter, and Sunshine Bay

Harrop and Procter are two communities on the south shore of West Arm of Kootenay Lake which are often combined in reference due to their proximity and mutual community services. Sunshine Bay is located in between the two. Approximately 570 people live within these communities, primarily on rural lots or within the small townsite of Procter. The communities are accessible only via a cable ferry landing at Harrop. The cable ferry crossing is located off Highway 3A, 27 kms northeast of Nelson and 7 kms west of Balfour. There is a general store with a gas pump, bakery, two community halls, a fire hall, and a ferry dry dock construction wharf located at Sunshine Bay Regional Park. The community of Harrop is just east of West Arm Provincial Park, which spans the remaining length of lake shoreline all the way west to the municipal boundary of Nelson. The Harrop-Procter Community Co-operative is a community-run organization that owns and operates the Harrop Procter Community Forest, as well as the local sawmill, Harrop Procter Forest Products. Forestry is an important economic driver in these communities, with emphasis on wildfire mitigation activities, managing for climate change and watersheds, and maintaining focus on locally sourced lumber. The Community Forest tenure is approximately 11,000 ha in size. The PRT Harrop nursery is also located in Harrop, which grows all the commercial tree species found in Canada and western USA, as well as standard seedlings.[20] In 2018, the Harrop Creek fire burned over 2,000 ha in the community forest tenure nearby and resulted in an increased effort to manage wildfire risk, including establishing fuel breaks and conducting fuel treatments. A CP Rail line also runs through the community, adjacent to the shore of Kootenay Lake. Fire

[19] https://www.nelsonkootenaylake.com/plan/region/balfour
[20] https://www.prt.com/contact/nursery-locations-canada/prt-harrop

protection services are provided by the Balfour Harrop Volunteer Fire Department, which has two fire halls – one in Balfour and one along Harrop-Procter Highway.

Figure 4. Example of fuel treatment area in Harrop Procter Community Forest[21]

Longbeach & West Arm Communities

Along the West Arm there are several small communities including Grandview, Redfish, and Longbeach. Longbeach is a small rural residential area located along Highway 3A on the north shore of West Arm of Kootenay Lake, across from Harrop. It is approximately 24 kms northeast of Nelson and 9 kms west of Balfour. Longbeach is just east of Kokanee Creek Provincial Park, which is a popular camping and hiking destination. The Redfish area is primarily rural residential and includes the Redfish Elementary School and the cable ferry landing for residents traveling to Harrop Procter. Grandview is a residential community located between Balfour and Longbeach, uphill of Highway 3A, and includes Grandview Properties, a recent subdivision. At full build-out, it is anticipated to have 78 lots.[22] The subdivision is serviced by a RDCK water system, supporting seven fire hydrants.[22] Fire protection services to West Arm communities are provided by the nearby Balfour Harrop Volunteer Fire Department.

[21] Photo from https://www.fesbc.ca/small-rural-communities-in-b-c-are-making-big-gains-to-mitigate-climate-change/
[22] https://www.rdck.ca/EN/main/services/water/rdck-water-systems/grandview-properties.html

Figure 5. Waterfront property located in Longbeach.[23]

Bealby Point & Svoboda Road

Located on the eastern lakeshore just north of the Fairview neighbourhood in Nelson, Bealby Point is a small residential community accessed via Bealby Point Road. Upslope of Bealby Point is the small residential community of Svoboda Road (accessed by Svoboda Road). The communities are surrounded by West Arm Provincial Park where there have also been recently completed fuel treatments.

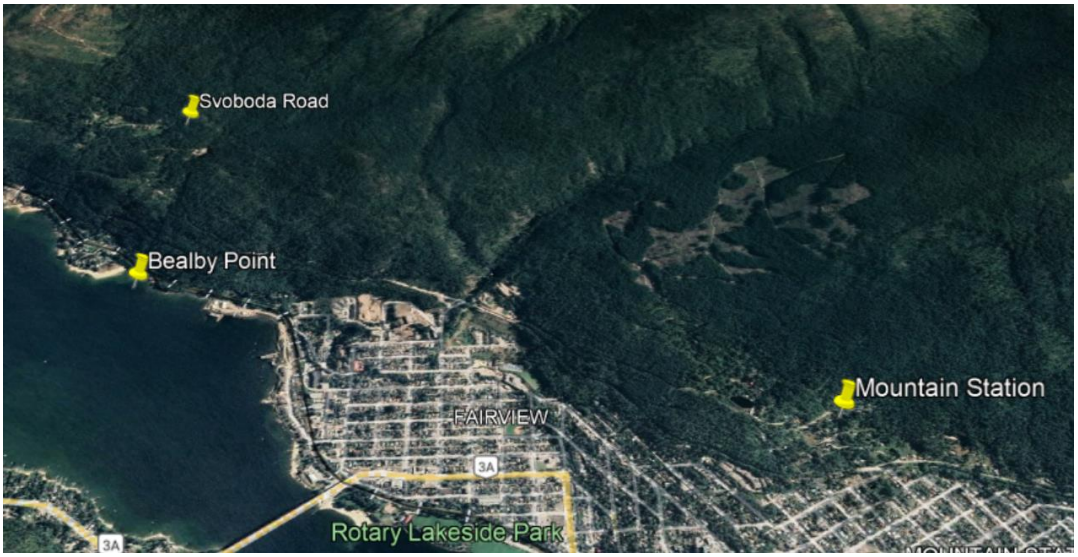


Figure 6: Google Earth screen-capture showing Bealby Point, Svoboda Road, and Mountain Station (looking east).

[23] https://www.kootenayproperties.com/Properties.php/Details/339

Mountain Station

Mountain Station is a small community located upslope on the east edge of Nelson. Properties are embedded in the forest, accessed by Mountain Station Road. The closest downhill riding to Nelson, Mountain Station Trails has a tightly packed nucleus of trails that are accessible from the Rail Trail, parking lots that provide easy access at the top of Gore Street, or on Svoboda Road.[24] Fire response services are provided by Nelson Fire Rescue.

Granite, Blewett & Taghum Beach

Granite is a rural-residential community on the western edge of Nelson, located above Highway 3A. The forested hills upslope, south of the community are part of the active timber harvest land base with varying ages and sizes of cutblocks. Blewett, further west of Grantie, is a small community located approximately 4 kms west of Nelson and consists of rural properties and farms. It is situated along the south shore of Kootenay River, across from the community of Taghum. Several services are available in the area including an elementary school, a large garden centre and an auto mechanic shop. Within the Blewett area is Taghum Beach Regional Park, which is a very popular beach and day-use area that is 4.5 ha in size.[25] Another park, Morning Mountain Regional Park, is accessed via Blewett Ski Hill Road and has a total area of 20.6 hectares, providing access to a broader network of trails beyond the regional park. The park is designated as a multiple purpose regional park and includes cycling, hiking, nature appreciation, snowshoeing, and tobogganing.[26] Fire protection services are provided by Blewett Volunteer Fire Department and Nelson Fire Rescue.

Figure 6. Viewpoint from Morning Mountain Regional Park in Blewett[27]

[24] https://www.nelsonkootenaylake.com/listing/mountain-station-trails
[25] https://www.rdck.ca/EN/main/services/parks/taghum-beach-regional-park.html
[26] https://www.rdck.ca/EN/main/services/parks/morning-mountain-regional-park.html
[27] https://westkootenayhiking.ca/morning-mountain-bike-trails/

3.3 VALUES AT RISK

Values at risk are the human, natural, or cultural resources that could be negatively impacted by wildfire. Protection of these values during a wildfire event is an important consideration for effective emergency response. Pre-identifying critical infrastructure and values at risk before an emergency event can ensure that essential services can be protected and/or restored quickly. Also, many activities that proactively assess and mitigate fire hazards around critical infrastructure and "Community Assets" are eligible for funding under the 2024 CRI FCFS Program Guide, which is addressed through Recommendation 14 (Section 5.3). Critical infrastructure includes buildings and structures that are essential to the health, safety, security, or economic wellbeing of the community and the effective functioning of government.

Table 8 lists critical infrastructure in EA-E's WUI as identified by the RDCK,[28] through consultation with EA-E staff, and outlined in the 2023 RDCK Community Risk Assessment. This list should not be considered as whole and complete, but rather a starting point for what should be considered as critical infrastructure. This list should be amended as required to add or remove new or excluded/outdated infrastructure so all are available for Community Asset FireSmart activities. The assets owned/operated by the RDCK are the RDCK Corporate Offices (Primary Emergency Operations Center), the Fire Halls, the Grandview and Balfour water systems, and transfer stations. Water and electric systems are discussed in more detail in Sections 3.3.1 and 0. Critical infrastructure FireSmart Assessments were outside the scope of this plan. At the time of writing, FireSmart Critical Infrastructure Assessments have been completed only on local fire halls. Map 4 and Map 5 present a visual display of values at risk throughout the eligible WUI.

Table 8: Critical Infrastructure within EA-E and its WUI.

Map ID	Description	Community (if applicable)	Name
Government / Community			
E-16	Community Hall	Balfour	Balfour Senior Hall
E-17	Community Hall	Procter	Procter Community Hall
E-18	Community Hall	Harrop	Harrop Community Hall
E-19	Community Hall	Balfour	Balfour Community Hall
E-60	Community Hall	Queens Bay	Queens Bay Residents Association
E-20	School	Balfour	Redfish Elementary School
E-21	School	Blewett	Blewett Elementary School
E-59	School	Nelson	Nelson Area Waldorf School (private)
E-62	Transfer Station	Blewett	Grohman Transfer Station
E-63	Transfer Station	Balfour	Balfour Transfer Station
Utilities			
E-84	Electrical or Generator	Balfour	125 kw GENERATOR
E-85	Electrical or Generator	Balfour	60kw GENERATOR
D_E-56	Electrical or Generator	Queens Bay	Electrical Power System
D_E-57	Electrical or Generator	Queens Bay	Electrical Power System
E-86	Water - Pumphouse	Balfour	Pumphouse

[28] RDCK maintains a comprehensive database of critical infrastructure GIS point data and was provided as part of this Plan's development.

Map ID	Description	Community (if applicable)	Name
E-87	Water - Reservoir/Well	Balfour	Reservoir (Steel)
E-88	Water - Treatment	Balfour	Water Treatment Plant
E-89	Water - Pumphouse	Grandview	Booster Station
E-90	Electrical or Generator	Grandview	Electric Control Shed
E-91	Water - Pumphouse	Grandview	Pump House
E-92	Water - Reservoir/Well	Grandview	Reservoir
E-93	Water - Reservoir/Well	Grandview	Reservoir
E-94	Water - Treatment	Grandview	Water Treatment Building
E-95	Water - Reservoir/Well	Grandview	Wet Well
Emergency Response			
E-22	Fire Hall	Blewett	Blewett Fire Department
E-23	Fire Hall	Balfour	Balfour Fire Department
E-24	Fire Hall	Harrop	Harrop Fire Department

3.3.1 ELECTRICAL POWER

A large fire has the potential to impact electrical service by causing disruption in network distribution through direct or indirect processes. Direct heat from flames or damage from fallen trees associated with a fire event may cause power outages. There is one major transmission line and right-of-way that transects EA-E's WUI, just upslope from homes and structures, from the northeast in Queens Bay, travelling the north side of West Arm of Kootenay Lake to where it crosses Kootenay River just west of Nelson and continues through Blewett. Transmission lines can provide excellent fuel breaks and access for first responders in the event of a wildfire – if the vegetation on them is regularly managed and kept in a low-hazard state. They can also be the source of fire ignitions – trees and other vegetation intruding into power lines can cause fires in multiple ways. A tree falling across a line can tear the line down and result in a downed line. A branch spanning two line conductors for a sufficient period of time may ignite the branch and also may produce high-energy, high-temperature arcs multiple feet in length. If the branch remains in contact and arcing, it can cause progressive damage that eventually breaks the line. It is important that both EA-E and RDCK lobby the electrical power providers in and influencing the community's WUI to regularly maintain their right-of-way's vegetation (see Recommendation #25 in Section 5.5).

Residential and commercial power throughout EA-E is provided by a network of wood-pole distribution lines. There are many instances where both the regional district/MOTI and private landowners have highly flammable vegetation and/or unmaintained conifer trees growing in close proximity to power poles and distribution lines.

Having secondary power sources for critical infrastructure is important to reduce community vulnerability in the event of an emergency that cuts power for days, or even weeks. It is recommended that RDCK and

EA-E review critical infrastructure and invest in back-up generators as required (see Recommendation #31 in Section 5.6).[29]

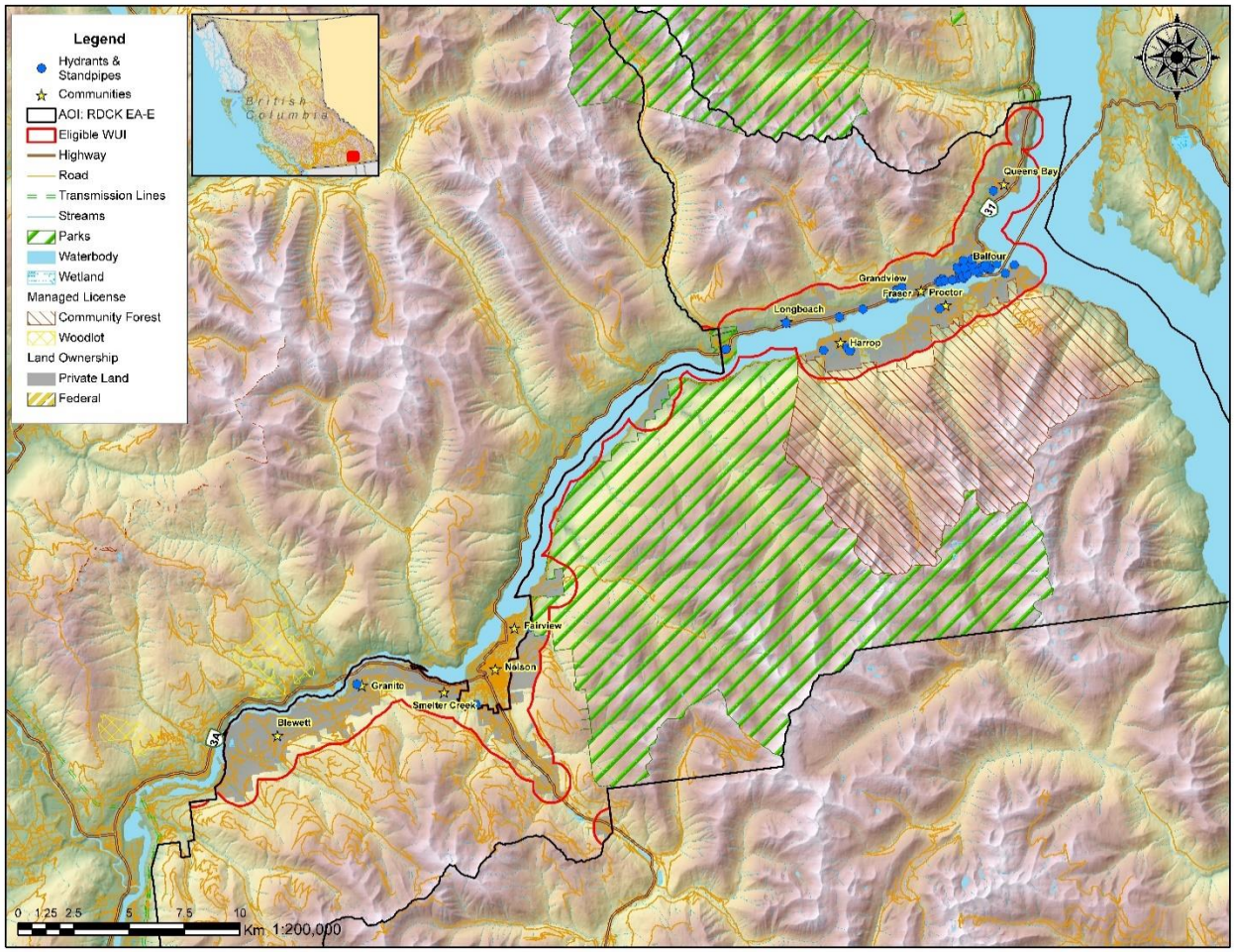
3.3.2 WATER AND SEWAGE

The RDCK operates water systems for Balfour and Grandview Properties; all other properties have individual wells or surface water intakes. RDCK does not operate any sewage systems. Thus all properties have private septic for sewage disposal.

Hydrants and standpipe locations within the WUI are shown below on Map 4, and are mostly located in Balfour, Grandview Properties, Procter, and Harrop. Local Government noted that Balfour to Longbeach would have sufficient water from their hydrants, however Blewett does not have any hydrants, nor does Queens Bay or Procter. Harrop is serviced by one hydrant. Even where there are hydrants, most locations will be serviced by a tanker shuttle for water; few homes are located close enough to hydrants to use them directly. In some areas the distance to shuttle water will be greater, and further work should be done to develop water supplies.

The most reliable source of year-round water for firefighting are Kootenay Lake and Kootenay River, and many other smaller sources (i.e., ponds, creeks, etc.) are known, but not mapped (see Recommendation #18 in Section 5.4). See Section 5.4 for recommendations related to fire department resources.

[29] The Blewett Fire Hall has a generator for powering its radio receiver system if electrical power fails. Noted from an information questionnaire as part of the development of this Plan.



Map 4: Hydrants and standpipes for communities in Electoral Area E (RDCK GIS data).

3.3.3 HAZARDOUS VALUES

Hazardous values are defined as values that pose a safety hazard to emergency responders and include large fuel / propane facilities, landfills, rail yards, storage facilities containing explosives, pipelines, etc. Anywhere combustible materials, explosive chemicals, or gas/oil are stored can be considered a hazardous value. Protecting hazardous values from fires is important to preventing interface fire disasters.

No hazardous values were identified within RDCK Electoral Area E's WUI, but it was noted in the 2023 RDCK Community Risk Assessment that hazardous materials are transported by truck and train throughout the area (Highway 6, Highway 3A and CN rail corridor). Accidental ignitions from train tracks and equipment are a fire risk. Vegetation management practices along the rail lines has the ability to exacerbate a fire hazard if deciduous and/or coniferous vegetation and cured grasses are being brushed and left in accumulations beside the tracks. This presents more of a concern where the vegetation on private properties adjacent to the tracks has a coniferous component or cured grass, which are able to support fast spreading fires. This is of special concern in the communities of Harrop and Procter, where

the rail corridor runs directly adjacent to homes and property. Recommendations associated with industry stakeholders are discussed in Section 5.5.

It is also very likely that both industrial and hobby farms store gas, oil, and/or fertilizer. Education and associated recommendations regarding FireSmart principles for hazardous materials storage are discussed in Section 5.2.

3.3.4 CULTURAL VALUES

There are documented and registered historic and archeological sites within the WUI and a high potential for additional sites to be found given the long history of use by First Nations. Known archeological sites are protected under the Heritage Conservation Act, which applies to both private and public lands.

RDCK, EA-E, and/or MOF should continue to consult with applicable First Nations well before development and implementation of any proposed fuel prescriptions to allow for meaningful review and input, as well as collaborative opportunities – cultural burning by First Nations has a long documented and orally spoken history in the area. Archeological assessments may be required to ensure that known or unknown cultural resources are not inadvertently damaged or destroyed, and that First Nations strategies for land management in their traditional territory are complied with.

3.3.5 HIGH ENVIRONMENTAL VALUES

The Kootenay Lake Local Conservation Fund (KLLCF) has identified the following as important environmental values within EA-E: reduction of human-wildlife conflict and protection of grizzly bears; recovery of species at risk (western toad); restoration activities in riparian areas that support bull trout and kokanee spawners; functioning wetlands, creeks, and grasslands that improve water quality; reduction of invasive species; water monitoring and osprey monitoring; and, support of protected bat colonies. There are 16 species of bats in BC and 11 of these are found in the Kootenays. Of these species, three are considered at risk and include the fringed myotis, northern myotis, and Townsend's big-eared bat.

Additionally, EA-E's WUI has significant overlaps with species and ecosystems at risk identified through the B.C. Conservation Data Center and by the federal government (Table 9). All fuel management prescriptions must identify and mitigate potential impacts to ecosystems or species at risk and may require rationales and/or mitigation measures for tree removal in some areas.

Table 9. Species and Ecosystems at Risk in the WUI – BC Conservation Data Center. *Denotes Critical Habitat for Federally Listed Species at Risk

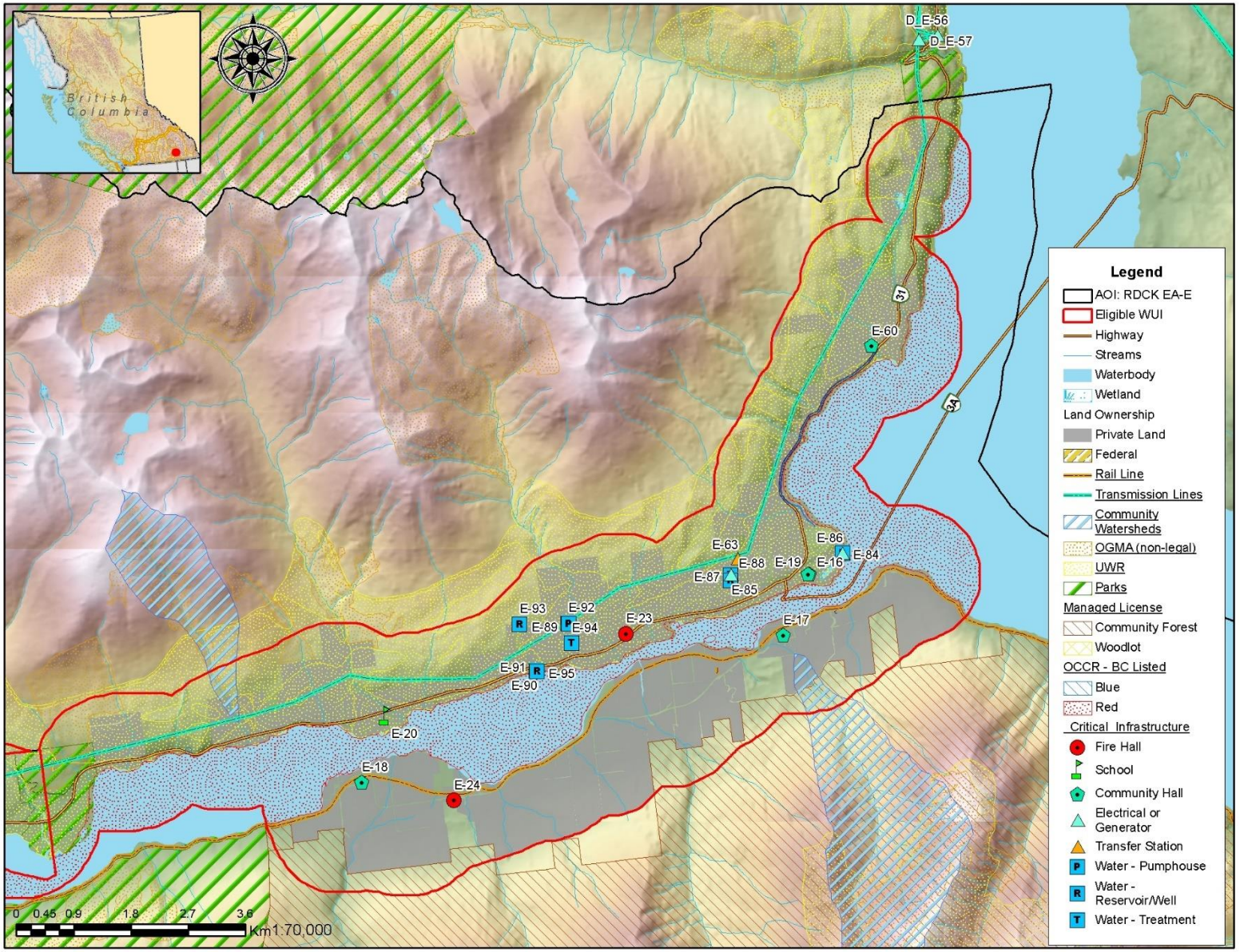
Common Name	Scientific Name	Category	BC List	Habitat Type
White Sturgeon (Upper Kootenay River Population)	Acipenser transmontanus pop. 1	Vertebrate Animal	Red	RIVERINE: Big River; Moderate Gradient; Low Gradient; Pool. LACUSTRINE: Deep Water
Banded Tigersnail	Anguispira kochi	Invertebrate Animal	Blue	TERRESTRIAL: Woodland Mixed. RIVERINE: Riparian

Common Name	Scientific Name	Category	BC List	Habitat Type
Painted Turtle - Intermountain - Rocky Mountain Population	Chrysemys picta pop. 2	Vertebrate Animal	Blue	PALUSTRINE: Herbaceous Wetland
Wild Licorice	Glycyrrhiza lepidota	Vascular Plant	Blue	TERRESTRIAL: Roadside
Spurless Touch-me-not	Impatiens ecornuta	Vascular Plant	Yellow	TERRESTRIAL
Western Screech-owl, Macfarlanei Subspecies	Megascops kennicottii macfarlanei	Vertebrate Animal	Blue	TERRESTRIAL: Urban; Forest Broadleaf. RIVERINE: Riparian
Monardella	Monardella odoratissima ssp. discolor	Vascular Plant	Unknown	TERRESTRIAL
Western Skink	Plestiodon skiltonianus	Vertebrate Animal	Blue	TERRESTRIAL: Rock Outcrop, Coarse Talus/Boulders, Grassland/Herbaceous, Forest Needleaf.

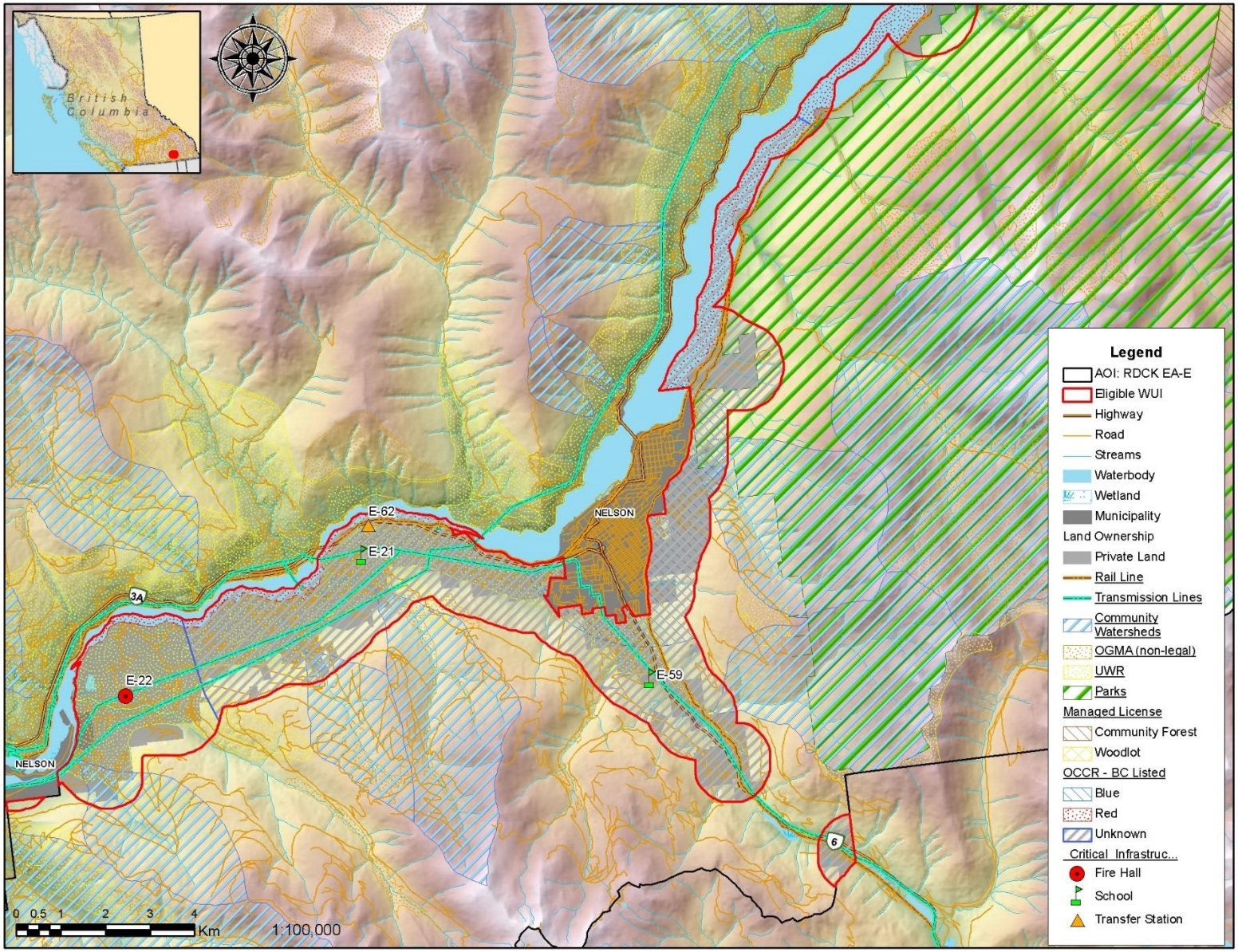
3.3.6 OTHER RESOURCE VALUES

There are multiple other important resource values associated with the land base, including forestry, agriculture (commercial and hobby farms), recreation, and tourism. Any fuel management within EA-E's WUI should consider the impact on any of these additional values, and consult with appropriate land managers and organized recreation groups in the area.

BC Timber Sales (on the north side of Kootenay Lake) and the Harrop-Procter Community Forest (HPCF; on the south side of Kootenay Lake), as well as other volume-based licensees, have significant tenure overlaps with EA-E's WUI. Forest activities can both increase and decrease wildfire risk in WUI areas. Any forestry activities within the WUI should consider the impact of wildfire risk to the community. Recommendations associated with industry stakeholders are discussed in Section 5.5.



Map 5: Values at risk within EA-E's eastern WUI area.



Map 6: Values at risk within EA-E's western WUI area.

SECTION 4: WILDFIRE RISK ASSESSMENT

This section summarizes the factors that contribute to local wildfire risk in EA-E. Section 4.1 discusses the wildfire environment in the WUI: focusing on topography, fuel, and weather. Section 4.2 discusses wildfire history in the area and wildfire response data from local fire crews. Section 4.3 uses updated fuel types combined with wildfire threat assessments and an office-based analysis to update the local wildfire risk for the eligible WUI.

The local wildfire risk assessment helps to identify the parts of the eligible WUI that are most vulnerable to wildfire. The CWRP risk assessment complements the broader scale Emergency Response and Recovery Plan for the Regional District of Central Kootenay.

The relationship between wildfire risk and wildfire threat is defined as follows:

Wildfire Risk = Probability X Consequence

Where:

Wildfire risk is defined as the potential losses incurred to human life and values at risk within a community in the event of a wildfire.

Probability is the threat of wildfire occurring in an area and is expressed by the ability of a wildfire to ignite and then consume fuel on the landscape. An area's *wildfire threat* is controlled primarily by:

- Topography: Slope and terrain features can influence rate of spread; aspect can affect pre-heating and other fuel properties
- Fuel: Amount, vertical and horizontal arrangement, type, and dryness
- Weather: Temperature, relative humidity, wind speed and direction, precipitation

Consequences refer to the repercussions associated with fire occurrence in a given area. Higher consequences are associated with densely populated areas, presence of values at risk, etc.

4.1 WILDFIRE ENVIRONMENT

There are three environmental components that influence wildfire behavior: topography, weather, and fuel. These components are generally referred to as the 'fire behaviour triangle' (Figure 7); the ways in which they individually influence the wildfire environment of the area will be detailed below. Fuel is the only component of the fire triangle that can be reasonably managed through human intervention. It is important to recognize that in WUI fires, wildland fuels (trees, shrubs, branches, etc.) are not the only fuel available to the fire – houses and their exterior construction materials and landscaping vegetation, cars, barbeque propane tanks, and more (anything that is flammable or combustible) is available fuel.

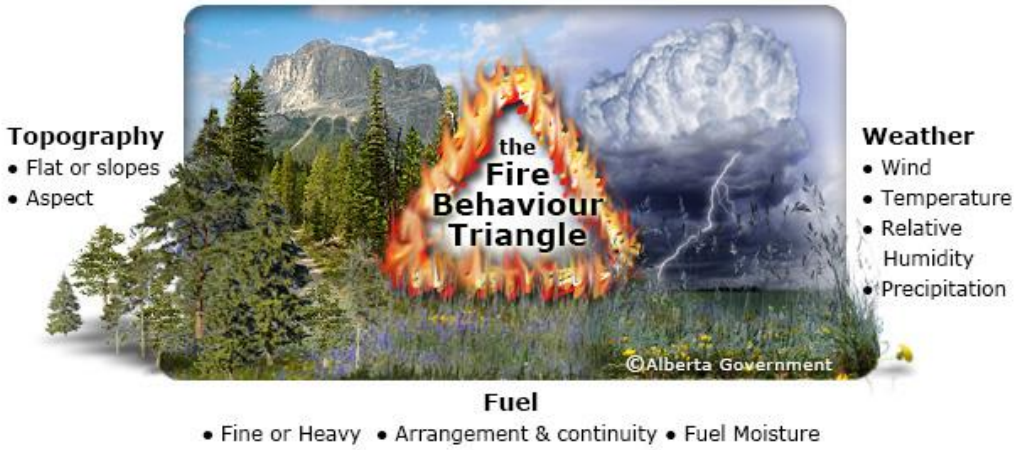


Figure 7: Graphic display of the fire behaviour triangle, and a subset of characteristics within each component.[30]

4.1.1 TOPOGRAPHY

Slope steepness influences the fire's trajectory and rate of spread and slope position relates to the ability of a fire to gain momentum uphill. Other factors of topography that influence fire behaviour include aspect, elevation, and configuration of features on the landscape that can restrict (i.e., water bodies, rock outcrops) or drive (i.e., valleys, exposed ridges) the movement of a wildfire.

Most homes and structures in EA-E communities that are located along the shorelines of Kootenay Lake and Kootenay River are situated along the lower slope adjacent to the lake/river shore. Often, these lower slopes are more subdued, but for some communities (or even just a part of them), the lower slopes can be quite steep. However, communities such as Blewett, Granite, Smelter Creek, the Grandview Properties subdivision, Harrop, and Proctor have homes and structures that are located uphill from the shoreline, on a mix of moderate and steeper slopes, and are intermixed with the wildland environment. Thus, while most homes and structures in EA-E are generally located in the lower slope of their respective macro-topological features (which is naturally advantageous from a fire spread standpoint), topography presents a situationally specific risk to some neighbourhoods and homes at the site level.

On a larger scale, the narrow valley of the west arm of Kootenay Lake and Kootenay River can funnel winds to drive a fire both up (east) and down (west) the valley. Additionally, tributary rivers and adjacent creek draws (often running up/down the valley slopes of the side drainages) provide additional convective features that can drive the up valley and upslope spread of fire.

Map 7 and Map 8 display the slope, by slope classes, for EA-E's WUI. Table 10 shows the percent of the WUI by slope steepness class, with corresponding *fire behavior* implications. Just over one-third (39%) of the WUI has slopes >30% and would experience accelerated rates of fire spread *uphill*. 60% of the WUI has slopes <30%, and would experience little slope-driven flame and fuel interaction.

[30] Graphic adopted from the Province of Alberta.

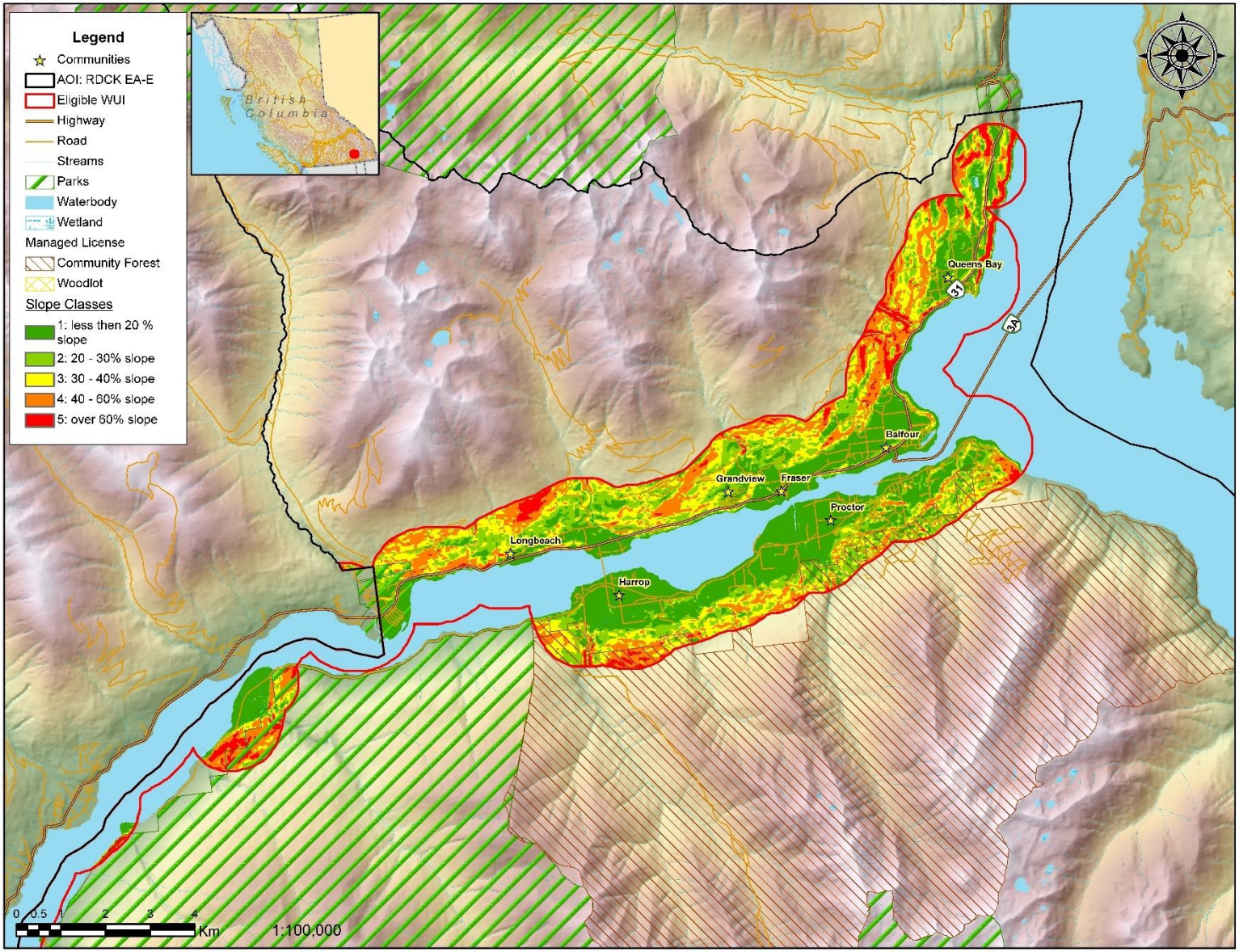
Table 10. Slope Percentage and Fire Behaviour Implications.

Slope	Percent of Eligible WUI	Fire Behaviour Implications
<20%	44%	Very little flame and fuel interaction caused by slope, normal rate of spread.
21-30%	16%	Flame tilt begins to preheat fuel, increase rate of spread.
31-40%	16%	Flame tilt preheats fuel and begins to bathe flames into fuel, high rate of spread.
41-60%	18%	Flame tilt preheats fuel and bathes flames into fuel, very high rate of spread.
>60%	5%	Flame tilt preheats fuel and bathes flames into fuel well upslope, extreme rate of spread.

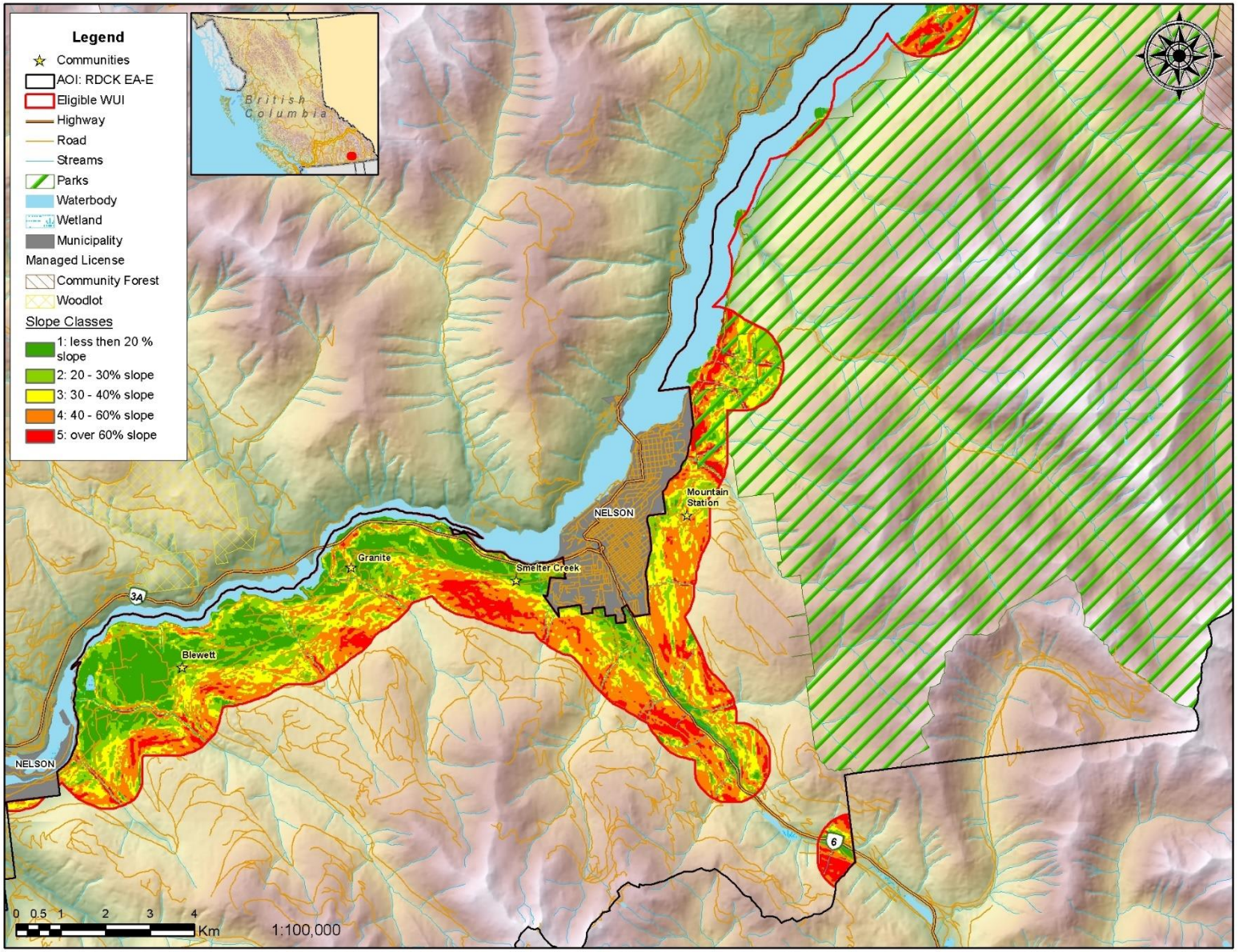
Slope-associated *fire risk* is dependent upon the slope position (location) of values, described below in Table 11. Values located in the middle and upper slopes are threatened by faster rates of fire spread due to the pre-heating of fuels from fire below and longer flame lengths reaching uphill. As discussed above, most of EA-E's communities are located at valley and slope bottoms, so would not have increased fire behaviour risks influenced by topography alone. However, there are neighbourhoods, homes, and structures that are middle slope, and these would be threatened by faster rates of slope-driven fire spread.

Table 11. Slope Position of Value and Fire Behaviour Implications.

Slope Position of Value	Fire Behaviour Implications
Bottom of Slope/ Valley Bottom	Impacted by normal rates of spread.
Mid Slope - Bench	Impacted by increase rates of spread. Position on a bench may reduce the preheating near the value. (Value is offset from the slope).
Mid Slope – Continuous	Impacted by fast rates of spread. No break in terrain features affected by preheating and flames bathing into the fuel ahead of the fire.
Upper 1/3 of slope	Impacted by extreme rates of spread. At risk to large continuous fire run, preheating and flames bathing into the fuel.



Map 7: Slope, by slope classes, for RDCK EA-E's eastern communities' WUIs.



Map 8: Slope, by slope classes, for RDCK EA-E's western communities' WUIs.

4.1.2 FUEL

The ecological context of wildfire and the role of fire in the local ecosystem under both current and historical conditions is an important basis for understanding the current and future wildfire threat to a community. Also, the type and amount of fuel available for a wildfire is a major driver of the fire's potential fire behaviour. Fuel is the only component of the fire triangle that can be realistically managed through human intervention. This section analyses and discusses available *wildland* vegetative fuels within EA-E's WUI.

The forested slopes both within and outside EA-E's WUI have experienced a significant amount of past, recent, and ongoing logging. Past logging, combined with historically suppressed wildfires throughout the 1900s, has resulted in a relatively continuous distribution of even-aged conifer stands. However, within EA-E's WUI, some of these forested stands have seen recent logging that has begun breaking up the even-aged continuity, something that can reduce wildfire behaviour by forcing fire 'to the ground'. Importantly, management of reduced slash (harvest debris) in these WUI harvested areas is paramount towards further reducing their wildfire behaviour and potential risk to nearby neighbourhoods and adjacent communities.

The Canadian Forest Fire Behaviour Prediction (FBP) System outlines sixteen fuel types based on characteristic fire behaviour under defined conditions.[31] BC Wildfire Service maintains a provincial fuel type layer that was confirmed and updated for this CWRP. It should be noted that mixed conifer stands[32] in the interior wet belt, of which EA-Es WUI is within, are one of the specifically identified areas of uncertainty and knowledge gaps within the FBP system and are considered, at best, a poor match with any fuel type.[33] The FBP system was almost entirely developed for boreal and sub-boreal forest types, which do not occur within the study areas. Furthermore, fuel types depend heavily on Vegetation Resource Inventory (VRI) data, which is gathered and maintained to inform timber management objectives, not fire behaviour prediction. Although a subjective process, the most appropriate fuel type was assigned based on research, experience, and practical knowledge; this system has been successfully used within BC, with continual improvement and refinement, for 25 years.[34] In some areas, aerial imagery is of low spatial resolution and/or ground access was impossible, making fuel type assessment difficult.

Table 12 lists the percentage of fuel types in EA-E's eligible WUI.[35] The fuel types present that are considered most hazardous in terms of fire behaviour (almost all located in the forested slopes) are C-4, C-3, S-1, and O-1a/b (can include C-5 and C-7 under certain conditions). C-4 and C-3 fuel types can support

[31] Forestry Canada Fire Danger Group. 1992. Development and Structure of the Canadian Forest Fire Behavior Prediction System: Information Report ST-X-3.
[32] Species such as western white pine and western larch growing in multi-story canopies, usually associated with Douglas-fir, redcedar, lodgepole pine, or other species.
[33] Natural Resources Canada. 2018. British Columbia Wildfire Fuel Typing and Fuel Type Layer Description. Daniel D.B. Perrakis, George Eade, and Dana Hicks
[34] Perrakis, D, G. Eade and D. Hicks. 2018. Canadian Forest Service Pacific Forestry Centre. British Columbia Wildfire Fuel Typing and Fuel Type Layer Description
[35] Larch produces very little persistent litter, so the D-1 fuel type likely overestimates fire spread potential of these stands. In mixed-species stands with other conifers, larch is considered to contribute to the deciduous portion of the stand, implemented using the M-1/M-2 fuel types. (Natural Resources Canada. British Columbia Wildfire Fuel Typing and Fuel Type Layer Description)

passive and active crown fires, and under extreme wildfire conditions can exhibit some of the highest wildfire risk associated to fuel type. Extensive areas of S-1, O-1a/b, C-5, or C-7 can support a rapidly spreading surface fire capable of damage or destruction of property and jeopardizing human life, but the fire behaviour potential in these fuel types is recognized as highly variable dependent on the percentage of grass or slash that is cured and the wind speed. An M-1/2 fuel type can be considered hazardous depending on the proportion of conifers within the forest stand, and/or the amount of dead and downed material. D-1/2 stands (of which there is little in EA-E's WUI) are dominated by deciduous species, and are generally considered the least hazardous forest type because of their higher moisture content and lack of flammable ladder fuels. The hazard of a D-1/2 stand can greatly increase if there is an accumulation of surface fuels, cured grasses, or flammable shrubs. Recent spring cross-over conditions[36] (called the 'spring dip') have allowed for destructive forest fires in deciduous-dominated stands. Detailed fuel type descriptions and their associated wildfire risk can be found in Appendix B-1: Fuel Typing Methodology.

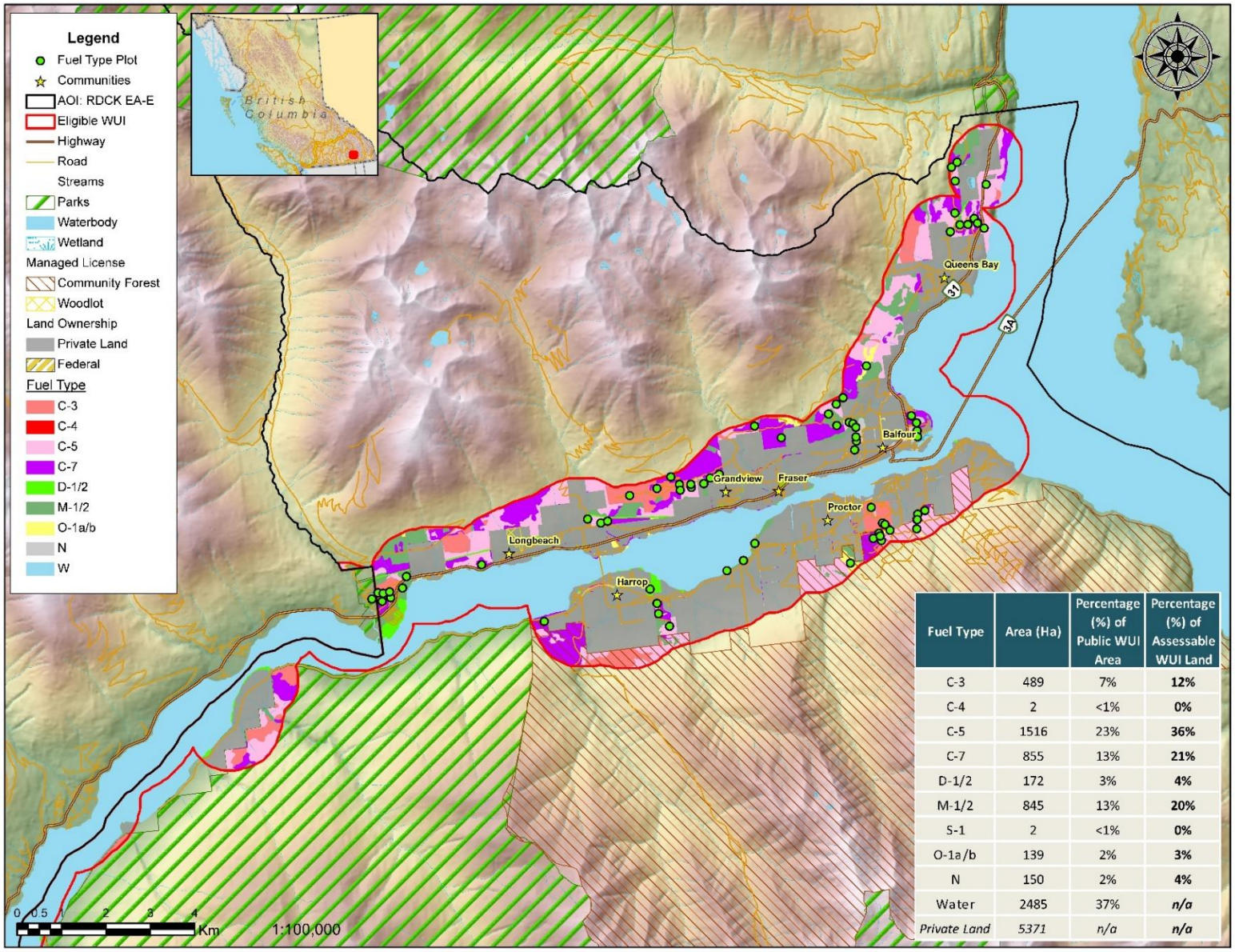
Table 12. Fuel types in EA-E's Wildland Urban Interface

Fuel Type	Fuel Type Description within the WUI	Area (ha) of total WUI	Percent (%) of *assessable* WUI area	Percent (%) of *assessable* WUI area (waterbodies removed)
C-3	Pole-sapling to mature even-aged conifer-dominated forest with moderate to high density and high crown closure (near or at horizontal continuity). Crows separated from the forest floor in mature stands.	489	7%	**12%**
C-4	Pole-sapling to mature (but stagnant in growth) very dense conifer-dominated forests (>10,000 sph). Some stands have a high number of dead standing or dead leaning/down from natural exclusion processes.	2	<1%	**0%**
C-5	Low to moderate density, uneven-aged conifer-dominated forest, crown base heights mixed. Understory of discontinuous natural conifer ingress in openings and gaps, deciduous shrubs, and herbs.	1516	23%	**36%**
C-7	Low-density, uneven-aged conifer-dominated forest, crowns separated from the ground, understory of discontinuous grasses and shrubs. Exposed bed rock and low surface fuel loading. Often located on south-facing slopes and throughout the ICH. Also used to type completed fuel treatments that have left a low-density conifer stand.	855	13%	**21%**
S-1	Conifer dominated slash as the result of harvesting practices on moderate to low slope grades. Slash is typically one to two seasons old,	2	<1%	**0%**

[36] Cross-over conditions refer to a point where air temperature drops below the relative humidity (e.g., 20°C/15% humidity), providing conditions for potentially severe fire behaviour.

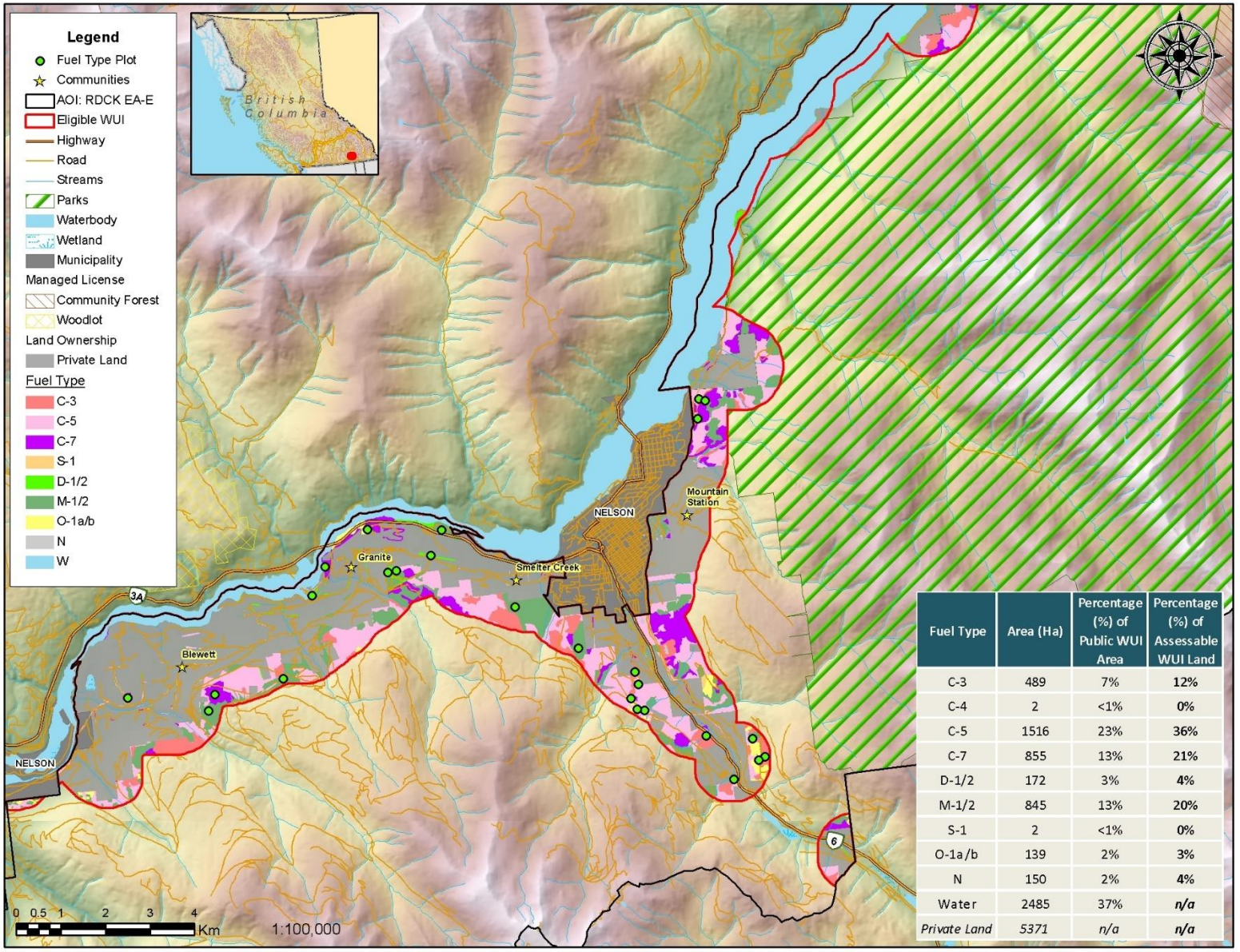
Fuel Type	Fuel Type Description within the WUI	Area (ha) of total WUI	Percent (%) of *assessable* WUI area	Percent (%) of *assessable* WUI area (waterbodies removed)
	continuous, with no post-logging treatment applied. Tops and branches left on site result in moderate fuel load depths.			
D-1/2	Deciduous stands/forest. Hazard increases with the amount of deadfall and/or establishment of a flammable shrub layer.	172	3%	**4%**
M-1/2	Moderately well-stocked mixed stands of conifer and deciduous, low to moderate dead stems and down woody fuels. Often transition to become more conifer dominated as pioneer deciduous species die out if disturbance is excluded. Note: Western Larch is typed as a deciduous species for fuel typing and may be part or all of the deciduous component in this fuel type.	845	13%	**20%**
O-1a/b	Grassland fuels ('a' refers to matted grasses, 'b' refers to standing). Matted and standing grass that can cure; sparse or scattered shrubs, trees, and down woody debris. Cutblocks >2 seasons old that do not meet S-type descriptions, as well as young regenerating cutblocks that have not reached any horizontal continuity.	139	2%	**3%**
Non-fuel	Areas with no available forest or grass fuels (e.g., roadways, gravel clearings, irrigated and/or mowed fields). These areas may (and often do) contain combustible materials, infrastructure, flammable landscaping, and homes.	150	2%	**4%**
Water	-	2485	37%	***n/a***
Private Land	-	*5371*	*n/a*	***n/a***

Map 9 and Map 10 below display the updated fuel types for EA-E's WUI.



Fuel Type	Area (Ha)	Percentage (%) of Public WUI Area	Percentage (%) of Assessable WUI Land
C-3	489	7%	**12%**
C-4	2	<1%	**0%**
C-5	1516	23%	**36%**
C-7	855	13%	**21%**
D-1/2	172	3%	**4%**
M-1/2	845	13%	**20%**
S-1	2	<1%	**0%**
O-1a/b	139	2%	**3%**
N	150	2%	**4%**
Water	2485	37%	***n/a***
Private Land	*5371*	*n/a*	***n/a***

Map 9: Update fuel types for EA-E's eastern WUI communities.



Fuel Type	Area (Ha)	Percentage (%) of Public WUI Area	Percentage (%) of Assessable WUI Land
C-3	489	7%	**12%**
C-4	2	<1%	**0%**
C-5	1516	23%	**36%**
C-7	855	13%	**21%**
D-1/2	172	3%	**4%**
M-1/2	845	13%	**20%**
S-1	2	<1%	**0%**
O-1a/b	139	2%	**3%**
N	150	2%	**4%**
Water	2485	37%	***n/a***
Private Land	*5371*	*n/a*	***n/a***

Map 10: Update fuel types for EA-E's western WUI communities.

4.1.3 WEATHER

Most EA-E communities are located along the shores and adjacent slopes of Kootenay Lake's west arm and Kootenay River. Fire season conditions are generally warm to hot (July and August daily temperature means average 19.2°C, with average highs of 28.3°C) with some rainfall expected throughout (August averages the least rainfall with 49.4mm, while June averages the most with 71.1mm), with climate change projections trending toward even hotter summers and more pronounced droughts.[37] Local BC Wildfire Service (BCWS) staff working actively on wildfires in the Central Kootenays during 2023 commented that in this region, weather (i.e., relative humidity and wind), slope, and aspect are far more important factors in fire growth than fuel types.[38]

Historical weather data can provide information on the number and distribution of days when EA-E's WUI communities and surrounding areas experience high fire danger conditions. 'High fire danger' is considered with a Canadian Forest Fire Danger Rating System (CFFDRS) Danger Class rating of 4 (High) or 5 (Extreme). Average danger class data for EA-E can be determined from representative BCWS fire weather stations within the WUI: Smallwood (located at an elevation of 997m (Nelson is at 535m elevation), across from Blewett on the north side of Kootenay Lake, east of Garrity Creek); and Powder Creek (located on the east side of Kootenay Lake across from Kaslo, facing west, at 1020 m elevation). Averages for the past 12 years are presented for each in in Figure 8 and Figure 9 below.

The data from Smallwood fire weather station, which is most appropriate for communities west of approximately Harrop, shows that, for the majority of EA-E's western WUI, July and August have the greatest number of High and Extreme fire danger days, with July averaging 16 and August averaging 23. When combined, 37% of days in those two months exhibit High or Extreme fire danger. It is important to note that High fire danger days are present in both June and September within EA-E's WUI.

The data from Powder Creek fire weather station, which is most appropriate for communities east of (and including) approximately Harrop, shows that, for the majority of EA-E's eastern WUI, July and August have the greatest number of High and Extreme fire danger days, with July averaging eight and August averaging 15. When combined, 64% of days in those two months exhibit High or Extreme fire danger. It is important to note that High and Extreme fire danger days are present in this area from May through October.

Overall, it is most likely that fire weather and associated fire danger days blends across EA-E's WUI east to west, from averaging a higher number of High and Extreme fire danger days in its more eastern areas, to a lower number of fire danger days in its western areas. However, the data does show that EA-E's WUI is at risk due to fire season weather.

[37] Environment and Climate Change Canada data for Nelson.
[38] From verbal conversations between the Plan's developers and wildfire crews encountered during field work for the Plan's development.

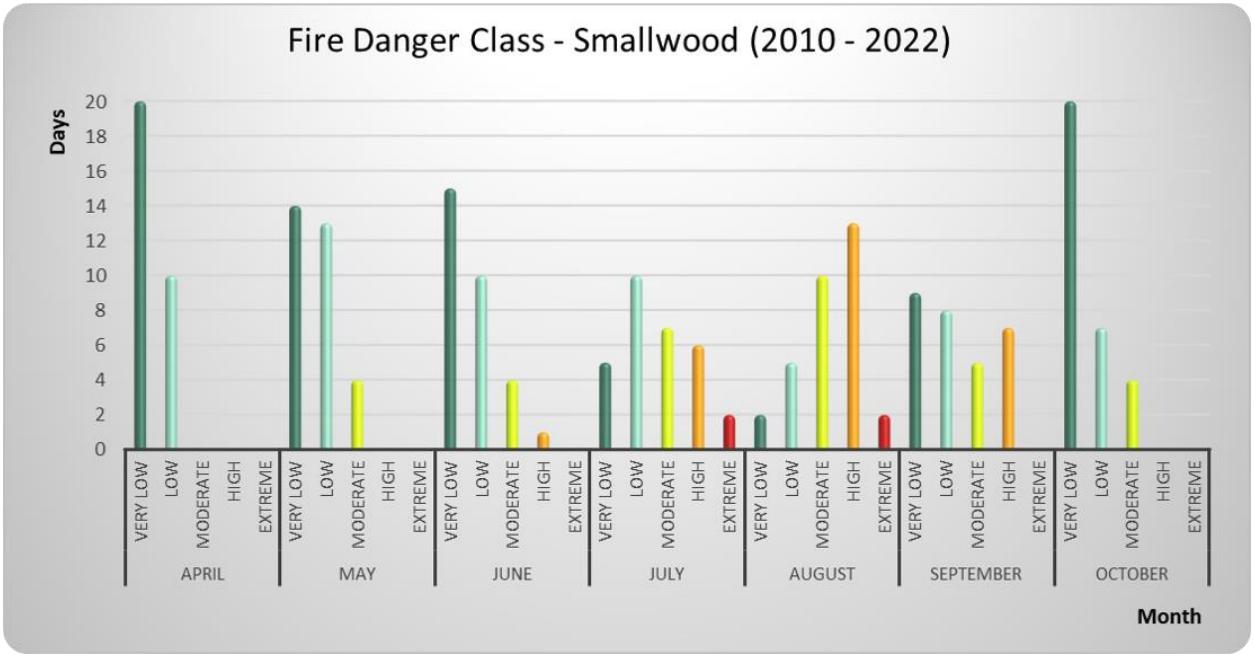


Figure 8: Average number of fire danger rating days by month for the Smallwood fire weather station.

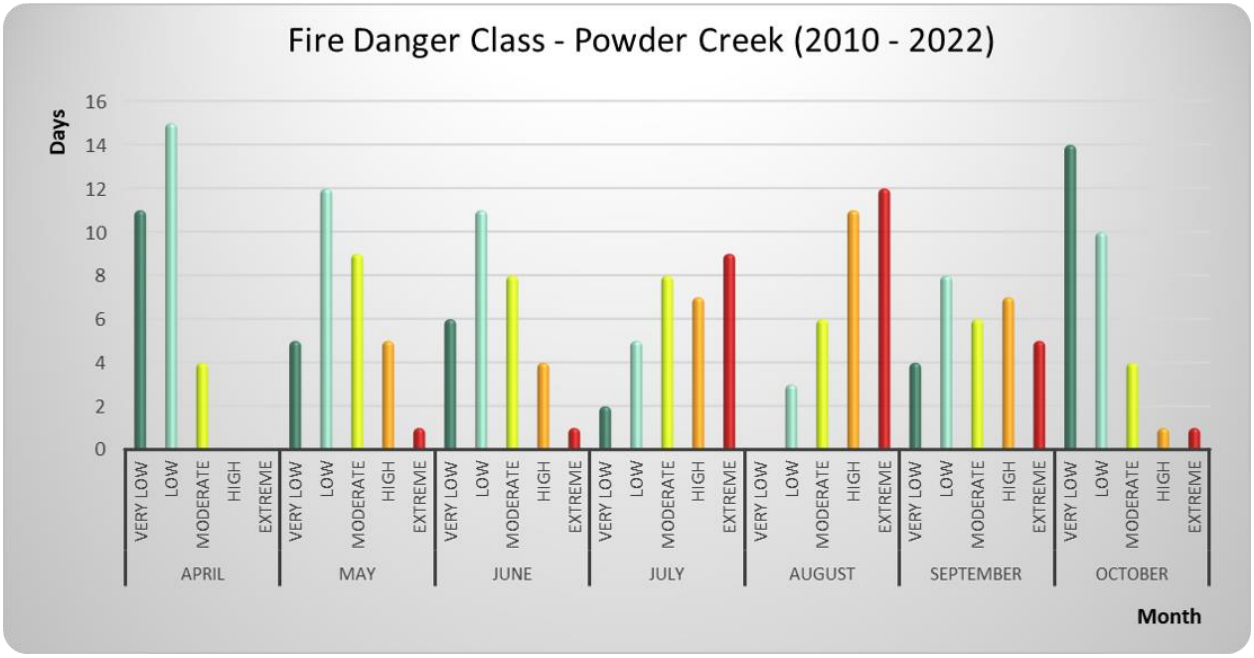


Figure 9: Average number of fire danger rating days by month for the Powder Creek fire weather station.

Hourly wind speed and direction is also recorded at BCWS weather stations. Data is publicly available in the form of average Initial Spread Index (ISI) roses.[39] The ISI is a numeric rating of the expected rate of fire spread that combines the effects of wind speed and fine fuel moisture (which is controlled by temperature and relative humidity). ISI roses can be used to help plan the location of fuel treatments on the landscape to protect values at risk based on the predominant wind direction and frequency of higher ISI values. Wildfire that occurs upwind of a value poses a more significant threat to that value than one which occurs downwind.

Wind and ISI data assessed from both the Powder Creek (Figure 10) and Goldhill (Figure 11) fire weather stations during the fire season indicates that EA-E communities primarily experiences strong diurnal winds – up-valley (north and east along Kootenay River, the west arm of Kootenay Lake, and Kootenay Lake during the day, and down-valley (south along Kootenay Lake, west and south along the west arm of Kootenay Lake and Kootenay River) at night . As per the ISI roses, the highest ISI values (and thus associated with higher rates of fire spread) are during the highest temperature summer months, June - August.

The local BCWS Wildfire Prevention Officer noted that high elevation spruce/balsam stands [largely just uphill and outside EA-Es WUI] tend to exhibit the most aggressive and volatile growth in the region. Middle elevation mixed stands of Douglas-fir, larch, and pine species [largely within the upper slopes of EA-E's WUI] can be volatile as well, however, typically less so than the higher spruce/balsam stands. Low elevation western red cedar/western hemlock stands [largely within the lower slopes of EA-E's WUI] exhibit the least volatility, unless certain fuel and weather conditions are met. Importantly, as fuel conditions dry out in the summer and combine with specific weather events (wind, low humidity, hotter temperatures), these fuel types can react with intensity and exhibit aggressive fire behavior. Echoing the sentiments of the firefighting ground crews encountered during Plan development field assessment work, winds are required to create volatility and fire growth in the fuel types in EA-E and are also required to push fire aggressively downslope towards communities.

[39] https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/vegetation-and-fuel-management/fire-fuel-management/fuel-management

Figure 10. Daily and monthly average initial spread index rose for Smallwood fire weather station for the fire season (April – October)

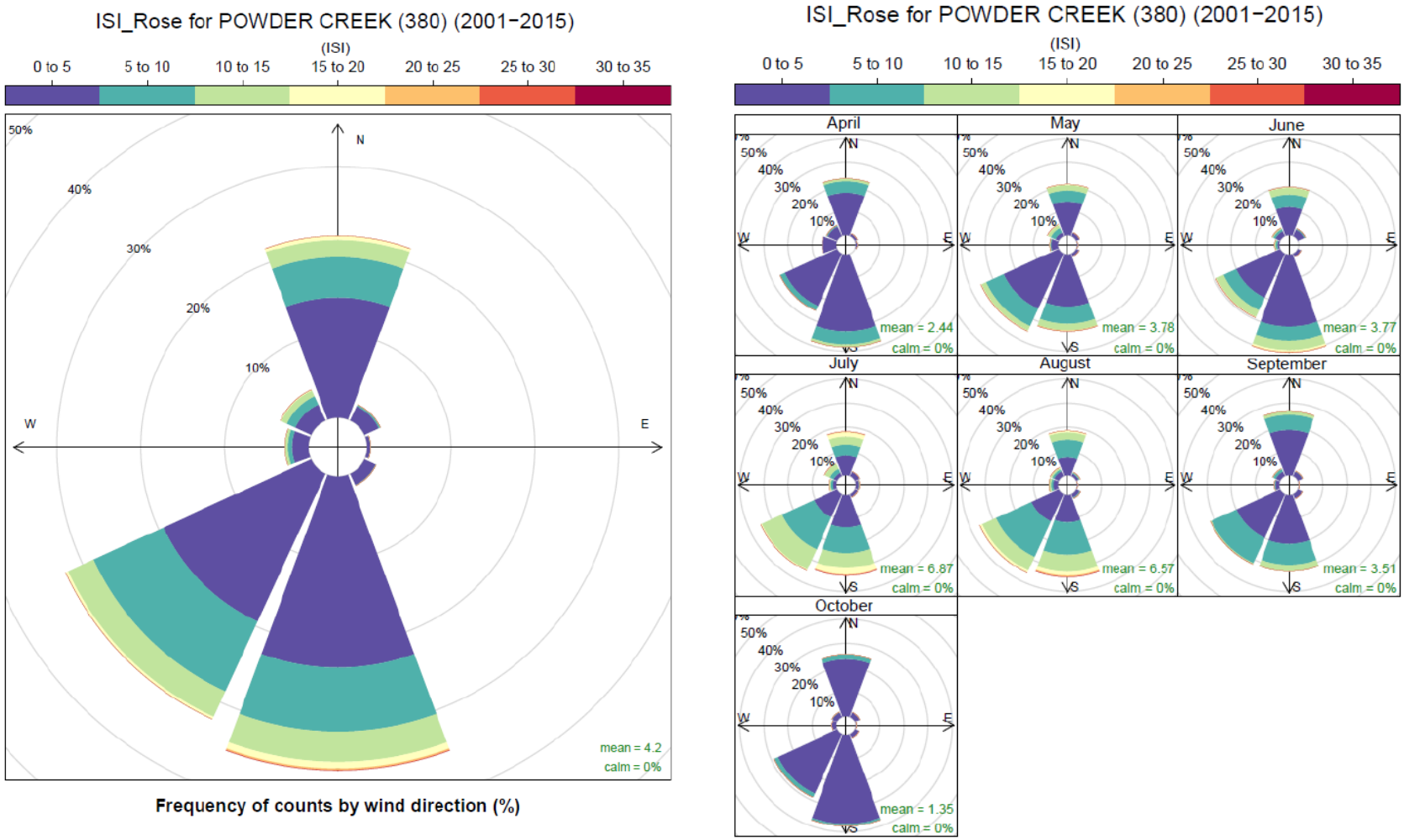


Figure 11: Daily and monthly average initial spread index rose for Powder Creek fire weather station for the fire season (April-October).

4.2 WILDFIRE HISTORY

4.2.1 HISTORIC FIRE REGIME

EA-E's WUI can be categorized using the Biogeoclimatic Ecosystem Classification (BEC) system, which classifies the province into zones by vegetation, soils, and climate. Regional subzones are derived from relative precipitation and temperature.

Map 11 and Map 12, in Section 4.2.2 below, show the distribution of Biogeoclimatic zones and associated Natural Disturbance Types (NDTs) in EA-E's WUI. Summarized in Table 13, the north, east, and upper south facing slopes of EA-E's WUI are dominated by the Interior Cedar Hemlock, Dry Warm (ICHdw1) subzone with an associated NDT3 – ecosystems with frequent stand-initiating events.[40] These ecosystems are characterized by frequent wildfires that range from small spot fires to conflagrations covering tens of thousands of hectares.[40] This results in a landscape mosaic of stands of different ages with individual stands being even-aged.[40] Larger fires often occurred, and could grow to enormous sizes if no topographical-limiting features were present. The mean return interval for fire in the ICH NDT3 is approximately 150 years.[40]

The lower south and west facing slopes of EA-E's WUI are dominated by the Interior Cedar Hemlock, Very Dry Warm subzone with an associated NDT4 – ecosystems with frequent stand-maintaining fires. These frequent fires would maintain the existing forest stand structure through frequent, low-intensity fires that would normally regulate the amount of surface fuel build-up and reduce the number of small, sapling size regenerating trees.[40] A higher frequency and a variable intensity of these types of fires across the landscape would create mosaics of uneven-aged forests and grassy or shrubby openings which naturally restricted the spread of large, severe fires.[40] Larger stand-initiating crown fires may be rarer, but historically occurred at intervals ranging from at least 150 to 250 years.[40]

It is important to consider that fire regimes in the region were likely exemplified through pre-settlement cultural burning practices by First Nations. It is also important to consider that, in the future, BEC (and associated NDT) distributions will likely shift and/or change because of climate change.

Table 13. Natural Disturbance Types (NDTs) of EA-E's WUI.

Biogeoclimatic Zone	Natural Disturbance Type	Area (ha)	Percent (%)
ICHdw1: Interior Cedar - Hemlock; Dry Warm; West Kootenay Variant	NDT3	9590	**80%**
ICHxw: Interior Cedar - Hemlock; Very Dry Warm	NDT4	2200	**18%**
ICHmw2: Interior Cedar - Hemlock; Moist Warm; Slocan Variant	NDT2	223	**2%**

[40] BC Biodiversity Guidebook. https://www.for.gov.bc.ca/hfd/library/documents/bib19715.pdf

4.2.2 HISTORICAL WILDFIRE OCCURENCES

Historic wildfire perimeters, from 1912-2022, are displayed below on Map 11 and Map 12 for an area within five kilometres of EA-E's WUI. Overall, wildfires have occurred regularly since 1912, with both people and lightning being nearly equal causes of those fires' ignitions (people: 45%, 45/81; lightning: 55%, 36/81). Since 2000, there have been 17 fires recorded, of which 12 (71%) were caused by lightning, but only three of those fires crossed into EA-E communities' WUIs. The largest fire recorded occurred in 1926 and was 5,786 ha; the second largest occurred in 1997 and was 4,920 ha. For all historic fires within five kilometres of EA-E communities' WUIs, the average size was 382 ha.

BCWS fire ignition data (which records point ignitions that may or may not have developed into a wildfire with a recorded perimeter area) is only available from 1950 onwards. Looking at the same five-kilometre area surrounding EA-E communities' WUIs, 883 out of 1,275 (69%) recorded ignitions have been from people. 371 (42%) were recorded from 2000 onwards – the frequency of human ignitions has greatly increased in the last 23 years.

Although human ignitions are the dominant source for point ignitions historically, lightning is still a very real ignition threat, and is the leading cause of ignition in higher elevations on slopes and ridges within 5km of EA-E's WUI. Additionally, historical fire perimeter data shows that most past fires that grew to size were started from lightning. Under the right fire weather conditions, fires started from these ignitions can grow in size and threaten the WUI.

Figure 12 displays trends with fire ignitions since the 1950's *within EA-E's WUI*. It is not surprising that, due to the much greater presence of people within the WUI than outside of them, humans are the leading cause of ignitions. Mirroring the larger five-kilometre area surrounding, human ignitions have greatly increased since 2000.

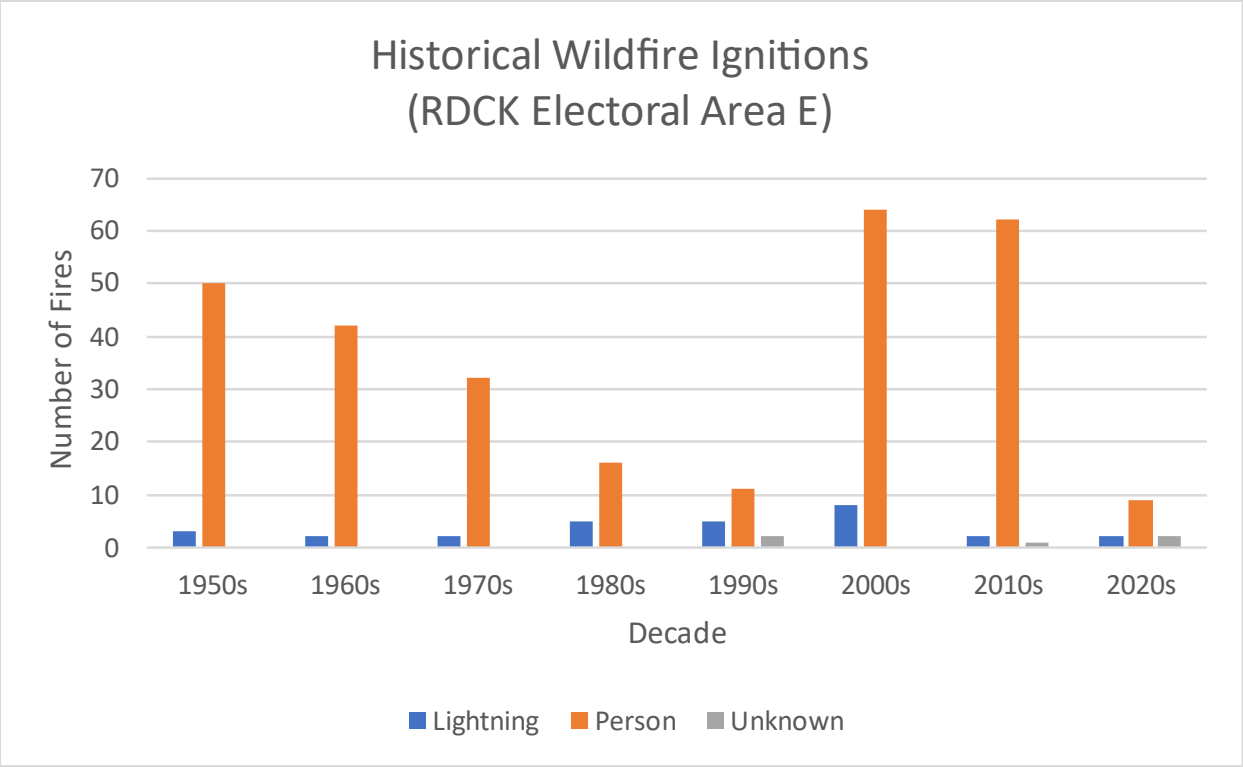
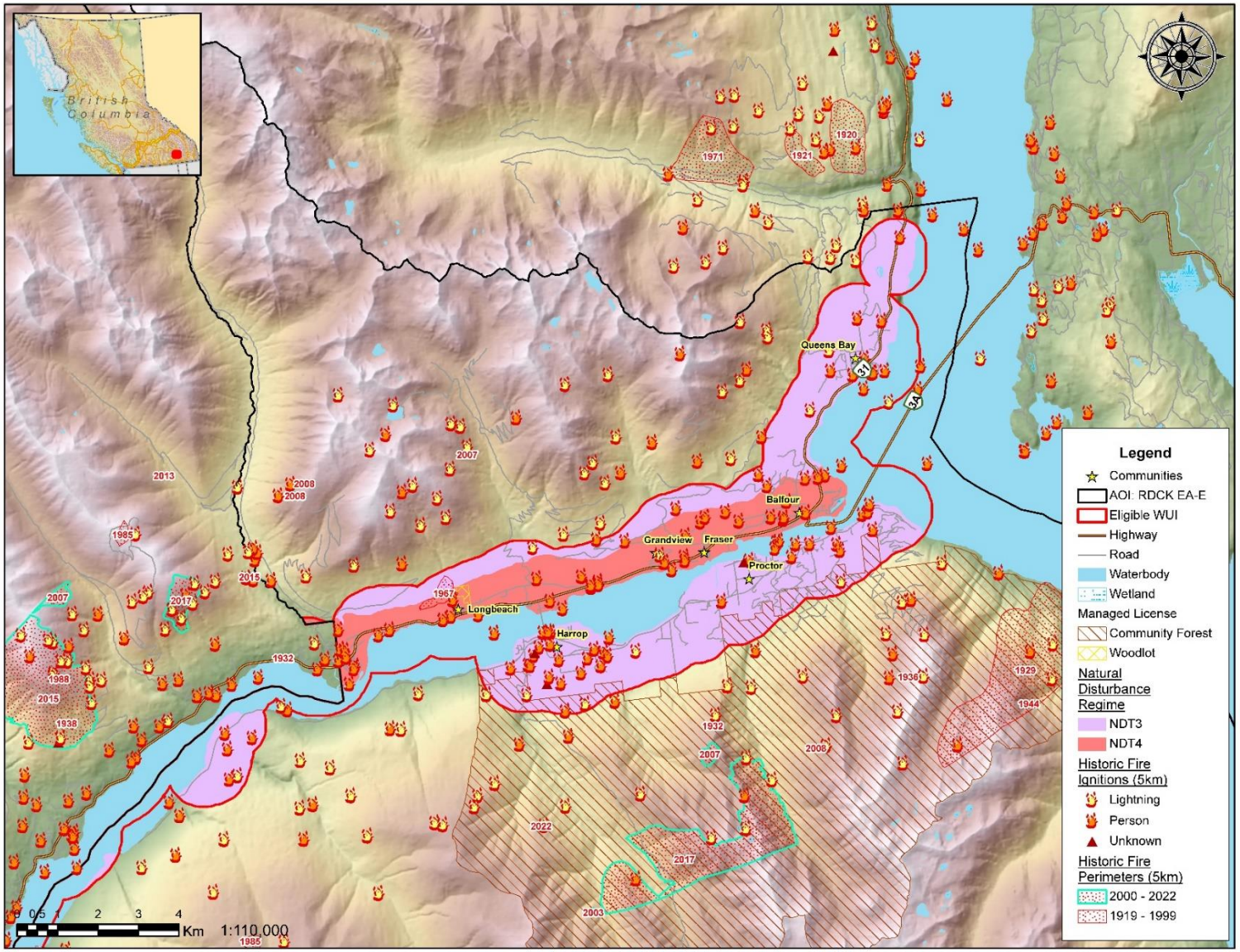
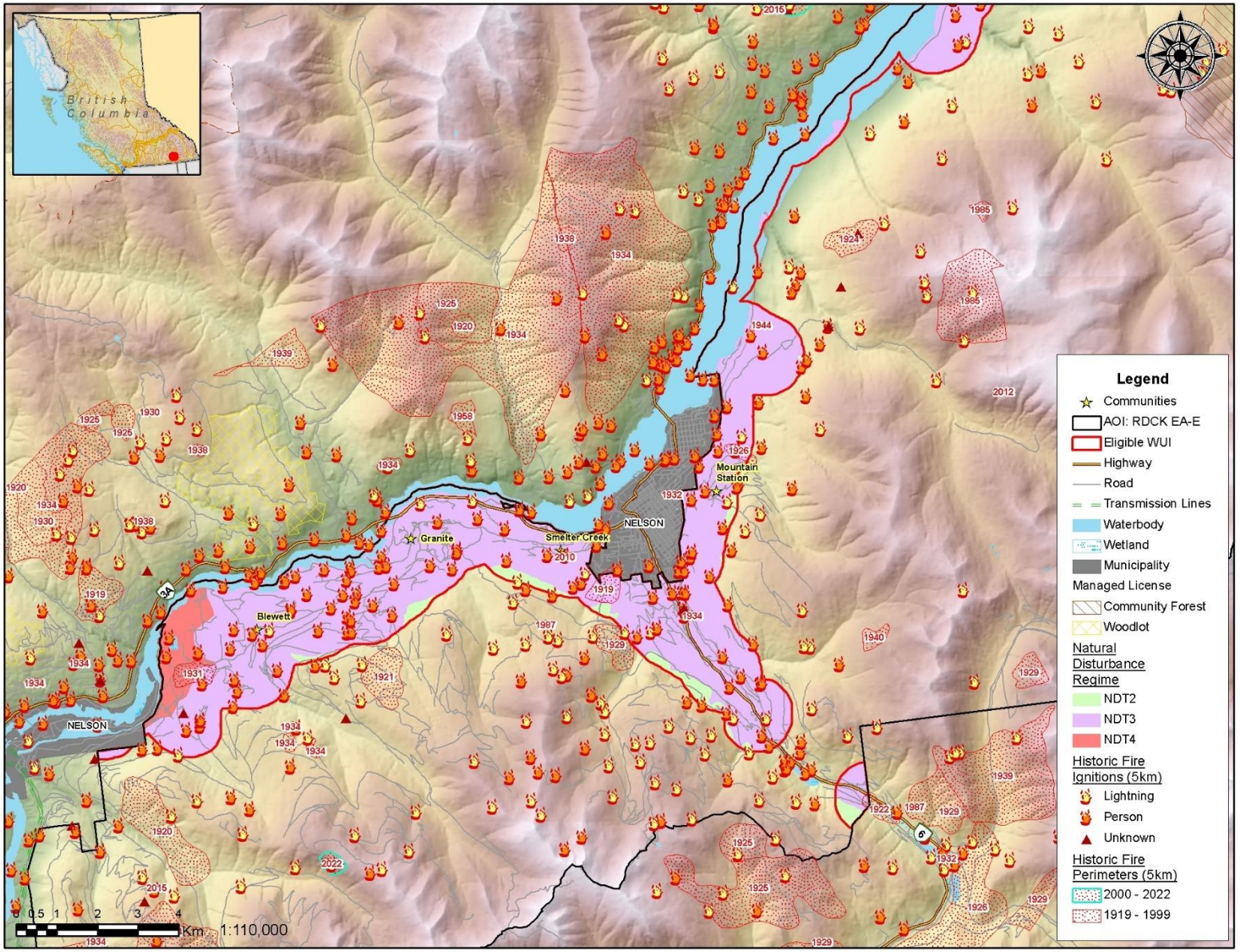


Figure 12: Summary of fire ignition data by cause within RDCK EA-E's WUI (Data from the BC Wildfire Service).



Map 11: Natural disturbance regimes and historical fire ignitions and occurrences within 5 km of EA-E's WUI (east).



Map 12: Natural disturbance regimes and historical fire ignitions and occurrences within 5 km of EA-E's WUI (west).

4.3 LOCAL WILDFIRE RISK ASSESSMENT

There are two main components of this local risk assessment: the *wildfire behaviour threat class* (fuels, weather, and topography sub-components) and the *WUI risk class* (structural sub-component). The local wildfire threat assessment process includes several key steps as outlined in Appendix B: Local Wildfire Risk Process and summarized as follows:

- *Fuel type attribute assessment* – ground truthing/verification and updating as required to develop a local fuel type map (Appendix B-1: Fuel Typing Methodology).
- *Consideration of the proximity of fuel to the community* – recognizing that fuel closest to the community usually represents the highest hazard (Appendix B-4: Proximity of Fuel to the Community).
- *Analysis of predominant summer fire spread patterns* – using wind speed and wind direction during the peak burning period using ISI Rose(s) from BCWS weather station(s). Wind speed, wind direction, and fine fuel moisture condition influence wildfire trajectory and rate of spread.
- *Consideration of topography in relation to values* (Table 10 and Table 11) – slope percentage and slope position of the value are considered, where slope percentage influences the fire's trajectory and rate of spread and slope position relates to the ability of a fire to gain momentum uphill.
- *Stratification of the WUI* – according to relative wildfire threat based on the above considerations, other local factors, and field assessment of priority wildfire risk areas.

Wildfire threat assessment field work in EA-E's WUI was completed in August of 2023. Nearly 165 field stops (e.g., qualitative FireSmart notes, fuel type updates/verification, photograph documentation) were made across the WUI (see Appendix B-2: ; Map 13 and Map 14), including 16 Wildfire Threat Assessment (WTA) threat plots (see Appendix C: Wildfire Risk Assessment – Worksheets and Photos). WTA plots were completed in interface (i.e., abrupt change from forest to residential development) and intermix (i.e., where forest and structures are intermingled) areas of the WUI to support wildfire risk analyses and development of priority treatment areas, as well as in completed fuel treatment areas to quantify the reduction in site-level wildfire threat. Constraints such as the limited amount of public land within some parts of the WUI available for assessment, and/or limited accessibility into the WUI (e.g., access required through private property; no roads), limited field assessments for some areas.

It is important to note that the local WTA analysis does not apply to private land parcels nor any areas outside of the eligible WUI for this CWRP. As well, the threat assessments quantify threat as it relates to forest fuels, but do not include the ignition potential of residential landscaping, structures, or other infrastructure. Structure fires and structure-to-structure spread in a wildfire scenario are largely attributable to hazardous conditions in the FireSmart Home Ignition Zone of a structure (i.e., the area within 30m of the principal building and/or its attachments).

4.3.1 WILDFIRE THREAT CLASS ANALYSIS

Classes of the wildfire threat class analysis are as follows:

- Very Low: Waterbodies with no forest or grassland fuels, posing no wildfire threat;

- Low: Developed and undeveloped land that will not support significant wildfire spread;
- Moderate: Developed and undeveloped land that will support surface fires that can be both threatening and unthreatening to homes and structures;
- High: Landscapes or stands with continuous forested or grassland fuels that will support candling, intermittent crown fires, or continuous crown fires. These landscapes often contain steeper slopes, rough or broken terrain and/or south or west aspects. High polygons may include high indices of dead and downed conifers; and
- Extreme: Continuous forested land that will support intermittent or continuous crown fires.

The results of the wildfire threat class analysis are displayed on Map 13 and Map 14, and summarized in Table 14 below. The local threat analysis shows that, for the assessable area (i.e., not private land and removing foreshore water areas), 41% of EA-E's eligible WUI is classified as a high or extreme fire behavior threat – mostly located on the middle and upper slopes on the north side of Kootenay Lake, largely reflecting steeper slopes on southerly aspects with conifer-dominated fuel types. Only 7% of the assessable WUI is classified as a low threat – almost all located in moisture receiving lower slopes (due to deciduous-dominated fuel types and low slope grades, or in areas of recently completed fuel treatments. Overall, private land totals 45% of EA-E's WUI – this area was not allocated fire threat data. Conditions on private land can often result in the fire hazard being much higher than in the forest adjacent if there is low compliance with FireSmart vegetation and structure principles – issues that were frequently observed throughout EA-E during field work.

Table 14: Wildfire threat summary for EA-E's eligible WUI

Wildfire Threat			
Threat Class	**Hectares**	**% of WUI**	**% of Assessable Public Land (excluding water)**
Extreme	768	6%	**18%**
High	954	8%	**23%**
Moderate	2152	18%	**52%**
Low	300	2%	**7%**
Very Low/No Threat (Water)	2485	21%	-
No Data (Private Land)	*5371*	*45%*	-

4.3.2 WUI RISK CLASS ANALYSIS

WUI risk classes are quantified when the Wildfire Threat (the above) is assessed as high or extreme, potentially causing unacceptable wildfire risk when near communities and developments. WUI risk classes are described below:

- **Low**: The high or extreme threat is sufficiently distant from developments, having no direct impact of the community and is located over 2 km from structures;
- **Moderate**: The high or extreme threat is sufficiently distant from developments, having no direct impact of the community and is located 500m to 2 km distance from structures;

- **High**: The high or extreme threat has potential to directly impact a community or development and is located 200m to 500m from structures; and
- **Extreme**: The high or extreme threat has potential to directly impact a community or development and is located within 200m from structures.

Table 15 below (and displayed on Map 13 and Map 14) summarizes the risk class ratings within EA-E's WUI. Of the 1,722 hectares assigned a High or Extreme wildfire threat class, 797 hectares (46%) have a high or extreme WUI risk. Overall, this represents 19% of the assessable land within EA-E's WUI. This analysis provides an initial step towards identifying priority areas/neighbourhoods for directing FireSmart education and vegetative/fuel management efforts, if practicable.

It is important to note that reducing the risk (i.e., performing wildland fuel management) in any of the High to Extreme WUI risk areas is unlikely to be a silver bullet in protecting communities and structures. In extreme wildfire scenarios, firebrands (embers) can travel many kilometers ahead of the active fire front, land in densities of up to 600/m^2, and ignite combustible building materials and landscaping vegetation. In combination with wildland fuel management, increasing the resilience of EA-E's WUI communities and interface/intermix neighbourhoods can only be efficiently achieved by performing residential-scale FireSmart activities on private land. The proposed fuel treatment units identified in Section 5.7 are not a comprehensive list of all areas that qualify for management; they were selected as the highest priority areas that are practicable to implement, present a high risk to their respective communities, and meet required funding program goals and requirements as either fuel breaks or fuel treatment areas.

Table 15: WUI risk class ratings within EA-E's eligible WUI.

WUI Risk			
Risk Class	**Hectares**	**% of WUI**	**% of Assessable Public Land**
Extreme	162	1%	**4%**
High	635	5%	**15%**
N/A (Moderate, Low, or Very Low fire threat)	4917	41%	-
No Data (Private Land)	*5371*	*45%*	-

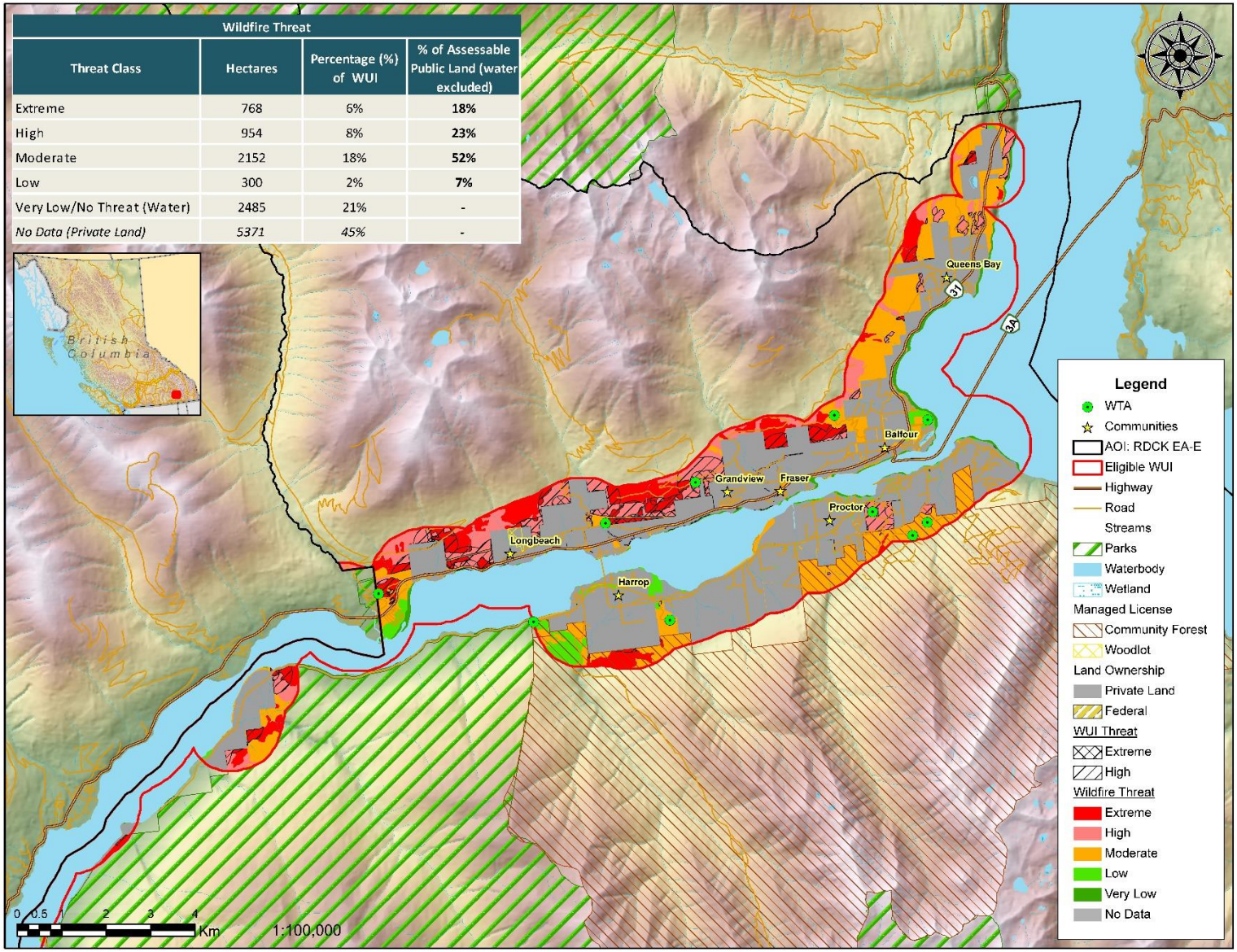
For detailed field data collection and spatial analysis methodology for the local threat assessment and classification, see Appendix B.

The Province of BC produces a Provincial Strategic Threat Analysis (PSTA; updated in 2021) for all non-private land parcels in BC. This high-level assessment of relative wildfire threat throughout the province is largely based on data from the Vegetation Resource Inventory (VRI) that has not been ground truthed,

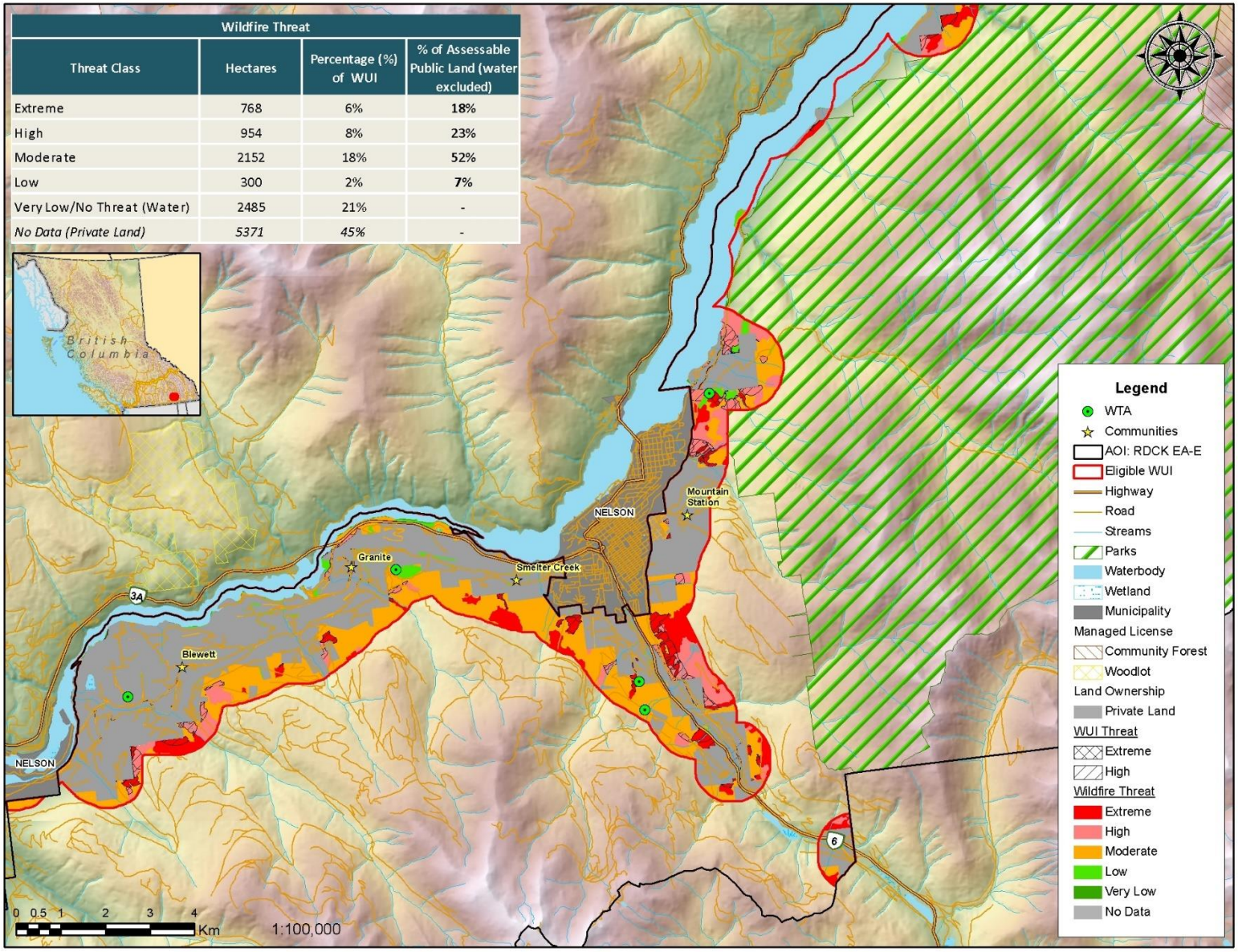
fire occurrence patterns, potential fire intensity, and spotting potential.[41] The PSTA ranks threat on a scale of 1 (lowest) through 10 (extreme). Complementing the above local wildfire risk analyses, the PSTA is a high-level, geographic information system (GIS) raster analysis that is suitable for wildfire threat information across the land base, while appropriate land management activities need to be determined at the local level using site-specific stand-level information.

Additionally, the Province has developed a WUI Risk Class Framework to prioritize risk reduction initiatives, categorizing WUI polygons by a risk class of 1 (highest) through 5 (lowest). The application of relative risk does not imply "no risk" since the goal is to identify areas where there is higher risk. EA-E's WUI is categorized as being in a Risk Class of 1 – highest relative risk.

[41] MFLNRORD. (2017). Provincial Strategic Threat Analysis. Accessed from: https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prevention/fire-fuel-management/fuels-management/provincial_strategic_threat_analysis_2017_update.pdf



Map 13: Local wildfire threat assessment for EA-E's eastern WUI communities.



Map 14: Local wildfire threat assessment for EA-E's western WUI communities.

4.4 HAZARD, RISK, AND VULNERABILITY ASSESSMENT

The purpose of a Hazard, Risk and Vulnerability Assessment (HRVA) is to help a community make risk-based choices to address vulnerabilities, mitigate hazards, and prepare for responding to and recovering from hazard events. The HRVA process assesses sources of potential harm, their likelihood of occurring, the severity of their possible impacts, and who or what is particularly exposed or vulnerable to these impacts.[42] An HRVA was not noted for EA-E, however, the Emergency Response and Recovery Plan for the Regional District of Central Kootenay includes a section on interface wildfire planning (3.10) with listed potential impacts. When an HRVA is completed or updated for EA-E (or RDCK as a whole), RDCK should look to the most recent CWRPs and reference their completed wildfire threat class analyses as well as recommendations.

[42] Government of BC. HRVA Example Report. https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/local-government/hrva/hrva_forms-step_8-anytown_bc-sample_hrva_report.pdf

SECTION 5: FIRESMART PRINCIPLES

FireSmart™ is the leading program in Canada aimed at empowering the public and increasing neighbourhood resilience through wildfire mitigation measures. It has been formally adopted by almost all Canadian provinces and territories, including British Columbia in 2000. The FireSmart program covers a wide breadth of preventative measures, which are founded in the seven FireSmart disciplines: Education, Legislation and Planning, Development Considerations, Interagency Cooperation, Cross-Training, and Vegetation Management. These seven disciplines and the guiding principles behind FireSmart can be applied at a number of spatial scales, and are not restricted to any type of land ownership, forest type or property type. EA-E has an active FireSmart program that is well staffed and funded to complete residential education activities.

Since EA-E's 2015 CWPP was completed, 9 of 36 of its recommendations have been wholly or partially implemented (previously detailed and discussed in Section 2.1). The recommendations addressed primarily related to delivering public FireSmart and wildfire education and prescribing and implementing proposed treatment units.

It has been found that during extreme wildfire events, most home destruction has been a result of low-intensity surface fire flame exposures, usually ignited by embers (firebrands). Firebrands can be transported long distances ahead of the wildfire, across fire guards and fuel breaks, and accumulate in densities that can exceed 600 embers per square meter. Combustible materials found on the exterior of and surrounding homes (the FireSmart Home Ignition Zone) combine to provide fire pathways allowing spot surface fires ignited by embers to spread and carry flames or smoldering fire into contact with structures.

Because ignitability of structures and landscaping vegetation is the main factor driving structure loss, the intensity and rate of spread of wildland fires beyond the community has not been found to necessarily correspond to loss potential. For example, FireSmart homes with low ignitability may survive high-intensity fires, whereas highly ignitable homes may be destroyed during lower intensity surface fire events.[43] Increasing ignition resistance would reduce the number of homes simultaneously on fire; extreme wildfire conditions do not necessarily result in WUI fire disasters.[44] Initial assessments of homes/structures damaged versus those not from the recent 2023 Kelowna-area wildfires provides strong evidence supporting these key points.[45] It is for this reason that the key to reducing WUI fire structure loss is to reduce structure ignitability. Mitigation responsibility must be centered on structure owners. Risk communication, education on the range of available activities, and prioritization of activities should help homeowners to feel empowered to complete simple risk reduction activities on their property.

[43] Cohen, J. Preventing Disaster Home Ignitability in the Wildland-urban Interface. Journal of Forestry. p 15 - 21.
[44] Calkin, D., J. Cohen, M. Finney, M. Thompson. 2014. *How risk management can prevent future wildfire disasters in the wildland-urban interface*. Proc Natl Acad Sci U.S.A. Jan 14; 111(2): 746-751. Accessed online 1 June, 2016 at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3896199/.
[45] Presentation by BCWS to the Wildland Fire and Fuels Community of Practice group via Forest Professionals of BC Webinar, November 2023.

5.1 COMMUNITY OVERVIEW

During CWRP development, FireSmart risk and resiliency factors for different general areas or specific neighbourhoods throughout EA-E were noted (Table 16). This incorporates field observations, the local risk assessment, and information from local government meetings and consultation.

Table 16: FireSmart vulnerability and resilience by neighbourhood.

Community	Vulnerability	Resilience
Queens Bay	- Forest interface and intermix. - Some homes are not FireSmart (deteriorating fences, sheds, exterior materials, landscaping vegetation). - Upslope of highway ignition source. - No hydrants.	- Fire response by Balfour Harrop VFD. - Proximity to Kootenay Lake water source. - Designated as a FireSmart Community. - Ongoing FireSmart activities are a widespread community effort. - Primarily lower slope community on <20% slope.
Balfour	- Forest interface and intermix. - Some homes are not FireSmart (deteriorating fences, sheds, exterior materials, landscaping vegetation). - Upslope of highway ignition source. - Primarily a retirement community. - Traffic congestion and high use of ferry terminal area during summer months.	- Fire response by Balfour Harrop VFD. - Proximity to Kootenay Lake water source. - Golf course fuel break. - Recently completed fuel treatment units in the community. - Water system with hydrants. - Primarily lower slope community on <20% slope.
Harrop-Procter Sunshine Bay	- Forest interface and intermix. - Near ignition source: CP Rail. - Isolated location – only accessible via cable ferry. - Some homes not FireSmart (deteriorating fences, sheds, exterior materials, landscaping vegetation) - No hydrants.	- Fire response by Balfour Harrop VFD - Proximity to Kootenay Lake water source and local streams. - Extensive wildfire risk reduction activities undertaken by Community Forest located upslope of the community – including fuel breaks and fuel treatment activities. - Fuel treatments completed in adjacent West Arm Provincial Park. - Primarily lower slope community on <20% slope.

Community	Vulnerability	Resilience
Longbeach & West Arm Communities	- Forest interface and intermix. - High summer use of area. - Upslope of highway ignition source. - No hydrants (except for Grandview Properties).	- Fire response by Balfour Harrop VFD. - Proximity to Kootenay Lake water source and local streams. - Grandview Properties with water system and hydrants.
Bealby Point & Svoboda Road	- One road in/out for egress. - Forest interface and intermix. - Ignition sources: CN rail, campers in provincial parks.	- Proximity to Kootenay Lake water source and local streams. - Primarily lower slope community on <20% slope. - Recent fuel treatments completed adjacent to communities.
Mountain Station & Rural Nelson to Cottonwood Lake	- Forest interface and intermix. - Some homes are not FireSmart (deteriorating fences, sheds, exterior materials, landscaping vegetation). - Ignition sources: CN rail, highway, campers in provincial parks. - No hydrants.	- Fire response by Nelson Fire Department. - Natural water source (Kootenay River, Cottonwood Lake).
Blewett & Granite	- Forest interface and intermix. - Some homes not FireSmart (deteriorating fences, sheds, exterior materials, landscaping vegetation). - No hydrants.	- Fire response by Blewett VFD and Nelson Fire Rescue. - Natural water source (Kootenay River). - Primarily lower slope community on <20% slope.

The sections to follow provide information on each FireSmart discipline as it relates to EA-E. An analysis of actions that have been implemented are noted, as well as any relevant gaps identified. Each section contains a table of recommended actions for EA-E. Most actions are fundable through the CRI FireSmart Community Funding and Supports program. Each recommendation includes a rationale, lead agency, timeline, and estimated resources to complete.

5.2 EDUCATION

Rural areas without fire services, or dependent upon small volunteer fire services, rely heavily on the coordination of local resources and the uptake of FireSmart initiatives to be prepared for a wildfire event. Public education and outreach play a critical role in helping a community prepare for and prevent a wildfire emergency. Awareness of wildfire risk is important, but this needs to be paired with an awareness of potential mitigation actions and available FireSmart programs for residents to implement on their properties and within the community. Participating in wildfire risk reduction and resiliency activities can also promote a sense of empowerment and shared responsibility at the home, street, neighbourhood, and municipal level. The education discipline often supports the successful implementation of many other FireSmart disciplines by building awareness and understanding within both residents and visitors.

EA-E (via the RDCK FireSmart program and its own FireSmart Coordinator/Mitigation Specialist) has been actively engaging the community with a FireSmart education program. This has led to EA-E having one of the highest numbers of FireSmart assessed homes in the RDCK.[46] Other FireSmart education activities that have been completed or are ongoing include:

- Distribution of FireSmart educational materials to residents,
- School FireSmart information days,
- Social media updates with FireSmart information and fire danger ratings,
- Community FireSmart workshops and presentations, and
- Created FireSmart signage at completed community fuel treatments.

There are currently seven FireSmart Coordinators across multiple RDCK electoral areas. As these positions were all recently created, there could be many initial lessons learned that could be shared between them. RDCK FireSmart coordinators should look to plan regular meetings amongst themselves to share these lessons, as well as success and failures so that the region, as a whole, is working together towards a more wildfire resilient future. Additionally, as FireSmart Neighbourhood Champions (as part of the FireSmart Canada Neighbourhood Recognition Program – see Section 5.7) are identified, consider including them in these meetings so that FireSmart information and programming opportunities are taken back into each community.

To continue furthering FireSmart education initiatives, Table 17 below details recommended actions that RDCK and EA-E can pursue or continue. Because of the large amount of private property within EA-E's WUI, the observed general lack of adherence to FireSmart construction materials and landscaping, and the understanding that homes, landscaping vegetation, and all other manner of flammable and combustible materials are considered fuel in the WUI wildfire triangle, a large emphasis should be placed by EA-E to continue upon its FireSmart education successes, and to seek out new opportunities to engage with neighbourhoods or demographics not previously done or that have been difficult to so with to date. Not all activities/efforts will be successfully received by the public, but it is equally important to know what does not work as what does in getting the FireSmart message further into the community – then efforts can be refined and improved moving forwards. This includes tourists, of which there are many to EA-E's communities, recreation areas, and campsites, that may not be knowledgeable on FireSmart and the wildfire risks their actions may carry.

[46] Information from EA-E local government questionnaire. 200 Home Partners Program assessments have been completed in EA-E at the time of this report's writing.

Table 17: Education recommendation and action items

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
Education - Section 5.2							
Residents							
1	High	Continue to apply for funding and employ an EA-E FireSmart Coordinator/Mitigation Specialist.	To provide a continuous, local FireSmart program, delivered by local professionals with local knowledge and connections, to their community. Having a FireSmart Coordinator will provide a lead person with dedicated time to coordinate, manage, and implement the program, especially as it grows.	RDCK	2 years	EA-E has its own FireSmart program being managed by a local FireSmart Coordinator.	CRI FCFS up to cost maximums.
2	High	RDCK FireSmart Coordinators should plan regular meetings to discuss their successes, failures, and learnings. Consider adding, or having specific meetings with, FireSmart Community Neighbourhood Champions.	So that they can continue to improve the RDCK's FireSmart program and tailor it to their respective communities. Adding in Community Champions will allow them to further support their EA's communities, as well as get FireSmart messaging and opportunities back into the communities faster.	FireSmart Coordinators (RDCK)	ASAP and ongoing	RDCK FireSmart Coordinators are meeting more than once a year.	CRI FCFS funding as part of FireSmart Coordinator salaries.
3	High	Continue to promote FireSmart to EA-E residents at community events, public spaces, and through workshops using FireSmart branded material and printed manuals (Home and Landscaping) and/or a FireSmart Canada Community Preparedness Day. Show a united front by having local government, fire department members, and FireSmart coordinators at events together as much as possible.	Observed adherence and uptake of FireSmart principles on private property and many homes/structures in EA-E is lacking. Landscaping (conifer hedges), firewood and combustible materials storage, and external building materials are the biggest issues. FireSmart BC resources help present a unified message. Print resources are popular and easy to distribute. FireSmart branded tents, banners, and t-shirts can be purchased with CRI FCFS funding.	EA-E / RDCK / FireSmart Coordinator	Annually	Quantity of resources distributed/number of times used at events.	CRI FCFS up to cost maximums.
4	High	Update RDCK's FireSmart webpage with the most recent FireSmart graphics and language. Provide links to the current fire danger rating, or better yet, have that posted on the front of this page (making sure to keep it updated during the fire season).	To continue to provide to most recent and up to date FireSmart information, language, and principles to residents (and visitors).	RDCK	Annually	RDCK FireSmart webpage is showing current FireSmart information and graphics.	CRI FCFS up to cost maximums.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
5	High	Continue the FireSmart social media campaign, with updated FireSmart graphics and language, through various RDCK/EA-E social media platforms (i.e., Facebook, Twitter, Instagram), including those from Volunteer Fire Departments.	To promote FireSmart information to residents (and visitors). Include links to graphics, videos, pdf information/pamphlet downloads, etc.	EA-E / RDCK	Annually	An organized FireSmart social media campaign is delivered throughout RDCK.	CRI FCFS up to cost maximums.
6	High	Continue to promote FireSmart in EA-E schools using the FireSmart Education Kit and other resources.	Great success has been made through BC schools with FireSmart outreach. Engaging with the community's younger population may increase uptake with all residents.	RDCK / School District 8	Annually	One FireSmart lesson delivered each year (minimum).	CRI FCFS; e.g. FireSmart Magnetic Board for $1,710.
7	High	Continue to promote free FireSmart Home Ignition Zone assessments and/or Home Partners Program assessments to residents.	FireSmart Home Ignition zone and Home Partners Program assessments introduce residents to FireSmart, its principles, fire and wildfire risks associated with their home and property, and how they can be mitigated. These assessments are primarily an educational exercise, and can be funded completely through CRI FCFS. They are a requirement to qualify for the FireSmart rebate program (see Section 5.7).	EA-E / RDCK	2 years	FireSmart Home Ignition Zone assessments are being completed within EA-E.	CRI FCFS up to cost maximums.
8	Moderate	Consider door-to-door knocks in neighbourhoods that have communication constraints to discuss wildfire risk and FireSmart principles that they can apply to their home and property.	Although wildfire can affect all areas of EA-E's WUI, some communities are more at risk due to risks/constraints not associated to wildfire – such as no cell service and low community turnouts at public FireSmart events. Door to door knocks by Fire Chiefs, fire department personnel, and FireSmart Coordinators have been successful in other communities.	RDCK / EA-E fire departments / FireSmart Coordinators	2 years	Visits to homes in these WUI neighbourhoods from local government/ FireSmart/ fire department members (with FireSmart information left at	In-house personnel time. CRI FCFS for FireSmart materials.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
						their door) have started.	
9	Moderate	Increase public awareness of this Community Wildfire Resiliency Plan.	Increasing awareness of wildfire risk also increases community resiliency through household emergency planning, and support for FireSmart.	EA-E / RDCK	1 year from CWRP completion	Awareness by residents - consider a survey.	Staff time to update website, and media posts. Newspaper ads ~$300 each.
Visitors							
10	High	Lobby BC Parks to install FireSmart educational signage at all BC Park camp and recreation sites within EA-E, starting at Kokanee Creek. RDCK should follow suit for all regional parks.	These signs provide both visitors and residents a quick snapshot of how their actions and activities can inadvertently increase wildfire and ignition risks, as well as introduces visitors to FireSmart – a message they can take home with them.	EA-E / RDCK / BC Parks	5 years (signs installed)	Wildfire risk signs at the highest traffic parks have signs.	Sign cost ~$800 for purchase and installation per sign.

5.3 LEGISLATION, PLANNING AND DEVELOPMENT CONSIDERATIONS

Legislation and planning regulation are effective tools for proactively reducing wildfire risk, although they can be less effective in large, rural regional districts like RDCK than in dense municipalities due to difficulties in enforcement. However, private property FireSmart Home Ignition Zone and structure risk reduction is the most effective avenue towards homes and structures surviving a wildfire event. One of the most powerful influences that legislation and planning can have on local wildfire risk is through wildfire hazard Development Permit Areas (DPAs).

Section 2.2 provided a comprehensive look at local plans and bylaws that are currently in place and relevant to wildfire resilience in EA-E. EA-E has embedded some FireSmart principles into its Rural Official Community Plan, primarily focussing on subdivision requirements and access to water for emergency responders. Currently, as stated in OCP section 13.5, only voluntary efforts are encouraged to reduce fire risk to existing buildings and developments by residents.

One of the priorities for recommendations within this Plan is to manage fire risk to structures within their Home Ignition Zones (i.e., within 30m of the structure and the structure itself). As part of the 2022 Wildfire Development Permit Area Study, draft wildfire Development Permit Areas (DPAs) were developed for the RDCK but have not yet been implemented. The purpose of a wildfire DPA is to manage wildland-to-structure fire transfer (and vice versa), achieved through the application of FireSmart principles. The BC Building Code, which to date manages room-to-room and structure-to-structure fire transmission, is currently being updated, with roll out planned for late-2024, and may include FireSmart standards. RDCK should review and assess what FireSmart principles are included and compare them to the draft Wildfire Development Permit Areas (DPAs), update the draft DPAs as required, then initiate a process to implement the wildfire DPAs, if still required, to manage for risks not addressed in the new Code.

Additionally, it is recommended that the OCP update language referencing “fire risk” (e.g., OCP sections 13.1 and 13.6) to refer to the Local Wildfire Risk Analysis developed as part of this plan, as it more accurately reflects current fire risk for EA-E’s WUI than currently available provincial data.

Part of development considerations is ensuring that all critical infrastructure (described in Section 3.3 and listed in Table 8) are constructed or brought up to a high FireSmart standard. Performing FireSmart Critical Infrastructure Assessments on those infrastructure that have not had one completed yet (in priority sequence) will detail which are most at risk to wildfire, and what mitigation activities should be performed to reduce those risks. Additionally, including a policy in the OCP stating that all regional district structures are built and landscaped to FireSmart standards would ensure these structures are wildfire resilient from the start as well as provide examples of FireSmart construction and landscaping to the public.

Recommended changes to planning and development for EA-E are detailed in Table 18.

Table 18: Legislation, planning and development recommendation and action items

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
Legislation, Planning and Development - Section 5.3							
11	High	Upon the roll-out of the new BC Building Code in 2024, RDCK should review and assess what FireSmart principles are included and compare them to the draft Wildfire Development Permit Areas (DPAs). Update the draft DPAs as required. Initiate a process to implement the wildfire DPAs, if still required, to manage for risks not addressed in the new Code.	FireSmart construction and landscaping policies manage for wildland-to-structure fire transfer (and vice versa). Over time, resiliency will be built up at the interface and intermix areas.	EA-E / RDCK (Consultant)	Upon BC Building Code roll out	All new development complies with the policy.	CRI FCFS: up to $10,700 available to apply to incremental staff hours or contract cost.
12	High	Update references to “fire risk” in EA-E’s OCP (e.g., sections 13.1 and 13.6) to include referencing the Local Wildfire Risk Analysis developed as part of this plan, as it more accurately reflects current fire risk for EA-E’s WUI than currently available provincial data.	EA-E should look to the most recent and accurate wildfire risk analysis for its WUI to be used to determine areas of Moderate and High wildfire threat for reducing wildfire threat through community planning and development purposes.	EA-E / RDCK (Consultant)	Upon next OCP review and update	OCP update that includes FireSmart construction/development policies for single home and lot development and major renovations.	CRI FCFS: up to $10,700 available to apply to incremental staff hours or contract cost
13	High	Consider adopting a Wildfire Landscaping Bylaw to restrict flammable landscaping. Example: prohibit conifer vegetation in the Immediate Zone of a residence or structure (0-1.5 m) and prohibit the planting of new conifer vegetation in Priority Zone 1 (1.5-10 m). Highly flammable landscaping plants (ex., cedar hedges) were noted throughout the Township, especially on more densely populated streets. This can be an effective communication tool regardless of enforcement capacity.	Highly flammable landscaping plants (ex., cedar hedges) were noted throughout EA-E, especially on more densely populated streets. Landscaping vegetation can act as a wick, moving fire to homes/structures and throughout communities.	EA-E / RDCK (Consultant)	5 years	A Wildfire Landscaping Bylaw is in effect.	CRI FCFS: up to $10,700 available to apply to incremental staff hours or contract cost
14	High	Continue to conduct FireSmart Critical Infrastructure Assessments for public works and community/ government buildings. Conduct FireSmart mitigation as soon as possible (vegetation management, material upgrades). Set a priority sequence for assessment based on wildfire response and post-wildfire recovery. Encourage and support privately owned community halls that act as community shelters, and private or community owned critical infrastructure, to do the same.	Protecting water systems, emergency shelters, and community infrastructure is critical to wildfire response and recovery. Assessments have already been completed for EA-E fire halls.	EA-E / RDCK (Local FireSmart Representatives; FireSmart Coordinator; and/or Consultant)	Ongoing	Number of assessments completed and mitigation hours/investment	CRI FCFS: up to $800 per assessment and up to $50,000 for mitigation per structure (publicly owned only)

5.4 CROSS-TRAINING AND FIRE DEPARTMENT RESOURCES

All staff and agency partners who are expected to participate in the development and implementation of this plan, or participate in a wildfire response and recovery, should be appropriately trained. This includes RDCK Emergency Management staff, other municipal staff that could play a role in an Emergency Operations Center (EOC), and EA-E Fire Response Area Fire Departments. Training opportunities include:

- Basic Wildland Fire Suppression and Safety
- Incident Command System[47]
- FireSmart 101
- FireSmart Local FireSmart Representative (LFR)
- FireSmart Community Champion
- FireSmart Home Partners Wildfire Mitigation Specialist (WMS)
- Post-wildfire reclamation and recovery
- Post-wildfire structure damage assessment
- BC Structure Protection Program (WSPP-115)[48]

Regular in-person cross-training between agencies is imperative for familiarization with each other's equipment and to address any incompatibilities. BCWS noted that there is annual cross-training conducted between EA-E fire response area fire departments and the BCWS zone staff.[49] Additionally, valuable training through experience can be acquired from being deployed to wildfires. Under the Fire Chiefs' Association of BC and BC Wildfire Service MEMORANDUM OF AGREEMENT for INTER-AGENCY OPERATIONAL PROCEDURES AND REIMBURSEMENT RATES, fire departments (including those in EA-E) routinely work with BCWS in response to incidents within and outside of Fire Protection and Response Areas. Thus, fire departments should maintain a level of wildland-specific training and equipment.[50]

Water is the most important resource for fighting wildland and structure fires. Balfour and Grandview Properties are the only communities in EA-E that have District-operated water systems with fire hydrants, however other communities have private systems with some standpipes (discussed in Section 3.2 and 3.3.2). Natural water sources are a valuable source of water that can be used for wildfire fighting (especially during summer drought conditions). Kootenay Lake and Kootenay River have water available year-round – having these sources with access points available to firefighters is strategically important, as echoed in EA-E's OCP section 13.3 which supports protection of accesses to water sources such as hydrants, standpipes, lakes, and streams to remain free of obstructions for fire protection purposes.

An example of community-led water development for wildfire fighting was initiated in 2020 by the Argenta Emergency Preparedness Group (AEPG; in EA-D). They began a began a water mapping project (with assistance from a Selkirk College student), which received additional support in 2023 from Living

[47] RDCK Emergency Program staff are trained in ICS.
[48] Blewett Volunteer Fire Department members take S-100 and WSPP-115 training – information received via questionnaire as part of the development of this Plan.
[49] Information gathered from BCWS questionnaire as part of the development of this Plan.
[50] Nelson Fire and Rescue Services wildland specific training levels, capacity, and deficiencies are detailed and discussed in the recently completed 2022 Nelson CWRP.

Lakes. With a goal of creating quick access to valuable information for fire response (local and BCWS), a focus has been on available water sources:

- Over 30 locations have been GPS'd where a fire pump could be quickly set up, including photos and access information and detailed information about each site.
- Existing standpipes with fire hose fittings were detailed in a similar fashion, noting water pressure and pipe sizes.

Table 19 lists recommendations for RDCK and EA-E related to cross-training and fire department resources.

Table 19: Cross-training recommendation and action items

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
Cross Training & Fire Department Resources - Section 5.4							
Training							
15	High	Continue to support 'train-the-trainer' programs so that required courses (e.g., S-231, WSPP-115) can continue to be delivered in-house to EA-E fire department members.	To continue providing an opportunity to expand in-house wildland specific training, and potentially train adjacent fire departments or community groups.	RDCK / EA-E / EA-E fire departments	Annually	Number of fire response personnel with wildland training maintains or increases.	Staff time; CRI FCFS funding is available for training. Columbia Basin Trust funding.
16	High	Support FireSmart specific training to EA-E fire departments. Examples include: FireSmart 101, Local FireSmart Representative (LFR), and FireSmart Home Partners Mitigation Specialists.	To continue building an understanding and knowledge of FireSmart principles within fire response personnel and the community. To certify fire response members so they can implement various FireSmart assessments within the community.	RDCK / EA-E / EA-E fire departments	3 years	Number of fire response personnel with FireSmart training increases.	Staff time; CRI FCFS funding is available for training.
17	High	EA-E fire departments should continue seeking out (and being supported by RDCK/EA-E in doing so) opportunities to perform wildfire response and structure protection drills - using hydrants, standpipes, and natural water sources, *with* BCWS.	Fast and effective deployment of available Structure Protection Units (two are owned by RDCK) and any additional equipment that the fire departments have will be crucial in any interface fire scenario. Equipment compatibilities and/or differences between those available and what equipment BCWS uses should be identified and addressed ahead of time.	RDCK / EA-E / EA-E fire departments	Annually	A Drill is performed with BCWS and one EA-E fire department annually.	Staff time as required.

Water							
18	High	Identify and map natural and artificial water sources useable for fire suppression across the entire regional district. Having a digital map would allow it to be uploaded into response vehicles' CAD systems, shared with BCWS response personnel, as well as included in the pre-planning of emergency community water delivery systems connecting major natural water sources with interface communities, to facilitate deployment of a structural protection system. Include important details such as: estimated water volume and access point notes. Share this information to all mutual aid fire response partners, and update over time.	Most firefighting service in EA-E requires water shuttling. Wildfire fighting response almost always relies upon local water sources. This impacts EA-E's wildfire resilience. Shuttling or pumping water from lakes and rivers to fill bladders can be pre-planned, including tender access points, traffic control, permanent large-volume pumps, and piping.	RDCK GIS department/ EA-E fire departments (to aid in identification for their service areas or share data already acquired) (BCWS)	5 years and ongoing	A fire suppression water source plan and map are produced and shared.	CRI FCFS Community Water Delivery Assessment funding available for incremental staff hours or contract cost.
19	High	In coordination with recommendation #18, create opportunities for BCWS to work with independent water systems to identify assets. Assist those communities in retrofitting their systems to be compatible, if required.	Reducing barriers to BCWS for accessing water sources in the WUI increases opportunities to fight WUI fires.	RDCK / FireSmart Coordinator (BCWS)	Annually	Communities with self-managed water systems are meeting with BCWS	RDCK/EA-E, BCWS, and community time.
20	Moderate	EA-E fire departments should seek (or continue to uphold, if accredited already) Superior Tanker Shuttle Service accreditation from Fire Underwriters Survey.	This accreditation certifies that the fire department can supply enough water to have some areas without fire hydrants within a certain distance of their structures qualify as having a fire hydrant within 300m of it (this can also potentially lower insurance rates for property owners within the EA-E fire response areas). Note: this does not increase the overall water supply already available under automatic and mutual aid agreements.	EA-E fire departments/ RDCK	5 years	Superior Tanker Shuttle Service accreditation achieved by EA-E fire departments.	Fire department staff time as required (and RDCK budget for equipment upgrades and purchases, if needed).
Equipment and Staff							
21	High	In coordination with Recommendations #17 and #18, the EA-E fire departments should continue (or begin, if not done already) annual inspections by BCWS of their wildland firefighting equipment. Any gaps should be addressed, as required.	To ensure proper equipment is available to respond to interface wildfire events, and that equipment is compatible with BCWS's. CRI FCFS funding is available for incremental equipment purchases.	EA-E fire departments (RDCK; BCWS)	Annually	Annual inspection of wildland firefighting equipment from BCWS; gaps filled as practicable.	Fire department and RDCK staff time; CRI FCFS equipment funding up to cost maximums.

5.5 INTERAGENCY COOPERATION

The goal of interagency cooperation is to approach wildfire resilience through a collaborative, multi-agency approach. This increases the ability of local governments to plan and respond to emergencies effectively. Cooperation and communication are especially critical for EA-E as there are multiple jurisdictions side-by-side (EA-E, City of Nelson, RDCK Electoral Areas D and F) and multiple land managers currently operating (e.g., Harrop-Procter Community Forest, Columbia Basin Trust). Landscape-level fire resilience cannot effectively be achieved without planning for resilience across jurisdictional boundaries. Engagement can be formal or informal and can take place through existing communication channels or stand-alone committees.

Due to their adjacency to the City of Nelson, western communities in EA-E (and their respective fire departments) should look to participate in the Nelson Community FireSmart Resiliency Committee (CFRC) which meets numerous times per year to coordinate cross-jurisdictional FireSmart and fuel mitigation planning within Nelson and surrounding RDCK electoral areas. Communities further from Nelson (i.e., those in the eastern parts of the electoral area), should look to develop their own FireSmart committees, especially as they self-organize for community FireSmart initiatives. Additionally, EA-E Fire Chiefs also participate in an annual Zone 4 Fire Chiefs meeting that includes BCWS representatives to ensure wildfire emergency pre-organization is in place, policy changes are discussed, and opportunities to improve mutual aid for fire response are capitalized on.[51] Mutual aid agreements exist between BCWS and RDCK fire services. This is captured in the MEMORANDUM OF AGREEMENT for INTER-AGENCY OPERATIONAL PROCEDURES AND REIMBURSEMENT RATES between the Fire Chief's Association of BC and the BC Wildfire Service.

When planning and implementing forest harvesting and fuel management treatments in the community and in adjacent forest tenures, a high-level tracking and communication of fuel treatments needs to occur. It is imperative that all land managers know what adjacent or overlapping jurisdictions have identified as fuel breaks, so that time and money is not wasted reassessing or re-prescribing an area. As EA-E's WUI is extensive in area, RDCK (via the CFRC) should develop a process for spatially tracking and managing proposed and completed fuel management/fuel break units in the greater regional district area that all members can access. Although RESULTS[52] is a powerful spatial tool to keep track of forest activities on the Provincial land base, it does not include activities on municipal and First Nations land. A separate spatial layer should be maintained by Ministry of Forests (MOF) as a public service using inputs from municipalities, First Nations, and forest licensees. Changes to the MOF Wildfire Risk Reduction program (which manages wildland fuel treatments on the Provincial land base) in the coming years may solve some of these problems.

BC Timber Sales (on the north side of Kootenay Lake) and the Harrop-Procter Community Forest (HPCF; on the south side of Kootenay Lake) have significant tenure within EA-E's WUI. Forest activities can both

[51] Information gathered from BCWS questionnaire as part of the development of this Plan.
[52] Government application that tracks silviculture information by managing the submission of openings, disturbances, silviculture activities and obligation declarations as required by the Forest and Range Practices Act.

increase and decrease wildfire risk in WUI areas. Although BCWS stated that Category 3 industry burning has led to fire starts and continues to be a concern every spring, HPPC noted that there have been no fire escapes from post-harvesting pile and burn activities. HPCF is very proactive in wildfire risk reduction planning and mitigation efforts both within its WUI overlap area as well as outside it on the greater landscape within its tenure.[53] This is exampled by reducing post-harvest slash within the WUI (through additional pile and burning of slash, making pulp product when possible, and providing loads of firewood to the public. Additionally, the community forest has developed its own fuel management areas map (with treatment planning and implementation being implemented through a mix of funding requests and in-house funds) and uses fire management stocking standards as part of reforestation efforts in the WUI.

Discussed in Section 3.3, transmission lines can provide excellent fuel breaks and access for first responders in the event of a wildfire – if the vegetation on them is regularly managed and kept in a low-hazard state. They can also be the source of fire ignitions - trees and other vegetation intruding into power lines can cause fires in multiple ways. Highways and rail lines can also provide excellent fuel breaks if the vegetation on them is regularly managed and kept in a low-hazard state. If not, they can act as wicks moving fire along them, or ignition sources for fires from burning cars, cigarette butts, sparks, etc. Additionally, highways are a main access/egress route during an emergency – these routes should be kept at as low risk of state as possible.

Table 20 details Interagency Cooperation recommendations for RDCK, EA-E, and its jurisdictional and local stakeholders.

[53] Information gathered from Harrop-Procter Community Forest questionnaire as part of the development of this Plan.

Table 20: Interagency cooperation recommendation and action items

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
Interagency Cooperation - Section 5.5							
22	High	Communities and Fire Departments adjacent to the City of Nelson should engage with the established local Nelson Community FireSmart Resiliency Committee (CFRC) to plan, implement, and coordinate FireSmart initiatives, including fuel management treatments. Look to include EA-E volunteer fire department Fire Chiefs.	To provide a platform for information sharing. All parties have indicated a willingness for collaboration, which will allow for greater management of wildfire risk both within and surrounding EA-E's WUI.	Nelson CFRC	Ongoing	CFRC FireSmart meeting takes place at least once annually.	At least 8 hours per meeting to prepare, participate and debrief. CRI FCFS up to $2,000 per meeting.
23	High	As eastern electoral area communities self-organize for FireSmart initiatives, and even take up the FireSmart Canada Neighbourhood Recognition Program (see Recommendation #45), RDCK and EA-E should look to support their inclusion in a Community FireSmart Resiliency Committee (CFRC), or develop local sub-committees, as required.	To further community involvement in FireSmart and wildfire risk reduction activities at the community level.	RDCK / EA-E FireSmart Coordinator	Ongoing	Additions to existing CFRCs are made, as required, or new ones are established, as needed.	Cost and time dependent upon level of effort required.
24	High	Work with RDCK, CFRC members, and MOF to develop a fuel treatment/fuel break tracking system to spatially manage proposed and completed fuel management areas both within EA-E's WUI and outside it at the regional level.	It is imperative that all land managers know what adjacent or overlapping jurisdictions have identified as fuel breaks, so that time and money is not wasted reassessing or re-prescribing an area.	Nelson CFRC / MOF / RDCK	As soon as possible	A regional GIS tracking system is established, or a provincial one is developed that CFRC members can access.	Cost and time dependent upon level of effort required.
25	High	Lobby forest land licensee/managers (e.g., BC Timber Sales, Woodlots, Harrop-Proctor Community Forest) to be aware of where their tenure overlaps EA-E's WUI and to develop and implement (or continue implementing) forest planning, harvesting, slash management, and reforestation plans that reduce wildfire behaviour in these areas.	Cutblock placement can break up the forest continuity across the landscape – with proper slash and reforestation management, they can remain as areas of low wildfire behaviour for many years. However, if not managed properly, they can increase wildfire behaviour.	RDCK / EA-E / MOF / Forest Licensees and Managers / Local Government elected officials/ Community members	Ongoing	Forest licensees/ managers are aware of their tenure overlaps with the WUI and are actively working towards forest management plans to reduce wildfire behaviour in those areas.	RDCK/EA-E staff time for discussions.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
26	High	Lobby and work with the electrical power providers in and influencing the community's WUI, MOTI for Provincial highways, and rail line owners/operators to regularly maintain their right-of-way's vegetation.	Transmission lines can provide excellent fuel breaks and access for first responders in the event of a wildfire – if the vegetation on them is regularly managed and kept in a low-hazard state. They can also be the source of fire ignitions - trees and other vegetation intruding into power lines can cause fires in multiple ways. Highways can also provide excellent fuel breaks if the vegetation on them is regularly managed and kept in a low-hazard state. If not, they can act as wicks moving fire along them, or ignition sources for fires from burning cars, cigarette butts, sparks, etc. Additionally, highways are a main access/egress route during an emergency – these routes should be kept at as low risk of state as possible.	RDCK / EA-E (MOTI; Local Government elected officials Electrical Providers; Rail line operators)	Yearly and ongoing	Right-of-way maintenance discussions are open and ongoing; right-of-ways are kept in low-risk states.	RDCK/EA-E staff time for discussions.

5.6 EMERGENCY PLANNING

Local government and community preparations for a wildfire emergency are very important. Plans, mutual aid agreements, resources, training, and emergency communications systems make for effective wildfire response. The RDCK Emergency Plan includes EA-E and the RDCK Emergency Program conducts tabletop exercises yearly with staff (and responds to emergencies involving evacuations almost yearly).

In a wildfire emergency that requires evacuation, Harrop and Procter have the largest constraint as they are dependent upon a cable ferry as the primary access route. The small ferry would quickly be overwhelmed by evacuees. This constraint is recognized and addressed in EA-E's Rural Official Community Plan in section 10.12, which encourages the identification and maintenance of public access points to the Kootenay River and the West Arm of Kootenay Lake to facilitate emergency egress via water in the event of forest fire, spills, slides and other disasters, most particularly in constricted areas such as Harrop and Procter where few opportunities exist for egress via roads and highway. Consistently applied in communities where egress is an issue (such as Harrop Procter) is having Local Government work closely with BCWS when considering trigger points for evacuation alerts and evacuation orders to allow time to evacuate via the ferry. This includes recommending residents evacuate livestock and move large items (such as trailers) across the ferry while they are on *evacuation alert*, thus allowing time for an orderly ferry evacuation during an *evacuation order*. Evacuations via public and private boat launches is a last case, least desirable scenario – considered as part of a tactical evacuation.

Thus, clear, consistent, concise, and quick communication during an emergency event and evacuation are integral to the prevention of loss of life. The RDCK has upgraded to a new notification system for emergency alerts and water advisories powered by "Voyent Alert!". Downloadable as an app to a smart phone, the user can receive a detailed map of the affected area. The system also supports text messaging, emails, or landline calls. RDCK and EA-E should promote this notification to residents as much as possible.

Most of EA-E's WUI is only accessible by roads through private property. This is a significant constraint to wildfire first responders as those road conditions are largely unknown. Access by emergency responders to the WUI is paramount towards both defending communities from WUI fire events, but also for aiding in fuel treatment practicability.

Additionally, it was noted during field assessments, and echoed in meetings with local government and first responders, that there is a pervasive lack of visible, reflective addresses for properties within EA-E. Addresses are one of the most common forms of providing first responders directions of where to respond to. This issue should be made aware to the public with examples and options of proper signage.

A pre-incident plan is a compilation of essential fire management information needed to save valuable time during fire suppression operations. During a busy wildfire season, Provincial resources are often stretched thin, and any information that local governments can provide to BCWS crews is helpful. A pre-incident plan should be developed and tested using tabletop simulations, and if necessary, revised prior to every fire season. BCWS should be involved in this process to ensure that any mapping done as part of the pre-incident plan or Fire Management Planning process is not unnecessarily duplicated.

Figure 13 contains a checklist of discussion points and considerations during pre-incident plan development.

Figure 13. A pre-incident planning checklist that can be used to help develop a pre-incident wildfire suppression plan and associated maps.

EA-E, in conjunction with its CFRC and regional district partners, could also consider developing local daily action guidelines based on expected wildfire conditions. Table 21 below provides a template that can be tailored specifically to EA-E, outlining actions staff can take as fire danger levels change throughout the fire season.

Table 21: Example of a Wildfire Response Preparedness Condition Guide[54]

FIRE DANGER LEVEL	ACTION GUIDELINES
LOW	• All District staff on normal shifts.
MODERATE	• All District staff on normal shifts. • Information gathering and dissemination through Nelson's CFRC.
HIGH	• All District staff on normal shifts. • Regional fire situation evaluated. • Daily fire behavior advisory issued. • Wildland fire-trained District staff and EOC staff notified of Fire Danger Level. • Establish weekly communications with CFRC.
EXTREME	• Daily fire behavior advisory issued. • Regional fire situation evaluated. • EOC staff considered for stand-by. • Wildfire Incident Command Team members considered for stand-by/extended shifts. • Designated District staff: water tender and heavy machinery operators, arborists may be considered for stand-by/extended shifts. • Consider initiating Natural Area closures to align with regional situation. • Provide regular updates to media / District staff on fire situation. • Update public websites and EA-E social media as new information changes.
FIRE(S) ONGOING	• All conditions apply as for 'Extreme' (regardless of actual fire danger rating). • Mobilize EOC support if evacuation is possible, or fire event requires additional support. • Mobilize Wildfire Incident Command Team under the direction of the EOC/Fire Chiefs. • Implement Evacuation Alerts and Orders based on fire behavior prediction and under the direction of the EOC/Fire Chief.

Emergency planning also includes the recovery from an emergency. As discussed in Section 3.3.1, having secondary power sources for critical infrastructure is important to reduce community vulnerability in the event of an emergency that cuts power for days, or even weeks.

Roof top and gutter-mounted sprinklers are a useful tool that can be easily stored and then set up, as needed, by individual homeowners (if they have the required water availability). BCWS can also link their water systems to them to support their firefighting efforts. Three main mounting types exist: temporary mounted sprinklers (fully removable), permanently mounted sprinklers, and permanent sprinkler mounts that sprinklers can then be attached/removed from. There are benefits and disadvantages to all, especially as structures can differ significantly from one another, however, the benefits to using permanent sprinkler mounts as the preferred choice were noted as such by the Beasley Volunteer Fire Department Fire Chief: permanent rooftop sprinklers are time consuming and difficult to access for troubleshooting; sprinklers

[54] From FireSmart Community Funding and Supports 2022 CWRP Supplemental Instruction Guide

on pipes that can be lifted and set onto the permanent mounts from the ground are fast to deploy, easy to lift down when repairs or replacement are needed; and, they reduce sprinkler deterioration rates from not being left in place year-round. Local Government and community organizations can spearhead the acquisition and planning of sprinklers and structure protection units (SPUs) themselves, moving the planning and organization off the individual homeowner and increasing community wildfire resiliency. Additionally, there can be cost savings in bulk orders.

RDCK has two Type 2 SPUs which are regional assets, and firefighters from all 16 RDCK supported fire departments that can be deployed as needed. One SPU is (generally) stationed at the Kaslo and Area Fire Department Hall. It should be noted that under the interagency agreement, when the SPUs are needed, they are requested by the local authority for use within a fire protection area and by BCWS for use outside of the fire protection area. Regardless of the requestor, they are sourced by BCWS. The cost of deployment is reimbursed by the Province. BCWS may or may not opt to use local SPUs to be deployed to a fire.

Recommendations and action items that RDCK and EA-E can implement to continue productive and effective emergency planning are detailed below in Table 22.

Table 22: Emergency preparedness recommendation and action items

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
Emergency Planning - Section 5.6							
27	High	Continue tabletop wildfire scenario tabletop exercises with emergency management and CFRC partners. Yearly, pre-fire season is best. Move the "WUI fire" to a different area of EA-E's WUI each time.	Tabletop exercises provide an opportunity to identify weak spots in a plan and collaborate.	RDCK (Nelson CFRC; RCMP; BCWS)	5 years	Knowledge of 'pinch points' in an evacuation scenario and understanding of roles and responsibilities.	CRI FCFS Emergency Planning: up to $2,000 per meeting. Possibly CRI / CEPF / Columbia Basin Trust
28	High	Consider updating EA-E's OCP with guidelines stating private roads that access forest lands should be of adequate design to allow for the safe movement of logging and fire-fighting equipment. Discuss with the Ministry of Transportation and Infrastructure (MOTI) possible means supporting/enforcing that private roads that access forest lands should be of adequate design to allow for the safe movement of logging and fire-fighting equipment.	Access by emergency responders to the WUI is paramount towards both defending communities from WUI fire events, but also for aiding in fuel treatment practicability. This constraint is recognized in EA-F's Rural Community Official Plan in section 18.3.8 which, "Encourages that private roads that access forest lands should be of adequate design to allow for the safe movement of logging and fire-fighting equipment."	RDCK (MOF; BCWS; Local Fire Response Area Departments)	5 years	OCP updated as required and access roads through private land to the interface forest are maintained.	RDCK/EA-E time for planning and discussions. CRI FCFS: up to $10,700 with estimated incremental staff hours or contract cost.
29	High	RDCK and EA-E should continue to promote the Voyent Alert! System to residents and visitors.	Clear, consistent, concise, and quick communication during an emergency event and evacuation are integral to the prevention of loss of life. A lack of this was identified as an issue during recent WUI fire disasters, such as that in Lahaina, Maui, USA and Fort McMurray, Alberta.	RDCK (FireSmart Coordinator)	Ongoing	Continued update of the Voyent Alert! System (can track downloads from app providers).	RDCK for promotion.
30	High	RDCK should have appropriate signage designating shoreline access routes for secondary boat egress for those communities that rely on ferry or private boat for access/egress (e.g., Harrop and Procter).	To expedite egress during an emergency evacuation in areas already significantly constrained.	RDCK / EA-E	5 years	All public shoreline access/egress routes are marked (a series of signs from main roads to access points is best).	RDCK. Cost/time dependent on number of access points and signs required.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
31	High	Invest in back-up generators for any critical infrastructure that does not have one. Encourage private businesses that provide critical services, like gas stations and grocery stores, to follow suit.	Back-up generators for pumphouses, treatment plants, and community buildings (especially those designated as emergency shelters) would facilitate both emergency response (water supply for suppression) and rapid community return and recovery following a fire.	RDCK / EA-E (Private Industry)	ASAP	A budget and purchase plan for back-up generators is implemented, starting with the most critical infrastructure.	Cost varies - ~$10,000
32	High	Initiate a roof-top sprinkler program for residential properties. Investigate bulk orders from wildfire protection or irrigation companies or commercial gutter-mount kits. Consider sprinkler kits as an incentive to communities/neighbourhoods for FireSmart participation. Discuss with local Fire Departments and BCWS what mounting/sprinkler types are best. This can be directly led by RDCK, or RDCK can offer support to local fire departments and community organizations to assist doing so.	Rooftop sprinklers reduce the time and resources needed to set up a structural protection system in a community threatened by wildfire. Sprinkler installation/acquirement could be paired with a free FireSmart Assessment.	RDCK / EA-E (EA-E fire departments; BCWS)	3 years and ongoing	Establish an efficient and effective system. Track the number and location of sprinklers purchased and installed annually.	Bulk sprinklers $40 - $100 each; gutter mount kits ~$100-200 for one home
33	High	Schedule regular updates of this Community Wildfire Resiliency Plan: target every 5 years.	A current and acceptable CWRP is required for funding under the CRI FCFS program. Update the wildfire threat for areas with completed fuel treatments and identify additional areas for treatment.	RDCK / EA-E	5 years – 2028 update	EA-E always has a current and acceptable CWRP.	~$32,000; CRI FCFS funding
34	Moderate	Pre-plan emergency community water delivery systems to connect major natural water sources with interface communities/neighbourhoods to facilitate deployment of a structural protection system. This can be supported by Recommendation #18. The Argenta Emergency Preparedness Group has been working on this since 2023 (see Section 5.4).	RDCK has many large natural water bodies and streams/creeks to draw from in the event of a wildfire. Shuttling or pumping water from lakes and rivers to fill bladders may be planned in advance, including tender access points, traffic control, permanent large-volume pumps and piping.	RDCK / EA-E (BCWS)	5 Years	Assess community water delivery for each neighbourhood. Develop and test neighbourhood specific plans.	CRI: Assessment of Community Water Delivery Ability - incremental staff hours or contract cost
35	Moderate	Promote the installation of visible and reflective addresses in EA-E Consider and explore how to regulate addressing across the District. Note: RDCK has requested a program to support standardized address signage, but stated that if	To allow for faster and more direct response to specific properties by first responders during an emergency.	EA-E / RDCK	5 years	Majority of properties have reflective, visible addresses.	Promotion campaign; consider providing discounted signs.

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
		building permits are not applied for then there is no street address. There are no regulations on addressing.					40-60 hours and $40-60 per sign

5.7 VEGETATION MANAGEMENT AND OTHER FIRESMART ACTIVITIES

VEGETATION MANAGEMENT

As discussed in Section 4.1, fuel is the only aspect of the fire behavior triangle that can be realistically modified to reduce wildfire threat. Fuel or vegetation management reduces potential wildfire intensity and ember, flame, and radiant heat exposure to people, structures, and other values through manipulation of both natural and cultivated vegetation within or adjacent to a community. A well-planned vegetation management strategy can greatly increase first responder safety, fire suppression effectiveness, and reduce damage to property and to values.

Vegetation management can largely be accomplished through two different activities:

1. **Residential-scale FireSmart landscaping**: The removal, reduction, or conversion of flammable [landscaping] plants to create more fire-resistant areas in the FireSmart Immediate, Intermediate, and Extended Zones (i.e., the area within 30m of a structure; see Figure 14 below).

Figure 14: FireSmart Home Ignition Zone

2. **Fuel management treatments:** The manipulation or reduction of living or dead forest and grassland fuels to reduce the rate of spread and head fire intensity and enhance likelihood of successful suppression.

Fuel Management Units

Fuel management treatments may function as fuel breaks (linear features, at least 1 km in length) or polygon treatments for discrete areas. The intent of establishing fuel treatments is to modify fire behaviour and should be designed to keep surface fires on the ground to avoid the establishment of more dangerous and uncontrollable crown fires. Fuel treatments can also provide anchor points to fire-fighting crews for suppression activities,[55] yet the application of appropriate suppression tactics in a timely manner with sufficient resources is essential for fuel treatments to be effective – fuel treatments adjacent to a home or property should not be considered a "fire break". Thus, to increase the efficacy of fuel treatments, FireSmart standards should be applied on nearby private properties to structures and vegetation to reduce the risk of structure ignition. Fuel treatment units will also require periodic maintenance (e.g., brushing, prescribed burning, surface fuel cleanup) to retain their effectiveness.

Implementing fuel management treatments often requires the successful collaboration of various land managers as these treatment areas can span across multiple types of land ownership. Often, this is required for the fuel treatment to effectively connect areas of low hazard, or to be a cohesively effective area. A significant amount of public land within EA-E's WUI is Crown provincial land under various area-based and volume-based licenses. Fuel management projects in community forests (area-based tenure) are currently funded and administered through the Forest Enhancement Society of BC (FESBC); those on municipal land are funded and administered through the CRI FCFS program; and those on Crown provincial land (not managed by an area-based tenure) are funded and administered through the BCWS Crown Land Wildfire Risk Reduction (CLWRR) Program. EA-E will need to ensure good planning and collaboration with the Selkirk Resource District CLWRR team, forest tenure holders, local government, community groups, and BCWS to achieve higher quality, more effective, and more efficient fuel treatments.

There are many historical (non-mapped) fuel treatment units (FTUs) completed within EA-E's WUI, as well as tracked prescribed (but not treated) and treated FTUs from the FESBC, CLWRR, and CRI FCFS programs – these are shown on Map 15 and Map 16 below, in conjunction with the proposed fuel treatment units (PTUs) from this Plan.[56] A number of past proposed but not treated FTUs are re-identified within this Plan due to their assessed risk and proximity to interface structures and communities. PTUs proposed as part of this Plan are discussed and described in Table 24.

Priority level for prescription and treatment (High, Moderate, Low) of PTUs is given to each and is based upon a combination of site-level risks and factors that include wildfire behaviour threat, strategic location, proximity to structures and critical infrastructure, location relative to dominant fire-season wind directions, and overall practicability of treatment implementation. The PTUs identified in this Plan are not a comprehensive list of all areas that qualify for management; they were selected as the highest priority areas that are practicable to implement, present a high risk to their respective communities or a strategic opportunity, and meet required funding program goals and requirements as either fuel breaks or fuel

[55] BC Wildfire Service. (2022). 2022 Fuel Management Prescription Guidance.
[56] CLWRR proposed and completed treatments include up to fiscal year-end 2021. CRI FCFS proposed and completed treatments includes up to year end 2022.

treatment areas. Overall, increasing the resilience of EA-E's WUI communities can only be efficiently achieved by performing residential-scale FireSmart activities on private land.

Residential-scale FireSmart Landscaping

Several smaller, community centrally-located PTUs are proposed within this Plan with the additional intention of providing residents with FireSmart vegetation management demonstration projects – showing them what can be done on their properties to reduce similar wildfire risks. A major barrier to implementing FireSmart vegetation management on private property is if there is no easy disposal process for the created vegetative debris. RDCK managed landfills within and adjacent to EA-E (Balfour and Grohman Narrows) accept yard and garden waste for payment – but, during the months of May and October there is no charge.[57] Unfortunately, for many residents in EA-E's ferry-access or boat only access communities, transporting material to these stations is too far. Thus, most residents likely rely upon at-home burn piles for garden and yard waste – education around the risks associated with this practice, and how to properly manage them, should be built into EA-E's FireSmart education program.

Other Residential-scale FireSmart Activities that RDCK/EA-E should apply through CRI FCFS and implement include:

- ***FireSmart Canada Neighbourhood Recognition Program***
  The FireSmart Canada Neighbourhood Recognition Program is a unique approach to collaboratively reduce a neighbourhood's risk to wildfire through education and events. It is run nationally through FireSmart Canada and facilitated locally by the RDCK. It is a grassroots, volunteer run program that is assisted by RDCK Wildfire Mitigation Specialists. It is a small-scale approach for neighbourhoods consisting of 5-50 homes, with the intent to implement achievable FireSmart goals (mitigation projects can be small and simple, or complex and extensive, ranging from individual owners doing around home clean-ups, to community hand treatments on common and private land near critical infrastructure). Communities within EA-E that have been recognized include Queens Bay, Blewett – CA-TU-KA, and Sunshine Drive.[58]

- ***FireSmart Rebate Program***
  To aid in residential-scale vegetation management and structure improvements, this program allows for residents that have had a completed FireSmart assessment (Home Ignition Zone or Home Partners Program) receive a rebate (using recorded expenses) for work completed to lower risk identified in their assessment. Starting in the 2024 CRI FCFS program, the eligible amount of rebate per property is now $5000.

Associated vegetation management and other FireSmart recommendations and action items are listed in Table 23.

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[57] https://www.rdck.ca/EN/main/services/waste-recycling/household-hazardous-waste-round-up/yard-garden-waste-free-tipping.html

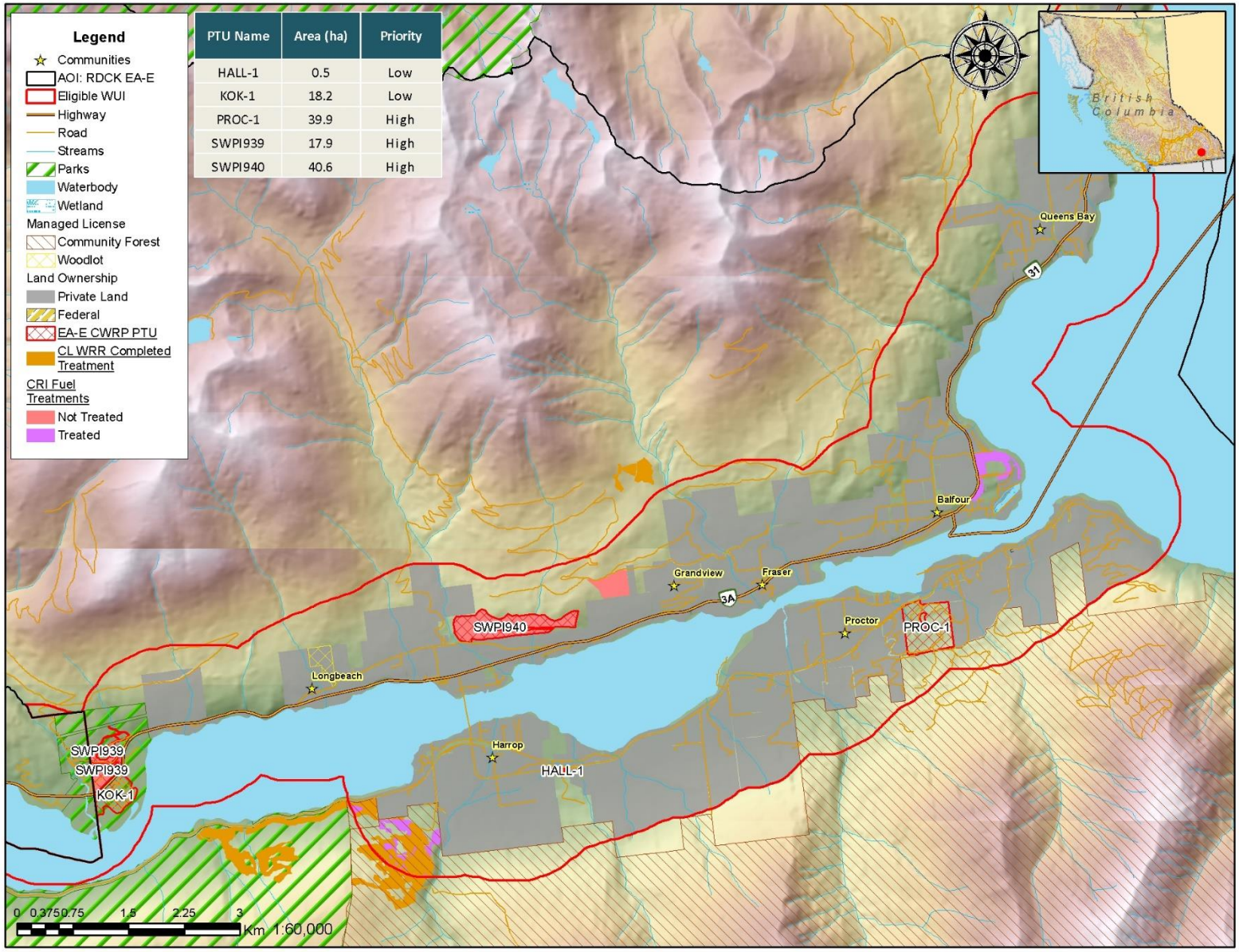
[58] https://www.rdck.ca/assets/Services/Emergency~Management/Documents/2022-08-26-RDCK%20FireSmart%20Neighbourhoods.pdf

Table 23: Vegetation management action items

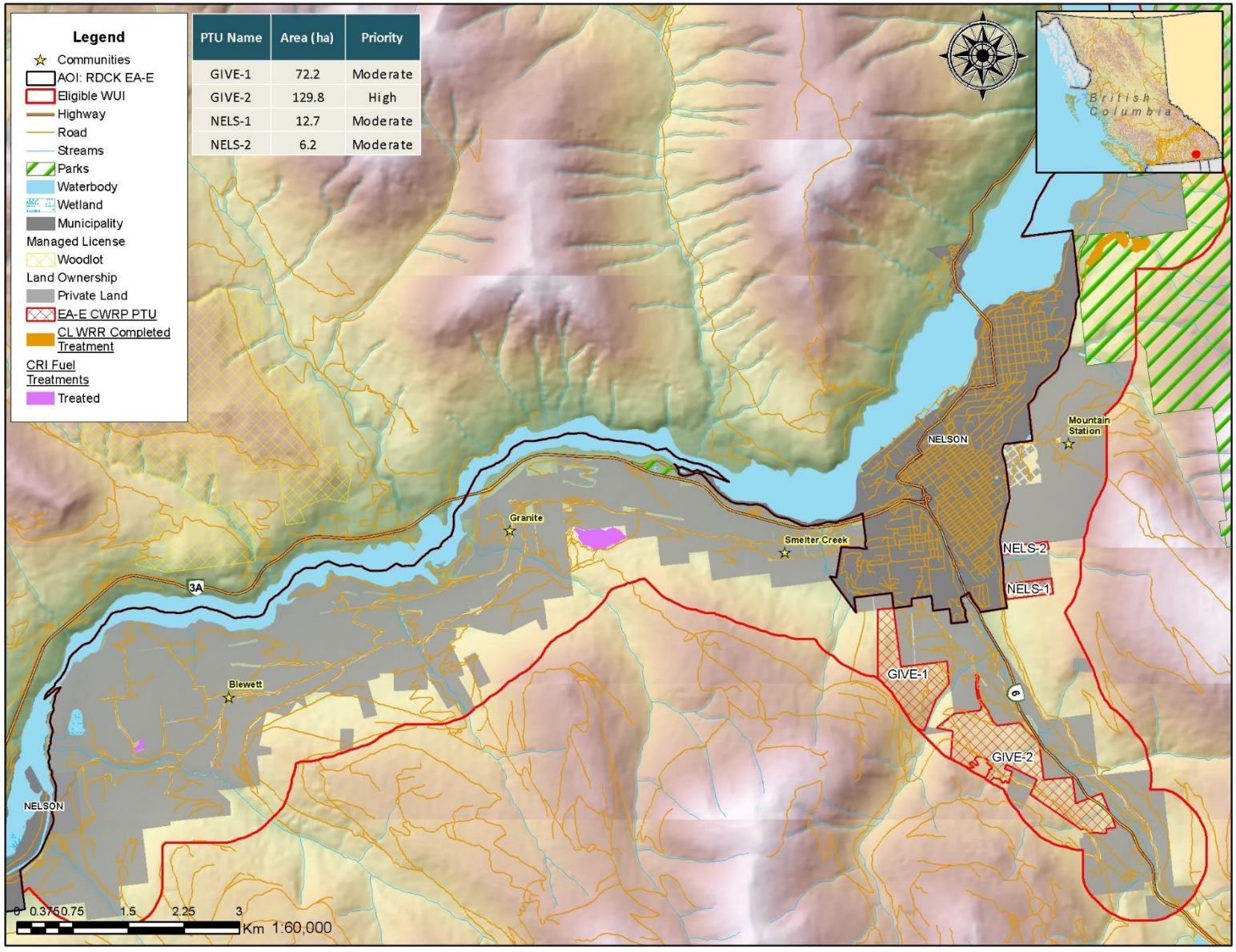
Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
Vegetation Management - Section 5.7							
Fuel Management Treatments							
36	High	Develop fuel management prescriptions for the identified Potential Fuel Treatment Units (PTUs), starting with those identified as High priority. Continue with treatment implementation when possible.	To reduce wildfire threat and risk to interface and intermix communities within the WUI. Also, to provide FireSmart vegetation management examples to the public that can be implemented on their own properties. See "Rationale" column in Table 24 for more detailed treatment rationales.	EA-E / MOF / BCWS	5 years	Approved FMP(s) for identified High priority areas.	CRI FCFS funding available for prescription and treatments; ~$425/hectare for a ~20 ha prescription
37	High	Lobby Provincial Government (Ministry of Forests) and other potential funding organizations for grant funds to implement landscape level fuel treatment on private land.	Much of EA-E's communities' structures are surrounded by undeveloped, forested private land. Current funding streams for fuel reduction at the landscape level are targeted, and thus limited, to public land. However, the interface wildland does not stop at the public/private land border.	Local Government (Provincial Government)	5 years	Discussions initiated and ongoing	Time and cost dependant upon level of engagement required.
Residential FireSmart							
38	High	In conjunction with provided home FireSmart Assessments (see Recommendation #7) Continue offering a local rebate program to property owners that have completed a FireSmart home assessment (Home Ignition Zone assessment or Home Partners Program Mitigation assessment. RDCK, EA-E, and FireSmart coordinators should advertise that the amount eligible for rebate has increased to $5000 for the CRI FCFS 2024 application program.	FireSmart home assessments encourage action in the FireSmart Home Ignition Zone of a community. Offer a rebate program (funded through CRI FCFS) to residents who have a pre- and post-work FireSmart assessment conducted. Focus on removal of conifer hedges and upgrading exterior structure materials.	RDCK / EA-E FireSmart Coordinator	Annually	Number of properties participating annually.	50% of costs per property up to $5,000, plus 2 hours administration time per property (CRI FCFS).
39	High	Continue providing regional district-led options for the disposal of yard waste. Currently, this includes having tipping fees waived (May and October) for yard waste at the RDCK transfer stations.	Yard waste burning restrictions limit options for debris disposal. Free debris disposal may be used as an incentive to participate in other FireSmart activities, like assessments or workshops.	RDCK	Annual	Municipally funded yard waste disposal continues.	CRI FCFS funding is available for

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
							tipping fee coverage.
40	High	Consider implementing a community chipper program. Education of FireSmart yard and landscaping principles, including chipping specifications, should be incorporated into the program.	To reduce fire and wildfire hazards on private property within the WUI, especially those long distances from RDCK landfills/transfer stations, and to promote FireSmart vegetation management knowledge and education. The intent is for landscaping/yard vegetation to be included, not farm or agriculture vegetation. This could assist with more uptake of residential FireSmart landscaping principles as the disposal method is brought to the resident, especially for those older and less mobile.	RDCK / EA-E FireSmart Coordinator	Annual (pre-fire season is best)	Number of properties who elect to have debris disposed.	CRI FCFS funding; ~$100-150 per chipper crew hour.
41	Moderate	Consider releasing an annual RDCK FireSmart report to the public that tracks community-specific uptake in various FireSmart initiatives, as well as tracks fuel management at all scales.	As the program grows, reporting allows the RDCK FireSmart program to track challenges and successes, further promote the program, and tailor outreach methods to achieve the most uptake.	RDCK / EA-E FireSmart Coordinator	Annual	An annual report is published.	Eligible for CRI funding – FireSmart staff time. Estimate 40-80 hours.
42	Moderate	Engage with local garden centers to implement the FireSmart BC Plant [Tagging] Program.	FireSmart BC introduced a plant tagging program in 2021 that has been implemented with great success by over 34 nurseries and garden centres to date. The Plant Program is an easy way to provide information at the point of purchase for homeowners and landscapers. See: https://firesmartbc.ca/landscaping-hub/plant-program/	Local Garden Centres (RDCK; EA-E FireSmart Coordinator)	5 years	Local garden centres have been notified of the program.	Staff time for engagement (2-4 hours per garden centre).
Community and Critical Infrastructure FireSmart							
43	High	Implement recommended vegetation management recommendations from FireSmart Critical Infrastructure Ignition Zone Assessments (see Recommendation #14), when completed, on a priority basis.	To reduce fire behavior and risks to critical infrastructure most important to fire and wildfire fighting and post-wildfire recovery.	RDCK / EA-E FireSmart Coordinator	5 years	High priority critical infrastructure has had FireSmart vegetation management completed.	CRI FCFS funding up to $53,500 per municipal infrastructure (vegetation management included).

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe	Metric for Success	Funding Source / Est. Cost ($) / Person Hours
44	High	As part of fuel treatment implementation, RDCK/EA-E should develop interpretive signage to demonstrate pre- and post-fuel treatment forest stands conditions.	Interpretive signage could include text explaining the purpose of the fuel management treatment, connection to the CWRP, and FireSmart practices residents nearby can take to reduce wildfire hazards around their yards and homes.	RDCK / EA-E FireSmart Coordinator	5 years	Signage installed during implementation phases.	Eligible for UBCM CRI funding.
45	High	Continue to support and promote the FireSmart Canada Neighbourhood Recognition Program to communities within EA-E. Identify community champions to spearhead organization for those communities not already organized, and support those communities that have been recognized in the past to continue working towards being so.	There are many small communities throughout EA-E that, by working together, could reduce their community-scale wildfire risk easily and substantially. The program supports a small-scale approach for neighbourhoods consisting of 5-50 homes, with the intent to implement achievable FireSmart goals	RDCK / EA-E FireSmart Coordinator	Ongoing	Increase in number of recognized communities.	FireSmart Canada $500; RDCK FireSmart Champion Grant up to $3000
46	Moderate	As part of the FireSmart Canada Neighbourhood Recognition Program (FCNRP), apply to CRI FCFS for funding to develop Neighbourhood FireSmart Plans.	To help guide FireSmart Canada Neighbourhood Recognition Program communities and their community champions to complete wildfire risk reduction measures.	RDCK / EA-E FireSmart Coordinator	In line with FCNRP Community program uptake.	Communities working towards FCNRP status have a Neighbourhood Plan	Eligible for UBCM CRI funding.



Map 15: Overview map of Proposed Treatment Units within EA-E's eastern WUI area.



Map 16: Overview map of Proposed Treatment Units within EA-E's western WUI area.

Table 24: Summary of Proposed Fuel Treatment Units (PTUs) for EA-E's WUI (ordered from east to west).

PTU Name	Nearest Community	Priority	Area (ha)	Overlapping Values / Treatment Constraints	Wildfire Behaviour Threat		Treatment Rationale
					Extreme & High	Moderate	
PROC-1	Proctor	High	39.9	Crown Provincial land. Borders private land on its north, east, and west sides. Borders Harrop-Proctor Community Forest on its south side. Gravel pit (cut out) in the centre.	38.5	0.8	Treat to reduce wildfire threat in a large area that is directly interface to the community. Hazardous, young C-3-type stand. Understory is very dense live and dead conifers - dead will soon contribute to surface fuel loading. Low crown base heights and dense crown closure. Scattered fine fuels. Treatment would likely include thin from below (retaining all dominant and co-dominant stems for shading), pruning retained conifers, and surface fuel reduction. There is a forest road through the unit providing access. WTA Protor-3 (Moderate)
HALL-1	Harrop	Low	0.5	Crown Provincial land and RDCK municipal land. Adjacent to Harrop Fire Hall and borders private property.	0.5	0.0	Treat to reduce wildfire threat within the community and adjacent to critical emergency response infrastructure. Treating this unit would also provide a demonstration project of FireSmart vegetation management to the community. Dense C-3 fuel type stand (with C-4 characteristics) on the west side of the Harrop Fire Hall. It is a small area, and the work could be potentially done by fire hall staff. Treatment would likely include spacing/thinning of the dense conifer stems and pruning of retained conifers.
SWPI 940	Longbeach	High	40.6	Crown Provincial	34.5	6.1	Treat to reduce wildfire threat in a large area that is directly interface to the community. Older CRI prescription area that may have had treatment work completed in it. Very open, south facing stand of mature Douglas-fir (Fd) and ponderosa pine (Pp), with many mature stems dead and down increasing surface fuel and horizontal continuity. Conifer regeneration is now reaching 1m ht and will continue growing. This unit is identified in this plan as a strong candidate for re-treatment/treatment, with treatment likely including the removal of dead standing stems, bucking of dead down stems, surface fuel clean up in areas of increased concentrations, and thinning regen. in denser pockets. Prescribed burning is a potential prescribed treatment as well. WTA of "Low" does not account for PTU's interface proximity, south aspect, and slope. WTA Wightwick-1 (Low)

PTU Name	Nearest Community	Priority	Area (ha)	Overlapping Values / Treatment Constraints	Wildfire Behaviour Threat		Treatment Rationale
					Extreme & High	Moderate	
KOK-1	Kokanee Campground	Low	19.8	Crown Provincial land. In Kokanee Creek Provincial Park. Entirely in UWR conditional harvest zone. Campsites.	10.5	7.7	*A portion of this PTU is in EA-F. It should all be treated as one polygon.* Treat to reduce wildfire threat within the campground and to protect the area from accidental fire starts related to campers. Treating this unit would also provide a demonstration project of FireSmart vegetation management to the community as well as visitors/tourists. Mature, C-5 type stand with patches of dense understory conifer regeneration. A mix of low to high crown base heights and moderate surface fuel loads. Treatment would likely include thinning of understory conifers, pruning of retained conifers, and surface fuel reduction. PTU SWPI 939 is uphill (north) from this unit. Treating all of these would create a more landscape-level area of reduced fire threat within the WUI. WTA KOKANEE-1 (Moderate; EA-F)
SWPI 939	Kokanee Provincial Park	High	17.9	Crown Provincial land. Existing CRI prescription, but not yet treated. In Kokanee Creek Provincial Park. Entirely in UWR conditional harvest zone and overlap with non-legal OGMA.	8.8	10.1	*A portion of this PTU is in EA-F. It should all be treated as one polygon.* Treat to reduce wildfire threat within the WUI and an area interface to structures. Treat to reduce fire ignition risk from hikers along the trails within. Treating this unit would also provide a demonstration project of FireSmart vegetation management to the community as well as visitors/tourists. Treating in conjunction with KOK-1 PTU would create a large area of reduced fire threat. Existing CRI prescribed unit, but not treated. The north and east portions of the TU are a young conifer regenerating stand (with some overstory L1 conifers) undergoing stem exclusion and self pruning. Little surface fuel currently, but high horizontal and vertical continuity. The south and east portions of the TU are a more open, mature conifer stand with higher amounts of surface fuels. PTU is anchored to the highway to the south and C5/C7 low risk fuel types to E and W. Prescribed burning following thinning and pruning is likely practicable. It is uphill from large campsite with a lot of people during fire season. WTA KP-1 (Moderate); REDFISH-1 (Low; EA-F)
NELS-2	Nelson	Moderate	6.2	Crown Provincial land. Borders private property on north, east, and west sides.	0.0	6.2	These two units have recently reverted from private land to Crown provincial. They have been recommended by the Nelson Fire Chief to treat due to being directly interface, having good access, and for providing a demonstration project of FireSmart vegetation management to the community. Treatment would likely include thinning of understory conifers, pruning of retained conifers, and surface fuel reduction.
NELS-1	Nelson	Moderate	12.7	Crown Provincial land. Borders private property on north and east sides.	0.0	12.7	

PTU Name	Nearest Community	Priority	Area (ha)	Overlapping Values / Treatment Constraints	Wildfire Behaviour Threat		Treatment Rationale
					Extreme & High	Moderate	
GIVE-2	Ymer/Nelson	High	129.8	Crown Provincial land. PTU proposed in 2022 Nelson CWRP. Steep slopes. Trans Canada Trail within. North edges border private property.	24.2	103.5	*Recommended in the 2022 Nelson CWRP.* Treat to reduce interface wildfire threat to Nelson and rural neighbourhoods adjacent in EA-E. At a minimum, it is recommended to create a 30m fuel reduction buffer of the Trans Canada Trail that traverses the lower part of the PTU and is a significant ignition risk. Treating the trail side area would also provide a demonstration project of FireSmart vegetation management to the community as well as visitors/tourists. Treating these two units would create a landscape level fuel break for Nelson on the leading fire season wind edge. Steep slopes also make these units prone to erosion and debris slide/flow issues if ever severely burned. C-5 dominant stand with C-3 characteristics, and some scattered C-7. Horizontal fuel continuity is patchy; existing canopy gaps from forest health factors and pockets of high surface fuel loading exists in these openings. Treatment would likely include thinning of understory conifers, pruning of retained conifers, and surface fuel reduction. The forest road along top of PTUs would allow for prescribed burning, if practicable. WTA GIVE-1 (Moderate); GIVE-2 (High)
GIVE-1	Nelson/ Smelter Creek	Moderate	72.2	Crown Provincial land. PTU proposed in 2022 Nelson CWRP. Steep slopes. North edges border private property.	15.3	56.6	

SECTION 6: APPENDICES

6.1 APPENDIX A: REVIEW OF 2015 CWPP RECOMMENDATIONS

The 2015 CWPP Recommendations were reviewed and commented on by the Local Government. Comments were edited for clarity.

Item	2015 CWPP Recommendation	2022 CWRP *Follow-Up Discussion*
Communication and Education		
Objective: To improve public understanding of fire risk and personal responsibility by increasing resident awareness of the wildfire threat in their community and to establish a sense of homeowner responsibility.		
1.	Establish a school education program to engage youth in wildfire management. Consult ABCFP and BCWS (the zone) to facilitate and recruit volunteer teachers and experts to help with curriculum development to be delivered in elementary and/or secondary schools. Educational programming can be done in conjunction with any currently running fire prevention education programs.	***Yes. Some education has happened (although more is needed). It is being done by the school, but not under the authority of RDCK.***
2.	Make summaries of this report and associated maps publicly available through webpage, social media, and public FireSmart meetings. Add fire threat spatial data to the interactive web-mapping tool to allow residents to find their property and the associated threat of wildfire.	***CWRP is available on RDCK website.***
3.	Add a Wildfire-specific Fire Prevention Week (or day) in the spring, immediately prior to the fire season.	***Yes, numerous FCNRP events happen throughout 2023.***
4.	Consider door to door FireSmart assessment and/or home owner self-assessment within the Area E interface in order to educate residents and to quantify the level the level of risk in the interface.	***Yes, 200 HPP assessments completed so far in Area E. [as of September 2023]***
Objective: To enhance the awareness of elected officials and stakeholders regarding the resources required to reduce fire risk.		

5.	Maintain and strengthen the regional Interface Working Group that includes Nelson, Area F and BC Parks to coordinate wildfire risk reduction efforts.	***Nelson CFRC meets numerous times per season to coordinate efforts within area E.***
6.	Consider local planning departments to develop regional development permit standards, provide a group voice to the Building and Safety Standards Branch and other provincial entities, and align municipal bylaws.	***No communications I am aware of.***
7.	Consider the development of a coordinated approach to fuel management and hazard reduction within and adjacent to the Area E Study Area by coordinating with stakeholders including forest licensees, Ministry of Transportation and Infrastructure and utility companies, to aid in the establishment of large, landscape-level fuel breaks or compliment current or proposed fuel treatment areas.	***Nelson CFRC includes Parks, CL WRR, RDCK, and BCWS who all collaborate on various fuel management projects.***
8.	Maintain regular communication with the Technical Review Committee (see Section 2.4) to ensure that proposed activities maintain or enhance biodiversity values	***[no comment]***
Structure Protection and Planning		
Objective: Enhance protection of critical infrastructure from wildfire.		
9.	Complete a fire flow / water vulnerability assessment for each water system and identify and map all alternative water sources (reservoirs, streams, lakes, etc.). Identify which areas may have insufficient or unreliable water supplies and provide recommendations to reduce Area E's vulnerability.	***[no comment]***

10.	Complete a vulnerability assessment of all critical infrastructure including water infrastructure in interface areas with FireSmart recommendations.	***Firehalls complete. Water/power unknown.***
11.	Develop alternative, backup water sources for fire protection, including the establishment of standpipes as required.	***[no comment]***
12.	Complete a detailed review of back-up power source options for all critical infrastructure and upgrade as required.	***[no comment]***
13.	Consider completing more detailed hazard assessments and developing response plans for stabilization and rehabilitation of burn areas in watersheds that are vulnerable to post-wildfire debris flows and floods. Opportunities may exist to coordinate study and planning with adjacent jurisdictions (City of Nelson and BC Parks).	***[no comment]***
Objective: Encourage private homeowners to voluntarily adopt FireSmart principles on their properties.		
14.	Complete, or support homeowners to complete, WUI Site and Structure Hazard Assessments for interface homes, make hazard mapping for assessed homes publicly available, and provide informational material to homeowners on specific steps that they can take to reduce fire hazard on their property.	***Yes, 200 HPP assessments completed so far in area E. [As of September 2023]***
Municipal Policy		
Objective: To reduce wildfire hazard on private land and increase FireSmart compliance.		

15.	Complete OCP review to strengthen and expand reach of the existing policy.	
16.	Consider developing Wildfire Hazard Development Permit (DP) Areas for major retrofits / renovations or new builds (building permits), collecting bonds to be returned upon evidence of completing development and landscaping according to wildfire hazard assessment. Review District of North Vancouver DP process as a model.	***Nothing implemented yet; wildfire development permit area study completed in 2022.***
17.	Obtain legal advice regarding the Building Act, specifically regarding the temporarily unrestricted matters and local government authority to set exterior building materials requirements. Use local government authority to mandate FireSmart construction materials beyond BC Building Code in wildfire hazard development permit area, as allowed.	***[no comment]***
18.	Develop a landscaping standard to be applied in interface / DP areas. The standard should list flammable non-compliant vegetation, non-flammable drought and pest resistant alternatives, and tips on landscape design to reduce maintenance, watering requirements, and reduce wildfire hazard. Include meeting landscaping standard as a requirement of Development Permit.	***Not complete***
19.	Proactively enforce wildfire covenants requiring owners to maintain their properties hazard free on all properties in Development Permit areas. Enforcement will serve to minimize fuel risks on problematic private properties which have allowed hazardous accumulation of fuels and provide improved protection to adjacent lands.	***Not complete***

20.	Alter the zoning bylaws to require that developers leave building set backs on private land so that there is a minimum of 10 m distance between buildings and forest interface.	***Not complete***
21.	Consider developing an outdoor burning bylaw specifying requirements for and limitations to outdoor burning and, in conjunction with the Fire Chief, implement the bylaw at times of high fire danger when provincial bans are not in place. The bylaw should consider effective and efficient enforcement measures and powers.	***Not complete***
22.	Work with the Building and Safety Standards Branch to provide input into the Building Code revisions that would apply within the development permit areas to prevent the spread of wildfire.	***Not complete***
Emergency Response and Planning		
Objective: To improve structural and wildfire equipment and training available to RDCK Fire and Rescue.		
23.	Conduct annual structural and interface training with MFLNRO BCWS. As part of the training, it is recommended to conduct annual reviews to ensure PPE and wildland equipment resources are complete, in working order, and the crews are well-versed in their set-up and use. Interface training should include completion of a mock wildfire simulation in coordination with BCWS and safety training specific to wildland fire and risks inherent with natural areas.	***[no comment]***
24.	Integrate Emergency Preparedness Committee and West Arm Interface Steering Committee. Coordination and information sharing are crucial to the development of a community well prepared for wildfire. As an outcome of this integration, consider updating the Emergency Program Structure.	***[no comment]***

25.	Provide S215 training to all/some members of Fire Halls in Area E to enhance wildfire suppression training. Consider investigating Office of the Fire Commissioner funding.	***[no comment]***
26.	Review UBCM-owned SPU request procedure. Complete training with SPU as required and assess needs based on training outcomes.	***[no comment]***
27.	Develop Regional Service to fund additional SPUs and maintain existing SPUs.	***[no comment]***
28.	Explore opportunities to collaborate with BCWS to coordinate discount volumes of hose for interface fires, reducing costs and logistics to local fire departments.	***[no comment]***
29.	Explore opportunities to ensure a duty officer is in place in each Fire Protection Area to provide coverage for periods of high or extreme hazard.	***[no comment]***
30.	Conduct fire preplan assessment for key interface areas in Area E. Other jurisdictions have completed assessments that prioritize fire department-specific variables, such as distance to hydrants, response time from nearest fire station, etc. to produce local risk ratings.	***[no comment]***
Emergency Response Evacuation and Access		
Objective: To improve access and egress to neighbourhoods at risk and natural areas within RDCK.		

31.	Develop a Total Access Plan to create, map and inventory trail and road network in natural areas for suppression planning, identification of areas with insufficient access and to aid in strategic planning. Fire threat mapping from this CWPP should be included. The plan should be updated every five years, or more regularly, as needed to incorporate additions or changes.	***[no comment]***
32.	Require that all new interface developments have access for evacuation and sufficient capacity for emergency vehicles.	***[no comment]***
33.	Facilitate completion of emergency evacuation plans for interface neighbourhoods with limited access.	***[no comment]***
Fuel Management		
Objective: Reduce wildfire threat on public lands through fuel management.		
34.	Proceed with detailed assessment, prescription development and treatment of hazardous fuel units identified in this CWPP. Collaboration with BCTS, and other licensees, BC Parks and City of Nelson may facilitate larger projects.	***[no comment; some prescriptions have been developed, and some of those implemented]***
35.	Prioritize Areas of Interest across Electoral Areas with updated CWPPs to ensure effective and objective treatment.	***[no comment]***
Objective: Maintain treated areas under an acceptable level of wildfire fire threat (moderate).		

36.	As treatments are implemented, complete monitoring within 10 years of treatment (subject to site conditions) and maintenance every 15-20 years (subject to prescription and site conditions) on previously treated areas. Treated areas should be assessed by a Registered Professional Forester, specific to actions required in order to maintain treated areas in a moderate or lower hazard.	***[no comment]***

6.2 APPENDIX B: LOCAL WILDFIRE RISK PROCESS

Wildfire Risk Assessment plot worksheets are provided in Appendix C: Wildfire Risk Assessment – Worksheets and Photos, plot locations are summarized in Appendix B-2: , and the field data collection and spatial analysis methodology is detailed in Appendix B-2 and B-3.

6.2.1 APPENDIX B-1: FUEL TYPING METHODOLOGY AND LIMITATIONS

The Canadian Forest Fire Behaviour Prediction (FBP) System outlines five major fuel groups and sixteen fuel types based on characteristic fire behaviour under defined conditions.[59] Fuel typing is recognized as a blend of art and science. Although a subjective process, the most appropriate fuel type was assigned based on research, experience, and practical knowledge; this system has been used within BC, with continual improvement and refinement, for 20 years.[60] It should be noted that there are significant limitations with the fuel typing system which should be recognized. Major limitations include: a fuel typing system designed to describe fuels which sometimes do not occur within the WUI, fuel types which cannot accurately capture the natural variability within a polygon, and limitations in the data used to create initial fuel types.[60] There are several implications of these limitations, which include: fuel typing further from the developed areas of the study has a lower confidence, generally; and, fuel typing should be used as a starting point for more detailed assessments and as an indicator of overall wildfire risk, not as an operational, or site-level, assessment. Forested ecosystems are dynamic and change over time: fuels accumulate, stands fill in with regeneration, and forest health outbreaks occur. Regular monitoring of fuel types and wildfire risk assessment should occur every 5 – 10 years to determine the need for threat assessment updates and the timing for their implementation.

Table 25 summarizes the fuel types observed in EA-E's WUI by general fire behaviour (crown fire and spotting potential). These fuel types were used to guide the threat assessment.

Table 25. Fuel Type Categories and Crown Fire Spot Potential encountered within the WUI.

Fuel Type	FBP / CFDDRS Description	*WUI Description*	Wildfire Behaviour Under High Wildfire Danger Level	Fuel Type – Crown Fire / Spotting Potential
C-3	Mature Jack or Lodgepole Pine	*Pole-sapling to mature even-aged conifer-dominated forest with moderate to high density and high crown closure (near or at horizontal continuity). Crows separated from the forest floor in mature stands.*	Surface and crown fire, low to very high fire intensity and rate of spread.	High

[59] Forestry Canada Fire Danger Group. 1992. Development and Structure of the Canadian Forest Fire Behavior Prediction System: Information Report ST-X-3.
[60] Perrakis, D.B., Eade G., and Hicks, D. 2018. Natural Resources Canada. Canadian Forest Service. *British Columbia Wildfire Fuel Typing and Fuel Type Layer Description* 2018 Version.

Fuel Type	FBP / CFDDRS Description	*WUI Description*	Wildfire Behaviour Under High Wildfire Danger Level	Fuel Type – Crown Fire / Spotting Potential
C-4	Immature Jack or Lodgepole Pine (>10,000 sph)	*Pole-sapling to mature (but stagnant in growth) very dense conifer-dominated forests (>5,000 sph). Some stands have a high number of dead standing or dead leaning/down from natural exclusion processes.*	Surface and crown fire, low to very high fire intensity and rate of spread.	High
C-5	Red and White Pine	*Low to moderate density, uneven-aged conifer-dominated forest, crown base heights mixed. Understory of discontinuous natural conifer ingress in openings and gaps, deciduous shrubs, and herbs.*	Moderate potential for active crown fire in wind-driven conditions. Under drought conditions, fuel consumption and fire intensity can be higher due to dead woody fuels.	Moderate
C-7	Ponderosa pine and Douglas-fir	*Low-density, uneven-aged conifer-dominated forest, crowns separated from the ground, understory of discontinuous grasses and shrubs. Exposed bed rock and low surface fuel loading.*	Surface fire spread, torching of individual trees, rarely crowning (usually limited to slopes > 30%), moderate to high intensity and rate of spread.	Moderate
O-1a/b	Grass	*Matted and standing grass that can cure; sparse or scattered shrubs, trees, and down woody debris. Cutblocks >2 seasons old that do not meet S-type descriptions, as well as young regenerating cutblocks that have not reached any horizontal continuity.*	Rapidly spreading, high-intensity surface fire when cured.	Low
M-1/2	Boreal mixedwood (leafless and green)	*Moderately well-stocked mixed stands of conifers and deciduous species, low to moderate dead, down woody fuels.*	Surface fire spread, torching of individual trees and intermittent crowning, (depending on slope and percent conifer).	<26% conifer (Very Low); 26-49% Conifer (Low); >50% Conifer (Moderate)
D-1/2	Aspen or birch (leafless and green)	*Deciduous stands.*	Always a surface fire, low to moderate rate of spread and fire intensity.	Low
S-1	Slash (jack / lodgepole pine, white spruce)	*Any conifer slash as the result of harvesting practices.*	Moderate to high rate of spread and high to very high intensity surface fire.	Low

Fuel Type	FBP / CFDDRS Description	*WUI Description*	Wildfire Behaviour Under High Wildfire Danger Level	Fuel Type – Crown Fire / Spotting Potential
N	N/A	*Non-fuel: irrigated/mowed agricultural fields, urban or developed areas void or nearly void of vegetation and forests.*	N/A	N/A
W	N/A	*Water*	N/A	N/A

6.2.2 APPENDIX B-2: WILDFIRE THREAT ASSESSMENT PLOTS

Table 26 displays a summary of all Wildfire Threat Assessment (WTA) plots completed during CWRP field work. The most recent 2020 WTA threat plot worksheets and methodology were used.[61] The plot forms and photos will be submitted as a separate document. The following ratings are applied to applicable point ranges:

- Wildfire Behaviour Threat Score (Southern Interior Mountains)
  - 0 – 47 Low
  - 48 – 65 Moderate
  - 66 – 79 High
  - 80 + Extreme

Table 26. Summary of WUI Threat Assessment Worksheets (2020).

WTA Plot	Geographic Location	Wildfire Threat Rating
BALFOUR-1	North of access Road	46 (Low)
BALFOUR-2	Adjacent to Balfour Beach Regional Park	35 Low)
BLEWETT-1	East of Carlson Rd. near the Blewett Fire Department	42 (Low)
GIVEOUT-1	South of Nelson on SilverKing Tramway	65 (Moderate)
GIVEOUT-2	South of Nelson on SilverKing Tramway	58 (Moderate)
KP-1	Adjacent to Kokanee Glacier Rd	61 (Moderate)
KOKANEE-1	Kokanee Creek Provincial Park Campground	53 (Moderate)
MORNING-1	Morning Mountain Regional Park	34 (Low)
PROCTOR-1	Adjacent to Victor Rd.	52 (Moderate)
PROCTOR-2	Adjacent to Victor Rd.	64 (Moderate)
PROCTOR-3	Near the junction between Victor Rd. and Harrop Proctor Rd.	65 (Moderate)
PROCTOR-4	Adjacent to the end of Mill Creek Rd.	31 (Low)
PROCTOR-5	Adjacent to Lasca Creek Rd.	38 (Low)
REDCREEK-1	West of Balfor adjacent to access road	65 (Moderate)
SLOVBONA-1	North of Nelson adjacent to Svoboda Rd	25 (Low)
WIGHTWICK-1	Near Wightwick Rd	42 (Low)

[61] MFLNRORD.2020 Wildfire Threat Assessment Guide and Worksheets

6.2.3 APPENDIX B-3: FIRE RISK THREAT ASSESSMENT METHODOLOGY

As part of the CWRP process, spatial data submissions are required to meet the defined standards in the Program and Application Guide. Proponents completing a CWRP can obtain open-source BC Wildfire datasets, including Provincial Strategic Threat Analysis (PSTA) datasets from the British Columbia Data Catalogue. Wildfire spatial datasets obtained through the BC Open Data Catalogue used in the development of the CWRP include, but are not limited to:

- PSTA Spotting Impact
- PSTA Fire Density
- PSTA Fire Threat Rating
- PSTA Lighting Fire Density
- PSTA Human Fire Density
- Head Fire Intensity
- WUI Human Interface Buffer (1436m buffer from structure point data)
- Wildland Urban Interface Risk Class
- Current Fire Polygons
- Current Fire Locations
- Historical Fire Perimeters
- Historical Fire Incident Locations
- Historical Fire Burn Severity

As part of the program, proponents completing a CWRP are provided with a supplementary PSTA dataset from BC Wildfire Services. This dataset includes:

- Fuel Type
- Structures
- Structure Density
- Eligible WUI (1 km buffer of structure density classes >6).

The required components for the spatial data submission are detailed in the Program and Application Guide Spatial Appendix – these include:

- AOI
- Proposed Treatment
- WUI (1 km buffer of structure density classes >6)

The provided PSTA data does not transfer directly into the geodatabase for submission, and several PSTA feature classes require extensive updating or correction. In addition, the Fire Threat determined in the PSTA is fundamentally different than the localized Fire Threat feature class that is included in the Local Fire Risk map required for project submission. The Fire Threat in the PSTA is based on provincial scale inputs - fire density; spotting impact; and head fire intensity, while the spatial submission Fire Threat is based on the components of the Wildland Urban Interface Threat Assessment Worksheet. For the scope of this project, completion of WUI Threat Assessment plots on the entire AOI is not possible, and therefore

an analytical model has been built to assume Fire Threat based on spatially explicit variables that correspond to the WUI Threat Assessment worksheet.

Field Data Collection

The primary goals of field data collection are to confirm or correct the provincial fuel type, complete WUI Threat Assessment Plots, and assess other features of interest to the development of the CWRP. This is accomplished by traversing as much of the AOI and surrounding Eligible WUI as possible (within time, budget and access constraints). Threat Assessment plots are completed on the 2020 form, and as per the Wildland Urban Interface Threat Assessment Guide.

For clarity, the final threat ratings for the AOI were determined through the completion of the following methodological steps:

1. Update fuel-typing using orthophotography provided by the client and field verification.
2. Update structural data using critical infrastructure information provided by the client, field visits to confirm structure additions or deletions, BC Assessment, and orthophotography
3. Complete field work to ground-truth fuel typing and threat ratings (completed 8 WUI threat plots on a variety of fuel types, aspects, and slopes and an additional 250 field stops with qualitative notes, fuel type verification, and/or photographs)
4. Threat assessment analysis using field data collected and rating results of WUI threat plots – see next section.

Spatial Analysis

The field data is used to correct the fuel type polygon attributes provided in the PSTA. This corrected fuel type layer is then used as part of the spatial analysis process. The other components are developed using spatial data (BEC zone, fire history zone) or spatial analysis (aspect, slope). A scoring system was developed to categorize resultant polygons as having relatively low, moderate, high or extreme Fire Threat, or Low, Moderate, High or Extreme WUI Threat. Table 27 below summarizes the components and scores to determine the Fire Behaviour Threat.

Table 27: Components of Fire Threat Analysis

Attribute	Indicator	Score
Fuel Type	C-1	35
	C-2	
	C-3	
	C-4	
	M-3/4,>50% dead fir	
	C-6	25
	M-1/2, >75% conifer	20
	C-7	
	M-3/4, <50% dead fir	
	M-1/2, 50-75% conifer	15
	M-1/2, 25-50% conifer	10
	C-5	
	O-1a/b	
	S-1	

	S-2	
	S-3	
	M-1/2, <25% conifer	5
	D-1/2	0
	W	0
	N	0
Weather - BEC Zone	AT, irrigated	1
	CWH, CDF, MH	3
	ICH, SBS, ESSF	7
	IDF, MS, SBPS, CWHsds1 & ds2, BWBS, SWB	10
	PP, BG	15
Historical Fire Occurrence Zone	G5, R1, R2, G6, V5, R9, V9, V3, R5, R8, V7	1
	G3, G8, R3, R4, V6, G1, G9, V8	5
	G7, C5, G4, C4, V1, C1, N6	8
	K1, K5, K3, C2, C3, N5, K6, N4, K7, N2	10
	N7, K4	15
Slope	<16	1
	16-29 (max N slopes)	5
	30-44	10
	45-54	12
	>55	15
Aspect (>15% slope)	North	0
	East	5
	<16% slope, all aspect	10
	West	12
	South	15

WUI Risk Classes and their associated summed scores

Very Low	0
Low	0-35
Moderate	35-55
High	55-65
Extreme	>65

These attributes are summed to produce polygons with a final WUI Risk Score. To determine the Fire Threat score, only the distance to structures is used. Buffer distance classes are determined; <200m, 200m-500m and >500m) but only for polygons that had a 'high' or 'extreme' Fire Threat score from previous assessment. In order to determine WUI Risk; those aforementioned polygons within 200m are rated as 'extreme', within 500m are rated as 'high', within 2km are 'moderate', and distances over that are rated 'low'.

Limitations

There are obvious limitations in this method, most notably that not all components of the threat assessment worksheet are scalable to a GIS model, generalizing the Fire Behaviour Threat score. The WUI Risk Score is greatly simplified, as determining the position of structures on a slope, the type of development and the relative position are difficult in an automated GIS process. Structures are considered, but there is no consideration for structure type (also not included on threat assessment worksheet). This method uses the best available information to produce accurate and useable threat assessment across the study area in a format which is required by the UBCM FCFS program.

6.2.4 APPENDIX B-4: PROXIMITY OF FUEL TO THE COMMUNITY

Home and Critical Infrastructure Ignition Zones

Multiple studies have shown that the principal factors regarding home and structure loss to wildfire are the structure's characteristics and immediate surroundings. The area that determines the ignition potential of a structure to wildfire is referred to as (for residences) the Home Ignition Zone (HIZ) or (for critical infrastructure) the Critical Infrastructure Ignition Zone (CIIZ).[62,63] Both the HIZ and CIIZ include the structure itself and three concentric, progressively wider Priority Zones out to 30 m from the structure (Figure 15 below). More details on priority zones can be found in the FireSmart Manual.[64]

[62] Reinhardt, E., R. Keane, D. Calkin, J. Cohen. 2008. Objectives and considerations for wildland fuel treatment in forested ecosystems of the interior western United States. Forest Ecology and Management 256:1997 - 2006.
[63] Cohen, J. Preventing Disaster Home Ignitability in the Wildland-urban Interface. Journal of Forestry. p 15 - 21.
[64] https://firesmartcanada.ca/ and https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/firesmart

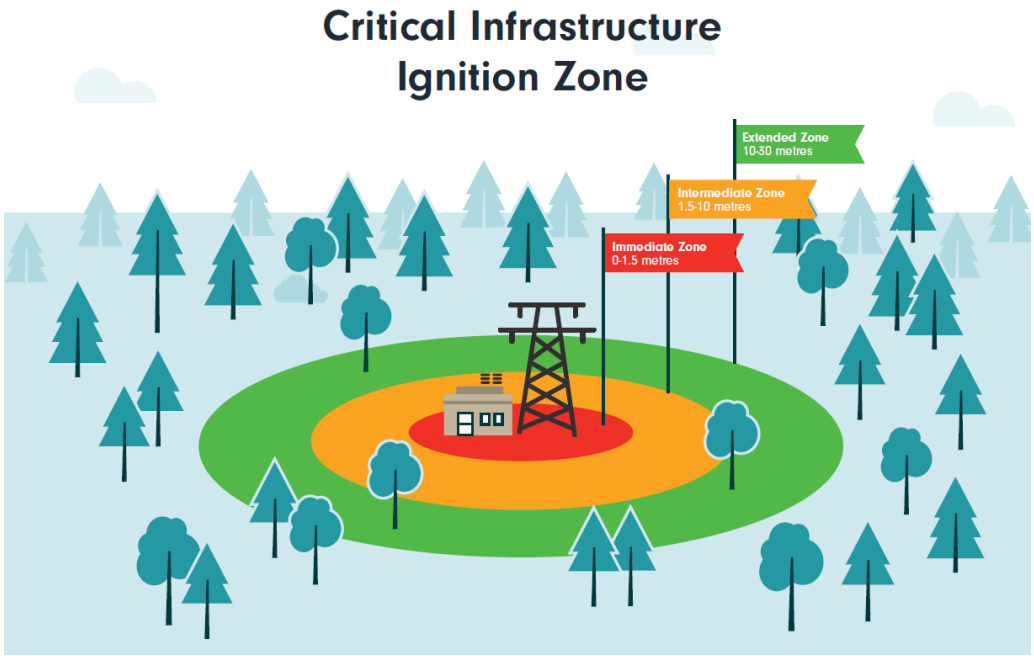


Figure 15: FireSmart Home and Critical Infrastructure Ignition Zone (HIZ, CIIZ)

It has been found that during extreme wildfire events, most home destruction has been a result of low-intensity surface fire flame exposures, usually ignited by embers (firebrands). Firebrands can be transported long distances ahead of the wildfire, across fire guards and fuel breaks, and accumulate within the HIZ/CIIZ in densities that can exceed 600 embers per square meter. Combustible materials found within the HIZ/CIIZ combine to provide fire pathways allowing spot surface fires ignited by embers to spread and carry flames or smoldering fire into contact with structures.

6.3 APPENDIX C: WILDFIRE RISK ASSESSMENT – WORKSHEETS AND PHOTOS

Provided separately as PDF package.

6.4 APPENDIX D: MAPS

Provided separately as PDF package.