

6.0 EVALUATION OF TRAIL ALIGNMENT CONCEPTS

6.1 Trail Alignment Concepts

The Feasibility Study, completed in 2019, identified four alternative trail alignment concepts. Prior to commencing the MCEA, an additional concept was identified and a final sixth trail concept was developed during the early stages of the project. As such, a total of six trail alignment concepts were considered. These included trail routes exclusively within the Humber River valley, on-road alignments, and hybrid concepts which included portions of the trail in the valley and along the road. A “Do Nothing” scenario was also considered as a comparison to the proposed concepts.

The six trail alignment concepts and “Do Nothing” scenario were subject to a high-level screening to eliminate concepts that were less preferred based on a number of natural, socio-cultural, financial, technical and public safety factors. Concepts selected to be brought forward through this screening process undergo a more rigorous technical analysis, which forms the basis of Chapter 7.

The screening was based primarily on information available through existing data sources, using qualitative and quantitative measures, as outlined in the following below.

6.1.1 Description of Trail Alignment Concepts

The six trail concepts and “Do Nothing” scenario are described below and shown on Figure 6-1 through Figure 6-6.

Do Nothing: From the existing trail at Crawford-Jones Memorial Park, trail users exit the park and travel along the road on Fairglens Crescent to Weston Road. They then travel south on Weston Road using the sidewalk or existing traffic lines for cyclists to the Metrolinx rail bridge. The staircase at Mallaby Park reconnects trail users to the lower valley and existing HRT.

New construction at the intersection of St. Philips and Weston Road in 2021 removed the right turn channel lane and provided boulevard space for south-bound cyclists only to use for the short segment just south of Humberview Crescent to Mallaby Park entrance/staircase.

Concept 1 (Full In-Valley Alignment): From the existing trail at Crawford-Jones Memorial Park, users cross the Humber River via a new pedestrian-cycle bridge and follow a trail along the western bank of the Humber River through the WGCC property. A second pedestrian-cycle bridge is required over a small tributary south of the WGCC irrigation pond. The trail then follows a steep valley wall around a deep bend in the Humber River. Due to the steep slope, this section of trail would be a cantilevered boardwalk, anchored to the slope, along

with significant armourstone retaining walls. A third pedestrian-cycle bridge would connect the existing HRT on the east side of the river at Mallaby Park.

Concept 1A (Modified In-Valley Alignment): From Crawford-Jones Memorial Park, trail users will cross the Humber River via a new pedestrian-cycle bridge. Users then follow a trail along the west bank of the Humber River through WGCC property, similar to Concept 1. In this concept, the second pedestrian-cycle bridge will be located upstream of the bend in the Humber River near the irrigation pond to a connection point on land owned by a private land trust on the east bank. A new trail through the land trust property will connect to the existing HRT at Mallaby Park.

Concept 2 (Hybrid In-Valley/On-Road Alignment): The existing trail at Crawford-Jones Memorial Park will be extended along the east bank of the Humber River. The steep valley wall north of the rail bridge will require construction of a cantilevered boardwalk, a portion of which would be constructed over an existing TRCA-owned armourstone retaining wall. At the rail bridge, the trail will turn eastward along the northern edge of the rail corridor through lands owned by Metrolinx to connect to Weston Rd. Trail users would cross below the rail bridge, using a shared multi-use path for pedestrians and cyclists, and would then follow Humberview Crescent. A new trail would be constructed along the top of the slope at the rear of the properties on Humberview Crescent in a city-owned road right-of-way. This section of trail will be bounded by two armourstone retaining walls due to the steep gradient in this area. The staircase in Mallaby Park would be replaced with a switch-back ramp that connects trail users to the lower valley and existing HRT.

Concept 2A (Modified Hybrid In-Valley/On-Road Alignment): A modified version of Concept 2, where south of the rail bridge trail users will continue along the Weston Road, using a modified shared multi-use trail for pedestrians and cyclists, beyond Humberview Crescent to the existing path in the upper portion of Mallaby Park. The staircase in Mallaby Park will be replaced with a switch back ramp that connects trail users to the lower valley and existing HRT.

Concept 3 (On-Road Alignment): Trail users exit Crawford-Jones Memorial Park at Fairglen Crescent using the road or new sidewalk that is to be constructed via a separate City project. At Weston Road, the route will turn southward and utilize the existing sidewalk or shared traffic lanes for cyclists to the rail bridge. Trail users would cross below the rail bridge using a modified shared multi-use trail for pedestrians and cyclists and would then follow Humberview Crescent. A new trail would be constructed along the top of the slope at the rear of the properties on Humberview Crescent in a city-owned road right-of-way. This section of the trail will be bounded by two armourstone retaining walls due to the steep gradient in this area. The staircase in Mallaby Park would be replaced with a switch-back ramp that connects trail users to the lower valley and existing HRT.

Concept 3A (Modified On-Road Alignment): Trail users exit Crawford-Jones Memorial Park at Fairglens Crescent using the road or the new sidewalk to be constructed via a separate City project. Pedestrians would utilize the existing sidewalk, while cyclists would follow a new two-way cycle track constructed on the west side of Weston Road. This would require modifications to the existing lane configuration on Weston Road. The two-way cycle track would end at the rail bridge where the existing sidewalk would be converted to a multi-use trail. Improved safety features such as a guard rail would be installed to separate users from adjacent vehicular traffic. A shared use trail (which allows for only southbound cyclist travel) south of Humberview Crescent, was recently implemented by other City works at the intersection of St. Philips and Weston Road but would still need to be further modified to allow for pedestrians and two-way cyclist use to an existing path in the upper portion of Mallaby Park. The staircase in Mallaby Park will be replaced with a switchback ramp that connects trail users to the lower valley and the existing HRT.

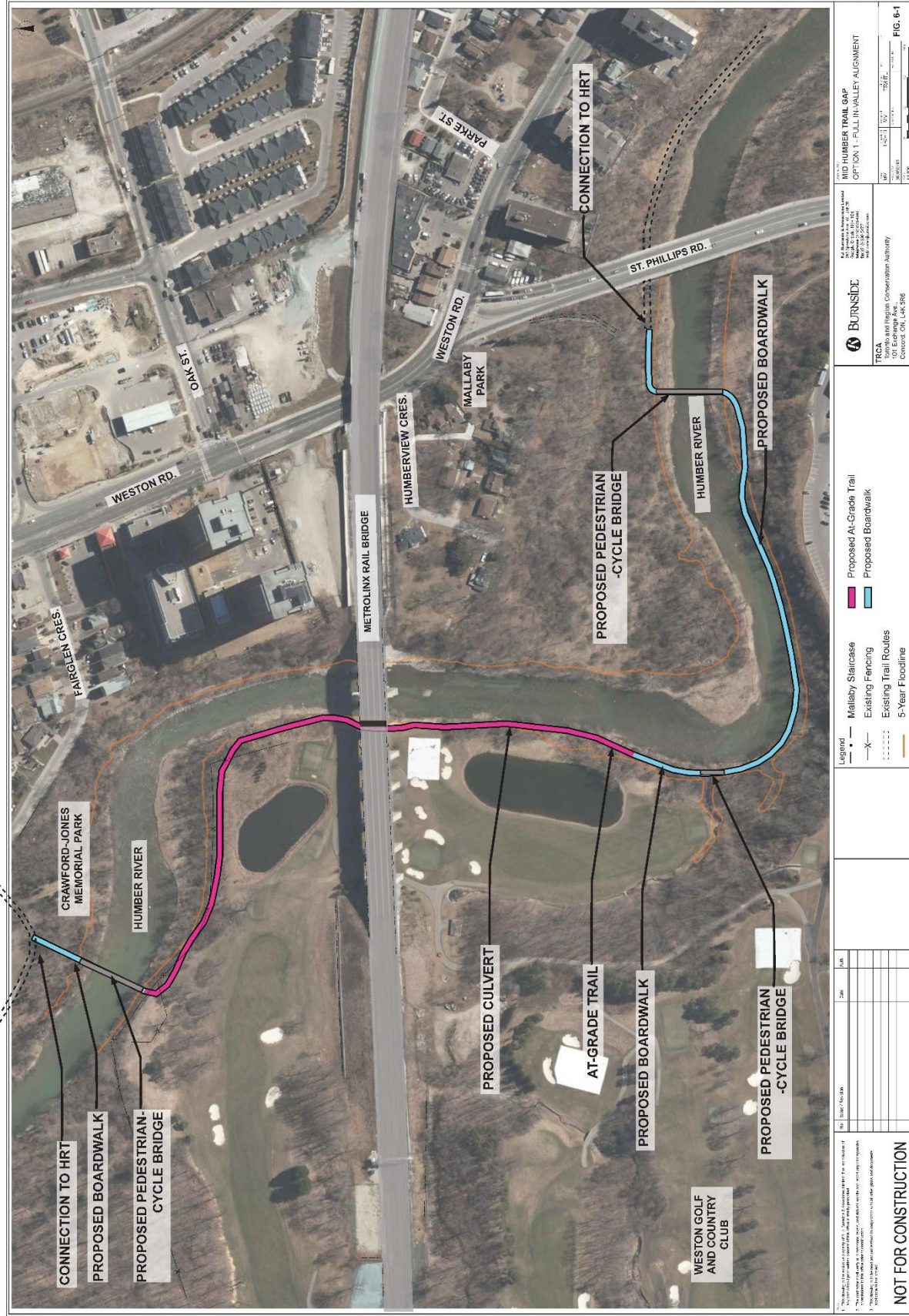


Figure 6-1: Concept 1 – Full in-valley alignment.

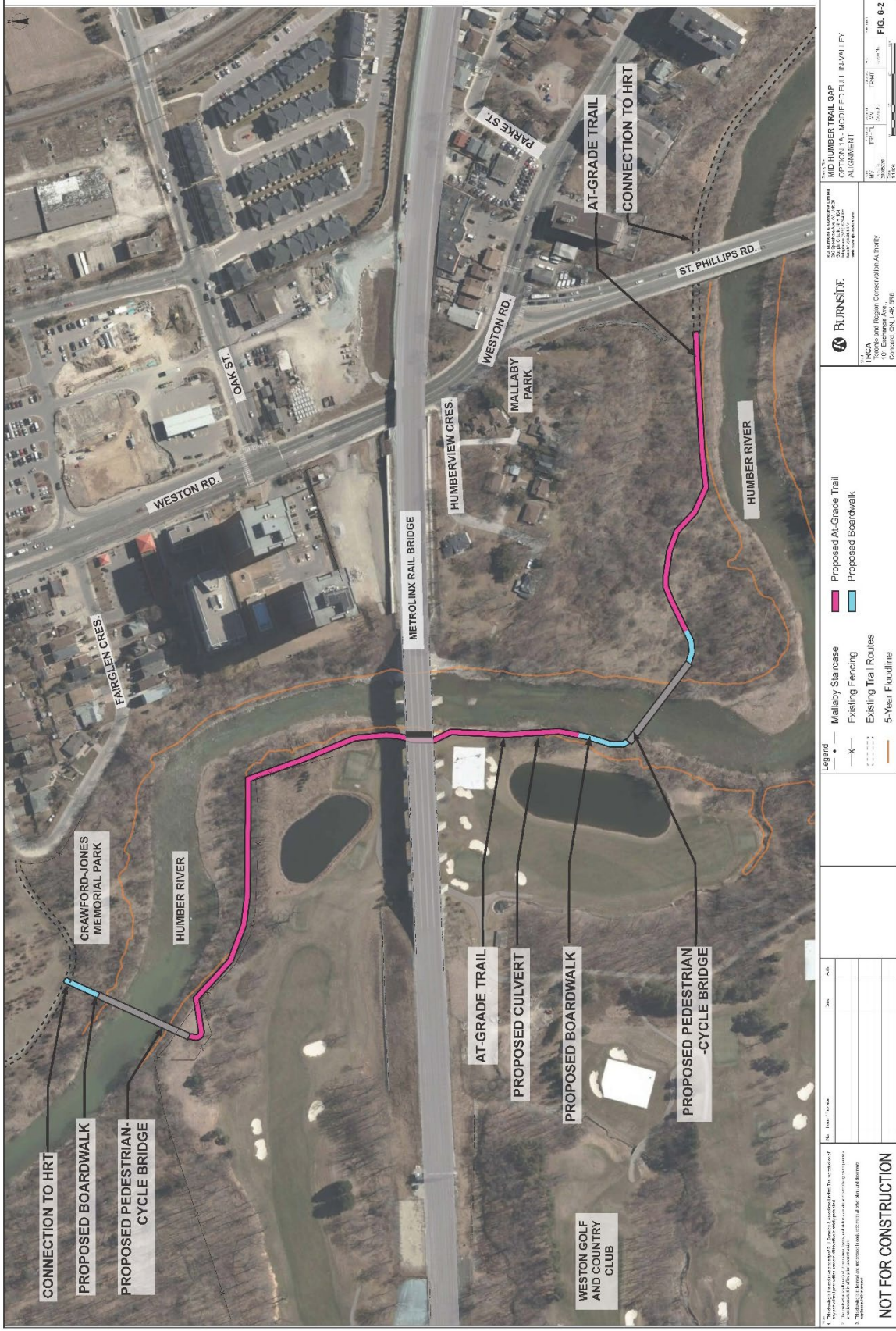


Figure 6-2: Concept 1A - Modified in-valley alignment.

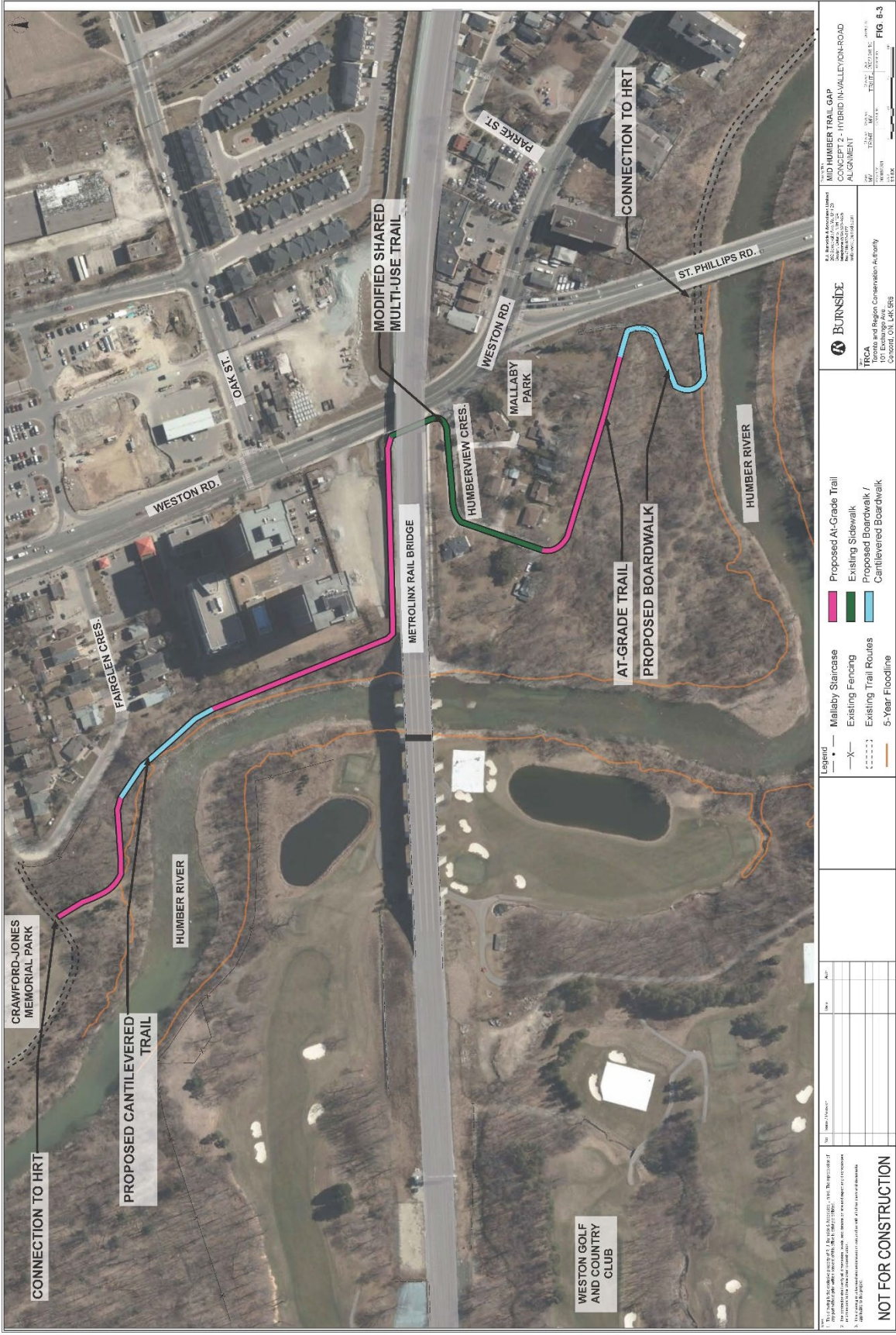


Figure 6-3: Concept 2 – Hybrid in valley-on-road alignment.

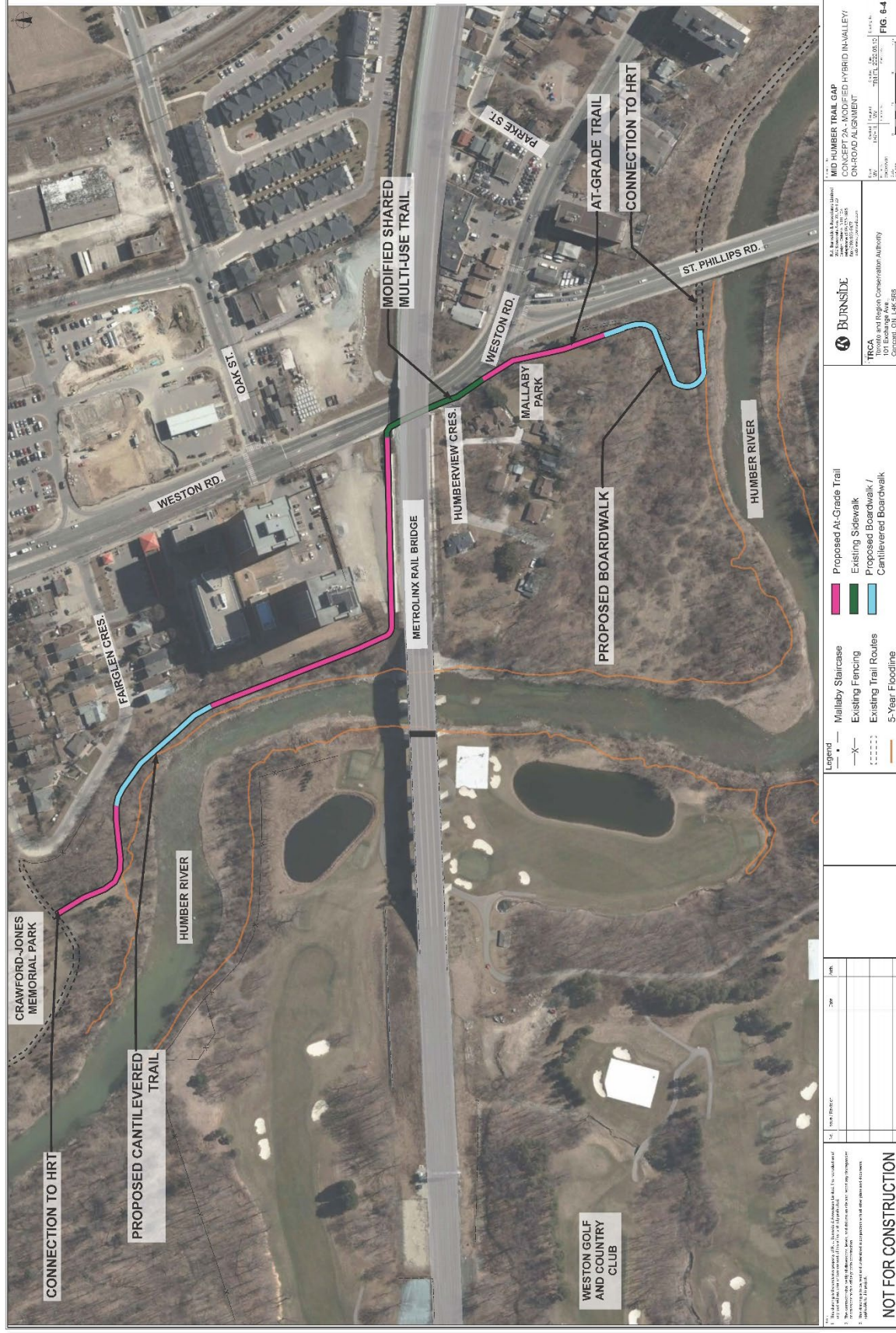


Figure 6-4: Concept 2A - Modified hybrid in-valley-on-road alignment.

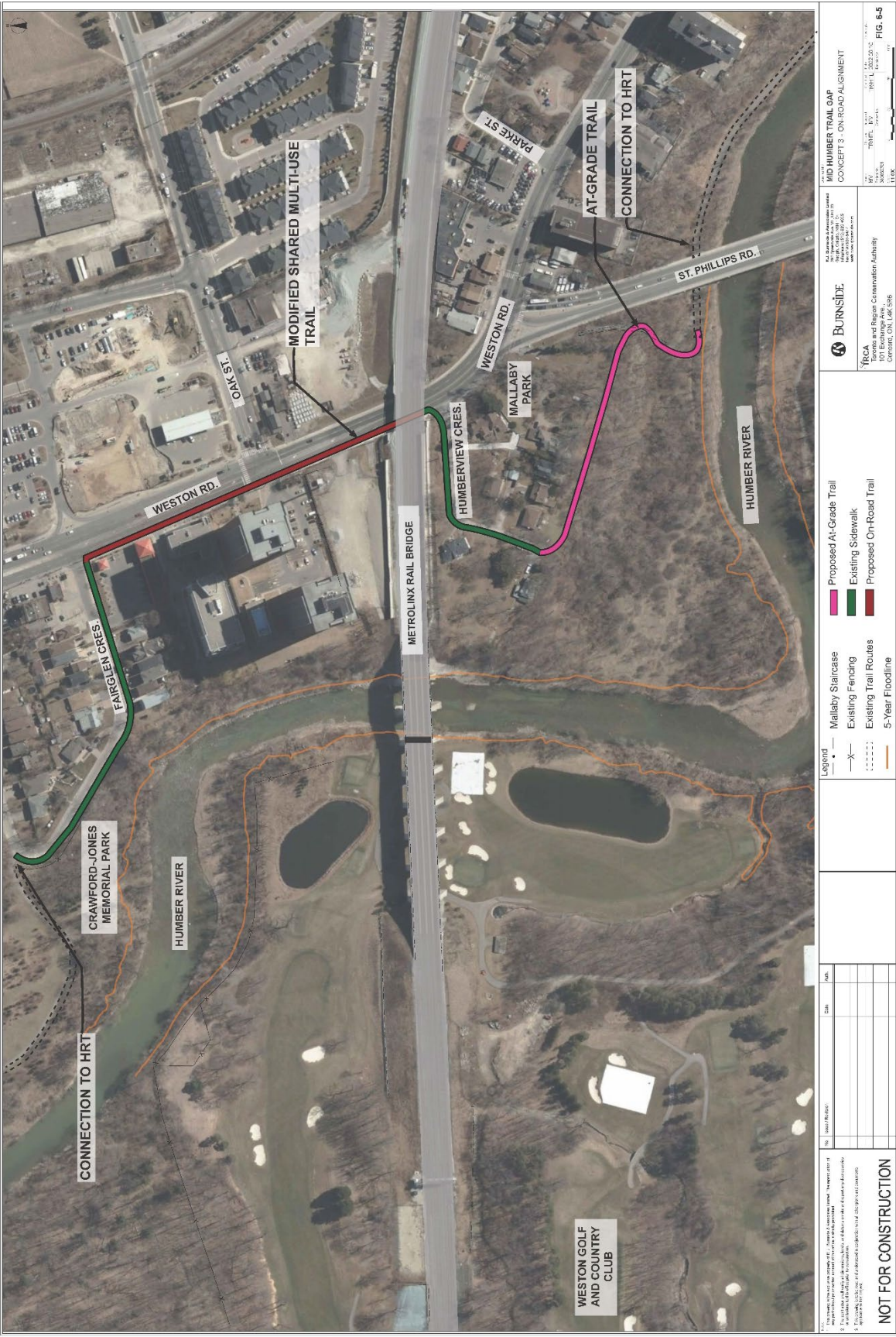




Figure 6-6: Concept 3A - Modified on-road alignment.

6.1.2 Evaluation Criteria and Indicators for Trail Alignment Concepts

The MCEA process is intended to provide a clear, transparent and reproducible decision-making process. Evaluation criteria and indicators were developed in consultation with the public and stakeholders to provide the framework for the screening process based on a variety of factors, such as environmental, financial, and technical. The criteria, indicators and data sources available at the time of the screening are presented in Table 6-1 below.

Table 6-1: Evaluation Criteria

Environmental Component	Criteria	Indicator	Data Source
Natural Environment	<ul style="list-style-type: none"> Impacts to bank stability 	<ul style="list-style-type: none"> Professional geotechnical engineering opinion of the requirement for permanent erosion control measures Length of trail on lands with greater than 2:1 slope 	<ul style="list-style-type: none"> LIDAR Data Topographic base mapping Air photos Various ravine infrastructure inspection reports Albion Sanitary Trunk Sewer Study MCEA (Hatch Mott MacDonald, 2015)
	<ul style="list-style-type: none"> Impacts to woodlands 	<ul style="list-style-type: none"> Length of trail through woodland 	<ul style="list-style-type: none"> Air photos
	<ul style="list-style-type: none"> Impacts to wetlands 	<ul style="list-style-type: none"> Length of trail through wetland and within 30 m wetland buffer 	<ul style="list-style-type: none"> Air photos Preliminary wetland mapping (Land Information Ontario, TRCA) Mid Humber Gap Terrestrial Biological Inventory report
	<ul style="list-style-type: none"> Impacts on aquatic habitat 	<ul style="list-style-type: none"> Length of trail within 30 m of a watercourse Area of riparian vegetation to be removed 	<ul style="list-style-type: none"> Air photos TRCA regulation mapping Mid Humber Gap Terrestrial Biological Inventory report
	<ul style="list-style-type: none"> Aesthetic Value 	<ul style="list-style-type: none"> Professional, qualitative opinion on trail aesthetics, trail user enjoyment, and comfort 	<ul style="list-style-type: none"> Air photos Professional Landscape Architect opinion
Social Environment			

Environmental Component	Criteria	Indicator	Data Source
	<ul style="list-style-type: none"> Impact to private property 	<ul style="list-style-type: none"> Portion of trail on private property Property requirements and permissions 	<ul style="list-style-type: none"> Property boundary mapping Property ownership data Stakeholder Advisory Group input City of Toronto Real Estate and Legal professional opinion.
	<ul style="list-style-type: none"> Trail accessibility 	<ul style="list-style-type: none"> Professional opinion on ability of the Alternative to be designed in compliance with AODA Consultation with Parks, Forestry and Recreation Disability Committee 	<ul style="list-style-type: none"> LiDAR Air photos Existing conditions topographic base mapping
Cultural Environment	<ul style="list-style-type: none"> Impacts to archaeological resources 	<ul style="list-style-type: none"> Portion of trail within area of moderate to high archaeological potential 	<ul style="list-style-type: none"> Stage 1 Archaeological Assessment (TRCA, 2021), provided in Appendix F
	<ul style="list-style-type: none"> Impacts to cultural heritage resources 	<ul style="list-style-type: none"> Portion of trail within proximity to heritage resources 	<ul style="list-style-type: none"> Stage 1 Archaeological Assessment (TRCA, 2021), provided in Appendix F
Financial Factors	<ul style="list-style-type: none"> Capital costs 	<ul style="list-style-type: none"> Capital costs for detailed design, permitting and installation of the proposed concept 	<ul style="list-style-type: none"> Professional Engineer's high-level cost estimate on design and implementation
	<ul style="list-style-type: none"> Costs associated with private property 	<ul style="list-style-type: none"> Costs associated with private property requirements, including easements, fee simple land purchases, restoration of private lands 	<ul style="list-style-type: none"> Property boundary mapping City of Toronto high-level estimates of potential property acquisition costs Professional Landscape Architect high-level cost estimate on restoration
	<ul style="list-style-type: none"> Reliability of preliminary cost estimates 	<ul style="list-style-type: none"> Presence of unknown factors which could increase the preliminary cost estimates 	<ul style="list-style-type: none"> Professional engineering opinion

Environmental Component	Criteria	Indicator	Data Source
	<ul style="list-style-type: none"> Maintenance costs 	<ul style="list-style-type: none"> Costs to maintain and operate the trail 	<ul style="list-style-type: none"> Professional Engineer's high-level cost estimate City of Toronto typical trail and trail infrastructure maintenance and inspection costs
Technical Environment	<ul style="list-style-type: none"> Constructability 	<ul style="list-style-type: none"> Professional opinion of the ease of access for construction equipment Previously completed projects with similar scope of work 	<ul style="list-style-type: none"> Professional engineering opinion
	<ul style="list-style-type: none"> Impacts to existing infrastructure 	<ul style="list-style-type: none"> Number of interactions with existing infrastructure 	<ul style="list-style-type: none"> City utility mapping Albion Sanitary Trunk Sewer Study MCEA (Hatch Mott MacDonald, 2015) Preliminary drawings of ongoing sanitary sewer work
Public Safety Factors	<ul style="list-style-type: none"> Flood risk 	<ul style="list-style-type: none"> Portion of trail subject to flooding 	<ul style="list-style-type: none"> TRCA floodplain mapping
	<ul style="list-style-type: none"> Compatibility with traffic 	<ul style="list-style-type: none"> Number of interactions with active roadways Number of intersection crossings Relative safety of intersections 	<ul style="list-style-type: none"> Air photos Traffic counts and collision data
	<ul style="list-style-type: none"> Compatibility with adjacent land uses 	<ul style="list-style-type: none"> Safety concerns associated with adjacent land uses (e.g., proximity of active golf course area) 	<ul style="list-style-type: none"> Property boundary mapping Property ownership data
	<ul style="list-style-type: none"> Fall risk 	<ul style="list-style-type: none"> Length of trail located 2 m above ground level or higher Requirements for safety features to mitigate public safety risk (e.g., fencing) 	<ul style="list-style-type: none"> LiDAR Data Existing conditions topographic base mapping Air photos

Environmental Component	Criteria	Indicator	Data Source
Problem statement	<ul style="list-style-type: none">Addresses problem statement	<ul style="list-style-type: none">Does the concept address the Problem Statement?	<ul style="list-style-type: none">Professional opinion

Preliminary trail concepts were compared using the criteria and indicators listed in Table 6-1. Based on potential impacts, each concept was scored using the following scale:

- Most Preferred
- ◐ More Preferred
- ◑ Somewhat Preferred
- ◒ Less Preferred
- Least Preferred

Scoring was based on quantitative measures where possible (e.g., length of trail through woodland). For many criteria (e.g., ease of construction), impacts were based on qualitative assessment and professional experience, as well as comparative projects.

Criteria are categorized into Natural, Social, Cultural, Financial, Technical and Public Safety components. Because each of these main categories has a different number of criteria, the rankings were averaged under each main category. The evaluation for the preliminary trail alignment concepts is summarized in Table 6-2 below, and the detailed evaluation is provided in Appendix G.

Table 6-2: Evaluation Criteria for the “Do Nothing” approach and preliminary trail alignment concepts.

EVALUATING CRITERIA		In-Valley Alignments			Hybrid Alignments		On-Road Alignments	
		Do Nothing	Concept 1	Concept 1A	Concept 2	Concept 2A	Concept 3	Concept 3A
Natural Environment	●	◐	◐	◐	◐	◐	◐	◐
Social Environment	◐	◐	◐	◐	◐	◐	◐	◐
Cultural Environment	●	◐	◐	◐	◐	◐	◐	◐
Financial Factors	◐	○	◐	◐	◐	◐	◐	◐
Technical Factors	●	○	◐	○	○	○	◐	◐
Public Safety Factors	◐	◐	◐	◐	◐	◐	◐	◐
Problem Statement	○	●	●	●	◐	◐	◐	◐
OVERALL SUMMARY	Carried Forward	Not Carried Forward	Carried Forward	Not Carried Forward	Carried Forward	Not Carried Forward	Carried Forward	

As shown in Table 6-3 and the detailed evaluation provided in Appendix G, there are a number of advantages and disadvantages for each concept. Concepts 1A, 2A and 3A are preferred over Concepts 1, 2 and 3 and were carried forward to the next phase of the MCEA. Although the Do Nothing Concept does not address the Problem Statement, it was carried forward as a baseline against which to assess the remaining concepts.

Table 6-3: Advantages and disadvantages of the preliminary trail concepts

Concept	Advantages	Disadvantages
Do Nothing	<ul style="list-style-type: none"> No additional environmental impact outside of existing uses No capital cost 	<ul style="list-style-type: none"> Does not address the accessibility barrier created by the Mallaby staircase Provides a disconnected and overall poor user experience Does not provide safe cycling conditions on Weston Road Does not address problem statement
Concept 1 (Full in-Valley)	<ul style="list-style-type: none"> Avoids impact to private land trust Avoids conflicts with road traffic Provides a comfortable, well-connected and appealing trail experience 	<ul style="list-style-type: none"> Greatest impact to woodlands and wetlands Extensive impact on WGCC property Safety/trespassing barrier required on WGCC property Extensive infrastructure required (three bridges and cantilevered trail with retaining wall) High-capital and maintenance costs Increase flood risk Ongoing maintenance (including ice management)
Concept 1A (Modified In-Valley)	<ul style="list-style-type: none"> Reduces impacts to wetlands over Concept 1 Reduces impact to WGCC over Concept 1 Provides an appealing, comfortable and well-connected trail experience Avoids conflicts with high traffic areas Less infrastructure required than Concept 1 (two bridges and no cantilevered trail/retaining wall). 	<ul style="list-style-type: none"> Impact to private land trust and WGCC property Higher cost related to greater land acquisition requirements Safety/trespassing barrier required on WGCC property and private land trust Increase flood risk Ongoing maintenance (including ice management)

Concept	Advantages	Disadvantages
	<ul style="list-style-type: none"> Less costly to implement than Concepts 1, 2 and 2A 	
Concept 2 (Hybrid In-Valley/On-Road)	<ul style="list-style-type: none"> No impact to WGCC Reduced impact on private land trust property near Mallaby Park staircase 	<ul style="list-style-type: none"> Significant impacts to woodlands Concerns with long-term stability of the east bank of the Humber River Portion of Metrolinx property will need to be acquired Provides a less-connected trail experience than Concepts 1 and 1A Safety concerns with lack of sidewalk on Humberview Crescent. And narrow sidewalk at rail underpass on Weston Road Cantilevered trail is challenging to construct with relatively high capital and maintenance costs Increase flood risk Ongoing maintenance (including ice management)
Concept 2A (Modified Hybrid In-Valley/On-Road)	<ul style="list-style-type: none"> No impact to WGCC Reduced impact on private land trust near Mallaby Park staircase Avoids trail through residential area on Humberview Crescent 	<ul style="list-style-type: none"> Significant impacts to woodlands Concerns with long-term stability of the east bank of the Humber River Requires acquisition of Metrolinx property to be acquired Provides a less-connected trail experience over 1/1A Safety concerns with narrow sidewalk at rail underpass at Weston Road. Cantilevered trail is challenging with relatively high capital and maintenance costs Relatively high cost to implement as compared to other concepts Increase flood risk Ongoing maintenance (including ice management)

Concept	Advantages	Disadvantages
Concept 3 (On-road Alignment)	<ul style="list-style-type: none"> Minimal impact to natural environment Avoids impact to WGCC Reduced impact on private land trust near Mallaby Park staircase Simplest option to construct with the lowest cost. Moderate maintenance costs relative to other options 	<ul style="list-style-type: none"> Poorly connected trail experience with a lower level of comfort and appeal over in-valley options Doesn't provide a safe cycling connection along Weston Road Doesn't provide a safe pedestrian connection along Humberview Crescent Does not address the Problem Statement
Concept 3A (Modified On-Road Alignment)	<ul style="list-style-type: none"> Minimal impact to natural environment Avoids impact to WGCC Reduced impact on private land trust near Mallaby Park staircase Provision of multi-use trail/cycle track along Weston Road improves safety/user comfort over Concept 3 Moderate maintenance costs relative to other options. (e.g., winter maintenance) 	<ul style="list-style-type: none"> Acquisition of portion of Metrolinx and other privately-owned properties along Weston Road May require lane removal on Weston Road between Oak Street and Cardell Avenue. May affect Oak Street bus stop & width of lanes under bridge. Possible third lane removal from Oak Street to Cardell Avenue Poorly connected trail experience as it requires users to come in and out of valley, with a lower level of comfort and aesthetics over in-valley options Shared pedestrian/cycling facility under rail bridge at Weston Road presents safety/accessibility concern Accessibility constraints with switchback Does not fully address the Problem Statement

6.2 Preliminary Preferred Trail Alignment Concepts

The high-level screening process provided an initial summary of the six options based on a variety of existing data sources, professional experience, and comparative projects. Each set of concepts provided some key advantages. For instance, in-valley alignments are advantageous as they offer the most well-connected and appealing route through the valley. Hybrid concepts that utilize a mix of in-valley and on-road segments avoid the need for bridges over the Humber River and avoid impacts to the WGCC and private land trust, while on-road concepts are relatively inexpensive and easiest to construct and maintain.

Consequently, Concept 1A, Concept 2A, and Concept 3A were selected to be carried forward based on the results of the preliminary screening. In the next phase of the study, these three concepts and the “Do Nothing” scenario were examined in further detail based on information gathered from technical studies and consultation undertaken during the MCEA.

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