Stantec

Memo

To:	Olivia Stanciu, Megan Salvucci City of Hamilton	From:	Isaac Bartlett Stantec Consulting Ltd.
File:	Garner Road MCEA	Date:	November 6, 2024

Reference: Garner Road (Wilson Street to Highway 403 Off-Ramp) Municipal Class Environmental Assessment – Cycling Facility Selection Memorandum

INTRODUCTION

The City of Hamilton initiated a Schedule 'C" Municipal Class Environmental Assessment (EA) to develop and assess Alternative Solutions to improve transportation along Garner Road (Wilson Street to the Highway 403 off-ramp). The EA will assess options to improve traffic, active transportation, transit, and stormwater management throughout the corridor. The improvements are required to support future growth within Hamilton, specifically, the Airport Employment Growth District (AEGD).

PROBLEM AND OPPORTUNITY

Garner Road from Wilson Street to Highway 403 off-ramp is a rural cross-section with inadequate transportation facilities to accommodate existing and future road users (i.e., pedestrians, cyclists, transit, commercial vehicles, and automobiles). Garner Road has no cycling facilities and discontinuous sidewalks. The existing Garner Road corridor cannot support the projected growth within the AEGD.

Improvements to Garner Road are required to accommodate existing and future transportation needs. Improvements will include road widening for the implementation of rapid transit and active transportation (i.e., bike lanes, sidewalks, multi-use paths).

EXISTING TRANSPORTATION CONDITIONS

The existing corridor includes a two-lane roadway with turning lanes at select intersections, which are either stop controlled or signalized. The existing corridor was reviewed to determine the overall Multi-modal Level of Service (MMLOS) for transit, bicycles, pedestrians, automobiles, and trucks to indicate how well these modes of travel are functioning. The corridor has discontinuous sidewalks and lacks dedicated cycling infrastructure, which resulted in a poor MMLOS for those elements. The corridor has two bus routes that utilize Garner Road; however, the MMLOS for transit is poor due to long delays and low levels of reliability.

ALTERNATIVE SOLUTIONS

Alternative Solutions were developed and assessed to determine their ability to address the problems and opportunities identified within the Study Area. The assessment determined

that the Operational Improvements and Widen Garner Road alternative solutions should be carried forward for further consideration and evaluation in Phase 3 of the Class EA process. The other Alternative Solutions were not carried forward as they do not address the problems and opportunities for the Study Area.

The Operational Improvements Alternative Solution includes the implementation of localized measures to improve transit, active transportation, and localized roadway improvements to optimize traffic flow. These improvements can include cycling lanes, sidewalks, transit queue jump lanes, intersection improvements, and/or turning lanes.

The Widen Garner Road Alternative Solution includes additional travel and/or turning lanes (e.g., 3, 4, or 5 lane cross-sections) to accommodate future travel demand. The right-of-way would be designed to accommodate pedestrians, cyclists, transit, automobiles, and truck traffic.

Both Alternative Solutions recommend the accommodation of cyclists and the addition of cycling infrastructure. To determine the suitable cycling facility type for the corridor, the Facility Selection Process, as outlined in Section 5 of Ontario Traffic Manual – Book 18 – Cycling Facilities (2021), was undertaken for the Study. The Ontario Traffic Manual (OTM) is a series of traffic engineering and traffic control reference manuals produced by the Ministry of Transportation (MTO) for use by municipalities in Ontario. The purpose of the OTM is to provide information and guidance to transportation practitioners, and to promote uniformity of treatment in design, application and operation of traffic control devices and systems across Ontario. The 2021 OTM Book 18 – Cycling Facilities (Book 18) was developed by MTO in associated with the Ontario Traffic Council.

The principles of facility selection are outlined in Section 5.1.1 of OTM Book 18. The Recommended Facility Selection Process, which was utilized to determine the appropriate facility for this Study, is outlined in Section 5.2 of OTM Book 18 and is summarized below.

RECOMMENDED FACILITY SELECTION PROCESS

The recommended facility selection process, as outlined in OTM Book 18, has three steps:

Step 1 guides practitioners to pre-select the desirable facility type based on the motor vehicle speed and average daily traffic volume. The outcome of this step is not definitive and must be further refined through Steps 2 and 3. Step 1 is accomplished through the use of the appropriate urban/suburban or rural nomographs (Figure 1 and Figure 2, respectively), as provided in OTM Book 18.

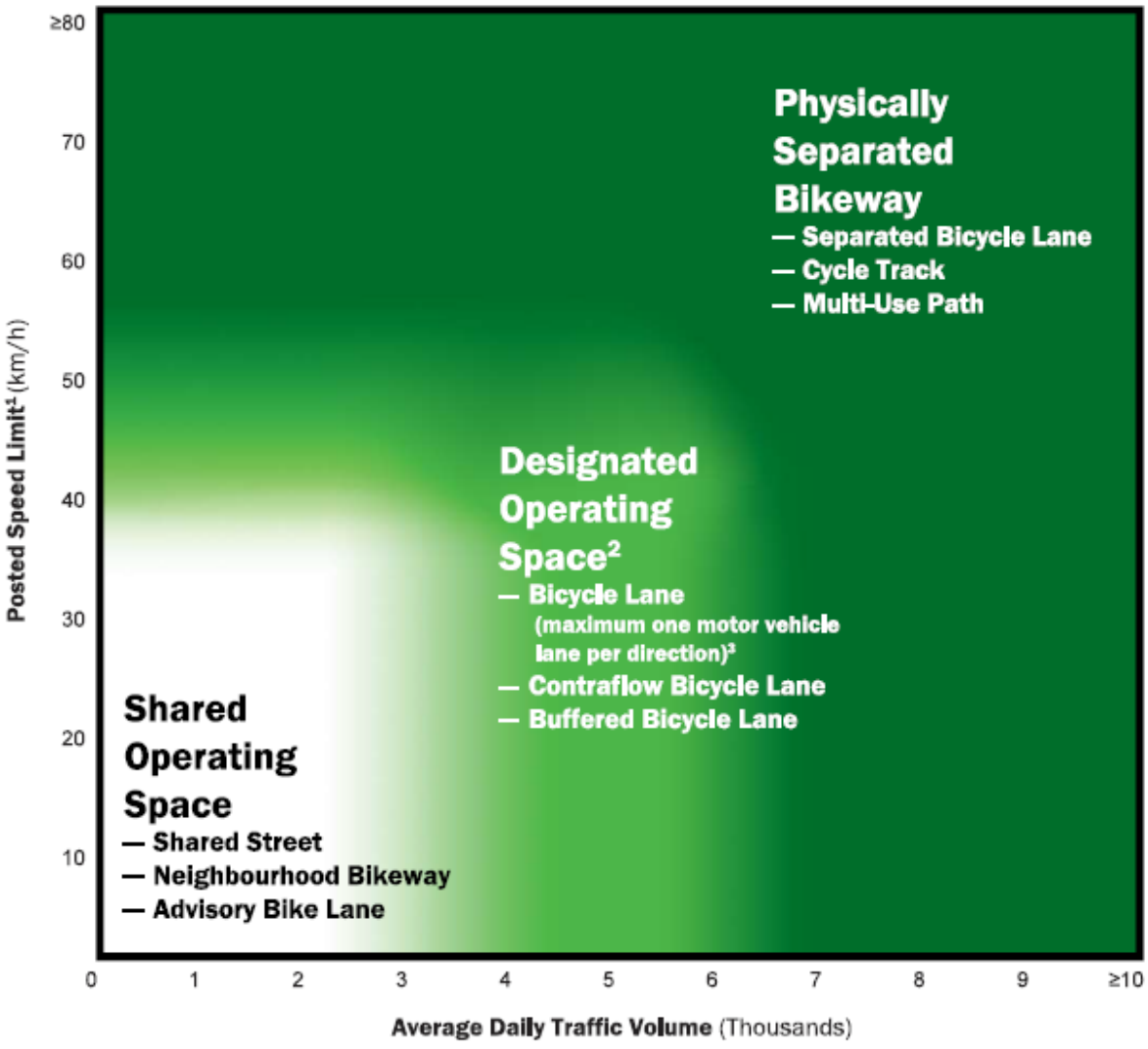
In Step 2, practitioners undertake a detailed and contextual evaluation of the cycling route. During this step, practitioners should complete a thorough desktop study with available

data and undertake field investigations to understand site-specific characteristics. These insights and observations are compared with application heuristics which inform the appropriateness of the facility type. If the result of Step 2 is inconclusive or points to the pre-selected facility type (from Step 1) not being appropriate, a new facility type or level of separation should be chosen and re-evaluated. Alternatively, practitioners may consider modifying the characteristics of the roadway through measures such as traffic calming or traffic diversion to provide a suitable context for the desired facility type. Practitioners are strongly encouraged to evaluate the situation and apply good engineering judgement to select the most appropriate facility type.

Step 3 guides practitioners in documenting their rationale for their final decision and associated design treatments and considerations.

Reference: **Garner Road (Wilson Street to Highway 403 Off-Ramp) Municipal Class Environmental Assessment – Cycling Facility Selection Memorandum**

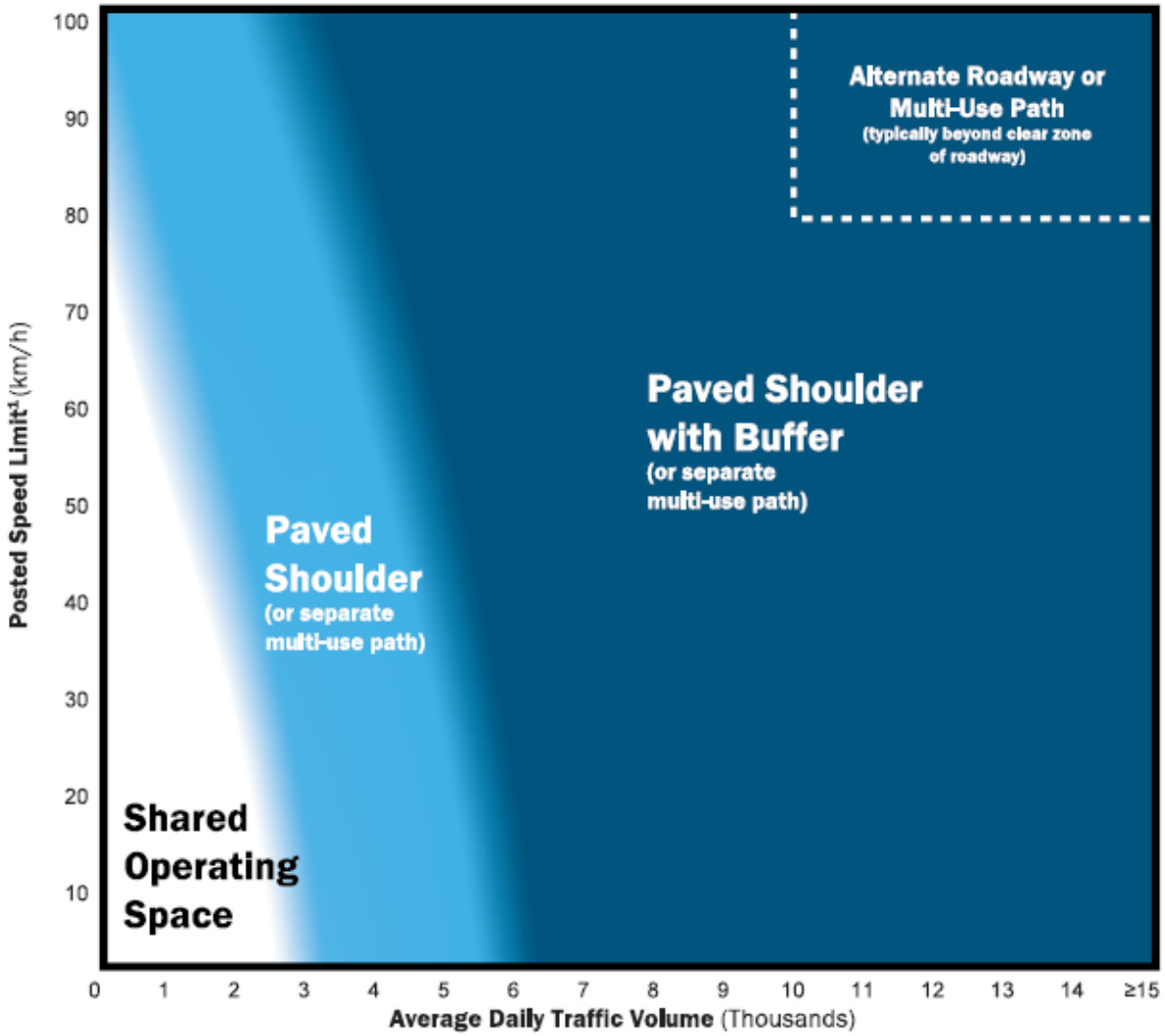
Figure 1: Desirable Cycling Facility Pre-selection Nomograph - Urban/Suburban Context



1 Operating speeds are assumed to be similar to posted speeds. If evidence suggests this is not the case, practitioners may consider using 85th percentile speeds or implementing measures to reduce operating speeds.
2 Physically separated bikeways may always be considered in the designated operating space area of the nomograph.
3 On roadways with two or more lanes per direction (including multi-lane one-way roadways), a buffered bicycle lane should be considered the minimum with a typical facility being a physically separated bikeway.

Reference: **Garner Road (Wilson Street to Highway 403 Off-Ramp) Municipal Class Environmental Assessment – Cycling Facility Selection Memorandum**

Figure 2: Desirable Cycling Facility Pre-selection Nomograph - Rural Context



1 In rural town/hamlet/village contexts, the urban/suburban nomograph may be used,
2 Operating speeds are assumed to be similar to posted speeds. If evidence suggests this is not the case, practitioners may consider using 85th percentile speeds or implementing measures to reduce operating speeds.
3 Paved shoulders should ideally be implemented where feasible along all designated bike routes, regardless of whether recommended by the nomograph
4 If the paved shoulder is recommended, consider incorporating a buffer as well if space allows
5 For roads with a posted speed limit of 80km/hr or higher a paved shoulder of 1.2 to 1.5 m, an additional 0.5 m to 1.0 m buffer should be considered, particularly if the roadway is a common truck route, due to the wind velocity impact of passing trucks

Reference: **Garner Road (Wilson Street to Highway 403 Off-Ramp) Municipal Class Environmental Assessment – Cycling Facility Selection Memorandum**

FACILITY SELECTION

STEP 1: PRE-SELECT FACILITY TYPE OPTIONS

The City of Hamilton's Official Plan designates the area to the north of Garner Road as urban and the area to the south of Garner Road as rural. As a result, the urban/suburban nomograph (Figure 1) was utilized for Step 1 of the Facility Selection process, as it is the more conservative nomograph.

In the Study Area, the average daily traffic volume exceeds 10,000 vehicles per day and the posted speed limit ranges from 60 to 70 km/h. OTM Book 18 also indicates that streets with two or more through lanes in each direction should at a minimum have a buffered bike lane or buffered paved shoulder, with physical separation being preferred. Two of the potential cross-sections carried forward for further evaluation have two through lanes in each direction.

Given this information and using the urban/suburban nomograph, a Physically Separated Bikeway (i.e., a Separated Bicycle Lane, Cycle Track, or Multi-Use Path) was identified as the pre-selected facility type for the Study Area.

STEP 2: DETAILED & CONTEXTUAL EVALUATION

A set of application heuristics or knowledge-based rules have been developed to aid practitioners in Step 2 of the facility selection process. These heuristics link specific site conditions to appropriate facility types and supplementary design features. The application heuristics are particularly important when the nomograph indicates that a corridor is in the nomograph transition zone. Given the average daily traffic volumes in the Study Area, the corridor is not in transition zone of the urban/suburban nomograph.

The application heuristics have been grouped into functional categories and are presented below:

Roadway Characteristics

1. Motor vehicle speed
2. Motor vehicle volume and number of traffic lanes
3. Function of street, road, or highway
4. Vehicle mix
5. On-street parking
6. Pedestrian activity
7. Frequency of intersections and crossings

Feasibility

8. Available space

Reference: **Garner Road (Wilson Street to Highway 403 Off-Ramp) Municipal Class Environmental Assessment – Cycling Facility Selection Memorandum**

9. Anticipated costs
10. Type of roadway improvement project

Attractiveness

11. User skill level and stress tolerance
12. Level of cycling usage
13. Function of route within the cycling network

OTM Book 18 provides a visual summary of the Roadway Characteristics heuristics in Table 5.3 of the document, and it notes that Roadway Characteristics are typically easier to quantify than feasibility and attractiveness considerations, which tend to be more qualitative in nature. Table 5.3 of OTM Book 18 is provided below (Table 1).

Reference: **Garner Road (Wilson Street to Highway 403 Off-Ramp) Municipal Class Environmental Assessment – Cycling Facility Selection Memorandum**

Table 1: Roadway Characteristics Application Heuristics Summary

	Shared Roadway	Neighbourhood Bikeway	Rural Paved Shoulder	Advisory Bicycle Lane	Bicycle Lane	Buffered Bicycle Lane	Separated Bicycle Lane	Cycle Track	Multi-Use Path
Motor vehicle speed									
30 km/h or less	✓	✓	?	?					
40 km/h	?	?	?	✓	✓	✓	✓	✓	✓
50 km/h			?	✓	✓	✓	✓	✓	✓
60 km/h			?			?	✓	✓	✓
70 to 90 km/h			?					✓	✓
Over 90 km/h								✓	✓
Motor vehicle volumes									
<1,500 vehicles/day	✓	✓	?	?	?	?			
1,500 to 3,000 vpd	?	?	?	✓	✓	✓	✓	✓	✓
3,000 to 6,000 vpd			?	?	?	?	✓	✓	✓
6,000 to 10,000 vpd			?				✓	✓	✓
>10,000 vpd							?	✓	✓
Function of street/road/highway									
Access roads (local streets)	✓	✓	✓	?	?	?			
Both mobility and access roads (minor collectors)			?	?	✓	✓	✓	✓	✓
Mobility roads (major collectors and arterials)			?		?	?	✓	✓	✓
Vehicle mix									
More than 30 trucks/buses per hour in curb lane			?			?	✓	✓	✓
Bus stops located along route			?		?	?	✓	✓	✓
Pedestrian activity									
Low pedestrian volumes	✓	✓	✓	✓	✓	✓	✓	✓	✓
High pedestrian volumes	✓	✓		✓	✓	✓	✓	✓	?

Reference: **Garner Road (Wilson Street to Highway 403 Off-Ramp) Municipal Class Environmental Assessment – Cycling Facility Selection Memorandum**

	Shared Roadway	Neighbourhood Bikeway	Rural Paved Shoulder	Advisory Bicycle Lane	Bicycle Lane	Buffered Bicycle Lane	Separated Bicycle Lane	Cycle Track	Multi-Use Path
On-street parking									
Parallel parking; low turnover	?	?		?	?	?	✓	✓	✓
Parallel parking; high turnover							✓	✓	✓
Perpendicular or angle parking							✓	✓	✓
Frequency of intersections and crossings									
Limited intersections and driveway crossings	?	?	✓	✓	✓	✓	✓	✓	✓
Low-volume driveways or unsignalized intersections	✓	✓	✓	✓	✓	✓	✓	✓	✓
Frequent high-volume driveways or unsignalized intersections					?	?	✓	✓	?
Signalized intersections with high-volume turning conflicts						?	✓	✓	?

✓	Typically appropriate for the context
?	Requires further context specific evaluation

As part of Step 2 of the facility selection process, each of the heuristics outlined in OTM Book 18 have been assessed. The results of the assessment for each heuristic are presented below.

Roadway Characteristics

1. Motor vehicle speed: the posted speed limit in the Study Area ranges between 60 and 70 km/h. Utilizing Table 5.3 from OTM Book 18, a Cycle Track or Multi-Use Path are the preferred facility types for this heuristic.
2. Motor vehicle volume and number of traffic lanes: the average daily volume of traffic exceeds 10,000 vehicles. In addition, two of the potential cross-sections carried forward for further evaluation have two through lanes in each direction. Utilizing Table 5.3 from OTM Book 18 and given the urban designation of the Study Area, a Separated Bicycle Lane, Cycle Track, or Multi-Use Path are the preferred facility types for this heuristic.
3. Function of street, road, or highway: Garner Road is an east-west two-lane major arterial road. Utilizing Table 5.3 from OTM Book 18 and given the high average daily

traffic volumes in the Study Area, a Separated Bicycle Lane, Cycle Track, or Multi-Use Path are the preferred facility types for this heuristic.

4. Vehicle mix: Garner Road is a full-time truck route and there are two bus routes that utilize Garner Road. Utilizing Table 5.3 from OTM Book 18 and given the high average daily traffic volumes in the Study Area, a Separated Bicycle Lane, Cycle Track, or Multi-Use Path are the preferred facility types for this heuristic.
5. On-street parking: there is no on-street parking in the Study Area. As such, per Table 5.3 from OTM Book 18, any facility type is equally preferred with regard to this heuristic.
6. Pedestrian activity: the corridor has discontinuous sidewalks and lacks dedicated cycling infrastructure. The corridor also has two bus routes that utilize Garner Road with bus stops throughout. The pedestrian level of service is currently at a level of E or F throughout the corridor, with a target level of C or better. As a result, pedestrian activity is generally low in the Study Area.
7. Frequency of intersections and crossings: the corridor contains stop controlled and signalized intersections, as well as driveways. All four signalized intersections in the Study Area and Garner Road were found to operate with a bicycle level of service of F. Utilizing Table 5.3 from OTM Book 18, a Separated Bicycle Lane, Cycle Track, or Multi-Use Path are the preferred facility types for this heuristic.

Upon evaluating the existing and proposed conditions in the Study Area through the lens of the Roadway Characteristics heuristics outlined in OTM Book 18, it has been determined that a Separated Bicycle Lane, Cycle Track, or Multi-Use Path are the preferred facility types for this heuristic category.

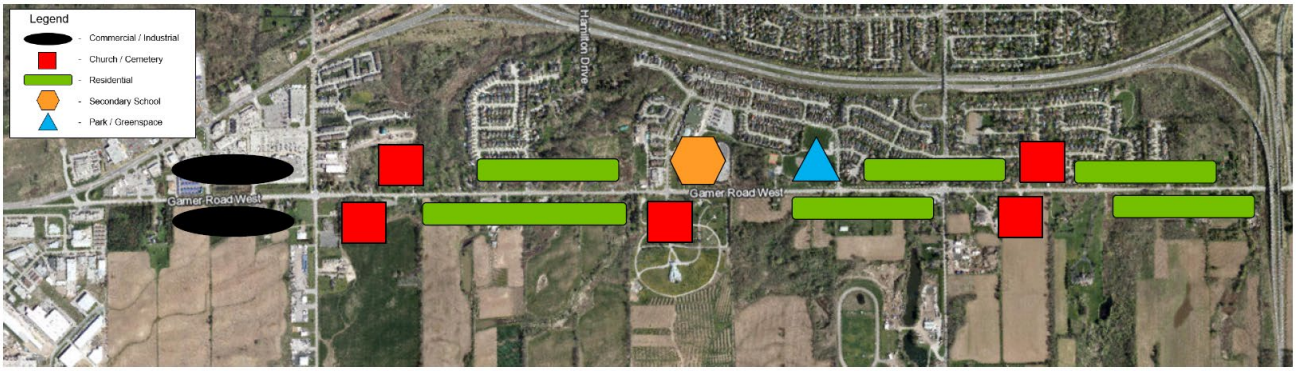
Feasibility

8. Available space: several environmental and technical constraints are located within the Study Area that influence the Design Alternatives and the decision-making process. Key constraints include existing commercial/industrial areas, churches, cemeteries, residential properties, secondary school property, and park/greenspace. The existing right-of-way varies and is approximately 30 m wide on average. Additional width/property is required to accommodate cycling facilities, sidewalks, multi-use paths, and lane capacity for cars and commercial vehicles. The location of constraints varies throughout the Study Area (see Figure 3) and may restrict improvement opportunities; therefore, a mixture of facility types may be required through the corridor, including Separated Bicycle Lanes, Cycle Tracks, or Multi-Use Paths, and are the preferred facility types for this heuristic.
9. Anticipated costs: given the existing and proposed conditions in the corridor, Separated Bicycle Lanes or Multi-Use Paths are generally preferred from a cost perspective. Providing separate sidewalks and Cycle Tracks are generally less preferred as this will

result in additional capital and maintenance costs. Therefore, Separated Bicycle Lanes or Multi-Use Paths are the preferred facility types for this heuristic.

10. Type of roadway improvement project: the project provides the opportunity to add cycling infrastructure throughout the study limits and, given the existing and proposed conditions throughout the corridor, a Separated Bicycle Lane, Cycle Track, or Multi-Use Path are the preferred facility types for this heuristic.

Figure 3: Environmental and Technical Constraints in the Study Area



Upon evaluating the existing and proposed conditions in the Study Area through the lens of the Feasibility heuristics outlined in OTM Book 18, it has been determined that a Separated Bicycle Lane, Cycle Track, or Multi-Use Path are the preferred facility types for this heuristic category.

Attractiveness

11. User skill level and stress tolerance: presently, there is no dedicated cycling infrastructure in the corridor. Given the mixed traffic operation along Garner Road and the conditions at the four signalized intersections in the Study Area, the bicycle level of service was determined to be a level of F. These conditions do not lend themselves to cyclists, regardless of skill level. Given the nature of the proposed improvements, a cycling facility that is suited to users of all ages and abilities and that is low stress in nature is preferred; therefore, a Separated Bicycle Lane, Cycle Track, or Multi-Use Path are the preferred facility types for this heuristic.
12. Level of cycling usage: presently, there is no dedicated cycling infrastructure in the corridor. The project improvements are being undertaken to support future growth within Hamilton, specifically the Airport Employment Growth District. In addition, the City of Hamilton has identified that a separate cycling facility should be installed along Garner Road as part of their 2023 Active Transportation Implementation Plan. Therefore, the level of cycling use is anticipated to increase and separated cycling infrastructure is

warranted through the corridor. A Separated Bicycle Lane, Cycle Track, or Multi-Use Path are the preferred facility types for this heuristic.

13. Function of route within the cycling network: the City of Hamilton has identified that a separate cycling facility should be installed along Garner Road as part of their 2023 Active Transportation Implementation Plan. Therefore, a Separated Bicycle Lane, Cycle Track, or Multi-Use Path are the preferred facility types for this heuristic.

Upon evaluating the existing and proposed conditions in the Study Area through the lens of the Attractiveness heuristics outlined in OTM Book 18, it has been determined that a Separated Bicycle Lane, Cycle Track, or Multi-Use Path are the preferred facility types for this heuristic category.

STEP 3: JUSTIFY AND DOCUMENT RATIONALE

Through undertaking Steps 1 and 2 of the facility selection process, it was determined that a Physically Separated Bikeway (i.e., a Separated Bicycle Lane, Cycle Track, and/or Multi-Use Path) is the preferred facility type for the Study Area.

This memorandum serves to document the decision-making process and rationale for the facility type selected for this project.

EVALUATION OF ALTERNATIVE SOLUTIONS

The preferred facility types were assessed for potential environmental impacts (see Attachment 1). Alternative B (3.5m Multi-Use Pathway On North Side and 2.0m Sidewalk On South Side) was determined to be preferred. The alternative is consistent with the recommended improvements along the corridor outside of the study area. This alternative provides a physical separation for cyclists and pedestrians from traffic, accommodates users of all ages and abilities, has the least impact on cultural and natural environments, and is consistent with the recommended improvements for Garner Road.

Attachment 1: Evaluation of Active Transportation Alternatives

FACTORS/ CRITERIA	ALTERNATIVE A 3.5M MULTI-USE PATHWAY (MUP) ON BOTH SIDES	ALTERNATIVE B 3.5M MULTI-USE PATHWAY ON NORTH SIDE AND 2.0M SIDEWALK ON SOUTH SIDE	ALTERNATIVE C 2.0M SIDEWALK & 2.0M CYCLE TRACK ON BOTH SIDES OF THE ROAD (+0.6M BUFFER)
TRANSPORTATION			
Services / Utilities • Potential to impact existing services or utilities within the corridor	• Moderate potential to reduce impacts to the existing services and utilities using a 'best fit' approach within the corridor.	• Highest potential to reduce impacts to the existing services and utilities using a 'best fit' approach within the corridor.	• Least potential to reduce impacts to the existing services and utilities using a 'best fit' approach within the corridor.

Safety
• Potential to provide safe experience for cyclists and pedestrians of all ages and abilities (i.e., novice, casual cyclist, commuter cyclist) and ability to encourage active transportation use
	• Moderate potential to provide a safe experience:
	  • Provides physical separation for cyclists and pedestrians from the road and vehicular/transit traffic.
	  • Does not provide separate facility for pedestrians and cyclists although lower-volume pedestrian area therefore signage may be used to inform proper use of MUP.
		• Least potential to provide a safe experience:
		  • Provides physical separation for cyclists and pedestrians from the road and vehicular/transit traffic.
		  • Does not provide separate facility for pedestrians and cyclists on north side of road although lower-volume pedestrian area therefore signage may be used to inform proper use of MUP.
		  • Does not provide cycling facilities on south side of road.
			• Highest potential to provide a safe experience:
			  • Provides physical separation for cyclists and pedestrians from the road and vehicular/transit traffic.
			  • Provides space separation between cyclists and pedestrians.

Compatibility • Compatibility of design with connecting roadway sections (i.e., proposed MUP on the north side of the road and sidewalk on the south side of the road recommended for the Rymal Road Environmental Assessment study)	• Moderate compatibility with connecting roadway sections - has potential to tie into the facilities. •	• Highest compatibility with connecting roadway sections – consistent facilities along corridors	• Least compatibility with connecting roadway sections - has potential to tie into the facilities.
Ease of Accommodating Transit Stops	• Can accommodate transit stops • Connection to transit stop would be for mixed users and has potential for cyclist conflicts.	• Can best accommodate transit stops due to lowest boulevard footprint • Connection to transit stop would be single user (pedestrian) on the south side, reducing the potential for cyclist and transit user conflict.	• Can best accommodate transit stops, though has the largest boulevard footprint • Connection to transit stop would require transit users to cross the bike lane with potential for conflict.
Capital Costs • Overall estimated costs	• Moderate estimated costs due to consolidated cycling and pedestrian facilities. Some signage and markings may be required. • Some additional maintenance required for snow removal.	• Cost savings with consolidated cycling and pedestrian facilities on north side, and smaller sidewalk footprint on south side of road.	• Highest estimated costs due to additional paving required for sidewalk and separate cycle path. • Additional maintenance required for snow removal.

Reference: **Garner Road (Wilson Street to Highway 403 Off-Ramp) Municipal Class Environmental Assessment – Cycling Facility Selection Memorandum**

FACTORS/ CRITERIA	ALTERNATIVE A 3.5M MULTI-USE PATHWAY (MUP) ON BOTH SIDES	ALTERNATIVE B 3.5M MULTI-USE PATHWAY ON NORTH SIDE AND 2.0M SIDEWALK ON SOUTH SIDE	ALTERNATIVE C 2.0M SIDEWALK & 2.0M CYCLE TRACK ON BOTH SIDES OF THE ROAD (+0.6M BUFFER)
Corridor Width • Ability to maintain consistent width of corridor; number of occasions to reduce width	• Moderate property area within the boulevard required	• Lowest property area required within the boulevard.	• Greatest area of property required within the boulevard
Summary of Transportation	**Moderately Preferred**	**Most Preferred**	**Least Preferred**
CULTURAL ENVIRONMENT			
Archaeological Resources • Conserves archaeological resources • Minimize potential impact to archaeological sites and areas of archaeological potential	• Each alternative will be within the same ultimate ROW width. Considering the existing ROW width, Stage 1 Archaeological Assessment indicates: ○ Areas of archaeological potential within the corridor exist requiring further archaeological work. ○ Cemeteries within corridor will be avoided. • Stage 2 archaeological assessment will be completed for any portion of the Project's anticipated construction which impacts an area of archaeological potential. • Lands adjacent to the extant boundaries of the Bethesda United Church Cemetery and the White Brick Cemetery require Stage 3 Cemetery Investigation (following any requisite Stage 2 property assessment) to confirm whether or not burials exist outside of that boundary. • This alternative provides some flexibility to avoid or mitigate impacts.	• Each alternative will be within the same ultimate ROW width. Considering the existing ROW width, Stage 1 Archaeological Assessment indicates: ○ Areas of archaeological potential within the corridor exist requiring further archaeological work. ○ Cemeteries within corridor will be avoided. • Stage 2 archaeological assessment will be completed for any portion of the Project's anticipated construction which impacts an area of archaeological potential. • Lands adjacent to the extant boundaries of the Bethesda United Church Cemetery and the White Brick Cemetery require Stage 3 Cemetery Investigation (following any requisite Stage 2 property assessment) to confirm whether or not burials exist outside of that boundary. • This alternative provides the most flexibility to avoid or mitigate impacts due to being the narrowest alternative.	• Each alternative will be within the same ultimate ROW width. Considering the existing ROW width, Stage 1 Archaeological Assessment indicates: ○ Areas of archaeological potential within the corridor exist requiring further archaeological work. ○ Cemeteries within corridor would be impacted. • Stage 2 archaeological assessment will be completed for any portion of the Project's anticipated construction which impacts an area of archaeological potential. • Lands adjacent to the extant boundaries of the Bethesda United Church Cemetery and the White Brick Cemetery require Stage 3 Cemetery Investigation (following any requisite Stage 2 property assessment) to confirm whether or not burials exist outside of that boundary. • This alternative provides the least flexibility to avoid or mitigate impacts due to being the widest alternative.
Built Heritage Resources and Cultural Heritage Landscapes • Conserves built heritage resources and cultural heritage landscapes	• A review of existing built heritage resources and cultural heritage landscapes within the study area to be completed. A 'best fit' approach will be utilized to avoid and/or reduce impacts.	• A review of existing built heritage resources and cultural heritage landscapes within the study area to be completed. A 'best fit' approach will be utilized to avoid and/or reduce impacts.	• A review of existing built heritage resources and cultural heritage landscapes within the study area to be completed. A 'best fit' approach will be utilized to avoid and/or reduce impacts.

Reference: **Garner Road (Wilson Street to Highway 403 Off-Ramp) Municipal Class Environmental Assessment – Cycling Facility Selection Memorandum**

FACTORS/ CRITERIA	ALTERNATIVE A 3.5M MULTI-USE PATHWAY (MUP) ON BOTH SIDES	ALTERNATIVE B 3.5M MULTI-USE PATHWAY ON NORTH SIDE AND 2.0M SIDEWALK ON SOUTH SIDE	ALTERNATIVE C 2.0M SIDEWALK & 2.0M CYCLE TRACK ON BOTH SIDES OF THE ROAD (+0.6M BUFFER)
• Minimize potential impact on known (e.g., previously recognized) and potential built heritage resources and cultural heritage landscapes	• This alternative provides some flexibility to avoid or mitigate impacts.	• This alternative provides the most flexibility to avoid or mitigate impacts due to being the narrowest alternative.	• This alternative provides the least flexibility to avoid or mitigate impacts due to being the widest alternative.
Summary of Cultural Environment	**Moderately Preferred**	**Most Preferred**	**Least Preferred**
SOCIO-ECONOMIC ENVIRONMENT			
Businesses Operations • Potential to impact businesses / business operations, such as displacement, access or reductions in parking	• Facilitates improved access to existing and future business operations. • No anticipated impacts to businesses / business operations.	• Facilitates improved access to existing and future business operations. • No anticipated impacts to businesses / business operations.	• Facilitates improved access to existing and future business operations. • No anticipated impacts to businesses / business operations.
Property • Potential impacts to property along the corridor (e.g., property acquisition)	• Moderate property area within the boulevard required • Moderate property required outside of the existing ROW	• Lowest property area required within the boulevard. • Lowest property required outside of the existing ROW	• Greatest area of property required within the boulevard. • Greatest property required outside of the existing ROW
Aesthetics & Complete Livable Better Streets • Potential to integrate Hamilton's Design Manual elements of Complete-Livable-Better Streets (i.e., street trees, landscaping, sidewalks, cycling lanes) • Ability to embellish green canopy by incorporating new green additions, such as additional trees	• High potential to integrate Complete-Livable Better Streets elements, including MUP which provides consolidated cycling facilities and sidewalks. • Moderate impacts to the available boulevard area to plant future trees and vegetation.	• High potential to integrate Complete-Livable Better Streets elements, including sidewalks and cycling lanes, and MUP. • Lowest impacts to the available boulevard area to plant future trees and vegetation.	• High potential to integrate Complete-Livable Better Streets elements, including sidewalks and cycling lanes. Potential for street trees and landscaping. • Greatest impacts to the available boulevard area to plant future trees and vegetation.

Planning Policy
• Ability to align with objectives of:
  ○ Hamilton's Cycling Master Plan (i.e., recommends bike lanes)
  ○ Transportation Master Plan (i.e., recommends bike lanes)
  ○ Airport Employment Growth District (AEGD) Transportation Master Plan (i.e., recommends constructing sidewalk and cycle track on both sides of the road)
	• Inconsistent with Cycling Master Plan, Transportation Master Plan, and AEGD.	• Inconsistent with Cycling Master Plan, Transportation Master Plan, and AEGD.	• Inconsistent with Cycling Master Plan and Transportation Master Plan.
			• Consistent with AEGD.

Accessibility • Potential to provide opportunity to improve accessibility/reduce barriers in the built environment, and meets AODA guidelines	• Provides opportunity to improve accessibility/reduce barriers in the built environment and meets AODA guidelines. • Provides mixed users (pedestrians and cyclists) on both sides of the road	• Provides opportunity to improve accessibility/reduce barriers in the built environment and meets AODA guidelines.	• Provides opportunity to improve accessibility/reduce barriers in the built environment and meets AODA guidelines.

Reference: **Garner Road (Wilson Street to Highway 403 Off-Ramp) Municipal Class Environmental Assessment – Cycling Facility Selection Memorandum**

FACTORS/ CRITERIA	ALTERNATIVE A 3.5M MULTI-USE PATHWAY (MUP) ON BOTH SIDES	ALTERNATIVE B 3.5M MULTI-USE PATHWAY ON NORTH SIDE AND 2.0M SIDEWALK ON SOUTH SIDE	ALTERNATIVE C 2.0M SIDEWALK & 2.0M CYCLE TRACK ON BOTH SIDES OF THE ROAD (+0.6M BUFFER)
		• Provides for mixed users on the north side, but only pedestrians on the south side.	• Provides for both types of users and separates pedestrians and cyclists for better accommodation.
Summary of Socio-Economic environment	**Moderately Preferred**	**Most Preferred**	**Moderately Preferred**
NATURAL ENVIRONMENT			
Wildlife • Potential to impact wildlife, Species at Risk (SAR) and SAR habitat • Potential to impact or enhance corridors for wildlife movement	• Each alternative will be within the same ROW width. A 'best fit' approach will be utilized to avoid and/or reduce impacts.	• Each alternative will be within the same ROW width. A 'best fit' approach will be utilized to avoid and/or reduce impacts.	• Each alternative will be within the same ROW width. A 'best fit' approach will be utilized to avoid and/or reduce impacts.
Terrestrial and Aquatic Habitat • Potential to impact aquatic species and habitat • Potential to impact woodlots and vegetation communities	• Each alternative will be within the same ROW width. A 'best fit' approach will be utilized to avoid and/or reduce impacts.	• Each alternative will be within the same ROW width. A 'best fit' approach will be utilized to avoid and/or reduce impacts.	• Each alternative will be within the same ROW width. A 'best fit' approach will be utilized to avoid and/or reduce impacts.
Street Trees/Mature Tree Canopy • Potential to impact to existing trees • Ability to replant displaced trees	• Moderate impacts to available existing trees and vegetation.	• Lowest impacts to existing trees and vegetation.	• Greatest impacts to existing trees and vegetation.
Air Quality • Potential to impact air quality within the study area.	• High potential to improve air quality through increased / improved active transportation facilities.	• High potential to improve air quality through increased / improved active transportation facilities.	• High potential to improve air quality through increased / improved active transportation facilities.
Climate Change • Potential to improve climate change resiliency and vulnerability, and mitigate climate change through reduction in greenhouse gas (GHG) emissions	• High potential to assist with reduction of GHG emissions through supporting active transportation facilities.	• High potential to assist with reduction of GHG emissions through supporting active transportation facilities.	• High potential to assist with reduction of GHG emissions through supporting active transportation facilities.
Summary of Natural Environment	**Moderately Preferred**	**Most Preferred**	**Least Preferred**
CONCLUSION	Alternative A is not selected as the preferred alternative due to the following reasons: • Does not provide a separate facility for cyclists and pedestrians • Has a moderate impact on the existing trees, property and heritage resources	Alternative B is selected as the preferred alternative for the following reasons: • Provides a physical separation for cyclists and pedestrians from traffic	Alternative C is not selected as the preferred alternative. • Has the most significant impact on existing trees, property and heritage resources

Reference: **Garner Road (Wilson Street to Highway 403 Off-Ramp) Municipal Class Environmental Assessment – Cycling Facility Selection Memorandum**

FACTORS/ CRITERIA	ALTERNATIVE A 3.5M MULTI-USE PATHWAY (MUP) ON BOTH SIDES	ALTERNATIVE B 3.5M MULTI-USE PATHWAY ON NORTH SIDE AND 2.0M SIDEWALK ON SOUTH SIDE	ALTERNATIVE C 2.0M SIDEWALK & 2.0M CYCLE TRACK ON BOTH SIDES OF THE ROAD (+0.6M BUFFER)
	• Is inconsistent with the recommended improvements along the corridor outside of the study area	• Multi-Use Pathway is accommodating for several levels of users • Has the least impact on the existing trees, property and heritage resources • It is consistent with the recommended improvements along the corridor outside of the study area	• Least compatibility with existing roadway and ability to reduce impacts to existing services and utilities • Highest estimated costs for additional paving and additional snow maintenance • Is inconsistent with the recommended improvements along the corridor outside of the study area
Overall Summary	**Moderately Preferred**	**Most Preferred**	**Least Preferred**