DEVELOPING KEY MANAGEMENT QUESTIONS TO EXPLORE IN K2 - Comparison of ecological sensitivity / management sensitivity and recommended management actions for the Kamloops TSA (from KFFS1, May 2009).

ECO GROUP	BEC sub-zones	% of THLB	SENSITIVITIES				RECOMMENDED MANAGEMENT ACTIONS
			Eco-logical	Summarized Rationale for Eco Sensitivity	MGMT	Summarized Rationale for Mgmt Sensitivity	
Dry Subzones with Pli **Group A**	MSxk, IDFdk, (SBPS)	28	**HIGH**	• Too hot and dry after 2050 for lodgepole pine. • young lodgepole (37% of THLB) will be highly stressed past 2050. • Increased fire risk with hotter / drier conditions and extensive lodgepole pine mortality.	**MOD-HIGH**	LOSS OF PINE POST 2050 CREATES: • High impacts on productivity and growing stock for timber. • High impacts on biodiversity and a range of habitats due to loss of overstory structure. THE HOTTER DRIER CLIMATE CREATES: • Significant issues for water supply, interface fires, and First Nations culturally important plants because of expected. • Extensive fish mortality.	**START NOW :** • Increase proportion of ponderosa pine and Doug-fir (Larch?) on suitable sites – by Planting new cutblocks, or cuti\ting out holes and plant existing lodgepole plantations. • Consider Ponderosa as a primary species on some sites. • Identify opportunties for cluster planting and lower densities based on a changing climate. • Strategically plan reserves, partial-cutting and retention to improve structure for biodiversity. • Maintain any broadleafs for as long as possible in stands and the landscape. • Fuel reduction in high risk stands in the urban interface. **CLOSE TO 2050:** • Target mid-age lodgepole pine stands for early harvest for biofuels or other small-size products.
Dry with Douglas-fir & Ponderosa Pine **Group B**	IDFxh, PPxh	10	**HIGH**	• Continuing mortality in Doug-fir will thin out and open up stands even more. • Increased grassland patches. • Increased fire risk.	**HIGH**	MORTALITY IN Doug-fir STANDS FROM CLIMATE, INSECTS AND FIRE CREATES: • High impacts on THLB, productivity and growing stock for timber. • High impacts on biodiversity and a range of habitats. • Significant issues for visual quality THE HOTTER/DRIER CLIMATE ALSO CREATES: • High impacts for water supply, interface fires, and First Nations culturally important plants. • Extensive fish mortality.	**START NOW:** • Risk rank stands for fire and health risks. • Fuel reduction in high risk stands in the urban interface. • Clarify areas most likely to become open grasslands over the next rotation – design a management regime. • Promote ponderosa pine management throughout the area as a major species mixed with Doug-fir. • Modify stocking to allow more clustering and lower densities. • Maintain broadleafs for as long as possible in stands and the landscape. • Strategically plan reserves, partial-cutting and retention to improve structure for biodiversity.

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Interior Cedar-Hemlock Transition to Dry Douglas-fir **Group C**	ICHmw, ICHdw, IDFmw, (ICHmk)	26	**MOD-HIGH**	• Doug-fir drops out of mixedwoods due to drought / root disease / D-fir beetle combo. • Lose considerable redcedar, spruce, and birch past 2050 • Increased fire risk.	**MOD-HIGH**	LOSS OF DOUG-FIR IN MIXEDWOODS CREATES: • High impacts on productivity and growing stock for timber as many more stands become uneconomic for harvesting. • Significant issues on biodiversity and a range of habitats and fish. • Significant issues for visual quality THE HOTTER/DRIER CLIMATE ALSO CREATES: • Significant issues for water supply, and interface fires. • Extensive fish mortality.	**START NOW:** • Target vulnerable stands for harvesting – mixedwoods with increasing Doug-fir mortality. • Remove stumps where possible. • Diversify species planted with less lodgepole and more Doug-fir, ponderosa pine, larch (possibly white pine). • Design a reserve and retention strategy to ensure sufficient structure for biodiversity in disturbed areas. • Monitor plantations beyond free-growing • Design strategic targets for broadleafs at the stand and landscape level. **BEYOND 2050** • Target suitable 40+ lodgepole pine stands for fertilization to ensure economic harvest before extensive mortality.
Dry- Moist Plateau/ High Elevation **Group D**	MSdm, SBSmm, ESSFdc, (ESSFxc)	15	**MOD**	• Increased growth in most species (except subalpine fir) up to 2050. • Beyond 2050 – subalpine fir has extensive mortality, lodgepole is at high risk, and spruce is questionable on some sites lower down. May see a few large fires.	**MOD**	MORTALITY PAST 2050 FROM CLIMATE AND POSSIBLY FIRES CREATES: • Moderate impact on growing stock for timber. • Significant issues for some habitats. THE HOTTER/DRIER CLIMATE ALSO CREATES: • Moderate impacts for water supply, fish, and First Nations culturally important plants.	**START NOW:** • Focus harvesting on Subalpine Fir (1) and Spruce (2) dominated stands, avoiding Doug-fir dominated stands. • When planting, mix in more Doug-fir in the short term. • Design a comprehensive plan for reserves and retention to maintain sufficient mature, old, and broadleaf stands and structure over time. • Favour Doug-fir and headwater streams for retention patches. • Monitor mortality beyond free-growing. **OVER THE LONG TERM:** • Diversify planting by mixing in larch, white pine, and pondersosa pine. • Near 2050, target suitable 40+ lodgepole pine stands for fertilization to ensure economic harvest before extensive mortality.
Cool/Cold	ESSFw			• Increased mortality in		MORTALITY IN OLD GROWTH	**START NOW:**

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& Wet **Group E**	c, ICHwk, (ICHvk)	21	**LOW**	old growth. • Increased growth in young stands. • Weevil increasing problem for young spruce.	**LOW-MOD**	CREATES: • Minor timber supply concerns long term – may be some short term benefits. • Minor concerns for habitat - except for Caribou where there are many outstanding questions, especially around the quality and duration of the snowpack. • Signficant issues possible for water quality due to increased and prolonged peak flows. • Possible infrastructure conserns due to increased flows (bridges) and landslides.	• Monitor mature and old stands and risk rank for potential insect disturbances (bark beetles, looper, weevil) • Use the monitoring above to guide harvest priorities. Strategically plan to maintain caribou habitats. • Explore the impact of climate change on the life and integrity of snowpacks in caribou winter ranges. • Promote species diversity in current plantations in the ICHwk – consider mixing Doug-fir, redcedar, spruce, white pine, possibly lodgepole pine. • Explore ideas to reduce snow damage on trees in plantations. **OVER THE LONG TERM:** • Explore greater use of redcedar (possibly Doug-fir) in lower reaches of ESSF. • Explore impacts of climate change on hydrological features (including peak flows) and impacts on infrastructure.