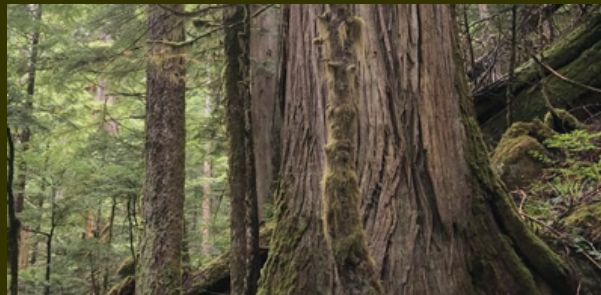


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DRAFT
**GIS ANALYSIS OF
FOREST COVER IN
qATHET REGIONAL DISTRICT**

In Relation to Criteria for Short-term Development Deferral
as Recommended by the
2020 Old Growth Strategic Review

March 17th, 2021



It's time to change the relationship we have with forests

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INTRODUCTION

On April 30th, 2020, Al Gorley and Gary Merkel submitted the results of their independent strategic review of old growth forest management in British Columbia: *A New Future for Old Forests: A Strategic Review of How British Columbia Manages for Old Forests Within its Ancient Ecosystems*. As per the NDP's 2020 election promise, the Premier's mandate letter to Katrine Conroy, Minister of Forests, Lands, Natural Resource Operations and Rural Development, instructs her to:

Implement the recommendations of the Old Growth Strategic Review in collaboration with Indigenous leaders, labour, industry, and environmental groups to protect more old-growth stands – in addition to the 353,000 hectares protected in September 2020.

Recommendation 6 of the Old Growth Strategic Review states that an immediate response to ecosystems at very high risk is required:

Until a new strategy is implemented, defer development in old forests where ecosystems are at very high and near-term risk of irreversible biodiversity loss. (p.55)

Specifically, the implementation advice for Recommendation 6 advises that old forests at highest risk of permanent biodiversity loss should be deferred from harvesting or other forms of disturbance (as soon as possible), until a system of new, more sustainable, and effective approaches to managing biodiversity and other old forest values is developed and implemented. The Review states that failure to act now could lead to the permanent loss of rare or unique ecosystem components contained in old and ancient forests.

The Strategic Review specifically advises that old forest areas meeting the following criteria (and possibly others) are at risk of near-term & irreversible biodiversity loss, and should be considered for short-term deferrals as soon as possible:

1. Any BEC variant with less than 10% old forest remaining today.
2. Old forest in any BEC – Landscape Unit combination that has less than 10% old forest today.
3. Ancient forests (e.g., forests >500 years on the coast).
4. Areas with a high potential to contribute towards larger ecosystem resilience.
5. Areas with a Site Index of >20m (i.e. productive sites able to grow large trees).

In an effort to understand what old forests within qathet Regional District (qRD) likely meet the above deferral criteria, in 2020 qathetOG undertook a preliminary (and conservative) GIS analysis of forest cover data from the 2019 Provincial Vegetation Resource Inventory (VRI). qathetOG is a group of concerned citizens living in the qRD with an interest in modernizing forest management toward sustainable second-growth harvests, fostering local value-added forestry economies, and balancing forest production with adequate protections for ecological, cultural and recreational forest values.

RESULTS

Figure 1 shows remaining old forest (age class 9 in the VRI, estimated to be >250yo) in the qathet Regional District, as a comparison to total forest cover. Our preliminary analysis shows that less than 22% of the forested landscape in the qRD remains as old forest (**Table 1**). When old forest in the comparatively unproductive subalpine Mountain Hemlock (MH) BEC zone is removed from the calculations, there is only ~15% old forest remaining. This remaining 15% is largely isolated to steep valley sides in the remotest northern drainages of the qRD. Little remains on the valley bottoms and in lower elevation forests close to the coast (less than 5%).

Remaining old forest in the qRD is compared by **BEC unit**¹ in **Table 1**. Historically, approximate expected percentages of old forest in each BEC unit would be: CDFmm 40% (Price et al. 2020), CWHxm, dm, ms 70%, CWHds 60%, CWHvm 85-90%, and MHmm 90-95% (MOE 2020). Remaining percentages of old growth in all BEC units in the qRD are far below the amounts of old growth that would be expected based on historic disturbance regimes.

Table 1. Remaining old forest (age class 9) in the qRD by BEC unit, with historic old growth percentages and risk thresholds indicated (data source: 2019 VRI).

BEC UNIT	TOTAL FOREST (Ha)	TOTAL OLD GROWTH (Ha)	CURRENT % OLD GROWTH	HISTORIC % OLD GROWTH ² (hOG)	Low Risk (>70% hOG)	High Risk (<30% hOG)
CDF						
mm	22289.8	1080.5	4.8	40	>28	<12
CWH						
xm	34862.7	865.3	2.5	70	>49	<21
dm	82755.1	2850.8	3.4	70	>49	<21
ds	5592.5	1531.3	27.4	60	>42	<18
ms	9216.6	5662.2	61.4	70	>49	<21
vm	84847.0	23966.4	28.2	85-90	>61	<26
MH						
mm	46774.2	26905.6	57.5	90-95	>65	<28
TOTALS	286338.0	62862.1	22.0	-	-	-

Deferral Criteria 1

Figure 2 highlights areas of qRD old forest remaining within the CDFmm, CWHxm and CWHdm BEC units. These forests meet **deferral criteria #1** in the Old Growth Strategic Review, as there is less than 10% old growth remaining in these BEC units province-wide. The situation for these ecosystems is particularly precarious in the qRD, where there is less than 5% old growth remaining in the CDF, and only 2.5% and 3.4% in the CWHxm and CWHdm, respectively (**Table 1**). According to

¹ The Biogeoclimatic Ecosystem Classification (BEC) delineates ecological zones (biogeoclimatic units) by vegetation, soils, and climate, and is more commonly used in forestry and conservation. It also classifies ecosystems, within the ecological zones, based on the potential of the site at climax or mature successional stages. For descriptions of the different BEC units referred to in this report see: <https://www.for.gov.bc.ca/hre/becweb/resources/classificationreports/subzones/index.html>

² Based on figures from the Provincial Cumulative Effects Framework, as cited in *Standards for Assessing the Condition of Forest Biodiversity under British Columbia's Cumulative Effects Framework* (MOE 2020). The CDF figure is sourced from *Last Stand for Biodiversity* (Price et al. 2020).

Gorley & Merkel (2020), if 70% or more of the natural abundance of forest with old trees is retained, the risk of species loss, compromised ecosystem services, and losing ecosystem resilience is *low*. If less than 30% is retained the risk is *high*. Between 30% and 70%, the risk *varies* by ecosystem. The relative risk thresholds as they pertain to BEC units in the qRD are outlined in **Table 1**.

Deferral Criteria 2

The Strategic Review also states that old forest distribution and spatial considerations are crucial in managing for effective ecosystem health. **Table 2** shows percentages old forest calculated for each BEC - Landscape Unit combination in the qRD. There are three BEC-LU combinations where the BEC unit doesn't meet criteria 1, but which have less 10% old forest remaining in that particular landscape unit. These include: old forests within the CWHvm and MHmm of the Haslam Landscape Unit, and old forests within the CWHvm of the Lois Landscape Unit. These forests meet **deferral criteria #2** in the Old Growth Strategic Review; their locations are highlighted in **Figure 3**.

Deferral Criteria 5

Site index is an indicator of site productivity described by the height that a stand of trees reaches in a given time. High productivity sites (Site Index >20) have the potential to grow very large trees. Sites with the potential to grow very large trees cover less than 3% of the province (Price et al. 2020). These types of forests match most people's vision of old growth, that being old forest with large trees. Old forests on these sites have dwindled considerably due to intense harvest. Almost all productive forests in the qRD have been logged; only 5.3% of high productivity forest is currently old (compared to 6% for the coast generally). According to Price et al. (2020), these ecosystems are effectively the white rhino of old growth forests. They are almost extinguished and will not recover from logging. **Figure 4** shows the locations of remaining high productivity old forests³ in the qRD (site index > 20).

Deferral Criteria 1,2 & 5

Figure 5 shows combined old forest in qRD which meet the Strategic Review's deferral criteria 1,2 & 5. Old forests that do not meet these criteria are likely to meet criteria 3 and 4 as per the discussion below.

Deferral Criteria 3 & 4

The Strategic Review's **deferral criteria # 3** is ancient forest, which on the coast is categorized as forest greater than 500 years old. However, age class (and age within the BC government forest cover data) does not allow for ancient forests (>500 yo) to be distinguished from old forests (>250 yo). On the coast, some forests are many thousands of years old (Price et al. 2020). According to the Strategic Review, these forests have ancient genetic material and are repositories of biota and processes we may not even know or understand. This makes them an extremely important buffer against species extinction, climate change, and lost future opportunities. These "ancient forests" are globally unique, rare, and contain species as yet undiscovered, and many of these ecosystems and old forests are non-renewable within any reasonable time frame. Many of these irreplaceable forests are in the timber harvesting land base and are subject to logging,

³ Very few high productivity old forest are designated as Old Growth Management Areas (OGMAs) in QRD; there is generally a preference for retaining lower productivity old forest (with smaller trees) in OGMAs.

In qRD most of the remaining old forest is in the subalpine Mountain Hemlock (MH) BEC zone (**Table 1**), or in higher reaches of the CWHvm. At higher elevations, particularly in the MH zone, trees are slow growing and small for their age. Hence, they are often many hundreds of years old before reaching a harvestable size. Tree ring counts on a selection of stumps in a recent WFP cutblock in the MH zone of Mount Freda (in the qRD) found several trees between 800 and 1200 years old (see article in *Powell River Living* magazine⁴). The VRI assigned age for the stand was 351 years, illustrating the limitations of using existing provincial forest cover data to identify ancient forest attributes.

In addition to old forests meeting criteria 1, 2 & 5, **Figure 6** highlights forests which have been assigned ages over 300 years by the VRI. Because most of these forests are at higher elevations where there are infrequent natural disturbances, there is a very good probability that they are actually ancient (>500 yo), and therefore likely to meet **deferral criteria #3**.

With the inclusion of forests likely to meet deferral criteria #3, there are few old forests remaining in qRD that are not at risk of near-term & irreversible biodiversity loss, as shown in **Figure 6**. For the remaining old forests that do not meet the above criteria, there is a reasonable likelihood that many will meet **deferral criteria #4**: old forest areas with a high potential to contribute towards larger ecosystem resilience. An analysis of forests within qRD meeting deferral criteria #4 was beyond the scope of this report.

OGMAs, WHAs & Tenure

Within the qRD, a small portion of remaining old forests is afforded some level of temporary protection by Old Growth Management Areas (OGMAs) and Wildlife Habitat Areas (WHAs). These are shown in **Figure 7**. For reference purposes, tenure is shown in **Figure 8**.

CONCLUSION

This preliminary analysis of the 2019 VRI data (recognizing that the data has limitations, and is not always accurate or up to date) indicates that most remaining old forests in the qRD likely meet the Old Growth Strategic Review criteria for being at risk of imminent and irreversible biodiversity loss, and qualify for short-term deferral from forestry development while new approaches to managing biodiversity and other old forest values are developed. This report is indicative only, and is not intended as a substitute for rigorous professional analysis, verified on the ground by recognized experts.

Next Steps:

In order to prevent irreversible biodiversity losses, the Old Growth Strategic Review advises that its recommendation for interim deferrals (Recommendation #6) be acted on as quickly as possible. Upon identifying and verifying very high-risk old forests that meet the short-term deferral criteria, the Review outlines the following next steps:

1. Determine which of the high risk old forests are subject to harvesting or other significant disturbances within the next two years (FLNRORD staff and licensees should have this information).
2. Use various mechanisms to enact interim deferrals, such as:

⁴ *Millennia-old cedars felled on Mount Freda* (May 2021)
<https://static1.squarespace.com/static/5ed44807709a614ffb3c1699/t/6055561e0af9103c1f5ce2a5/1616205343182/PR+Llving+Jan+2021++Old+Forests+Freda+Article.pdf>

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- a. Instruct BCTS to cease development and defer selling timber in old growth areas;
 - b. Request authorized tenure holders to voluntarily defer development;
 - c. Decline to authorize new permits or licences in deferral areas; and
 - d. If necessary, establish regulatory provisions and incentives to enable deferrals.
3. Carry out an economic impact analysis of deferrals.
 4. Establish a fair and equitable process to mitigate economic impacts to holders of small area-based timber tenures (e.g., replacement area or compensation).
 5. Provide a public progress report on how these priority areas have been addressed at the end of the first year after this report.
 6. After two years, confirm which temporary deferral areas will be subject to protection or further management measures.
 - a. For each identified area, determine whether biodiversity conservation requires full exclusion from development or special management.
 - b. Establish legal protection for areas confirmed to be critical for biodiversity conservation.

REFERENCES:

Gorley, A. and G. Merkel (2020). *A New Future for Old Forests: A Strategic Review of How British Columbia Manages for Old Forests Within its Ancient Ecosystems*. Report prepared for the Minister of Environment.

MOE (2020). *Standards for Assessing the Condition of Forest Biodiversity under British Columbia's Cumulative Effects Framework*. Provincial Forest Biodiversity Technical Working Group.

Price, K., R.F. Holt and D. Daust (2020). *BC's Old Growth Forest: A Last Stand for Biodiversity*.

Table 2. Percentages old forest calculated for each BEC - Landscape Unit combination in qRD, with combinations meeting deferral criteria 1 & 2 indicated. The risk rating, as per Table 1, for each BEC-Landscape Unit combination is indicated by colour coding: red = high risk, green = low risk, yellow = variable risk.

BEC-LU COMBO	TOTAL FOREST (ha)	AGE CLASS 9 (ha)	% OG	Meets Deferral Criteria 1	Meets Deferral Criteria 2
Brittain	33860.0	6803.2	20.1		
CWH	25425.0	3821.6	15.0		
dm	11175.0	501.9	4.5	Y	Y
vm	14250.0	3319.7	23.3		
MH	8435.0	2981.6	35.3		
mm	8435.0	2981.6	35.3		
Bunster	38467.8	4391.0	11.4		
CDF	2084.1		0.0		
mm	2084.1		0.0	Y	Y
CWH	33186.3	3045.7	9.2		
dm	13723.3	386.4	2.8	Y	Y
vm	8064.0	2358.4	29.2		
xm	11399.0	300.9	2.6	Y	Y
MH	3197.5	1345.3	42.1		
mm	3197.5	1345.3	42.1		
Haslam	18603.6	232.3	1.2		
CDF	1137.1		0.0		
mm	1137.1		0.0	Y	Y
CWH	17158.5	204.3	1.2		
dm	9842.6	110.6	1.1	Y	Y
vm	2704.4	93.7	3.5		Y
xm	4611.5		0.0	Y	Y
MH	308.0	28.0	9.1		
mm	308.0	28.0	9.1		Y
Homfray	26323.3	9427.2	35.8		
CWH	19229.9	4096.4	21.3		
dm	7987.8	625.4	7.8	Y	Y
vm	10343.1	3463.3	33.5		
xm	898.9	7.7	0.9	Y	Y
MH	7093.5	5330.8	75.2		
mm	7093.5	5330.8	75.2		
Powell Daniels	12175.6	5464.4	44.9		
CWH	10597.3	4051.7	38.2		
dm	763.3	36.6	4.8	Y	Y
vm	9834.0	4015.2	40.8		
MH	1578.3	1412.7	89.5		
mm	1578.3	1412.7	89.5		
Powell Lake	26457.5	3914.2	14.8		

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BEC-LU COMBO	TOTAL FOREST (ha)	AGE CLASS 9 (ha)	% OG	Meets Deferral Criteria 1	Meets Deferral Criteria 2
CWH	21763.5	1660.2	7.6		
dm	9618.1	18.3	0.2	Y	Y
vm	12145.4	1641.8	13.5		
MH	4694.0	2254.0	48.0		
mm	4694.0	2254.0	48.0		
Skwawka	11943.1	5869.1	49.1		
CWH	9178.0	3619.6	39.4		
dm	703.5	33.3	4.7	Y	Y
vm	8474.5	3586.3	42.3		
MH	2765.1	2249.4	81.4		
mm	2765.1	2249.4	81.4		
Texada	37090.8	1647.5	4.4		
CDF	19068.7	1080.5	5.7		
mm	19068.7	1080.5	5.7	Y	Y
CWH	18022.1	567.0	3.1		
dm	1696.3	20.5	1.2	Y	Y
xm	16325.8	546.5	3.3	Y	Y
Toba	39943.0	22476.9	56.3		
CWH	27780.4	12941.6	46.6		
dm	5022.9	903.9	18.0	Y	
ds	5592.5	1531.3	27.4		
ms	9216.6	5662.2	61.4		
vm	7948.3	4844.2	60.9		
MH	12162.6	9535.3	78.4		
mm	12162.6	9535.3	78.4		
Lois	41473.2	2636.3	6.4		
CWH	34933	868	2		
dm	22222.3	213.9	1.0	Y	Y
vm2	11083.1	643.8	5.8		Y
xm1	1627.5	10.1	0.6	Y	Y
MH	6540.2	1768.4	27.0		
mm	6540.2	1768.4	27.0		
GRAND TOTALS	286338.0	62862.1	22.0		

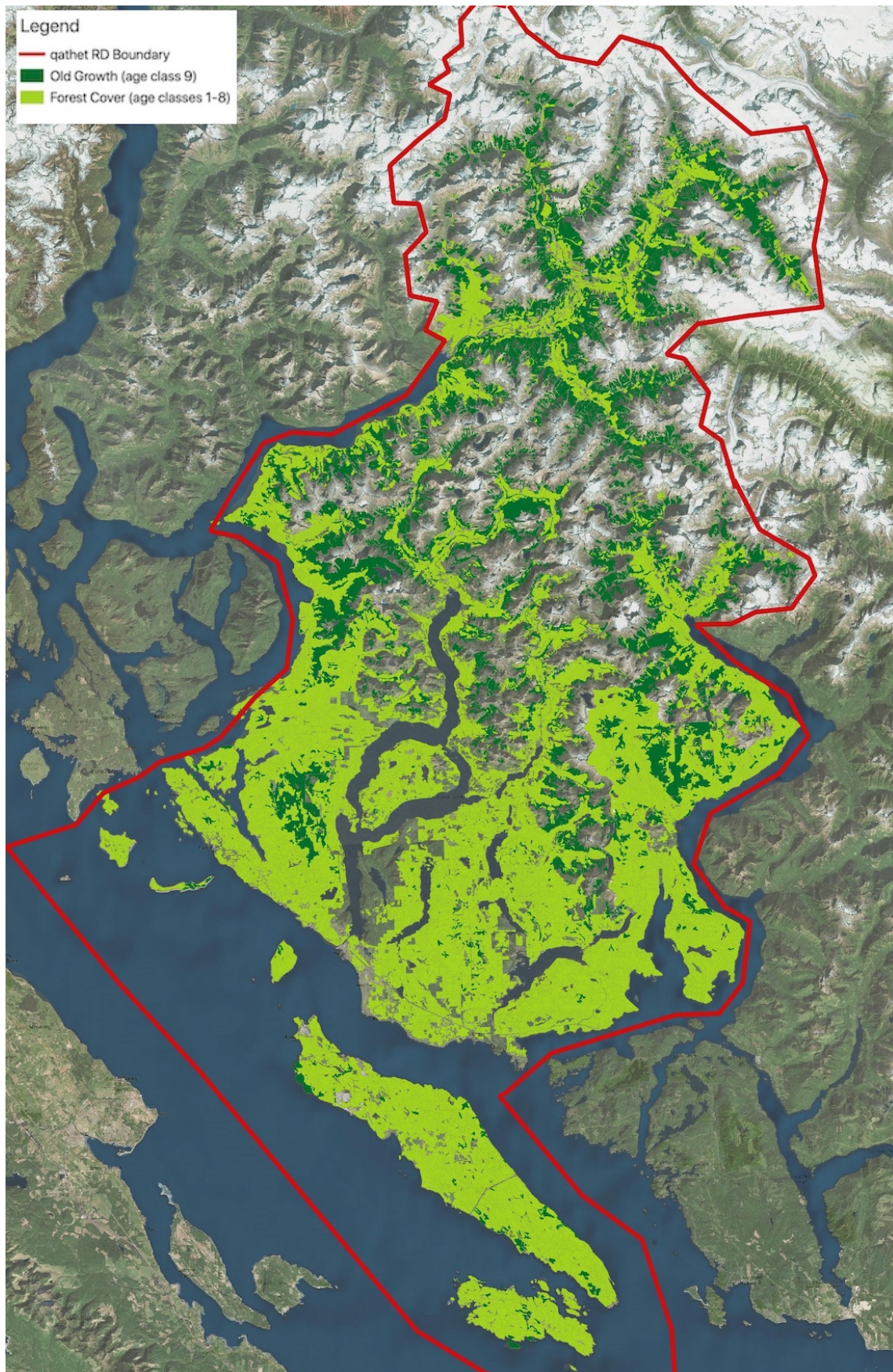


Figure 1. Forest cover in qathet regional district, with remaining old growth forest (age class 9, >250yo) indicated in dark green (data source: BC VRI 2019).

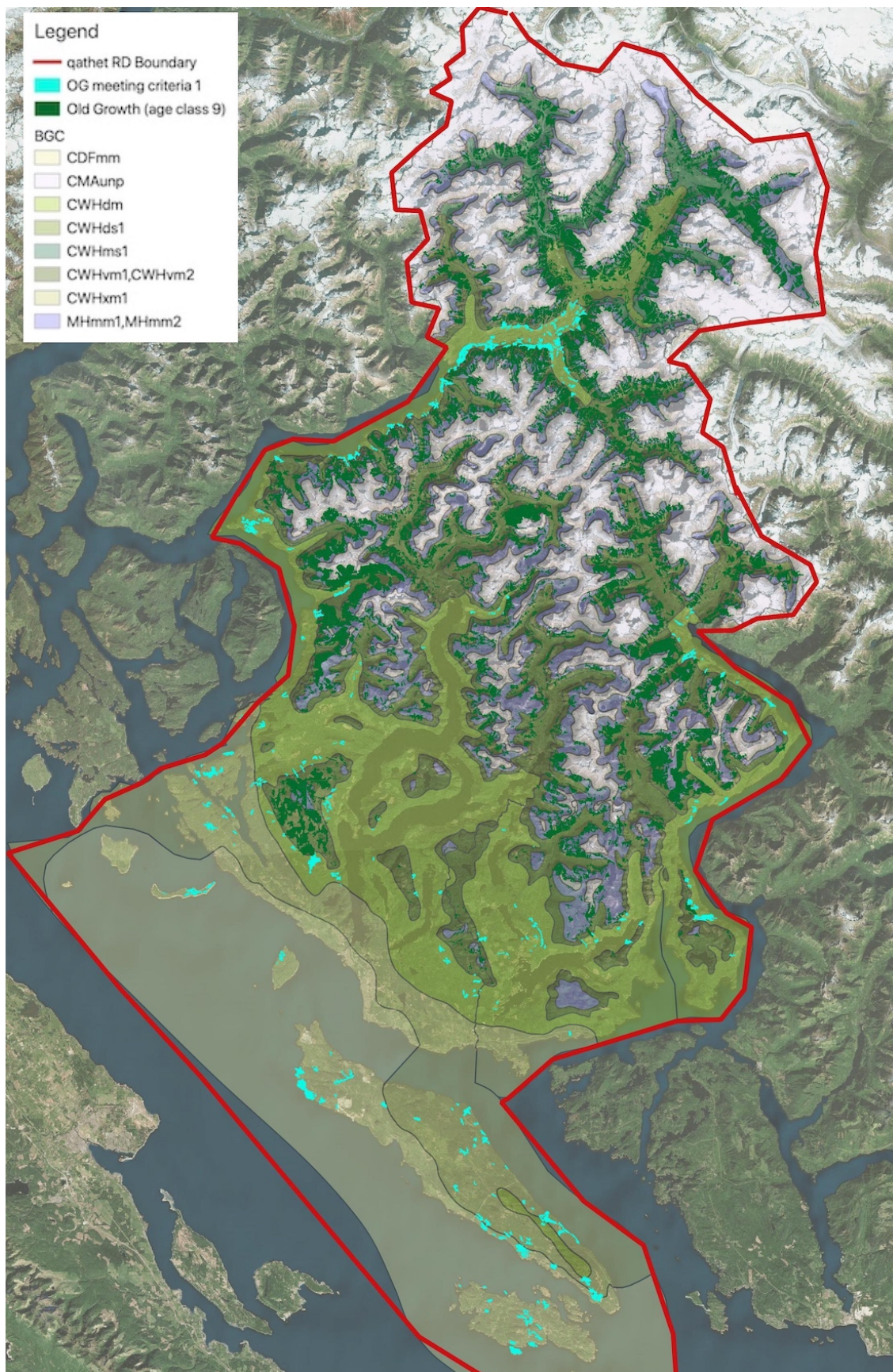


Figure 2. Forest cover in qathet Regional District. Remaining old growth forest (age class 9, >250yo) indicated in dark green, with old forest meeting **deferral criteria #1** (any BEC variant with less than 10% old forest remaining) highlighted in turquoise (data source: BC VRI 2019).

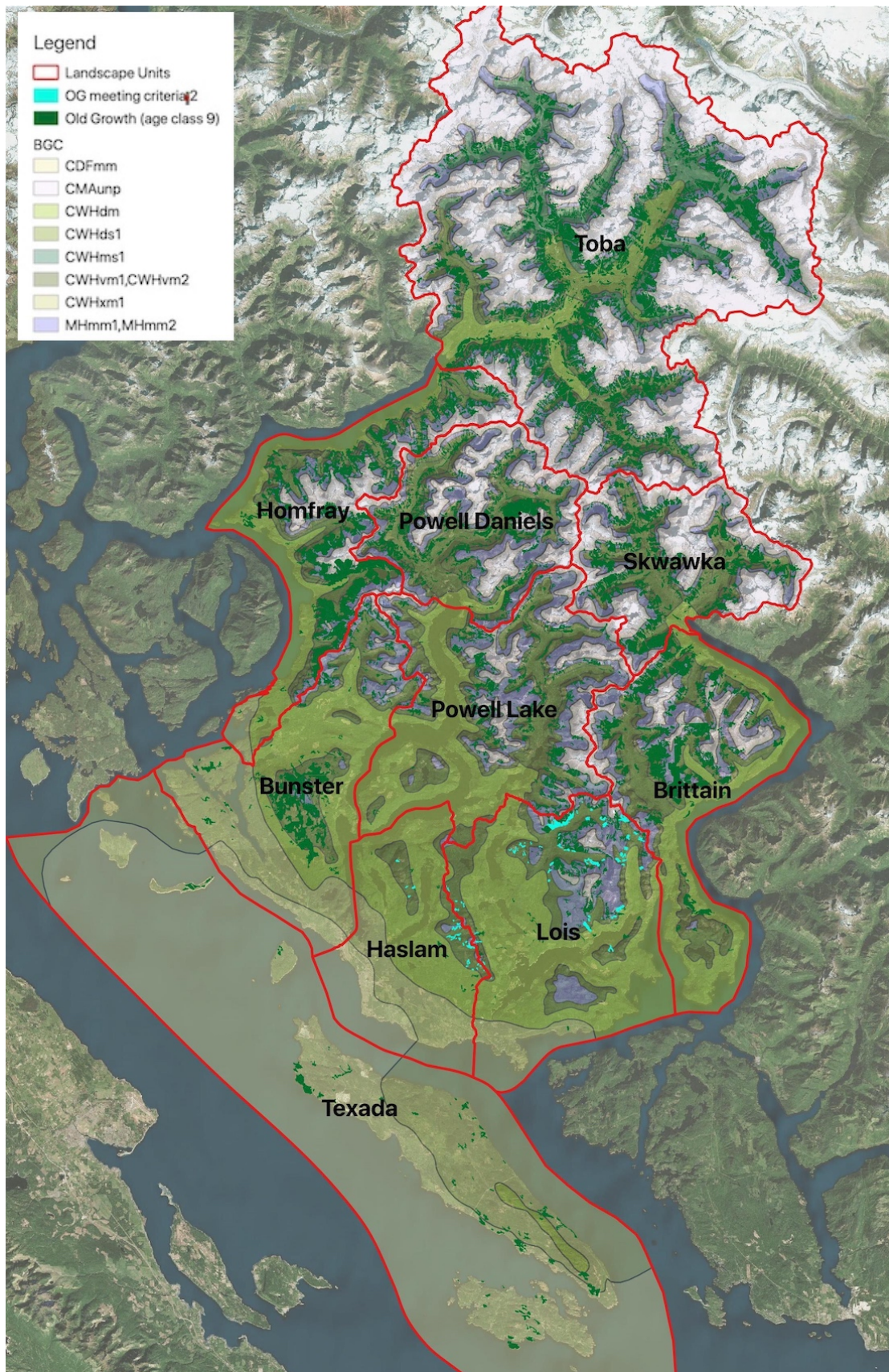


Figure 3. BEC zones and landscape units for qathet Regional District. Remaining old growth forest (age class 9, >250yo) indicated in dark green, with old forest meeting **deferral criteria #2** (old forest in any BEC-landscape Unit combination that has less than 10% old forest) highlighted in turquoise (data source: BC VRI 2019).

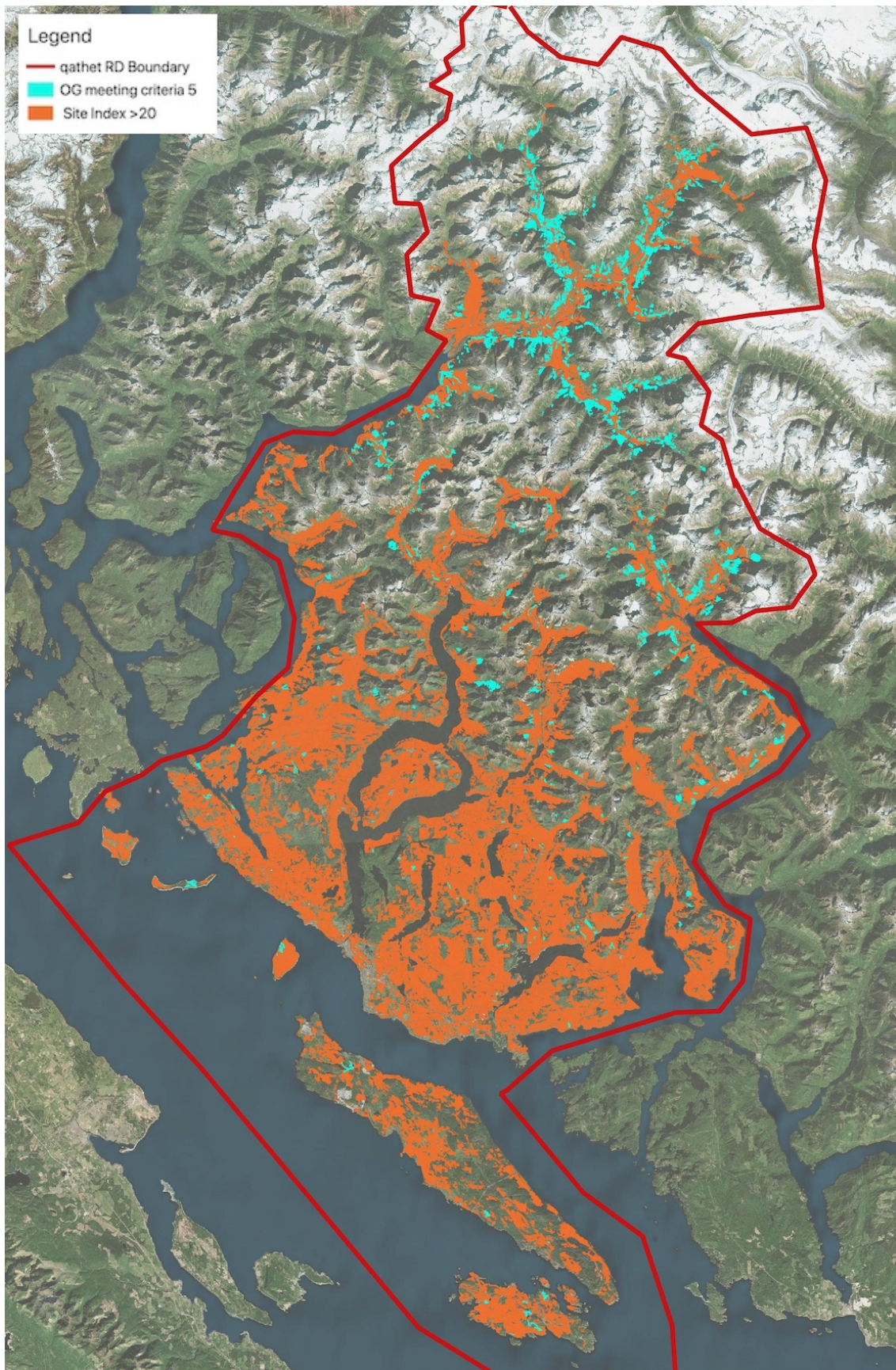


Figure 4. Forests (not old) with Site Index >20 in qathet regional district (orange). Old forests (age class 9, >250yo) meeting deferral **criteria #5** (old forests with Site Index of >20) highlighted in turquoise (data source: BC VRI 2019).

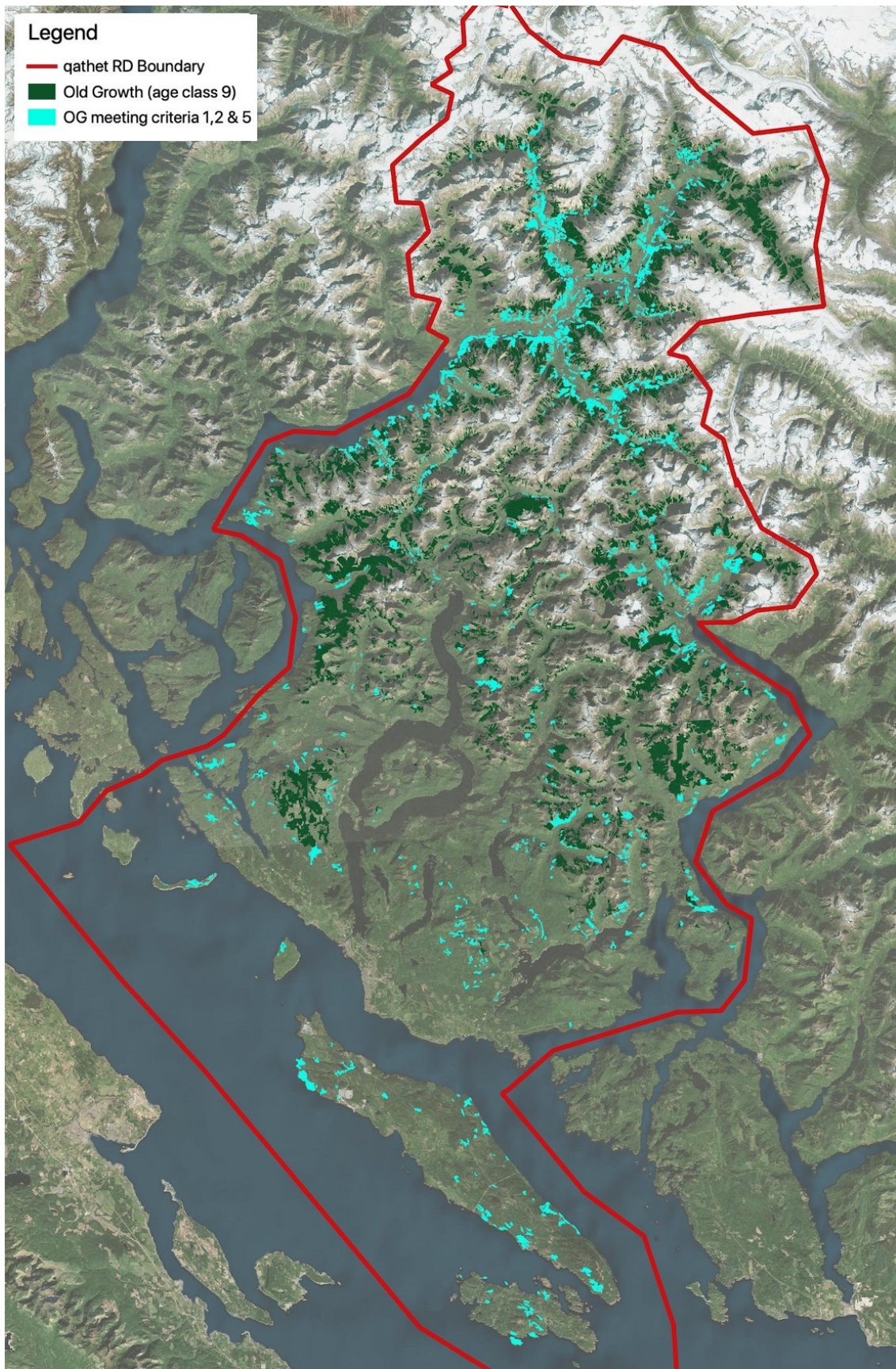


Figure 5. Remaining old growth forest (age class 9, >250yo) in qathet Regional District, indicated in dark green, with old forest meeting **deferral criteria #1, 2 & 5** highlighted in turquoise (data source: BC VRI 2019).

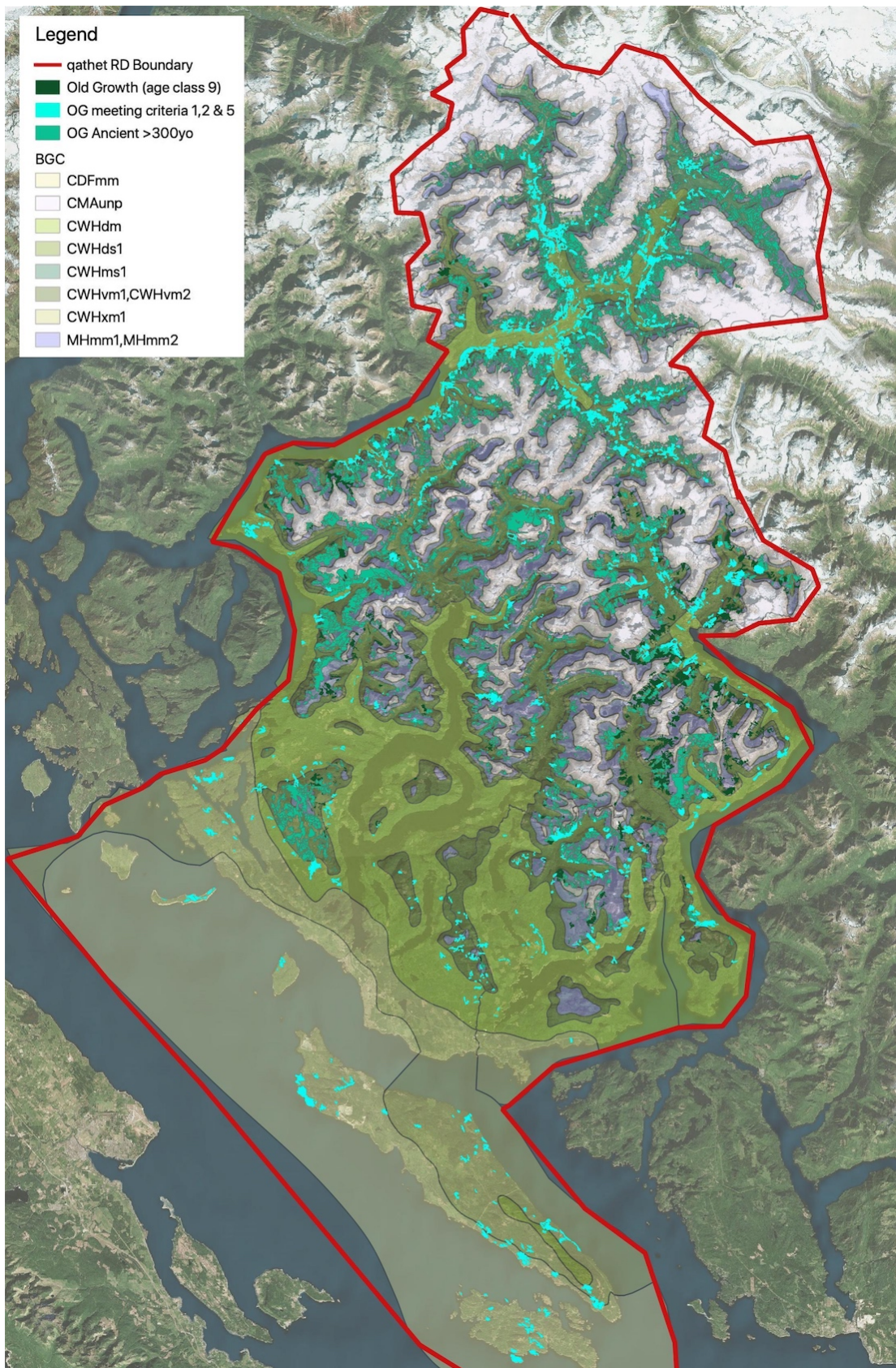


Figure 6. Old forest (age class 9, >250yo) in qathet Regional District meeting **deferral criteria #1, 2 & 5**, highlighted in bright turquoise. Additional old forests >300 years old and therefore likely meeting **deferral criteria #3** (ancient forests, > 500 yo) highlighted in dark turquoise. Remaining old forests that fall outside the above criteria are indicated in dark green – there is a reasonable likelihood these forests would meet **deferral criteria 4** in an extended analysis (data source: BC VRI 2019).

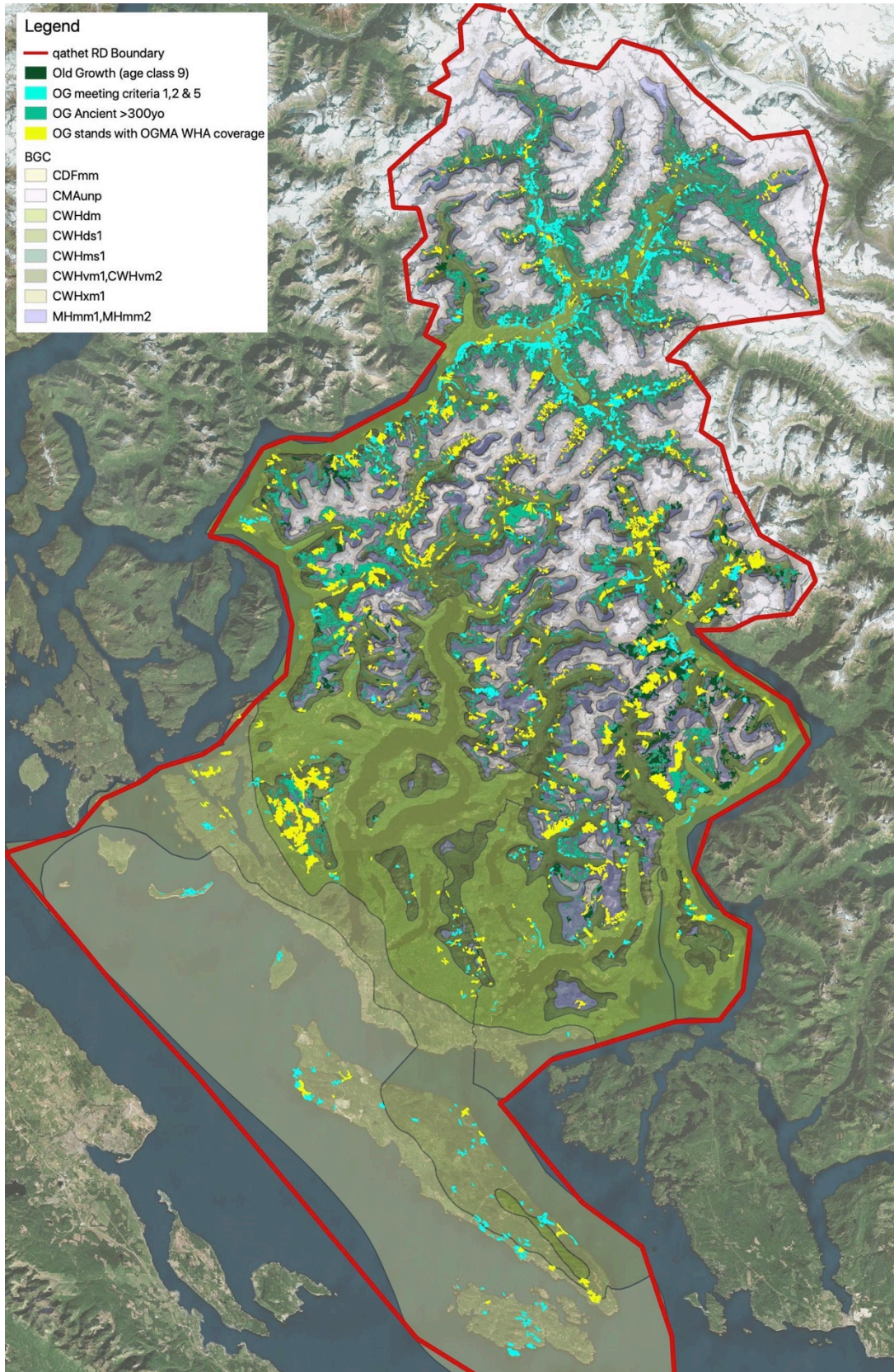


Figure 7. Old forest stands in qathet Regional District falling wholly or partly within OGMA and/or WHAs, indicated in yellow. Old forests (age class 9, >250yo) meeting **deferral criteria #1, 2 & 5**, highlighted in bright turquoise. Old forests likely meeting **deferral criteria #3** highlighted in dark turquoise (data source: BC VRI 2019).

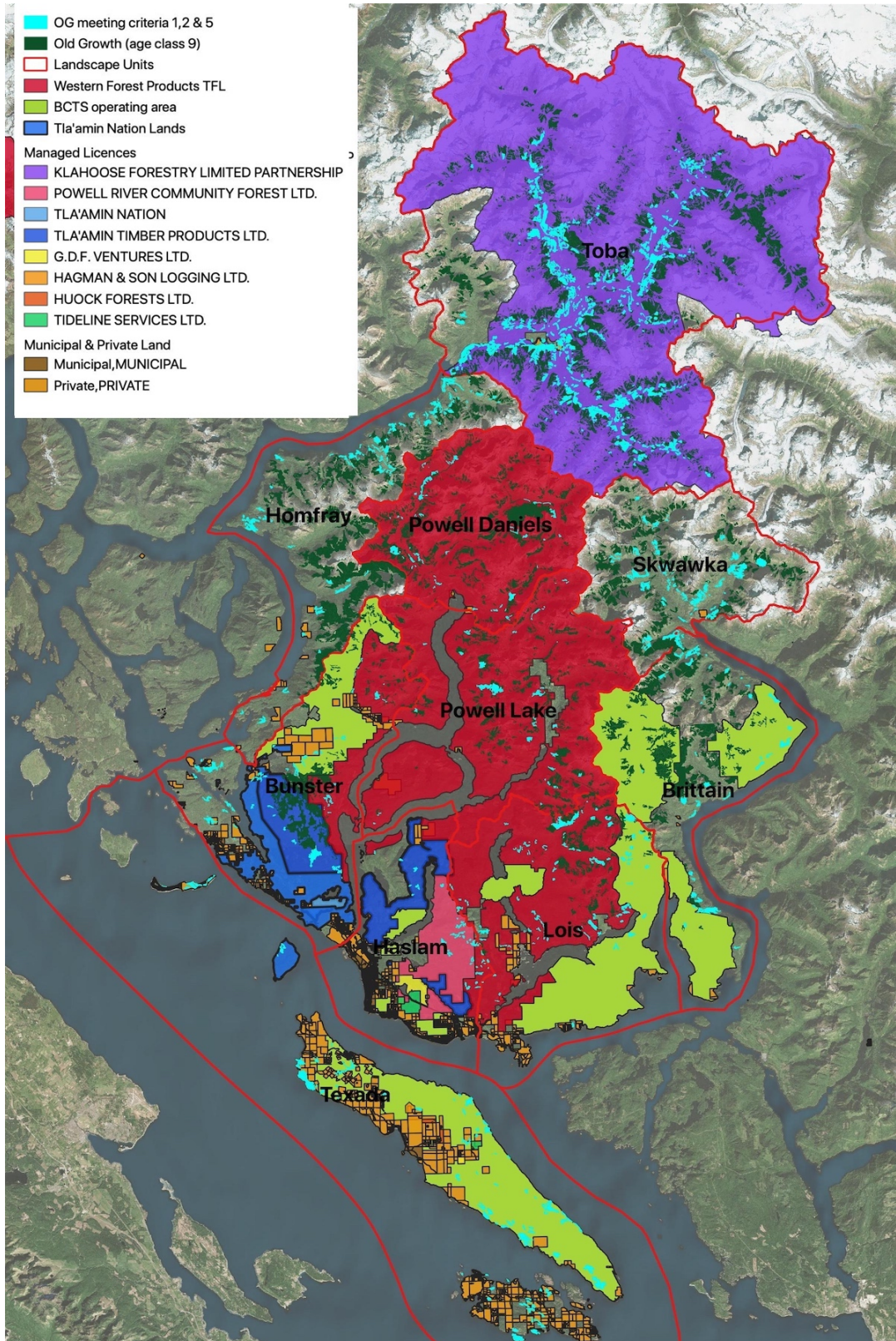


Figure 8. Tenure in qathet Regional District. Remaining old growth forest (age class 9, >250yo) indicated in dark green, with old forest meeting deferral criteria #1, 2 & 5 highlighted in turquoise (data source: BC VRI 2019).