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.**

RE: **Galloway Land – Review of BC Parks Review and Comments**

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 raised by BC Parks on their review of the development application.

Impacts to movement corridors and access to Lizard Creek for grizzly bear and ungulates.

Ford *et al.* (2020) showed that the zone of influence from residential areas on grizzly bear can range from 4000 to 8000 m with 6000 m being the median size. The report suggests that grizzly bears would be negatively impacted by residential developments in a corridor with a width of less then 6000 m. However, this does not signify that the animals would be absent from the corridor. Currently the forest between the Fernie Alpine Resort and the closest development on the northeast side of Lizard Creek is approximately 720 m wide. This would indicate that grizzly bears currently using the Galloway Lands to move across the landscape are already influenced by residential development in the area. This is supported by the telemetry data which shows low levels of use by grizzly bears. In addition, Ford *et al.* (2020) also showed that trails can have a zone of influence on grizzly bears ranging from 21 to 8000 m with a median of 628 m. Therefore, the existing trails in the Galloway Lands further reduce the effective corridor width.

The response of ungulates to residential development is highly variable (Polfus and Krausman, 2012). Avoidance response can occur from ungulate because of the residential development (Polfus and Krausman, 2012). However, ungulates can habituate to human activity development (Polfus and Krausman, 2012) which could result in a positive effect. Some species can have a higher survival rate in close proximity to residential development due to a decrease in predation or increase availability of fertilized yards (Polfus and Krausman, 2012).

Overall, the Galloway Lands is not an identified wildlife corridor (Proctor *et al*., 2015). However, telemetry data (Lamb, 2022) show that grizzly occasionally use the Galloway Lands to move across the landscape. The proposed development has the potential to increase the zone of influence for grizzly bear and may reduce the movement of grizzly bear in the vicinity of the development.

Rerouting of existing trails will further impact wildlife habitat and increase recreation pressure.

The Galloway Lands development will result in the closure of some mountain biking trails. The mountain bike trails are an unsanctioned trail network on private land. As the mountain bike trails were not planned or sanctioned, they are relatively high-density network throughout most of the property area. Existing trails will be rerouted wherever possible, and the development is committed to retaining a meaningful mountain bike network. Therefore, recreation pressure on these trails is not expected to significantly increase due to this trail retention design. Trails will not be rerouted within the Lizard Creek riparian area preserving wildlife habitat in this sensitive riparian area. The development also offers the opportunity to construct the rerouted mountain bike trails with the Fernie Trail Alliance to provincial trail standards to help mitigate recreation use impacts on surrounding habitat. As existing trails were constructed without

approval, they likely do not meet provincial trail standards and the development offers an opportunity to upgrade the trail quality.

Concerns over the proximity of the building envelopes to the Mt. Fernie Provincial Park and enforcement of covenants

Approximately half of the north boundary of the Galloway lands abuts Mt. Fernie Provincial Park. Mt. Fernie Provincial Park is a part of BC's protected areas and is managed provincially by BC Parks under the *Park Act*. Land use management for Mt. Fernie Provincial Park was researched and currently the park does not have a developed management plan but does have a purpose statement and zoning plan. The primary listed role of the park is to protect remnant old growth cottonwood and riparian ecosystems within the park boundaries (BC Parks, 2003). The secondary listed role is to provide recreation and camping opportunities (BC Parks, 2003).

The Galloway Lands have considered the adjacent boundary of Mt Fernie Provincial Park in its development design and provided a secondary conservation area from the boundary of the park to proposed building envelopes. Secondary conservation areas will not be developed and provide a naturally forested buffer to the park boundary from proposed building envelopes. Current designs have an approximate 100 m secondary conservation natural forested buffer to park boundaries from building envelopes.

Potential impacts of developing the site in relation to the park boundary include an ecological edge effect from anthropogenic development negatively influencing ecological conditions within the protected area. Potential impacts from edge effect can include increased risk of parasitism or disease, increased risk of predation, adverse microclimate conditions, and competition from invasive species (US DAA, 2008). Studies on wolverine density in national parks in Canada also found a density decrease towards park boundaries due to edge effect (Barrueto, Sawaya and Clevenger, 2020). However, the anthropogenic disturbance was from trapping activities at park boundaries and not development. As edge effects are difficult to quantify the study does not recommend buffer distances and only details that buffer should be applied to park boundaries (Barrueto, Sawaya and Clevenger, 2020). The Galloway Lands is designating 100 m buffers to park boundaries in its design and meets recommendations of the paper.

Buffer distances from park boundaries are not listed within BC Parks management direction. The provincial environmental guidelines for Urban and Rural Land Development in British Columbia Develop with Care Section 4 lists target development buffers distances for environmentally valuable resources (BC MOE, 2014). Parks and protected areas are designated a 100m target buffer distance if in an undeveloped state within the guidelines (BC MOE, 2014). As per current Galloway Lands designs the secondary conservation area and 100 m buffer distance to the Mt. Fernie Park Boundary meets these target buffer distances.

The document *Conservation Buffers; Design Guidelines for Buffers, Corridors, and Greenways* by the US Department Agency of Agroforestry also lists edge effect distances from a collection of scientific sources on ecological edge effects (US DAA, 2008). The document provides an estimate of edge effect zone impacts as below.

Table 1: Open Corridor Edge Effect Impacts in Woodland Habitat

Edge Effect Impact	Distance of Edge Effect Observed	
	Min. zone distance edge effect observed	Max zone distance edge effect observed
Microclimate	0-11 m	0-235 m
Bird Response	0-45 m	0-305 m
Mammal Response	0-40 m	0-91 m
Invasive Plants	0-6 m	0-137 m

The Galloways Lands secondary conservation area and 100 m buffer is beyond the minimum distances edge effect zones observed for all impact factors and beyond the max effect for mammal response.

The Galloway Lands will protect primary and secondary conservation areas through local government planning tools including zoning areas as parkland and restrictive covenants within private lots. The provincial document development with care also recommends protecting environmentally valuable resources through park land zoning and covenants local government land use tools (BC MOE, 2014). As per other land use planning tools including the *Riparian Areas Protection Regulation* covenant enforcement is conducted by local government and importance of the covenant area will be highlighted to residents through education, communication, and bylaw enforcement.

Reference

BC Ministry of Environment 2014. Develop with Care 2014 Environmental Guidelines for Urban and Rural Land Development in British Columbia. https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/best-management-practices/develop-with-care/dwc-section-4.pdf

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