



## MEMORANDUM

**DATE:** June 23, 2020  
**TO:** Kevin Healy, Creus Engineering  
**CC:** Dillon Xu, Fine Peace Canada

**FROM:** Mike Nelson, R.P.Bio., Cascade Environmental Resource Group Ltd.  
**RE:** Furry Creek, Review of Development Lots  
**FILE #:** 926-01-02-01

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At the request of Kevin Healy, Creus Engineering, on behalf of Fine Peace Canada, Cascade Environmental has reviewed the updated neighbourhood plans for the proposed development at Furry Creek, from NSDA Architects and Creus Engineering (June 22, 2020), as they relate to the recommendations in the Preliminary Bio-Inventory Assessment (BIA)(Cascade, 2019).

### Upper Benchlands

As recommended in the BIA, the residential development in the Upper Benchlands largely avoids the mature red listed ecological community that occurs in the northern section of this lot, with only 5 of the proposed 35 building occurring in that TEM unit (terrestrial ecosystem mapping unit). Note that red listed ecological community only makes up 40% of that TEM unit, therefore the impact on the red listed community may be even smaller. The proposed buildings respect the preliminary SPEAs (Streamside Protection and Enhancement Areas) established for South Creek (noted to be non-fish bearing within the Upper Benchlands). The proposed access road will also cross South Creek four times over a 250 m length of the creek. It is understood that the number of crossings is fixed by grade restrictions and maximum cul-de-sac road lengths. It has been Cascade's experience that even though culverts and free-span bridges can be constructed under a notification under the provincial *Water Sustainability Act*, multiple crossing will likely require a more detailed Approval under that act.

### Lot 2

Development on Lot 2 will largely occur on previously disturbed lands. Currently the lands consist of grasses and shrubs (dominated by the invasive Himalayan blackberry, the golf course maintenance yard and the previously constructed sea dyke, with an emerging cover of pole sampling trees. Development would be behind the sea dyke, and therefore respect the marine setback. There has been some concerns with regards to the shadow effect from the proposed buildings. Assuming a building height of 30 m, the shadows from the proposed building would be no greater than that cast from a mature coniferous forest. But, assuming that there was no other obstructions, Cascade used Suncalc (<https://www.suncalc.org/#/49.5806,-123.2267,4/2020.12.21/11:46/10/3>) to determine the sun azimuth angle and shadow cast from a 30 m height object located at the latitude and longitude of Lot 2 on March 19, 2020 (the spring equinox), June 20, 2020 (summer solstice), September 21, 2020 (the fall equinox) and December 21, 2020 (the winter solstice). During the spring equinox, the beach to the west of the buildings would be shadow free by 9:40 a.m., during the summer solstice the beach would be shadow free by 7:40 a.m., and during the fall equinox the beach would be shadow free by 9:25 a.m. During the winter, the shadow for the buildings would extend approximately 35 m onto the beach at the height of the sun; however, assuming a vegetation plus dyke height of 10 m above the beach level, this would also cast a shadow of similar proportions onto the beach. Therefore, the



shadows cast from the building would be no greater than those occurring with modest vegetation heights on the sea dyke.

### **Marina Neighbourhood**

The residential development within the Marina Neighbourhood respects the recommended 15 m marine setback, but the proposed access to this area, generally following the existing skid road, is restricted by the existing CN Rail right-of-way and would infringe on the setback for approximately 30 metres of road length. Note that the BIA (Cascade, 2019) recommended a preliminary setback of 30 m for the entire development, to be refined during the design stage. Different shore types have a different ability to accommodate disturbance. Estuary and mud flats are fragile and easily destroyed, and require a larger setback, while rocky shores are typically very stable and are quite resistant to change. As the vegetated foreshore of the marina neighbourhood is dominated by brock and bedrock, it is considered stable and a 15 m setback is recommended. Infringement into this setback, such as for the access road, will however, require an application to DFO under the *Fisheries Act*. Depending on the configuration of that access, and its associated environmental impacts, either a "Request for Review" will need to be filed with DFO, or an application will need to be filed for an Authorization under section 35(2) of the *Fisheries Act*. (Note that the marina itself was not within Cascade's scope of work.)

### **Northwest**

The proposed buildings respect the preliminary SPEAs established for Watercourse 1, 1a, and 2 as well as the recommended 15 m marine setback. A 15 m marine setback is recommended due to the stable bedrock foreshore in this area; however, even bedrock can be subject to faults, therefore the 15 m setback should be considered a minimum, subject to geotechnical stability. There are no mapped faults in this area, however, site specific assessment will be needed to confirm building setbacks. The proposed access road will also cross Watercourse 2 three times over approximately 200 m of creek length. Depending on the crossing structures, either a notification or an approval will be required under the provincial *Water Sustainability Act*. The development also respects the marine riparian setbacks. A portion of the Northwest development pod is also located on lands designated as critical habitat for nesting marbled murrelet; however marbled murrelet primarily nest in old growth forest (i.e. >250 years old), and the tree age in the western portion of the Northwest development pond is 120 to 130 years old (as identified in provincial Vegetation Resource Inventory mapping, and verified by Cascade in the BIA). Further, the Recovery Strategy for the Marbled Murrelet (Environment Canada, 2014) indicates that they are least likely to nest in forests with stand age class of less than 140 years old, particularly if the stands are of uniform height, which is the typical case for second growth forests, which occur on-site. Approximately 40% of the western portion of the Northwest development pod also consists of a red listed ecological community, but again, this forest has been logged in the past. The proposed development calls for multi-family development which would allow for significant preservation opportunities between the individual development sites (i.e. the site will not be clear-cut). This approach will allow for retention of approximately 4 ha of this 8 ha habitat unit, and combined with the remaining undisturbed mapped marbled murrelet habitat on site will total 39 ha. This amounts to 90% of the mapped critical habitat, which meets the recovery strategy objective of 80% preservation (as well as providing an opportunity in other preserved areas on site). Provided that the development sites are selected within the 120 to 130 year old uniform forest stands, the development should not impact critical marbled murrelet habitat.

### **Northeast**

The proposed buildings respect the preliminary SPEAs established for Watercourse 1, North Creek, North Creek Tributary 1 and North Creek Tributary 2. There would also be a single crossing of North Creek and North Creek Tributary 2. Depending on the crossing structures, either a notification or an approval will be required under the provincial *Water*



*Sustainability Act.* Also, as North creek is fish bearing at this location, depending on the crossing structure an application to DFO under the *Fisheries Act* may be required. Note that the developer has committed to an open bottom structure at this location to minimize impacts to the stream. A portion of the Northeast development pod also consists of a red listed ecological community, but as with most of the Furry Creek property, this forest has been logged in the past. The proposed development calls for multi-family development which would allow for preservation of the majority of this ecological unit.

### **Mountain**

A red listed ecological community is located within the Mountain development pod, but the majority of this unit is avoided by the proposed development. Again, this unit has been previously logged. Only 3 of the proposed 10 units within this development pond would affect the red listed community, and the proposed multi-family development which would allow for significant preservation opportunities.

### **Collector**

The collector neighbourhood would be accessed by an existing dedicated road, that would be upgraded to the appropriate standard. Again, red and blue listed ecological communities will be impacted, but they have been previously disturbed by logging. The multifamily nature of most of the development allows for preservation opportunities. Middle Creek tributary 1 will be affected by the proposed development, but approximately half of this drainage currently consists of a roadside ditch. It is proposed to move a section of Middle Creek tributary 1 to a new alignment to facilitate the firehall location, away for the current ditchline. This will provide opportunities for augment stream flows through installation of detention ponds, and to enhance the riparian habitat of this non-fish bearing section of the watercourse. A *Water Sustainability Act* approval will be required for these works that would include a compensation plan. A “request for review” should also be sent to DFO under the *Fisheries Act*.

### **Uplands**

The Uplands neighbourhood (both North and South) would also be serviced by an existing dedicated road, that would be upgraded to the appropriate standard. The proposed development respects the SPEAs adjacent to Middle Creek, Middle Creek Tributary 2, Middle Creek Tributary 3 and Furry Creek. Proposed development has also been removed from the wetland adjacent to the 2<sup>nd</sup> reach of Middle Creek Tributary 3, as per the BIA recommendations. The access road and secondary roads would cross Middle Creek Tributary 2 twice, Middle Creek twice and Middle Creek Tributary 3 twice. The existing road paralleling the second reach of Middle Creek Tributary 3 would also need upgrading adjacent to that waterbody. The stream crossings and paralleling the creek will require applications under the *Water Sustainability Act*. As per the Upper benchlands, it has been Cascade’s experience that even though culverts and free-span bridges can be constructed under a notification under the provincial *Water Sustainability Act*, multiple crossing will likely require a more detailed Approval under that act. Also, as Middle Creek is fish bearing downstream, a “request for review” should be filed with DFO under the *Fisheries Act*. The development within the Uplands largely avoids impacts on red listed ecological communities. Again, the multifamily nature of the residential development provides significant preservation opportunities as well as movement corridors for wildlife in both listed and unlisted ecological communities. The extensive BC Hydro Right-of way through this and the Collector neighbourhood also provides potential opportunities to create bioponds for stormwater detention, bio-treatment and infiltration.