



Calgary River Valleys champions and engages the public in the protection, appreciation and stewardship of Calgary's rivers, creeks, wetlands and watershed resources.

We are the voice of our rivers.

May 26, 2020

Attention: **City Clerk**  
Sent via Email to: [PublicSubmissions@Calgary.ca](mailto:PublicSubmissions@Calgary.ca),  
Re: **GreenLine Committee Meeting June 1**  
**Green Line LRT Updated Stage 1 Alignment Proposal**  
From: **Calgary River Valleys**  
Via Email: [CalgaryRiverValleys2@outlook.com](mailto:CalgaryRiverValleys2@outlook.com)

**Overview of Calgary River Valleys' Comments**

Category	Comments
Demonstrated Need for bridge vs Tunnel to Cross Bow River	Principle 1 in Appendix B of the Calgary Transportation Plan (CTP) states that <b>“A balanced triple bottom line framework should be used to assess the social, economic, and environmental implications of the crossing and the corridor it serves and all alternatives, including the option of doing nothing.”</b> More information and transparency is required to confirm this Principle has been adhered to.
Site / Location for Bridge	Principle 2 in Appendix B of the CTP requires consideration of several factors when <b>“planning, designing and constructing”</b> river crossings. These include: use of the river corridor by people and wildlife, recognition that a bridge is human development within a <i>watercourse ecosystem</i> , review of impacts from a new bridge in both flood and drought conditions, impacts on riverbank erosion, and river channel movement. <u>CRV is concerned that the proposed siting of the Bow River bridge in the downtown area appears to based more on the prior 2017 tunnel alignment than on the most appropriate bridge location.</u> <b><i>CRV believes rigorous and comprehensive studies of the impacts of a new river crossing should be completed prior to acceptance of an alignment / site for any new bridge.</i></b>



Category	Comments
Biophysical & Social Impacts	Principle 3 in Appendix B of the CTP requires consideration of impacts (including cumulative impacts) from a new bridge on river changes due to droughts, floods, and ice conditions, changes to the water flow and impacts on river erosion & deposition, plants & wildlife habitat including fish passage, as well as long term impacts from operations. Our river valley corridors are recognized as a jewel, and their natural functionalities and biodiversity should be protected to the highest extent possible.
Co-location of Complementary Functions and Infrastructure, & Avoidance of Adverse Impacts	Principle 4 in Appendix B of the CTP intends to minimize future “ <b>impacts from construction, rehabilitation and ongoing operation and maintenance</b> ”, by ensuring that all possible needs are addressed in the design phase, so as to avoid lost opportunities to build key infrastructure elements into the bridge. Before a decision is made about the GreenLine LRT alignment, CRV believes decision-makers should know what we are protecting and what we will be losing with the various bridge alignment options that could be considered
Transparent Adherence to Legislation & Policies, & Documentation of Environmental Trade-Offs	Principle 6 in Appendix B of the CTP requires that “ <b>proper planning and design of watercourse crossings must be governed and supported by environmentally responsible legislation.</b> ” Documentation should be made publicly available, including the environmental options already reviewed, as well as the reasoning for recommendations that so far appear to be <u>not</u> fully compliant with environmentally responsible legislation & policies BEFORE any decision is made on the alignment / siting for a river crossing

**Who Is Calgary River Valleys (CRV)?**

- CRV was formed in 1990 at the request of Calgary City Council; the River Valleys Committee (RVC) was placed under the Parks Foundation Calgary’s umbrella, to provide an opportunity for Calgarians to participate in the development of policies and projects to manage use of Calgary’s river valley system.
- In 2008 and 2009, Calgary River Valleys (at that time as the River Valleys Committee) was extensively involved in the Plan-It Calgary process that resulted in the development of the *Principles and Design Considerations for River Crossings* that form Appendix B in the Calgary Transportation Plan.
- In 2010, CRV became an independent society commonly known as Calgary River Valleys (CRV).
- CRV has worked in collaboration with many City of Calgary departments, Province of Alberta staff, representatives of Calgary communities, and members of the general public to provide input on major urban planning and development proposals, including among others:
  - Crowchild Trail bridge pedestrian & cycling pathway addition
  - Nose Creek Watershed Water Management Plan



- Wetland Conservation Plan
- Harvie Passage design & post-2013 flood re-build design
- Various Area Structure Plans, large parcel outline plans, city-wide policies, public parks and individual riverfront development proposals
- Stoney Trail bridge over the Bow River & 37 St SW bridge over Fish Creek
- Southwest Calgary Ring Road
- Calgary Growth Management Plan to focus urban development in corridors
- Original 2017 GreenLine LRT alignment, station workshops and charettes.
- From 2009 to present, CRV has been the lead organizer of an annual citizen science project to locate and count the Brown Trout spawning nests in the Elbow River as a trend indicator of the river's ecosystem health; this data was used by the City of Calgary and the Government of Alberta in 2018 to identify suitable locations for restoring fish spawning habitat in the Elbow River in 2019.
- Other recent CRV work includes providing input for the post-2013 flood restoration of the Chevron Learning Pathway in the constructed wetland on Prince's Island, providing input and some funding for City of Calgary's River Access Signage project so boaters and rafters could safely and responsibly access the river, as well as small riverbank restoration projects to re-naturalize some privately-owned sections of Calgary's riverbanks, and to encourage other river-adjacent landowners to do the same.

### **General Information re CRV Comments re GreenLine Stage 1 Alignment**

Our comments on the Green Line LRT 2020 Updated Stage 1 Alignment Proposal have been generated through discussions with our members, contacts, and staff. The majority of our comments and concerns lie with the proposed plan to build a bridge over the Bow River. As indicated above, CRV was significantly involved with the process that developed the *Principles and Design Considerations for River Crossings*, that make up Appendix B in the Calgary Transportation Plan (CTP).

In particular, CRV has concerns that the process for the GreenLine LRT Stage 1 Alignment Proposal has not properly adhered to CTP Appendix B Principles 1, 2, 3, 4, and 6. Our comments below will summarize these concerns.

### **Principle 1 of Calgary Transportation Plan Appendix B: Demonstrated Need For the Crossing - Bridge vs Tunnel**

The original 2017 approved plans for the GreenLine alignment included plans for a tunnel under the Bow River, which was the option preferred by the public after months of GreenLine engagement, even though it was clear it would come at a higher cost. It was also preferred by environmental stewardship groups like ours because the tunnel option would have fewer impacts on the river and its valley.

Recently, we learned that these plans had been changed to recommend a bridge to cross the Bow River instead. It is the opinion of CRV members that the reasoning for defaulting to a new bridge to cross the Bow River did not comply with Principle 1, in that it was not well-demonstrated. CRV was subsequently advised by GreenLine team members that this change was required as a cost-saving measure, and to improve accessibility



for users of the GreenLine. The balancing of all costs and benefits, long-term impacts, and opportunities should be well-demonstrated and publicly available.

Principle 1 states that a **“balanced triple bottom line framework should be used to assess the social, economic, and environmental implications of the crossing and the corridor it serves and all alternatives, including the option of doing nothing.”** While the economic reasoning has been outlined, it has not been made clear that the other two pillars of Triple Bottom Line assessments have been considered in a “balanced” way; more information and transparency is required regarding the “demonstrated need” for a bridge rather than a tunnel or even no crossing at all. CRV would be pleased to review and provide comments on technical documents outlining the justification for this recommendation if such documents were shared with us.

### **Principle 2 of CTP Appendix B: Advanced Planning for Appropriate Siting**

The siting proposal for a new bridge appears to be based on the original 2017 tunnel location, rather than an independent evaluation of the best possible location for a bridge crossing. It has not been made fully clear to us as to why an existing transportation corridor across the Bow River such as the Centre St Bridge could not be used for the GreenLine LRT.

We understand there are competing forces the GreenLine team is dealing with regarding this project, including various groups who are for and against different locations to locate a bridge over the Bow River. We also understand the GreenLine team’s position that the south end of a bridge over the Bow River would be better closer to existing dense residential development and employment destinations (i.e. closer to 2 St SW rather than at Centre St S), so as to support connectivity and compact growth. In general, we support this intent. However, the general theory to support the development of major transportation corridors such as this, is that they, with planning support, would result in Transit Oriented Development on any new alignment.

The proposed siting for the GreenLine bridge from 2 St SW downtown to connect to Centre St N would need to be either on an angle, or in an “S-shape” as has been suggested. Any new bridge would therefore also be significantly longer within the river valley than one in a straight alignment across the river, and would therefore have a considerably larger impact on the Bow River and its valley. If a Centre St siting were used, there would be no new bridge footprint, although some other impact issues could be added. We believe the larger environmental impacts that will result from this trade-off need to be fully considered before the bridge location or site is finalized.

A new bridge, especially a long bridge as has been proposed, will no doubt have other additional impacts on the river valley with pedestrian access and egress staircases potentially connecting to Memorial Drive, and Prince’s Island. CRV believes a more complete study of these environmental considerations should be conducted before a siting decision is finalized.

Specifically, our members would like the factors outlined in Principle 2 to be given more consideration prior to a siting decision. These include:

- **“Use of the river and stream corridors by people, fish, migratory birds and other wildlife and the sensitive integration of human development within *watercourse ecosystems*,”**



- “Waterway constraints, such as *hydrology* (e.g. volume of water from droughts to floods, etc.), hydraulics (e.g. erosive power of moving water and ice, etc.) and channel morphology (e.g. meandering, braiding, entrenchment of the river channel, etc.)”, and
- “Location and design of stream channel crossings”.

Principle 2 specifically states, “River crossing sites should only be chosen after careful determination of the least damaging crossing location – before the crossing and the associated infrastructure leading to it are designed.” Any new bridge the City of Calgary builds should be treated as an opportunity to build something better than we have done in the past, with the expectation that it will exist for hundreds of years. Any such river crossing should minimize the impacts on the river valley and watercourse ecosystem.

### **Principle 3 of CTP Appendix B: Adherence to Recommendations of Biophysical and Social Impact Assessments**

We have been advised by the GreenLine team that a Biophysical Impact Assessment (BIA) has not yet been completed for this project, and that it cannot be undertaken until the GreenLine Stage 1 Alignment Proposal has been approved by City Council. While it is clear from our interactions with the GreenLine team that some studies have been completed or technical opinions have been received with regard to the plans for a Bow River bridge, this technical documentation has not been shared with us nor posted on the City’s website.

Various considerations of impacts are required for adherence to Principle 3. Any decision regarding a bridge over the Bow River instead of a tunnel should certainly include the consideration of:

- Plants and animals that would be impacted, as well as existing park infrastructure and usage,
- Seasonal and climate-related hydrological changes (droughts, floods, ice conditions, etc.),
- Conditions and functionalities of the watercourse ecosystem before and after construction,
- Hydraulic conditions and functions (e.g. erosion, scouring and deposition),
- Connectivity of viable wildlife habitats, including fish passage, and
- Long term impacts on the ecosystem from bridge operations.

### **Principle 4 of CTP Appendix B: Successful minimization of impacts from construction, rehabilitation and ongoing operation and maintenance through engineering design and rehabilitation requirements**

We know there are already significant impacts on the Bow River in Calgary, especially in the section through downtown. There are already 12 full span bridges within 2.5 km either direction of the proposed new site for the GreenLine LRT bridge. Each bridge represents an additional cumulative impact on the river ecosystem, each with its own impacts on river flow and water quality, and each contributing to further degradation of the wildlife corridor. Any new bridge would also represent an opportunity to “bundle” infrastructure and improvements that were missed in the design of previous crossings.

Since the 2013 flood, much of the riverbank along this section of the river has had rip rap (large boulders) placed along it to prevent bank erosion. While rip rap can help to prevent erosion of the riverbank or riparian area, it significantly negatively impacts the normal functionalities of riparian areas, since it transfers hydrological energy to other sites downstream and eliminates habitat for ground-nesting birds, insects, and



prevents normal transit by other native species, both local and migratory. Any new river crossing also represents an opportunity to restore or improve functionality of the riverbank and riparian areas in this part of Calgary.

With regard to flood risk, we have been advised that both the proposed Bow River bridge and the proposed portal at the south end of it, at 2 St SW, would be designed to withstand a 1 in 200-year flood. The expectation is that any bridge alignment that is selected will be located within the river valley for substantially more than 200 years. We believe the standard for flood resiliency for this public infrastructure should be substantially higher than a 1 in 200-year flood level. CRV has been advised by City of Calgary Water Resources experts that we likely to receive substantially more precipitation in the next 50 to 70 years, and in fewer but more concentrated events, therefore resulting in greater likelihood of more frequent and more damaging floods in future.

The result from significantly increased precipitation will also include impacts to the riverbed and banks, such as currently unforeseen scouring, erosion, and deposition of river rocks and sediment. These kinds of impacts from the 2013 flood modified the 10<sup>th</sup> St Wave by shifting large rocks within the river and re-routed sections of the river channel. Future flood events are likely to leave considerably larger after-effects.

While some information related to these issues was synthesized into the summary documents shared by the GreenLine team, without being able to review the technical details that informed the team on these environmental impacts and issues, we cannot determine if these CTP principles were adhered to. We believe that before a final decision is made for a new bridge over the Bow River, comprehensive studies of the potential impacts should be made available for review.

#### **Principle 6 of CTP Appendix B: Effective Policies, Regulations, Guidelines and Enforcement**

This CTP principle states that **“proper planning and design of watercourse crossings must be governed and supported by environmentally responsible legislation.”** CRV was pleased to note that the GreenLine team outlined in their online engagement sessions that much additional work will need to be done to comply with Federal and Provincial legislation.

As per the City of Calgary’s River Access web page: **“The Bow and Elbow rivers are integral to our city and provide extensive opportunities to promote social, economic, and environmental well-being in Calgary.”**

In addition to compliance with legislation, we encourage and support compliance with the City policies that have been developed to ensure protection of these natural areas in Calgary. CRV would support a move by the City of Calgary to include publicly available documentation with all planning files that would identify the policies that were considered and which were deemed to be in (or not in) the public interest. For example, it would be desirable to provide documentation that indicates which scenarios were considered that may have higher and lower costs but also have fewer or more environmental benefits. Planning recommendations could then be shown to be based on weighing the costs and benefits, which would provide more transparency and would likely create more public buy-in for planning matters.



Relevant City policies related to environmental matters include but are not limited to:

- Open Space Plan (2003), which states “**Calgarians recognize and appreciate that parks, urban forest and natural areas are significant contributors to the environmental quality and recreational fabric of Calgary,**”
- Municipal Development Plan (2009), which provides the objective to “**maintain biodiversity and landscape diversity, integrating and connecting ecological networks throughout the city,**” with an ecological network including the components of the river valley system, natural environment parks, regional and neighbourhood parks, and pathways among other components.
- Our BiodiverCity – Calgary’s 10-Year Biodiversity Strategic Plan (2015), which “**establishes clear, strategic and comprehensive principles to consider biodiversity in all aspects of local planning and management, from land use and mobility to social and economic development,**”
- The Durban Commitment (2016), which “**recognizes that biodiversity is the variety of life on earth on which human well-being is dependent and that biodiversity provides eco-system services that underpin all of our community’s needs.**”
- The Riparian Action Program (2017), which states, “**Responsible planning and management of riparian areas will benefit Calgarians by providing cleaner water and improved drainage that supports recovery after climatic events, including flood and drought.**”
- As well as other plans, including: Calgary Urban Park Master Plan, Calgary River Valleys Plan, and the Calgary Wetland Conservation Plan.

## Conclusion

There are clearly multiple competing forces and voices from members of the public and special interest groups regarding the GreenLine. Calgary River Valleys recognizes and appreciates the effort put in by the GreenLine team to attempt to balance competing forces but we believe this project must address these Principles for river crossings, especially with regard to siting and impacts before a decision is made on the alignment across the Bow River through downtown.

We were pleased to see that some feedback received from the public earlier this year was incorporated into the latest iteration of the proposed Stage 1 Alignment. One example is the plan to include pedestrian and cycling infrastructure with a new bridge, which didn’t appear to be included in earlier versions of the plan. We also appreciated the efforts by the GreenLine team to answer questions during the recent online engagement sessions and to explain why some suggestions from the public could not be included in the GreenLine LRT alignment proposal recommended for approval.

However, we want to ensure the Triple Bottom Line framework is well-balanced for this project, that environmental and social considerations are given their due, just as economic considerations are. Before any final decision is made, we recommend a rigorous, comprehensive, and transparent review of the environmental and social impacts be completed, or if these have already been done that this information be shared.



CRV would be happy to help develop Terms of Reference for additional studies and participate in technical discussions surrounding how best to balance the economic, environmental, and social implications of this major infrastructure project.

The section of the Bow River valley in question that is proposed for the potential bridge siting location is often described as a jewel making up part of Calgary's open space. As we impose our urban and suburban footprint in a broad corridor between the foothills and the prairie, our river valleys are the major concession that we make, as a City, to biodiversity and natural functionalities, including wildlife corridors. The downtown section of the Bow River is already heavily encumbered and impacted by the development practices of the past, and any plan for a new bridge must consider the impacts it will impose on this natural asset. We must use this as an opportunity to rise to a higher and better standard.

Calgary River Valleys looks forward to working with City Administration to provide input for subsequent stages of this project as it progresses.

For further information, please contact CRV Program Manager, Anne Naumann, via email at [CalgaryRiverValleys2@outlook.com](mailto:CalgaryRiverValleys2@outlook.com).

Sincerely,

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cc: CRV Circulation

