

Introduction:

The following Tree Management Plan (TMP) has been prepared to aid in the planning stage to determine expected tree removal requirements for 3469 Uplands Drive located in Nanaimo, BC to support a rezoning application with the City of Nanaimo. The subject parcel is currently zoned R10 and is developed with a single-family residence. The parcel is approximately 0.6495 ha in size and approximately 0.5070 ha (78%) is heavily treed. The parcel also contains a wetland at the south end that is associated with a 15m leave strip at the back portion of the property comprising 0.2102 ha of the parcel. The south bank of the wetland is a small rocky outcrop habitat that will not be impacted by the proposed development.

As understood, the proposed development includes a 21 unit and a 15-unit multi-story building with underground parking; rezoning is required to meet the density allowance for the proposed development. As understood, at the rezoning stage, the City is requiring a preliminary TMP to be completed. Because the proposed development is still in the design stage and pending approval for rezoning, this TMP has been prepared as a draft for planning purposes only. At the detailed design stage, the TMP will be amended to reflect the exact tree removal requirements based on the finalized building design and location and extent of the proposed construction envelope.

The following TMP includes an inventory of trees that were identified within the parcel during a site assessment completed by Aquaparian. A site location map of the subject parcel in relation to the City of Nanaimo has been included as Figure 1. During the assessment, several trees classified as 'Significant' by the City are located within the parcel and are predominantly concentrated within the leave strip and wetland area. Significant Trees are mapped in Figure 2 and tabulated in Table 1. Figure 3 identifies polygons of uniform forest composition as mapped over an aerial image of the subject parcel. Descriptions of the species composition, tree size ranges, tree density and understory characteristics have been provided for each polygon. Figure 4 shows the preliminary development plan superimposed over the parcel in order to identify the expected clearing and retention areas.

This document also includes a list of information (Page 4) that will be required at the detailed design stage in order for the tree removal permit, calculation of removal and replacement requirements and/or fees, and the TMP to be completed for approval for the finalized design plan.

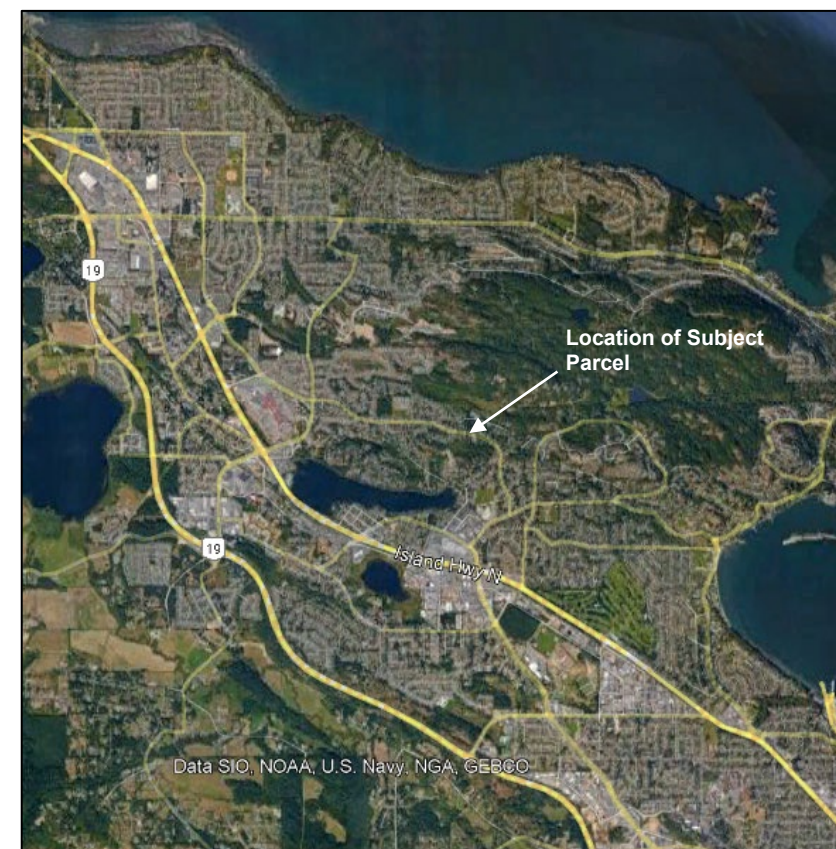


Figure 1. Site Location Map



Figure 2. Map of significant trees within the subject parcel and location of wetland and 15m wetland leave strip

Table 1. List of Significant Trees Identified Within the Subject Parcel

Tree ID #	Species	Spp.	DBH (cm)	Coordinates
T1	Douglas fir	<i>Pseudotsuga menziesii</i>	83	49°12'55.8" N / 124°00'04.9" W
T2	Douglas fir	<i>Pseudotsuga menziesii</i>	84	49°12'56.2" N / 124°00'05.5" W
T3	Bitter cherry	<i>Prunus emarginata</i>	20	49°12'53.9" N / 124°00'05.5" W
T4	Bitter cherry	<i>Prunus emarginata</i>	23	49°12'53.7" N / 124°00'05.5" W
T5	Pacific dogwood	<i>Cornus nuttallii</i>	20	49°12'53.5" N / 124°00'06.1" W
T6	Pacific dogwood	<i>Cornus nuttallii</i>	24	49°12'53.5" N / 124°00'06.4" W
T7	Douglas fir	<i>Pseudotsuga menziesii</i>	92	49°12'52.4" N / 124°00'06.0" W
T8	Douglas fir	<i>Pseudotsuga menziesii</i>	90	49°12'52.6" N / 124°00'06.4" W
T9	Douglas fir	<i>Pseudotsuga menziesii</i>	81	49°12'52.4" N / 124°00'05.6" W
T10	Douglas fir	<i>Pseudotsuga menziesii</i>	91	49°12'52.3" N / 124°00'05.6" W
T11	Western redcedar	<i>Thuja plicata</i>	82	49°12'52.3" N / 124°00'05.5" W
T12	Douglas fir	<i>Pseudotsuga menziesii</i>	95	49°12'52.4" N / 124°00'04.9" W
T13	Western redcedar	<i>Thuja plicata</i>	88	49°12'52.4" N / 124°00'06.6" W
T14	Red alder	<i>Alnus rubra</i>	32	49°12'51.5" N / 124°00'05.2" W
T15	Red alder	<i>Alnus rubra</i>	37	49°12'51.2" N / 124°00'05.0" W

Road dedication (2.5m X 25m treed strip):

Single hedgerow of 8 western redcedar (6-25cm DBH) and 13 Douglas fir (6-20cm DBH) in retaining wall garden fronting street.

Removal: 21 trees (100%)

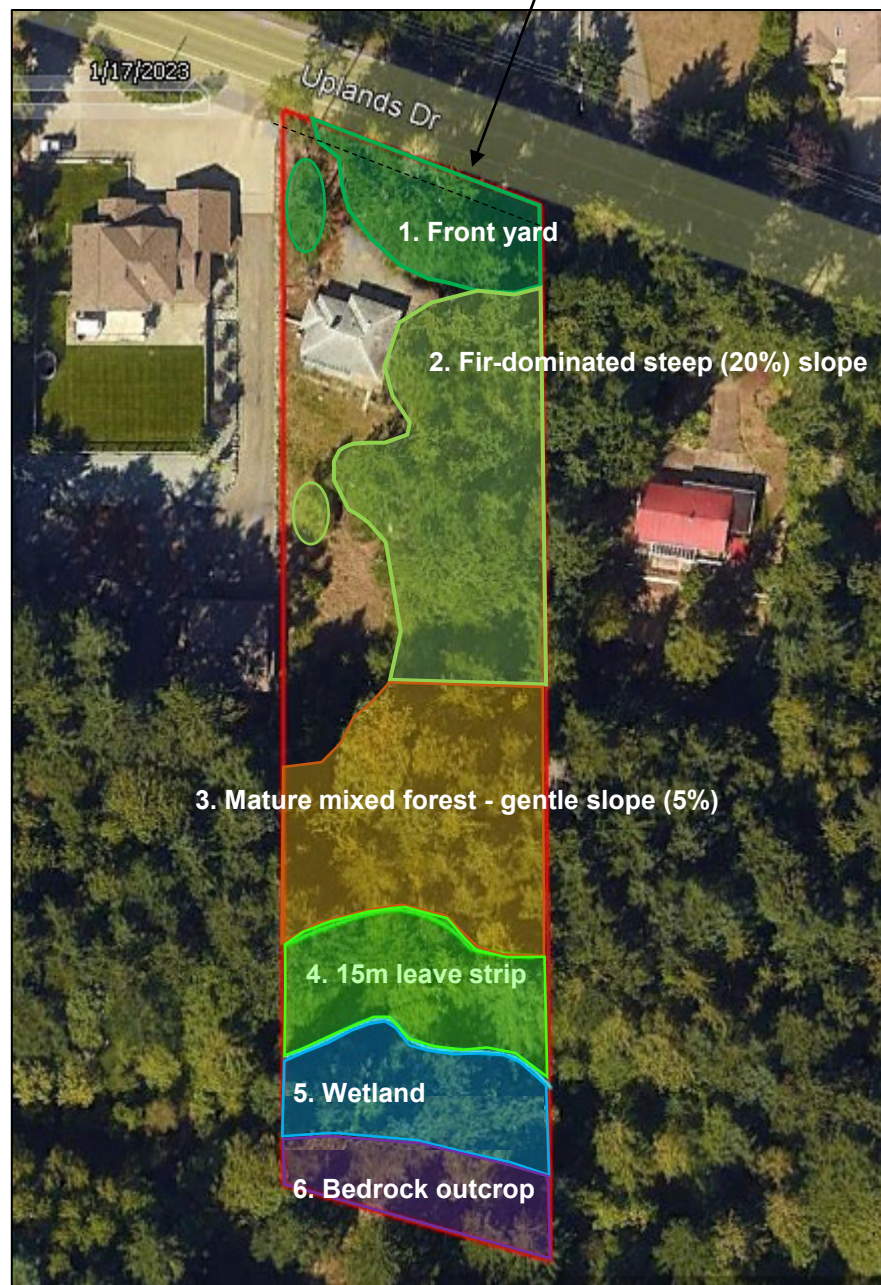


Figure 3. Map of Tree Stands and Forest Composition within the Subject Parcel

Tree stands:

1. Front yard (area without road dedication: 0.04ha): 19 trees scattered over grass lawn. 16 Douglas fir (32-83cmDBH), 1 western redcedar (40cmDBH), 2 ornamental spp. (12-13cmDBH) and 1 arbutus (36cmDBH). Expected **Removal: 14 trees (70%)**

2. Fir-dominated steep slope (0.17ha): Mature second growth forest with closed canopy. 32 trees/10m radius, trees spaced 4m apart on avg. Patchy understory includes dull Oregon-grape, salal, holly, garden escapees and abundant spurge laurel.

Species composition

- 75% Douglas fir
- 14% Western cedar
- 5% Red alder
- 5% Arbutus
- 1% ornamental spp.

Size ranges (cm DBH):

- 15% 6-30cm
- 60% 30.1-60cm
- 25% 60.1-79.9cm

Expected Removal: 0.17ha (100%)

3. Mature mixed forest - gentle slope (0.14ha): 30-35% canopy cover, trees spaced 7m apart avg., approx. 50-60 trees total in polygon. Understory: oceanspray, sword fern, spurge laurel, dull Oregon-grape, salal, holly, bracken fern, moss.

Species composition (% of polygon)

- 40% Douglas fir
- 30% Bigleaf maple
- 20% Western cedar
- 6% Bitter cherry
- 2% Pacific dogwood
- 2% ornamental spp.

Size ranges (cm DBH):

- 30% 6-30cm
- 69% 30.1-60cm
- 1% 60.1-79.9cm

Expected Removal: 0.12ha (86%)

4. 15m Leave strip (0.07ha): 50% canopy cover, 40 trees/10m radius. Sparse, shady understory: dull Oregon grape, sword fern, holly, red huckleberry, spurge laurel.

Species composition (% of polygon)

- 60% Western cedar
- 40% Douglas fir

Size ranges (cm DBH):

- 25% 6-30cm
- 50% 30.1-60cm
- 20% 60.1-79.9cm
- 5% 80cm+

Expected Retention 100%

5. Wetland south to base of bedrock outcrop (0.05ha): 30% canopy cover, 80 trees total. Open wetland area and low, moist south bank to base of bedrock outcrop. Wetland understory: slough sedge, yellow-flag iris, salmonberry, ninebark. Streamside understory: holly, sword fern, salal, spurge laurel, red huckleberry, dull Oregon-grape, trailing blackberry, minor ivy.

Species composition (% of polygon)

- 31% Red alder
- 25% Western cedar
- 25% Bigleaf maple
- 19% Douglas fir

Size ranges (cm DBH):

- 81% 6-30cm
- 19% 30.1-60cm

Expected Retention 100%

6. Bedrock outcrop (0.03ha): Open canopy, 13 trees spaced 7-10m apart on avg. Understory: oceanspray, Scotch broom, grasses and abundant moss.

Species composition (% of polygon)

- 69% Douglas fir (8@ 6-30cm, 1@80cm+)
- 31% Arbutus (4@6-30cm)

Expected Retention 100%

****Note that removal numbers are estimated based on the preliminary building layout and observations in the field. Numbers may change following detailed design**



Figure 4. Overlay of Proposed Development Identifying Expected Tree Removal Area

Legend:

Tree removal area for proposed development
Tree removal area for road dedication
Wetland boundary
15m leave strip boundary
Property boundary



Requirements at the Detailed Design Stage

The following is a list of requirements to finalize the Tree Management Plan following completion of detailed design.

1. Identify the extent of the construction envelope required for the final design.
2. The construction envelope will need to be at least partially indicated on the ground in order to clearly identify trees to be retained that will need protection. Aquaparian will measure and flag trees within close proximity to the construction envelope that will require protective fencing to be installed to protect root zones during all levels of construction. Once surveyed, Aquaparian will identify the location for protective fencing to be installed as per the requirements of the City of Nanaimo's Management and Protection of Trees Bylaw 2013 No. 7126 and will provide a drawing to be followed by the contractor including specs for the fencing as per the Bylaw.
3. If the construction envelope is within several meters of the east and west property boundaries, trees along the fence line including those on neighbouring parcels will be required to be measured and flagged by Aquaparian and surveyed onto the site plan in order to establish protective fencing. This will include consultation with the neighbours to the east and west in order to gain access to their properties to complete the work. If neighbouring trees are required to be removed this may include negotiation with the neighbours.
4. Once tree removal and retention requirements have been finalized, Aquaparian will complete the TMP and Tree Removal Permit and will calculate the tree removal fee. Aquaparian will also calculate the replacement criteria based on trees to be removed. Given the layout of the preliminary design and the size of the expected clearing area, Aquaparian assumes that the client will select a *cash in lieu* option as there is not sufficient room for the required replacement trees to be planted within the parcel.