Appendix 1

NEIGHBOURHOOD BIKEWAYS PROJECT

DUDLEY STREET CORRIDOR

November 10, 2020

City of Saskatoon

URBAN SYSTEMS

PREPARED FOR:

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1.0 INTRODUCTION

The City of Saskatoon (City) is committed to promoting active transportation and providing transportation choices that are safe and comfortable for people of all ages and abilities year-round. As part of the City's 2016 Active Transportation Plan (AT Plan), the City has committed to the following action item under the theme of connectivity: **"Develop a complete and connected bicycle network for all ages and abilities."**

To help work towards achieving this action item, the City undertook this Neighbourhood Bikeways Project to develop conceptual designs for active transportation facilities on the following four corridors:

- **3rd Avenue North:** From 25th Street East to 2nd Avenue North;
- **29th or 31st Street West:** From the Circle Drive underpasses to Idylwyld Drive North;
- **14th Street East:** From Saskatchewan Crescent East to Cumberland Avenue South; and
- **Dudley Street:** From Dawes Avenue to Spadina Crescent West.

In addition to these four corridors, the City is also conducting a separate study for improvements on Victoria Avenue from 8th Street East to Taylor Street East. These corridors have been selected for review because they provide important connections to existing or future walking and cycling facilities or were identified in the AT Plan. The Neighbourhood Bikeways Project will help identify measures to provide more travel choices and improve safety, accessibility, and connectivity for each of these corridors, including the evaluation and design of walking and cycling facility improvements for each corridor.

These corridors were identified as high priorities due to the opportunity to coordinate infrastructure improvements with other work scheduled in the next one to three years. While these corridors vary in context, location, and length, they all share the possibility of encouraging cycling by improving the connectivity between residential areas, the established cycling routes on the Meewasin Trail network, and destination areas in the vicinity of Idylwyld Drive and the Central Business District (CBD). The corridors are intended to be designed as all ages and abilities (AAA) cycling facilities to ensure they are comfortable for all users, regardless of age or ability.

This report summarizes the existing conditions and recommended concept for the **Dudley Street** corridor.

1.1 PROJECT GOALS

1. To improve pedestrian and cycling connections between residential areas along the proposed routes and their neighbouring areas;
2. To improve safety and mobility for all road users by making the corridors more bicycle and pedestrian friendly;
3. To connect to existing pathways, and future cycling corridors effectively; and
4. To coordinate improvements with other upcoming infrastructure projects scheduled along the proposed corridors.

1.2 STUDY PROCESS

The study was developed through five phases, with two opportunities for public input. Between February and October 2020, as shown in **Figure 1.**

Figure 1. Study Process

1.3 REPORT OVERVIEW

This report summarizes the overall study process and recommendations for the Dudley Street corridor and includes the following sections:

- **Section 1 – Introduction** provides an overview of the project, including project goals, study process, and report overview;
- **Section 2 – Corridor Review** summarizes existing conditions along the corridor, including the route context, policy context, road network characteristics, pedestrian facilities, bicycle facilities, transit services and facilities, collisions, and the results of a Multi-Modal Level of Service (MMLOS) analysis;
- **Section 3 – Phase 1 Engagement Summary** provides an overview of the Phase 1 Engagement process and input received;
- **Section 4 – Recommended Design** summarizes the key features of the recommended conceptual design;
- **Section 5 – Phase 2 Engagement Summary** provides an overview of the Phase 2 Engagement process and input received; and
- **Section 6 – Closing and Next Steps** provides a summary of the report and next steps for the City to advance this project to detailed design and construction.

2.0 CORRIDOR REVIEW

This section summarizes existing conditions for the Dudley Street corridor, including the following characteristics:

- **Route context**, including a general description of the corridor and neighbourhood context, adjacent land uses, connections to existing cycling routes, and nearby infrastructure and destinations;
- **Policy context**, including background information from the AT Plan as well as applicable Local Area Plans (LAPs), Neighbourhood Traffic Reviews (NTRs), and the Saskatoon Cycling Guide;
- **Road network characteristics**, including the existing roadway cross-section, road network classification, traffic volumes and speeds, traffic operational analysis, and parking supply and utilization;
- **Pedestrian facilities**, including existing sidewalks, crossing treatments, and other pedestrian amenities such as curb ramps;
- **Bicycle facilities**, including existing on-street and off-street bicycle routes;
- **Transit services and facilities**, including existing bus routes and bus stops; and
- **Collisions,** including a review of collision data between 2014 and 2018.

2.1 ROUTE CONTEXT

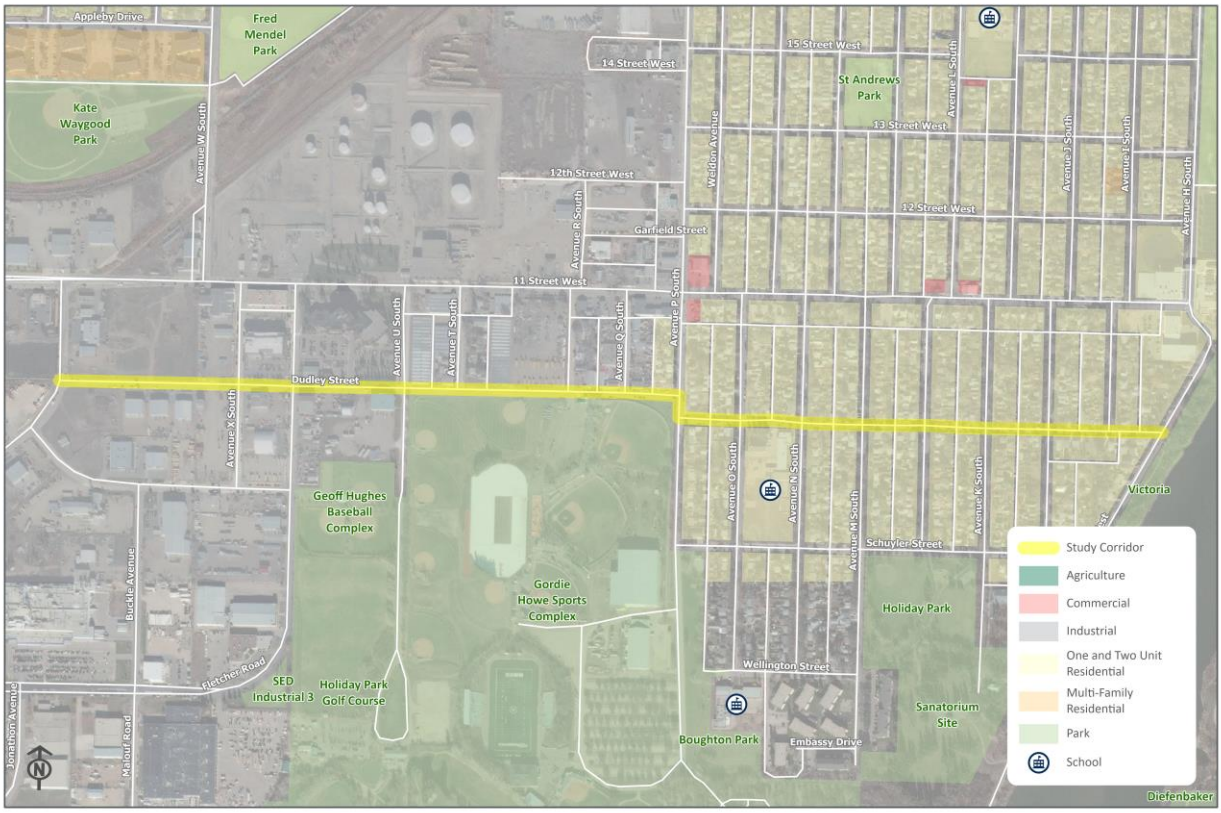
2.1.1 ROUTE DESCRIPTION AND NEIGHBOURHOOD CONTEXT

The Dudley Street corridor extends approximately 18 blocks for 1.9 kilometres between Dawes Avenue in the west and Spadina Crescent West in the east. Dudley Street begins in the the Southwest Industrial area in the west and connects to the neighbourhood of Holiday Park in the east . This corridor is notable as being the only one of the five studied corridors which provides access to an industrial area. The route provides access to the Meewasin Trail in the east and the western half runs adjacent to the Gordie Howe Management Area, which includes a variety of recreational and athletics attractions. The corridor connects to an existing multi-use pathway on the west side of Dawes Avenue. This path provides access to multi-use pathways on the north side of 11th Street West.

2.1.2 ADJACENT LAND USES

The eastern half of this corridor, from Spadina Crescent West to Avenue P South, consists exclusively of single-family residential land uses in Holiday Park. The western half of this corridor passes through light industrial zones. The route is also within two blocks of the recreational land uses of Gordie Howe and the heavy industrial uses north of 11th Street West. Small pockets of commercial land uses can also be found on 11th Street West one block from this corridor. The eastern terminus of this corridor ties into the recreational green spaces along the South Saskatchewan River Valley. **Figure 2** shows the land uses around the Dudley Street Corridor.

Figure 2. Dudley Street: Adjacent Land Uses



2.1.3 NEARBY INFRASTRUCTURE AND DESTINATIONS

The following notable destinations and infrastructure have been identified within two blocks of the Dudley Street Corridor:

- **Multi-use paths** on west side of Dawes Avenue with connections to additional paths on the north side of 11th Street West west of Avenue W South
- **Several parks and recreational destinations,** including:
    - Meewasin Trail
    - Holiday Park
    - Gordie Howe Management Lands (includes skating oval, golf course, sports fields, etc.)
- **St. John School**; and
- **Industrial employment areas**.

2.2 BACKGROUND INFORMATION

2.2.1 ACTIVE TRANSPORTATION PLAN

The AT Plan contains the following information relevant to the Dudley Street corridor:

- Dudley Street was not identified for a proposed AAA bicycle route. Instead, 11th Street West (located one block to the north) was identified as the preferred route.
- The AT Plan shows a new river crossing at 11th Street West connecting to Nutana and Buena Vista on the east side of the river.

As part of the AT Plan, a city-wide Level of Traffic Stress (LTS) analysis was conducted. LTS is a Geographic Information System (GIS) analysis that assesses the appropriateness and comfort of road infrastructure based on a cyclist's level of stress. LTS classifies road segments based on four levels of traffic stress. LTS 1 is the most comfortable where children can play, LTS 2 is tolerated by the adult population, LTS 3 is tolerated by cyclists who are 'enthused and confident' and LTS 4 is tolerated only by those in the 'strong and fearless' cyclist category.

The AT Plan identified the Dudley Street corridor as having a Level of Traffic Stress (LTS) of 2 for most of its length with a small pocket of LTS 1 between Avenue N and Avenue P. This indicates that adults will tolerate vehicle traffic throughout the route and that the portion of the corridor between Avenue N and Avenue P is currently comfortable for children.

The AT Plan identified the eastern half of the corridor in Holiday Park as having a high equity need for additional active transportation infrastructure. This indicates that active transportation investments in Holiday Park are needed and will likely be utilized effectively.

2.2.2 LOCAL AREA PLANS

Holiday Park does not have a LAP.

2.2.3 NEIGHBOURHOOD TRAFFIC REVIEW

The Holiday Park NTR is currently underway. However, some relevant observations can be drawn from the public engagement work which has been completed to date. The following findings were drawn from the public engagement presentation and minutes from October 29, 2019:

- Residents expressed concerns with speeding and shortcutting traffic on 11th Street West and Dudley Street;
- Residents suggested stop signs at Dudley Street and Avenue M South;
- Residents expressed concerns with speeding in the school zone along Dudley Street; and
- Many missing sidewalks on Dudley Street were noted by residents between Avenue M South and Spadina Crescent West.

2.2.4 SASKATOON CYCLING GUIDE

Saskatoon's Cycling Guide does not label this corridor as a cycling route. Nearby 11th Street West is labeled as shared-use on-road cycling suitable for intermediate riders.

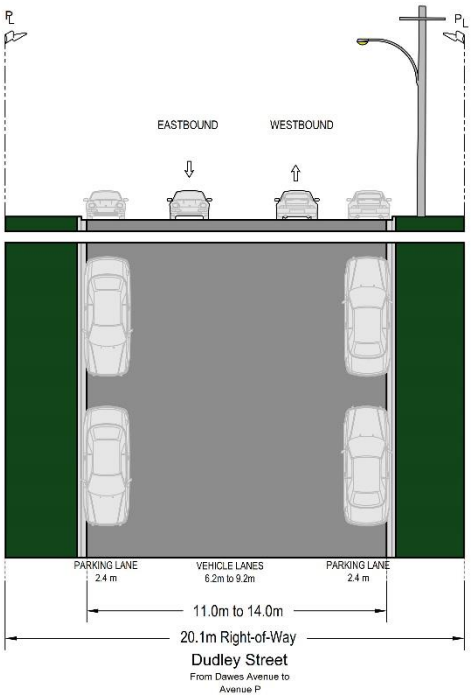
2.3 ROAD NETWORK CHARACTERISTICS

2.3.1 ROADWAY CROSS-SECTION

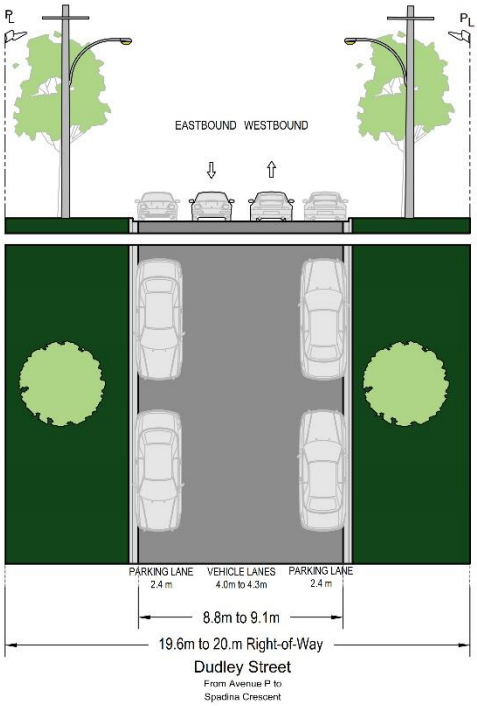
Figure 3 depicts the general cross sections through the corridor, noting that the cross-section varies in the western segment (Dawes Avenue to Avenue P South) compared to the eastern segment (Avenue P South to Spadina Crescent West). Dudley Street accommodates motor vehicle traffic in both directions as well as parking on both sides of the street.

Figure 3. Dudley Street Cross-Section

Dawes Avenue to Avenue P South*



Avenue P South to Spadina Crescent West

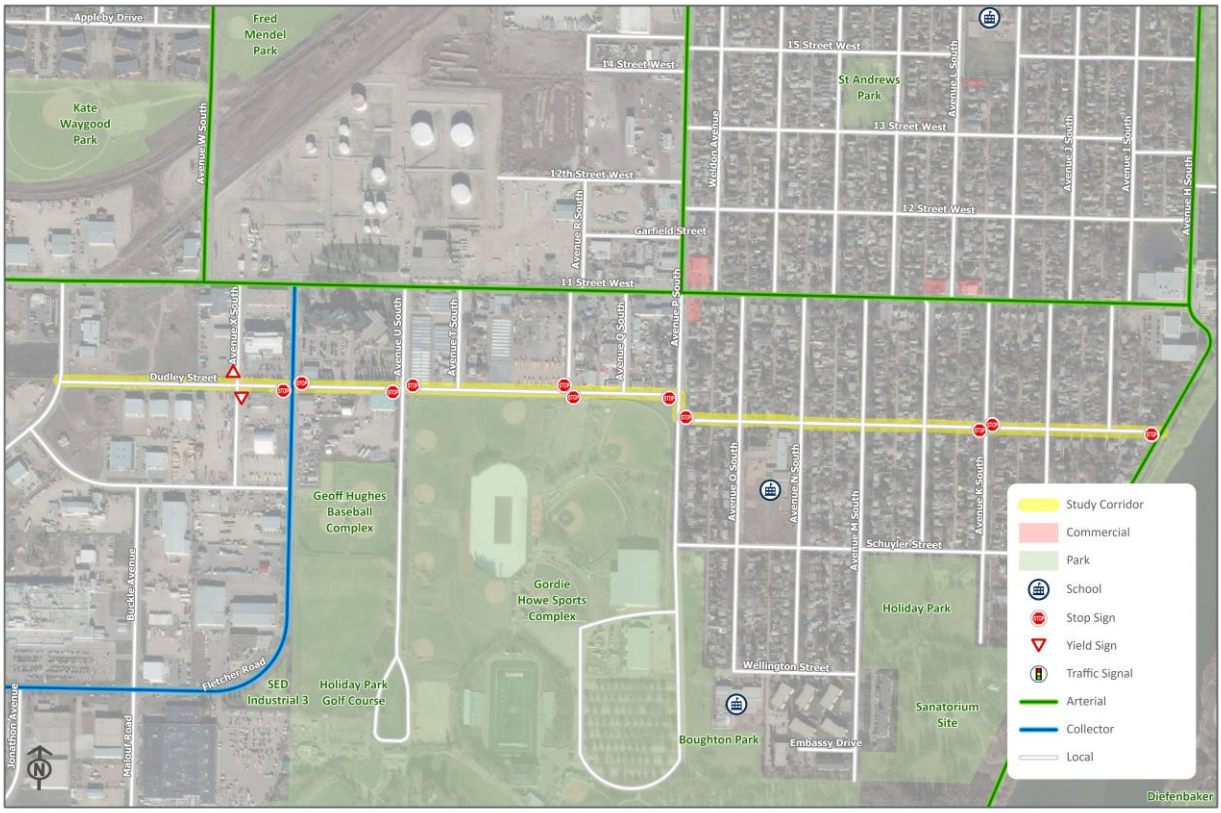


**Dudley Street does not have curbs from Avenue P South to Avenue U South*

2.3.2 ROAD NETWORK CLASSIFICATION AND INTERSECTION CONTROLS

Dudley Street is classified as a local street, as shown in **Figure 4**. There are no signalized intersections along the corridor, but there are several stop and yield controlled intersections throughout the corridor.

Figure 4. Dudley Street: Road Network Classification



2.3.3 PAVEMENT CONDITION

Pavement condition along the corridor is considered to be fair or good for most of the corridor, with the exception of the segments between Avenue K South and Avenue P South (fair to poor) and Avenue P South to Avenue W South (very poor), as shown in **Table 1.**

Table 1. Dudley Street: Pavement Condition

Corridor	From	To	Average Surface Condition (2017)	Ride Index (2017)	Comments
Dudley Street	Spadina Crescent West	Avenue I South	Assumed good	Assumed very good	Last treatment in 2017
	Avenue I South	Avenue K South	Good	Good to very good	Last treatment in 2002
	Avenue K South	Avenue P South	Fair to poor	Fair	Preservation treatment will improve condition
	Avenue P South	Avenue W South	Very poor	Fair	Rehabilitation planned in 2022
	Avenue W South	Avenue X South	Good	Good	Rehabilitation planned in 20221
	Avenue X South	Dawes Avenue	Good	Good	Last treatment in 2010

2.3.4 TRAFFIC VOLUMES AND SPEEDS

The City of Saskatoon provided weekly traffic counts and 85th percentile speeds for the selected corridors. **Table 2** below summarizes the AADT and 85th percentile speeds for this corridor. Traffic volumes are relatively low throughout the corridor, with daily traffic volumes of 1,000 vehicles per day or less. However, speeding was observed to be an issue in the western segment of the corridor, with 85th percentile speeds of 55 km/h between Avenue R South and Avenue U South.

Table 2. Dudley Street: Annual Average Daily Traffic (AADT)

Corridor	From	To	Average Daily Traffic (vpd)	85th Percentile Speed (km/h)	Heavy Vehicle Percentage
Dudley Street	Avenue R South	Avenue U South	1,000	55	No Data
	Avenue M South	Avenue L South	200	45	10%

Note: *vpd = vehicles per day*

2.3.5 TRAFFIC OPERATIONAL ANALYSIS

Table 3 shows the existing morning and afternoon (in brackets) peak hour turning movement counts and traffic analysis for intersections along the Dudley Street corridor.

Level of Service and Delays

Generally, the intersections studied in the Dudley Street corridor operate at a LOS B or better during AM and PM peak hours. The worst movement has up to an 11 second delay in the peak AM period.

Volume to Capacity Ratios

All intersections along the Dudley Street corridor have a v/c ratio under 0.25.

Queue Lengths

The longest queue lengths along this corridor occur at the intersection of Dudley Street and Dawes Avenue.

Table 3. Dudley Street: Intersection Analysis – AM (PM)

Intersection Control	Approach	Control	Volume	Level of Service	Total Delay (s)	V/C Ratio	95% Queue Length (m)
Dudley Street & Dawes Avenue							
Yield	Westbound Left, Right	Yield	53 (87)	B (B)	10.5 (12.4)	0.11 (0.24)	2.8 (7.3)
	Northbound Thru, Right	Free Flow	119 (283)	A (A)	0 (0)	0.09 (0.21)	0 (0)
	Southbound Left, Thru	Free Flow	393 (211)	A (A)	2.2 (3.2)	0.07 (0.07)	1.7 (1.8)
	Overall			**A (A)**	-	-	-
Dudley Street & Avenue P South (North)							
One-Way Stop	Eastbound Left, Right	Stop	24 (60)	B (B)	10 (11.4)	0.07 (0.16)	1.6 (4.3)
	Northbound Left,Thru, Right	Free Flow	103 (118)	A (A)	2.4 (1.1)	0.04 (0.02)	0.9 (0.4)
	Southbound Left, Thru, Right	Free Flow	94 (224)	A (A)	0 (0)	0.09 (0.17)	0 (0)
	Overall			**A (A)**	-	-	-
Dudley Street & Avenue P South (South)							
One-Way Stop	Westbound Left, Thru, Right	Stop	23 (18)	A (A)	9.2 (9.2)	0.03 (0.03)	0.8 (0.6)
	Northbound Left, Thru, Right	Free Flow	80 (102)	A (A)	0 (0)	0.09 (0.1)	0 (0)
	Southbound Left, Thru, Right	Free Flow	27 (207)	A (A)	2.1 (1.6)	0.03 (0.04)	0.8 (1.1)
	Overall			A (A)	-	-	

2.3.6 PARKING

Parking utilization on the study corridor was estimated by counting the number of vehicles parked on each segment of the corridor over 3 time periods throughout the day, as summarized in **Table 4**.

Some key findings from this data include:

- Dudley Street east of Avenue P South is comprised of low-density residential homes with parking garages. As a result, parking utilization generally does not exceed 30%.
- Between Avenue N South and Avenue O South, parking utilization increases to 98% on the south side of the street during the day. This can be attributed to the Saint John Elementary School which is between those 2 blocks.
- It should be noted that events happening in the Gordie Howe Management Lands and adjacent parks could impact parking utilization along this route. Parking utilization is likely to be higher during such events.

Figure 5 through **Figure 8** provide a visualization of the parking utilization on Dudley Street.

Table 4. Dudley Street: Parking Utilization

Block		Side	Parking Utilization			
From	To		5:00-7:00	11:30-1:30	16:00-18:00	Average
Spadina Crescent West	Avenue I South	North	0%	0%	0%	0%
		South	0%	0%	0%	0%
Avenue I South	Avenue J South	North	9%	0%	0%	3%
		South	10%	10%	10%	10%
Avenue J South	Avenue K South	North	28%	28%	28%	28%
		South	0%	0%	0%	0%
Avenue K South	Avenue L South	North	0%	0%	0%	0%
		South	0%	0%	0%	0%
Avenue L South	Avenue M South	North	0%	0%	0%	0%
		South	0%	0%	12%	4%
Avenue M South	Avenue N South	North	33%	33%	33%	33%
		South	0%	0%	0%	0%
Avenue N South	Avenue O South	North	0%	26%	0%	9%
		South	0%	98%	0%	33%
Avenue O South	Avenue P South	North	0%	13%	13%	9%
		South	24%	12%	24%	20%
Avenue P South	Avenue Q South	North	20%	10%	0%	10%
		South	9%	9%	9%	9%
Avenue Q South	Avenue R South	North	0%	0%	12%	4%
		South	0%	0%	0%	0%
Avenue R South	Avenue T South	North	4%	4%	0%	3%
		South	0%	0%	0%	0%
Avenue T South	Avenue U South	North	0%	0%	0%	0%
		South	0%	0%	0%	0%
Avenue U South	Avenue W South	North	0%	7%	0%	2%
		South	0%	17%	9%	9%
Avenue W South	Avenue X South	North	0%	0%	0%	0%
		South	0%	0%	0%	0%
Avenue X South	Dawes Avenue	North	0%	0%	0%	0%
		South	5%	14%	0%	6%

Figure 5. Dudley Street: Morning Parking Utilization

Figure 6. Dudley Street: Mid-day Parking Utilization

Figure 7. Dudley Street: Evening Parking Utilization

Figure 8. Dudley Street: Average Daily Parking Utilization

2.4 PEDESTRIAN FACILITIES

Table 5 provides a summary of pedestrian facilities along the Dudley Street corridor and **Table 6** provides a summary of pedestrian features at intersections.. There is generally a lack of pedestrian facilities throughout most of the corridor. **Figure 9** provides a visualization of the pedestrian amenities on Dudley Street.

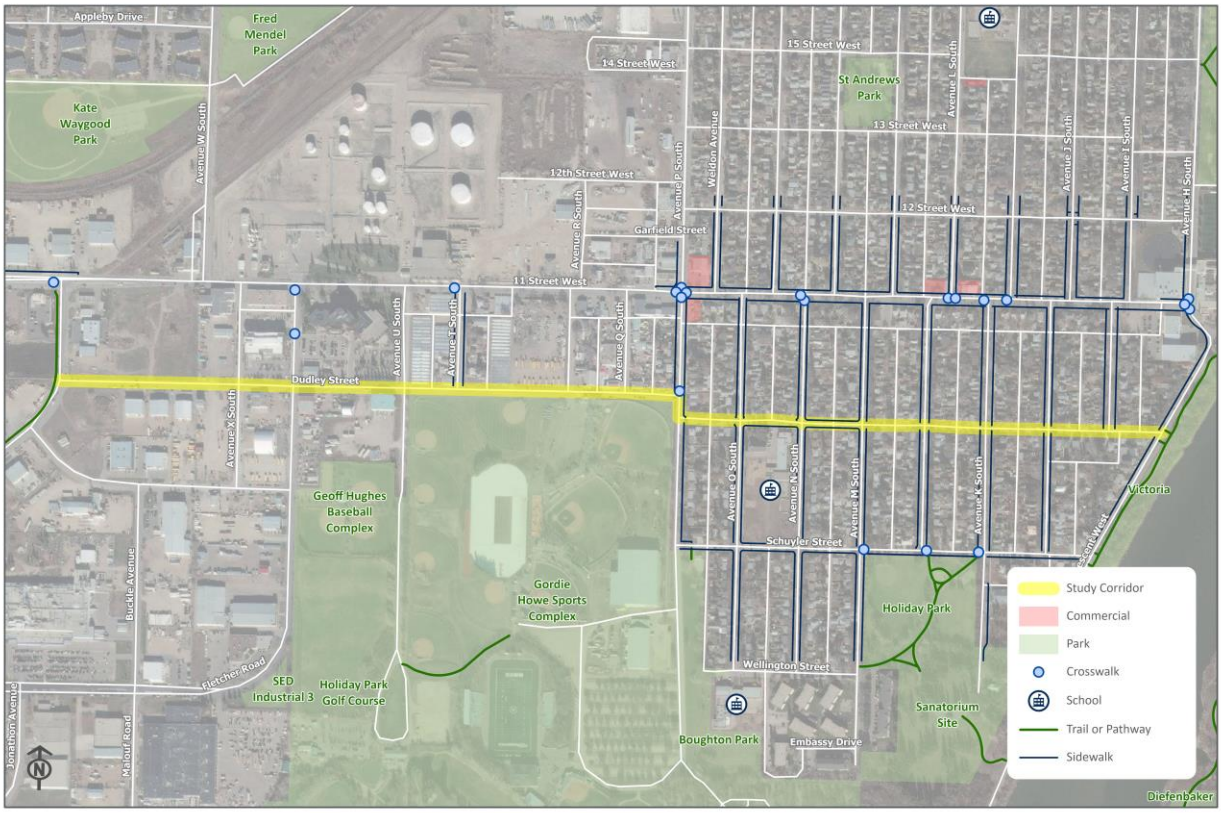
Table 5. Dudley Street: Existing Sidewalks and Pathways Summary

From	To	Sidewalk
Spadina Crescent West	Avenue M South	• No sidewalk present
Avenue M South	Avenue N South	• Both sides - combined curb and sidewalk
Avenue N South	Avenue O South	• South side only - combined curb and sidewalk
Avenue O South	Dawes Avenue	• No sidewalk present

Table 6. Dudley Street: Intersection Pedestrian Accommodation

Intersecting Street	Ramps	Comments
Spadina Crescent West	Ramps present	
Avenue I South	Lacks ramps oriented in some directions of travel	
Avenue J South	Lacks ramps oriented in some directions of travel	
Avenue K South	Ramps present	
Avenue L South	No ramps present	
Avenue M South	Lacks ramps oriented in some directions of travel	
Avenue N South	Ramps present	
Avenue O South	Ramps present	
Avenue P South	No ramps present	• Offset intersection • Sidewalks present on Avenue P South
Avenue Q South	No ramps present	
Avenue R South	No ramps present	
Avenue T South	No ramps present	
Avenue U South	No ramps present	
Avenue W South	No ramps present	
Avenue X South	No ramps present	
Dawes Avenue	No ramps present	

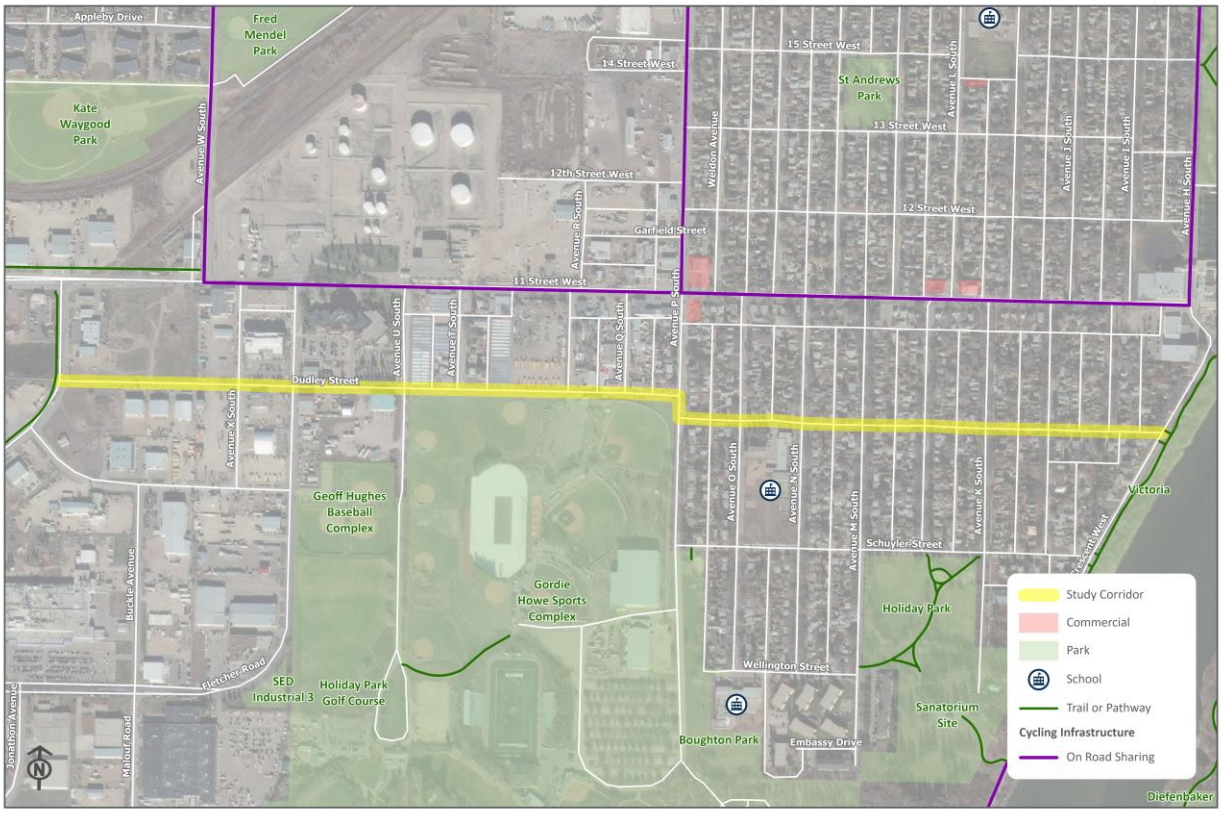
Figure 9. Dudley Street: Pedestrian Amenities



2.5 BICYCLE FACILITIES

The Dudley Street corridor does not have bicycle specific infrastructure. **Figure 10** shows the bicycle routes nearby to the Dudley Street corridor.

Figure 10. Dudley Street: Cycling Routes



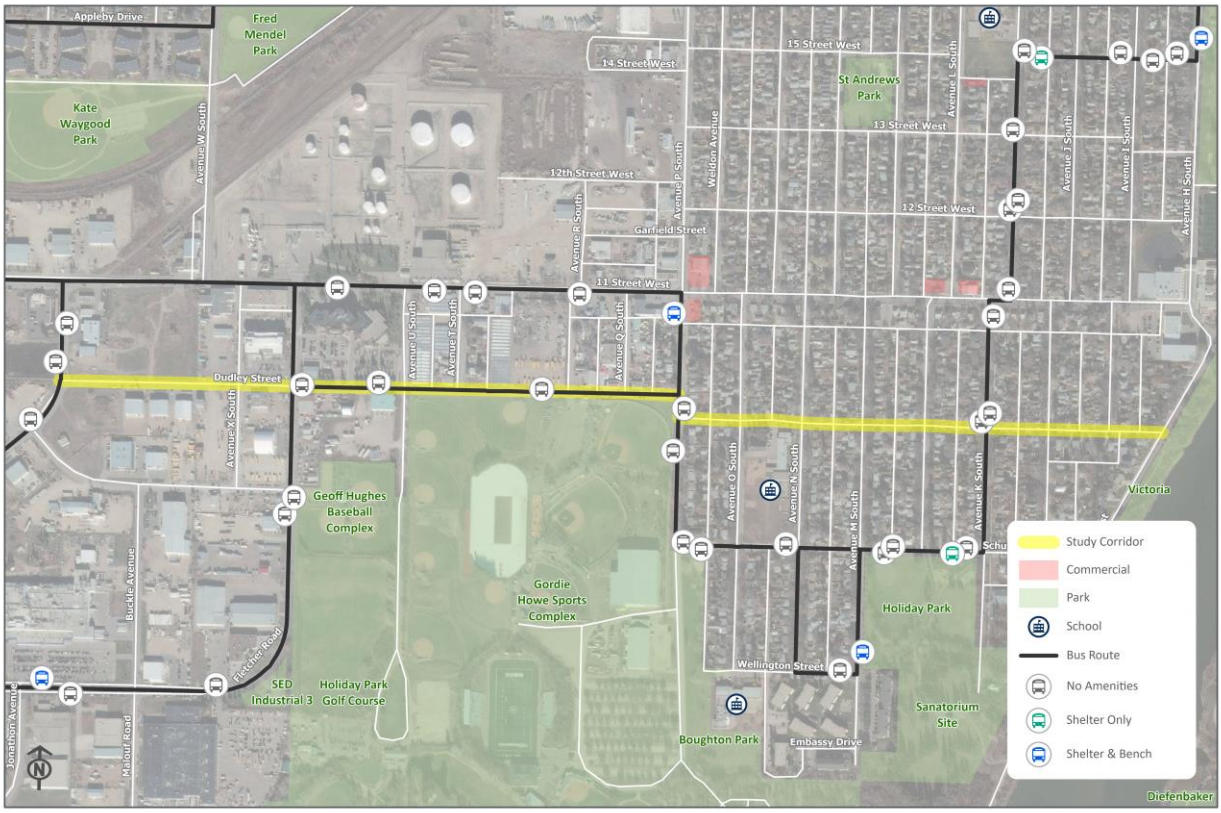
2.6 TRANSIT SERVICES AND FACILITIES

Saskatoon Transit's Route 9 uses this corridor in the westbound direction only between Avenue P South and Avenue W South. Route 9 crosses this corridor at several locations including Avenue K South, Avenue P South, Avenue W South, and Dawes Avenue. The following table outlines the location of relevant bus stops. **Figure 11** shows nearby transit amenities to the Dudley Street Corridor.

Table 7. Dudley Street: Existing Transit Infrastructure

Bus Stop Location	Routes Served	Direction	Amenities
Avenue R South (far side)	9	Westbound	None
Avenue U South (far side)	9	Westbound	None
Avenue W South (near side)	9	Westbound	None

Figure 11. Dudley Street: Transit Amenities



2.7 COLLISIONS

Collision data for the Dudley Street corridor was provided by the City of Saskatoon for the years 2014 to 2018. The data is summarized below in **Table 8.**

The key takeaways from the data are:

- There were 6 collisions occurring on the Dudley Street corridor over the 5-year period. Of those collisions, 17% resulted in injuries (1 collision), while 83% resulted in property damage (5 collisions).
- The most common type of collision was a collision with a fixed object, which accounted for 2 collisions.
- The intersection with the greatest number of collisions was Dudley Street and Avenue X South, where 2 collisions occurred.
- There were no collisions involving cyclists.
- One collision involving a pedestrian at midblock of Dudley Street and Avenue W South / Avenue U South occurred in 2014 where a vehicle drove over a pedestrian's foot.

Table 8. Dudley Street: Collision History

Year	Number of Total Collisions		
	Property Damage	Personal Injury	Grand Total
2014	2	1	3
2015	0	0	0
2016	1	0	1
2017	1	0	1
2018	1	0	1
Grand Total	**5**	**1**	**6**

2.8 MULTI-MODAL LEVEL OF SERVICE

Based on the existing conditions review in the previous section, a Multi-Modal Level of Service (MMLOS) was developed for each corridor. MMLOS is defined as a set of discrete quantitative measures used to describe the convenience and comfort experienced by all roadway users over a particular roadway segment or at a particular intersection. MMLOS builds on the fact that, in the past, municipalities often focused on the performance of only vehicular traffic in evaluating the level of service (LOS) on streets. MMLOS was developed to provide a similar tool to assess convenience and comfort for all road users.

The MMLOS analysis included three separate analyses for each corridor: Bicycle Level of Service, Pedestrian Level of Service, and Multi-Modal Intersection Level of Service. For each of these assessments, each segment of the corridor was assigned a score ranging from 0-17 and a letter grade was assigned to each segment for this score. An overall score for each corridor was then developed based on creating a normalized average score by multiplying the segment score by the length of each segment, and then dividing the total score by the total length of the corridor. Further details about the MMLOS methodology are provided in **Appendix A.**

The results of the MMLOS analysis for the Dudley Street corridor are presented in **Table 9** and in **Figure 12** to **Figure 15** on the following pages.

Table 9. Overall Summarized MMLOS Results

Corridor	Bicycle Score		Pedestrian Score		Intersection Score	
	Score	Letter Grade	Score	Letter Grade	Score	Letter Grade
Dudley Street	10.4	B	1.2	F	12.0	B

Figure 12. Dudley Street: Bicycle Level of Service (Corridor)

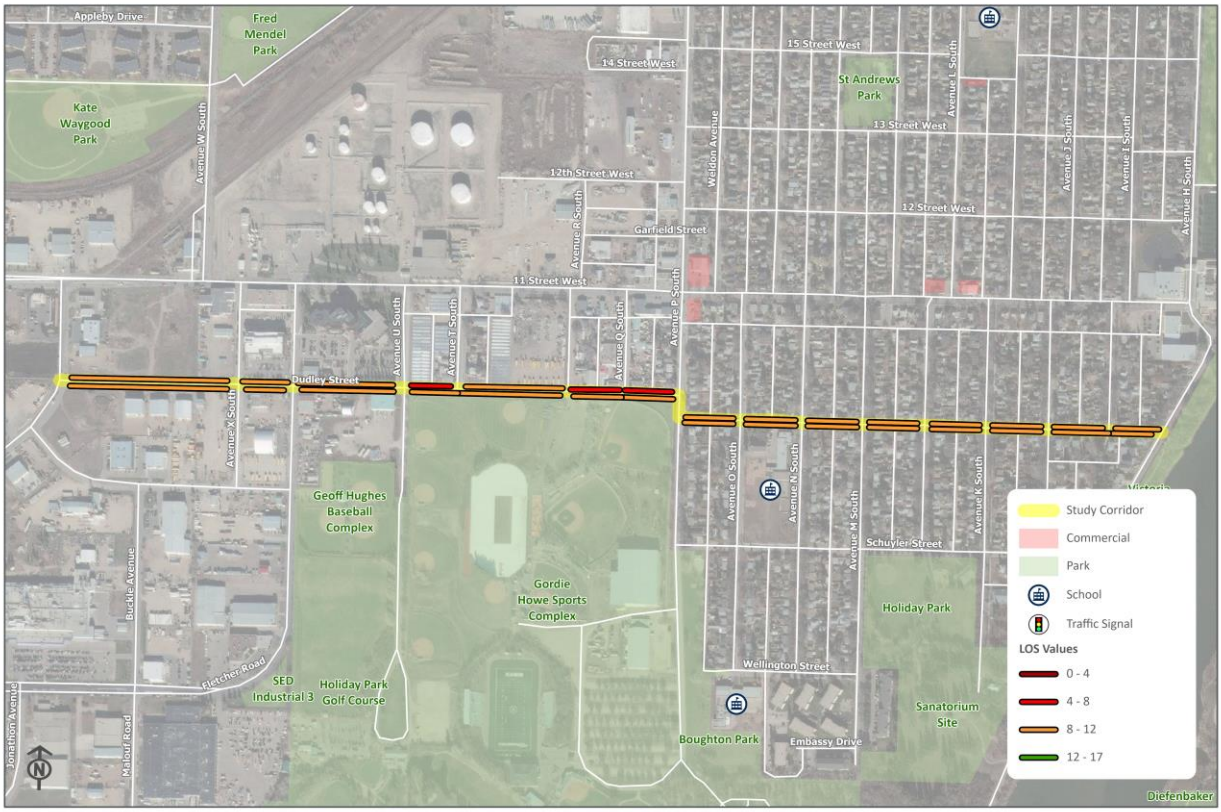


Figure 13. Dudley Street: Pedestrian Level of Service (Corridor)

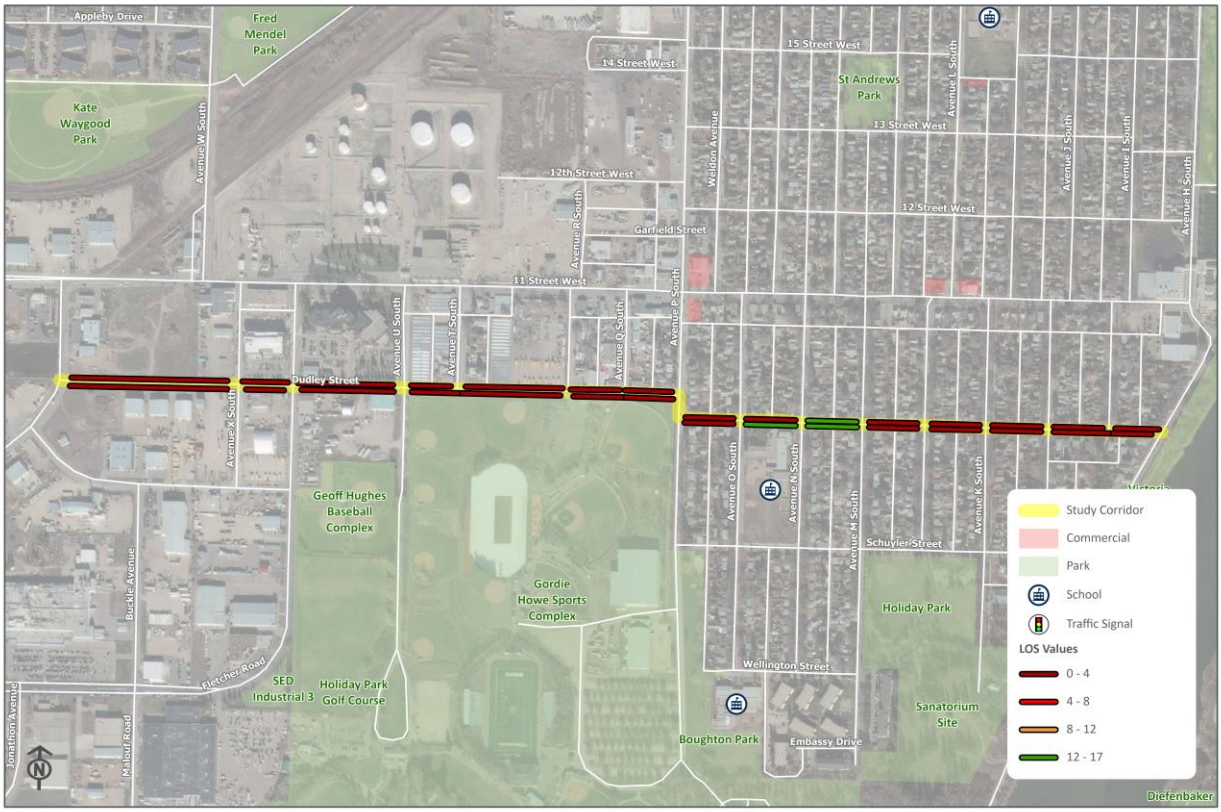


Figure 14. Dudley Street: Intersection Level of Service for East / West Crossings

Figure 15. Dudley Street: Intersection Level of Service for North / South Crossings

3.0 PHASE 1 ENGAGEMENT SUMMARY

The first phase of public engagement was conducted in March, 2020. A range of opportunities were available to provide input during this phase of engagement for all corridors, including a series of five open houses, an online survey, social media, emails, and phone calls. This section summarizes the promotion and advertising that was conducted, objectives of the engagement, and engagement opportunities.

The first phase of public engagement was promoted and advertised through a range of channels to ensure that interested community members and stakeholders were aware of the engagement opportunities. Promotion and advertising included:

- **Delivering flyers to all residences and businesses** with 150 metres on each side of the study corridors;
- **Sending flyers to key stakeholders** inviting them to submit comments directly to the City, to attend the open houses, and/or to forward the invitations to other members of their stakeholder group.
- **Community consultants** were contacted and asked to pass information along to the relevant community associations. City councillors were also notified.
- **Placing portable billboards or changeable message boards** along each study corridor to advertise the open houses; and
- Posting information about the public engagement opportunities on the **City of Saskatoon Engage webpage** and on the **City's social media pages**.

3.1 ENGAGEMENT OBJECTIVES

The purpose of the first phase of engagement was to obtain input on existing conditions, opportunities, and challenges for each corridor. Specific engagement objectives were to:

- **Present general information** to the public regarding active transportation and neighbourhood bikeways;
- Discuss **existing conditions, issues, and opportunities** for each corridor;
- Discuss **considerations and possible improvements** for all modes of transportation for each corridor; and.
- Help **inform design elements** for each corridor's transportation needs.

3.2 ENGAGEMENT OPPORTUNITIES

The public was invited to attend and provide input at a series of five open houses held between March 4 and March 12, 2020. Each of the open houses was focused primarily on one of the study corridors and was held at a venue near the subject corridor. Although each open house focused primarily on the subject corridor, project information for all corridors was available at all open houses. It should be noted that an additional open house was held for the Victoria Avenue bikeway project through the engagement process, although that corridor was not included in this study.

The open houses provided background information and an opportunity to provide input on each of the study corridors, including Victoria Avenue. A large format roll plot was provided for the public to provide feedback on the corridor of focus at each event.

Participants were invited to share their input by:

- Sharing feedback at www.saskatoon.ca/engage;
- Speaking with project team members;
- Adding sticky note comments to any of the engagement materials;
- Using social media; and/or
- Filling out a comment form.

The following two key questions were asked about each of the corridors.

1. What would you like to see stay the same?
2. What would you like to see improved?

Nearly 100 community members participated in the open house events for the first phase of engagement, including 11 community members for the Dudley Street corridor, as shown in **Table 10**. A detailed summary of open house input for the Dudley Street corridor is provided in **Appendix B.**

An online survey was also available for feedback between March 5 and March 25, 2020 on the City of Saskatoon Engage webpage. Community members were also able to comment directly on the City of Saskatoon Engage webpage. Over 60 survey responses were received. A detailed summary of survey responses for the Dudley Street corridor is provided in **Appendix C**.

The public was also invited to provide comments by email, telephone, or through social media channels. The City received emails from 16 residents, 5 phone calls, and one person commented on a social media post for all corridors.

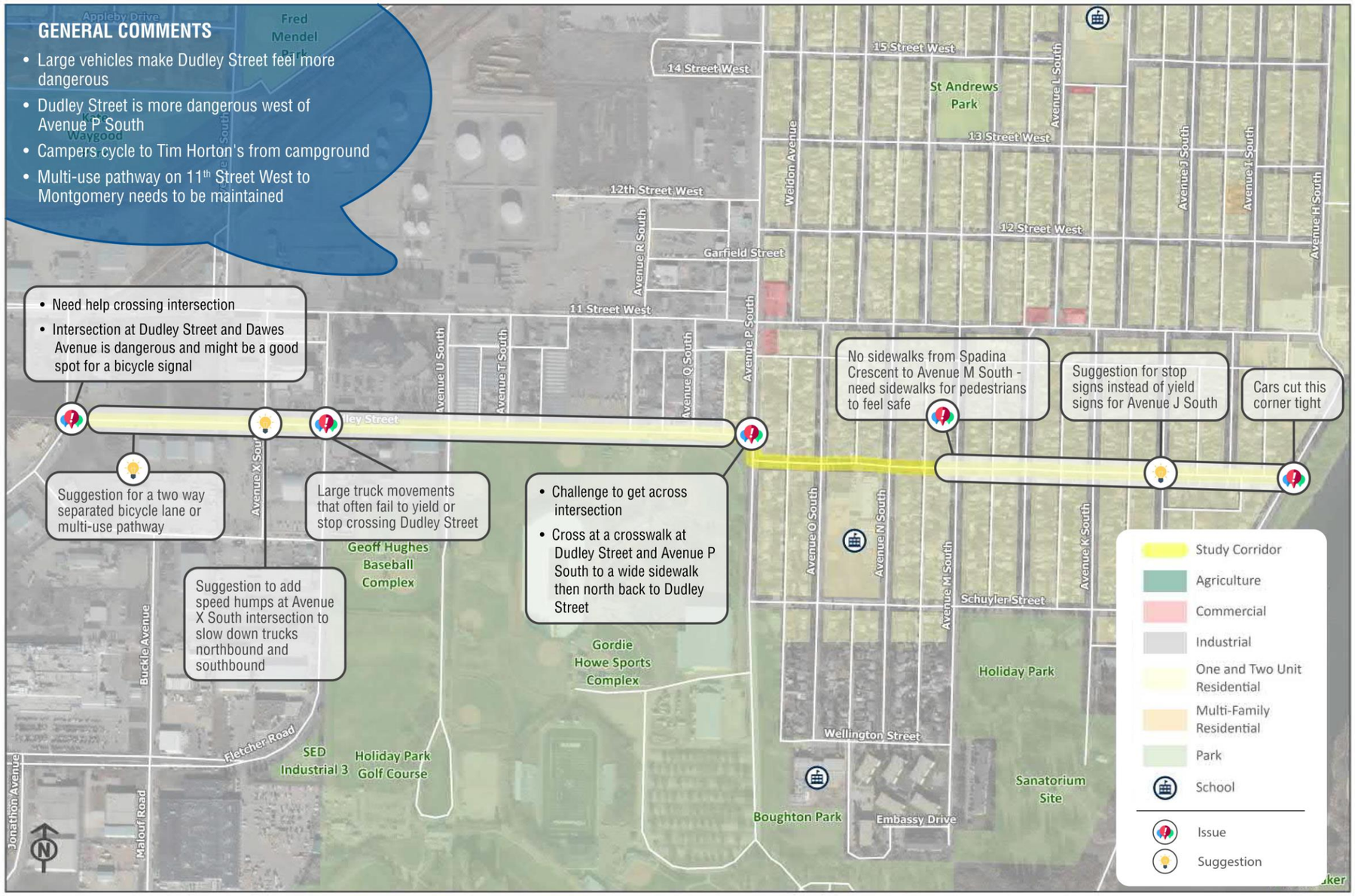
Table 10. Summary of Engagement Opportunities

Event	Location	Date	Number of attendees
14th Street East Corridor Open House	Emmanuel Anglican Church	7-9 PM March 4, 2020	25
Dudley Avenue Corridor Open House	Saskatoon French School	7-9 PM March 5, 2020	11
3 Avenue South Corridor Open House	Frances Morrisson Public Library	7-9 PM March 9, 2020	19
Victoria Avenue Corridor Open House	Queen Elizabeth School	7-9 PM March 11, 2020	22
29th Street West /31st Street West Corridor Open House	Howard Coad Elementary School	7-9 PM March 12, 2020	16

3.3 SUMMARY OF PUBLIC INPUT

A number of suggestions and issues were identified by members of the public that attended the open houses and completed the online survey. **Figure 16** below summarizes the input received on the roll plot during the Dudley Street open house.

Figure 16. Dudley Street Open House Feedback Summary



Additional input received on the open house display boards highlighted the desire for the addition of sidewalks on the blocks east of Avenue P South and a multi-use pathway on the west end of the corridor. Other comments that were heard several times include the need for the roadway surface to be repaired, and the need for an improved crossing of Avenue P South.

Feedback received through the online survey highlighted many similar opportunities and challenges to what was heard at the open house event. The different context between the west and east sections of the corridor was noted, and led to comments noting a desire to have a separated bicycle facility for some of the corridor, while others noted the low traffic volumes present an opportunity for a shared route with a reduced speed limit. Other comments highlighted the need to ensure the route connects to the Meewasin Trail at the east end of the corridor and provides a future connection west into the Montgomery neighbourhood.

A summary of improvement opportunities for the Dudley Street corridor from the public input included:

- Multi-use pathways and sidewalks to improve pedestrian safety
- Improved road surface conditions
- More street trees
- More lighting
- Better snow removal
- Better signage
- Improved connections to Montgomery via 11th Street West multi-use pathway

3.4 SUMMARY OF OPPORTUNITIES AND CHALLENGES

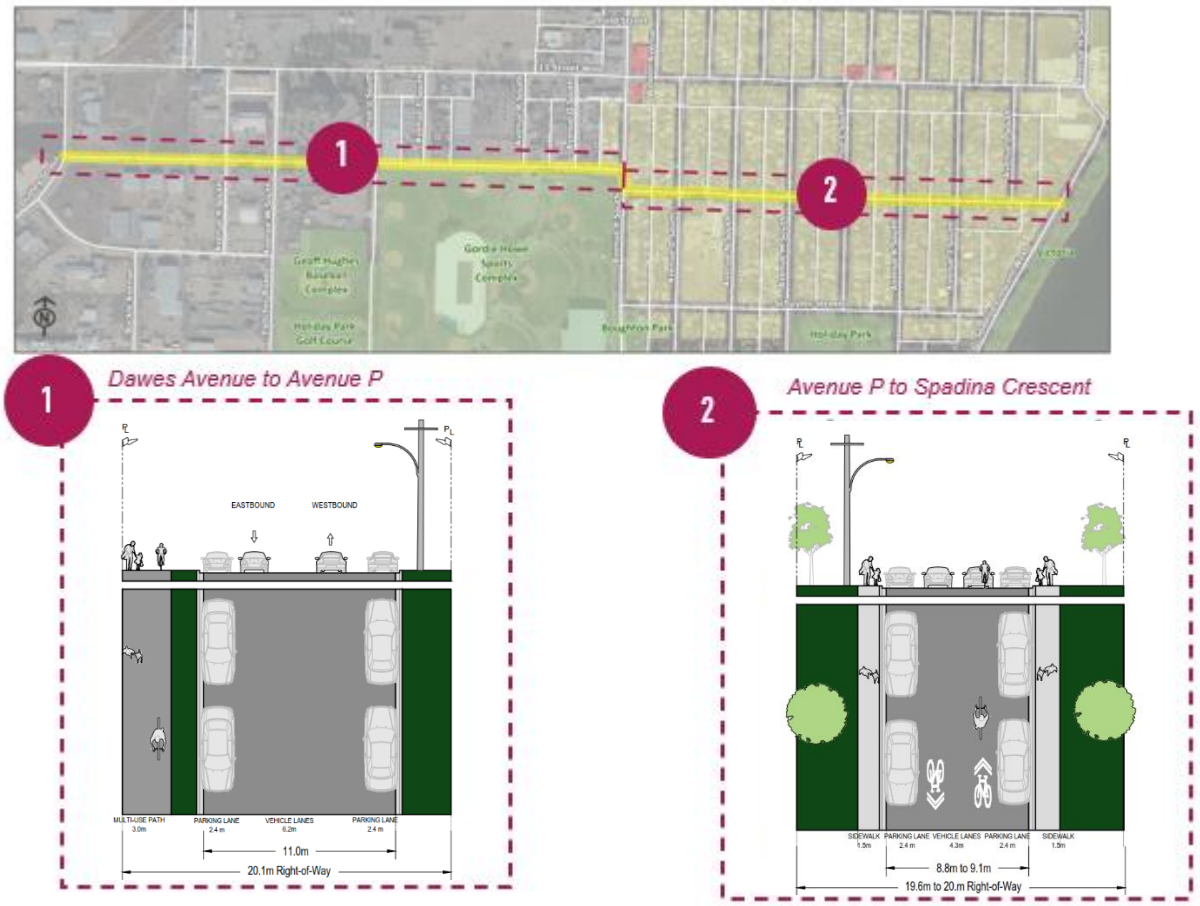
Based on the technical analysis and public input, a number of key themes were identified that present either challenges or opportunities along the Dudley Street corridor. These themes were used to develop concept designs that create safe and comfortable cycling facilities that meet the project goals. The key themes for Dudley Street include:

- There is an opportunity to provide a multi-use pathway west of Avenue P South;
- The lack of pedestrian facilities along the corridor provides an opportunity to enhance the corridor for both people walking and biking;
- Improved road surface conditions and snow clearing are needed;
- There is an opportunity for improved connections between Dudley Street and the Meewasin Trail on the east end of the corridor, and the multi-use pathway on Dawes Avenue at the west end;
- There is an opportunity to improve walking and cycling connections to Gordie Howe recreational area; and
- There is a desire to see the speed limit reduced to 30 km/h.

4.0 RECOMMENDED DESIGN

The recommended design for the Dudley Street corridor consists of a multi-use pathway in the western segment between Dawes Avenue and Avenue P South and a neighbourhood bikeway in the eastern segment between Avenue P South and Spadina Crescent West, as shown in **Figure 17**.

Figure 17. Dudley Street Corridor Overall Concept



Key features of the design are summarized below for each segment. Detailed conceptual plans are provided in **Appendix D**.

4.1 DAWES AVENUE TO AVENUE P SOUTH

The overall concept for this segment consists of a 3.0 metre wide multi-use pathway on the south side of Dudley Street between Dawes Avenue and Avenue P South. This multi-pathway provides a direct connection to the existing multi-use pathway on the west side of Dawes Avenue. Key features include:

- **New crosswalk and crossride with pedestrian and cyclist activated signal** recommended on the south side of the Dawes Avenue intersection to improve intersection safety and to connect to the Dawes Avenue multi-use pathway, as shown in **Figure 18;**
- **New crosswalks and crossrides** are recommended on the south side of several intersections to improve intersection safety for people walking and cycling at several locations, including: Avenue X South, Avenue U South, and Avenue R South, as shown in **Figure 19**;
- **Changing north-south traffic from yield to stop control** at several locations to improve safety, as shown in **Figure 19**;
- **Transitioning the pathway to street level** between Dawes Avenue to Avenue X at driveway crossings to minimize grade changes on the pathway with the frequent driveway crossings.
- At the approach to Avenue P South, **the multi-use pathway transitions south adjacent to Gordie Howe Park** to have a direct connection with the Dudley Street to the east, as shown in
-
- **Figure** *20*;
- **Existing crosswalk at Avenue P South at the north leg of Dudley Street is relocated to the south** leg to connect with the realigned multi-use pathway;
- **New curb extension with pedestrian and cyclist activated signal** is recommended at Avenue P south to improve intersection safety, as shown in
- **Figure** *20*; and
- **Parking is maintained on both sides of the street.**

Figure 18. Dawes Avenue Intersection

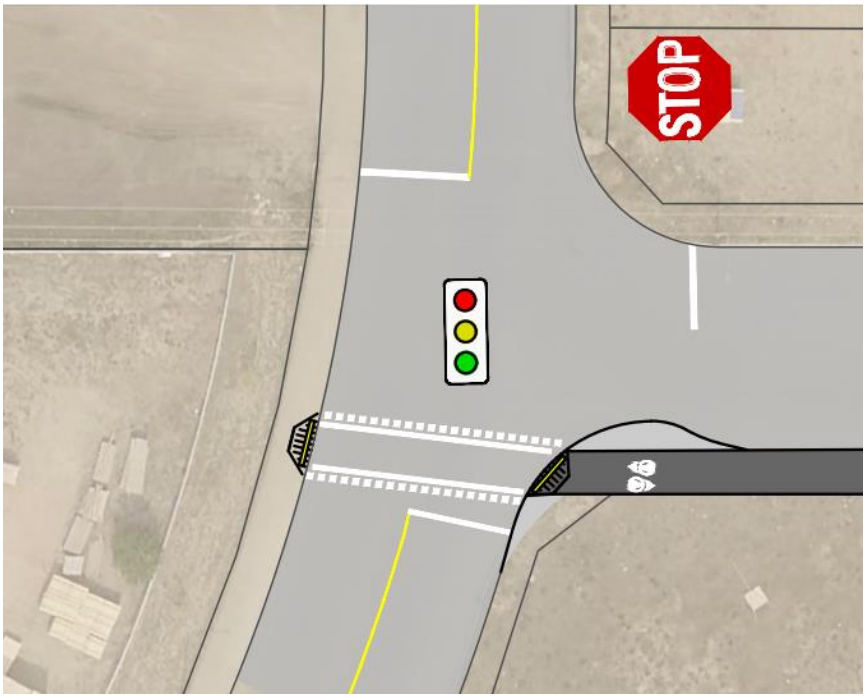


Figure 19. Crosswalk and Crossride Treatments

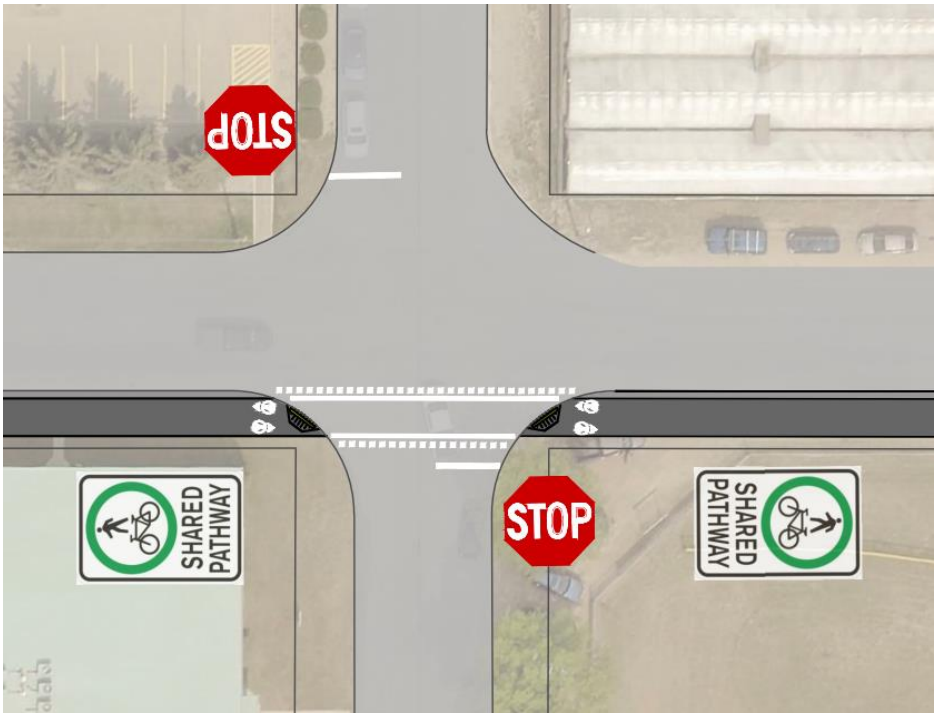


Figure 20. Multi-Use Pathway Transition at Avenue P South

4.2 AVENUE P SOUTH TO SPADINA CRESCENT WEST

The overall concept for this segment consists of a neighbourhood bikeway on Dudley Street between Avenue P south and Spadina Crescent West. This segment provides a direct connection to the existing multi-use pathway at Spadina Crescent West. Key features include:

- **Bicycle route signage and pavement markings** to improve cyclist visibility;
- **New sidewalks** to improve pedestrian safety at several locations;
- **New raised crosswalks** at Avenue O South and Avenue N South to improve safety of children walking to school and to reduce vehicle and cyclist speeds, as shown in **Figure 21**;
- New curb extensions at Avenue K to improve pedestrian safety and reduce vehicle speeds, as shown in **Figure 22**;
- **Changing north-south traffic from yield to stop control** at several locations to improve safety;
- **New painted crosswalks** at Spadina Crescent West to improve intersection safety and the transition to the Meewasin Trail, and
- **Parking is maintained on both sides of the street.**

Figure 21. Raised Crosswalks at Avenue O South and Avenue N South

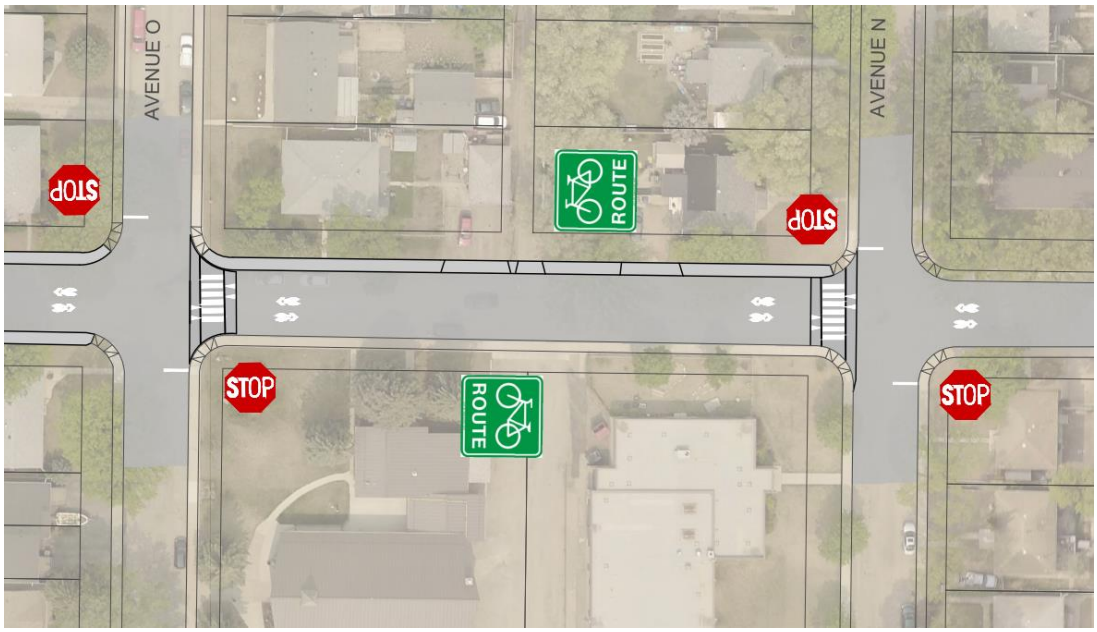


Figure 22. Curb Extensions at Avenue K South

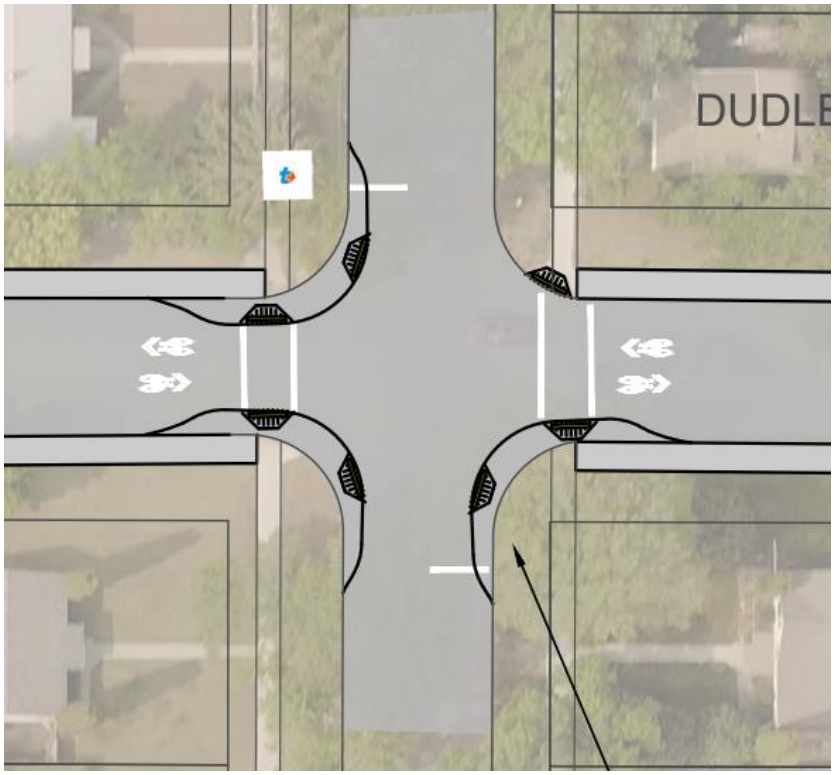
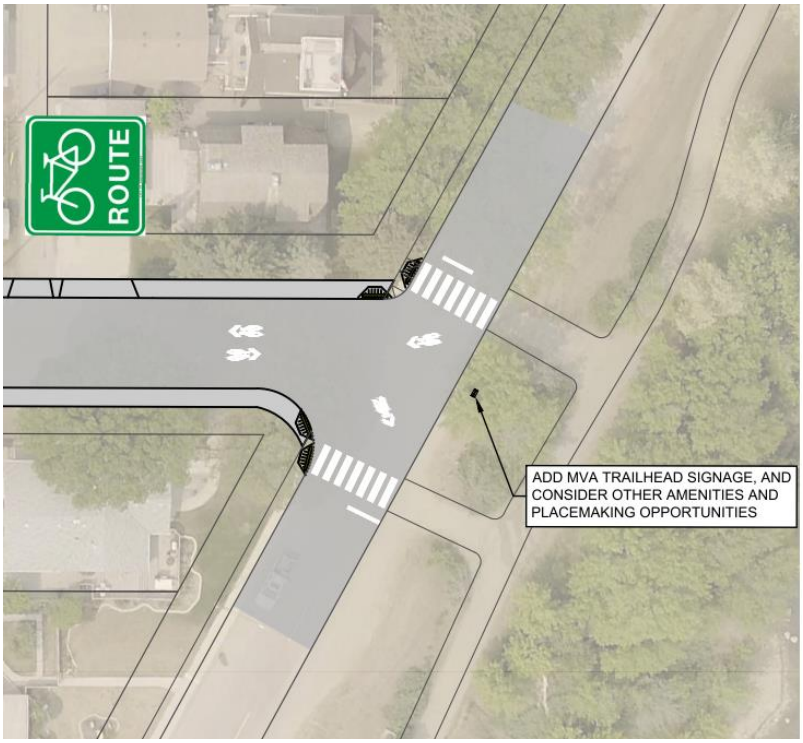


Figure 23. Spadina Crescent West Intersection



4.3 COST ESTIMATES

Order-of-magnitude cost estimates were prepared for the proposed concept based on typical unit costs for similar construction in the City of Saskatoon and elsewhere. The cost estimate for this corridor is approximately $2.68 million (including a 30% contingency and 10% for engineering and project management fees). This includes approximately $598,000 for the multi-use pathway, $593,000 for other bikeway improvements (such as signage, pavement markings, pedestrian and cyclist half signals), $1,112,500 for sidewalk improvements, $79,000 for traffic calming measures, $57,000 for other measures, and $244,000 for engineering and project management, as shown in **Table 11.**

Table 11 Cost Estimates

Item	Unit	Price
Multi-use pathway		$598,000
Bikeway improvements		$592,670
Sidewalk improvements		$1,112,475
Traffic calming measures		$79,040
Miscellaneous (Traffic control, drainage, etc)		$57,200
Engineering and project management	10%	$244,000
Total		**$2,683,385**

Note: Includes 30% contingency

5.0 PHASE 2 ENGAGEMENT SUMMARY

The second phase of public engagement for the Dudley Street corridor was conducted in August and September, 2020. A range of opportunities was available to provide input during this phase of engagement for all corridors, including a series of three online public meetings, social media, emails, and phone calls. This section summarizes the promotion and advertising that was conducted, the objectives of the engagement, and the engagement opportunities

The second phase of public engagement was promoted and advertised through a range of channels to ensure that interested community members and stakeholders were aware of the engagement opportunities. Promotion and advertising included:

- **Delivering flyers to all residences and businesses** with 150 metres on each side of the study corridors;
- **Sending flyers to key stakeholders** inviting them to submit comments directly to the City, to attend the online meetings, and/or to forward the invitations to other members of their stakeholder group.
- **Community consultants** were contacted and asked to pass information along to the relevant community associations. City councillors were also notified.
- **Placing portable billboards or changeable message boards** along each study corridor to advertise the online meetings; and
- Posting information about the public engagement opportunities on the **City of Saskatoon Engage webpage** and on the **City's social media pages**.

5.1 ENGAGEMENT OBJECTIVES

The purpose of the second phase of engagement was to obtain input on the recommended designs for each corridor. Specific engagement objectives were to:

- Present the neighbourhood bikeway designs;
- Communicate how previous public input informed the designs;
- Collect public feedback on the designs to help prioritize the projects; and
- Summarize public feedback on the designs for the final report to City Council.

5.2 ENGAGEMENT OPPORTUNITIES

The public was invited to attend and provide input at a series of online public meetings held in August and September 2020 using Microsoft Teams Live. Each public meeting was dedicated to a specific corridor:

- August 19, 2020: Dudley Street
- September 9, 2020: 29th Street West and 31st Street West
- September 17, 2020: 14th Street West

An online public meeting has not been held for the 3rd Avenue Corridor. Public engagement for this

corridor will be deferred to future public engagement as part of the Downtown Bicycle Network.

The online public meetings presented an overview of the study process, existing conditions, and the recommended concept for each corridor. Each meeting started with a presentation and provided an opportunity for questions and answers following the presentation. All online public meetings were recorded and were posted to on the City of Saskatoon Engage webpage.

In addition to the online public meetings, a video series was made available to provide information in advance of the online public meetings. Videos were prepared to provide a project overview, summarize key features of the designs, and outline the specific recommendations for each corridor. All videos were posted to the City of Saskatoon Engage webpage.

Participants were invited to share their input by:

- Sharing feedback at www.saskatoon.ca/engage;
- Asking questions during the online public meeting;
- Using social media;
- Completing a feedback form; and/or
- Emailing or phoning the City.

Twenty community members participated in the online public meetings during the second phase of engagement, as shown in Table 12 . The City received 1 email, 1 phone call, and 1 survey for the Dudley Street corridor.

Table 12. Summary of Engagement Opportunities

Event	Date	Number of people engaged
Dudley Street Online Public Meeting	7-8 PM August 19, 2020	2
29th Street West and 31st Street West Online Public Meeting	7-8 PM September 9, 2020	8
14th Street West Online Public Meeting	7-8 M September 17, 2020	10

5.3 SUMMARY OF PUBLIC INPUT

There were a number of questions at the online public event, including:

- Whether the crosswalks and crossrides at Spadina Crescent West would include crossrides as well;
- Whether stop signs at Avenue K South and Avenue U South would be reversed so Dudley Street has the right-of-way;
- When additional sidewalks would be approved; and
- ow much traffic disruption is anticipated during construction.

Based on the feedback received, no further changes have been made to the recommended concept.

6.0 CLOSING AND NEXT STEPS

This report summarizes the existing conditions, opportunities, and challenges for the Dudley Street corridor along with a recommended concept with cost estimates. This report also summarizes the engagement process and results based on two phases of public engagement. The recommended concept in this report is provided in **Appendix D** and will be presented to Council. The City will seek to identify capital funding to advance these projects to detailed design and construction should funding be obtained. The City would like to thank the residents of the City of Saskatoon for participating in this process.

APPENDIX A:
MULTI-MODAL LEVEL OF SERVICE METHODOLOGY

Based on the assessment of each, a Multi-Modal Level of Service (MMLOS) was developed for each corridor. This included three separate analyses for each corridor:

- Bicycle Level of Service (**Table A.1**);
- Pedestrian Level of Service (**Table A.2)**; and
- Multi-Modal Intersection Level of Service (**Table A.3).**

For each of these assessments, each segment of each corridor was assigned a score ranging from 0-17 (**Table A.4)**.

Table A.1. Bicycle Level of Service Methodology (Corridor)

Indicator	Criteria	Points
Lane Width (Max. value = 3)	Travel lane between 4.0 – 5.5m Travel lane less than 4.0m Travel lane greater than 5.5m	3 2 1
On-Street Parking (Max value = 3)	No Yes	3 0
Conflicts (driveways, laneways, and intersections) (Max. value = 3)	No conflict points 1-2 conflict points / 100m 3-4 conflict points / 100m More than 5 conflict points / 100m	3 2 1 0
Daily Traffic Volumes (Max value = 4)	Less than 1,500 1,500 – 2,000 2,000 – 2,500 2,500 – 3,000 Greater than 3,000	4 3 2 1 0
Heavy Vehicle Percentage (Max value = 2)	0-5% 5-10% ≥10%	2 1 0
Speed Differential (Max. value = 2)	20-30 kph 40-50 kph >50 kph	2 1 0

Table A.2. Pedestrian Level of Service Methodology (Corridor)

Indicator	Criteria	Points
Network Connectivity (Max. value = 4)	Sidewalk on both sides with connections on both ends Sidewalk on both sides with connection on one end Sidewalk only on one side No sidewalk	4 3 2 1
Facility Width (Max. value = 2)	Min. 1.5m wide & barrier free Sidewalk width >1.5 m Non-existent	2 1 0
Conflicts (Max. value = 3)	No conflict points 1-2 conflict points / 100m 3-4 conflict points / 100m More than 5 conflict points / 100m	3 2 1 0
Amenities (Max. value = 2)	Buffer / boulevard more than 1.5 m Buffer / boulevard between less than 1.5m No buffer boulevard	2 1 0
Heavy Vehicle Percentage (Max value = 2)	0-5% 5-10% ≥10%	2 1 0
Daily Traffic Volumes (Max value = 4)	Less than 1,500 1,500 – 2,000 2,000 – 2,500 2,500 – 3,000 Greater than 3,000	4 3 2 1 0

Table A.3. Intersection Level of Service Methodology (Intersection)

Indicator	Criteria	Points
Number of traffic lanes to cross (both directions (Max. value = 4)	2 3 4 5 6	4 3 2 1 0
Traffic Control (Max value = 5)	Traffic Signal 4-Way Stop 2-Way Stop on street perpendicular to crossing Yield on street perpendicular to crossing Crosswalk only No Control	5 4 3 2 1 0
Heavy Vehicle Percentage (Max value = 2)	0-5% 5-10% ≥10%	2 1 0
Motor Vehicle LOS (Max. value = 6)	Local Street (No LOS) LOS = A, B, C LOS = D, LOS = E, F	6 4 2 0

Table A.4. Level of Service Grading

Score	Letter Grade
0 – 2.5	F
2.5 – 5.0	E
5.0 – 7.5	D
7.5 - 10	C
10 – 12.5	B
Above 12.5	A

The results of the analysis are shown in Figures 51 to 66 below. The overall average scores for each corridor are summarized in Table 45.

APPENDIX B: PHASE 1 ENGAGEMENT OPEN HOUSE INPUT

Open house participants were invited to provide input on the current state of the five corridors being considered for the Neighbourhood Bikeways Project. Participants were invited to provide comments on a roll plot outlining the detailed physical characteristics of each corridor, and/or to provide comments on the open house display boards where they were asked 1) what they would like to see stay the same on the corridor, and 2) what they would like to see improved. This section provides a verbatim summary of the comments that were written down for each corridor.

General Comments

- East-west access from river through park space to the south of Dudley Street.
- Second access to Gordie Howe so there is less traffic on Avenue P South. Direct traffic to Avenue U South.
- Difficult to cross Avenue P South during events at Gordie Howe.

What would you like to see stay the same?

- No comments received.

What would you like to see improved?

- Plant trees! Then more trees.
- Better signage at Avenue P South and Dudley Street.
- Challenging from getting to Montgomery from Dudley Street. Multi-use pathway can be challenging to use going across 11th Street West into Montgomery.
- Road conditions (smooth bumps and potholes).
- More lighting.
- I like to see the Spadina Crescent West to Dawes Avenue route – I bike this every summer to connect to Spadina Crescent West.
- Need sidewalks on Dudley Street.
- Would like a multi-use pathway.
- Sidewalks need to be installed before bicycle lanes on Dudley Street.
- Would like to see a multi-use pathway on Dudley Street for both biking and walking.
- Dudley Street is shady so it needs better snow removal for bicycles.
- Would like to see a multi-use pathway.
- I would like to see sidewalks right from Dawes Avenue to Spadina Crescent West.
- Pavement improvement from Dawes Avenue to Avenue P South for sure!
- Protection on west Dudley Street (multi-use pathway).
- Pedestrian walkways on east Dudley Street.
- Science Trek program at Montgomery School.

APPENDIX C: PHASE 1 ENGAGEMENT SURVEY INPUT

Respondents were asked to provide input on the current state of the five corridors being considered for the Neighbourhood Bikeways Project. In particular, respondents were asked 1) what they would like to see stay the same on the corridor, and 2) what they would like to see improved. Respondents were also asked how often they utilize each corridor: often, sometimes, rarely, or never. For this summary, comments from those respondents who utilize each corridor often or sometimes were grouped together, similarly respondents who utilize each corridor rarely or never were grouped together.

Respondents also had an opportunity to provide general comments about the project. General comments from all respondents are included in this summary.

What would you like to see stay the same?

Sometimes or Often Utilize the Street

- Low traffic volumes.
- There is no issue with the use by either cyclists or motorists – leave it alone.
- Amount of vehicular traffic is low – would like that to continue in the residential area.

Rarely or Never Utilize the Street

- Single lane vehicle traffic.
- Not much.
- I know very little about this area of town.
- No opinion, don't often cycle here.
- I'm not that familiar with this street.
- No opinion.
- Nothing.
- License bicycles to pay for the lanes.
- The connection to the river.
- No opinion.

What would you like to see improved?

Sometimes or Often Utilize the Street

- Avenue P South is a challenge to get across.
- Very shady so snow removal is an issue in spring.
- The far west end is industrial with heavy truck traffic.
- There is little on-street parking, so a separated bicycle lane would be ideal.
- Needs better connection to multi-use pathway on Dawes Avenue.
- Sidewalks.
- Bike lanes!
- Connect the west end of this route with a safe bike passage into Montgomery.
- I think the connection makes more sense to go right to and through the Gordie Howe area – either pick up existing infrastructure through Holiday Park and Wellington Street or create a new

link past the Sanitorium Site and along the north side of Gordie Howe Campground to get to the heart of facilities in the Gordie Howe cluster.
- There would be a great future opportunity to have this route cross the river and connect to Gabriel Dumont Park, 8th Street East and Saskatchewan Crescent West.
- No parking near the park, there is enough parking already.

Rarely or Never Utilize the Street

- Install separated bi-directional bikeway on one side of the street and remove on-street parking from that side.
- Pothole repairs.
- Create space for and designate where parking space is allowed.
- Create pathway adjacent to the road for both cyclists and walkers.
- I know very little about this area of town.
- No opinion.
- Step 1 as Neighbourhood Bikeway – just add signage, and increase the priority for street sweeping is quick-win.
- No opinion.
- Protected bicycle lane.
- Accessible sidewalks for pedestrians.
- Safe connection to the Meewasin trail.
- Connection to the Montgomery neighborhood.
- License bicycles to pay for the lanes.
- 30 km/h speed limit.
- Connected to other bicycle routes - if it's not connected people can't safely use it
- Traffic calming.
- Permeable to bicycle road blockages.
- I don't know this area well enough to comment.
- What about connecting Riversdale and west to Downtown and Nutana via 19th Street West.
- Addition of protected bicycle lanes.
- Sidewalks on both sides of the street.
- Bicycle lanes on both sides.

Hard Copy Survey Responses for Dudley Street

- No feedback to either question.

APPENDIX D: RECOMMENDED CONCEPT

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#	Date	Issue / Revision	App
A	2020-04-09	----	BP
B	2020-06-04	----	BP

CITY OF SASKATOON

URBAN systems

Scale

Quality Control by U. Systems
Designed by U. Systems
Drawn by U. Systems

SASKATOON
NEIGHBOURHOOD BIKEWAYS
PROJECT
DUDLEY STREET

Sheet Number 13 of 21

Project Number	Drawing Number	Revision
3257.0009.01	C1	B

NOT FOR CONSTRUCTION

AVENUE W

DUDLEY STREET

AVENUE U

AVENUE T

CHANGE YIELD CONTROL TO STOP CONTROL

CHANGE YIELD CONTROL TO STOP CONTROL

CHANGE YIELD CONTROL TO STOP CONTROL

STOP

STOP

STOP

TREE REMOVAL REQUIRED

0.6m HARDSCAPED BUFFER

PROPOSED CURB AND GUTTER

0.6m HARDSCAPED BUFFER

2.4m PARKING LANE
7.2m TRAVEL LANES
2.4m PARKING LANE

2.2m PARKING LANE
6.6m TRAVEL LANES
2.2m PARKING LANE

3.0m MUP

3.0m MUP

SHARED PATHWAY

SHARED PATHWAY

SHARED PATHWAY

SHARED PATHWAY

EXISTING UTILITY POLE NARROW MUP TO ~2.5m

EXISTING UTILITY POLE NARROW MUP TO ~2.5m

AVENUE W

GORDON HOWE PARK

N

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B	2020-06-04	----	BP

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SASKATOON NEIGHBOURHOOD BIKEWAYS PROJECT
DUDLEY STREET

Sheet Number		14 of 21
Project Number	Drawing Number	Revision
3257.0009.01	C2	B

NOT FOR CONSTRUCTION

DESIGN NOTES
–PROPOSED SIDEWALK FEASIBILITY TO BE CONFIRMED
–ON–STREET BIKEWAY TO BE SIGNED AT 30 KM/H

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SASKATOON
NEIGHBOURHOOD BIKEWAYS PROJECT
DUDLEY STREET

Sheet Number 15 of 21
Project Number 3257.0009.01
Drawing Number C3
Revision B

NOT FOR CONSTRUCTION

EET LIGHT

AVENUE O

TREE REMOVAL REQUIRED

EXISTING UTILITY POLE

PROPOSED RAISED CROSSWALK

PROPOSED STOP SIGN (TYP.)

2.4m PARKING LANE

4.7m TRAVEL LANES

2.4m PARKING LANE

AVENUE N

ON-STREET BIKEWAY TO BE SIGNED AT 30KM/H

DUDLEY STREET

AVENUE M

EXISTING UTILITY POLE

AVENUE L

EXISTING UTILITY POLE

PROPOSED RAISED CROSSWALK

PROPOSED 1.8m SIDEWALK (TYP)

DESIGN NOTES
–PROPOSED SIDEWALK FEASIBILITY TO BE CONFIRMED
–ON–STREET BIKEWAY TO BE SIGNED AT 30 KM/H

N

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A	2020-04-09	----	BP
B	2020-06-04	----	BP

CITY OF SASKATOON

URBAN systems

Scale

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SASKATOON
NEIGHBOURHOOD BIKEWAYS
PROJECT
DUDLEY STREET

Sheet Number 16 of 21
Project Number 3257.0009.01
Drawing Number C4
Revision B

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AVENUE K

AVENUE J

AVENUE I

DUDLEY STREET

DUDLEY STREET

CRESCENT

TREE REMOVAL REQUIRED

EXISTING UTILITY POLE

ON-STREET BIKEWAY TO BE SIGNED AT 30KM/H

PROPOSED STOP SIGN (TYP.)

EXISTING UTILITY POLE

2.2m PARKING LANE
4.0m TRAVEL LANES
2.2m PARKING LANE

EXISTING UTILITY POLE

PROPOSED 1.8m SIDEWALK (TYP)

ADD MVA TRAILHEAD SIGNAGE, AND CONSIDER OTHER AMENITIES AND PLACEMAKING OPPORTUNITIES

ROUTE

DESIGN NOTES
–PROPOSED SIDEWALK FEASIBILITY TO BE CONFIRMED
–ON–STREET BIKEWAY TO BE SIGNED AT 30 KM/H

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CITY OF SASKATOON

URBAN systems

Scale

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SASKATOON
NEIGHBOURHOOD BIKEWAYS PROJECT
DUDLEY STREET

Sheet Number		17 of 21
Project Number	Drawing Number	Revision
3257.0009.01	C5	B

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