

TRANS CANADA TRAIL

COMPREHENSIVE TRAIL STUDY FOR TARGETED ROADWAY CONNECTION SEGMENTS

Final Report: Nova Scotia Project



EXECUTIVE SUMMARY

WSP has been retained by Trans Canada Trail to review routing options to connect two existing trail facilities, Blueberry Run Trail and Gaetz Brook Greenway (approximately 7 km in length), located in Porters Lake, Nova Scotia. The goal of the project is to identify and compare 2 to 4 potential connection alignments between these two trails. This proposed trail connection will close the gap in a major trail spanning several kilometres throughout Nova Scotia. Gaetz Brook Greenway and Blueberry Run Trail are the proposed connection points for this trail study review.

WSP has prepared 3 alignment options for review by Trans Canada Trail. Each option has varying alignments with different connection points, user experience, constructability, and constraints which are discussed in this report.

- Option 1 would connect to Blueberry Run Trail at the western end at Marine Drive and follow the abandoned CN Railway bed to the east before connecting to the Gaetz Brook Greenway.
- Option 2 would connect to Blueberry Run Trail at the western end at Marine Drive and follow the abandoned CN Railway bed to the east like Option 1, but diverge along Trunk 7 as a multi-use pathway across from Redmond Road, continuing along the south side of Trunk 7 and Stage Coach Lane before connecting to the Gaetz Brook Greenway.
- Option 3 would connect to Blueberry Run Trail at the western end at Marine Drive and follow the abandoned CN Railway bed to the east like Option 1, but diverge along Trunk 7 as a multi-use pathway at the proposed ATV/OHV connection, continuing along the south side of Trunk 7 and the realigned East Chezzetcook Road before connecting to the Gaetz Brook Greenway.

Option 1 is expected to have the highest cost, followed by Option 3 and then Option 2.

A set of qualitative design criteria was developed to identify a preferred route alignment. The route selection criteria reflect Trans Canada Trail mission to connect Canadians and visitors through a system of urban and rural trails to nature and to one another, from coast to coast, through accessible and inclusive outdoor activities. The Trans Canada Trail Greenway principles were used to inform each criterion:

- Alignment and Connectivity
- User Experience and Safety
- Constructability and Magnitude of Cost

Based on the overall scoring of alignment options, cost estimate and stakeholder feedback, the recommended alignment option is Option 1: Abandoned CN Railway Alignment. This option connects several destinations, has a strong tourism potential, and has minimal impact to existing streets and utilities.



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1 INTRODUCTION

WSP has been retained by Trans Canada Trails to review routing options to connect two existing trail facilities, Blueberry Run Trail and Gaetz Brook Greenway (approximately 7 km in length), located in Porters Lake, Nova Scotia. The goal of the project is to identify and compare 2 to 4 potential connection alignments between these two trails that will consider both existing and potential non-motorized greenway routes. Each recommended option should also consider critical stakeholders, potential barriers and further assessments and estimated costs for implementation.

The existing trail alignment mostly follows the abandoned CN Railway line along Highway 107. An overview of the study area is provided in Figure 1-1 below.

Following the 50% project milestone memo submission, WSP has continued to assess and refine potential route alignments and developed route selection criteria that will be used to evaluate alignment options. WSP has prepared and advanced 3 alignment options for review by Trans Canada Trail. The options are discussed in further detail in the subsections of this report.

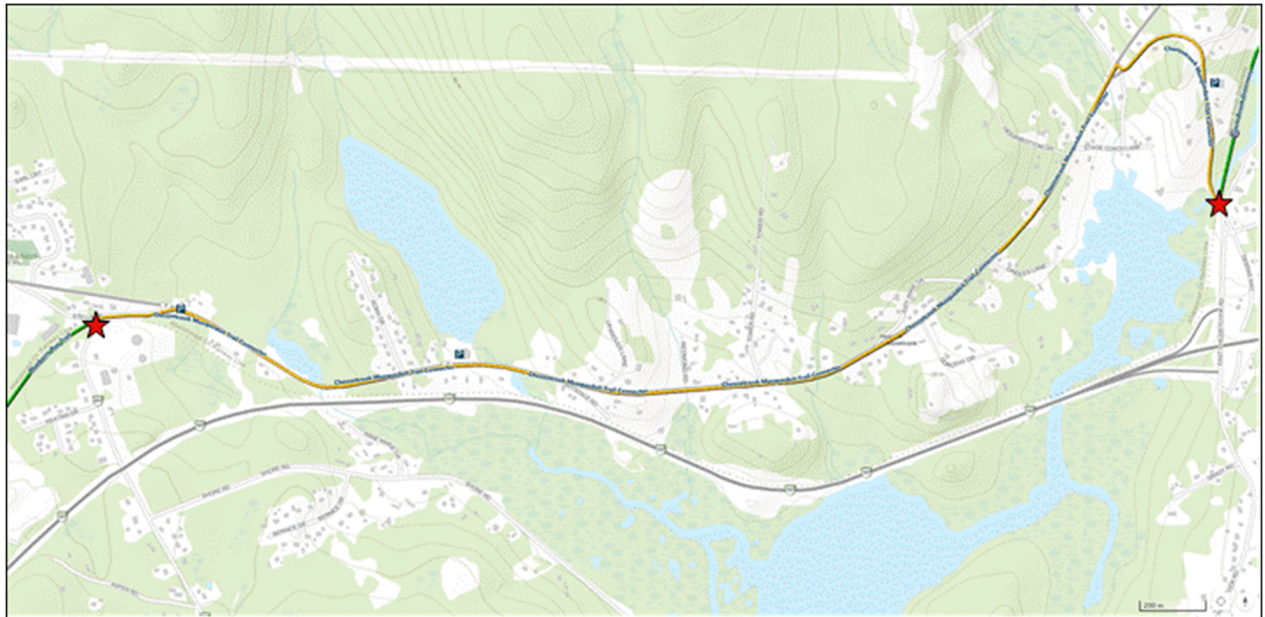


Figure 1-1: Project Study Area



2 EXISTING CONDITIONS REVIEW

2.1 BACKGROUND STUDIES

Gaetz Brook Greenway and Blueberry Run Trail are the proposed connection points for this trail study review. The Gaetz Brook Greenway was completed in early 2020 and runs from East Chezzetcook Road at Motts Drive (Western Trailhead) to Stat Hill Road (Eastern Trailhead). The Greenway is 7.4km long and is constructed of compacted crusher dust and is for non-motorized users only. Blueberry Run Trail was developed on the abandoned rail bed that travels from Atlantic View Trail to the intersection of Stella Drive at Marine Drive. The Marine Riders ATV Club currently has the Letter of Authority for this section of trail and it is proposed to be designed to accommodate a shared use trail for hiking, cycling, horseback riding and ATVing.

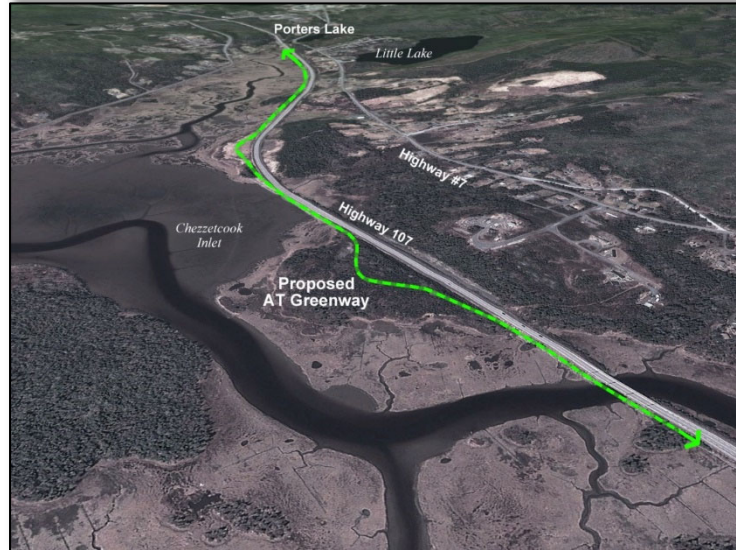


Photo 2-1: Acadia March Greenway Phase 2 Routing

In 2015, WSP completed two reports for the Acadia Marsh Greenway review to determine connections opportunities throughout Porters Lake. The first report was an Evaluation of Candidate Options for the Acadia Marsh Greenway, which recommended the option on the south side of Highway 107. The second report completed an Acadia March Greenway Feasibility Analysis of Highway 107 (south side), see Photo 2-1. WSP has reviewed these documents to familiarize the previous work to apply to this comprehensive trail study review



Photo 2-2: Abandoned CN Railway Ponding

2.2 TRAIL CONDITIONS

The current conditions along the abandoned CN railway trail are not suitable for pedestrian usage. The trail is frequently accessed by ATV/OHV users which has led to rutting and ponding in several areas, as shown in Photo 2-2. There are also sections of the trail which are overgrown by trees, particularly the east side of the trail, shown in Photo 2-4, which is accessed by ATV/OHV users less frequently.

There is an existing footpath along E Chezzetcook Road to the Gaetz Brook Greenway, as shown in Photo 2-3.



Photo 2-4: Abandoned CN Railway (near East Chezzetcook Road)



Photo 2-3: E Chezzetcook Footpath



2.3 OPPORTUNITIES AND CONSTRAINTS

This proposed trail connection will close the gap in a major trail spanning several kilometres throughout Nova Scotia. West of the proposed trail connection there is over 40 km of existing trail spanning through Porter’s Lake, Lawrencetown, Eastern Passage, and to the Alderney Ferry Terminal in Downtown Dartmouth. There is currently a gap in connectivity of the trail along a section Pleasant Street with provisions for HRM to provide connectivity through this section. East of the proposed trail connection there is over 60 km of existing trail spanning northeast to Upper Musquodoboit. The full trail layout is shown in Figure 2-1.

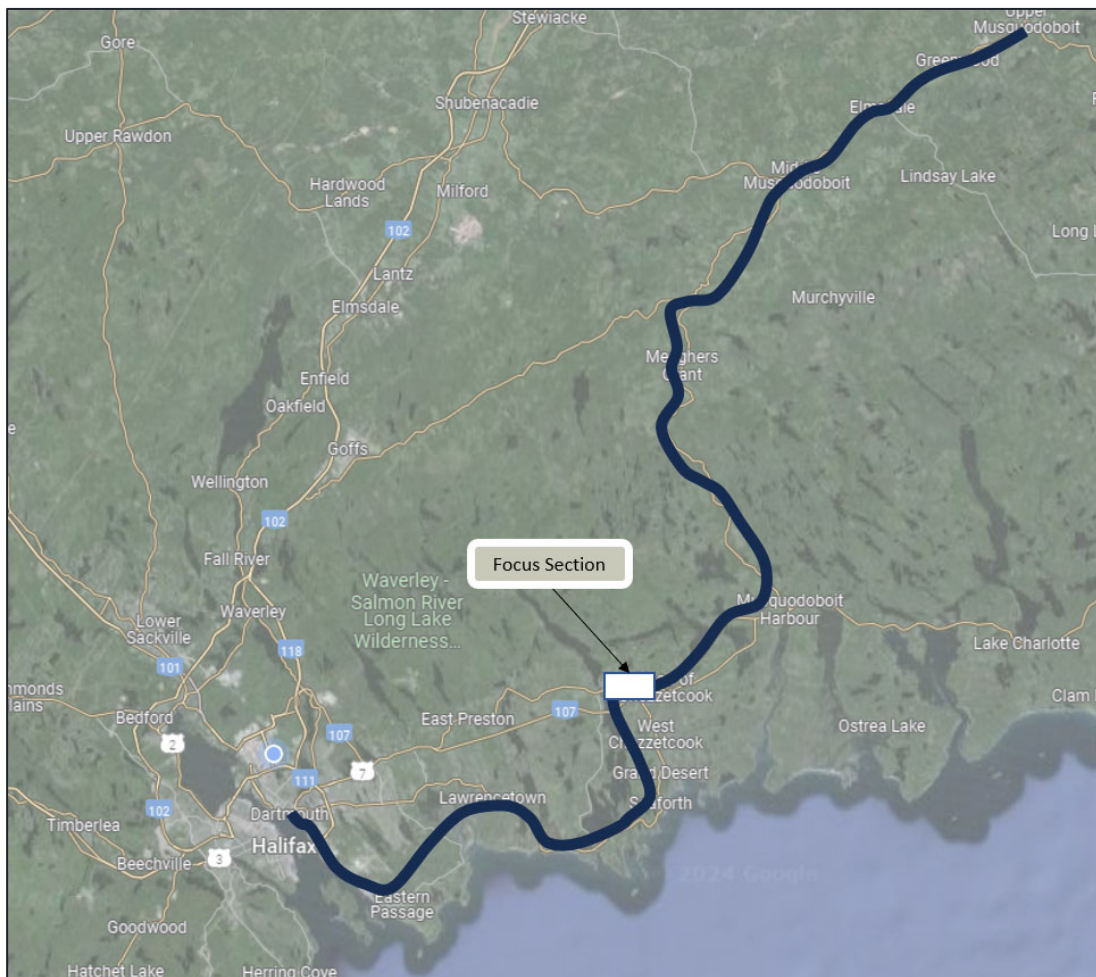


Figure 2-1: TCT Trail Network

There are several constraints in constructing a trail network through this section. Several property boundaries are encroaching on where the proposed trail may be located, and property requestion may be required to complete the project. A portion of the abandoned CN railway right-of-way is used by the existing Highway 107 along certain sections, which may be a challenge for trail alignment. Stormwater and drainage need to be considered when constructing a raised trail through marshlands and long sections.



3 ROUTING OPTIONS

WSP has continued to assess and refine potential route alignments and developed route selection criteria that will be used to evaluate alignment options. WSP has prepared 3 alignment options for review by Trans Canada Trail, shown in Figure 3-1. Each option has varying alignments with different connection points, user experience, constructability, and constraints which are discussed further in detail below.



Figure 3-1: Proposed Routing Options

3.1 KEY CONSIDERATIONS

There are several key considerations for this proposed trail connection. These include:

- **AAA Facility:** The proposed trail connection should be suitable for use by people of all ages and abilities.
- **Shared Use:** The proposed trail connection provides opportunities for OHV/ATV, walking, cycling, and other active transportation modes.
- **Consistency:** The proposed trail connection is recommend flowing well between the Blueberry Run Trail in the west to Gaetz Brook Trail in the east.
- **Tourism and Historical Factors:** Opportunity for inclusion of historical landmark/areas and funding may be available if tourism is a component.
- **Constructability:** The proposed options will be reviewed based on the constructability of the proposed cross section and infrastructure required.



3.2 OPTION 1 – ABANDONED CN RAILWAY ALIGNMENT

To remain consistent with both the Blueberry Run Trail, Gaetz Brook Greenway and the nearby Salt Marsh Trail, an alignment option that included an off-road greenway was considered. The proposed alignment for Option 1, would connect to Blueberry Run Trail at the western end at Marine Drive and follow the abandoned CN Railway bed to the east. There is an existing trail from Stella Drive to where the ATV/OHV’s currently travel to the Fire Station, noted in purple in Figure 3-2. This option would be considered shared use, both non-motorized active transportation (AT) users and ATV/OHV users, from Stella Drive to this proposed connection to the Fire Station. There is approximately 30m of right-of-way space from Marine Drive to the purple connection.

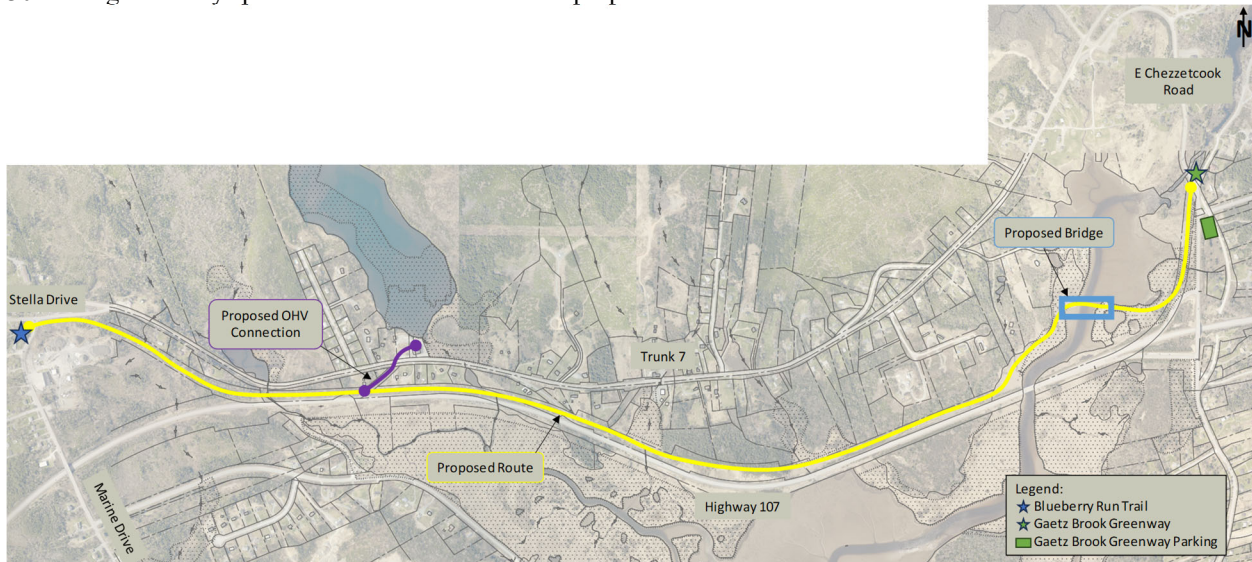


Figure 3-2: Option 1 - Abandoned CN Railway Alignment

As the proposed greenway continues east, past the connection to the Fire Station, the existing abandoned CN Railway right-of-way is narrowed and was utilized for the construction of Highway 107. There is approximately 30m to 50m of right-of-way to the north of Highway 107 that may be available for the greenway connection to the east. This remaining greenway connection is expected to be utilized by non-motorized AT users only. There is marsh land, elevation changes and large rock cuts that will need to be considered for this alignment option.



Photo 3-1: Cavendish Boardwalk

WSP completed a project for Cavendish, Prince Edward Island that incorporated boardwalk across marsh lands, as shown in Photo 3-1 and Photo 3-2. Helical piles were driven into the marsh land for support and the timber boardwalk was installed above. This may be an option for travelling over the marsh land, however geotechnical investigation and environmental review is required.



To complete the connection from the west side of the marsh to the east side with final connection to Gaetz Brook Greenway, a bridge structure will be required, similar to the Lawrencetown crossing, shown in Photo 3-3. Additional review will be required, to confirm bridge structure span (may be 100m). Geotechnical investigation will also be required to ensure that a boardwalk supported by helical pile or other foundation method is suitable for the soil conditions within the project area.

After the bridge crossing, the boardwalk would be extended to the east to connect to the existing abandoned CN Railway corridor, which provides connection to East Chezzetcook Road. A dedicated AT crossing will be required on East Chezzetcook Road to provide connection to the existing Gaetz Brook Greenway, located on the east side of East Chezzetcook Road.



Photo 3-2: Helical Piles for Boardwalk

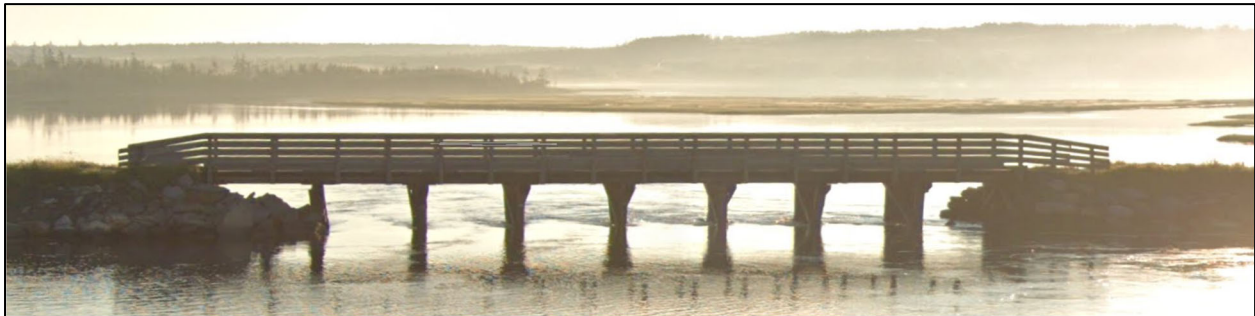


Photo 3-3: Lawrencetown Greenway Bridge Structure

3.2.1 OPTION 1 – ALIGNMENT SEGMENTS

Each of the proposed alignment options are expected to require different segments with different structures along the trail with varying elements and cross-sections. Three focused views of the proposed Option 1 trail alignment are shown in Figure 3-3, Figure 3-6, and Figure 3-8 with different features highlighted along the segments.

The first section along the trail for Option 1 is shown in Figure 3-3. Along this section there is a shared AT and ATV/OHV section (yellow), which is identical for each of the three options. There is a section that is close to Highway 107 due to right-of-way constraints that includes fencing on both sides of the trail (orange), and an AT only, off-road urban greenway style section (blue) following the proposed ATV/OHV connection (purple). The yellow, purple, and blue sections will have a cross-section similar to what is shown in Figure 3-4. The proposed ATV/OHV connection is expected to be suitable for motorized and non-motorized modes and is present in each of the three options. The orange section, near the highway, will have a cross-section similar to what is shown in Figure 3-5.



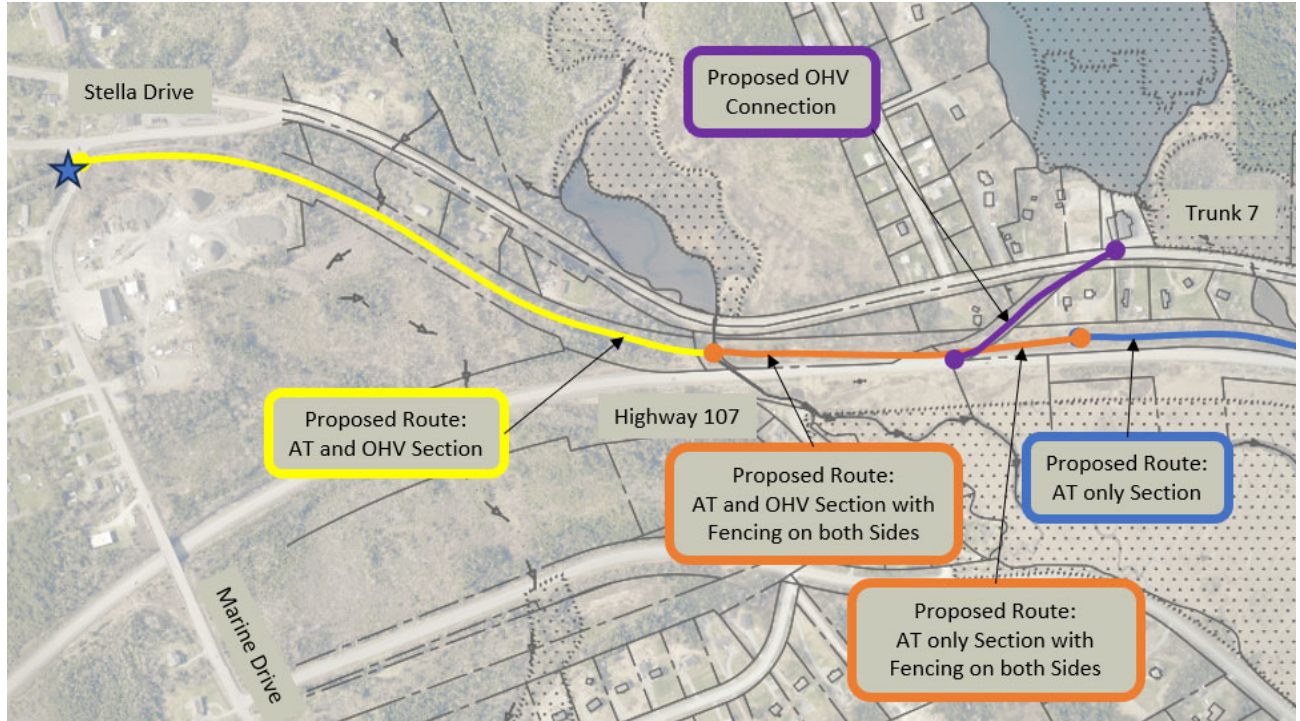


Figure 3-3: Option 1, Section 1 Segments



Figure 3-4: Typical Off-Road Greenway Cross-Section

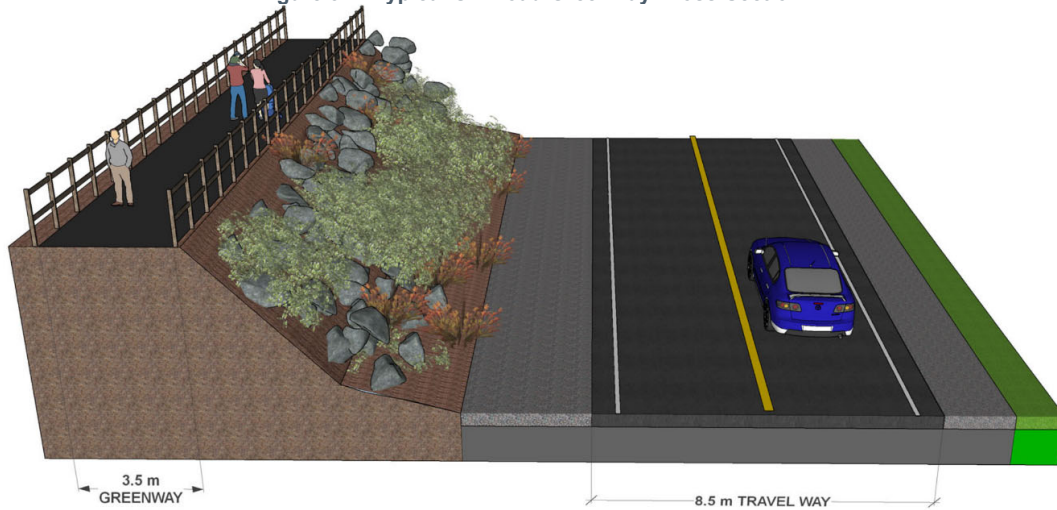


Figure 3-5: Typical Off-Road Greenway with Fencing Cross-Section



The second section along the trail for Option 1 is shown in Figure 3-6. This section continues as an AT only, off-road urban greenway style section along Highway 107, with a couple of boardwalk-style sections (pink) through the marshland areas. The boardwalk sections may be similar to those at MacCormack Beach Provincial Park (Shore Road), shown in Photo 3-4, but with a wider facility more suitable for users of all ages and abilities. They will have a cross section similar to what is shown in Figure 3-7.



Photo 3-4: Shore Road Boardwalk Facility

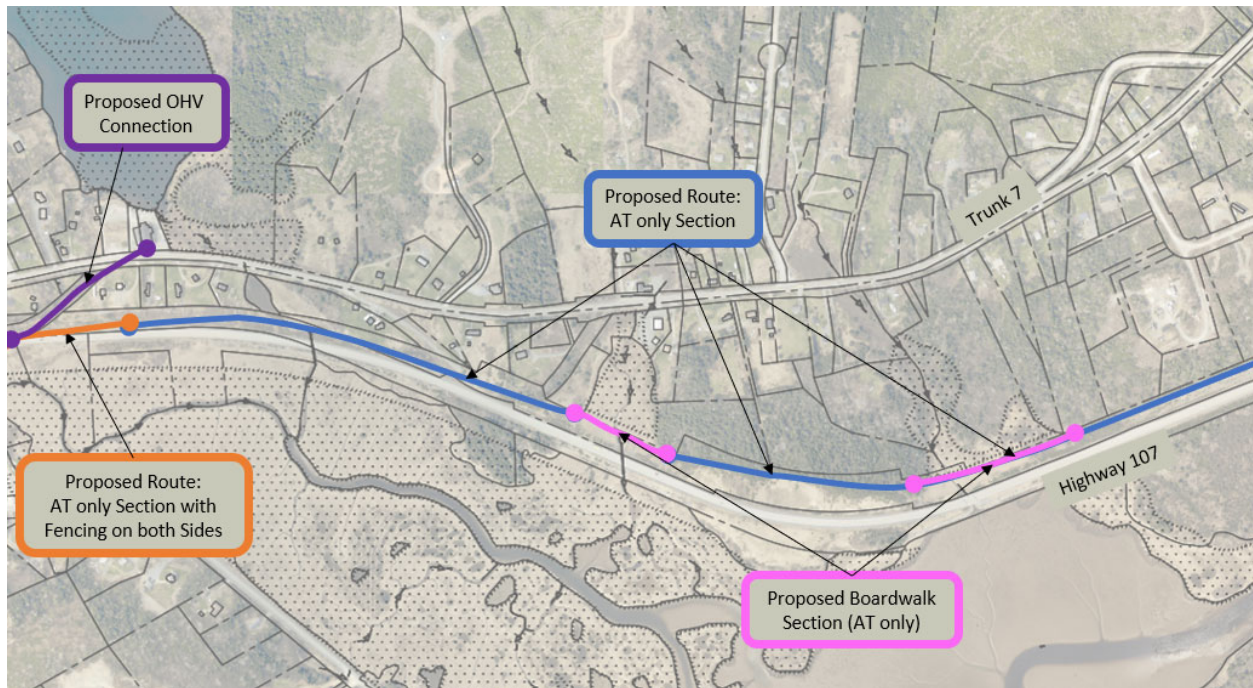


Figure 3-6: Option 1, Section 2 Segments

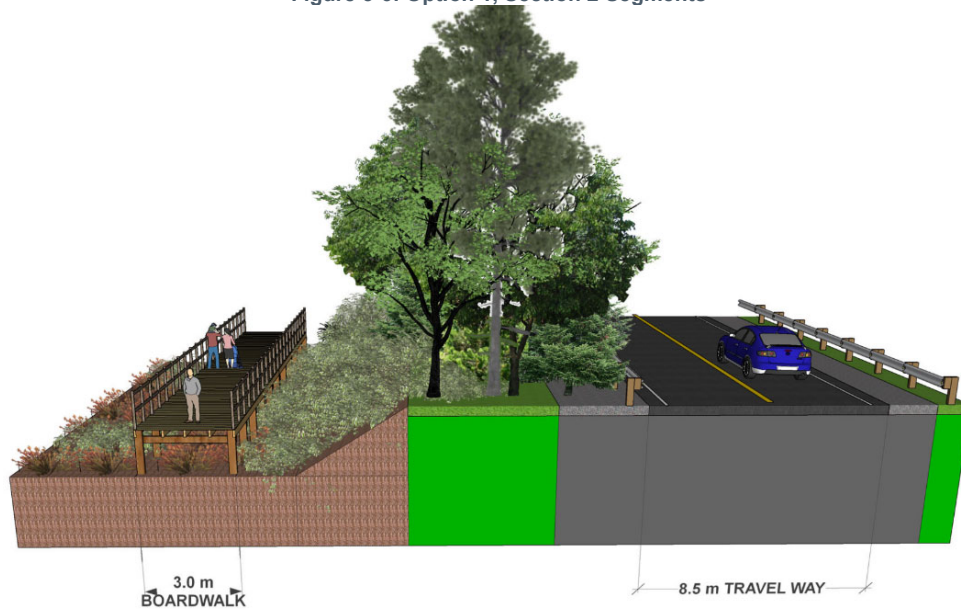


Figure 3-7: Typical Boardwalk Cross-Section



The third section along the trail for Option 1 is shown in Figure 3-8. Along this section the AT only off-road urban greenway and boardwalk-style marshland sections continue, with a bridge structure component (green) over the river. The east end of this section requires a high-order pedestrian crossing of East Chezzetcook Road to connect to the existing Gaetz Brook Greenway Trail.

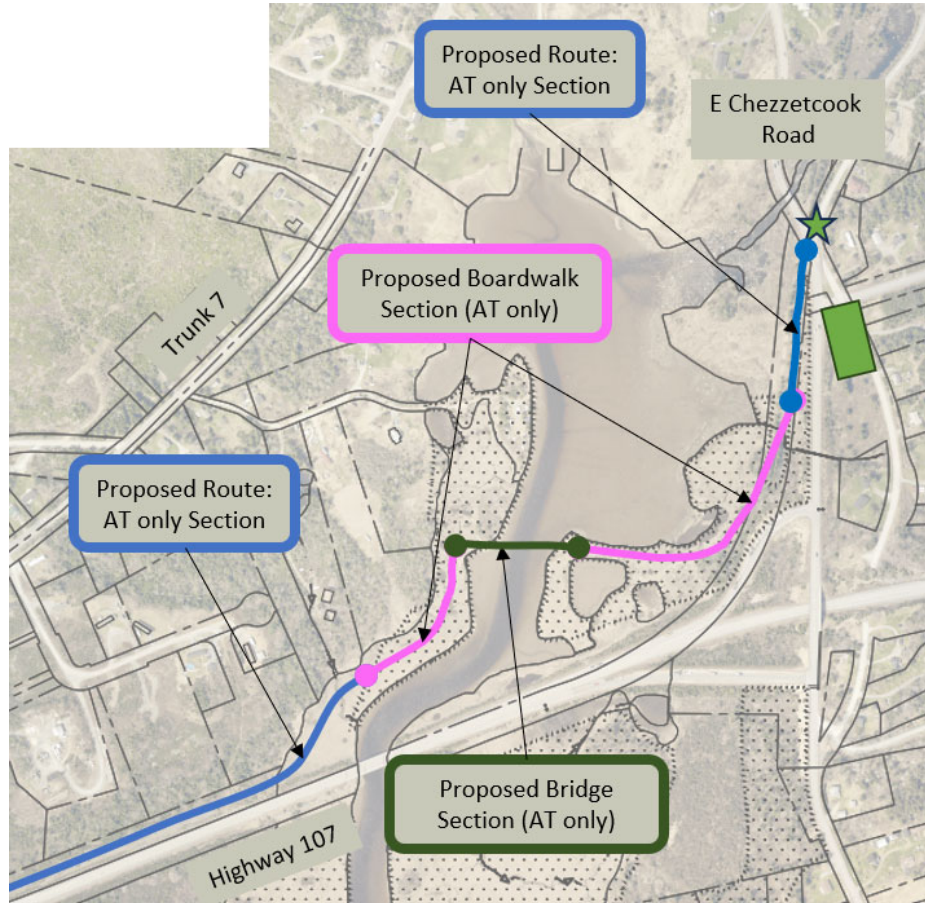


Figure 3-8: Option 1, Section 3 Segments



3.3 OPTION 2 – ABANDONED CN RAILWAY, TRUNK 7 & STAGE COACH LANE ALIGNMENT

Option 2 alignment includes using the Abandoned CN Railway from Marine Drive at Blueberry Run Trail, the proposed OHV connection to the fire hall (purple) and then a non-motorized AT users to continue to the east, north of Highway 107, the same as Option 1, see Figure 3-9.

Option 2 reviews an alternative alignment, which includes utilizing the south side of Trunk 7, for approximately 1.5km, with a multi-use pathway facility. The multi-use pathway would extend from civic address 5683 Marine Drive (Trunk 7) to Stage Coach Lane. AT users would then continue on Stage Coach Lane to East Chezzetcook Road with a dedicated crossing on East Chezzetcook Road to Gaetz Brook Greenway. Stage Coach Lane is a cul-de-sac road and a greenway/pathway would be required to be extended from Stage Coach Lane across private property to access East Chezzetcook Road. A multi-use pathway would be required on the west or east side of East Chezzetcook Road to provide a connection to the Gaetz Brook Greenway. A separate AT bridge may be required to cross the river on East Chezzetcook Road, as the existing bridge structure may be too narrow to accommodate AT users.

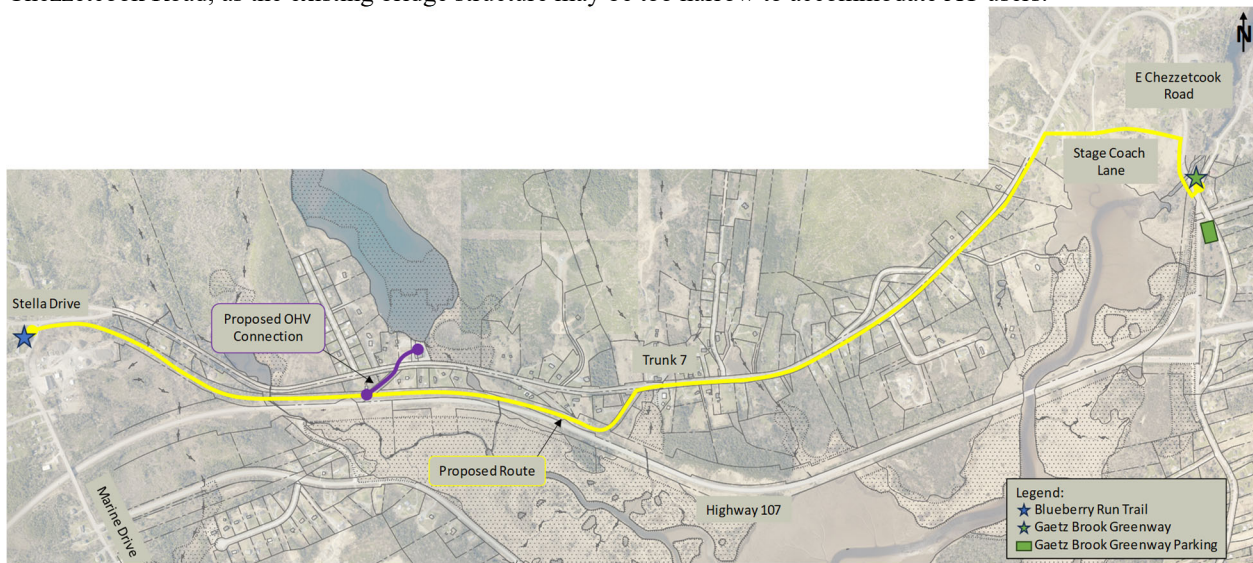


Figure 3-9: Option 2 - Abandoned CN Railway, Trunk 7 & Stage Coach Lane Alignment

Trunk 7 (Marine Drive) is a two-lane arterial road that has a posted speed limit of 70 km/hr, approximately 4,000 daily vehicles and has open ditching on both sides. To provide an all ages and abilities facility, it is recommended that a multi-use pathway on the south side of Trunk 7 be installed to horizontally and vertically separate AT users from motor vehicles, similar to the multi-use pathway in Sackville on Cobequid Road (Photo 3-5). This AT facility option would require for the ditch on the south side of Trunk 7 to be filled in and stormwater infrastructure installed. There are private driveways accesses on Trunk 7 that may pose as conflicts for AT users. Property acquisition may be required along the frontage of the homes on the south side from civic address 5683 Marine Drive to Stage Coach Lane to accommodate the multi-use pathway facility.



Photo 3-5: Cobequid Road Multi-Use Pathway



3.3.1 OPTION 2 – ALIGNMENT SEGMENTS

Each of the proposed alignment options are expected to have different segments along the trail with varying elements and cross-sections. Three focused sections of the proposed Option 2 trail alignment are shown in Figure 3-10, Figure 3-13, and Figure 3-15 with different features highlighted along the segments.

The first section along the trail for Option 2, shown in Figure 3-10, is the same as in Option 1. Along this section there is a shared AT and ATV/OHV section (yellow), which is identical for each of the three options. There is a section that is close to Highway 107 due to right-of-way constraints that includes fencing on both sides of the trail (orange), and an AT only, off-road urban greenway style section (blue) following the proposed ATV/OHV connection (purple). The proposed ATV/OHV connection is expected to be suitable for motorized and non-motorized modes and is present in each of the three options. The yellow, purple, and blue sections have a cross-section similar to what is shown in Figure 3-11; and the orange section has a cross-section similar to what is shown in Figure 3-12.

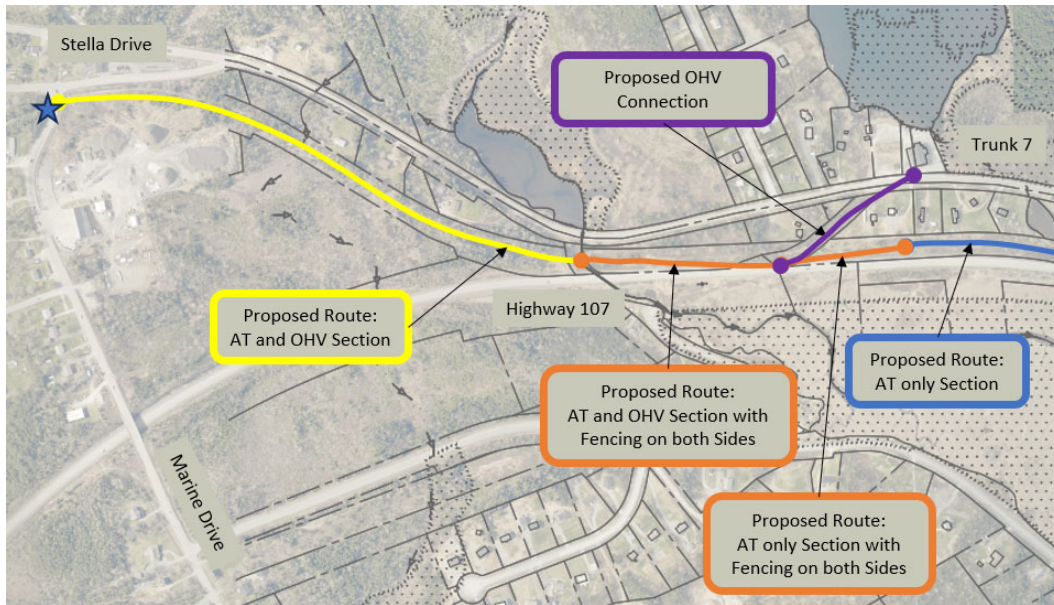


Figure 3-10: Option 2, Section 1 Segments



Figure 3-11: Typical Off-Road Greenway Cross-Section



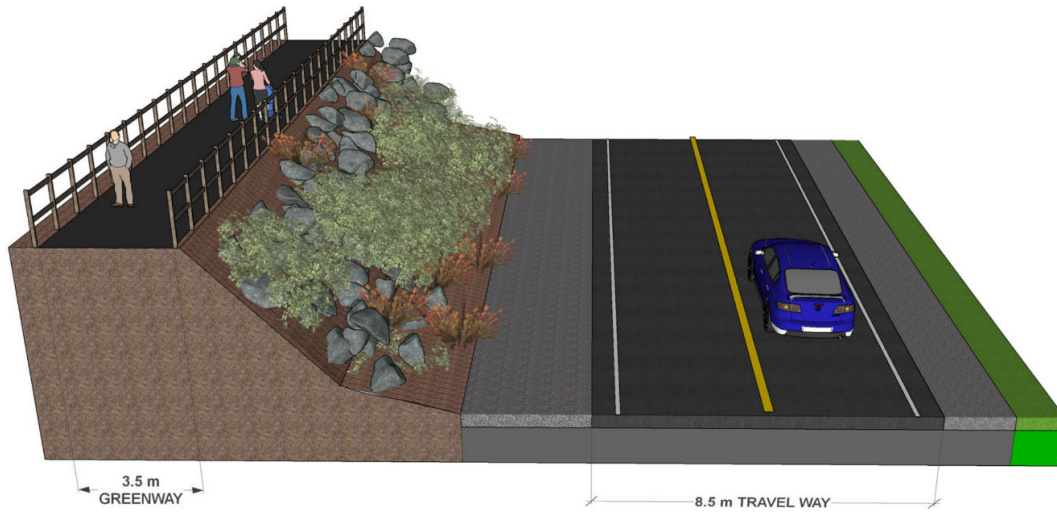


Figure 3-12: Typical Off-Road Greenway with Fencing Cross-Section

The second section along the trail for Option 2 is shown in Figure 3-13. Along this section the AT only off-road urban greenway section connects to Trunk 7 where it changes to a multi-use pathway style trail (red) along the south side of Trunk 7. The multi-use pathway section will have a cross section similar to what is shown in Figure 3-14.

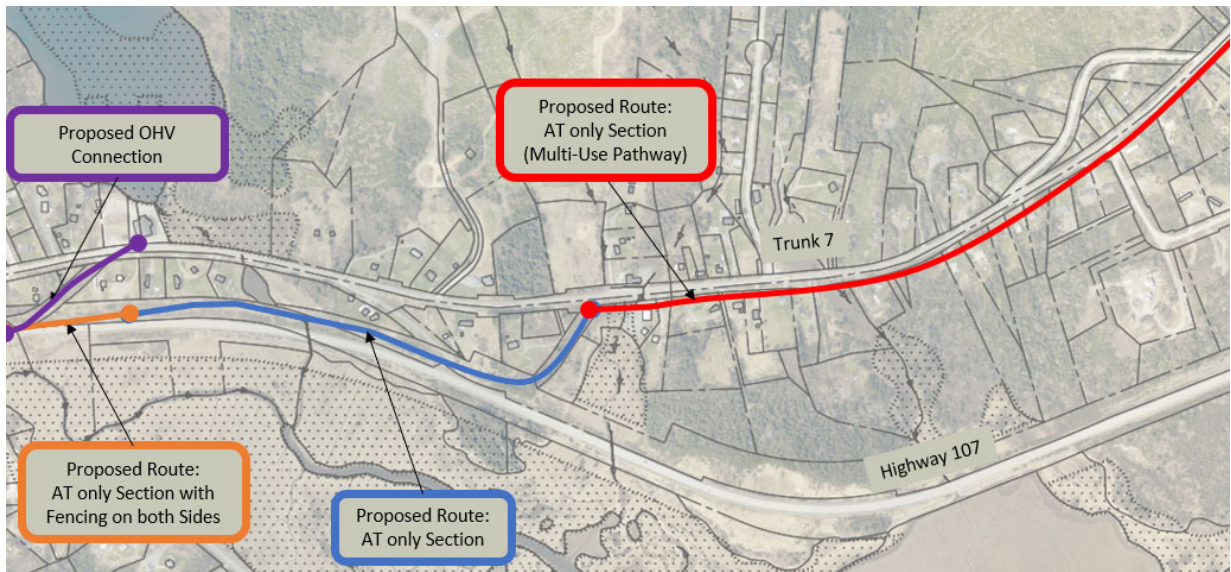


Figure 3-13: Option 2, Section 2 Segments





Figure 3-14: Typical Multi-Use Pathway Cross-Section

The third section along the trail for Option 2 is shown in Figure 3-15. Along this section the multi-use pathway continues from Trunk 7 to Stage Coach Road where it connects to East Chezzetcook Road. The multi-use pathway would continue down the west side of East Chezzetcook Road with a crossing at the East Chezzetcook Road and Gaetz Brook Greenway connection. The route will connect with the existing footpath along the east side of East Chezzetcook Road.

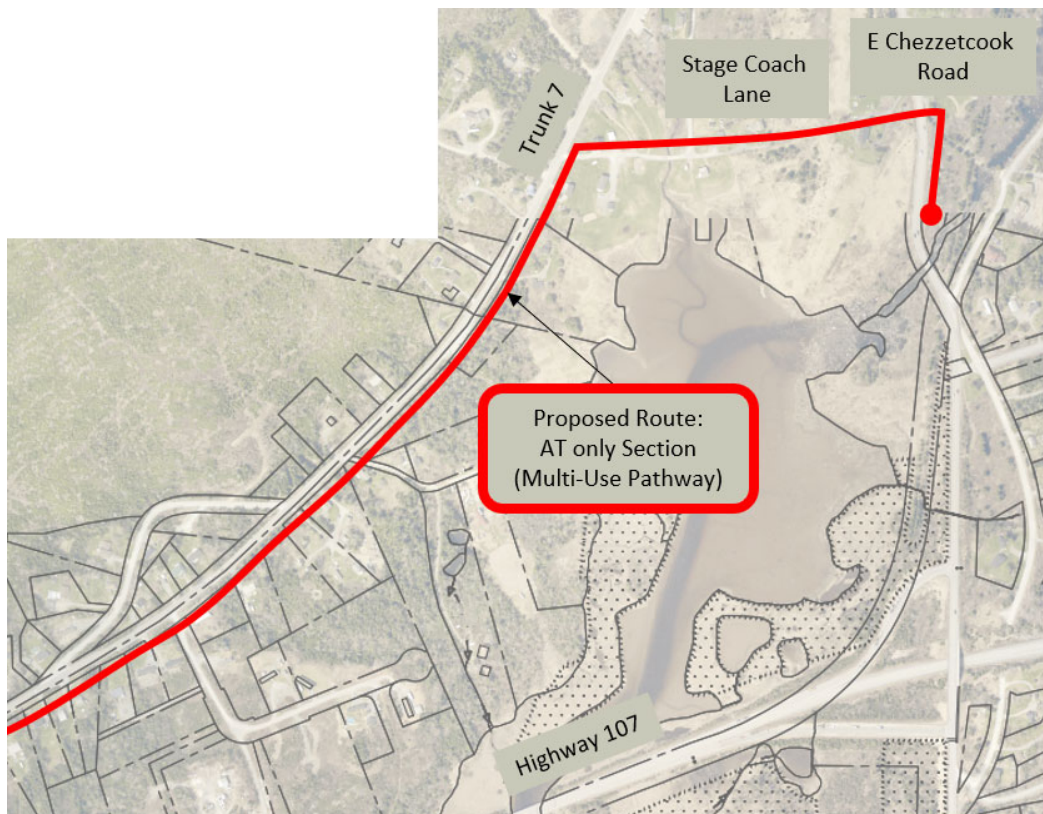


Figure 3-15: Option 2, Section 3 Segments



3.4 OPTION 3 – ABANDONED CN RAILWAY, TRUNK 7 & FIRE STATION ALIGNMENT

An alignment option that would provide a connection from Blueberry Run Trail to Gaetz Brook Greenway for non-motorized AT users would be along Trunk 7 from Stella Drive to East Chezzetcook Road, Figure 3-16. With Trunk 7 having two lanes, approximately 4,000 daily vehicles and a posted speed of 70 km/hr, the recommended facility would be a multi-use pathway on the south side of Trunk 7. The multi-use pathway would provide a horizontal and vertical separation for AT users from motorized vehicles on Trunk 7. There are currently open ditches on both sides of Trunk 7 and with a multi-use pathway facility, the ditch would need to be filled in and stormwater infrastructure installed. There are numerous private driveways and road accesses that would be along the multi-use pathway, and this may pose as conflicts for AT users.

Nova Scotia Department of Public Works (NSPW) is currently in the design process of re-aligning East Chezzetcook Road, approximate re-alignment shown in red in Figure 3-16. To complete the connection from Trunk 7, the multi-use pathway would continue on either the west or east side of East Chezzetcook Road across the river on a separate bridge structure and connect to Gaetz Brook Greenway. The east side of East Chezzetcook Road would be the preferred side, as the multi-use pathway would have a dedicated crossing at the intersection of Marine Drive and East Chezzetcook Road instead of a mid-block crossing near the gateway to the Gaetz Brook Greenway.

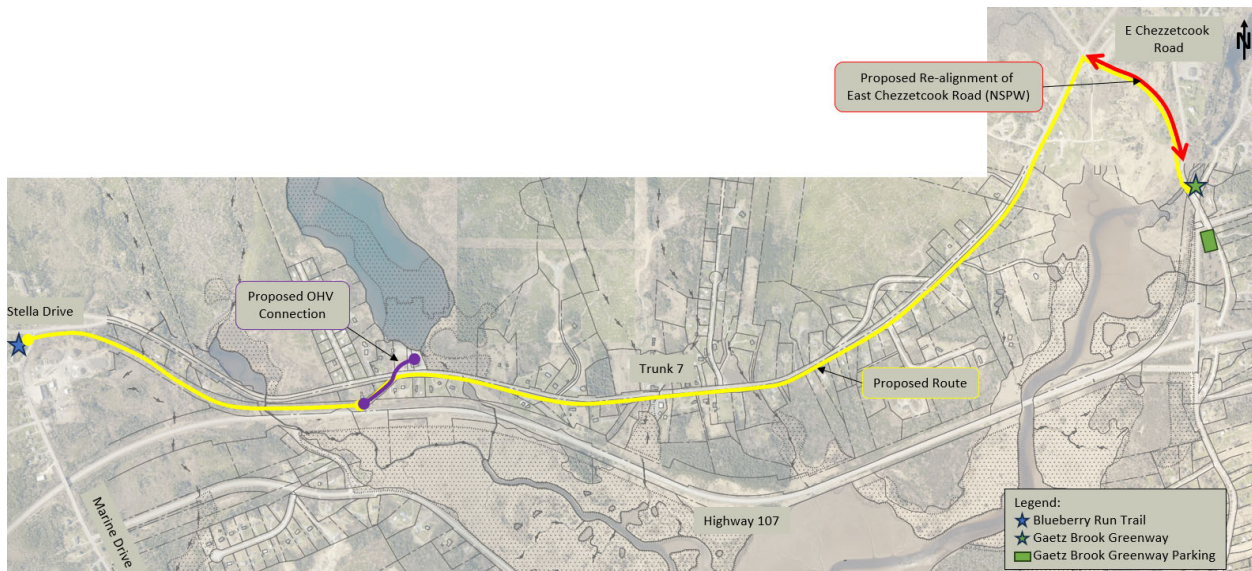


Figure 3-16: Option 3 - Trunk 7 Alignment

3.4.1 OPTION 3 – ALIGNMENT SEGMENTS

Each of the proposed alignment options are expected to have different segments along the trail with varying elements and cross-sections. Three focused sections of the proposed Option 3 trail alignment are shown in Figure 3-20, Figure 3-24, and Figure 3-25, with different features highlighted along the segments.

The first section along the trail for Option 3 is shown in Figure 3-20. Along this section, like in the other two options, there is a shared AT and ATV/OHV section (yellow) and a section that is close to Highway 107 due to right-of-way constraints that includes fencing on both sides (orange). There is an AT and ATV/OHV connection (purple). After this connection to Trunk 7 the pathway changes to a multi-use pathway style trail (red) for AT use only along the south side of Trunk 7. The yellow and purple sections have a cross-section similar to what is shown in Figure 3-17; the orange section has a cross-section similar to what is shown in Figure 3-18; and the red section has a cross-section similar to what is shown in Figure 3-19.



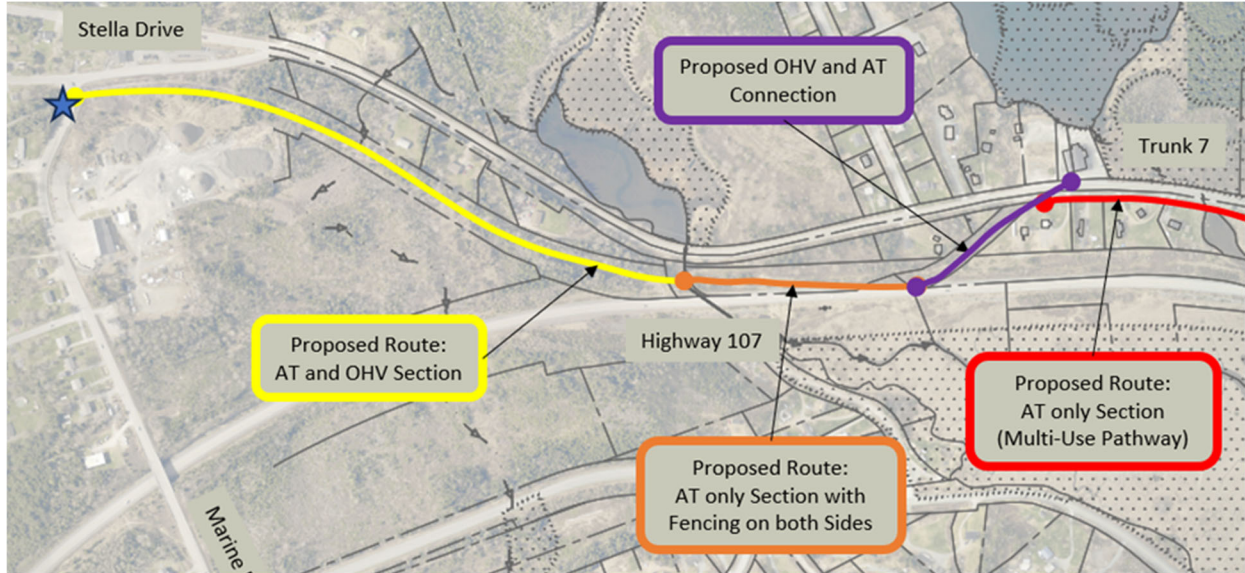


Figure 3-20: Option 3, Section 1 Segments



Figure 3-21: Typical Off-Road Greenway Cross-Section



Figure 3-22: Typical Off-Road Greenway with Fencing Cross-Section



Figure 3-23: Typical Multi-Use Pathway Cross-Section

The second section along the trail for Option 3 is shown in Figure 3-24. Along this section the AT only multi-use pathway section continues along the south side of Trunk 7.

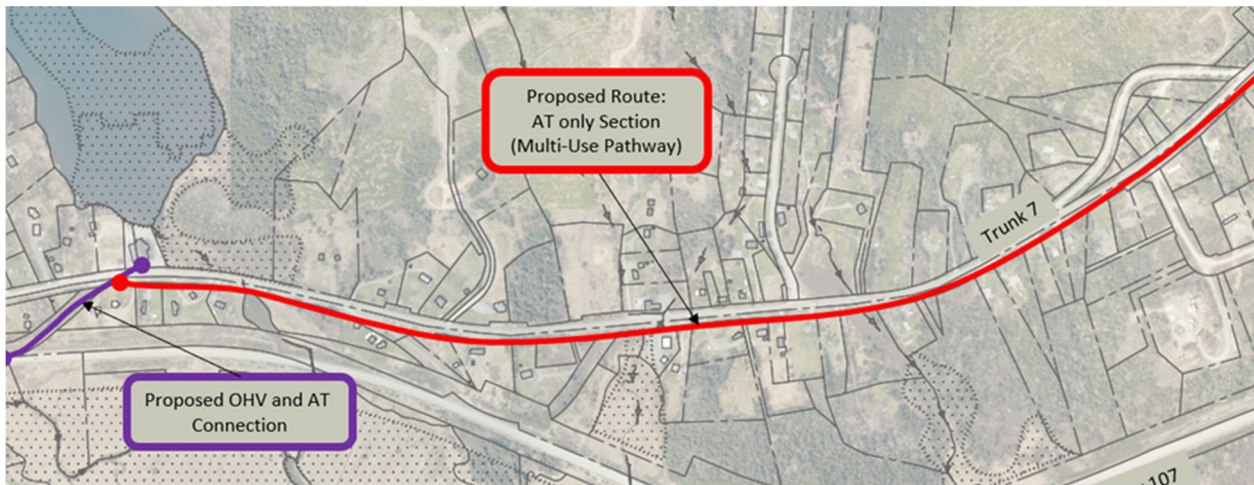


Figure 3-24: Option 3, Section 2 Segments

The third section along the trail for Option 3 is shown in Figure 3-25. The multi-use pathway continues along Trunk 7 until it reaches the realigned East Chezzetcook Road intersection. This realignment is currently being designed by NSPW to accommodate the modifications at Exit 21 on Highway 107. There will be a crossing at the intersection where the multi-use pathway will continue on the east side of East Chezzetcook Road before connecting to the Gaetz Brook Greenway Trail. A small bridge section would be required for this option to come across the river, just like that in Option 2.





Figure 3-25: Option 3, Section 3 Segments

3.5 CROSSING TYPES

The TAC *Pedestrian Crossing Control Guide, 3rd Edition, 2018* includes a decision support tool that recommends the appropriate pedestrian type based on traffic volume, speed limit, and number of lanes crossed. Given the two-lane crossings, traffic volume, and speed limit (60km/h on East Chezzetcook Road), the TAC Pedestrian Crossing Control Guide recommends that pedestrian crossings in this area are RRFB type. These crossings are marked with zebra crosswalk markings and signed with RRFB and side mounted RA-4 signage.

Rectangular Rapid-Flashing Beacon (RRFB): Rectangular Rapid Flashing Beacons (RRFBs) are pedestrian activated crosswalk treatments that consist of two rapidly and alternately flashing rectangular amber beacons that are mounted above side-mounted pedestrian crosswalk signage. RRFBs are activated by pedestrian push buttons.

It is recommended that RRFBs be installed at the proposed crossing options due to the estimated daily traffic volume, the two-lane cross-section, and the speed limit along the street. Higher order crossings are also beneficial where a large number of pedestrians is expected and when it is the first crossing encountered when entering a Municipality or Town.



4 STAKEHOLDER COMMUNICATIONS

4.1 SITE VISIT

WSP completed a site visit on December 12th, 2023 with the SATA to both walk and drive the project study area. The site walk started at the west access to the abandoned CN Railway near the intersection of Stella Drive and Marine Drive. There is currently no marked crossing on Marine Drive for the trail from Blueberry Run to the Abandoned CN Railway. There is currently a fence along the Nova Scotia Department of Public Works property fronting Stella Drive. It is our understanding that the fence may be encroaching into the Abandoned CN Railway and may be able to be moved to provide a wider space for the proposed trail connection, see Photo 4-1.



Photo 4-1 – Fence along Abandoned CN Railway



Photo 4-2 – Abandoned CN Railway Ponding

The site visit continued approximately 600m until we encountered ponding along the trail, as shown in Photo 4-2. The group turned around, however discussed how the ATV/OHV users like to use this section of trail to navigate towards the Fire Hall to connect to other connections north of Trunk 7.

The next portion of the site visit included driving the general project area on Trunk 7, East Chezzetcook Road and Highway 107 to observe connections and routing options. Previous options (Acadia Marsh projects) were

discussed and if any further development has happened of those pieces of the project. At this time, the Acadia Marsh project has not progressed past the work completed in 2015.

To wrap up the site visit, the group accessed the Abandoned CN Railway near the Gaetz Brook Greenway Western Trailhead. The group reviewed options for crossing the East Chezzetcook Road to connect to Gaetz Brook Greenway and completed a trail walk to the end of the available land from the old rail bed, see Photo 4-3.



Photo 4-3 – Abandoned CN Railway (near East Chezzetcook Road)

4.2 VIRTUAL MEETING WITH NSPW

WSP virtually met with Nova Scotia Department of Public Works (NSPW) on December 14th, 2023 to review background information, discuss present and future design projects within the project study area and receive feedback on high-level preliminary routing options. In general, NSPW is in support of the project.

NSPW provided updates on two ongoing design projects that are currently scheduled to be constructed over the next 5 years. NSPW noted that there is a realignment proposed for Marine Drive (Route 207) and Stella Drive onto Trunk 7. WSP received the most recent copy of the design drawings and will incorporate the proposed alignment based on the preferred option selected. The second project that is underway is the realignment of East Chezzetcook Road to Trunk 7 near Exit 21. This project is still in the detailed design stage and NSPW has informed WSP that they plan to have a more defined road alignment and cross section for the next stakeholder meeting proposed in March 2024. Both of these projects have opportunities for project collaboration depending on the recommend routing option for the trail connection.

4.3 VIRTUAL MEETING WITH HRM

On December 18th, 2023, WSP met virtually with Halifax Regional Municipality Active Transportation to discuss the project study area, background information, future projects in the project area and discuss high-level routing options.

HRM does not have any current projects in this area, but they are familiar with the previous work completed in the area and support a connection between the Blueberry Run Trail and Gaetz Brook Greenway. HRM mentioned that paved shoulders along Trunk 7 are not an ideal choice for this project, as the other two facilities are trails/greenways. WSP will reach out to HRM in March 2024 to review the proposed routing options.

4.4 VIRTUAL MEETING WITH MARINE RIDERS

On January 19th, 2024, WSP spoke with Charles from the Marine Riders group to discuss the Blueberry Run Trail project and review the high-level options for the proposed connection towards Gaetz Brook Greenway. Marine Riders are on-board with the connection and will assist where possible to make the connection happen. Their goal for the trail is to provide a connection to the Fire Hall, where they meet-up for trail rides. It was noted that they don't believe others would like to continue to the east on an ATV/OHV, however, cannot speak for everyone.

Overall, was supportive of the project and looking forward to seeing it move ahead.



5 COST ESTIMATES

High-level cost estimates were developed for Options 1, 2, and 3. Cost estimates consider the physical construction of the trail including cost of materials and explores the environmental impacts of wetlands, waterbodies and historical resources that may necessitate supporting infrastructure such as bridges, culverts and additional studies. The area of property acquisition required for each alignment has also been identified to provide an indication of additional of costs. Table 5-1 provides a summary of costs and additional considerations.

Table 5-1 – High Level Cost Classification of Routing Options

Costs and Considerations	Option 1: Abandoned CN Railway Alignment	Option 2: Abandoned CN Railway, Trunk 7 & Stage Coach Lane Alignment	Option 3: Abandoned CN Railway, Trunk 7 & Fire Station Alignment
Length (m)	3890	3975	5260
Site Preparation and Demolition	\$90,335	\$139,125	\$183,960
Earthworks	\$206,290	\$178,875	\$236,520
Hardscape	\$1,043,810	\$1,406,350	\$1,670,025
Drainage General	\$70,728	\$359,240	\$538,632
Landscape Repair	\$147,350	\$218,150	\$293,130
Boardwalks	\$7,630,200	-	-
Bridges	\$5,600,000	-	-
Sub-Total Cost	\$14,788,713	\$2,301,740	\$2,922,267
Contingency (50%)	\$7,394,356.50	\$1,150,870.00	\$1,461,133.50
Total Estimated Cost	\$22,180,000	\$3,450,000	\$4,380,000
Major Roadway Crossings	2	4	3
Driveways and Minor Road Crossings	0	32	37
Watercourse Crossings	9	7	6
Estimated length of alignment adjacent to wetland (m)	950	0	0

Summary of Assumptions and Exclusions:

- Estimated costs do not include consulting fees or engagement for design of the trail system and related infrastructure, such as engineering, planning, and/or landscape architecture.
- Estimated costs do not include signage, such as directional or trail identification signage, except for pedestrian crossing signage as noted in the assumptions for "Pedestrian Crossings".
- Estimated costs do not include site furniture, such as benches or waste receptacles.
- Estimated costs do not include planting, except for seeding to restore disturbed areas.
- Estimated costs do not include repairs to hard surfaces or infrastructure, such as signage.
- Estimated costs do not include surveys, permits, approvals, or crossing agreements.



- **Estimated costs do not include relocation of existing above ground or below ground infrastructure, such as utilities and power lines.**
- **Estimated costs assume that contamination is not present.**
- **Estimated costs do not include mobilization & demobilization, insurance, record drawings, or any other general requirements of the contractor.**
- **Estimated costs do not include improvements to, or construction of, overpass or underpass at highway(s).**
- **Estimated costs do not include HST.**
- **Quantities are estimations only and were based upon aerial photo observations. All quantities and unit rates must be verified through further detailed design.**

5.1 COST ESTIMATE SUMMARY

Option 1 represents the highest trail construction cost due to being an off-road facility, potential for some property impacts along the marshlands, boardwalk structures, and bridge structures, and challenges associated with building through marshland. There are adjacent wetlands that could require additional environmental studies.

Option 2 and Option 3 are ranked closely due to their comparable length and complexity. Option 2 and Option 3 are expected to have some property acquisition requirements and a higher number of driveways/minor road crossings than Option 1. These two options also require stormwater management and utility reallocation along Trunk 7 with the proposed ditch removal.

The route in Option 3 is slightly longer than that in Option 2 but Option 3 would be easier to design and align along with the planned realignment of East Chezzetcook Road.



6 RECOMMENDED OPTIONS

6.1 EVALUATION CRITERIA

A set of qualitative design criteria was developed to identify a preferred route alignment. The preliminary set of route selection criteria was developed based on previous studies and the study team's experience on similar projects. The route selection criteria reflects Trans Canada Trail's mission to connect Canadians and visitors through a system of urban and rural trails to nature and to one another, from coast to coast, through accessible and inclusive outdoor activities. The Trans Canada Trail Greenway principles were used to inform each criterion.

The following design criteria reflect the goals and objectives of the Trans Canada Trail and are based on best practices and guidelines for non-motorized active transportation user routes:

- **Alignment and Connectivity:** This criterion focuses on the feasibility and directness in routing people where they want to go.
 - Trail alignment provides connection to adjacent communities, historical, cultural and nature features.
 - Connects to existing trail networks.
 - The preferred alignment should limit its environmental impact and preserve or enhance the natural features as a destination as well as increase the attractiveness of the trail.
- **User Experience and Safety:** This criterion focuses on users of the trail and the elements of the design that allow people of all ages and abilities to enjoy a safe recreational route that is as conflict-free as possible.
 - Design safety for all non-motorized users.
 - Maximize percentage of alignment that is off-road through greenways and on low volume, low speed and low truck volume roads.
 - Minimizes grade changes to support all abilities (preferably under 5%).
 - Minimize crossings on busy streets. Cross at signalized or grade-separated crossings, if required.
 - Alignment is conducive towards all season maintenance and access (if applicable).
 - Provides quality views, has a high tourism potential and a high user amenity value (diversity, challenge, safety and balance).
- **Constructability and Magnitude of Cost:** As a significant region-wide trail, the constructability and cost of the trail determines the ease of implementation.
 - Prefer options with lower cost.
 - Minimizes requirements for property acquisition.
 - Minimize impact on utilities and infrastructure.
 - Reduce number of new grade-separated and signalized crossings.

6.2 SCORING OF ALIGNMENT OPTIONS

The rationale for determining the preferred alignment based on the above design criteria is summarized in Table 6-1. Each alignment alternative is scored on a scale of 1 to 5 (1 being the least desirable, 5 being the most). A total score was determined for each alignment and was used to identify the preferred alignment alternative. The construction of an off-road facility was assumed in the evaluation of alignment alternatives.



Table 6-1: Alternative Route Selection Evaluation Matrix

CRITERIA	Alignment and Connectivity		User Experience		Constructability and Cost		TOTAL SCORE
Score Colour:	1	2	3	4	5		
Option 1: Abandoned CN Railway Alignment	4		5		1		10
	<ul style="list-style-type: none"> Option 1 provides a connection to Blueberry Run Trail to the west and Gaetz Brook Greenway to the east. Option 1 provides opportunity for nature and historical features to be incorporated along the proposed alignment near the marsh lands. Access locations would be at Marine Drive and East Chezzetcook Road. Potential environmental impacts to the marsh lands, further review is required. 		<ul style="list-style-type: none"> Option 1 proposes a shared use between ATV/OHVs and AT users for a portion of the trail and then non-motorized AT users for the remainder of the proposed corridor. Almost entirely off-road as a greenway style facility. Will need to confirm grade changes along the proposed route prior to evaluating. Two road crossings required to make connections to adjacent trail facilities. Winter maintenance may need to be coordinated with local NS Trail societies / groups. This option may have high tourism potential and high user amenity value. 		<ul style="list-style-type: none"> This option is expected to have the highest construction cost. A timber boardwalk facility is approximately \$8,000/m to install and a bridge structure (span approximately 140m) is about \$5,600,000 to construct. There may be some property impact on the outer edges of property near the marsh lands. Minimal impact to utilities and existing infrastructure. No grade separated crossings expected, there may be marked or a Rectangular Rapid Flashing Beacon Pedestrian Crossing required. 		
Option 2: Abandoned CN Railway, Trunk 7 & Stage Coach Lane Alignment	3		4		2		9
	<ul style="list-style-type: none"> Option 2 provides a connection to Blueberry Run Trail to the west and Gaetz Brook Greenway to the east. Option 2 provides opportunity for nature features along abandoned CN Railway and connection to East Chezzetcook Road. Opportunity for connections to local residential neighbourhoods along Trunk 7. Potential environmental impacts to the marsh lands, further review is required. 		<ul style="list-style-type: none"> Option 2 proposes a shared use between ATV/OHVs and AT users for a portion of the trail and then non-motorized AT users for the remainder of the proposed corridor. A portion off-road as a greenway style facility and a portion within the road right-of-way as a multi-use pathway facility. Will need to confirm grade changes along the proposed route prior to evaluating. Two road crossings required to make connections to adjacent trail facilities. 		<ul style="list-style-type: none"> This option is expected to have a medium-high construction cost, not as high as Option 1. There is a high cost to install stormwater infrastructure with a multi-use pathway. WSP to provide that cost per metre for the evaluation. There may be property impact on Trunk 7, depending on the grades and blending to existing properties. There may be impact to utilities and existing infrastructure. 		

CRITERIA	Alignment and Connectivity		User Experience		Constructability and Cost		TOTAL SCORE
Score Colour:	1	2	3	4	5		
			<ul style="list-style-type: none"> Winter maintenance may need to be coordinated with local NS Trail societies / groups for the greenway and coordination with NSPW for road right-of-way portion. 		<ul style="list-style-type: none"> No grade separated crossings expected, there may be marked or a Rectangular Rapid Flashing Beacon Pedestrian Crossing required. 		
Option 3: Abandoned CN Railway, Trunk 7 & Fire Station Alignment	3		4	2			9
	<ul style="list-style-type: none"> Option 3 provides a connection to Blueberry Run Trail to the west and Gaetz Brook Greenway to the east. Option 3 may have opportunities for historical features along the proposed facility. Little to no impact to the marsh lands. 		<ul style="list-style-type: none"> Option 3 proposes a facility for non-motorized AT users. The proposed facility of a multi-use pathway would be within the road right-of-way. Will need to confirm grade changes along the proposed route prior to evaluating. Two road crossings required to make connections to adjacent trail facilities. Winter maintenance may need to be coordinated with NSPW. 		<ul style="list-style-type: none"> This option is expected to have a medium-high construction cost, in the same range as Option 2. There is a high cost to install stormwater infrastructure with a multi-use pathway. WSP to provide that cost per metre for the evaluation. There may be property impact on Trunk 7, depending on the grades and blending to existing properties. There may be impact to utilities and existing infrastructure. No grade separated crossings expected, there may be marked or a Rectangular Rapid Flashing Beacon Pedestrian Crossing required. 		

7 CONCLUSION AND NEXT STEPS

Each alignment option has different pros and cons. While Option 1 provides strong value and user experience it also has the highest cost. Option 2 and Option 3 have a lower cost but have a higher impact on utilities and cross more driveways and side streets. Stakeholder feedback and public support of the trail alignment is another crucial factor that impacts the feasibility of trail development.

Based on the overall scoring of alignment options, cost estimate and stakeholder feedback, the recommended alignment option is Option 1: Abandoned CN Railway Alignment. Option 3: Abandoned CN Railway, Trunk 7 & Fire Station Alignment may have a higher likelihood of implementation with available funding as a majority of the right-of-way required for the trail is owned by HRM and changes are already planned along some of the proposed section. Option 1: Abandoned CN Railway Alignment connects several destinations and has a strong tourism potential but may require land acquisition to accommodate the trail which may be challenging to implement. This option also has minimal impact to existing streets and utilities. Off-road, 3m paved asphalt multi-use trail is recommended along each alignment to support all ages and abilities.

The selected Option 1 should be taken to functional design to acquire a more precise scope of work and cost. Survey and environmental impact assessment would be required along the area. Interim or staged trail development could consider crushed stone trails as an alternative to asphalt to support all ages and abilities, especially where there is significant rutting. Detailed design, environmental studies, public engagement and permitting will be required through the next stage of trail development to confirm costs and feasibility of trail construction.