

Technical Memorandum

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Via Email:	Joe Mitchell <jmitchell@summerland.ca>
To:	Joe Mitchell, Director of Works and Infrastructure, Deputy CAO
From:	Brittany Linnett, P.Eng., Senior Geotechnical Engineer
cc:	Bobby Williamson, Manager of Development Service
Date:	August 17, 2026
Re:	Preliminary Slope Hazard Assessment, Cartwright, Rev 1 Summerland, BC
Project No.	TBD

Introduction

Brittany Linnett, P.Eng. of Terrane Geoscience Inc (Terrane) was contacted by Bobby Williamson of the District of Summerland (DoS), on August 16, 2026 regarding slope hazard assessments for areas of Summerland impacted by the Bald Range Fire. From information discussed in a meeting on August 16, 2026 there are multiple areas of Summerland where the Bald Range Fire burnt slopes uphill of homes, potentially causing dangerous conditions. A consulting rate sheet was requested and provided by Terrane on August 16, 2026. Due to the urgency of the situation Brittany Linnett, P.Eng, began initial hazard assessments of impacted areas on the same day.

The Bald Range Fire started on August 7, 2026 and at the time of this memo had burned 21,256 Hectares including portions of the Hunters Hill, Cartwright, Garnet Valley, Deer Ridge, and outlying areas of the DoS. This memorandum focuses on the Cartwright neighbourhood and the immediate surroundings, which is located on the west side of downtown Summerland (See Figure 1).

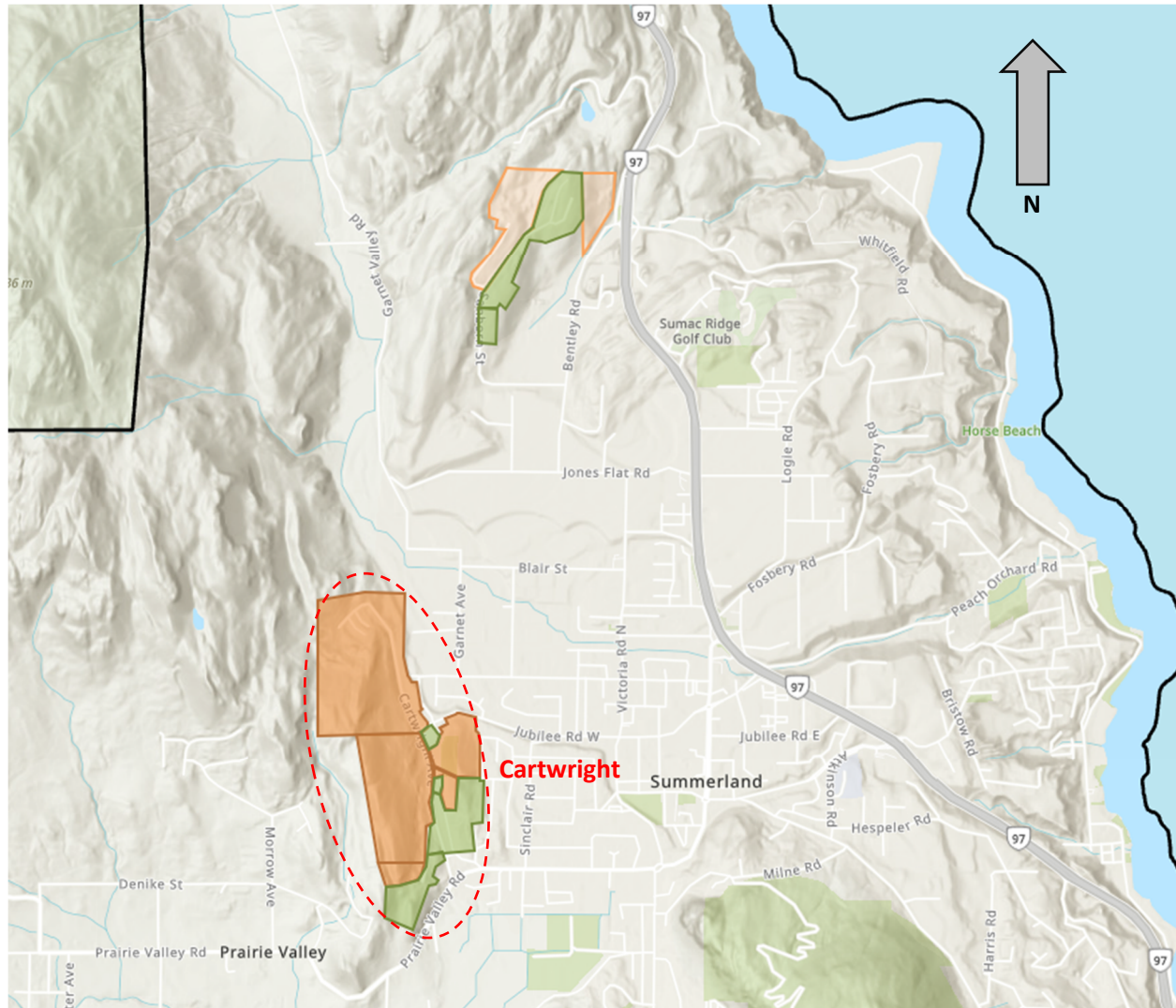


Figure 1 - Site Location (from DoS Spatial Viewer)

Scope of Work

The following scope of work was discussed on August 16, 2026:

- Site Visit - A senior geotechnical engineer site visit to observe the slope conditions, burn impacted areas, and slopes around potentially impacted homes.
- Initial *Re-entry Criteria* memorandum - Observations from the site visit summarized and hazard criteria applied as needed to the impacted areas for potential evacuations or other measures, as well as potential long-term recommendations.

Site Visit Observations

Brittany Linnett, P.Eng. completed a site reconnaissance of the Cartwright neighbourhood on August 16, 2026.

The following observations were noted (Note – Photos are included in Appendix A attached):

- The majority of the undeveloped area west of Carwright was impacted by the fire, and the burn appeared to be of varying intensity (Photos 1-4).
- In the area upslope of Carwright Ave and Herron Road fire intensity appeared to be higher, with many burned roots, little to no surviving vegetation, and multiple smoldering roots and voids (Photos 3-4).
- The area above the northern portion of Carwright Ave had multiple pre-existing eroded runoff channels above and below the traversed trail (Photo 5).
- The area above Herron Rd and the strata properties at the north end of Cartwright Ave has a large runoff gully. This area has historically had significant water during periods of high groundwater, excessive rainfall, and snowmelt (Photo 6).
- The area above (west) and south of the southernmost properties on Taylor Place was unburnt (Photo 7)
- A portion of Cartwright Mountain, east of the main interface burn area, was also significantly impacted (Photo 8) A large, irrigated, property at 12600 Blagborne Ave was not significantly impacted.
- Properties on the west side of Durick Ave, a portion of Jubilee Rd W, Borton Cres, and the east side of Cartwright Ave are potentially impacted by the burned areas on Cartwright Mountain (See Figure 3) (Photos 9).

Recommendations

In the meeting with DoS, rainfall triggers for post wildfire debris flows and slope instability were discussed. Generally, post wildfire slopes are vulnerable to debris flows and/or landslide hazards during high intensity and/or prolonged rainfall events.

Statlu Environmental Consulting developed rainfall trigger guidelines which are detailed in the report “*Wet Weather Shutdown Criteria*” for the MFLNRORD Southern Engineering Group, dated April 29, 2021. For the purposes of the initial hazard assessment these criteria developed for the southern interior of British Columbia are considered to be applicable.

Table 1 details rainfall intensity and total shutdown criteria for different zones. In the case of wildfire experienced within the last 3 years the “Identified Unstable Conditions” triggers are recommended.

Table 1 - Proposed Shutdown Criteria (from Stalu, 2021)

Zone	Zone (annual precipitation)	Time Period			
		One hour	12 hour	24 hour	48 hour
1	Very wet (1,500 mm to 3,000 mm)	N/A	28 mm	35 mm	60 mm
2	Wet (1,100 mm to 1,500 mm)	N/A	25 mm	30 mm	50 mm
3	Average (600 mm to 1,100 mm)	10 mm	22 mm	25 mm	40 mm
4	Dry (100 mm to 600 mm)	8 mm	18 mm	20 mm	30 mm
5	Identified Unstable Conditions	6 mm	10 mm	15 mm	20 mm

For the purposes of the initial assessment and re-entry criteria development it is Terrane's recommendation that homes immediately downhill of fire impacted slopes, or downslope of fire impacted drainages, are evacuated if the Zone 5 precipitation criteria are met (Table 1). Impacted properties in the Cartwright neighbourhood are shown in Figures 2, 3, and 4, below. Red areas have a higher risk of long term impacts due to slope height and or/grade, runoff channels, or known historic drainages.

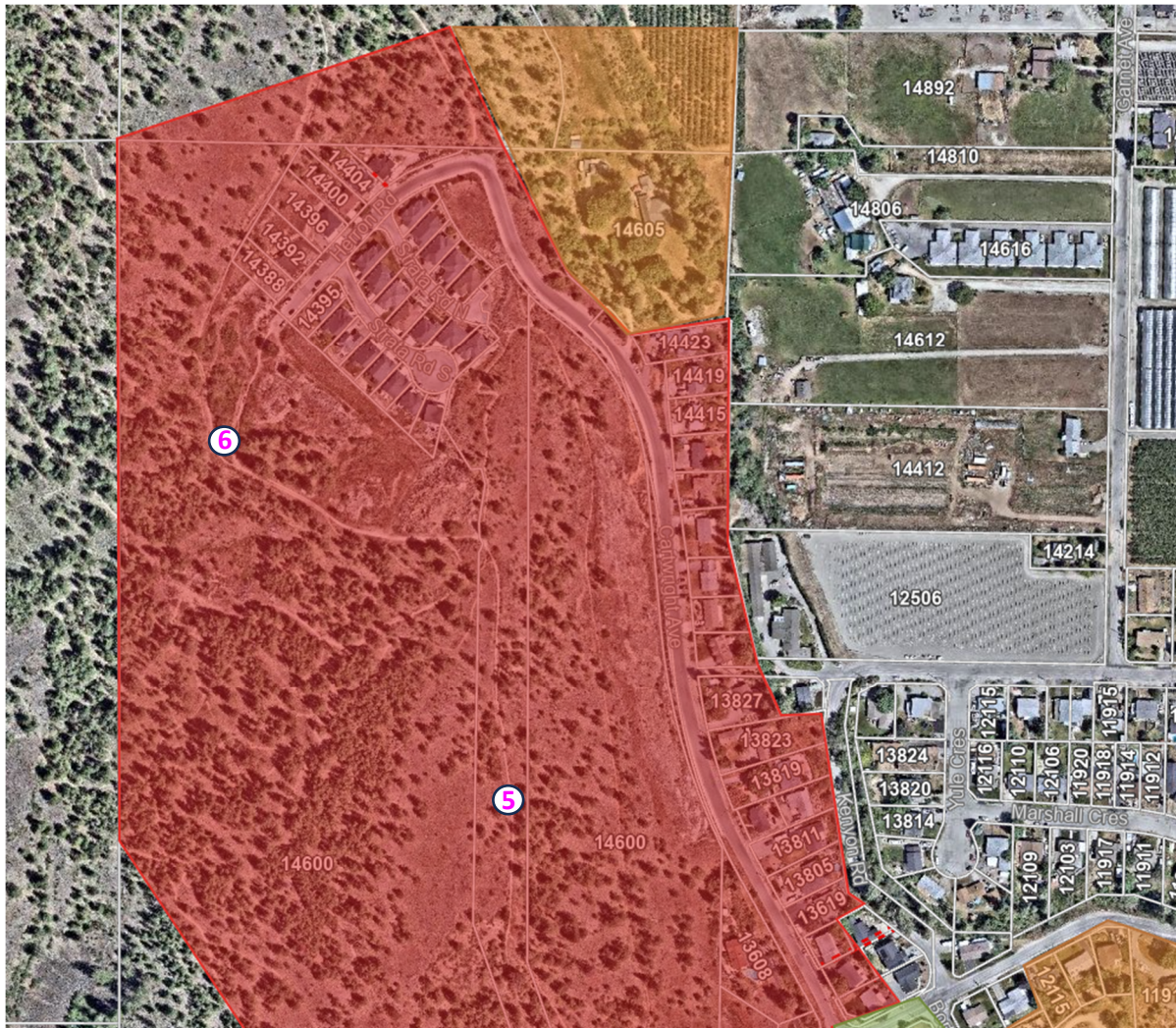


Figure 2 – Cartwright Properties Potentially Impacted by Post-Wildfire Slope Hazards (Red and Orange). Properties not considered at increased risk from slope hazards (Green). Approximate Photo locations in pink. Imagery from DoS Spatial Viewer August 17, 2026.

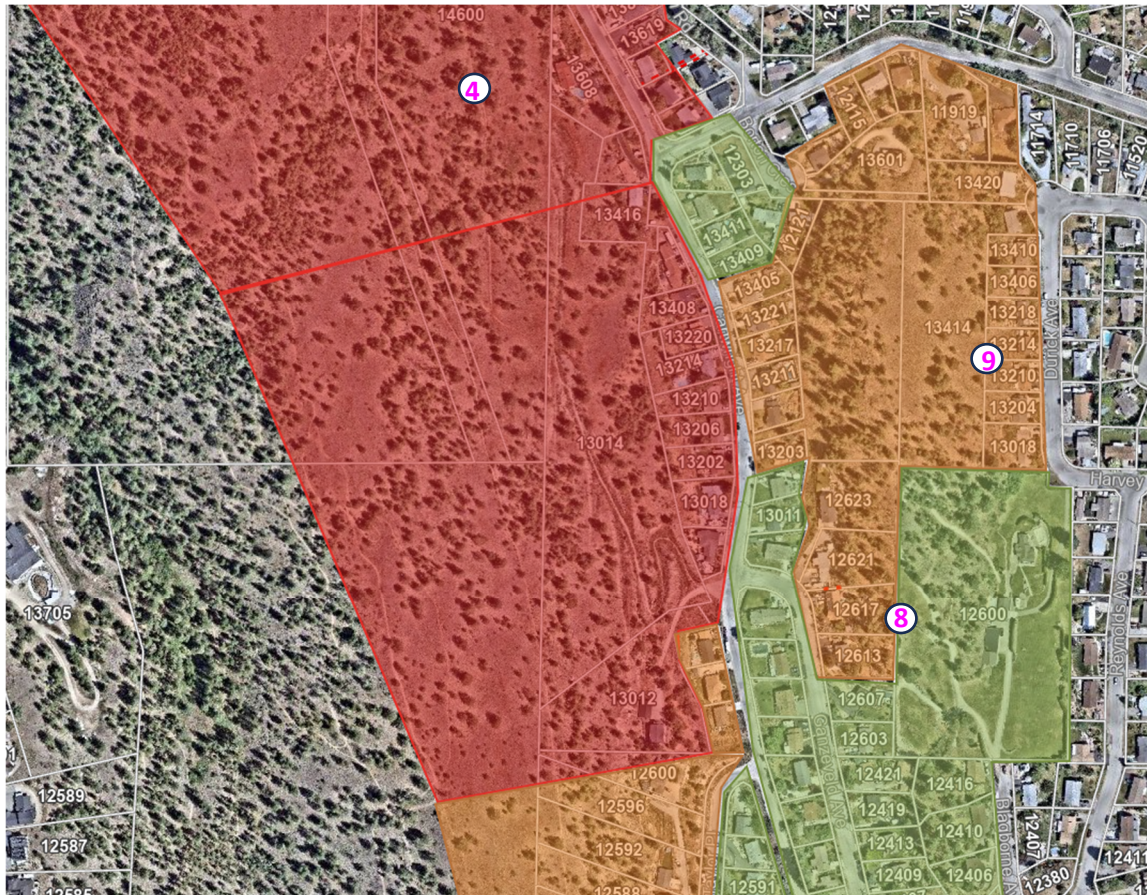


Figure 3 - Cartwright Properties Potentially Impacted by Post-Wildfire Slope Hazards (Red and Orange). Properties not considered at increased risk from slope hazards (green). Approximate Photo locations in pink. Imagery from DoS Spatial Viewer August 17, 2026.

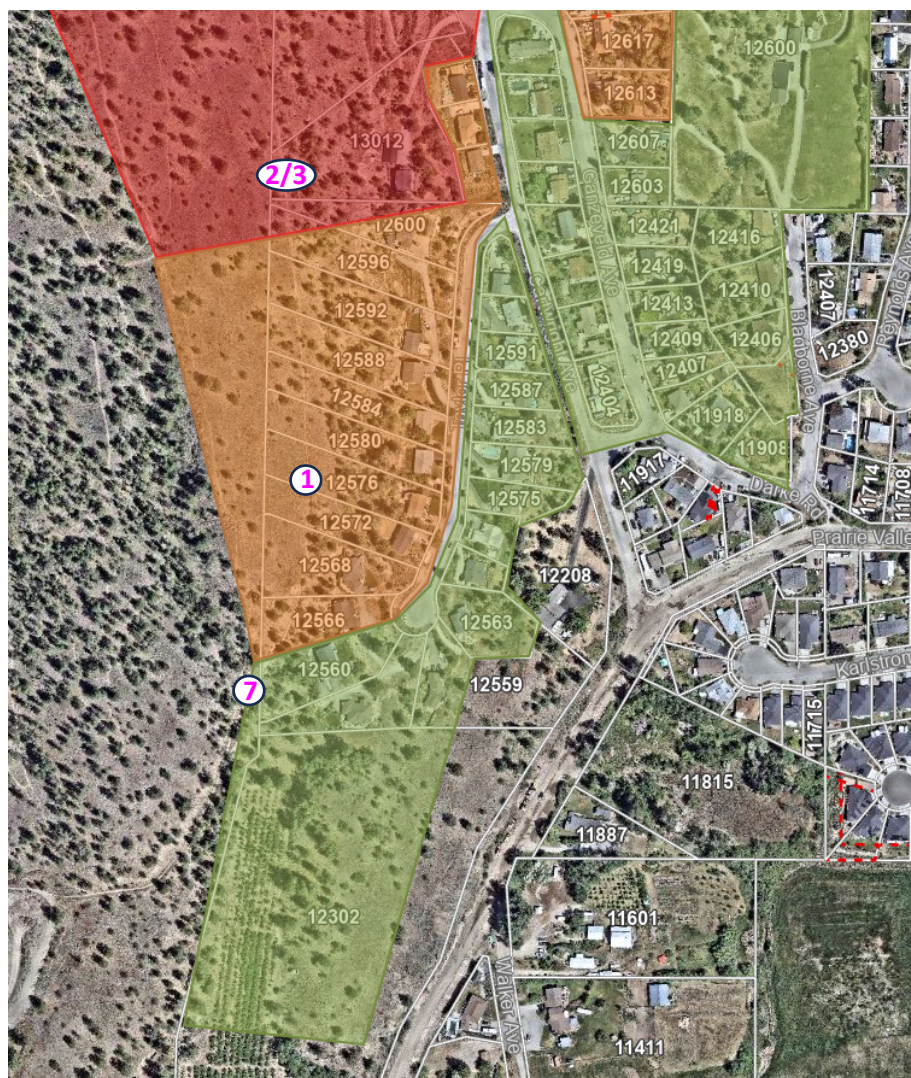


Figure 4 - Cartwright Properties Potentially Impacted by Post-Wildfire Slope Hazards (Red and Orange). Properties not considered at increased risk from slope hazards (Green). Approximate Photo locations in pink. Imagery from DoS Spatial Viewer August 17, 2026.

The following recommendations apply to the rainfall and evacuation criteria:

- Impacted properties should remain evacuated until 24 hours after the end of the rain event for 1 hour, 12 hour, and 24 hour criteria, or 48 hours after the end of the rainfall event if the 48 hour criteria is exceeded (see Table 1), or after an assessment by a qualified professional engineer.
- A rainfall gauge with remote monitoring and alarm capabilities should be placed within 2.5 km and 150 m of elevation of the impacted areas. If remote monitoring is not available, then the gauge should be checked hourly during significant rainfall. Snowmelt is not included in the criteria detailed in this memo.

In addition to measures resulting from the exceedance of rainfall criteria, the public and DoS should remain aware of other indicators of geotechnical instability. These can include but are not limited to:

- Pulses of sediment-laden (turbid) water in streams, especially in gullies,
- Streams suddenly drying up when conditions are otherwise wet,
- Constant small rock falls,
- Cutslope slumps that block ditches and/or roads,
- Tension cracks appearing in road fills or slopes,
- Recent avalanches, landslides, or debris flows or their deposits observed that were not present during the previous day; and,
- Diverted streams with flow appearing in new stream courses that were previously dry.

If any of these indicators of instability are observed, potentially impacted properties should be evacuated until a qualified professional engineer has assessed the site.

Properties not highlighted were not included in the site reconnaissance at the time of this memo. Potentially dangerous tree assessment, fire hazard, and other non-geotechnical hazard assessments are not included within the scope of this memo.

Long term slope stability and potential debris flow/debris flood hazards should be assessed by a Qualified Geotechnical Engineer prior to removal of the rainfall evacuation criteria noted above. Terrane would be happy to provide these services if requested.

Closure

Please contact us with any questions, comments or concerns.

Regards,

Terrane Geoscience Inc.



Brittany Linnett, P. Eng.

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A handwritten signature in black ink, appearing to read "T. Gilman".

Tony L Gilman, M.Sc., P.Eng, P.Geo

VP / Senior Geotechnical Engineer
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tgilman@terranegeoscience.com

Appendices

Appendix A Photo Log



Photo 1. Upslope (west) of Taylor Ave looking north.



Photo 2. Upslope (west) of Cartwright Ave looking north.

Client:

District of Summerland

Project:

Cartwright Preliminary Slope Hazard
Assessment



YY/MM/DD 2026-08-16

Prepared BL

Design

Reviewed TLG

Approved

Title:

Photographs – TGI 1-9

Project #:

TBD

Page 1 of 5



Photo 3. Upslope (west) of Cartwright Ave looking west.



Photo 4. Upslope (west) of Cartwright Ave looking south.

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Page 2 of 5



Photo 5. Slope uphill (west) of Cartwright Ave looking east, at pre-existing erosion channels.



Photo 6. Slope uphill (west) of Herron Rd strata looking west, up the larger drainage.

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Page 3 of 5



Photo 7. Slope upslope (west) of the south end of Taylor Place, looking west.



Photo 8. Slope upslope (east) of properties on the east side of Cartwright Ave, on Cartwright Mountain, looking northwest.

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Photo 9. Slope upslope (west) of Durick Ave on Cartwright Mountain, looking southwest.

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Page 5 of 5