

8.0 DESCRIPTION OF PREFERRED TRAIL ALIGNMENT CONCEPT

This chapter provides an overview of the preferred trail alignment Concept 1A – Modified in-valley.

The concept was developed, evaluated, and revised over the course of the MCEA with contributions from technical staff, agencies, landowners, Indigenous communities, stakeholders and the public. The following describes the preferred alignment, its various components, design guidelines, local conditions affecting the design and future considerations for the detailed design phase to be completed after completion of the MCEA.

A 30% preliminary design has been developed for the preferred alignment. Each component of the trail is described in the following, with preliminary technical plans provided in Appendix K.

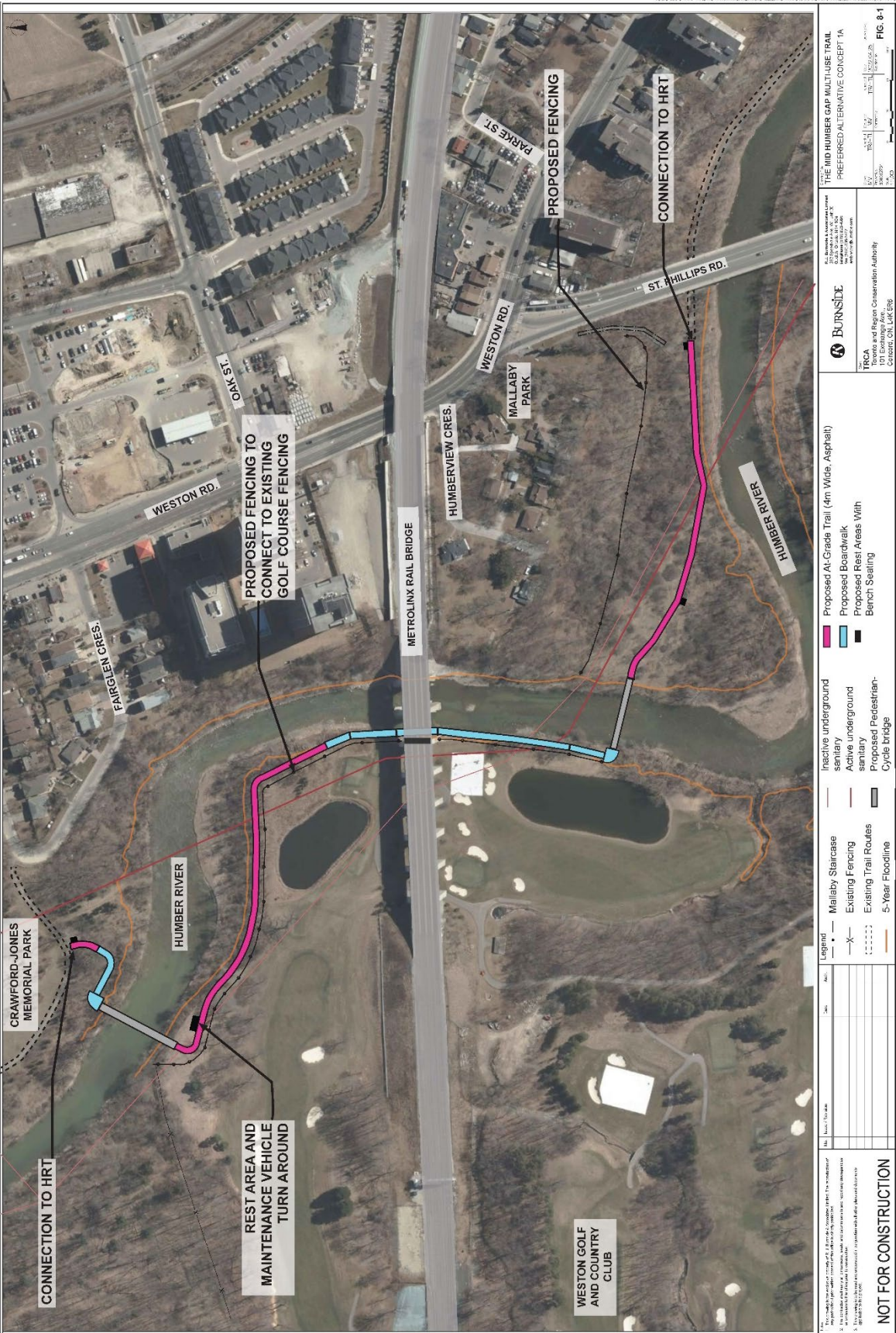


Figure 8-1: Concept 1A – Modified in-valley preferred trail alignment.

8.1 Multi-use Trail General Route

Beginning at the existing paved trail in Crawford-Jones Memorial Park, the preferred trail alignment crosses the Humber River via a new pedestrian-cycle bridge and routes along the west bank of the Humber River through property owned by the WGCC. Just north of the Metrolinx rail bridge, the paved at-grade trail transitions into an elevated boardwalk that connects to a second pedestrian-cycle bridge that takes users to the east bank of the Humber River. A paved at-grade trail connects users to the existing HRT in Mallaby Park, just south of the existing staircase.

8.2 Trail Design and Cross Sections

The trail will be designed as a primary trail exemplary configuration following the City of Toronto Multi-Use Trail Guidelines (2015). The Guidelines state that “primary trails connect between destinations in different parts of the city, and will often connect with each other, providing perhaps the most significant level of connectivity among the three [trail] types. They are similar to arterial roads in the road classification system, or to community and district parks in the parks network” (Toronto, 2015). The majority of multi-use trails in Toronto, including the HRT, are in this category.

The preferred alignment will match the already existing sections of the HRT and will accommodate two-way pedestrian and nonmotorized uses. The Guidelines provide the following principles to be achieved where possible:

- Consistency and Excellence – meet and exceed best practices and use of evolving technologies;
- Safety, Security, and Comfort – primary consideration for all trail users;
- Accessibility – universal design for all people and abilities;
- Sustainability – sustainable building and maintenance technologies; and,
- Environmental Protection – minimize impacts to the adjacent trail corridor.

A key consideration in the development of the preferred alternative was to improve accessibility over existing conditions and meet the following guidelines and standards, where possible:

- Toronto Accessibility Design Guidelines (2021) – This document identifies specific city standards for indoor and outdoor routes, special areas, and amenities. Policy 1.3.14 within the Guidelines requires that trails be laid out with accessible pedestrian paths and footbridges that are suitable for persons using various mobility aids, and that slopes greater than 1:20 (5%) require alternative routes where possible (Toronto, 2021); and,

- Ontario Regulation 191/11 Integrated Accessibility Standards – This is a regulation under the AODA (2005). Within the Regulation, exceptions to requirements for recreational trails (80.15) are provided in instances where it is not possible to comply due to the potential for significant negative impacts to ecological integrity and/or where existing physical or site constraints do not allow for modifications (Government of Ontario, 2016).

8.2.1 At-Grade Trail

There are two sections of at-grade trail along the preferred alignment. The first is located on WGCC property between the north pedestrian-cycle bridge and the start of the boardwalk just north of the Metrolinx rail bridge. The second section of at-grade trail is located on what is currently the private land trust property between the south pedestrian-cycle bridge and the existing HRT trail in Mallaby Park.

The at-grade trail will be 4.0 m in width with an asphalt surface. A mowed grass strip, approximately 1.0 m in width will be maintained on either side of the trail, with an additional 1.0 m on either side used for signage and other associated trail elements (Figure 8-2).

A typical trail cross-section is shown in Figure 8-3. The locations of the at-grade trail are characterized by relatively flat topography and will not include grades steeper than 5:1. Some adjustments to the width and surface type may be made during detailed design to address regulatory accessibility requirements and other site conditions.



Figure 8-2: Conceptual view of at-grade trail, looking west towards the southern bridge over the Humber River.

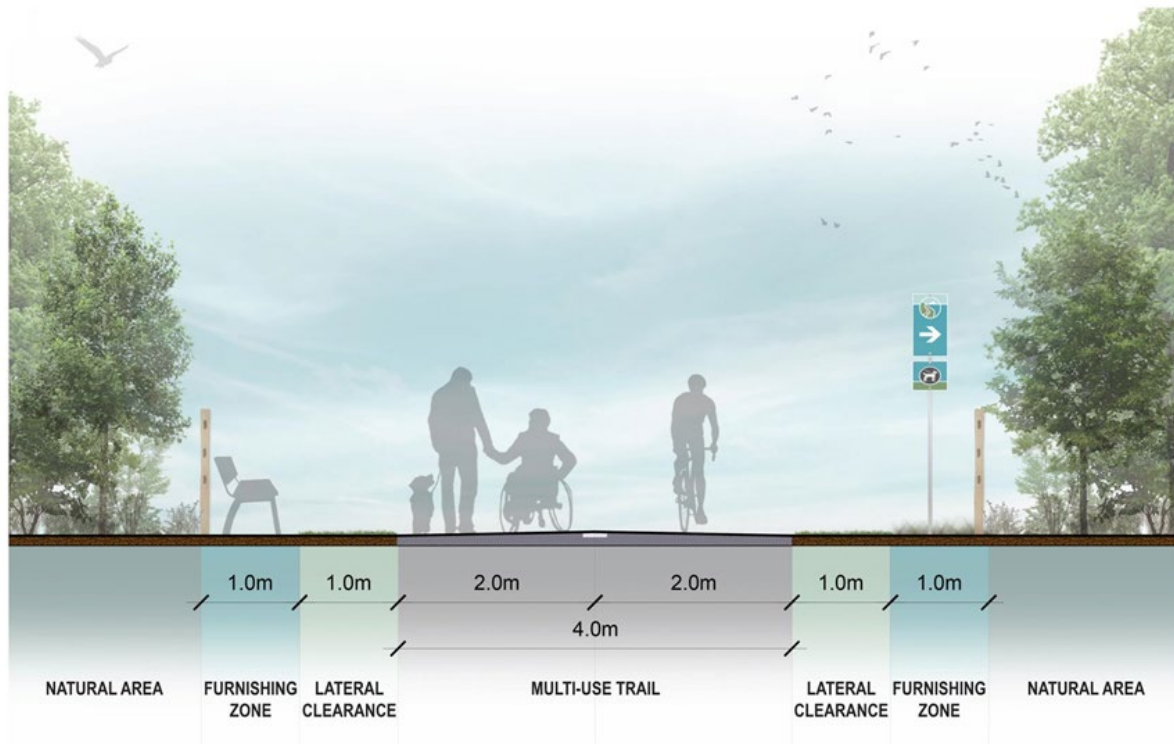


Figure 8-3: A typical cross-section of a primary trail configuration with a 4.0 m wide paved asphalt surface.

8.2.2 Boardwalk

The elevated boardwalk structure will be approximately 183 m in length and will run along the west side of the Humber River from just north of the rail bridge to the south pedestrian-cycle bridge. Subject to the findings of a geotechnical analysis to be completed during detailed design, the conceptual boardwalk design will be founded on a suitable deep foundation system (e.g., supported by helical piers).

The boardwalk will cross an existing sanitary sewer easement located between the WGCC irrigation pond and the Metrolinx rail bridge. In order to avoid damage to the sewer, the boardwalk has been designed to include a large span over a distance of 42 m without any piers, which allows for a setback of 3 m from the sewer. Another span of 26 m will be installed below the Metrolinx rail bridge to avoid interference between boardwalk piers and the existing bridge abutments.

The boardwalk will have a covered structure along its entire length to protect trail users from golf balls and debris from the overhead rail bridge. In addition, a protective screen will be installed on the west side of the boardwalk structure from the boardwalk deck to the canopy. A typical profile and cross-sectional view of the preliminary boardwalk design is shown in

Figure 8-4 and Figure 8-5, respectively. Additional technical details are provided in Appendix K.

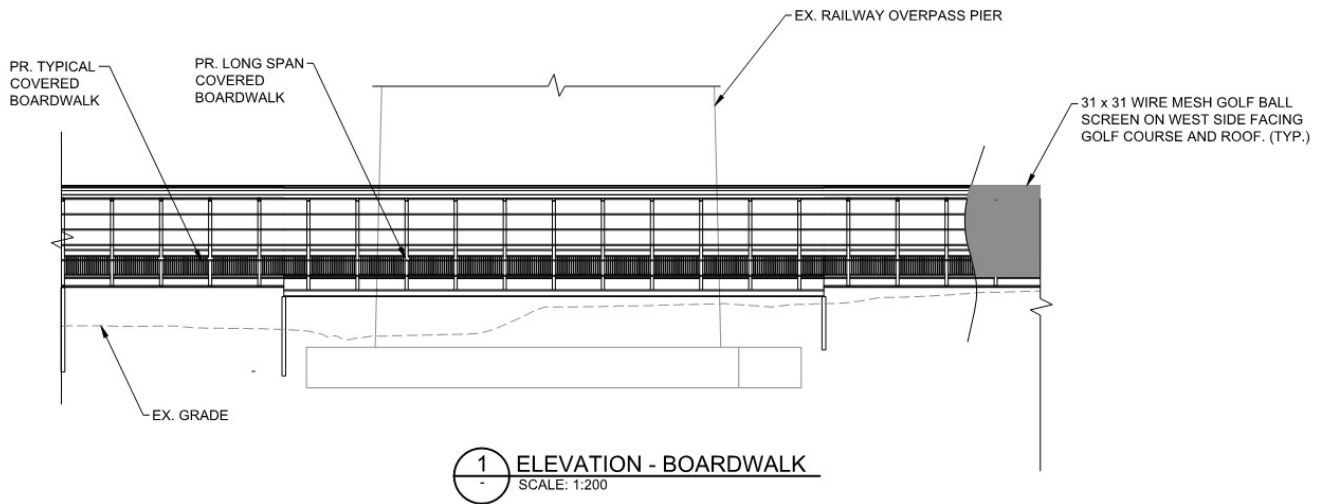


Figure 8-4: A profile view of the elevated boardwalk structure, looking west towards the section that will cross underneath the Metrolinx rail bridge.

The proposed boardwalk will include an overhead canopy and protective screening along the west facing side. Design of the canopy and protective mesh structure will be developed as part of the detailed design phase following completion of the MCEA and in discussion with Metrolinx and WGCC.

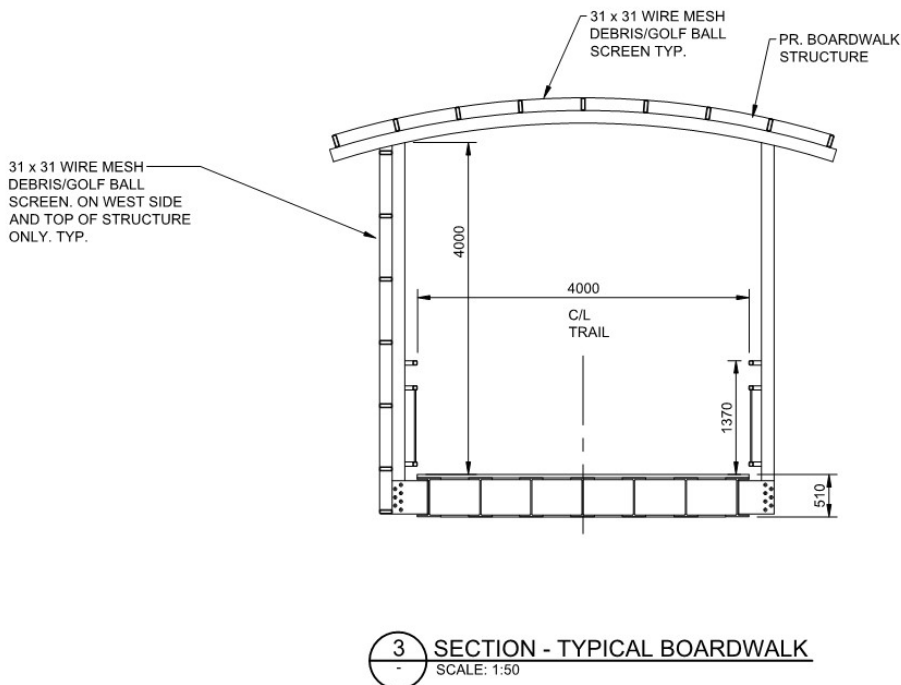


Figure 8-5: A typical boardwalk cross-section looking north, showing the overhead canopy and protective screening on the west side of the structure.

8.3 Pedestrian – Cycle Crossings

Two pedestrian-cycle crossings are proposed as part of the preferred alternative (see Figure 8-1). The north bridge will cross the Humber River between Crawford-Jones Memorial Park and the WGCC property, with the south bridge spanning the Humber River between the existing private land trust and the WGCC.

A preliminary design for each bridge is provided in Appendix K. The design will be refined during the detailed design process subsequent to this MCEA. In general, each bridge will be designed:

- To comply with applicable AODA guidelines;
- To comply with TRCA policies and regulations; and
- To allow access by standard work vehicles.

The preliminary designs provided in Appendix K and highlighted below are intended to be flexible and can be adjusted based on additional technical information obtained during the detailed design and permitting process. A summary of the preliminary details for each bridge are described below.

8.3.1 Humber River – North Bridge

The north bridge will be a prefabricated COR-TEN steel through truss structure with a clear span of 55.2 m and an interior width of 4.0 m. The proposed bridge has been designed with a minimum soffit elevation of 123.5 metres above sea level (mASL). The deck surface will be of anti-slip weathering steel and railing heights will be a minimum of 1.37 m in height in order to satisfy cycling safety requirements.

The ground elevation at the proposed north bridge crossing location is higher on the west bank than the east bank. To accommodate this difference in elevation and to ensure AODA compliance, the bridge will include a trail ramp connecting users on the east side of the bridge to the existing trail at Crawford-Jones Memorial Park. The ramp structure will run perpendicular to the river from the landing at a 15:1 slope (~7% grade) for 9.0 m and then turn 90° to meet the existing trail in Crawford-Jones Memorial Park.

8.3.2 Humber River – South Bridge

Spanning 46.5 m, the south bridge will match the design of the north bridge as a 4.0 m wide prefabricated CORE-TEN steel through truss structure (soffit elevation of 121.6 mASL). Anti-slip decking and appropriate railing heights will be included as part of the bridge design.

To minimize conflict between trail users and the WGCC, the south bridge will include an overhead canopy and protective screening along its south facing side (Figure 8-2). Similar to

the boardwalk, the exact design of the canopy and protective screening will be developed as part of the detailed design phase following the MCEA.

To the west of the river, the bridge will connect to a protected trail landing area that routes users along the bank of the Humber via the elevated boardwalk.

8.4 Visual Appeal and Design

Opportunities for incorporating creative and naturalistic design elements will be explored as part of the overall planning of the preferred alignment. The trail will include a consistent design language that aligns with the natural environment and ensures continuity for users. The design will also address unique site opportunities and constraints along the length of the trail, which includes but is not limited to:

- Designing for the safety and comfort of trail users and existing land uses (e.g., WGCC and nearby communities);
- Mitigating negative impacts on existing vegetation and habitat due to trail and bridge construction;
- Identifying opportunities for restoration post construction, such as invasive species management and plantings alongside the trail to contribute to habitat linkages and foster biodiversity; and
- Implementing creative design solutions that tap into the natural and cultural history of the area, while creating a unique trail system that blends into the environment.

8.4.1 Architectural Safety Screening and Overhead Canopy

Installed along the full length of the boardwalk and south bridge, the canopy will be designed in accordance with Metrolinx safety standards specifying canopy requirements for trails below rail bridges, an example is shown in Figure 8-6.

Portions of the preferred alignment in close proximity to or along WGCC property will include overhead canopies and architectural safety screening that provides safety to trail users and reduces potential conflict with private land use (e.g., vandalism, trespassing, etc.). A conceptual rendering, to help visualize how this section of the preferred alignment may look, is presented in Figure 8-7.



Figure 8-6: Example of overhead canopy structure below a Metrolinx rail bridge on the Lower Don River Trail, Toronto.

In addition to the overhead canopy, architectural screening will be provided along the south facing side of the south bridge and west side of the boardwalk. During the detailed design phase and through additional consultation, opportunities for incorporating artistic design elements into the architectural screening will be explored. An example of architectural safety screening is shown in an artistic rendering to help visualize how the screening may look is shown in Figure 8-7.

Opportunities will be explored for the strategic placement of vegetation, as has been implemented by TRCA on other projects, to function as natural visual and sound barriers between the WGCC and trail infrastructure.



Figure 8-7: Conceptual view from WGCC, looking east towards the elevated boardwalk that runs along the edge of the Humber River.

8.4.2 Fencing

A post and paddle-style fence is proposed along the north side of the paved at-grade trail through the private land trust property to encourage trail users to stay on the trail and mitigate impacts to the natural environment. To provide added safety to adjacent communities, “anti-climb” fencing will be installed at the bottom of the slope behind the properties on Humberview Crescent. The location and design of the safety fencing will be developed in consultation with residents via the detailed design phase. Refer to Figure 8-8 for an example of anti-climb fencing.

There is an existing fence between the active portions of the WGCC and the Humber River, north of the rail bridge. By the north bridge, portions of this fence will need to be relocated to accommodate the trail and to mitigate trespassing. Any open sections between this fencing and the boardwalk will be enclosed with new “anti-climb” fencing developed in consultation with the WGCC.



Figure 8-8: Anti-climb fencing along the Toronto Rail Path.

8.4.3 Rest areas and Trail Signage

Four rest areas are proposed along the trail route in the following locations (see Figure 8-1):

- At the northern extent of the new trail at its connection point with the existing HRT in Crawford-Jones Memorial Park;
- Between the north bridge and the boardwalk on WGCC lands. This rest area will also accommodate a maintenance vehicle turn-around;
- On the east side of the south bridge on the private land trust property; and,
- At the end of the new trail connection where it will connect with the existing HRT in Mallaby Park.

The number of rest areas, their locations along the trail, and the standard park elements that will be included within each will be developed as part of the detailed design phase. Trail signage will be installed at strategic points or areas of interest and will align with the City of Toronto wayfinding strategy for parks and trails (City of Toronto, 2014).

8.4.4 Bank Stability and Opportunity for Restoration

The boardwalk and bridge abutments will be located along the banks of the Humber River. The Fluvial Geomorphology study, provided in Appendix D, indicated that the river and banks are generally stable within the project limits. Additional geotechnical work will be completed during the detailed design phase to further characterize the composition of the banks and subsurface conditions. This work will inform whether any bank stability measures will be required and how they will need to be designed. Riparian areas will be planted with stabilizing native vegetation to the extent possible. Bank hardening using engineered methods will be avoided, if possible.

Following construction activities, opportunities to improve environmental conditions within the project area will be explored, such as invasive species removal. Restoration of the project area will contribute to:

- Improving linkages between habitats;
- Increasing resiliency to erosion forces within the project area;
- Enhancing biodiversity of aquatic and terrestrial habitat species; and
- Improving ecological health by providing better resiliency to future changes in the environment.

8.5 Hydrology and Hydraulics

The planning and design of the bridge crossings and elevated boardwalk within the floodplain has been guided by the TRCA's Living Cities Policies, with comprehensive flood modelling and geomorphologic study undertaken as part of the MCEA to ensure all structures are carefully sited, sufficiently sized, and appropriately designed.

A detailed hydraulic analysis of the preferred alignment indicates that each structure can be built with only minor increases to water surface elevations primarily during extreme flood events, and that these minimal increases will not negatively impact features within the floodplain above what is already witnessed under existing conditions (Please refer to Appendix E). Ice jamming is known to occur in the area and potential impacts will be considered in the detailed design phase. Changes necessary to ensure that flood and erosion risk remain minimal will be re-assessed during detailed design.

8.6 Infrastructure and Utilities

8.6.1 Metrolinx

The preferred alternative trail alignment proposes a section of elevated boardwalk that will run underneath the Metrolinx rail bridge between the east side of the bridge pier and the west bank of the Humber River. Based on consultation with Metrolinx during the MCEA phase, preliminary design considerations include (but are not limited to) ensuring sufficient distance

is provided between the boardwalk and the existing pier and that an overhead canopy be installed to protect users from falling objects.

Additional consultation with Metrolinx will be required at the detailed design phase, in order to ensure that the proposed boardwalk structure meets all required design, safety, construction, and maintenance requirements.

8.6.2 Toronto Water

Two Toronto Water sewer lines are present within the project study area. Recently, new maintenance access holes and sewers were constructed to intercept and then abandon sections of the Albion Sanitary Trunk Sewer (STS), transferring flow to the existing Humber STS (see Figure 8-1) The Albion STS is now abandoned within the project limits, however the Humber STS remains active.

The proposed trail crosses over the sewer lines at several locations, most notably to the west of the Humber River where the elevated boardwalk runs parallel to the riverbank. To avoid impacts to the Humber STS, the boardwalk will incorporate removable decking to maintain access and all footings will need to be placed at a sufficient distance from the sewer line. Additional technical studies (e.g., geotechnical investigations) and ongoing consultation with Toronto Water will be required throughout the detailed design stage.

8.6.3 Other Utilities

The presence of other utilities and communications infrastructure in, and around, the trail route will be confirmed during the detailed design of the project.

8.7 Preliminary Cost Estimate (Construction)

Table 8-1 provides a high-level capital cost estimate of the preferred alignment Concept 1A, based on a 30% level of design. Note that the estimate reflects capital costs for construction and consulting services only and does not include costs for private land acquisition and overall project management.

Table 8-1: High-level cost estimate for Concept 1A, based on a 30% level of design

Project Component	Estimated Cost
Two bridge crossings	\$2,630,000
Boardwalk structure	\$2,000,000
Trail and landscaping	\$600,000
Engineering Design and approvals	\$800,000
Project Subtotal	\$6,030,000
Contingency (10%)	\$603,000
HST (13%)	\$862,290
Total Estimated Construction Cost	\$7,495,290

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