



HIGHLANDS

Community Wildfire Protection Plan (CWPP)

Presentation to Council

March 1st 2010

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Emergency Coordinator



CWPP Overview

- Conducted by B.A. Blackwell and Assoc.
- Funded by \$15,000 grant from UBCM
- CWPP to be used as a guide to the Wildfire Protection Planning Process
- Three phases to project:
 1. Assess fire risk to spatially quantify the probability and consequence of wildfire
 2. Identify hazardous fuel types
 3. Outline measures to mitigate identified risk

Study Area

DOH 3,745 ha in size with 39% of area covered by parks

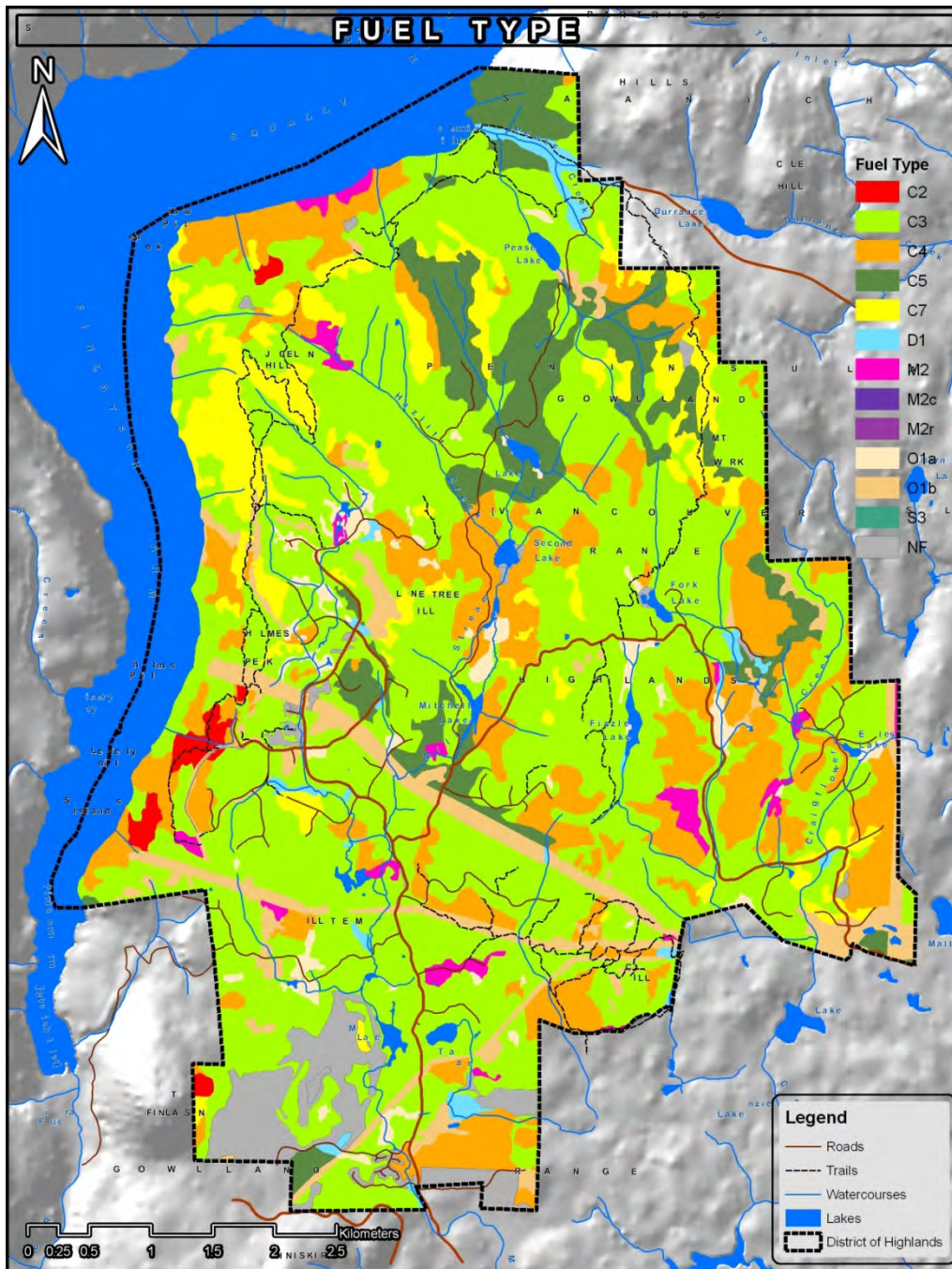
2 km buffer (red line on map) applied to DOH for a total study area of 7,656 ha





Fire Behaviour

- Affected by three aspects of the environment:
 - Fuels
 - Weather
 - Topography



FUELS

Most common fuel type "C3" (light green) covers 38% of study area

"C5" (dark green) 2nd most common at 10% of area

The other seven fuel types are 6% or less for area coverage

C3 Fuel Type

Area of Fuel Type (ha)	2931
Structure Classification	Late pole sapling to late young forest
Dominant Tree Species	<i>Pseudotsuga menziesii</i> (Douglas-fir), <i>Thuja plicata</i> (western redcedar), <i>Arbutus menziesii</i> (Arbutus)
Tree Species Type	> 80% Coniferous
Understory Vegetation	Low (< 50% cover)
Age	40 – 80 yrs
Height	20 – 35 m
Stand Density	700 – 1,200 stems/ha
Crown Closure	40 – 100 %
Height to Live Crown	Average 8 m
Surface Fuel Loading	< 5 kg/m ²
Burn Difficulty	Moderate; however, if fire is wind driven then there is a high potential for extreme fire behaviour and active crown fire.



C5 Fuel Type

Area of Fuel Type (ha)	798
Structure Classification	Mature and old forest
Dominant Tree Species	<i>Pseudotsuga menziesii</i> (Douglas-fir), <i>Thuja plicata</i> (western redcedar), <i>Abies grandis</i> (grand fir), <i>Arbutus menziesii</i> (Arbutus)
Tree Species Type	> 80% Coniferous
Understory Vegetation	Moderate (> 40% cover)
Average Age	> 80 yrs
Average Height	30 – 40 m
Stand Density	700 – 900 stems/ha
Crown Closure	40 – 100 %
Height to Live Crown	Average 18 m
Surface Fuel Loading	< 5 kg/m ²
Burn Difficulty	Low; however, if fire is wind driven then there is a moderate potential for active crown fire.



Weather

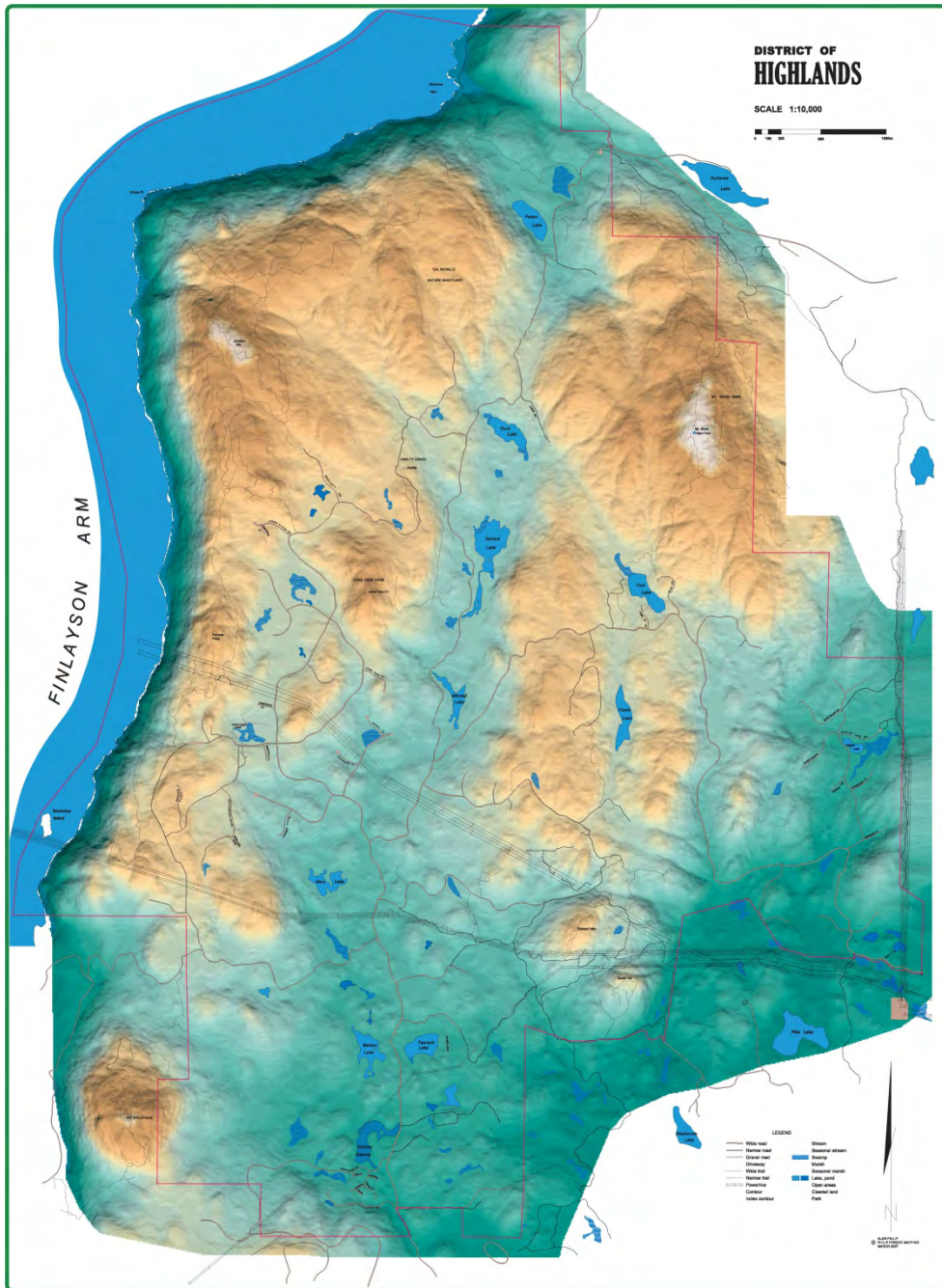
Fire Danger Class Rating based on:

Weather – rainfall, relative humidity, wind speed, temperature
&

Moisture content of fine fuels (litter), shallow and deep
organic layers (duff)

Five Classes: 1 - Very Low
2 - Low
3 - Moderate
4 - High
5 – Extreme

Historically, the most extreme fire weather occurs during late July to the third week in August (Danger Class 4 and 5 days).

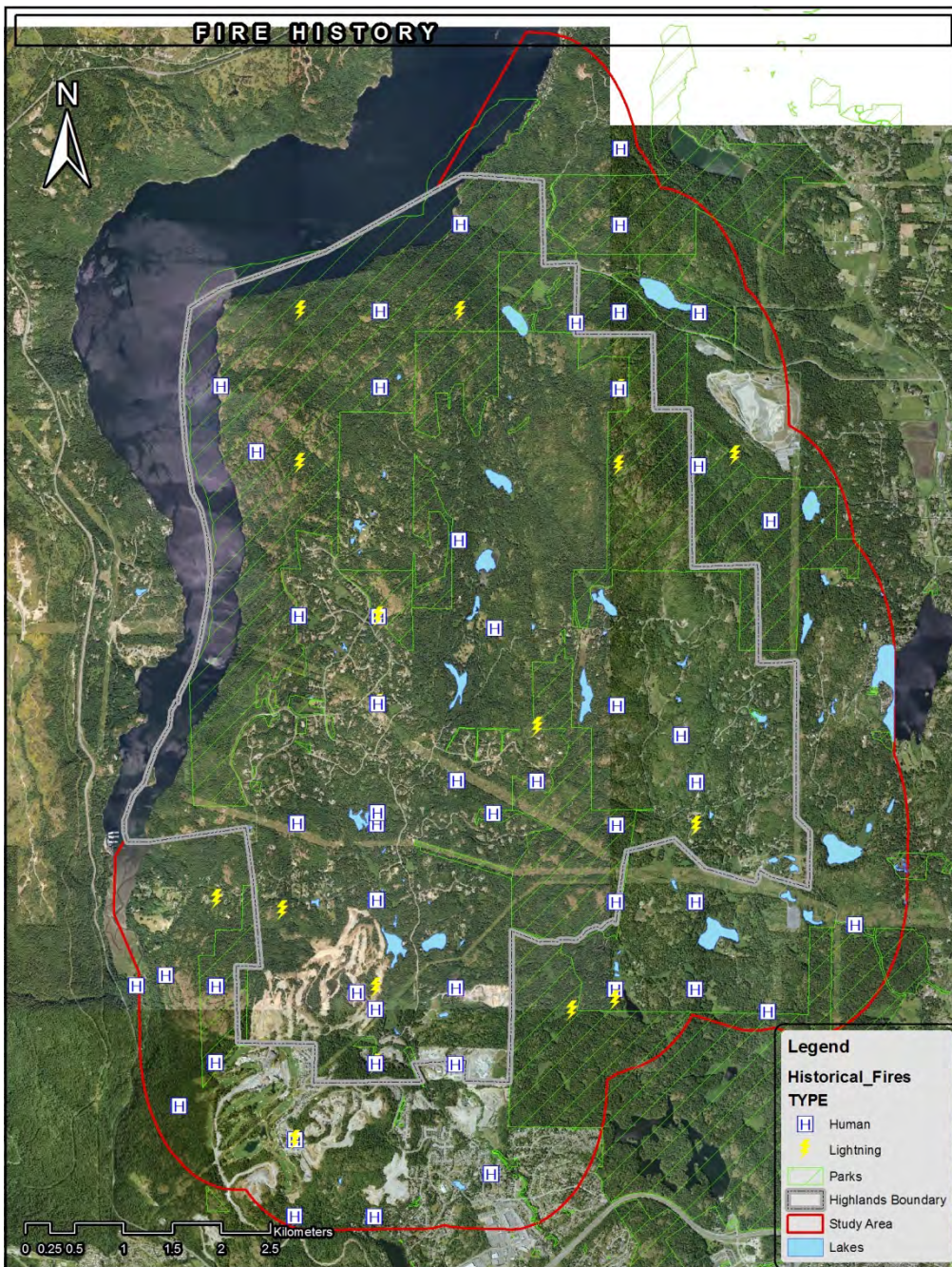


Topography

Gowlland Range rises to 434 m (1400 ft) above Finlayson Arm

Mount Work in the east has a summit of 449 m (1500 ft)

Central corridor is 160- 180 m (525-590 ft) above sea level



FIRE HISTORY

(1950-2008)

211 fires in total:

- 194 (92%) human caused
- 17 (8%) lightning caused

Avg. no. of fires/yr
dropping each decade:

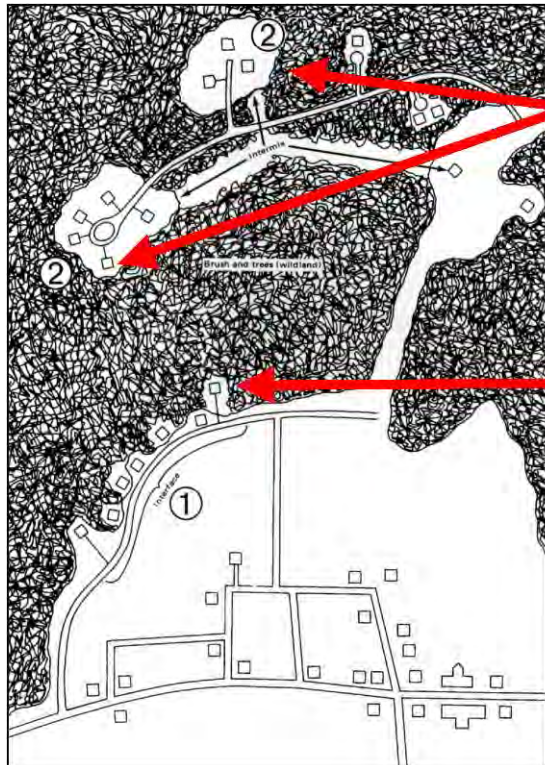
- 1950-59 = 5 fires
- 2000-08 = .3 fire

Top Six human causes:

- Smoker (60)
- Misc (40) – power lines, undet.
- Juv. fire setter (33)
- Outside burning (22)
- Campfire (17)
- Arson (16)

Wildland Urban Interface

“where the forest meets the community”



Intermix

Smaller, more isolated homes or clusters of homes within the forest

Interface

Larger, completely urban areas bordered by forest

Fire can move from the forest into the community or from the community into the forest

Wildfire Spread to the Community

How are Buildings Ignited by Wildfire?

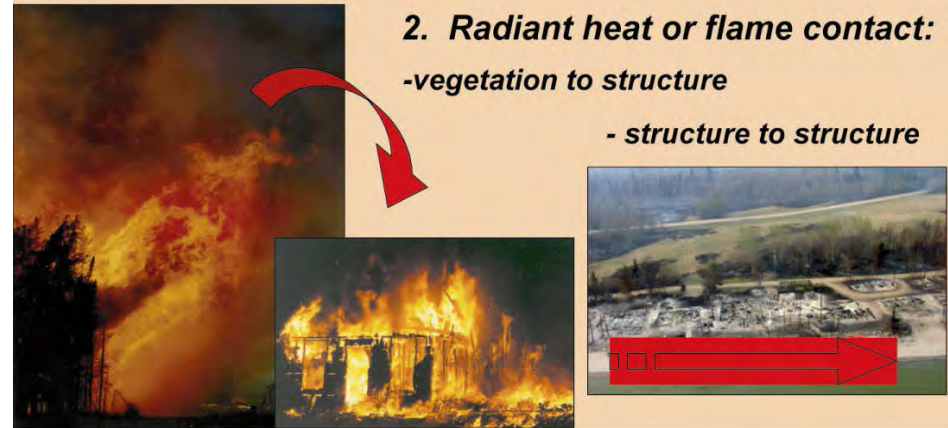
1. Firebrand caused ignitions:



Burning embers carried aloft by wind or convection and alight on roofing, siding and decks.

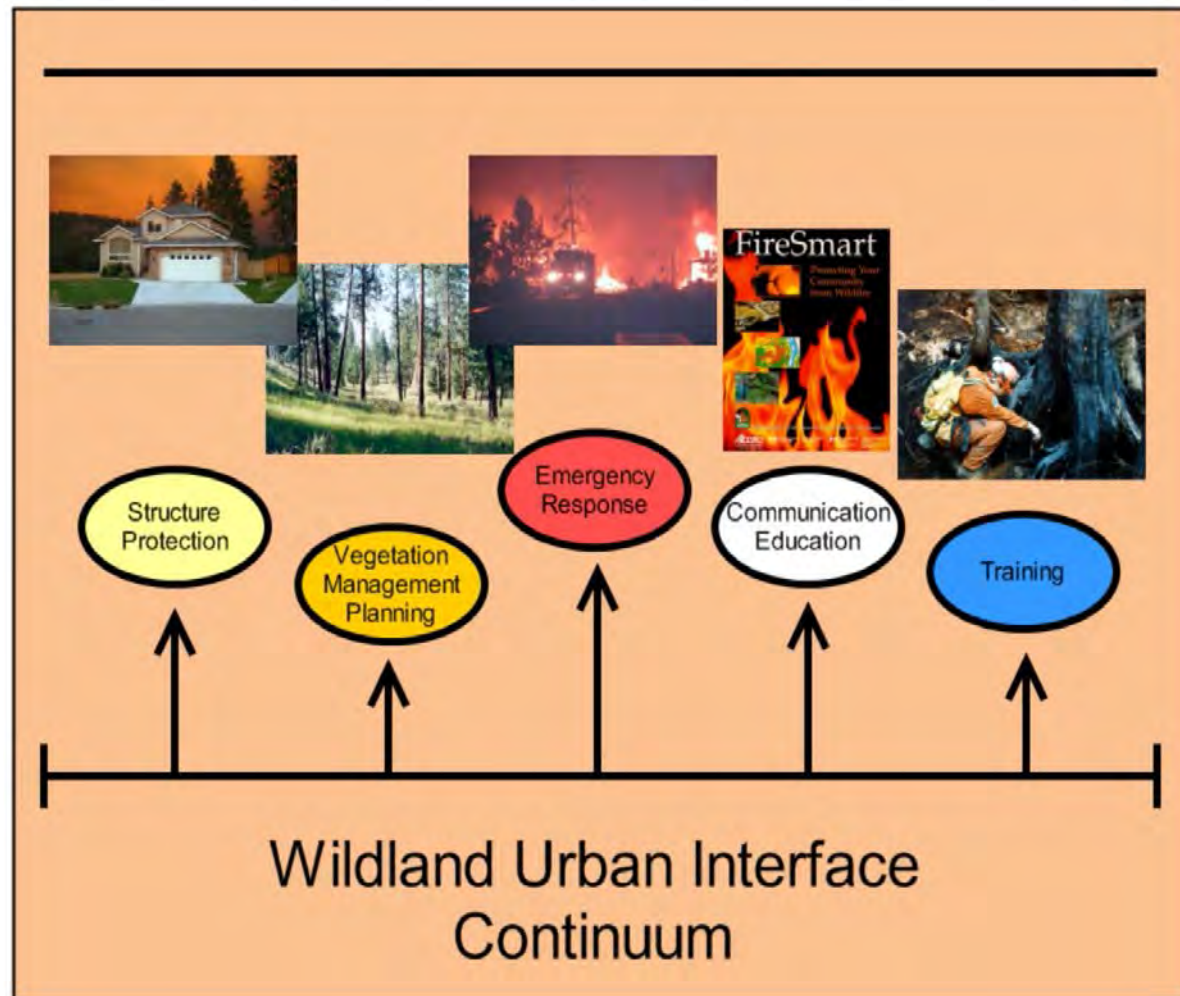
How are Buildings Ignited by Wildfire?

2. Radiant heat or flame contact: -vegetation to structure - structure to structure



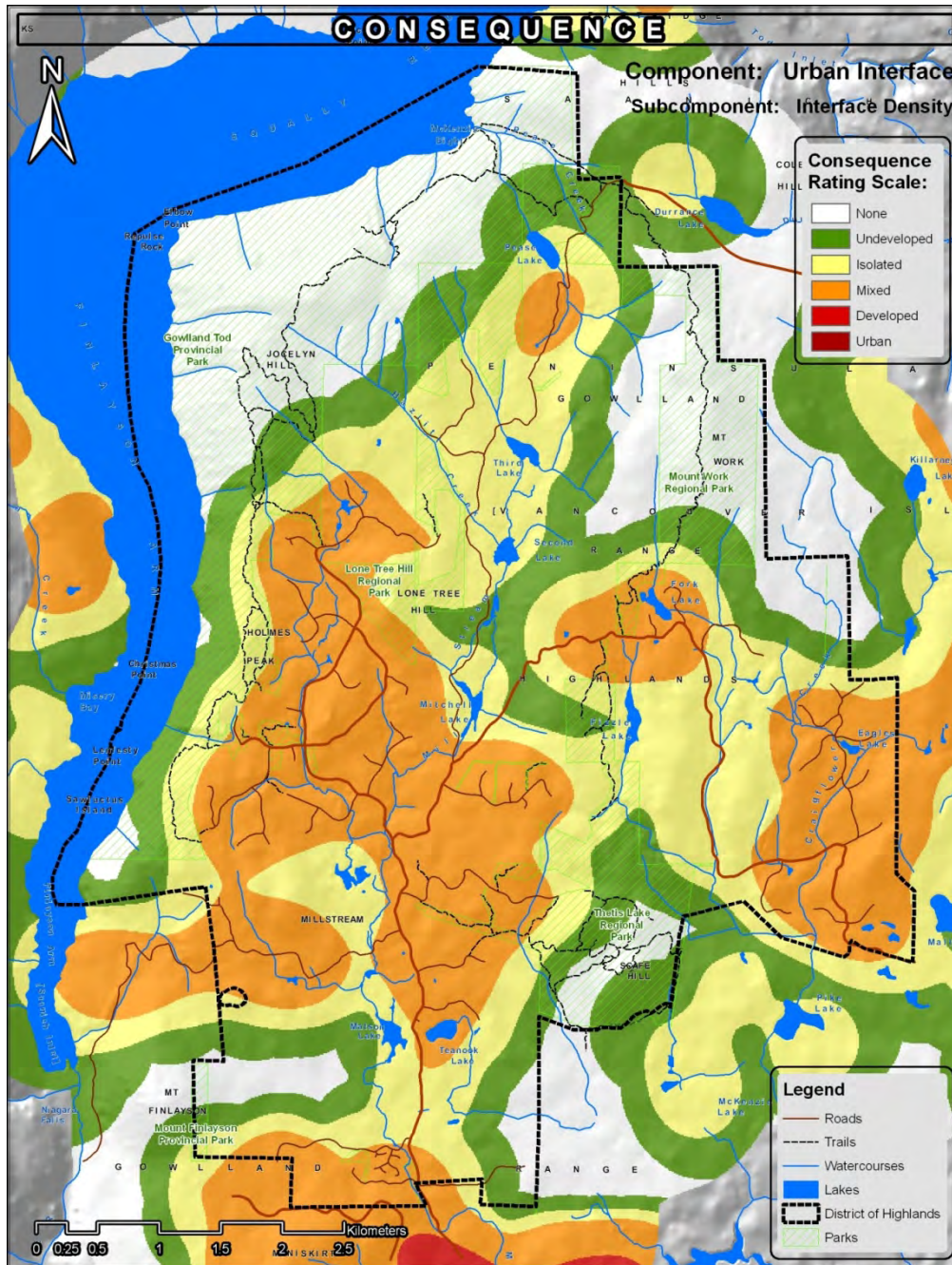
Direct flame contact or radiant heating at the edge of an advancing fire front.

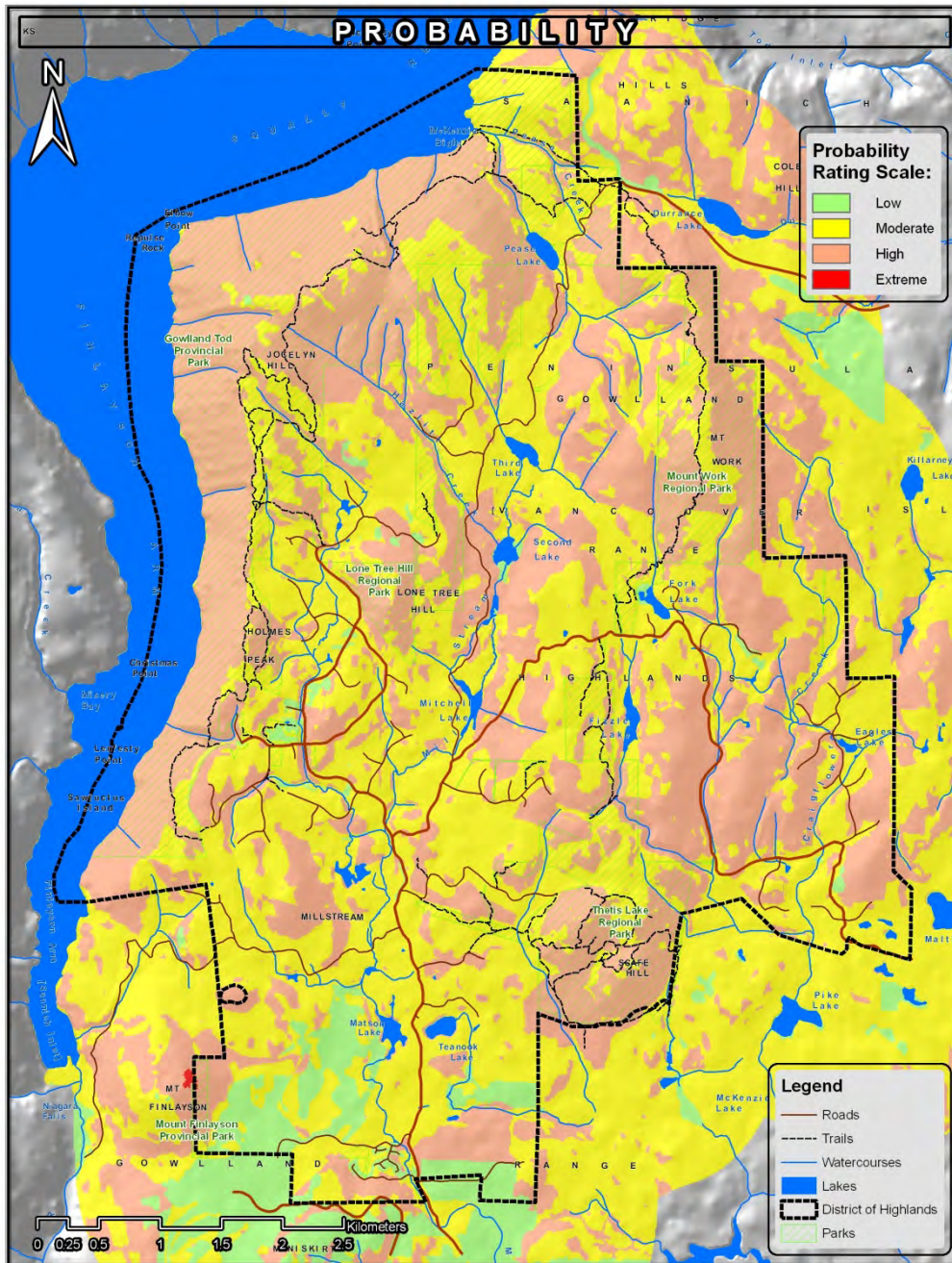
Management Responses to Wildfire Risk Profiles



Consequence

(Values at Risk)

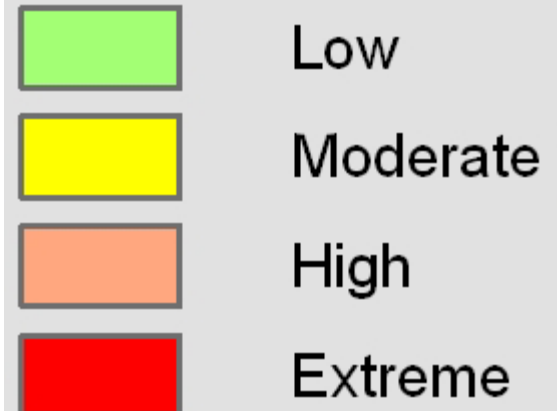




Probability

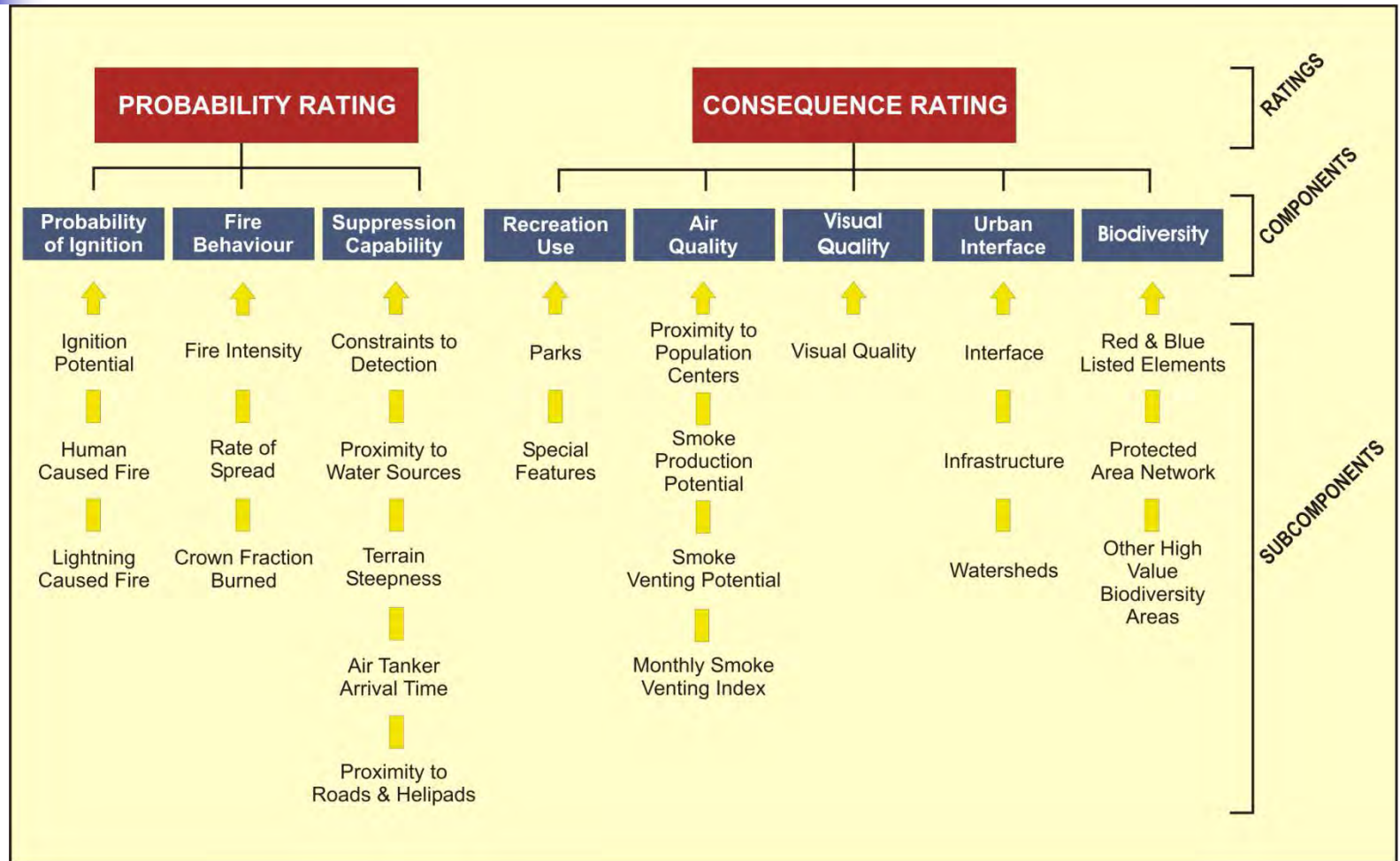
- Probability of ignition
- Fire Behaviour
- Suppression Capability

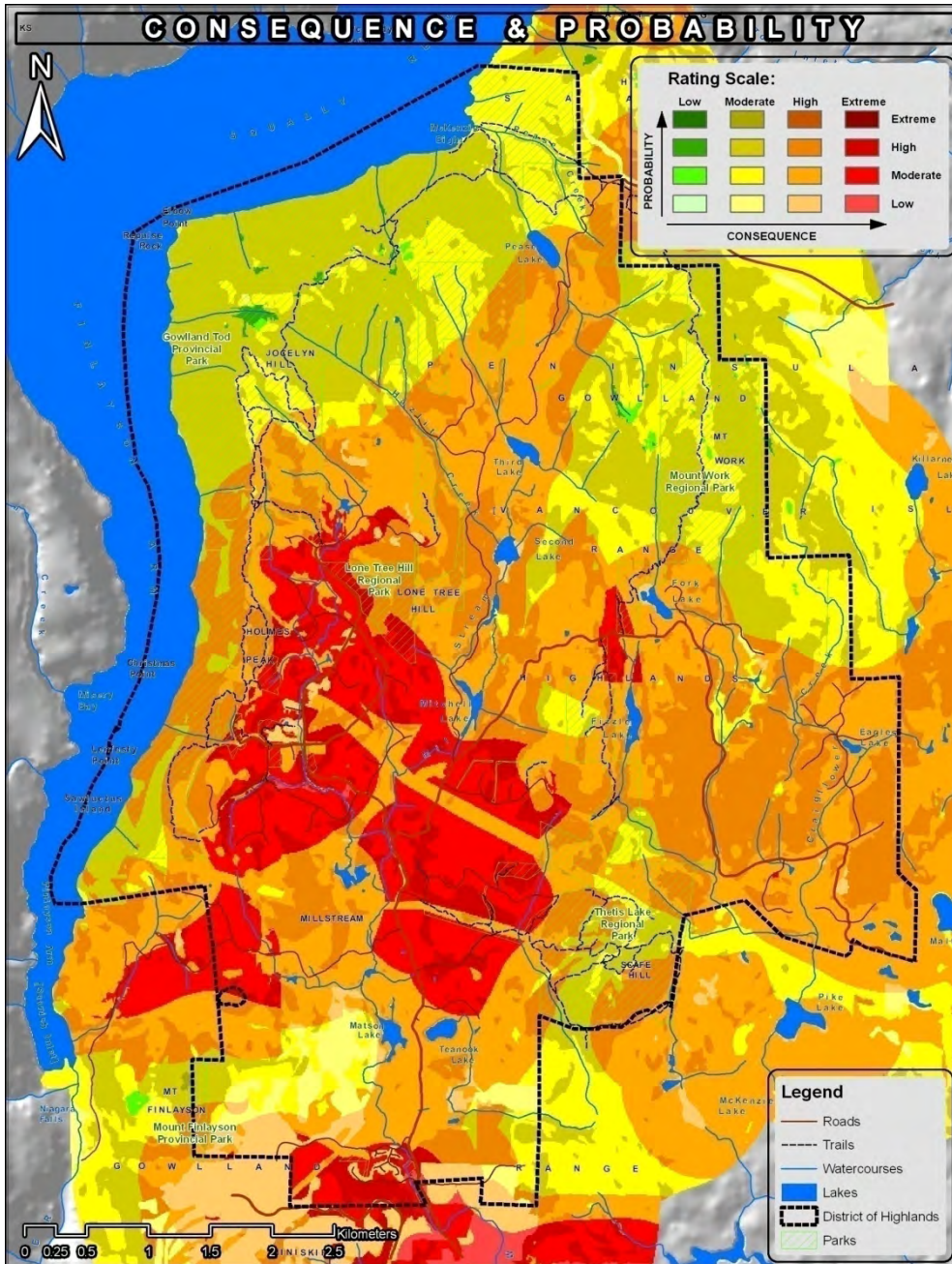
Probability Rating Scale:



Community Risk Profile

(an output of the Wildfire Risk Management System)



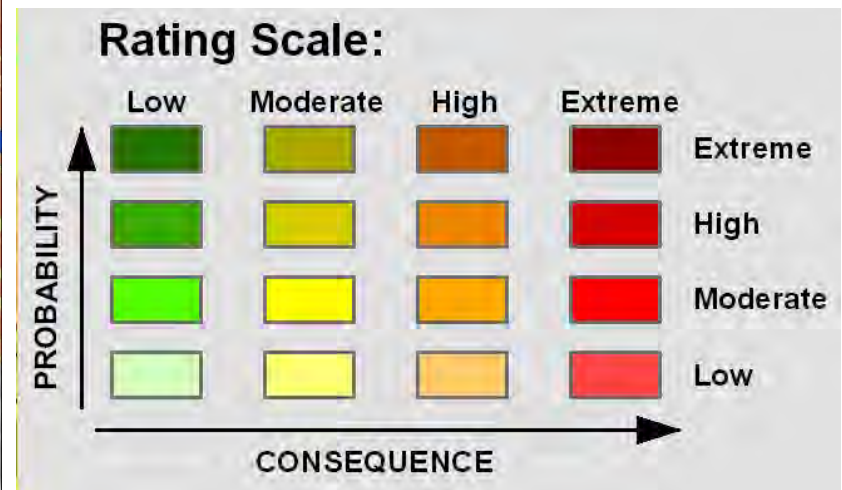


Consequence & Probability

(Community Risk Profile)

The Highlands has a moderate to high probability of fire with moderate to high consequences.


Areas of highest value have a higher density of homes and thus a greater amount of wildland urban interface.





Community Wildfire Protection Planning Process

Fire Behaviour



Action Plan



Communication and Education

- Continue mailouts to deliver Fire Smart materials
- Develop a community education plan in next two years
- Develop a show home and landscaping to demonstrate Fire Smart principles
- Improve Fire Danger and Evacuation signage in the next two years

Structure Protection

- Conduct a Fire Smart hazard assessment of the entire community
- Investigate policy tools for reduction of wildfire risks (bylaws for building materials, vegetation setbacks, Wildfire Development Permit Areas – fire retardant roofing materials.)

Action Plan

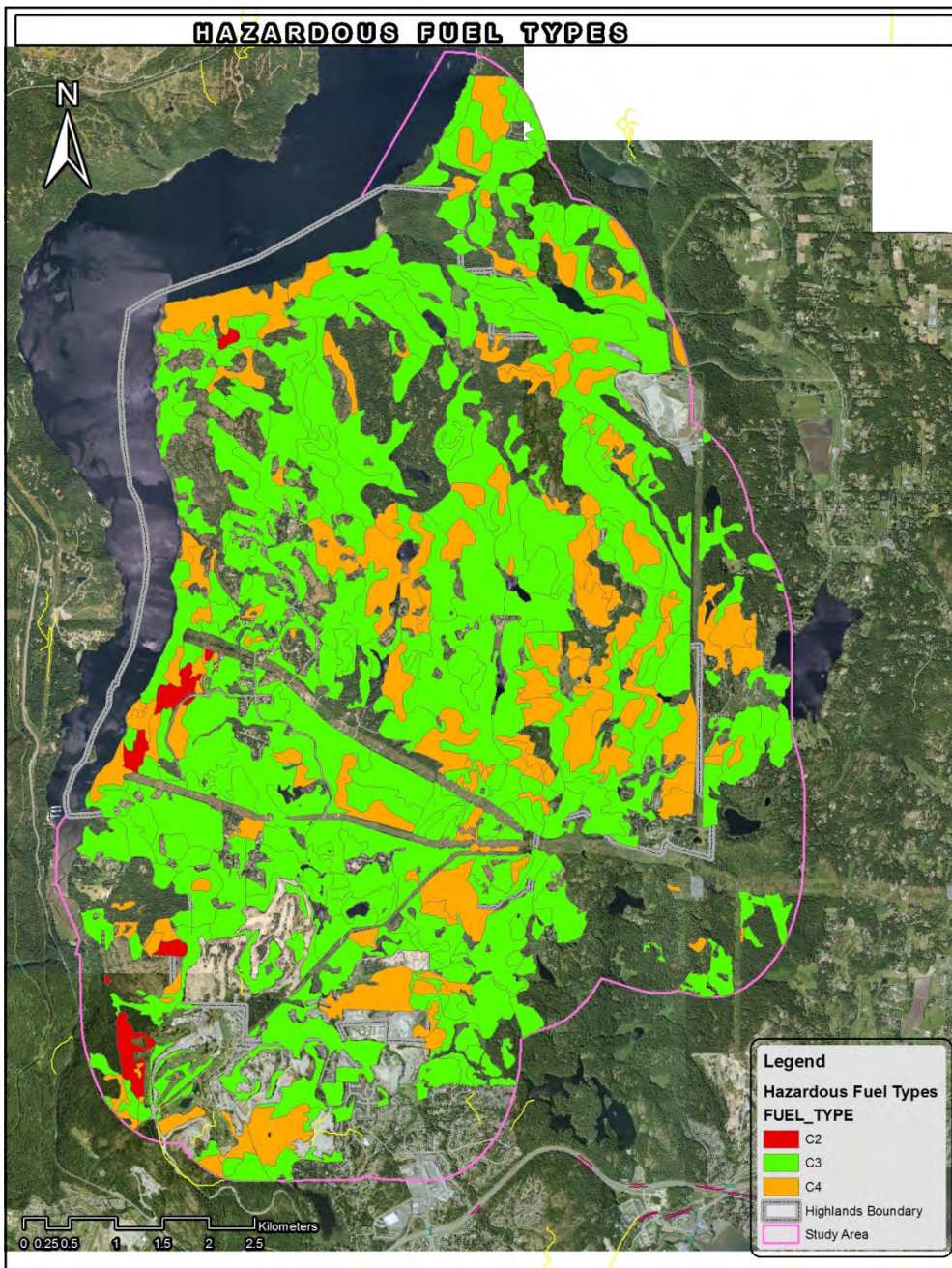


Emergency Response

- New subdivisions should be developed with multiple access routes for evacuation and emergency vehicle access
- Improve access to areas of the community that have inadequately developed access for evacuation and fire control (e.g. connecting roads)

Training /Equipment

- Review mutual aid agreements with adjoining fire departments
- Review current inventory of portable pumps, hose, tools and firefighter personal protection gear to ensure they are adequate and compatible the BCFS equipment



Hazardous Fuel Types

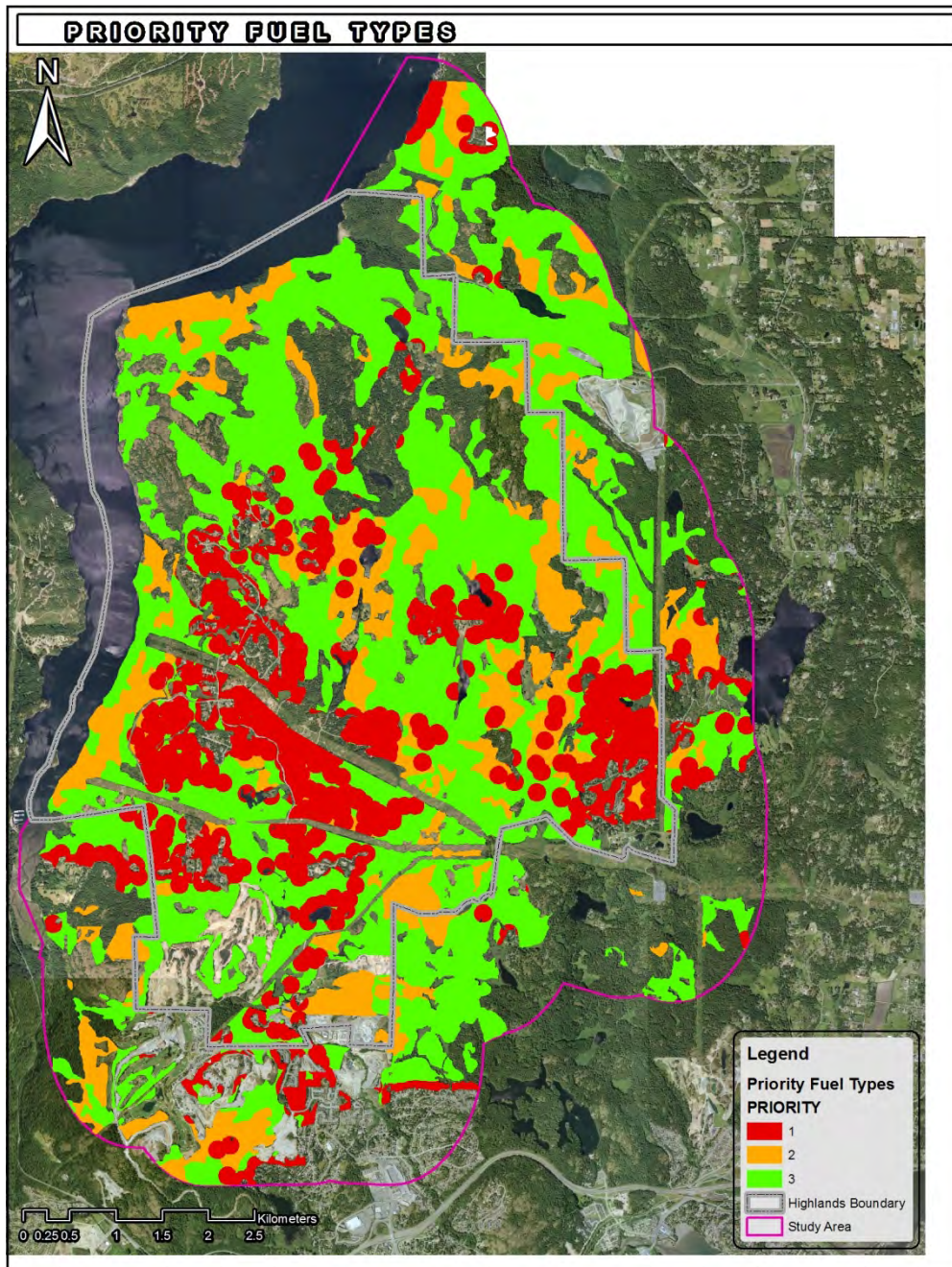
C2, C3, C4 have high potential for extreme fire behaviour and active crown fire especially if wind driven

Legend

Hazardous Fuel Types

FUEL_TYPE

- C2 (Red)
- C3 (Green)
- C4 (Orange)
- Highlands Boundary (Dashed line)
- Study Area (Pink outline)



Priority Fuel Types

Priority 1 – C2, C3, C4 within 100 m of structures

Priority 2 – C2 & C4 >100 m

Priority 3 – C3 >100 m

Legend

Priority Fuel Types

PRIORITY

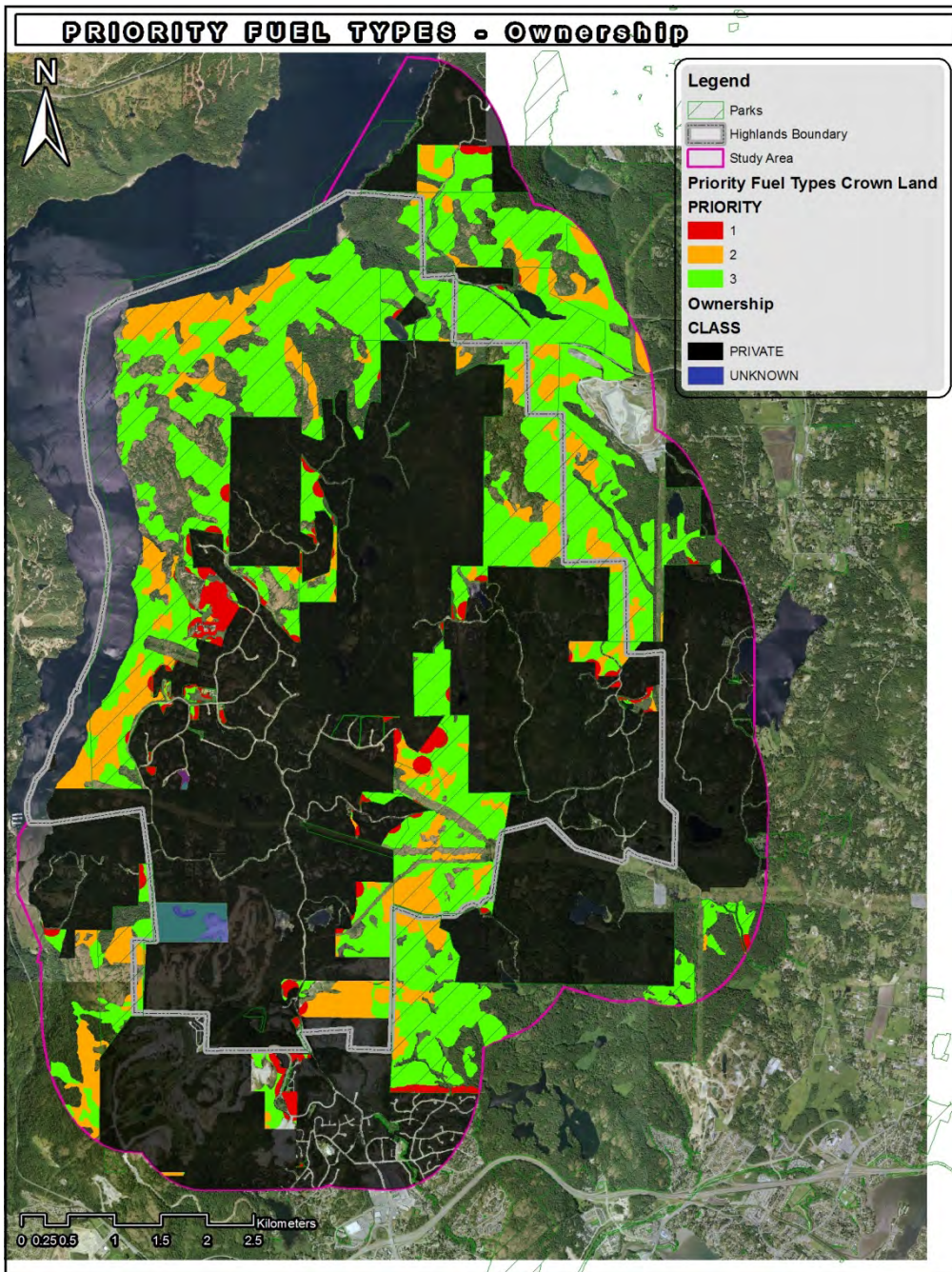
1

2

3

Highlands Boundary

Study Area



Priority Fuel Types & Ownership

56% of land privately owned; the rest Provincial, Regional or District Park





Action Plan

Vegetation (Fuel) Management

- Majority of Hazardous fuels on private property – keep emphasizing Fire Smart principles to homeowners
- District should investigate fuel management programs with BC and CRD Parks in those areas of mutual concern (UBCM have funding programs)
- Work with BCTC to ensure transmission line infrastructure can be maintained and managed during a wildfire. Also, develop a right-of-way vegetation management plan in consultation with the community.

QUESTIONS?