PARKS CANADA
PACIFIC RIM NATIONAL PARK RESERVE
PACIFIC RIM HIGHWAY
"2016 WILDLIFE AND DANGER TREE ASSESSMENT"

Location:	Tofino, British Columbia
Site Coordinates:	Latitude: 49° 4' 21"N, Longitude: 125° 45"58"W
Site Activities:	Ministry of Transportation Public Highway within the Pacific Rim National Park.
Site Facilities/Targets:	Pacific Rim Highway #4
Level Of Disturbance:	1
Date Assessed:	June 29 – August 12, 2016
Assessor's Names:	Darin Brown, RFT, DTA #P2174, and Dean McGeough, RPF, DTA #P0004

Scope of Project

Complete a "Wildlife and Danger Tree Assessment" of Pacific Rim Highway #4 to identify hazardous/dangerous trees that need to be removed or managed to protect the public, staff and park facilities/infrastructure. The Wildlife and Danger Tree Assessment (WDTA) for the Pacific Rim Highway was completed using the "Parks and Recreation Sites Wildlife and Danger Tree Assessment" standards.

The Alder Marking Program was completed concurrent with the WDTA. The goal was to identify and mark all alder trees (> 20cm diameter) within 10m from the edge of the Pacific Rim Highway that will be removed to address tree health, worker/public safety (line of sight, physical highway encroachment and tsunami routes) and site maintenance concerns (lifting pavement).

Incidental alder trees < 20cm in diameter have been marked concurrent with the larger stems due to limb locked trees, multiple leaders and for safety purposes.

Methodology

Wildlife and Danger Tree Assessment:

The Level of Disturbance (LOD) of Pacific Rim Highway, based on the Parks and Recreation Sites Wildlife and Danger Tree Standards, is 1 (Low Risk). The Meridian Danger Tree Assessors walked the timber along the Pacific Rim Highway within the boundary of the Pacific Rim National Park Reserve. The WDTA was conducted 1.5 tree heights from the highway and the setback distances varied based on different heights of the timber (timber types). The assessors focused on the timber on the opposite side of the BC Hydro 25kv powerline, as this utility and all danger trees immediately adjacent to the utility are managed by BC Hydro. When conducting the WDTA, the Assessors looked for any trees meeting the Level 1 danger tree criteria (insecurely lodged trees/hang-ups, highly unstable trees, recent lean) that could reach the target-Pacific Rim Highway. Some trees not meeting the criteria were marked and recorded as Safe (Recommend/Monitor) because they have the potential to deteriorate and become a future safety hazard. Monitoring these trees will provide a baseline to determine how quickly trees will deteriorate.

In the event that a dangerous tree or tree part was discovered and deemed an immediate hazard, a "Danger Tree Safety Alert" form would be sent to Parks Canada which would outline appropriate mitigation strategies or options to reduce or eliminate the hazard. Another alternative available would be to flag out a dangerous tree or tree part in a "no work zone" until the hazard was eliminated and the area was deemed safe to work in.

As the Assessors transected the Pacific Rim highway they noted the following features, if they were present: timber types, streams, culverts, utilities, and roads.

Alder Marking Process:
The alder trees were marked concurrent with the WDTA based on the criteria outlined in the scope of practice. Alders immediately adjacent to fish bearing streams were not marked 5m to 30m either side of these features to maintain the integrity of the stream and stream habitat (shade, food source and stream bank integrity). In locations where alders were located on large fill slopes above the stream, several alders were marked where deemed susceptible to wind-throw/failure.

The following Stream Management Protection criteria were used when marking alder trees adjacent to streams:

- fish stream > 5m to 20m = 30m reserve (set-back)
- fish stream > 1.5m to 5m = 20m reserve (set-back)
- fish stream < 1.5m and all other non-fish streams = 0m reserve (set-back)

Field Marking Standards

The Pacific Rim Highway tree marking standards are as follows:

- **Danger Trees** ~ painted with an orange dot and a numbered aluminum tag was affixed to the tree (e.g., HWY #1 for Highway tree #1). One tree, HWY #10A, was painted with an orange dot and tagged. The use of alpha characters on a danger trees tag number (e.g., HWY #10A) is commonly used when there is a concentration of marked trees in close proximity to each other.

  Yellow flagging with the tree reference number was also hung as a roadside reference to assist in locating the danger trees.

  Not all trees marked in the field have been numbered sequentially; several trees originally marked may have been removed during the quality control review. Refer to the "Detailed Danger Tree Spreadsheet" for the final danger tree count.

- **Alder Trees** ~ painted with a pink dot or multiple pink dots when marked during rainy field conditions.

Previous Site Management Observations

When conducting the WDTA of Pacific Rim Highway it was noted that there is an active roadside brushing program, old tree topping program near Incinerator Rock and recent highway improvements (waterline construction and drainage structure improvements).

Site Conditions

Topography:	☐ Apex ☐ Face ☐ Upper ☐ Middle ☐Lower ☒ Valley ☐Gully ☐ Riparian		
Elevation:	5m to 40m	**Slope %:**	5%
Aspect:	☐ N ☐ NE ☐ E ☐ SE ☐ S ☒ SW ☐ W ☐ NW		
Soil Drainage:	☐ Poorly /Saturated ☒ Imperfect (silt/clay) ☐ Mod. Well ☒ Well		
Rooting Depth:	☐ Shallow/Restricted (<0.4) ☒ Moderately Deep (0.4-0.8m) ☒ Deep (0.8m+) ☒ Nurse Logs		

Site Damage ~ Pathogens

Abiotic Factors:	☒ Flooding	☒ Historic ☐Recent ☒ Die Back ☐Exposed Root ☒ Rotting Root ☐ Scar **Note**: Flooding/High Water Table sites along the Pacific Rim Highway corridor are primarily the Shorepine timber types. These sites have shorter than average trees (9m) with smaller diameters and a high snag component due to die back and rotting roots. Several of these sites can be observed 100m east of the Green Point Campground.
	☒ Mechanical	☐ Historic ☒ Recent ☒ Brush/Prune ☒ Construction ☐ Falling ☐ Loose Root ☒ Scar ☒ Broken Top/Limb **Note:** Minor tree branch and stem damage has occurred due to roadside brushing. Sitka Spruce trees also were topped near Incinerator Rock for airport improvements and recent highway improvements (waterline construction and drainage structure improvements) have damaged some tree roots during construction.
	☒ Other	☐ Chemicals ☒ Candelabra ☒ Catface ☐ Fume **Note:** Cedar timber types, along Pacific Rim Highway corridor, typically have candelabras and catface features. The features can deteriorate over time and become a future hazard.
	☒Wind-throw	☒ Historic ☐ Recent ☒ Minor ☐ Moderate ☐ Extensive (pit & mound) Prevailing wind direction = 272° Site Exposure: ☐ Windward ☐ Parallel ☐ Diagonal ☒ Leeward **Note:** Very minor wind-throw was noted near the Esowista village, along the Pacific Rim Highway, as the right-of-way is only 20-30m wide. The orientation to the wind and small fetch length reduces the potential for wind-throw damage. Most trees near the ocean are acclimated to windy conditions with shorter than average heights, good anchor roots and wind profiled crowns.
Biotic Factors:	☒ Butt, Heart & Sap Rot	☒ Conk ☐Fallen Tree ☐Leaner ☐Branch Rot ☐ Clorosis ☐ Thin Crown **Note:** Brown Crumbly Rot (*Fomitopsis pinicola*) was noted on stem wounds or dead trees, primarily on Western Hemlock and Sitka Spruce within the assessment area. Ganoderma oregonense is also present in the Western Hemlock near Green Point Campground.
	☒ Mistletoe	☒ Broom ☐ Branch Rot ☐ Thin Crown **Note:** Hemlock Dwarf Mistletoe (*Arceuthobium tsugense*) was identified on Western Hemlock; incidence level was common.
	☒ Root Disease	☐ Historic ☒ Recent ☐ Conk ☐ Tree Lean ☐ Root Pull ☐Fallen Tree ☒ Thin Crown **Note:** Armillaria Root Disease (*Armillaria solidipes*) is present in the Western Hemlock and Red Alder trees; incidence – scattered and infrequent.
	☒ Rust Disease	☐ Blister ☒ Broom ☐ Gall ☐ Fungi ☐ Clorosis ☐ Resinous **Note:** Some Sitka Spruce within the assessment area have been infected with a broom rust disease.

Stand~Timber Types

When conducting the WDTA it was noted that there are 5 main timber types within the Pacific Rim Highway corridor assessment area.

Type Number:	**Type I**	**Type II**	**Type III**	**Type IV**	**Type IV**
Stand Age:	Old Growth	Old Growth	Old Growth	Second Growth	Second growth
Stand Density (canopy closure):	Open (<30%)	Normal (60-90%)	Semi-open (30-60%)	Dense (90%+)	Semi-open (30-60%)
Species and %:	Pine 70% Cedar 30%	Hemlock 50% Cedar 50%	Spruce 60% Hemlock 30% Alder 10%	Hemlock 50% Cedar 50%	Alder 100%
Avg. Stand Height (m):	8	20	21	21	16
Avg. Diameter (cm)**:**	17	70	60	30	27
Understorey Vegetation:	Labrador Tea, Moss, Sedges	Salal	Salmonberry	Moss	Salmonberry
Coarse Woody Debris:	Minor	Extensive	Moderate	Moderate	Minor

Work Site Hazards

Danger Trees:	Danger Trees (highly unstable or hazardous parts) leaning towards the target have been identified at this site. Hazards associated with "Dangerous Trees" include being struck by the danger tree/hazardous parts.		
Underbrush:	There is a thick layer of under-brush (salal and salmonberry) within the alder removal area. Hazards associated with "Underbrush" include: eye pokes, thorns, obscured holes, concealed rocks and twining vegetation.		
Garbage:	There is incidental glass and metal discarded within the timber around the roadways, parking lots and facilities. Exposure to hazardous substances or chemicals, sharp glass and metal (nails, fencing and sheet metal) is possible.		
Urban Interface:	Pacific Rim Highway crosses many public access trails (hiking) near the day use areas. There is also the village of Esowista which is adjacent to proposed operations. Flag people and traffic control will be required to ensure public safety.		
Motor Vehicles:	Pacific Rim Highway is very busy. Hazards associated with "Motor Vehicles" include: Struck by vehicles or unsecured flying debris and obscured lines of sight.		
Utilities:	There is a BC Hydro 25kv distribution hydro line in or adjacent to the assessment area. Additional utilities, such as gas lines and/or waterlines, may be associated with the highway. There is the possibility of or rupturing/contacting a utility line.		
Wildlife:	Black Bears, Wolves and Cougar are frequently seen feeding along-side the highway or crossing it. Follow Parks Canada guidelines/best practices if wildlife is encountered.		
Wind-throw:	There is historic wind-throw located in pockets along Pacific Rim Highway. Hazards associated with "Windfall Areas" include: loose root systems, root wells, hung up branches, trees under tension, buckskin and elevated walk logs.		
Hazard Alert Issued:	☒ No ☐ Yes	**Hazard Areas Flagged:**	☒ No ☐ Yes

Management Results

Summary of Tree Mitigation Strategies	Trees Field Marked		
Alder Marking Program ~ Total Trees <10m from Road:	**2,250**		
WDTA ~ Total Suspect Hazard Trees:	**31**		
WDTA ~ Tree Management Action:	Dangerous (D)	Safe Recommend (SR)	Safe Monitor (SM)
Number of Suspect Hazard Trees:	6	11	14
Treatment by Parks Canada ~ Trees < 20cm diameter:	0	10	0
Treatment by Contractor ~ Trees > 20cm diameter:	6	1	0
Note: SR = Recommend removal (inevitable) , SM = Monitor rate of deterioration			

Alder Marking Program: A total of 2,250 alder trees have been marked < 10m from the highway as part of the alder tree removal program. Tree diameters range from 20cm to 60cm on average, with a mean height of 16m.

Wildlife and Danger Tree Assessment: There are 31 danger trees identified in the field. A total of 6 trees were identified as Dangerous (D) and must be immediately removed in the off-season. Another 11 trees have been identified as Safe Recommend (SR). Parks Canada can remove 10 of the trees (Safe Recommend) and the remaining 7 trees (Dangerous & Safe Recommend) can be removed by a Contractor. The 14 Safe Monitor (SM) trees do not need to be treated. Refer to the detailed danger tree spreadsheet and danger tree location map.

Wildlife Activity: During the WDTA of the Pacific Rim Highway, it was noted that some Class 5 and Class 6 trees had signs of wildlife use (e.g., feeding excavations and cavity nesting) by woodpeckers and sapsuckers. Also observed were several high use wildlife trails most likely used by black bears, cougars and wolves. Four wolves were observed crossing the highway near the Green Point Campground and two black bears were observed feeding on roadside vegetation (grass and sedges) along the Pacific Rim Highway during the assessment.

Cultural Heritage: During the WDTA and Alder Marking Program of the Pacific Rim Highway, no ancient culturally heritage resource features (e.g., Culturally Modified Tree's) were observed. However, recent evidence of cultural use was observed (e.g., cedar bark pulling) on some cedar trees.

Pacific Traverse Trail: Incidental alders marked for removal may be impacted by the new Pacific Traverse Trail if the trail location is near the right-of-way of the Pacific Rim Highway. At the time of assessment, the exact location of the new Pacific Traverse Trail was unclear.

Timber Value

Parks Canada requested that consideration be given to the value of the alder and danger trees being removed within the Pacific Rim Highway. The values listed in the tables below are only estimates as the request was made after the WDTA and Alder Marking Program was complete. More detailed data would be required to accurately calculate the value of the trees being removed within the assessment area.

Limitations:

Only Class 2 (live) Safe Recommend (SR) trees, identified during the WDTA, have been used to determine a tree value as all other danger trees have no commercial value due to the deteriorating tree conditions (soundness).

Only alder trees identified during the Alder Marking Program, that are commercially viable (5.1m to 9.5m log lengths), have been considered in this calculation. All other trees yielding pulp have not been included.

To estimate the tree volume, a cull/deduction was applied to account for decay, waste and breakage associated with the trees being removed.

All pricing is based on the Coast Selling Price System three month average log prices ending April 30, 2016.

Site Management Objectives	Trees Marked	Commercially Viable Number of Trees	Estimated Tree Volumes (m^3)	Estimated Value of Trees Being Removed ($)
WDTA ~ Safe Recommend (SR) Trees:	11	2	2.5	$465
Alder Marking Program ~ Total Trees < 10m from Road:	2250	1463	831	$62,353
Total		**1465**	**833.5**	**$62,818**

Tree Removal Costs

The following estimated tree removal costs, for the Pacific Rim Highway, are based on Contractor pricing.

	Tree Removal Costs		
Tree Removal Options:	**Alder Marking Program:**	**Wildlife & Danger Trees: Dangerous (D)**	**Wildlife & Danger Trees: Safe Recommend (SR)**
Tree Count:	**2,250**	**6**	**11**
Hand Fall Tree "No cleanup"	$168,750	$900	$2,200
Hand Fall Tree "Chip & Chunk"	$213,750	$1,050	$2,750
Hand Fall Tree "Chip, Chunk & Truck"	$258,750	$1,500	$3,300
Bucket Truck "No cleanup"	$191,250	$900	$2,200
Bucket Truck "Chip & Chunk"	$258,750	$1,050	$2,750
Bucket Truck "Chip, Chunk & Truck"	$303,750	$1,500	$3,300
Roadside Brusher/Mower	$44,000	~	~
Flag People	$67,500	$250	$450
Estimated Total	**$371,250**	**$1,150**	**$2,650**

In Summary, the estimated cost of removing all trees identified during the assessment along the Pacific Rim Highway, based on the most effective tree removal method (highlighted above), is **$375,050**.

Additional cost saving options/scenarios - based on the above quote - is as follows:

	Tree Removal Scenarios	Project Cost
A	**Remove 90% of Alders and all "Danger/Safe Recommend" trees (excl. 10% leaning alders)**	$334,125.00
B	**Remove 50% of Alders (5m width) and all "Danger/Safe Recommend" trees**	$188,125.00
C	**Remove 50% of Alders (5m width) & 10% Leaners and all "Danger/Safe Recommend" trees**	$167,062.50
D	**Remove 50% of Alders (5m width), 10% Leaners & Parks Canada Trees (D&SR, <8"diameter)**	$165,662.50

Recommendations

The tree removal recommendations for the Pacific Rim Highway, based on the WDTA and Alder Marking Program, are as follows:

1. **Trees to be Removed ~**
    a. **Alders:** it is recommended that all 2,250 alder trees be removed by a Contractor from the Pacific Rim Highway. Ideally, all alders < 20cm diameter should be taken concurrently with the larger trees for cost efficiency purposes, otherwise, Parks Canada personnel can remove the < 20cm diameter alder trees prior to the Contractor removing the larger stems.

    b. **WDTA:** The 6 "Dangerous" trees identified in the WDTA should be removed. Ideally, the 11 "Safe Recommend" trees identified during the WDTA should be removed at the same time for cost efficiency. The "Safe Monitor" trees do not need to be treated.

    All trees should be removed during the **"**off season", from September to March, to avoid/minimize conflicts with the nesting season.

2. **Duration of Tree Removal** ~ it is expected that the removal of the trees, mentioned above, for the Pacific Rim Highway will take 75 days for one crew. Additional crews can be used to reduce the traffic delays on the Pacific Rim Highway.

3. **Access Control ~** Partial road closure will be required to control motor vehicle traffic along the Pacific Rim Highway. Alternating single lane motor vehicle traffic is permitted through the treatment area but only if controlled by certified flaggers. The tree removal cost estimates for the removal of the alder and danger trees for this site are based on "Partial Road Closure."

4. **Tree Removal Method ~** the best option to remove the alder trees is to use the bucket truck, top down, chip to a 13cm diameter top and blow debris into the timber. Truck the larger tree debris (> 13cm diameter) off-site to a designated location. The "Dangerous and Safe Recommend" trees can be hand-felled into the timber with no clean-up required.

    By-products (woodchips and firewood) can be used by Parks Canada for garden beds, siltation control and trail maintenance, or firewood sold at the Green Point Campground to alleviate the environmental impact (safety and site degradation) of campers chopping firewood from standing and fallen trees within the campground. The wood chips could also be donated to local First Nations, businesses, charities or schools in the communities of Tofino and Ucluelet to fund community, social or school events.

5. **Heritage Survey ~** it is recommended that a formal Heritage Survey be conducted on the trees being removed to ensure no cultural heritage resource features (CMTs) are present or impacted prior to tree removal.

6. **Stand Development Program** ~ it is recommended that a < 20cm diameter tree thinning program be implemented for two areas near the Rainforest Day Use Area. The surrounding second growth timber is very dense and has supressed the shorter desirable cedar and spruce trees causing them to die and fall towards the highway. These short 9m tall trees can be felled by Parks Canada personnel for a distance of 15m from the edge of the pavement. This will be an ongoing maintenance issue if left unattended. Refer to the Danger Tree Location Map for the sanitization site locations.

7. **Pre-work Meeting** ~ a pre-work meeting should be conducted with all workers (employees and contractors) to ensure they are familiar with the site hazards and environmental constraints prior to commencing work. The Pacific Rim Highway ~ Wildlife and Danger Tree Report, Danger Tree Location Map and Detailed Danger Tree Spreadsheet should be reviewed and understood prior to removing the trees. Once a tree is felled, take off the tag to cross-reference. If the tree is topped, leave the tag to enable future monitoring. This will ensure all danger trees are accounted for and that no tree and liabilities associated with them have been missed. Only those trees identified as danger trees are permitted to be removed, unless approved by Parks Canada. However, where a professional faller needs to remove additional trees to permit the safe removal of a dangerous tree, this discussion must be made with Parks Canada.

Maps and Attachments

This Wildlife and Danger Tree Report includes a:

- Danger Tree Location Map,
- Workers Map Comments (Hazards), and
- Detailed Danger Tree Spreadsheet.

For the purpose of estimating the tree removal cost per kilometer and to assist Parks Canada in making operational decisions, the attached maps have been broken down into 1km sections. Within these sections the number of alder trees to be removed has been recorded and displayed as follows:

- 0 ~ 100 alders (low intensity) = yellow highlight
- 101 ~ 200 alders (moderate intensity) = orange highlight
- 201 ~ 300 alders (high intensity) = red highlight
- 301+ alders (very high intensity) = purple highlight

This will help the tree removal contractor see where most of the activity will be along the 22km stretch of the Pacific Rim Highway. All maps produced by Meridian have been spatially referenced for ease of use with Avenza Maps and mobile devices.

Disclaimer / Limitations

1. **Facilities/Structures/Features Not Assessed**: The BC Hydro side of the highway where the 25kv powerline is located was not assessed.

2. **Wildlife and Danger Tree Assessment Validation Clause**: The results and conclusions of this WDTA are valid until March 31, 2017 pending any conditions/events outlined in the section 3.

3. **Reassessment of Trees**: Areas and trees assessed during the WDTA must be reassessed if a site altering event occurs (e.g., widespread wind or snow damage, construction, fire, tsunami, flooding, landslide, or vandalism), or there are construction projects planned (capital or operational improvements using heavy equipment). Furthermore, the assessment criteria to differentiate between safe and dangerous trees are applicable for wind speeds of up to 40km/hour.

4. **Inspection Frequency**: The Pacific Rim Highway is a low risk activity, and as such, should be inspected annually for dangerous trees.

5. **Tree Removal**: All tree removals must only be done by persons who are trained, qualified and supervised in accordance with the Occupational Health and Safety Regulations. A qualified assistant is required for certified individuals who are falling/removing trees.

6. **Tree Removal Cost Estimates:** Asplundh Canada assisted in determining the trees removal costs and timelines for this project which will help Parks Canada, make operational decisions. These costs figures are confidential and knowledge thereof cannot be released to competitors.

7. The assessment results and intervention strategies recommended do not eliminate the possibility for tree failures within the areas assessed. Trees are living organisms that fail in response to a complex range of interactions that are not always known or predictable. In addition, defects may be hidden within the tree and below ground. As a consequence, Dangerous Tree assessors cannot guarantee that a tree will remain healthy or safe under all circumstances. However, if the treatments recommended are implemented they will reduce the level of risk to visitors and to workers to generally accepted standards of care. No other warranty is made, either expressed or implied.

   Due to the nature of the work and the fact that assessments are only made of trees with symptomatic visual signs of decline, damage or visible hazards, it is possible that trees with hidden defects still do exist that were not evaluated during the assessment. Such hidden defects combined with weather patterns, traffic patterns, worker or visitor interactions could materially affect the conclusions and recommendations contained herein. Monitoring, re-assessment and dangerous tree mitigation is the responsibility of Parks Canada.

Professional Signatures REGISTERED FOREST TECHNOLOGIST PROVINCE OF DARIN BROWN BRITISH COLUMBIA NO. 0423 Darin Brown 2016.09.15 08:16:34 -07'00' *Darin Brown, RFT, DTA #P2174* *Meridian Forest Services Ltd.*	*Professional Signatures* REGISTERED PROFESSIONAL PROVINCE OF DEAN M. McGEOUGH BRITISH COLUMBIA FORESTER No. 2274 *Dean McGeough, RPF, DTA #P0004* *Integra Forest Consulting Ltd.*

Parks Canada ~ Pacific Rim National Park Reserve ~ Pacific Rim Highway #4 Danger Tree Assessment-August 8, 2016 ~ page1

Level of Disturbance = 1													Rating	Tree Mangement Prescriptions													
Tree #	**Tree Species**	**Tree Class**	**Wildlife Value** (L, M, H)	**Wildlife Use**	**Heritage Tree** (Yes/No)	**Recreation Attraction** (Yes/No)	**Tree Height** (m)	**DBH (cm)**	**Target Distance** (m)	**Insecurely Lodged or Hung-up Limbs / Tops = D**	**Highly Unstable Tree =D**	**Recent Lean with Unstable Roots = D**	**Overall Rating (S or D)**	**Safe** - No Action Required	**Safe** - Recommend Actions	**Safe** - Monitor	**Dangerous** - Fall Tree	**Dangerous** - Install NWZ	**Other** (remove hazardous part - prune/top)	**Parks Canada** - Crew	**Bucket Truck** - Piece Down	**Climb** - Piece Down	**Wildlife Tree** (<6m)	**Jagged Top**	**Short Stump** (<3m)	**Moss Cap Stump**	**Eyelet tent Anchor**	**Notes**
1	Hw	1	L		N	N	14	25	10			X	**S**	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lean 60%
2	Hw	6	L		N	N	10	28	4		X		**D**	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	Broken Top/Conks
4	Dr	1	L		N	N	16	30	12			X	**S**	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lean 45%.
5	Hw	6	L		N	N	16	55	12			X	**D**	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	Lean 35%.
6	Pl	5	L		N	N	14	21	10		X		**D**	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
7	Pl	5	L		N	N	14	21	10		X		**D**	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
8	Hw	2	M		N	N	19	65	6		X		**S**	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Butt Rot = 35%/Top to 10m
9	Cw	6	M		N	N	13	50	6		X		**D**	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Dying Crown/Resinosus
10A	Hw	6	H		N	N	16	70	14		X		**D**	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Conk/Broken Top/Lean
12	Hw	6	L		N	N	10	45	4		X		**S**	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Conks/Hallow/Lean To Road
13	Hw	6	M		N	N	12	60	8		X		**S**	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Conks/Broken Top
15	Cw	6	M		N	N	11	80	5		X		**S**	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
18	Pl	5	L		N	N	8	17	7			X	**S**	☐	☑	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	
19	Pl	5	L		N	N	9	17	7			X	**S**	☐	☑	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	

Tree Codes	**Act** - Black Cottonwood	**Bg**- Grand Fir	**Dr** - Red Alder	**Fd** - Douglas Fir	**Hm**- Mountain Hemlock	**Pw** - Western White Pine	**Ss** - Sitka Spruce	**Yc**- Yellow Cypress
	Ba- Amabilis Fir	**Bl**- Subalpine Fir	**Cw** - Western Red Cedar	**Hw** - Western Hemlock	**Mb** - Big Leaf Maple	**Pl** - Shore/Lodgepole Pine	**Se** - Engelmann Spruce	
Wildlife Codes	**CN** -Cavity Nest	**D** -Den	**F**-Feeding	**M**-Mark tree	**ON**-Open Nest	**P**-Perch Tree	**O**-Other (Bats, Roost)	

Tree Prescriptions

Fall Tree

Bucket Truck - Piece Down

Climb - Piece Down

Jagged Top

Wildlife Tree

Moss Cap Stump

Anchor Eyelet

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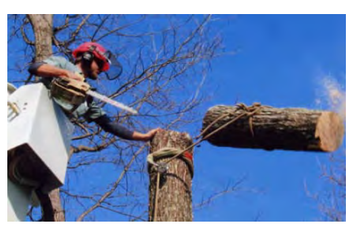
Level of Disturbance = 1													Rating	Tree Mangement Prescriptions													
Tree #	Tree Species	Tree Class	Wildlife Value (L, M, H)	Wildlife Use	Heritage Tree (Yes/No)	Recreation Attraction (Yes/No)	Tree Height (m)	DBH (cm)	Target Distance (m)	Insecurely Lodged or Hung-up Limbs / Tops = D	Highly Unstable Tree =D	Recent Lean with Unstable Roots = D	Overall Rating (S or D)	**Safe** - No Action Required	**Safe** - Recommend Actions	**Safe** - Monitor	**Dangerous** - Fall Tree	**Dangerous** - Install NWZ	**Other** (remove hazardous part - prune/top)	**Parks Canada** - Crew	**Bucket Truck** - Piece Down	**Climb** - Piece Down	**Wildlife Tree** (<6m)	**Jagged Top**	**Short Stump** (<3m)	**Moss Cap Stump**	**Eyelet tent Anchor**	**Notes**
20	Hw	2	L		N	N	9	17	7			X	**S**	☐	☑	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Cw fell away splitting stump & roots. Lean 20%
21	Hw	2	L		N	N	13	26	7			X	**S**	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Pl fell into tree breaking base.30% hold wood.
22	Cw	2	L		N	N	10	75	8			X	**S**	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
24	Hw	5	L		N	N	6	8	4		X	X	**S**	☐	☑	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Clense
25	Hw	4	L		N	N	14	10	12		X	X	**S**	☐	☑	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Clense
26	Hw	4	L		N	N	14	10	12		X	X	**S**	☐	☑	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Clense
27	Hw	4	L		N	N	14	10	12		X	X	**S**	☐	☑	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	
28	Pl	4	L		N	N	18	27	16			X	**S**	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Roots Lifted. Can bucket truck 6m and leave.
29	Pl	4	L		N	N	20	30	16			X	**S**	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Roots Lifted. Can bucket truck 6m and leave.
30	Pl	4	L		N	N	18	22	16			X	**S**	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Roots Lifted. Can bucket truck 6m and leave.
31	Cw	7	H		N	N	12	95	8		X		**S**	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	%0% Decay
32	Hw	2	H		N	N	35	85	20		X		**S**	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Conks
33	Cw	2	L		N	N	12	17	12			X	**S**	☐	☐	☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	
34	Cw	2	L		N	N	16	27	12			X	**S**	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
35	Cw	2	L		N	N	14	20	12			X	**S**	☐	☐	☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	
36	Cw	2	L		N	N	12	17	12			X	**S**	☐	☐	☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	
37	Ss	5	L		N	N	16	60	10		X		**S**	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
														☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
														☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

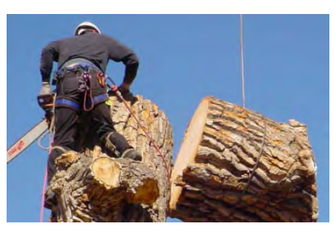
Tree Codes	**Act** - Black Cottonwood	**Bg**- Grand Fir	**Dr** - Red Alder	**Fd** - Douglas Fir	**Hm**- Mountain Hemlock	**Pw** - Western White Pine	**Ss** - Sitka Spruce	**Yc**- Yellow Cypress
	Ba- Amabilis Fir	**Bl**- Subalpine Fir	**Cw** - Western Red Cedar	**Hw** - Western Hemlock	**Mb** - Big Leaf Maple	**Pl** - Shore/Lodgepole Pine	**Se** - Engelmann Spruce	
Wildlife Codes	**CN** -Cavity Nest	**D** -Den	**F**-Feeding	**M**-Mark tree	**ON**-Open Nest	**P**-Perch Tree	**O**-Other (Bats, Roost)	

Tree Prescriptions

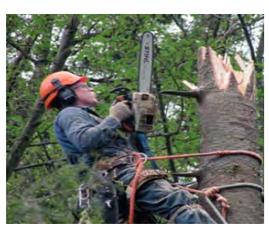
Fall Tree



Bucket Truck - Piece Down



Climb - Piece Down



Jagged Top

Wildlife Tree

Moss Cap Stump

Anchor Eyelet

Highway 4
MAP 1 of 6

Alder Removal

Parks Canada / Parcs Canada

Scale: 1:10,000
Datum: Albers
Mapsheet: 92F.002

Safety Coordinates
Latitude: 49°0'56"N
Longitude: 125°37'48"W

N

Prepared By:
MERIDIAN Forest Services Ltd.
Box 275
Shearme Road
Coombs, BC
V0R 1M0
www.meridianforest.ca

Print Date: 16 -Aug -2016

PARKS CANADA	PACIFIC RIM NATIONAL PARK
SITE	HIGHWAY 4
ALDER REMOVAL PROGRAM	2250
VEHICLE PARKING STALL TREE REMOVAL	0
DANGER TREE ASSESSMENT	31

Legend

- Roads
- Recreation Trail
- Park Boundary
- Contours 20m
- Fish Stream
- Fish Sensitive Zone
- Non Fish Stream
- Non Classified Drainage
- Power Line
- Timber Type
- Stand
- Airport
- Golf Course
- Indian Reserves Govt

Alder Intensity

- High (201-300)
- Medium (101-200)
- Low (0-100)

Road Feature

- Legal Pin
- Building
- Km Marker
- Alder Tree Removal
- Danger Tree
- Blowdown
- Swamp
- Culvert
- Bridge
- Watermain
- Hydrant
- Hydro Pole

Old Growth Hw_5Cw_5 21m 60cm

Second Growth Hw_6Cw_4 21m 40cm

Alder Patch Dr_8Hw_1

OG

Second Growth Hw_7Cw_3

Bog $Hw_4Cw_4Pl_2$

Hw_8Cw_2

Sandhill Creek

BC Hydro 2.5 KV Powerline

Wick Road

OG Hw_5Cw_5 21m 100cm Salal

Second Growth $Cw_4Hw_4Fd_1Ss_1$ 21m 35cm

Shorepine Pl_7Cw_3 9m 35cm

OG Cw_5Hw_5 21m 60cm

Second Growth

Dr_{10} 15m 25cm

Hw_6Cw_4 21m 40cm

Lost Shoe Creek

Park Boundary

Pacific Rim Highway 4

Alder trees not marked 30m either side of fish stream. Do not introduce debris to fish bearing water. Coho and trout habitat.

7 3000 3 5 4 2 1200 800 2 1 1100 1 0

Highway 4
MAP 2 of 6

Alder Removal

Scale: 1:10,000
Datum: Albers
Mapsheet: 92F.002

Safety Coordinates
Latitude: 49°2'4"N
Longitude: 125°40'14"W

N

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Second Growth
$Hw_6Cw_3Pl_1$
21m
50cm

Dr_{10}
5m
5-10cm

Hw_6 Cw_3Pl_1
21m
50cm

Dr_{10}
5m
10cm

Second Growth
Hw_6 Cw_4
21m
30cm

Rainforest

Old Growth
Hw_5 Cw_5
21m
70cm

Suppressed cedar stand is naturally thinning out causing trees to lean towards road. Monitor and cleanse as required.

Hw_6Cw_4

Pl_7 Cw_2 Hw_1

Dr_8 Hw_1 Cw_1
21m
35cm

Shorepine
Pl_7 Cw_3
9m
30cm

Old Growth
Hw_5 Cw_5
21m
70cm

Old Growth
Hw_5 Cw_5
20m
70cm

Shorepine
Pl_7 Cw_3
9m
30cm

Old Growth
Hw_5Cw_5
21m
60cm

Second Growth
Hw_6Cw_4
21m
40cm

Alder Patch
Dr_8Hw_1

OG

Landfill Rd

Sandhill Creek

BC Hydro 2.5 KV Powerline

Pacific Rim Highway 4

600 3000 10A 1200 800 600 600 3000

7 6 13 12 5 9 4 8 6 7 3 5

PARKS CANADA	PACIFIC RIM NATIONAL PARK
SITE	HIGHWAY 4
ALDER REMOVAL PROGRAM	2250
VEHICLE PARKING STALL TREE REMOVAL	0
DANGER TREE ASSESSMENT	31

Legend

- Roads
- Recreation Trail
- Park Boundary
- Contours 20m
- Fish Stream
- Fish Sensitive Zone
- Non Fish Stream
- Non Classified Drainage
- Power Line
- Timber Type
- Stand
- Airport
- Golf Course
- Indian Reserves Govt

Alder Intensity

- High (201-300)
- Medium (101-200)
- Low (0-100)

Road Feature

- Legal Pin
- Building
- Km Marker
- Alder Tree Removal
- Danger Tree
- Blowdown
- Swamp
- Culvert
- Bridge
- Watermain
- Hydrant
- Hydro Pole

Highway 4
MAP 3 of 6

Alder Removal

Scale: 1:10,000
Datum: Albers
Mapsheet: 92F.002

Safety Coordinates
Latitude: 49°3'8"N
Longitude: 125°43'5"W

N

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Print Date: 16 -Aug -2016

PARKS CANADA	PACIFIC RIM NATIONAL PARK
SITE	HIGHWAY 4
ALDER REMOVAL PROGRAM	2250
VEHICLE PARKING STALL TREE REMOVAL	0
DANGER TREE ASSESSMENT	31

Legend

- Roads
- Recreation Trail
- Park Boundary
- Contours 20m
- Fish Stream
- Fish Sensitive Zone
- Non Fish Stream
- Non Classified Drainage
- Power Line
- Timber Type
- Stand
- Airport
- Golf Course
- Indian Reserves Govt

Alder Intensity

- High (201-300)
- Medium (101-200)
- Low (0-100)

Road Feature

- Legal Pin
- Building
- Km Marker
- Alder Tree Removal
- Danger Tree
- Blowdown
- Swamp
- Culvert
- Bridge
- Watermain
- Hydrant
- Hydro Pole

Wickaninnish Bay
Parks Canada Admin Building
Green Point Campground
Shorepine
Open Industrial Site
Combers Beach
BC Hydro 2.5 KV Powerline
Pl 7 Cw 3 12m
Cw5 Hw 5 18m 45cm
Cw5 Hw5 16m 40cm
Pl 3 Cw4 Hw3 15m
Cw3 Pl 7 12m
Pl3Cw4Hw3 15m 35cm
Hw4Cw4Pl2 16m 35cm
Hw5Cw5 18m 35cm
Dr10 16m 30cm
Hw5Cw5 18m 35cm
Hw4Cw6 12m 25cm
Second Growth Hw6Cw3Pl1 21m 50cm
Dr10 5m 5-10cm
Hw6 Cw3Pl1 21m 50cm
15
11
10
22
21
20
9
19
18
8
1700
600
7
40
60
20

Highway 4
MAP 4 of 6

Alder Removal

Scale: 1:10,000
Datum: Albers
Mapsheet: 92F.002

Safety Coordinates
Latitude: 49°4'12"N
Longitude: 125°45'21"W

N

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Print Date: 16 -Aug -2016

Tofino Airport

Trees previously topped due to plane clearance on approach to Tofino Airport

Trees previously topped due to plane clearance on approach to Tofino Airport

Trees previously topped due to plane clearance on approach to Tofino Airport

Grice Bay

Wickaninnish Bay

ESOWISTA 3

Esowista IR Rd

Airport Road

Incinerator Rock

Long Beach

Pacific Rim Highway 4

BC Hydro 2.5 KV Powerline

Old Growth

Suppressed hemlock understorey dying out and leaning towards road. Monitor and cleanse as required.

Sw_6, Hw_3, Dr_1 21m 60cm

Sw_6 Hw_3 Dr_1 21m 60cm

Sw_7, Hw_3, Cw_3 21m 45cm

Ss_4 Hw_5 Cw_3

SML Ss

Cw_5 Hw_5 18m 45cm

Pl_7 Cw_3 12m

Pl_7 Cw_3 12m

Pl_3

PARKS CANADA	PACIFIC RIM NATIONAL PARK
SITE	HIGHWAY 4
ALDER REMOVAL PROGRAM	2250
VEHICLE PARKING STALL TREE REMOVAL	0
DANGER TREE ASSESSMENT	31

Legend

- Roads
- Recreation Trail
- Park Boundary
- Contours 20m
- Fish Stream
- Fish Sensitive Zone
- Non Fish Stream
- Non Classified Drainage
- Power Line
- Timber Type
- Stand
- Airport
- Golf Course
- Indian Reserves Govt

Alder Intensity

- High (201-300)
- Medium (101-200)
- Low (0-100)

Road Feature

- Legal Pin
- Building
- Km Marker
- Alder Tree Removal
- Danger Tree
- Blowdown
- Swamp
- Culvert
- Bridge
- Watermain
- Hydrant
- Hydro Pole

Highway 4
MAP 5 of 6

Alder Removal

Scale: 1:10,000
Datum: Albers
Mapsheet: 92F.002

Safety Coordinates
Latitude: 49°4'54"N
Longitude: 125°48'19"W

N

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Coombs, BC
V0R 1M0
www.meridianforest.ca
Print Date: 16 -Aug -2016

PARKS CANADA	PACIFIC RIM NATIONAL PARK
SITE	HIGHWAY 4
ALDER REMOVAL PROGRAM	2250
VEHICLE PARKING STALL TREE REMOVAL	0
DANGER TREE ASSESSMENT	31

Legend

- Roads
- Recreation Trail
- Park Boundary
- Contours 20m
- Fish Stream
- Fish Sensitive Zone
- Non Fish Stream
- Non Classified Drainage
- Power Line
- Timber Type
- Stand
- Airport
- Golf Course
- Indian Reserves Govt

Alder Intensity

- High (201-300)
- Medium (101-200)
- Low (0-100)

Road Feature

- Legal Pin
- Building
- Km Marker
- Alder Tree Removal
- Danger Tree
- Blowdown
- Swamp
- Culvert
- Bridge
- Watermain
- Hydrant
- Hydro Pole

Pacific Rim Highway 4
Bomber Trail
BC Hydro 2.5 KV Powerline
Ty Histanis Rd
Grice Bay Rd
Long Beach Golf Course
Schooner Cove
Esowista IR Rd
ESOWISTA 3

$Hw_5\ Cw_5$ 5m 60cm
$Pl_5\ Cw_3Hw_2$ 12m 35cm
$Dr_6\ Hw_2Cw_2$ 20m 45cm
$Pl_6\ Hw_3\ Cw_1$ 11m 25cm
$Dr_6\ Hw_2Cw_2$ 20m 45cm
$P_6\ C_3H_1$ 7m 25cm
$P_7\ C_2H_1$ 16m 27cm
Dr_9Hw_1 16m 20cm
Cw Hw Dr
28 - 30 Dr
$Cw_9\ Hw_1$
$Hw_8\ Cw_1Dr_1Ss_3$ 14m 30cm

1700 31 18 2000 1200 17 16 15 1600 1000 37 36 33-35

Highway 4
MAP 6 of 6

Alder Removal

Scale: 1:10,000
Datum: Albers
Mapsheet: 92F.002

Safety Coordinates
Latitude: 49°5'30"N
Longitude: 125°49'39"W

N

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Coombs, BC
V0R 1M0
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PARKS CANADA	PACIFIC RIM NATIONAL PARK
SITE	HIGHWAY 4
ALDER REMOVAL PROGRAM	2250
VEHICLE PARKING STALL TREE REMOVAL	0
DANGER TREE ASSESSMENT	31

Legend

- Roads
- Recreation Trail
- Park Boundary
- Contours 20m
- Fish Stream
- Fish Sensitive Zone
- Non Fish Stream
- Non Classified Drainage
- Power Line
- Timber Type
- Stand
- Airport
- Golf Course
- Indian Reserves Govt

Alder Intensity

- High (201-300)
- Medium (101-200)
- Low (0-100)

Road Feature

- Legal Pin
- Building
- Km Marker
- Alder Tree Removal
- Danger Tree
- Blowdown
- Swamp
- Culvert
- Bridge
- Watermain
- Hydrant
- Hydro Pole

Robinson Cove

Park Boundary

Shorepine

Hw_5 Cw_5 5m 60cm

Hw_5 Cw_5 5m 60cm

19

Pacific Rim Highway 4

Radar Hill Rd

1700

31

Pl_5 Cw_3Hw_2 12m 35cm

18

Bomber Trail

Dr_6 Hw_2Cw_2 20m 45cm

Pl_6 Hw_3 Cw_1 11m 25cm

2000

Dr_6 Hw_2Cw_2 20m 45cm

1200

17

BC Hydro 2.5 KV Powerline

P_6 C_3H_1 7m 25cm

P_7 C_2H_1 16m 27cm

Dr_9 Hw 16m 20cm

PACIFIC RIM NATIONAL PARK RESERVE

PACIFIC RIM HIGHWAY

"2016 WILDLIFE AND DANGER TREE ASSESSMENT"

FACILITIES /SITES ASSESSED	Pacific Rim Highway
LEVEL OF DISTURBANCE (LOD)	Permanent Paved Road ~ LOD 1
ALDER REMOVAL PROGRAM *Scope: To mark all red alder (Alnus rubra) trees > 20cm diameter that are located within 10m from the boundary of the Pacific Rim Highway.*	**Alder Trees Marked = 2,250** • 20.1 - 30cm diameter = **900** • 30.1 – 40cm diameter = **675** • 40.1 – 50cm diameter = **225** • 50.1 – 60cm diameter = **225** • 60.1 – 70cm diameter = **225**
WILDLIFE AND DANGER TREE ASSESSMENT *Scope: To complete a Wildlife and Danger Tree Assessment (WDTA) within one and a half tree lengths of Pacific Rim Highway.*	**"Dangerous" (D) Trees Marked = 6** **"Safe Recommend" (SR) Trees Marked = 11** **"Safe Monitor" (SM) Trees Marked = 14**

FIELD MARKING STANDARDS *:*

- Alder Marking Program- Trees marked for removal have been identified with a pink dot.
- Wildlife & Danger Trees- Reference trees marked for removal have been identified with an orange dot and an aluminum tag.

BEST MANAGEMENT PRACTICES	
Access Control	*During treatments the access must be controlled (example: by locking the gates and posted AREA CLOSED signage).*
Danger Trees	*Once a tree is removed, take off the tag to cross-reference. If the tree is topped, leave the tag to enable future monitoring.*
Ditching	*Ensure all ditch-lines and culverts are free of debris prior to leaving the site.*
Fish Streams	*When removing trees near a stream ensure the following Stream Management Protection is maintained:* • *fish stream > 5m to 20m = 30m reserve (set-back)* • *fish stream > 1.5m to 5m = 20m reserve (set-back)* • *fish stream < 1.5m and all other non-fish streams = 0m reserve (set-back)* *If fish are observed in non-classified streams, stop work and contact your Supervisor for guidance. Leave those trees with a heavy lean over the streams for shade and as a food source for fish. Ensure no debris enters fish bearing water.* *Refer to the map for the status and location of fish and non-fish streams within the road corridor.*
Cultural Heritage Features	*If unidentified cultural heritage features are discovered, stop work immediately and contact your Supervisor. Contact Parks Canada for guidance. Those trees predating 1846 are protected under the "Heritage Act."*
SITE HAZARDS	
Utilities	*There is a 25kv distribution hydro line in or adjacent to the assessment area. The general limits of approach are 3m. In the event that trees inadvertently come in contact with the powerlines, follow the " 7 Steps to electrical Safety" which includes:* • ***10 Meters to Safety****-stay back at least 10m (33 feet) from any fallen power line or exposed underground cable* • ***Look Up and Live****- look up, check and keep equipment clear of overhead power lines* • ***Known Your Limits****-when using equipment in the vicinity of powerlines, always maintain the limits of approach: from 3-7 meters (10-20 feet) depending on the voltage* • ***Don't Hang around Operating Equipment****-stay 10 meters from operating equipment in case it contacts an energized line.* • ***Shuffle or Hop, Don't Step****-if your vehicle makes contact with an energized line, remain inside until help arrives. If you must get out due to a fire, jump out with your feet together. Then shuffle away keeping both your feet close together. Never contact the vehicle and the ground at the same time* • ***Call before You Dig****-to avoid contacting underground power lines, call "BC One Call" at 1-800-474-6886.* • ***Don't Become Victim****-always call local emergency personnel when someone is injured in an electrical accident.* *Additional utilities, such as gas lines and/or waterlines, may be associated with facilities / structures at this site. Ensure you know the location of all activities prior to commencing work.*
Underbrush	*There is a thick layer of under-brush (salal and salmonberry) within the alder removal area. Hazards associated with "Underbrush" include: eye pokes, thorns, obscured holes, concealed rocks and twining vegetation.*
Garbage	*There is incidental glass and metal discarded within the timber around the roadways, parking lots and facilities. Exposure to hazardous substances or chemicals, sharp glass and metal (nails, fencing and sheet metal) is possible.*
Motor Vehicles	*Pacific Rim Highway is very busy. Hazards associated with "Motor Vehicles" include: Struck by vehicles or unsecured flying debris and obscured lines of sight. Flag people will be required to control access around the work site to ensure public and worker safety.*
Urban Interface	*There are numerous hiking and biking trail heads originating from the parking lots within day use areas which cross the Pacific Rim Highway. The community of Esowista is located 500m southeast of the Schooner Cove day use area. Flag people will be required to control access to the work site to ensure public and worker safety.*
Wildlife	*Black Bears, Wolves and Cougar are known to frequent this site. Hazards associated with these species include: habituation to human attractants (garbage), predatory behavior, defending a food cache, defending young and proximity to dens/lairs.*
Wind-throw	*There is recent wind-throw located 500m west of Incinerator Rock, on the edge of the airport runways. Hazards associated with "Windfall Areas" include: loose root systems, root wells, hung up branches, trees under tension, buckskin and elevated walk logs.*

Professional Signatures REGISTERED FOREST TECHNOLOGIST PROVINCE OF BRITISH COLUMBIA DARIN BROWN NO. 0423 Darin Brown 2016.09.15 08:00:28 -07'00' *Darin Brown, RFT, DTA #P2174 ~ Meridian Forest Services Ltd.*	*Professional Signatures* REGISTERED PROFESSIONAL PROVINCE OF BRITISH COLUMBIA DEAN M. McGEOUGH FORESTER No. 2274 *Dean McGeough, RPF, DTA #P0004 ~ Integra Forest Consulting Ltd.*

Pacific Rim Highway #4 ~ Danger Tree Location Coordinates

Type	Area	Tree #	Long	Lat
Danger Tree	Highway 4	1	W125 36' 48.769"	N49 0' 23.388"
Danger Tree	Highway 4	2	W125 37' 38.690"	N49 0' 50.204"
Danger Tree	Highway 4	4	W125 38' 19.583"	N49 1' 17.172"
Danger Tree	Highway 4	5	W125 38' 36.325"	N49 1' 25.846"
Danger Tree	Highway 4	6	W125 38' 57.914"	N49 1' 38.913"
Danger Tree	Highway 4	7	W125 38' 57.959"	N49 1' 38.848"
Danger Tree	Highway 4	8	W125 39' 18.114"	N49 1' 50.637"
Danger Tree	Highway 4	9	W125 39' 28.305"	N49 1' 56.174"
Danger Tree	Highway 4	10A	W125 41' 12.136"	N49 2' 33.037"
Danger Tree	Highway 4	12	W125 40' 23.297"	N49 2' 28.059"
Danger Tree	Highway 4	13	W125 40' 24.019"	N49 2' 28.647"
Danger Tree	Highway 4	15	W125 44' 5.702"	N49 3' 50.234"
Danger Tree	Highway 4	18	W125 42' 50.008"	N49 3' 12.578"
Danger Tree	Highway 4	19	W125 42' 50.161"	N49 3' 12.672"
Danger Tree	Highway 4	20	W125 42' 54.991"	N49 3' 17.009"
Danger Tree	Highway 4	21	W125 43' 6.947"	N49 3' 24.792"
Danger Tree	Highway 4	22	W125 43' 21.459"	N49 3' 34.231"
Danger Tree	Highway 4	24	W125 44' 12.290"	N49 3' 50.934"
Danger Tree	Highway 4	25	W125 44' 12.733"	N49 3' 50.669"
Danger Tree	Highway 4	26	W125 44' 12.784"	N49 3' 50.701"
Danger Tree	Highway 4	27	W125 44' 12.643"	N49 3' 50.729"
Danger Tree	Highway 4	28-30	W125 47' 26.935"	N49 4' 55.717"
Danger Tree	Highway 4	31	W125 49' 36.593"	N49 5' 22.228"
Danger Tree	Highway 4	32	W125 46' 30.835"	N49 4' 22.881"
Danger Tree	Highway 4	33-35	W125 46' 42.372"	N49 4' 22.363"
Danger Tree	Highway 4	36	W125 46' 42.689"	N49 4' 21.870"
Danger Tree	Highway 4	37	W125 46' 52.042"	N49 4' 21.612"