



MORDEN COLLIERY REGIONAL TRAIL – NANAIMO RIVER BRIDGE FEASIBILITY STUDY

Please note: The recommendation was varied by the Committee as follows:

1. That the truss bridge option be selected for crossing the Nanaimo River on the Morden Colliery Regional Trail and staff be directed to proceed with detailed design, costing and associated studies required to advance to construction pending project budget approval as part of 2024 and Five-year Financial Plan Budget review process.
2. That staff review the application of Active Transportation grants for the Nanaimo River pedestrian crossing at Morden Colliery Regional Trail.

RECOMMENDATIONS

That the suspension bridge option be selected for crossing the Nanaimo River on the Morden Colliery Regional Trail and staff be directed to proceed with detailed design, costing and associated studies required to advance to construction pending project budget approval as part of 2024 and Five-year Financial Plan Budget review process.

BACKGROUND

In October 2014 and February 2016, the Regional Board approved the following motions respectively:

That the updated Nanaimo River Pedestrian Crossing at the Morden Colliery Regional Trail Feasibility Study be received to use as a guiding document for the future development of a bridge crossing within the Morden Colliery Regional Trail corridor.

That the design and development of the multi-use bridge crossing over the Nanaimo River, within the Morden Colliery Regional Trail, incorporate equestrian accessibility (in addition to pedestrian, cyclist, and wheelchair accessibility) in response to current community recreational needs and public support.

With almost 10 years having passed since the 2014 Feasibility Study was completed, an updated study to include additional hydrotechnical, geotechnical and costing information was required. In 2022, Herold Engineering was retained to provide an updated feasibility study and to complete a site review for the bridge crossing over the Nanaimo River (Attachment 1 – Herold Engineering Draft Feasibility Study). Consistent with the 2014 report, the 2022 study outlines several challenges with the proposed bridge location within the RDN right of way and indicates that a single span across the river is not feasible at this location.

To correspond with the motion to accommodate equestrians, a review of a 2.5m wide steel truss bridge was included in the study. A preliminary design indicates that two distinct bridge spans of 110m and 100m would be required, with an estimated cost of \$3,700,000 for the bridge structures alone. In addition, design elements such as bridge width and railing height may need to be altered to safely accommodate equestrians alongside other users. These alterations will likely increase bridge costs by approximately 30%.

Amy Gore, Superintendent Park Planning and Development

The feasibility study also re-visited the suspension bridge structure as a less expensive alternative to the truss bridge option. This type of bridge consists of steel cables attached to steel towers at each side of the bridge approach, which are then attached to concrete anchor blocks or rock anchors. This option also requires two spans, however, the estimated cost of \$2,471,888 is significantly lower than the truss bridge option. Although this option does not accommodate equestrian use, the improved aesthetics and lower cost make this option worth reconsidering given competing board priorities within the Regional Parks and Trails service that also require funding.

As part of the updated feasibility study, a hydrotechnical assessment was completed by Northwest Hydraulics Consultants (NHC). The assessment highlights several challenges with the proposed bridge location, notably, the significant rate and level of bank erosion on the west bank due to the high flow through the west channel of the river. It is recommended that final location of the bridge foundations be carefully considered in the detailed design phase to account for the dynamic behaviour of the river.

Additional hydrotechnical studies that are required as part of the detailed design phase, include:

- a comprehensive river survey around the bridge location to update the hydraulic model;
- a detailed waterway design, including flood level, scour and debris assessment; and
- a geomorphology investigation to predict the potential channel changes.

A preliminary geotechnical review for the bridge foundation recommends that driven piles rather than typical spread footings be used for the truss bridge option to support the bridge structures. Further geotechnical assessments will be conducted, when required, during the detailed design phase. For the suspension bridge option, a comprehensive geotechnical investigation is required to ensure that suitable conditions are present for anchoring the steel towers.

As outlined above, comprehensive geotechnical, hydrotechnical and environmental assessments and a topographic survey is required as part of the detailed structural design phase. Due to the remote location, and difficult access to the riverbank, constructability of the bridges will also need to be reviewed and budgeted for, as well as permitting requirements for constructing a bridge over an active waterway.

License of Occupation – Statutory Right-of-Way Tenure Upgrade

Parks staff have been successful in advancing this long-standing tenure renewal file with the provincial government. In 2022, the Province of British Columbia offered a License of Occupation to permit the RDN continued use of the corridor for regional trail use and to conduct a survey of the land. In 2023, the boundary survey was completed and has been registered by the Surveyor General and submitted to the province. Once received, the province will offer a statutory right-of way to the RDN for a 30-year term.

Agricultural Land Reserve

An 850m undeveloped section of the trail connecting Nanaimo River and Hemer Road is within The Agricultural Land Reserve (ALR) (Attachment 2 – Site Map). Approval from the Agriculture Land Commission (ALC) was required to utilize ALR land to construct the pedestrian bridges over the Nanaimo River and complete the undeveloped portion of the Morden Colliery Regional Trail. Approval was granted in July 2018 for completion of the trail by 2021. In August 2020, a time extension was granted to complete the construction by January 31, 2024. Staff are currently in the process of applying for another extension. As a condition of approval, the RDN is required to submit a Trail Design Report for the Commission’s review and approval. The report will outline several conditions that will need to be fulfilled, including a fencing and vegetative buffering plan in accordance with ALC’s specifications, as well as solutions related to the passage of farm related activities across the buffered and fence trail. The costs to fulfill these requirements will need to be factored into the total project budget.

FINANCIAL IMPLICATIONS

The Board approved budget for this project is \$2,322,192. Considering estimated costs for additional studies, professional fees, trail development and bridge construction, an additional \$2,923,564 is required for the truss bridge (option 1), for a total project budget of \$5,245,756. Conversely, an additional \$1,673,172 is required for the suspension bridge (option 2), for a total project budget of \$3,995,364 (Table 1). Staff is seeking board direction to proceed with option 2 and request for approval for this increase will be addressed during the 2024 budget approval process.

Table 1: Project Budget Summary

	Option 1 Truss Bridge	Option 2 Suspension Bridge
Previously approved budget	\$2,322,192	\$2,322,192
Class D Cost Estimate for bridge construction	\$3,722,280	\$2,471,888
Contingency for professional fees, additional studies and trail development	\$1,523,476	\$1,523,476
Total Estimated Budget Required	\$5,245,756	\$3,995,364
Additional Amount required to fund project	\$2,923,564	\$1,673,172

STRATEGIC PLAN ALIGNMENT

Transportation and Transit - Provide opportunities for residents to move effectively through and around the Region.

REVIEWED BY:

- R. Daykin, Manager, Parks Services
- T. Osborne, General Manager, Recreation and Parks
- T. Moore, Chief Financial Officer
- D. Holmes, Chief Administrative Officer

ATTACHMENTS

1. Herold Engineering Feasibility Study
2. Site Map