City of Sault Ste. Marie

Great Northern Road/Second Line Area

Volume 1: Road Network and Access (under separate cover)

Volume 2: Active Transportation

B000780

June 2018

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1. Introduction

CIMA+ Canada Inc. (CIMA) was retained by the City of Sault Ste. Marie (the City) to conduct a review and assessment of the cycling facilities in the area surrounding the Great Northern Road and Second Line intersection. The study area is illustrated in Figure 1.

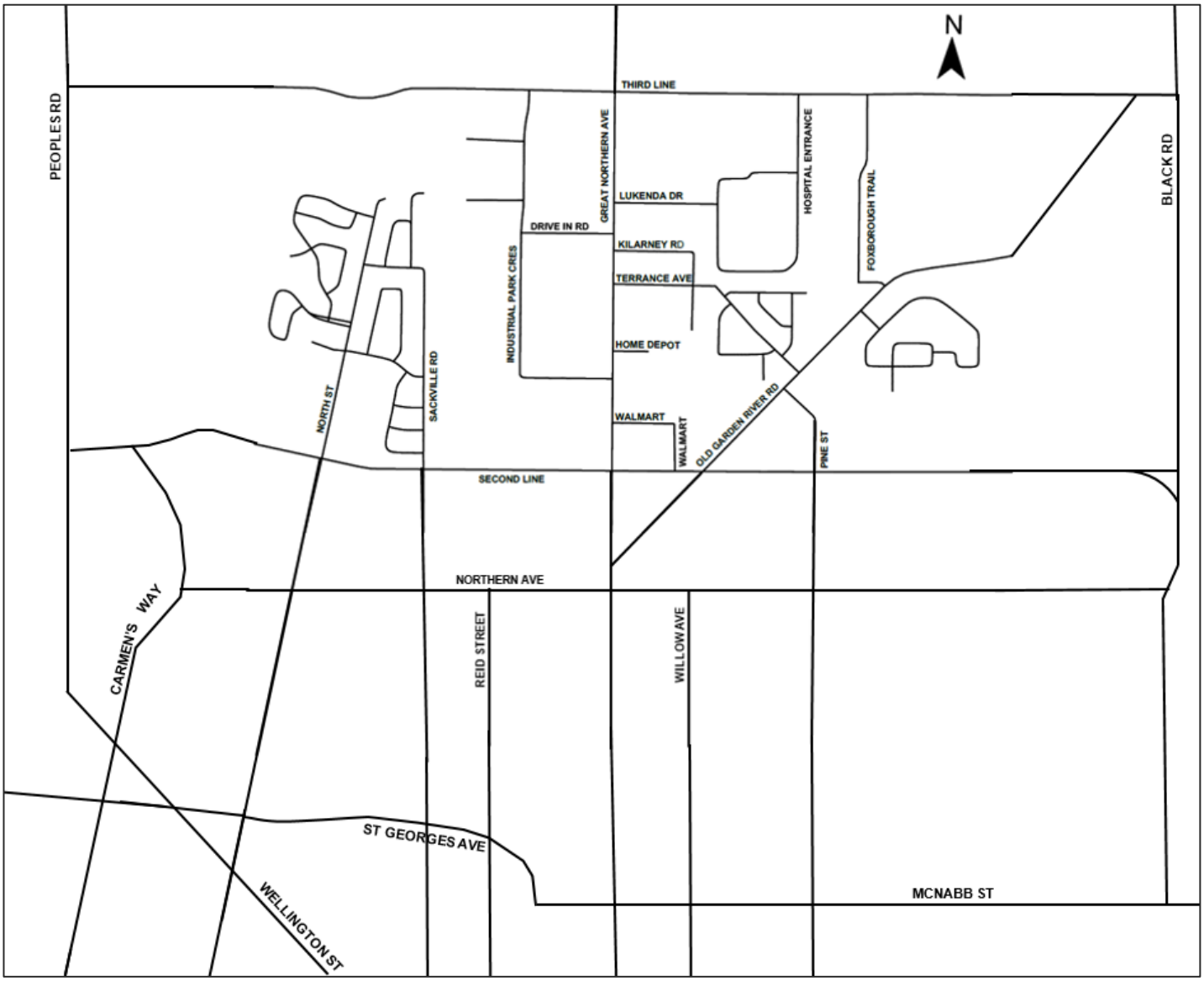

Figure 1: Study Area

2. Problem and Opportunities

2.1. Existing Cycling Facilities

Within the study limits, the existing built cycling facilities consist of the Hub Trail as illustrated in Figure 2. The City of Sault Ste. Marie Cycling Master Plan (CMP) (2007) has identified the need for additional active transportation facilities to provide a connected and continuous multi-use network

linking primary and secondary destinations throughout the City. The planned cycling routes throughout the study area are also identified in Figure 2.

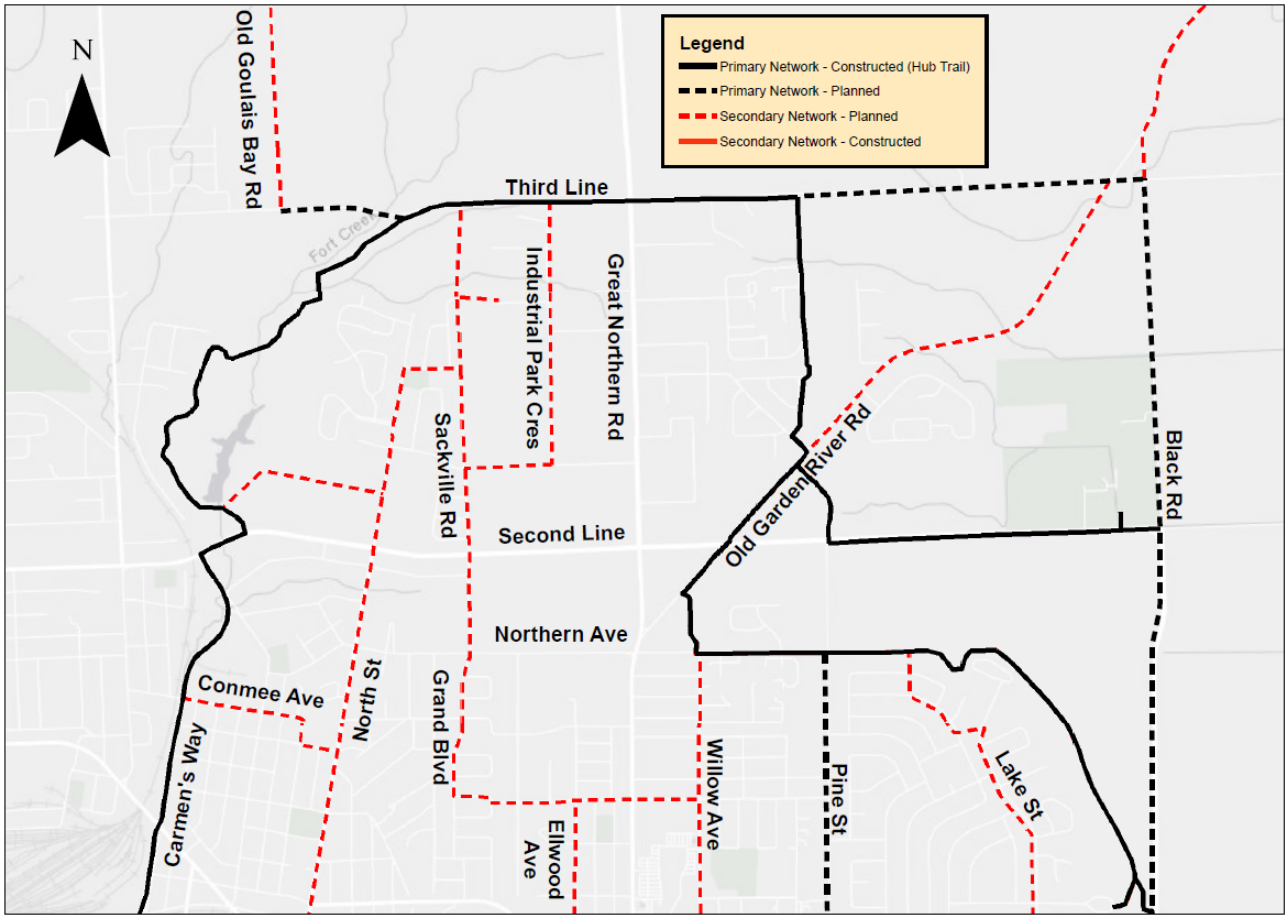

Figure 2: Primary and Secondary Cycling Network within Study Area

2.2. Existing Pedestrian Facilities

In addition to the Hub Trail network (Figure 2), pedestrians are serviced by the existing sidewalk network illustrated in Figure 3. In most locations adjacent to key generators of pedestrian traffic (i.e. schools, commercial areas), sidewalks are provided on both sides of the road. Existing sidewalks are generally 1.2m wide and have been upgraded in some sections to 1.5m.

The City is planning to construct a sidewalk on the south side of Second Line between Great Northern Road and Old Garden River Road in 2018.

As apparent in Figure 3, the most notable missing pedestrian linkages are along Old Garden River Road north and south of Second Line.

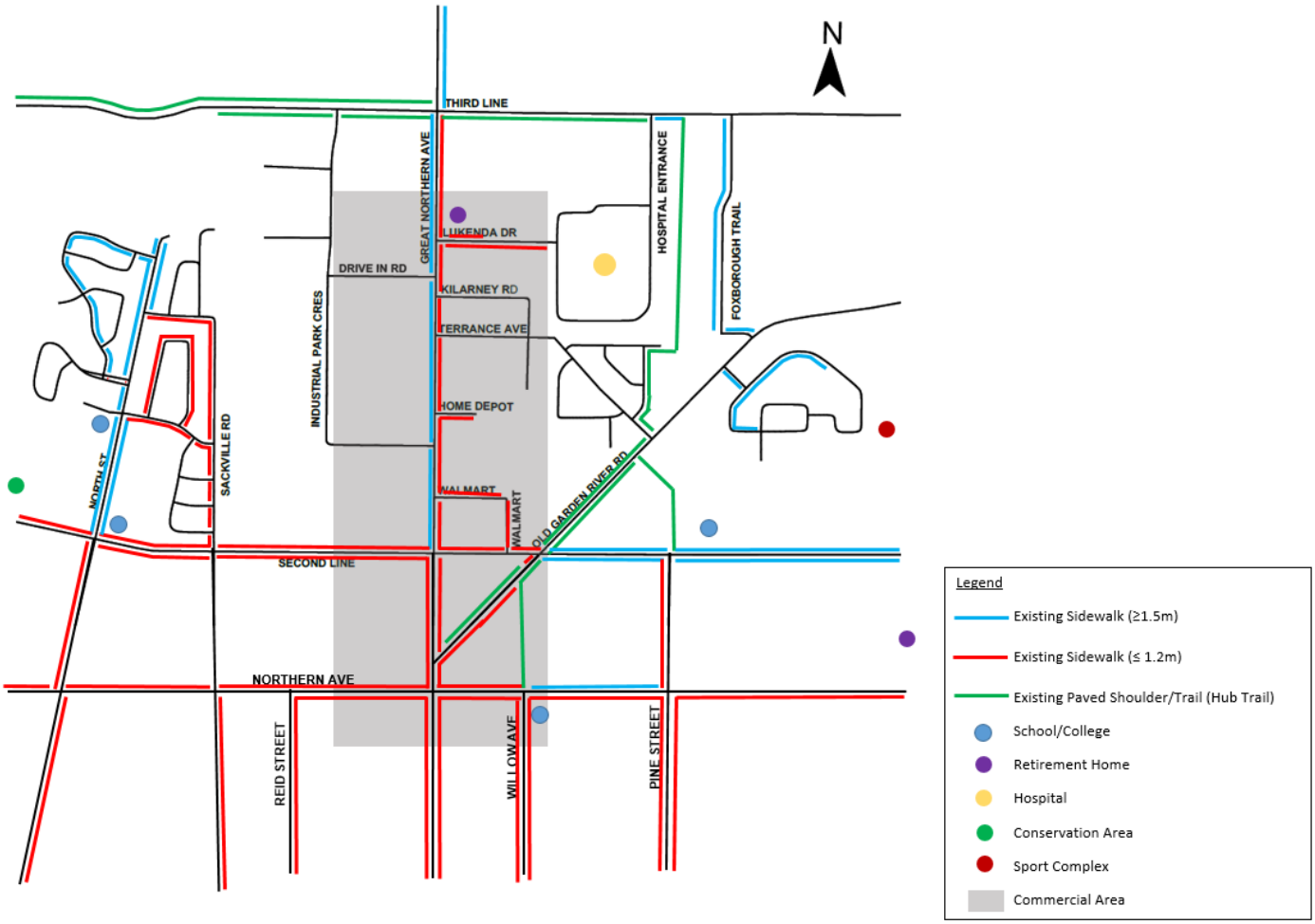

Figure 3: Existing Sidewalk Network

2.3. Cyclist and Pedestrian Destinations

As part of the development of the City's CMP, primary and secondary destinations throughout the City were identified to ensure the overall active transportation network provides sufficient access to these locations. Primary destinations were identified as the major points of attraction and gathering areas in the City. Secondary destinations were generally located near but not adjacent to trails and may be associated with primary destinations of the Hub Trail system. The trails system also connects other important destinations such as schools, places of employment, parks and other cultural and governmental institutions. Table 1 lists the primary and secondary destinations that the CMP Plan route considered in the development of the active transportation network. There are three primary destinations and one secondary destination within the study area.

Table 1: Primary and Secondary Destination (Source: CMP 2007)

Primary Destination	Secondary Destination
• **Waterfront**	• Downtown Queen Street
• **Fort Creek Conservation Area**	• The Sault Ste. Marie Canal National Historic Site
• **Hospital**	• **Strathclair Farm Sports Complex**
• **Sault College**	• Finn Hill
• **Algoma University College**	• Queen Elizabeth Park
• **Bellevue Park**	• Bush Plane Museum

***Destination is within the study area**

3. Industry Guidance and Accessibility Requirements

3.1. Accessibility for Ontarians with Disabilities Act

The Accessibility for Ontarians with Disabilities Act (AODA) (2005) sets forth requirements for improving accessibility for individuals with disabilities. As part of AODA, standards are provided for the design of public spaces including recreational trails and exterior paths of travel. AODA requires the following for the development of sidewalks:

> "***80 .23*** *When constructing new or redeveloping existing exterior paths of travel that they intend to maintain, obligated organizations, other than small organizations, shall ensure that new and redeveloped exterior paths of travel meet the following requirements:*
>
> 1. *The exterior path must have a minimum clear width of 1,500 mm, but this clear width can be reduced to 1,200 mm to serve as a turning space where the exterior path connects with a curb ramp."*[1]

The 1.5m width should be considered a minimum standard. If the sidewalk is adjacent to the back of curb, a 1.8m sidewalk should be considered a minimum. Many other municipalities are considering 1.8m as a minimum in any situation and 2.0m width as desirable. This is mainly a result of the increasing population of senior citizens. It was noted at the public meeting that residents with motorized assistive equipment frequently travel throughout the immediate study area to access the commercial areas north and south of Second Line.

3.2. Federal Highway Administration

Although no Canadian guidance for the use of "visually separated facilities" for pedestrians and cyclists is available, the Federal Highway Administration (FHWA) *Small Town and Rural Multimodal Networks* (2016) manual provides guidance for small towns and rural communities to

[1] Accessibility for Ontarians with Disabilities Act (AODA), 2005, S.O. 2005, c.11

support safe, accessible, comfortable, and active travel for people of all ages and abilities.[2]

The guide indicates that for rural cross-sections, paved shoulders on the edge of the roadway can be enhanced to serve as a functional space for bicycles and pedestrians to travel in the absence of other facilities with more separation. To accommodate bicyclist and pedestrian use of the shoulder, a minimum width of 1.2 m adjacent to a road edge or curb should be provided, exclusive of any buffer or rumble strip. The minimum recommended cross-section for the use of the paved shoulder for bicycles and pedestrians is illustrated in Figure 4. Buffers are recommended to improve cyclist or pedestrian comfort when travelling in higher speed and/or volume situations but only when adequate space is provided.

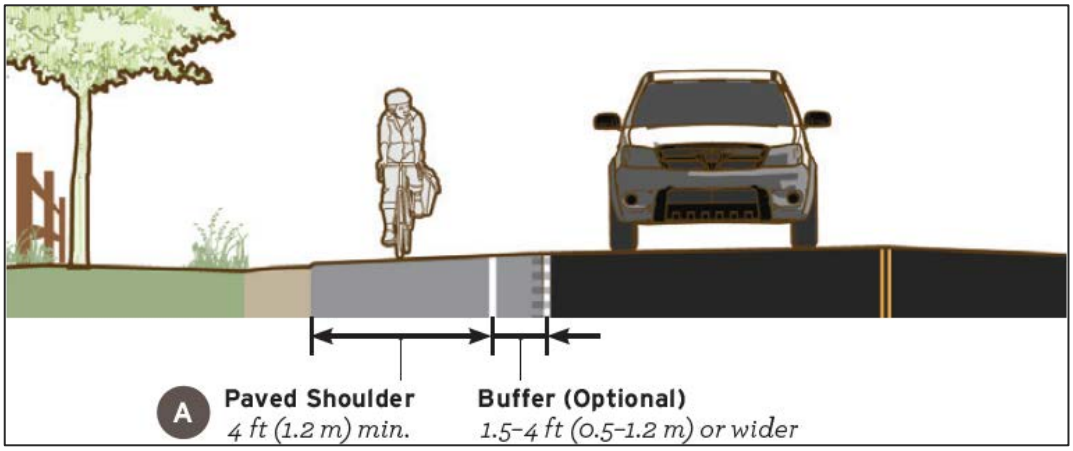

Figure 4: Recommended Minimum Cross-Section[3]

The recommended minimum paved should width for various road classifications is provided in Table 2.

Table 2: Recommended Minimum Paved Shoulder Widths by Roadway Conditions[4]

Functional classification	Volume (AADT)	Speed (Mi/h)	Recommended Minimum Paved Shoulder Width
Minor Collector	up to 1,100	35 (55 km/h)	5 ft (1.5 m)
Major Collector	up to 2,600	45 (70 km/h)	6.5 ft (2.0 m)
Minor Arterial	up to 6,000	55 (90 km/h)	7 ft (2.1 m)
Principal Arterial	up to 8,500	65 (100 km/h)	8 ft (2.4 m)

According to the guide, on shoulders designed for bicycle and pedestrian accessibility, the edge should be clearly delineated and defined to discourage unnecessary encroachment by motor

[2] FHWA, Small Town and Rural Multimodal Networks, December 2016
[3] FHWA, Small Town and Rural Multimodal Networks, December 2016
[4] FHWA, Small Town and Rural Multimodal Networks, December 2016

vehicles. Longitudinal markings along the shoulder should be selected in response to the shoulder width and the desire to discourage encroachment by motor vehicles. Options beyond a normal white line are illustrated in Figure 5 and are as follows:

- A wide 200 mm white line (C)
- A narrow buffer space–two normal 100 mm solid white lines separated by a 0.45 m or greater space (D)
- A wide buffer space–two normal solid white lines, separated by a 1.2 m or greater space and optional crosshatch markings (E)

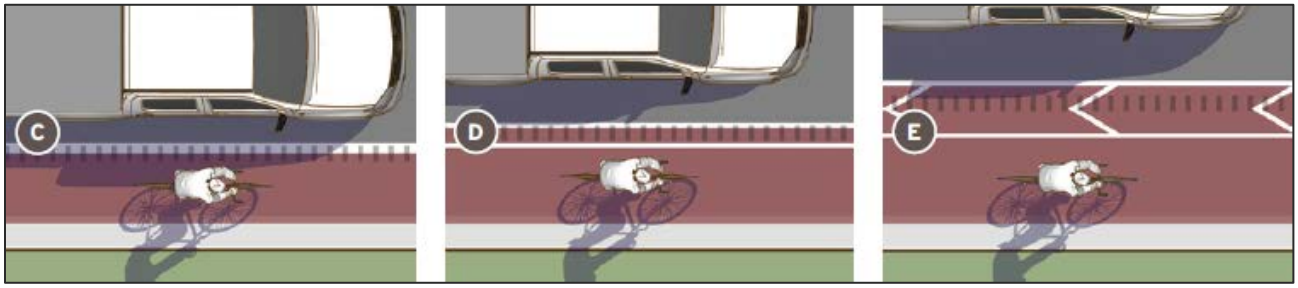

Figure 5: Pavement Marking Requirements[5]

4. Cycling Network

4.1. Needs and Justification

As part of this assignment, CIMA has divided the planned cycling route identified in the CMP into a primary and secondary cycling network. The primary cycling network can be considered as the Hub Trail and the cycling network along arterial roads. The secondary network can be considered as the cycling network along collector and local roads and off-road facilities. The primary and secondary cycling networks within the study area are illustrated in Figure 2.

Based on a review of good practice in bicycle network planning, cyclists would ideally have access to the primary cycling network within 1 kilometre and access to the secondary network within 300 to 500 metres in order to ensure connectivity throughout the City. Good practice also involves providing access for both north-south and east-west routes.

4.1.1. North-South Cycling Network

Figure 6 illustrates the areas within the study area that have access within 1 kilometre to the north-south routes of the primary cycling network.

[5] FHWA, Small Town and Rural Multimodal Networks, December 2016

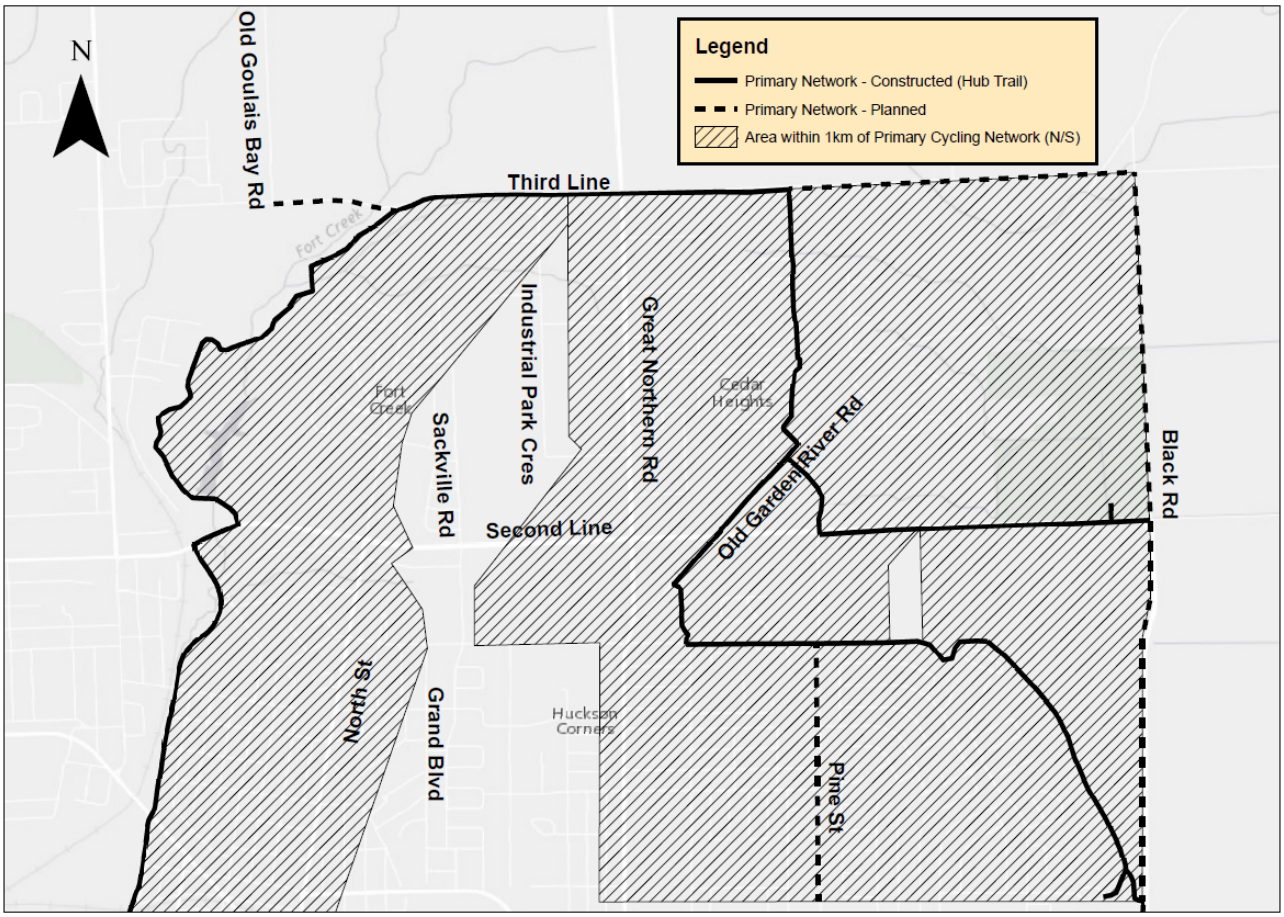

Figure 6: Connection to North-South Primary Cycling Network Within 1 km

Access to the north-south network is provided throughout the majority of the study area with the exception of a small area west of Great Northern Road. However, this area will be sufficiently supplied by the secondary network (when implemented) with routes along Industrial Park Crescent, North Street and Sackville Road (Figure 2). Based on the review, it is evident that the primary and secondary cycling networks provide sufficient north-south access across the study area.

4.1.2. East-West Cycling Network

Figure 7 illustrates the areas within the study area that have access within 1 kilometre to the east-west routes of the primary cycling network. The western quadrant of the study area does not have sufficient access to east-west routes as there are only three east-west routes within the study area; Third Line, Second Line and Northern Avenue. The routes along Second Line and Northern Avenue only provide access for the east side of the study area and are not continuous east-west links across the study area. Intermittent east-west secondary cycling network routes are provided on the west side of the study area (Figure 2). However, there remain gaps in the primary and secondary network as highlighted in Figure 8.

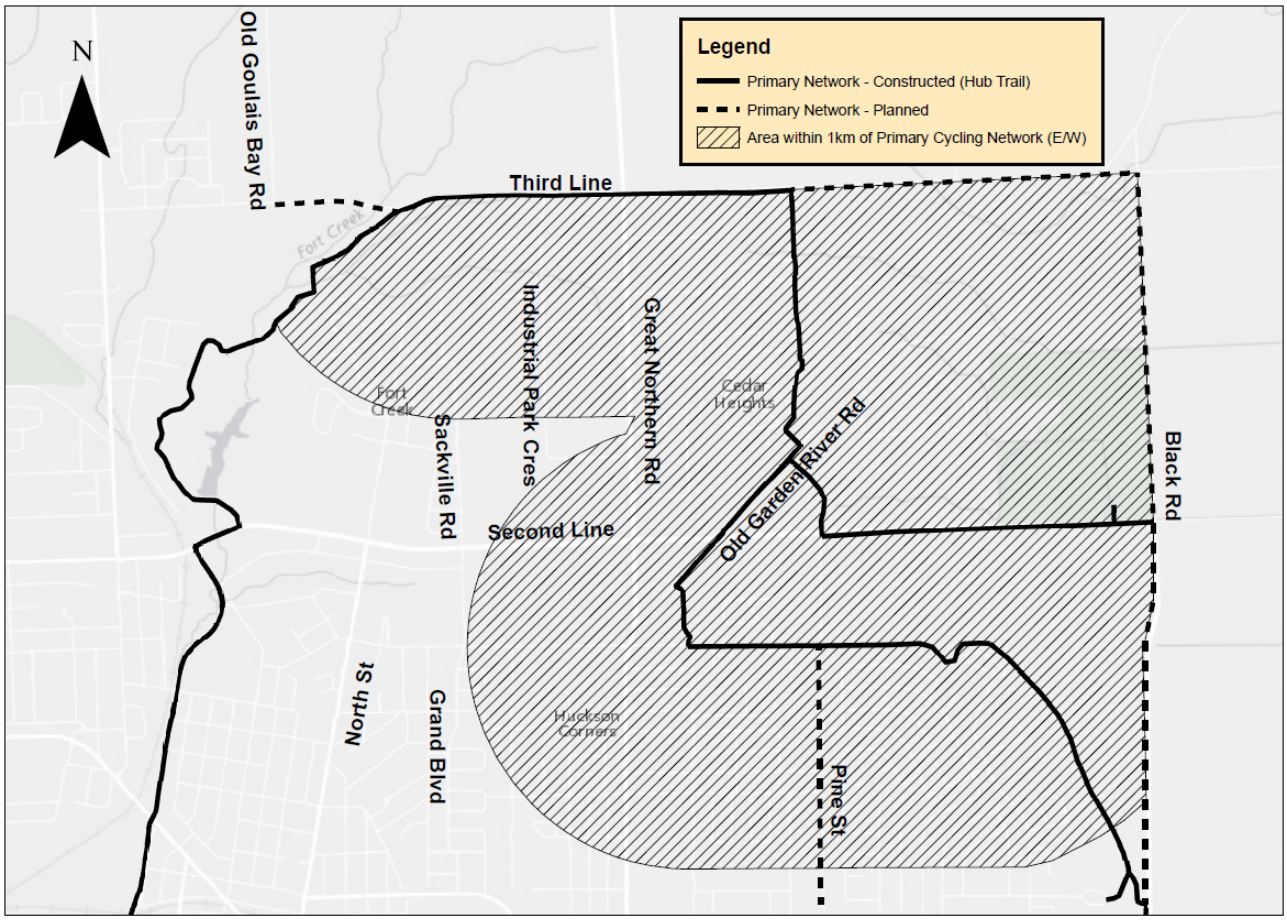

Figure 7: Connection to East-West Primary Cycling Network Within 1 km

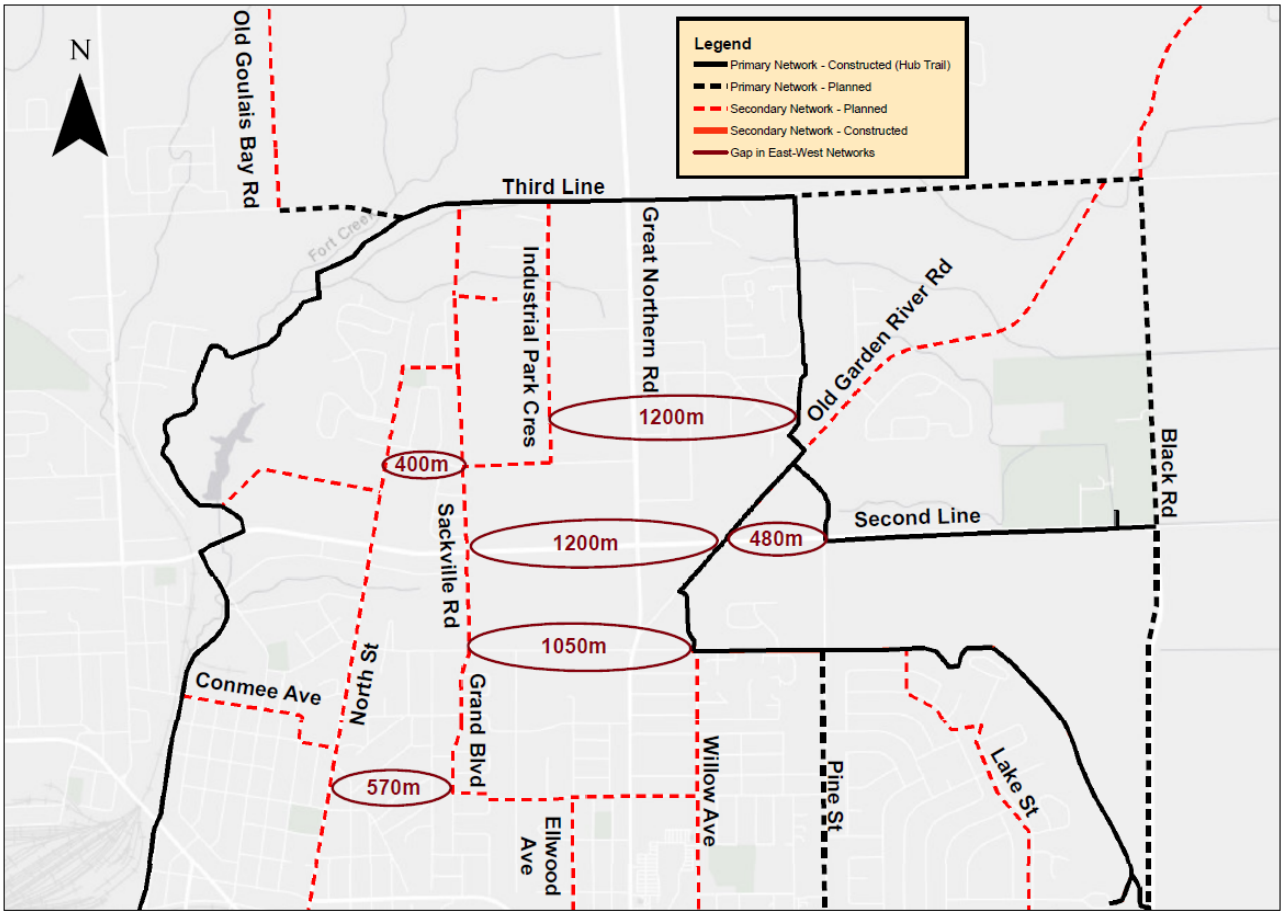

Figure 8: Gaps in the East-West Primary and Secondary Network

As discussed above, access to the secondary network is ideally provided within 300 to 500 metres. Between Sackville Road and Old Garden River Road, there is a 1.2 kilometre gap in the east-west network with the exception of a short off-road segment adjacent to Industrial Park Crescent. To the north, the closest east-west route is Third Line. To the south, the closest east-west route is Wawanosh Avenue. This presents a 2.8 kilometre gap from north to south between east-west routes in this portion of the study area.

With the planned Hub Trail and cycling facilities proposed in the CMP, there remains a lack of east-west primary and secondary cycling network in the vicinity of the Second Line and Great Northern Road intersection.

4.2. Alternative Solutions

Five alternative solutions have been reviewed to examine the possibility of providing additional bicycle routes in the vicinity of the Second Line and Great Northern Road intersection:

1. Second Line from Sackville Road to Old Garden River Road
2. Northern Avenue from North Street to Pine Street
3. Industrial Park Crescent to Old Garden River Road
4. Terrance Avenue from Great Northern Road to Old Garden River Road/Hub Trail
5. Walmart Entrance from Second Line to Industrial Park Crescent

The alternative solutions are illustrated in Figure 9.

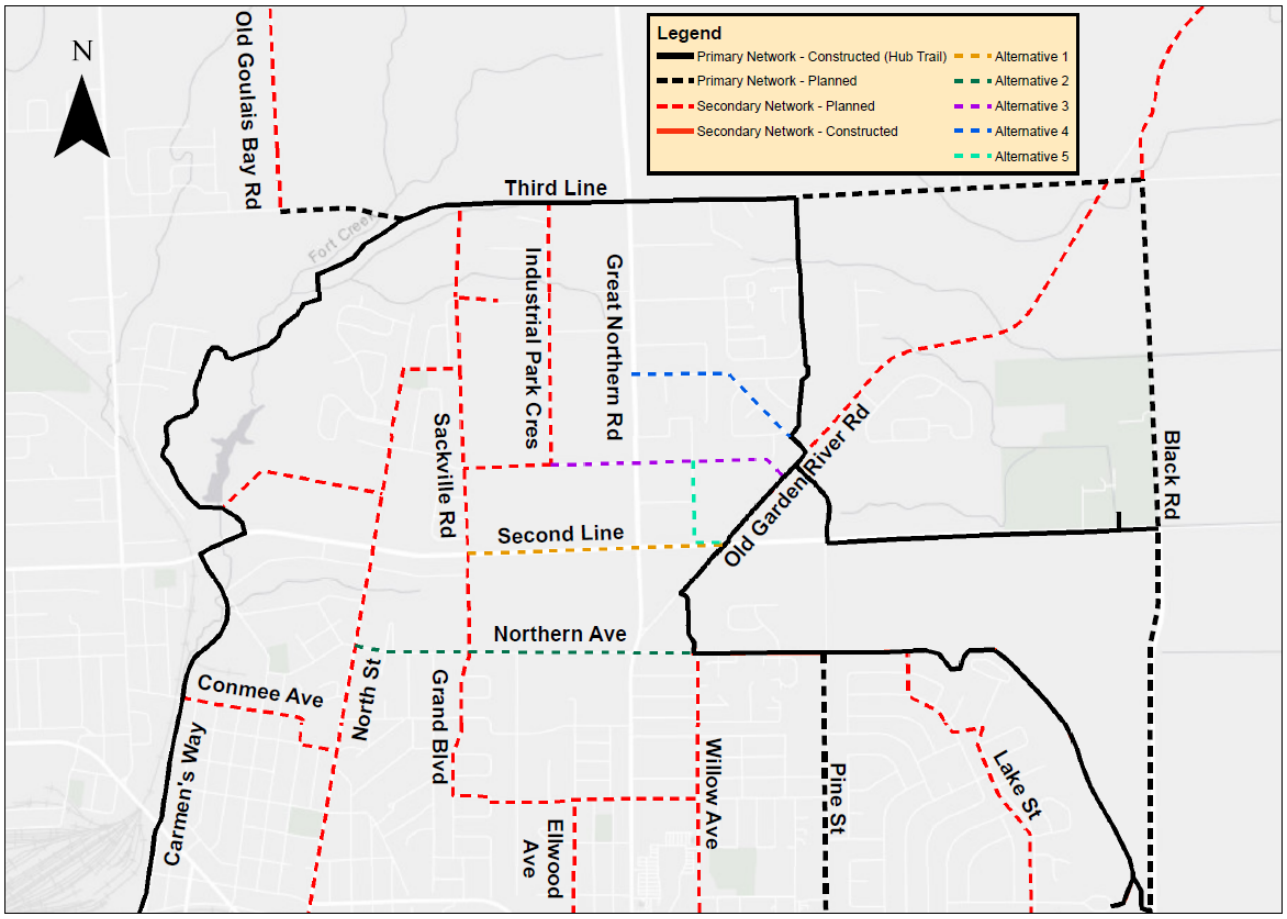

Figure 9: Alternative Solutions

4.2.1. Ontario Traffic Manual Book 18 Guidance

The Ontario Traffic Manual (OTM) Book 18 – Cycling Facilities, guides the process for the selection of appropriate bicycle facilities along a specific route. The Desirable Cycling Facility Pre-selection Nomograph was utilized to determine the desirable bicycle facility type for each alternative solution based on 85th percentile motor vehicle operating speed and average daily traffic volumes of the route as illustrated in Figure 10.

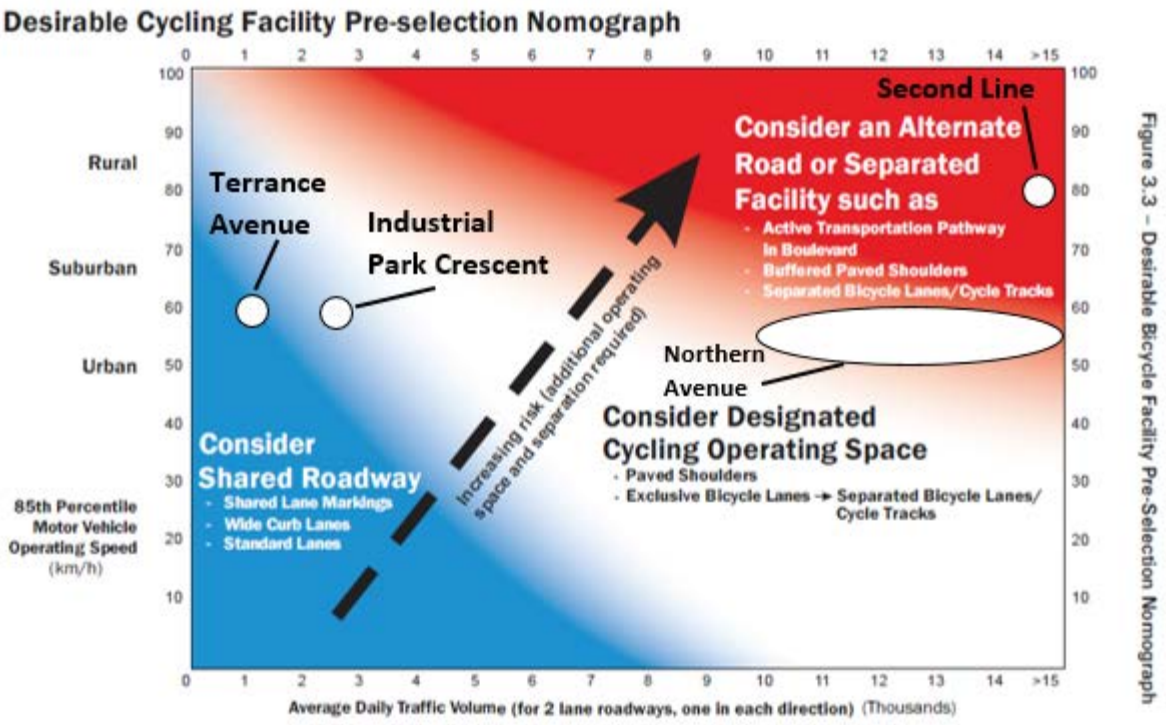

Figure 10: Desirable Cycling Facilities

Table 3 summarizes the desirable cycling facilities for each alternative solution route.

Table 3: Alternative Solution Traffic Data

Alternative Solution	Route	Estimated Average Annual Daily Traffic (AADT)[6]	95th Percentile Operating Speed[7]	Desirable Cycling Facility
1	Second Line	22,500	80 km/h	**Alternate Road or Separated Facility** • Active Transportation Pathway in Boulevard • Buffered Paved Shoulders • Separated Bicycle Lanes/Cycle Tracks
2	Northern Avenue	10,000 to 15,000	50 to 70 km/h	**Designated Cycling Operating Space** • Paved Shoulders • Exclusive Bicycle Lanes o Separated Cycle Lanes/ Cycle Track

[6] For Industrial Park Crescent and Terrance Avenue, AADT is based on the peak hour turning movement volumes at Great Northern Road.
[7] 95th percentile operating speeds are estimated based on posted/unposted speed.

3	Industrial Park Crescent	3,100[8]	60 km/h	**Designated Cycling Operating Space** • Paved Shoulders • Exclusive Bicycle Lanes o Separated Cycle Lanes/ Cycle Track
4	Terrance Avenue	1,340	60 km/h	**Shared Roadway** • Shared Lane Markings • Wide Shoulders • Standard Lanes
5	Walmart Entrance	N/A (private driveway)	N/A	**N/A**

4.2.2. Second Line

Feasibility Analysis

As illustrated in Figure 2, as part of the primary cycling network, the Hub Trail extends along Second Line from Pine Street to Black Road with the Trail crossing Second Line at Old Garden River Road. To the west, the nearest north-south portion of the trail initiates at Sackville Road. The implementation of bicycle facilities on Second Line from Old Garden River Road to Sackville Road would provide a direct east-west link for cyclists (Figure 11).

[8] If Industrial Park Crescent is extended southerly and the new shopping centre on the northwest corner of Great Northern Road/Second Line is developed, traffic volumes are anticipated to increase.

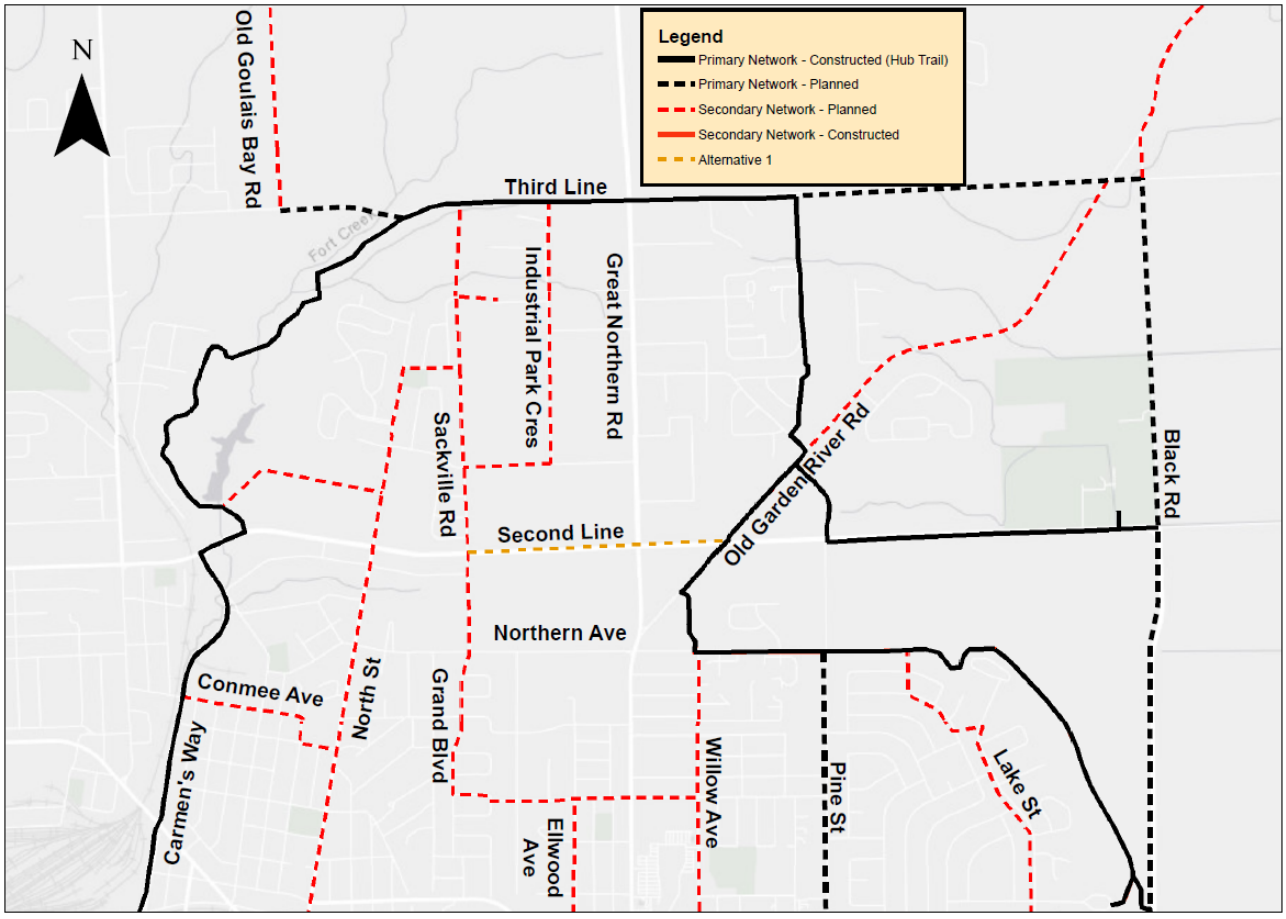

Figure 11: Alternative Solution #1

Along this section of Second Line, there are a number of accesses from developments on the north and south sides of the roadway. There are 24 intermittent accesses from the north side of Second Line and 22 accesses from the south side of the road as illustrated in Figure 12.

Advantages and Disadvantages

Advantages of this solution include the following:

- Second Line can provide an east-west connection across the study area providing access to the east-west cycling network within 1 kilometre for the area north and south of Second Line that currently lacks access.

Disadvantages associated with the solution include the following:

- Due to this high frequency of driveways, a multi-use pathway or off-road facilitates, as recommended by the cycling facilities nomograph, are not appropriate for Second Line as there is a high risk for conflict with vehicles at driveways.
- Only on-road separated bicycle lanes are an appropriate option such as the facilities identified in Figure 13. The implementation of a physical barrier system would require the widening of Second Line at a great cost.
- Property on all four corners of the intersection of Great Northern Road/Second Line is fully built out and implementing cycling facilities would result in significant impacts including property acquisition and likely site contamination issues.

Figure 12: Second Line Driveway Access

Figure 13: Separated Bicycle Lanes Example

(*Top Left Source: OTM Book 18, Top Right Source: https:// www.bicycling.com, Bottom Source: https://bikingtoronto.com*)

Conclusion

While implementation of a separated bicycle facility on Second Line would have great merit from a network continuity perspective, unless there is a total reconstruction of the road together with property acquisition and ideally a consolidation of driveways, it is not considered feasible at this time.

A recent proposal to extend a boulevard based trail on the south side of Second Line between Great Northern Road and Old Garden River Road is similarly not feasible for the reasons stated above.

4.2.3. Northern Avenue

Feasibility Analysis

As part of the recent Northern Avenue Class Environmental Assessment, lane reassignment in the form of a road diet is proposed on Northern Avenue. The road diet includes the removal of one travel lane in each direction and the introduction of a centre two-way-left-turn lane. The remaining pavement width is proposed to be reallocated to other uses including bicycle lanes. With the implementation of the road diet, two exclusive bicycle lanes, one in each direction varying from 1.2m to 1.5 m, are proposed along Northern Avenue from North Street to Pine Street. The proposed route along Northern Avenue is illustrated in Figure 14.

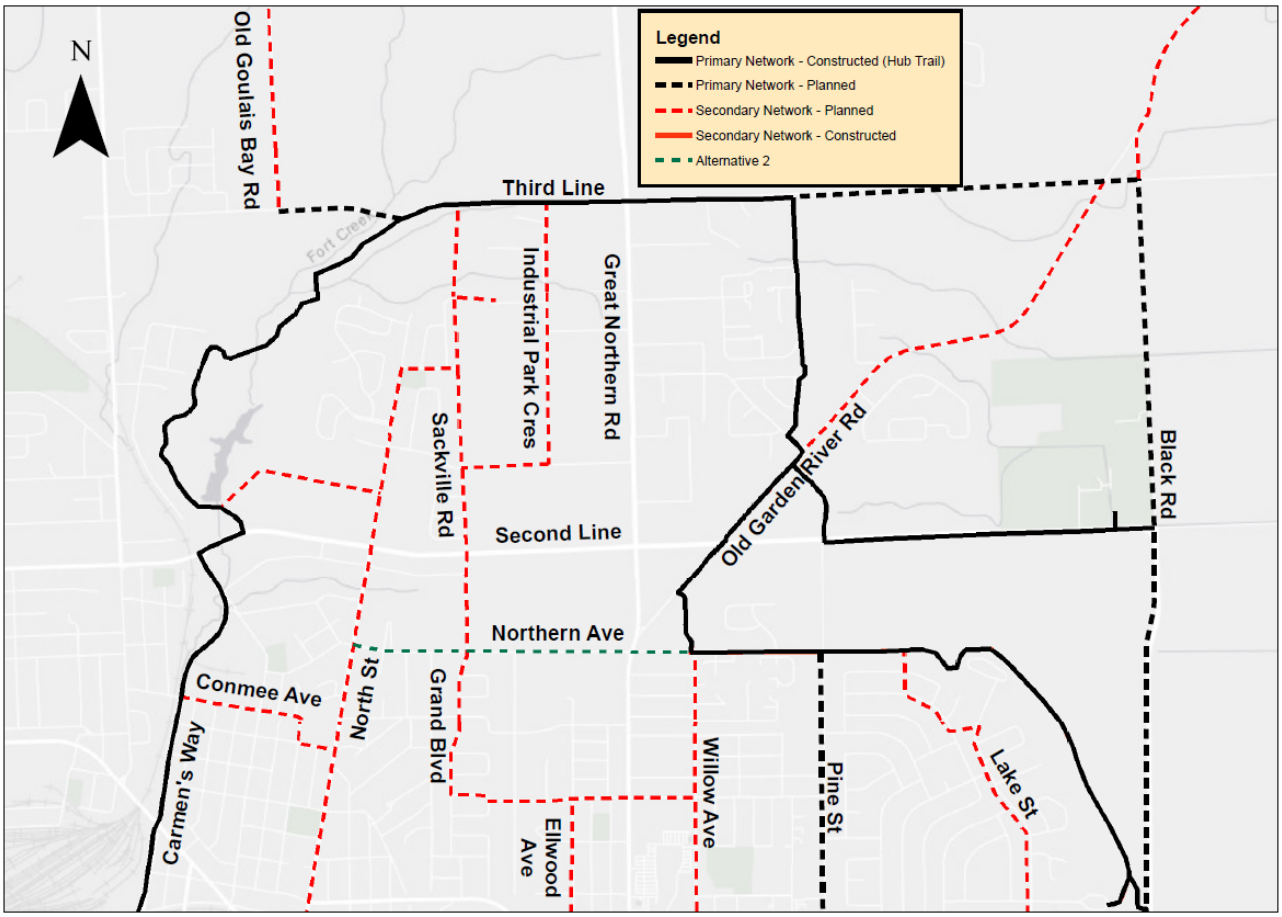

Figure 14: Alternative Solution #2

The proposed cross-sections from the study are illustrated in Figure 15 through Figure 17.

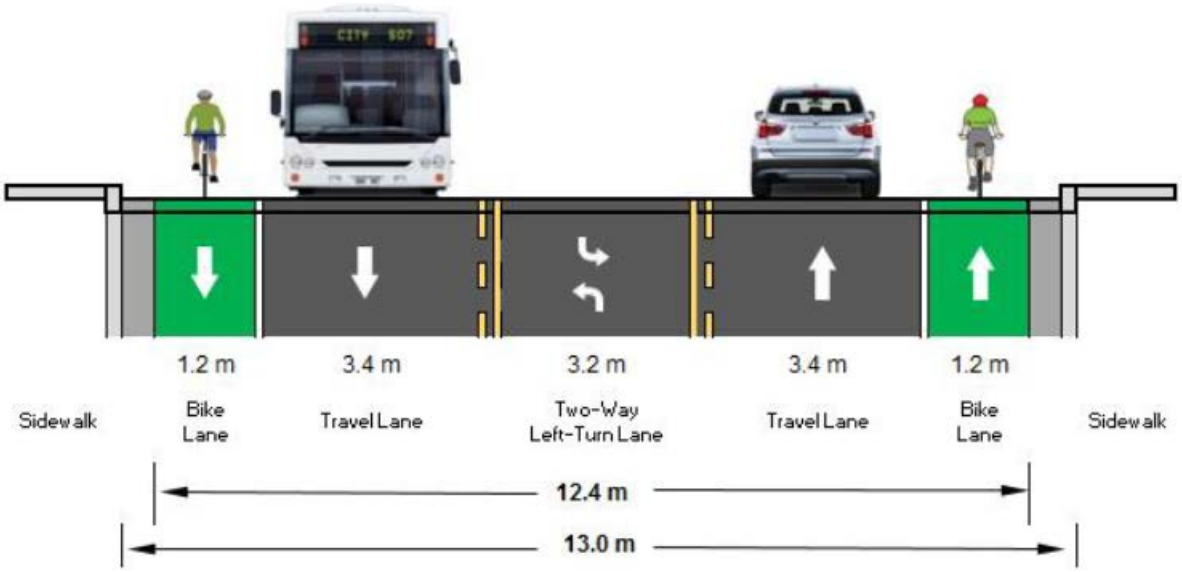

Figure 15: Proposed Road Diet Configuration between North Street and Sackville Road

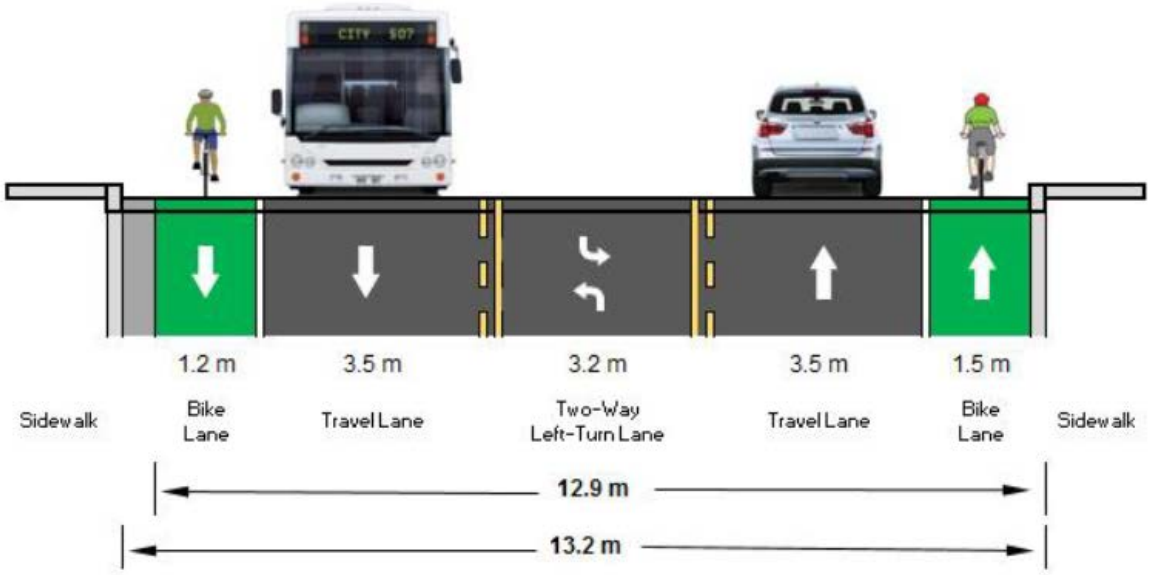

Figure 16: Proposed Configuration between Sackville Road and Great Northern Road

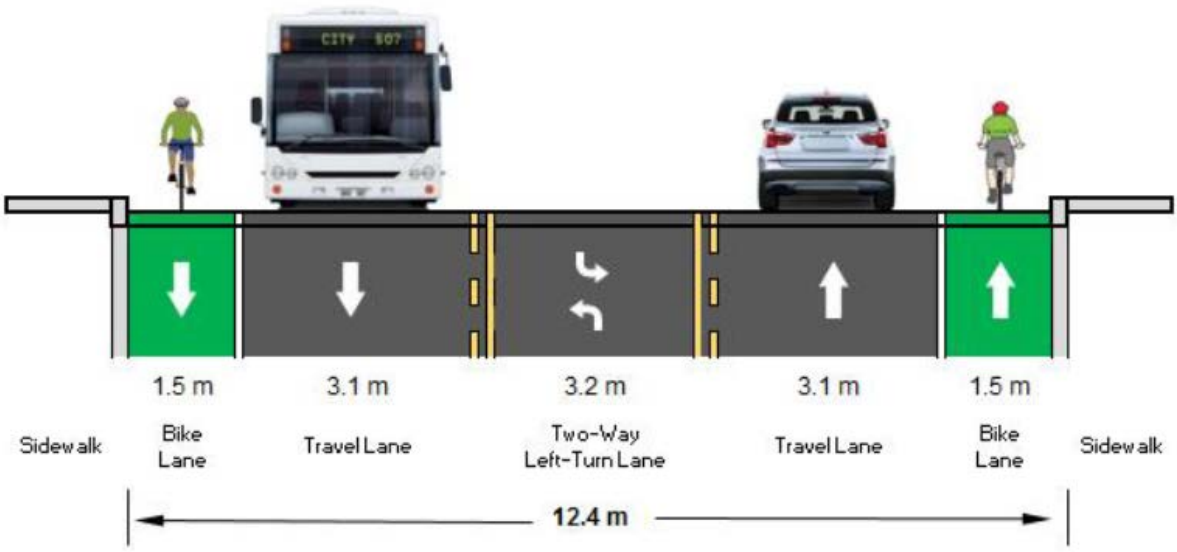

Figure 17: Proposed Road Diet Configuration between Great Northern Road and Pine Street

Advantages and Disadvantages

Advantages of this solution include the following:

- The implementation of bicycle lanes along Northern Avenue is being recommended as part of a separate ongoing study.
- Bicycle lanes from Sackville Road to Pine Street will provide an east-west connection to the cycling network within 1 kilometre to the north and south.
- No additional property is required if the road diet and bicycle lanes are implemented as part of one assignment.

Disadvantages associated with the solution include the following:

- Ideally, the on-road bicycle lanes would be wider than the 1.2 to 1.5 metres provided; however, the space is not available.

Conclusion

Bicycle lanes on Northern Avenue will provide the missing east-west link in the City's cycling network. These improvements are currently being pursued by the City.

4.2.4. Industrial Park Crescent

Feasibility Analysis

Under existing conditions, Industrial Park Crescent has 1.8 metre gravel shoulders on both sides of the road along its length. OTM Book 18 indicates that the suggested minimum lane width for bicycle lanes is 1.5 metres and the desired width is 1.8 metres. The existing cross-section of Industrial Park Crescent has sufficient space to support bicycle lanes on both sides on the road. To the east of Great Northern Road, a multi-use trail could be implemented through the commercial complex and wooded area to connect with the Hub Trail network on Old Garden River Road. A potential alignment for on-road bicycle lanes and an off-road trail are illustrated in Figure 18.

It should be noted that a future southerly extension of Industrial Park Crescent to Second Line is being considered. In this case, existing sections of Industrial Park Crescent may have to be reconstructed; at which time other cycling options may come available (e.g. urban cross-section).

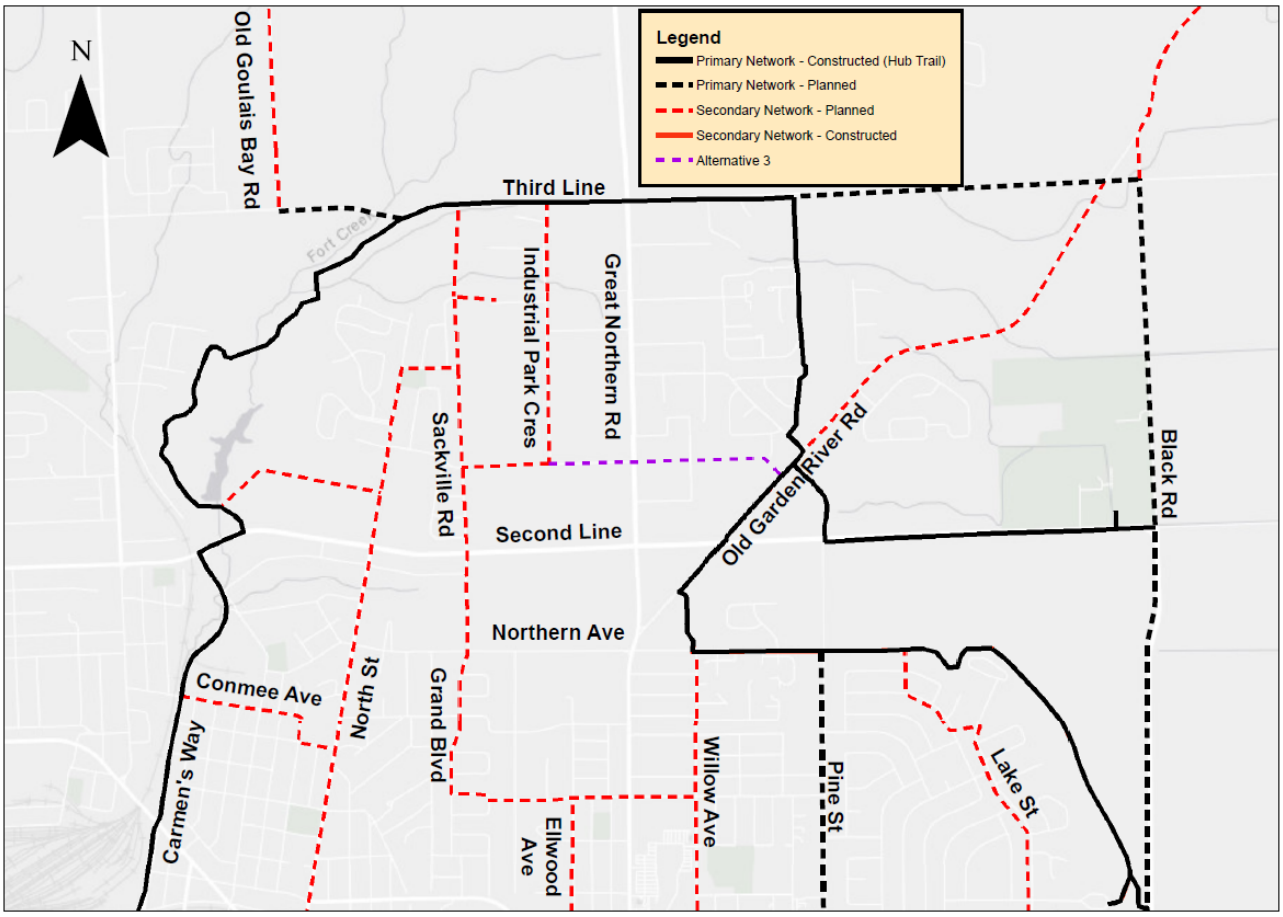

Figure 18: Alternative Solution #3

Advantages and Disadvantages

Advantages of this solution include the following:

- Cycling facilities can be implemented without widening of the roadway.
- The proposed route will provide an east-west connection to the north-south Hub Trail route and from the commercial/industrial area adjacent to Great Northern Road.
- The proposed route will provide an east-west connection to the cycling network within 1 kilometre to the north and south.
- If vehicle speeds are less than 40 km/h, a “share the road” designation may be adequate.

Disadvantages associated with the solution include the following:

- Cycling facilities will impact private property east of Great Northern Road.
- Off-road cycling facilities will require property through the wooded area and will impact two residential properties if a connection with Old Garden River Road is established.
- Requires a traffic signal at the intersection of Great Northern Road and Industrial Park Crescent.

Conclusion

An east-west connection between the Hub Trail and Industrial Park Crescent would provide access to the commercial area adjacent to Great Northern Road and is worthy of further consideration.

4.2.5. Terrance Avenue

Feasibility Analysis

The implementation of bicycle facilities on Terrance Avenue would provide a connection from Great Northern Road to the Hub Trail as shown in Figure 19. However, cyclists would be required to travel along Great Northern Road, which does not include cycling facilities, in order to connect to the cycling network and Hub Trail. The high vehicular speeds and volume on Great Northern Road create a high-risk situation for cyclists sharing the roadway with vehicles.

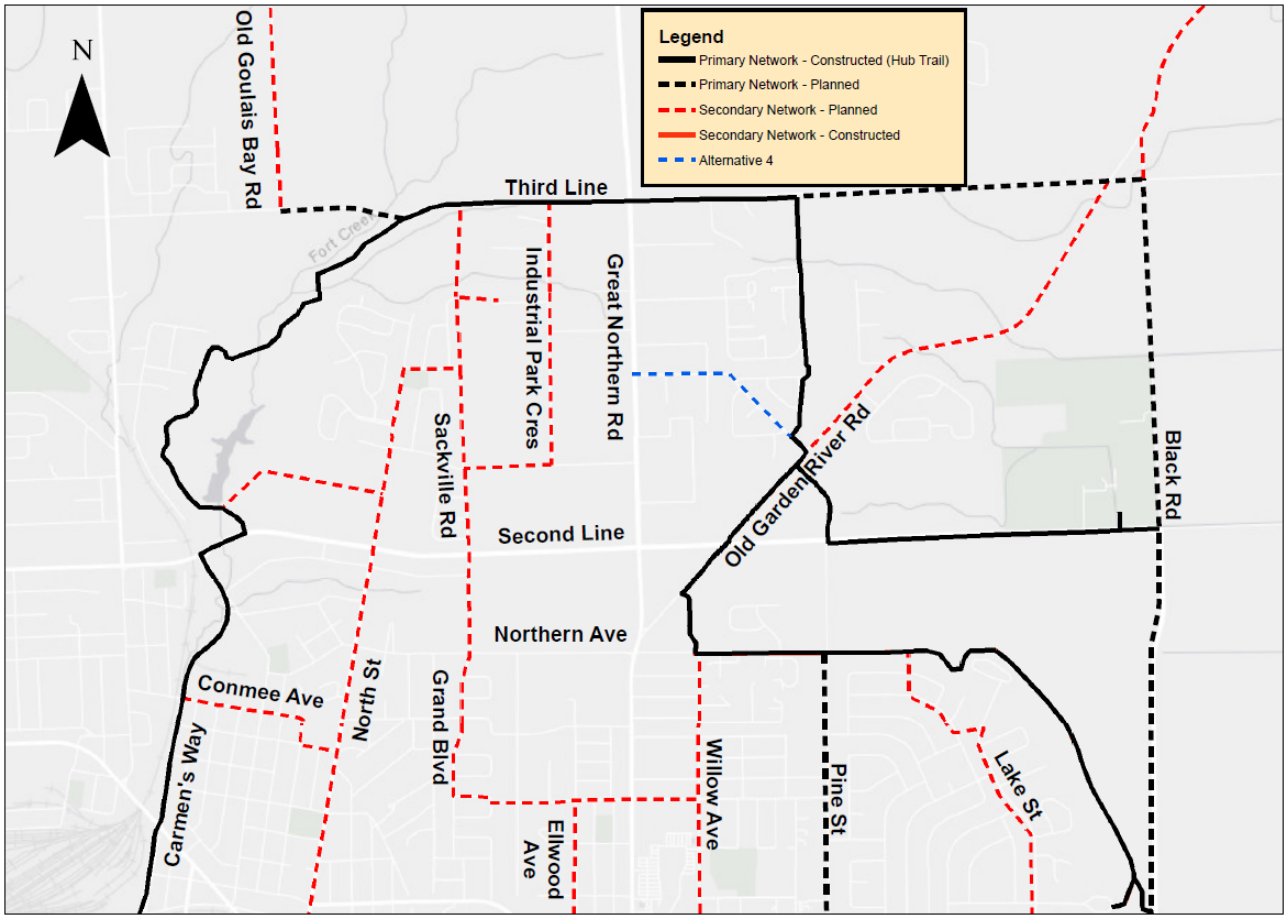

Figure 19: Potential Terrance Avenue Cycling Facilities

Terrance Avenue currently has narrow gravel shoulders with frequent driveway accesses along its length as illustrated in Figure 20. This cross-section does not support a multi-use path or bicycle lanes, as there is a high risk for conflict with vehicles at driveways. OTM Book 18 recommends a shared roadway along Terrance Avenue such as wide shoulders or standard lanes. In order to widen and pave the shoulders along Terrance Avenue to accommodate bicycles, property adjacent to the roadway would be required. Although cycling facilities on Terrance Avenue would provide a new connection to the cycling network, Terrance Avenue is recommended to remain a shared roadway.

Figure 20: Terrance Avenue Cross-Section

Advantages and Disadvantages

Advantages of this solution include the following:

- Cycling facilities on Terrance Avenue would connect to the proposed Hub Trail network in the east.

Disadvantages associated with the solution include the following:

- The east-west connection to the cycling network would be discontinuous and would not provide a direct connection between north-south routes.
- Terrance Avenue cycling facilities would require cyclists to utilize Great Northern Road, which does not provide cycling facilities.
- Wider roadway lanes cannot be implemented without widening of the roadway.

Conclusion

The provision of cycling facilities on Terrance Avenue are not worthy of further consideration due to the numerous disadvantages discussed above.

4.2.6. Walmart Entrance

Feasibility Analysis

As illustrated in Figure 21 and discussed in Section 4.2.2, as part of the primary cycling network, the Hub Trail extends along Second Line to Pine Street in the west and crosses Second Line at Old Garden River Road. Cycling facilities along the short east-west segment on the north side of Second Line between Old Garden River Road and the Walmart entrance together with a northerly extension to Industrial Park Crescent could provide access from Second Line to the commercial area adjacent to Great Northern Road for cyclists. This segment could be built in line with the Walmart entrance. If combined with Alternative Solution #3 – Industrial Park Crescent, this option would provide a connection from Second Line to Great Northern Road, allowing cyclists to avoid the Great Northern Road/Second Line intersection.

Consistent with the recommendations of OTM (Section 4.2.1), a multi-use path on the north side of Second Line would be implemented. Adjacent to the Walmart entrance, a multi-use path would be provided on the east side where feasible and shared facilities would be implemented in constrained locations such as across the entrance of Walmart.

Figure 21: Alternative Solution #5

Advantages and Disadvantages

Advantages of this solution include the following:

- If combined with Alternative Solution #3 – Industrial Park Crescent, cyclists can access the commercial area adjacent to Great Northern Road from Second Line without having to pass through the Great Northern Road/Second Line intersection.
- Provides access to the Hub Trail on Old Garden River Road from the commercial area adjacent to Great Northern Road.

Disadvantages associated with the solution include the following:

- Requires coordination with commercial development for use of property.

Conclusion

The provision of cycling facilities on Second Line west of Old Garden River Road extending northerly to Industrial Park Crescent (adjacent to the Walmart entrance) is worthy of further consideration if provided in conjunction with Alternative Solution #3 – Industrial Park Crescent.

4.3. Cycling Network Conclusions

While Second Line would provide good east-west continuity in the cycling network, cycling facilities along the length of Second Line were found to be infeasible at this time. The recommended additions to the bicycle network are illustrated in Figure 22 and include the following:

- Bicycle lanes on Northern Avenue from North Street to Pine Street (Alternative Solution #2) (currently being pursued by the City)
- Bicycle lanes on Industrial Park Crescent to the Hub Trail (Alternative Solution #3). A multi-use trail could be implemented to the east of Great Northern Road, through the commercial complex and wooded area to connect with the Hub Trail network on Old Garden River Road.
- A multi-use trail along the north side of Second Line between Old Garden River Road and the Walmart Entrance and with cycling facilities continuing northerly adjacent to the Walmart entrance to Industrial Park Crescent (Alternative Solution #5). Adjacent to the Walmart entrance, a multi-use path will be implemented where feasible and in constrained locations such as across the entrance of Walmart, shared facilities will be provided.
- A connection from Industrial Park Crescent to Sackville Road (exact alignment to be confirmed).
- A connection from the existing Walmart entrance of Great Northern Road to Industrial Park Crescent if a traffic signal is implemented at the Walmart entrance (to be confirmed).

The routes discussed above are recommended for implementation within 2 years in order to serve the commercial areas that are continuing to develop around the Great Northern Road/Second Line intersection.

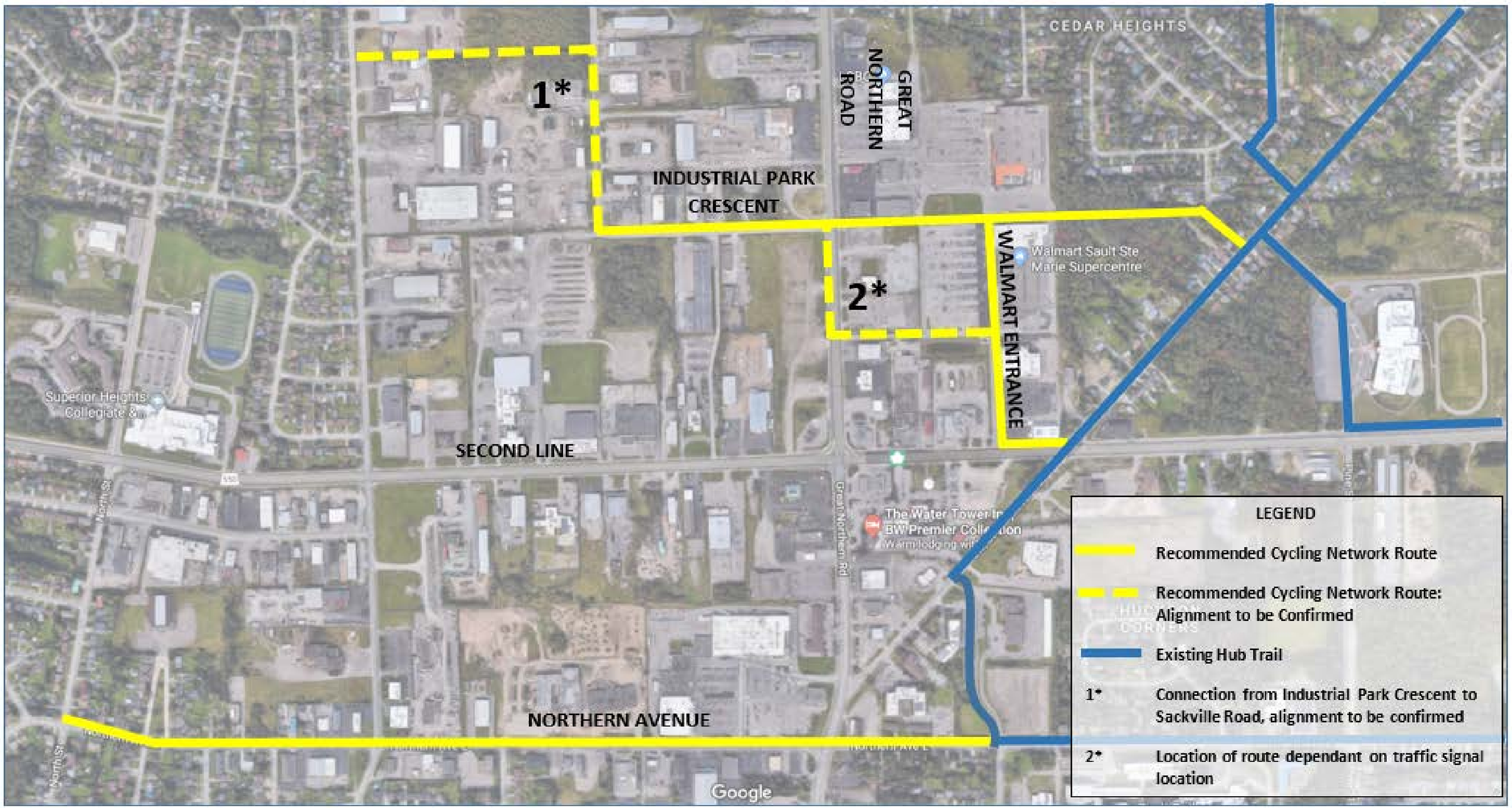

Figure 22: Recommended Cycling Network Improvements

5. Pedestrian Network

5.1. Needs and Justification

As identified in Figure 3 (Section 2.2), the City currently has an existing sidewalk network that provides access to the majority of the commercial area surrounding the Great Northern Road/ Second Line intersection. However, a gap in the pedestrian network exists on the south-east corner of the intersection.

Sidewalks are provided on both sides of Second Line to the west of the Great Northern Road/Second Line intersection however, a sidewalk is only provided on the north side to the east of the intersection. The lack of a sidewalk on the south side of Second Line at this location creates a gap in the pedestrian network as pedestrians travelling north on Old Garden River Road and west on Second Line to the intersection of Great Northern Road/Second Line must cross to the north side of Second Line (Figure 23). There is a high volume of pedestrian travelling along this route including elderly individuals with assistive equipment (i.e. wheelchairs and motorized scooters) travelling from the retirement community on Old Garden River Road destined to the commercial areas on the north and south sides of Second Line.

Figure 23: Gap in Pedestrian Network

A sidewalk is provided on Old Garden River Road and terminates approximately 250m northeast of the intersection of Great Northern Road/Old Garden River Road. At this termination, the Hub Trail begins and paved shoulders are provided for pedestrian and cyclist use. The Hub Trail continues northerly until Terrance Avenue.

5.2. Pedestrian Network Improvements

The following improvements to the pedestrian network are recommended and are illustrated in Figure 22:

Paved Shoulder (Hub Trail)

- As discussed in Section 3, the FHWA *Small Town and Rural Multimodal Networks* (2016) manual provides guidance for the implementation of accessible and safe pedestrian facilities. The paved shoulders on Old Garden River Road which are designated as the Hub Trail appear to be approximately 2.0m in width.
- In the City of Sault Ste. Marie Transportation Master Plan (2015), Old Garden River Road is designated as an urban collector. Therefore, based on the FHWA guidance, the 2.0m width is appropriate to accommodate cyclists and pedestrians on the paved shoulder.

- However, to accommodate the high traffic of individuals with additional accessibility requirements, the City may consider widening the paved shoulder to provide a buffer and additional travel space for assistive equipment.

Sidewalks

- AODA requirements indicate that new sidewalks should be a minimum of 1.5m wide. Ideally, in areas of high pedestrian traffic such as the commercial area adjacent to Great Northern Road, sidewalks would be wider to allow for a buffer between pedestrians and vehicular traffic and to accommodate assistive equipment.
- In locations where the sidewalk is adjacent to a splash pad, the recommended minimum sidewalk width is 1.5m with an ideal width of 1.8m.
- In locations where space is limited and the sidewalk is located directly adjacent to the back of curb (no splash pad), the recommended minimum sidewalk width is 1.8m with an ideal width of 2.0m.
- The City should provide a sidewalk on the south side of Second Line east of the intersection of Great Northern Road/Second Line to improve pedestrian accessibility to the intersection. If implemented, as suggested above, the recommended minimum sidewalk width is 1.8m from the curb face with an ideal width of 2.0m to accommodate assistive equipment.
- When new roads are constructed (as discussed in the CIMA *Great Northern Road/Second Line Area Problems, Opportunities and Potential Solutions* report), consideration should be given to implementing active transportation elements including bicycle lanes, sidewalks and/or multi-use trails.
- When roads are reconstructed or rehabilitated, the City may consider upgrading the 1.2m sidewalks to 1.5m-1.8m.

It is recommended that the improvements in the area adjacent to Great Northern Road (Figure 24) be implemented within two years to serve the ongoing commercial developments in the area. Improvements to the pedestrian facilities adjacent to Old Garden River Road are recommended within 5 years and the remaining improvements are recommended for implementation within a 10-year horizon. These improvements can potentially be coordinated with the rehabilitation of the roadway if possible.

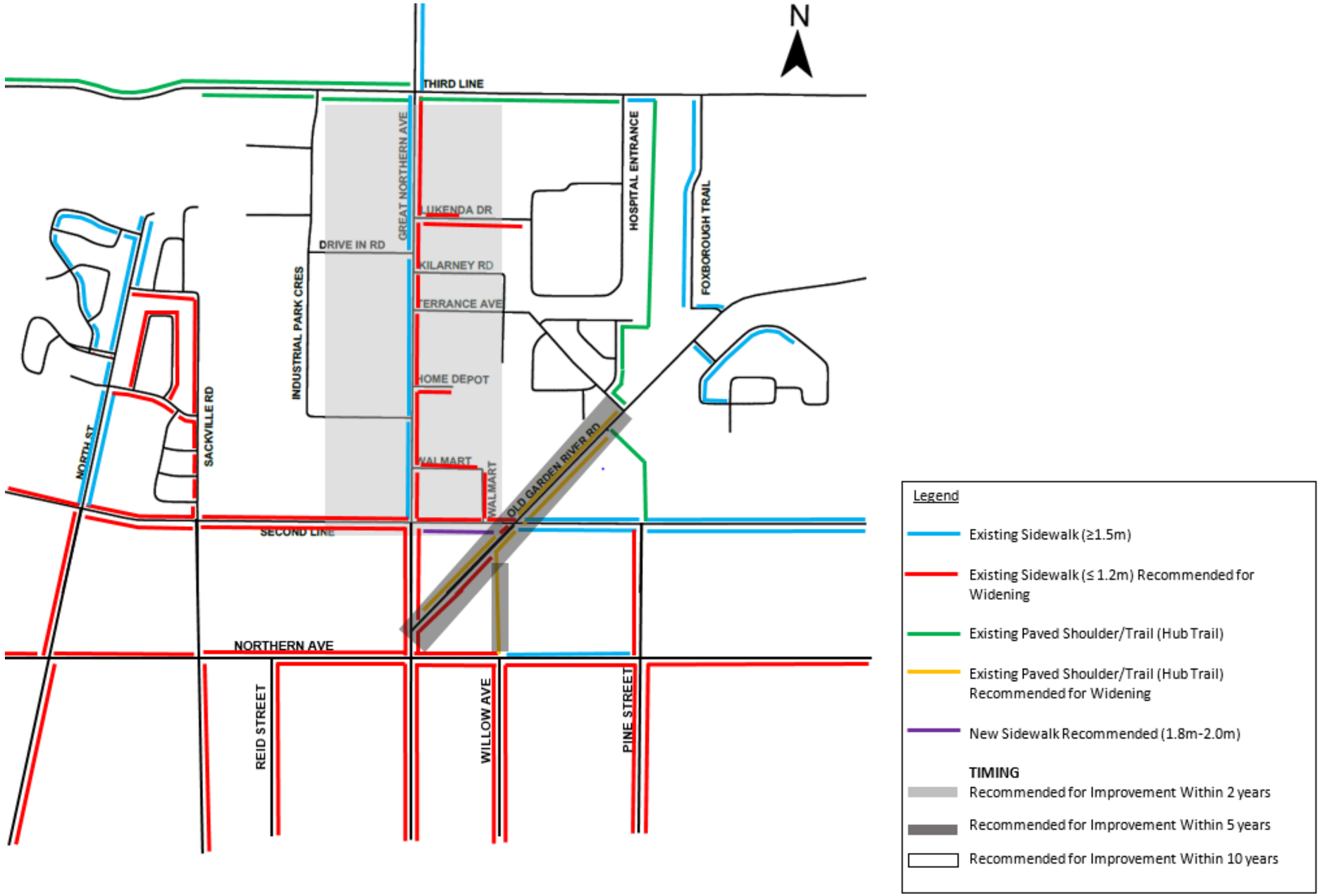

Figure 24: Recommended Pedestrian Network Improvements

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