CASCADE ENVIRONMENTAL
RESOURCE GROUP LTD

TECHNICAL MEMORANDUM

DATE: **March 25, 2022**

TO: **Richard Haworth, Haworth Development Consulting**

Handshake Holdings Inc.

FROM: **Cascade Environmental Resource Group Ltd.**

FILE: **1082-01-02**

RE: **Galloway Land – Comments on Cumulative Effects Assessment**

Handshake Holdings Inc. wishes to develop a parcel for residential use in Fernie BC, referred to as the Galloway Lands. Their representative, Richard Haworth, Haworth Development Consulting, retained Cascade Environmental Resource Group Ltd. (Cascade) to review questions regarding environmental concerns of the proposed project. In this Memo Cascade addresses comments regarding the contribution of the Galloway Lands to the Elk Valley cumulative effects assessment. Cascade reviewed the following documents:

- Elk Valley Cumulative Effects Management Framework Working Group (EVCEMFWG). 2018. Elk Valley Cumulative Effects Assessment and Management Report.
- Davidson *et al.* 2018. Aquatic Ecosystems Cumulative Effects Assessment Report.
- Holmes *et al.* 2018. Old and Mature Forest Cumulative Effects Assessment Report.
- Mowat *et al.* 2018. Grizzly Bear Cumulative Effects Assessment Report.

These assessments did not consider the potential effect of the proposed development on the Galloway Lands. The cumulative effects assessments were conducted in 2015 and modeled the expected changes over a period of 50 years.

Contribution to the Elk Valley Cumulative Effects

The Elk Valley Cumulative Effects Assessment and Management Report (EVCEMFWG, 2018) modeled the expected increase in built-up area (residential and recreational) according to various scenarios between 2015 and 2065. The Elk Valley represents an area of approximately 365,000 ha. In 2015, 770 ha of built-up area was present. Under the reference scenario (current levels of economic development) and the maximum scenario, the model predicted the total built-up area would increase to 980 ha and 1170 ha respectively between 2015 and 2065. The Galloway Lands was not considered as part of the cumulative effects assessment conducted in 2015. However, the Galloway Lands is expected to add 35 ha to the built-up area in the Elk Valley (Table 1).

The increase in built-up area within the entire Elk Valley is expected to increase by approximately 0.077% under the reference scenario and 0.129% under the maximum scenario (EVCEMFWG, 2018). Based on the numbers presented in the previous paragraph, the Galloway Lands would represent an additional 0.01% of built-up area to the Elk Valley.

Table 1: Built-up are under reference and maximum scenario with and without the Galloway Lands

	Total built-up area (ha)	
	Reference scenario	**Maximum scenario**
Without Galloway Lands	980	1170
With Galloway Lands	1015	1205

Cumulative Effects on Wildlife and Wildlife Habitat

Bighorn sheep and grizzly bear were chosen as valued components in EVCEMFWG (2018) and Mowat *et al.* (2018). The Galloway Lands are outside the distribution range of the bighorn sheep therefore no contribution the cumulative effects are expected and will not be discussed further.

The simulation conducted by Mowat *et al.* (2018) determined that development rate may have a relatively small effect on the habitat availability and suitability of grizzly bear. Increased road density and loss of high-quality habitat such as young (<20 years), open-canopy forest were identified by Mowat *et al.* (2018) as the two main cumulative effects to grizzly bear. Analysis of air photos presented in the Galloway Lands Application for Land Use Amendment application, showed that most of the subject property was logged in 1988 and no further logging was observed since then. Therefore, the subject property is unlikely to contain young forest (<20 years).

Cumulative Effects on Aquatic Habitat

Davidson *et al.* (2018) identified the following impact indicators to aquatic ecosystems:

- Riparian disturbance (percent disturbed riparian area)
- Stream crossings (number per km^2, excluding bridges)
- Road density within 100 m of any stream (km of road per km^2)
- Road density on steep slopes (>60% grade) (km or road per km^2)
- Equivalent Clearcut Area (percent)
- Degree of westslope cutthroat trout (WCT)/rainbow trout hybridization (percent pure WCT)
- Average warmest month stream temperature (°C)

As the proposed development on the Galloway Lands is not expected to affect the last three impact indicators, these won't be discussed. Davidson *et al.* (2018) determined that the mining disturbance is likely to contributes the most intense hazard to aquatic habitat. The proposed development on the Galloway Lands is not expected to contribute to the riparian disturbance as the 30m setback on Lizard Creek and 15 m setback along all other creeks will be maintained (Map 1). However, the proposed development has the potential to contribute to an increase in stream crossings, road density within 100 m of streams and road density on steep slopes. Should the following measures be employed, the proposed development on Galloway Lands should avoid any contribution to the cumulative effects on aquatic habitat in the Elk Valley:

- Three stream crossings are currently proposed for the development. The stream crossings are already existing but the condition and current impact to the stream has not yet been assessed. Bridge crossing will be used to avoid any contribution to the cumulative effect on aquatic environment. No crossing of Lizard Creek are presented in the application. Old culverted stream crossing will be removed which has potential for ecological benefits.
- Roads near streams have the potential to increase overland runoff and fine sediment delivery to stream. To avoid increase in sediment transport to the streams, the road and road drainage design should ensure all water run off are directed away from any stream and treated appropriately.
- Roads on steep slopes have the potential to destabilize the slopes. Prior to development, A geotechnical report should be prepared to ensure no impact to the steep slope of the site occurs.

Cumulative Effects on Old and Mature Forest

Holmes *et al.* (2018) determined that the amount of old and mature forest is considerably reduced and is highly fragmented at lower elevations. The model shows a decline in potential for loss of old growth forests from land use development could decrease over the next 50 years as mature forests transition to old growth forest. Holmes *et al.* (2018) determined that natural disturbances are expected to have a larger

effect on potential for loss associated with mature forest than land use development. As the old growth forest present on the Galloway Lands will be protected, the development is not expected to contribute to the cumulative effects on old forests in the Elk Valley. The presence and amount of mature forest has not been assessed yet. Therefore, the contribution of the development to the cumulative effect on mature forest cannot be determined.

Summary

Overall, The Galloway Lands would represent a small area (0.01%) of to the Elk Valley. The Galloway Lands is unlikely to contribute to the cumulative effects on grizzly bear as the subject property is unlikely to contain young forest. Should adequate mitigation measures be followed the proposed development is unlikely to contribute to cumulative effects on aquatic habitat. As the old growth forest on the Galloway Lands will be protected, no contribution to the cumulative effects to old growth forest is expected. The amount of mature forest on the site should be assessed to determine contribution to cumulative effects to mature forest.

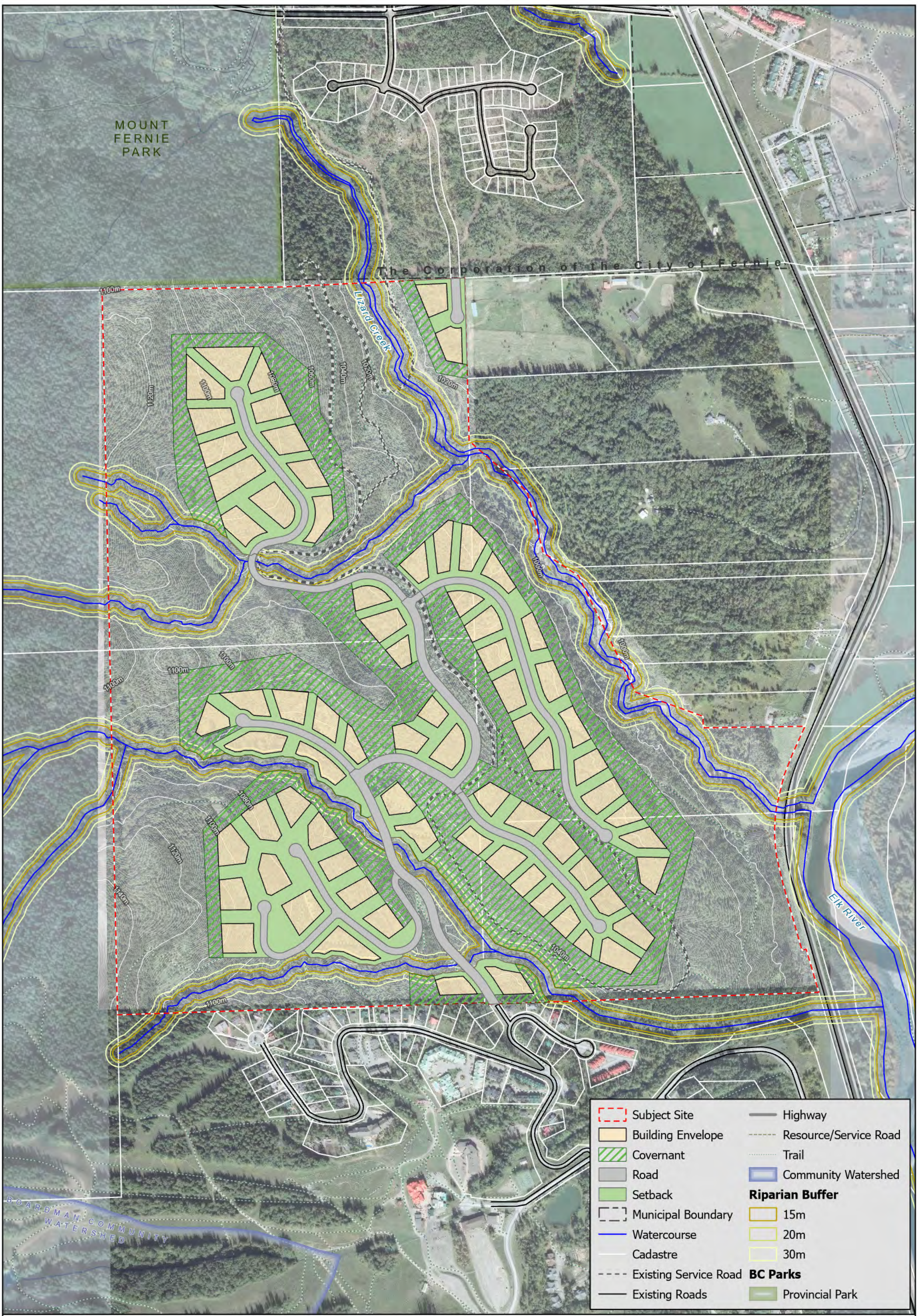
References

Elk Valley Cumulative Effects Management Framework Working Group (EVCEMFWG). 2018. Elk Valley Cumulative Effects Assessment and Management Report.

Davidson A, Tepper H., Bisset J, Anderson K., Tschaplinski P., Chirico A., Waterhouse A., Franklin W., Burt W., MacDonald R., Chow E., van Rensen C., and Ayele T. 2018. Aquatic Ecosystems Cumulative Effects Assessment Report.

Holmes P, Sturt-Smith K., Mackillop D., Lewis D, Machmer M., Franklin W., MacDonald R., McGuinness K., Chow E., van Rensen C and Ayele T. 2018. Old and Mature Forest Cumulative Effects Assessment Report. Version 9

Mowat G, Conroy C, Podrasky K, Morgan D, Davies R., MacDonald R, Chow E., van Rensen C and Ayele T. 2018. Grizzly Bear Cumulative Effects Assessment Report.



GIS Cartographer: Nicola Church
Date: *3/22/2022*
CERG File #: 1082-01-01
Projection: NAD 1983 CSRS UTM Zone 11N

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0 75 150 300 450 600
Meters

Map 1 - Proposed Development

Galloway Lands
Fernie
British Columbia