



MEMORANDUM

DATE: April 21, 2023
TO: Reto Barrington, Handshake Holdings Inc.
Richard Haworth, Haworth Development Consulting
FROM: Cascade Environmental Resource Group Ltd.
FILE: 1082-01-02-01
RE: Galloway Land – Environmental Overview Addendum

Handshake Holdings Inc. wishes to develop a parcel of land, referred to as the Galloway Lands for residential. The Galloway Lands is an approximately 182.7 ha parcel of land located within the Regional District of East Kootenay (RDEK). Under the RDEK Official Community Plan (OCP) the Galloway Lands is zoned RR-8 – Rural Residential Country and RR-60 – Rural Resource. Cascade Environmental Resource Group Ltd. (Cascade) was retained to conduct an Environmental Overview (EO) to describe the existing environmental conditions and propose key recommendations based on these conditions (Cascade, 2022a).

In this addendum, Cascade addresses five key environmental concerns raised during the April 13, 2023 RDEK Planning Committee Meeting. These include the following:

1. Protection of Lizard Creek water quality and preservation of fish and fish habitat
2. Potential impact of crossing Lizard Creek
3. Wildlife migration patterns within the Galloway Lands
4. Cumulative Effects of development with the Galloway Lands

To protect and avoid potential impacts to Lizard Creek, its resident fish and fish habitat, Cascade proposed a series of mitigation measures which will be carefully prescribed in a series of environmental management plans for the development. Mitigation measures are designed to prevent and/or avoid the risk from potential impacts. Mitigation measures are pro-active and not reactive. That is to say, mitigation measures are designed to prevent impacts, not to reverse effects after an impact has occurred.

1 Protection of Lizard Creek and Preservation of Fish and Fish Habitat

The Environmental Overview confirms the importance of Lizard Creek for fish, fish habitat and wildlife. The mitigation measures proposed by Cascade maintains water quality, prevents harm to fish and fish habitat. These mitigation measures are stipulated as conditions of compliance with the provincial *Water Sustainability Act*, the *Fish Protection Act* and the federal *Fisheries Act*. Beyond compliance with provincial and federal laws these mitigation measures are tested and proven effective by these regulators.

2 Crossing Lizard Creek

The proposed bridge crossing for the development is a clear span bridge. Fisheries and Oceans Canada have developed best management practices for projects near water including a specific code of practice that outlines national best practices for clear span bridges (DFO 2023). Clear span bridges are designed to completely span a watercourse without interfering with the channel bed and banks (DFO 2023). Clear span bridges are used to protect fish and fish habitat by implementing the following measures:

1. Protection of the riparian zone
2. Protection of aquatic habitat



3. Protection of fish and fish habitat from sediment
4. Protection of fish and fish habitat from other deleterious substances

At the provincial level, the Water Sustainability Regulation permits the construction, maintenance or removal of a clear span bridge if all the following conditions are met (BC Government, 2016):

- i. the equipment used for construction, including site preparation, maintenance or removal of the bridge, is situated in a dry stream channel or is operated from the top of the bank,
- ii. The bridge and its approach roads do not produce a backwater effect or increase the head in the stream,
- iii. the hydraulic capacity of the bridge is equivalent to the hydraulic capacity of the stream channel, or is capable of passing the 1 in 200-year maximum daily flow, and the height of the underside of the bridge is also adequate to provide free passage of flood debris and ice flows, and
- iv. the bridge is made of materials that meet the applicable standards of the Canadian Standards Association.

3 Wildlife Migration Patterns

In a memo dated March 25, 2022, Cascade produced a technical memo that summarized and provided comments on a review of Grizzly Bear and Ungulate Winter Range and their movements within the Galloway Lands (Appendix 1). This memo focused on a review conducted by Dr. Clayton Lamb.

Grizzly Bears

Dr. Lamb's review showed that based on telemetry data few grizzly bears move through the Galloway Lands, while the majority of the movement occurs southeast of the Town of Fernie. However, Dr. Lamb also developed a Resource Selection Function (RSF Model) that showed an isolated high quality habitat patch in May-July surrounded by low quality habitat. This led Dr. Lamb to determine that Galloway Lands are commonly used as a movement corridor for grizzly bear (Cascade, 2022c). However, another study conducted by Proctor *et al* (2015) also using telemetry and an RSF model identified the southeast corner of the Galloway Lands as moderate movement potential while most of the site has low movement corridor potential. The Proctor *et al* (2015) study was based on a small scale (large area) throughout southeastern British Columbia and identified linkages between high quality core habitat while Lamb (2022) assessed movement on a large scale (small area) by focusing on the Fernie area with a landscape buffer. Analysis on a larger scale (small area), highlights a few bears moving through an area but this does not necessarily make it a movement corridor.

Ungulate Winter Range

Dr. Lamb identified the Galloway Lands as part of the winter range for moose. However, the RDEK OCP does not identify the Galloway Lands as Class 1 or Class 2 UWR. In addition, UWR are not protected on private land. Therefore, the potential presence of a UWR on the Galloway Lands should not be considered a constraint to the proposed development.

A study conducted by Polfus and Krausman (2012) determined that the response of ungulates to residential development is highly variable. In certain instances, ungulate were found to avoid residential developments. However, 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). Ungulates can habituate to human activity and development which could result in a positive effect (Polfus and Krausman, 2012). Given the level of preservation provided in the proposed design, utilization by ungulates species should continue at existing levels and may potentially increase if predation is a factor.



4 Cumulative Effects

Cascade evaluated the contribution of the Galloway Lands to the Elk Valley cumulative effects assessment in a Technical Memorandum dated March 25, 2022 (Appendix 2). Within the memo 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.

Contribution to the Elk Valley Cumulative Effects

The cumulative effects assessments and the expected changes over a period of 50 years were modeled and reported in the 2018 Elk Valley Cumulative Effects Assessment and Management Report. Through the reviews it was determined that the assessments did not consider the Galloway Lands as part of the cumulative effects assessment conducted in 2015 (Figure 1 and Figure 2). Cascade reviewed the Elk Valley Cumulative Effects Assessment and Management Report (EVCEMFWG, 2018) model and determined that the Galloway Lands would represent an additional 0.01% of the built-up area to the Elk Valley (Cascade, 2022b). This assessment was based on a previous and more extensive subdivision design. The current plan would result in an approximate contribution of 0.007%. The contribution of the proposed development will not contribute significantly to cumulative effects in the Elk Valley study area.



Figure 1: Built-up area (blue) of Fernie during 1950, current condition, and modeled reference, minimum and maximum scenarios (from left to right) (EVCEMFWG, 2018)

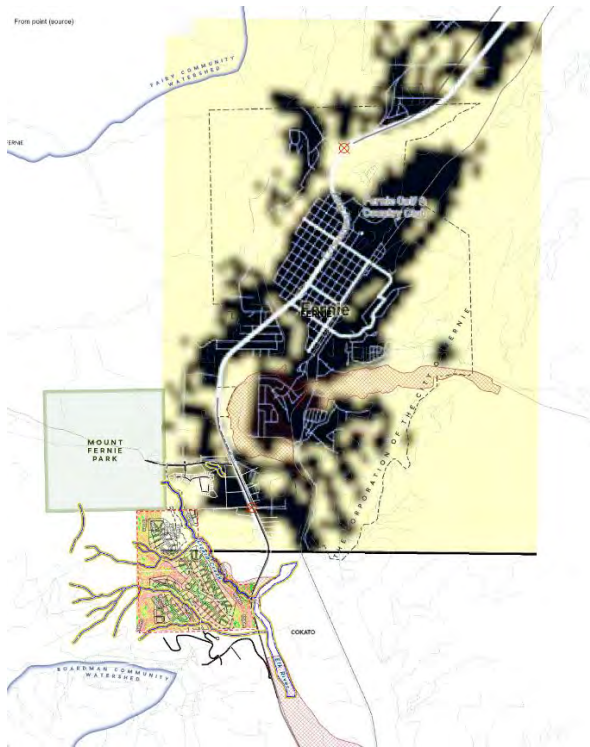


Figure 2: Maximum built-up area scenario (blue) of Fernie (EVCEMFWG, 2018) overlaid with the Galloway Lands (previous subdivision design) and Mount Fernie Park.

Cumulative Effects on Wildlife and Wildlife Habitat

Cascade reviewed the Grizzly Bear Cumulative Effects Assessment Report. The results of the report showed that the modeled rate of development will likely have a small effect of the habitat availability and suitability of grizzly bear due to an increase in road density (Cascade 2022b). Loss of high-quality habitat such as young (<20 years), open-canopy forest is the other main impact to grizzly bears (Mowat *et al.* 2018). The Galloway Lands do not meet the criteria for high-quality habitat as the subject property was logged in 1988 and no further logging was observed since then. As such, the contribution to cumulative effects on grizzly bear will not be significant.

The report also examined the cumulative effects to Big Horn sheep in the Elk Valley. The Galloway Lands are outside the distribution range of the bighorn sheep therefore no contribution the cumulative effects are expected.

Cumulative Effects on Aquatic Habitat

Cascade reviewed the Aquatic Ecosystems Cumulative Effects Assessment Report (Cascade 2022b). Davidson *et al.* (2018) identified the following impact indicators to aquatic ecosystems:

- Riparian disturbance (percent disturbed riparian area)
- Stream crossings (number per km², excluding bridges)
- Road density within 100 m of any stream (km of road per km²)
- Road density on steep slopes (>60% grade) (km of road per km²)
- Equivalent Clearcut Area (percent)
- Degree of westslope cutthroat trout (WCT)/rainbow trout hybridization (percent pure WCT)
- Average warmest month stream temperature (°C)



The Galloway Lands development is not expected to affect the last three impact indicators. Other than the proposed clear span bridge creek crossing, the proposed development on the Galloway Lands is not expected to contribute to the riparian disturbance as the 30 m setback on Lizard Creek and 15 m setback along all other tributary creeks will be maintained. However, the proposed development has the potential to contribute to an increase in road density within 100 m of streams and road density on steep slopes.

To reduce the risk of impacts from these activities and to avoid any contribution to the cumulative effects on aquatic habitat in the Elk Valley the following mitigation measures should be employed:

- Clear span bridges will be used for proposed creek crossings. As mentioned above, clear span bridges are designed to completely span a watercourse without interfering with the channel bed and banks (DFO 2023). The old, culverted stream crossing will be removed which result in a positive, offsetting impact.
- 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 run off water is directed away from any stream and treated appropriately with bio-swales and sediment basins.
- Roads on steep slopes have the potential to destabilize the slopes. Prior to construction, site specific geotechnical assessments should be conducted to ensure steep slopes on the site are suitable for the proposed development and any stabilization measures are identified.

Cumulative Effects on Old and Mature Forest

Cascade reviewed the Old and Mature Forest Cumulative Effects Assessment Report. An old growth management area is present on the property. The proposed development will impact 1.07 ha of the old growth management area. This includes homesite boundaries for lot 73 to 76 and the top of bank footings for the clear span bridge crossing for Lizard Creek. However, only 0.09 ha of riparian area will be impacted by the road associated with the Lizard Creek clear span bridge. This represents 1.19 % of the Lizard Creek riparian area contained within and or adjacent to the Galloway Lands and should not be considered to be a significant impact.

5 Summary

Overall, The Galloway Lands development would represent a small area (less than 0.01%) of the built-up area in the Elk Valley. The Galloway Lands is unlikely to contribute to the cumulative effects on grizzly bear as the subject property does not contain high-quality habitat such as young (<20 years), open-canopy forest. The Galloway Lands were logged in the 1980's. During the field investigations in July 2022, it was confirmed the property mostly consists of forest, 40-80 years. Should adequate avoidance and mitigation measures be followed the proposed development is unlikely to contribute to cumulative effects on aquatic habitat. The proposed development will include 1.07 ha of the old growth management area. Of this only 0.09 ha (1.19%) of riparian area within the property will be impacted by the road associated with the Lizard Creek clear span bridge.

References

BC Government. 2022. iMap BC. <https://maps.gov.bc.ca/ess/hm/imap4m/> website accessed on March 2, 2022.

BC Government. 2016. *Water Sustainability Act*.- Water Sustainability Regulation [Last amended April 1, 2022] https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/36_2016#part3 website accessed on April 17, 2023.

Cascade. 2022a. Environmental Overview Assessment: Galloway Lands, Fernie, BC



- Cascade. 2022b. Galloway Lands – Comments on Cumulative Effects Assessment – Technical Memorandum.
- Cascade. 2022c. Galloway Lands – Comments on Review by Dr. Clayton Lamb - Technical Memorandum.
- 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.
- DFO (Fisheries and Oceans Canada). 2023. Code of Practice: Clear Span Bridges. <https://www.dfo-mpo.gc.ca/pnw-ppe/codes/clear-span-bridges-ponts-portee-libre-eng.html> website accessed on April 17, 2023.
- Elk Valley Cumulative Effects Management Framework Working Group (EVCEMFWG). 2018. Elk Valley Cumulative Effects Assessment and Management 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.
- Proctor M, Nielsen S, Kasworm W, Servheen C, Radandt T, Machutchon G and Boyce M. 2015. Grizzly bear connectivity mapping in the Canada-United States Trans-Border Region. The journal of Wildlife Management 79(4):544-558



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Appendices



Appendix 1: Galloway Lands – Comments on Review by Dr. Clayton Lamb - Technical Memorandum.



TECHNICAL MEMORANDUM

DATE: March 25, 2022
TO: Richard Haworth, Haworth Development Consulting
Handshake Holdings Inc.
FROM: Cascade Environmental Resource Group Ltd.
RE: Galloway Land – Comments on Review by Clayton Lamb

Handshake Holdings Inc. wishes to develop a parcel for residential use in Elk Valley near Fernie BC, referred to as the Galloway Lands. Their representative, Richard Haworth, Haworth Development Consulting, retained Cascade Environmental Resource Group Ltd. (Cascade) to provide comments on the review of the proposed project carried out by Clayton Lamb.

Using the best available data, Dr. Lamb summarised the current habitat and connectivity value of these lands for grizzly bears across all seasons, and ungulates such as moose in the winter. Dr. Lamb briefly discussed impacts to aquatic systems. Then finally conducted a literature review to assess if conservation subdivisions and associated design principles were well-suited to safeguard these wildlife values.

Grizzly Bear

The telemetry data show low to medium habitat use of the Galloway Lands compared to the surrounding area. The data show few bear moving through the site while the majority of the movement occurs south east of the Town of Fernie. Using the biophysical attributes of the site and the telemetry data, Dr. Lamb created a Resource Selection Function (RSF Model) to assess habitat quality. The model shows an isolated high quality habitat patch in May-July surrounded by low quality habitat. Medium quality between August and November and low denning quality habitat.

Using the data analysed, Dr. Lamb determined that Galloway Lands are commonly used as a movement corridor for grizzly bear. However, Proctor *et al* (2015) used telemetry and an RSF model to identify movement corridors. The study only identified the southeast corner of the Galloway Lands as moderate movement potential while most of the site has low movement corridor potential. Proctor *et al* (2015) studied movement corridors on a larger scale throughout southeastern British Columbia and identified linkages between high quality core habitat while Lamb (2022) assessed movement on a smaller scale by focusing on the Fernie area with a landscape buffer. Analysis on a smaller scale, highlights a few bears moving through an area but this does not necessarily make it a movement corridor.

Ungulate Winter Range

Dr. Lamb states that the Galloway Lands comprise important moose winter range. The Ungulate Winter Range (UWR) layer on iMap BC confirms the presences of said winter range (BC Gov, 2022). However, the RDEK Elk Valley Official Community Plan (OCP) does not identify the Galloway Lands as Class 1 or Class 2 UWR. In addition, UWR are not protected on private land. Therefore, the presence of a UWR on the Galloway Lands should not be a constraint to the proposed development.



Lizard Creek

Dr. Lamb raises the concern about development impact to Westslope Cutthroat present in Lizard Creek. Maintaining an adequate undisturbed vegetated buffer should avoid any impact to Lizard Creek. Environmental considerations listed in the Elk Valley OCP encourage developers to avoid streams, wetlands and riparian areas and to provide appropriate development setbacks and buffer areas. The OCP also encourages the integration of Conservation Subdivision Design principles to minimize disturbances to environmentally sensitive areas (ESAs) for residential land use. This includes the identification of riparian areas and steep slopes. The RDEK Elk Valley Zoning bylaw requires a floodplain setback area designation of 15m of the ordinary highwater mark for most watercourses in the Elk Valley including Lizard Creek and the smaller creeks within the Galloway Lands.

Although not applicable to the RDEK, under the Riparian Areas Protection Regulation (RAPR), the Riparian Assessment Area (RAA) is 30m on either side of a stream if the bank slopes are less than 3:1.

The buffers proposed within the plan submitted for the Galloway Lands and the proposed zoning as park exceed the floodplain setback on the RDEK Elk Valley Zoning bylaw for Lizard Creek. It also exceeds the RAA as defined by the RAPR. In addition, employing adequate erosion and sediment control measures and runoff management during development and occupation of the Galloway Lands should prevent any impact to the Creek and the cutthroat population.

In addition, employing adequate erosion and sediment control measures and runoff management during development and occupation of the Galloway Lands should prevent any impact to the Creek and the cutthroat population.

Conservation Subdivision

Dr Lamb conducted a literature review on conservation subdivisions and their effectiveness on large mammals. He determined that the conservation subdivision protect more land than traditional subdivisions but this doesn't translate to meaningful benefits to wildlife. The conservation subdivision design is the requirement of the Elk Valley OCP.

References

- Proctor M, Nielsen S, Kasworm W, Servheen C, Radandt T, Machutchon G and Boyce M. 2015. Grizzly bear connectivity mapping in the Canada-United States Trans-Border Region. *The journal of Wildlife Management* 79(4):544-558.
- BC Government. 2022. iMap BC. <https://maps.gov.bc.ca/ess/hm/imap4m/> website accessed on March 2, 2022.



Appendix 2: Galloway Lands – Comments on Cumulative Effects Assessment – Technical Memorandum.



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 km², excluding bridges)
- Road density within 100 m of any stream (km of road per km²)
- Road density on steep slopes (>60% grade) (km of road per km²)
- 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 contribute 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



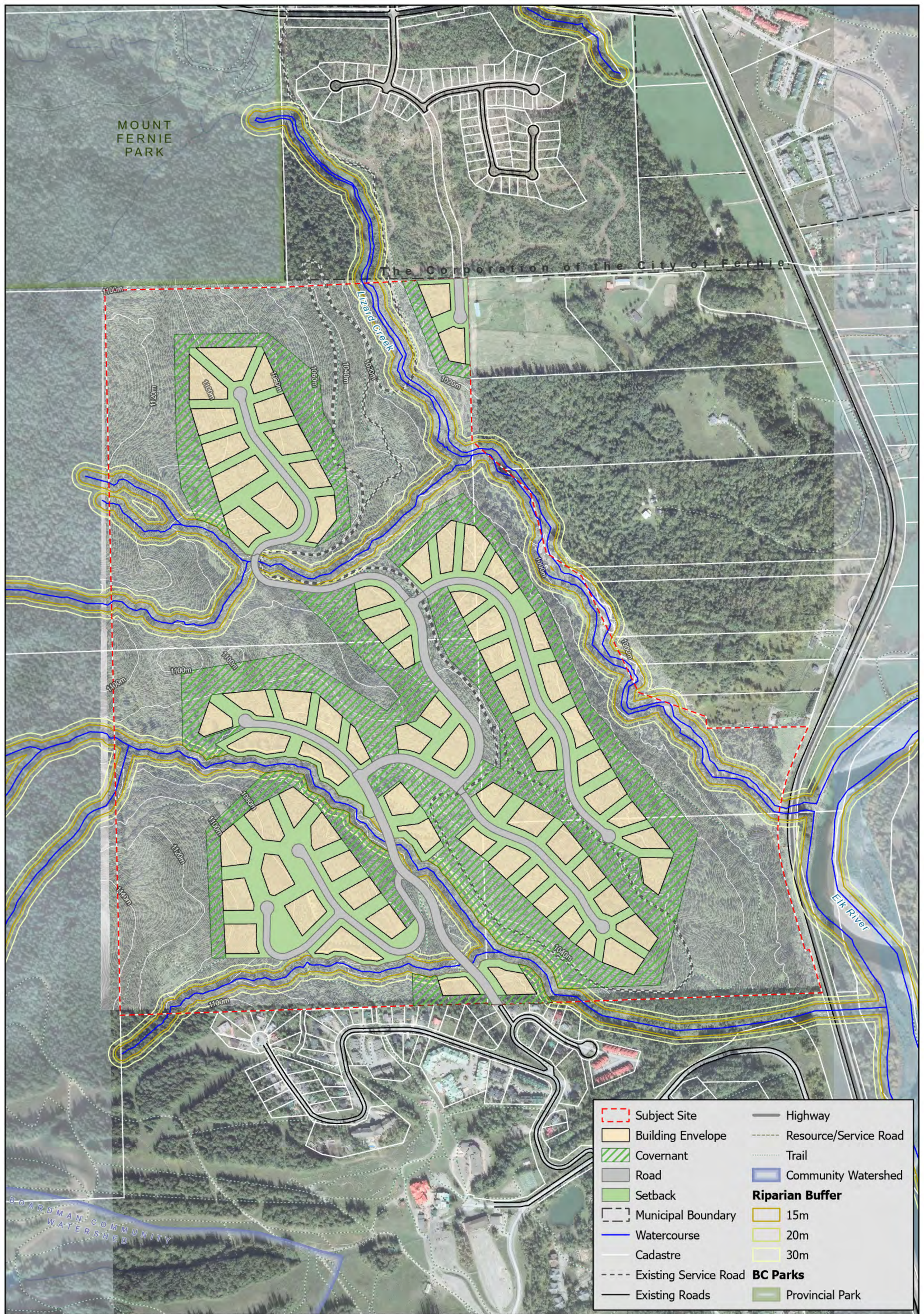
effect on potential for loss associated with mature forest than land use development. As the old growth forest present on the Galloway Lands will be protected, the development is not expected to contribute to the cumulative effects on old forests in the Elk Valley. The presence and amount of mature forest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

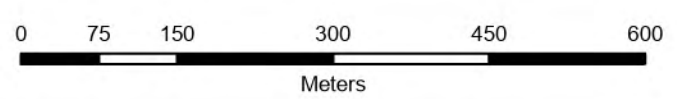
References

- 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.



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|-----------------------|------------------------|
| Subject Site | Highway |
| Building Envelope | Resource/Service Road |
| Covenant | Trail |
| Road | Community Watershed |
| Setback | Riparian Buffer |
| Municipal Boundary | 15m |
| Watercourse | 20m |
| Cadastre | 30m |
| Existing Service Road | BC Parks |
| Existing Roads | Provincial Park |

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



Map 1 - Proposed Development

Galloway Lands
 Fernie
 British Columbia

