Traffic Calming of Carlton Road (Kennedy Rd - McCowan Rd)

Development Services Committee

June 18, 2024

Existing Safety Conditions

- Very high operating speeds above posted speed limit of 40 km/hr
- 27 collisions on Carlton Rd between McCowan Rd and Kennedy Rd, from 2015 to 2022
- 10 angle collisions occurred at all-way stops
- 7 collisions involved pedestrians or cyclists
- 1 fatal collision in early 2000s at curve east of Loring Cres

2020 Traffic Safety Audit (Intersections)

Intersection	Systemic Safety Ranking (*)	Safety Risk Factors
Carlton Rd @ Central Park Dr	1	• High traffic volumes during peak hours exacerbate all safety risk factors • Traffic and pedestrian conflicts • Multi-lane approach to all-way stop control causes confusion • Collision history: 9 reported collisions in past 7 years, including 2 pedestrian collisions and 2 cyclist collisions
Carlton Rd @ Waterbridge Ln	9	• High traffic volumes during peak hours exacerbate all safety risk factors • Traffic and pedestrian conflicts • Multi-lane approach to all-way stop control causes confusion • Proximity to Kennedy Road intersection • Collision history: 8 reported collisions in past 7 years, including 2 pedestrian collisions
Carlton Rd @ Manhattan Dr	13	• High traffic volumes during peak hours exacerbate all safety risk factors • Traffic and pedestrian conflicts • Multi-lane approach to all-way stop control causes confusion • Intersection on a horizontal curve • Proximity to Houndsbrook Cres intersection

* Of 1,570 unsignalized intersections assessed, rank identifies locations with the greatest road design and operational risk factors (intersection features having strong correlation with specific collision types).

2020 Traffic Safety Audit (Road Segments)

Road Segment	Systemic Safety Ranking (*)	Safety Risk Factors
Carlton Rd between Kennedy Rd & Loring Cres (E)	35	• 4-lane major collector road • High traffic volumes during peak hours • Significant disparity in vehicle speeds (posted vs. actual) • Vehicles weaving between lanes • Designated cycling route without dedicated lane
Carlton Rd between Loring Cres (E) & Houndsbrook Cres	98	• 4-lane major collector road • High traffic volumes during peak hours • Significant disparity in vehicle speeds (posted vs. actual) • Vehicles weaving between lanes • 2 deficient horizontal curves in the road alignment, just east of Loring Cres. and at Manhattan Dr. • Multiple transit stops • Designated cycling route without dedicated lane

* Of 2,200 road segments assessed, rank identifies locations with the greatest road design and operational risk factors (roadway features having strong correlation with specific collision types).

Review & Analysis - Key Findings

- High operating speeds above posted speed limit
- Geometric road profile and design that limits stopping distance and sight distance at intersections
- Consistent pattern of angle collisions at intersections
- Elevated safety risks confirmed through City-wide Traffic Safety Audit

Safety improvements must address operating speed as it is the key factor in all the safety risks identified.

Proposed Traffic Calming Measures

Reduction in Lanes (Road Diet)

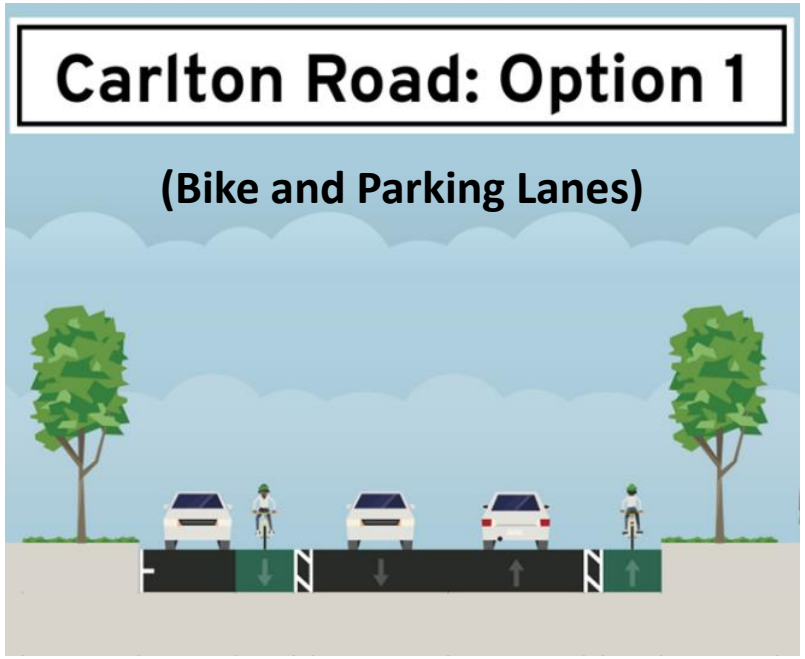
Controlled Pedestrian Crossings

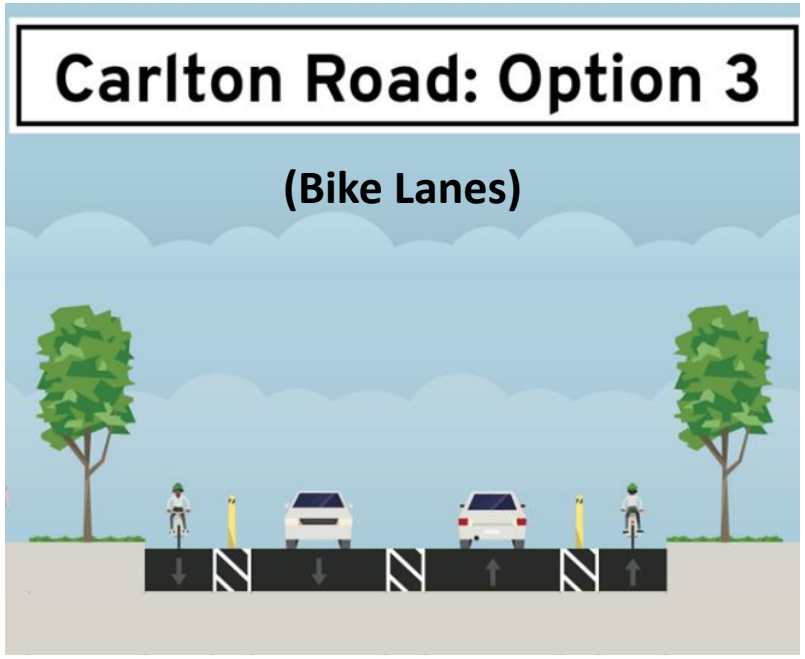
On-Road Pavement Markings

Bike Lane or Cycle Track

Conceptual Design Options

- Options presented at PIC #1:

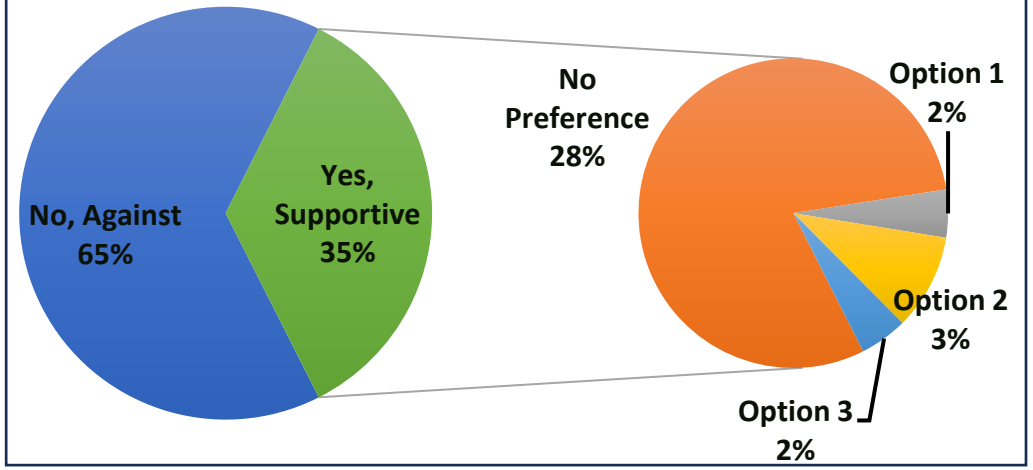




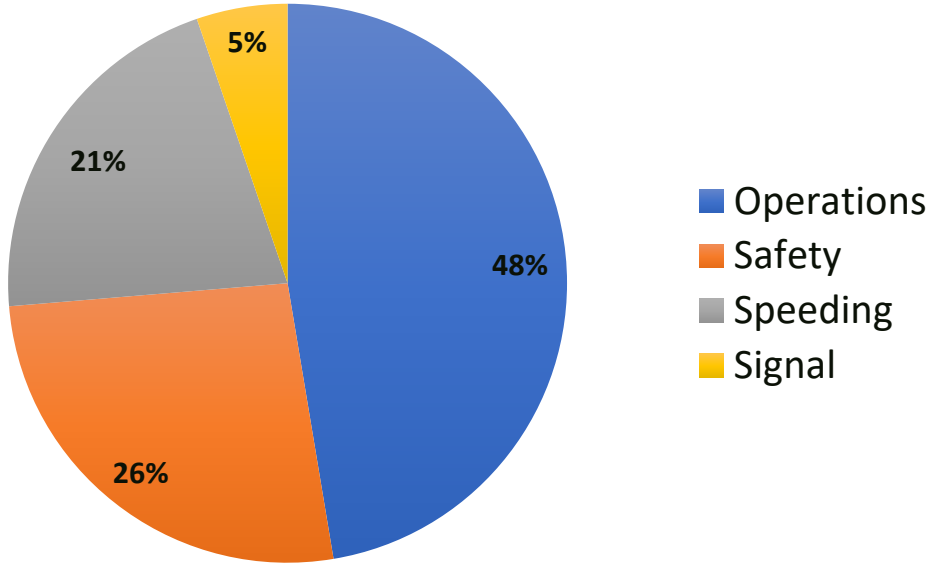
Options are developed based on utilizing the existing pavement width, between the existing curbs.

Public Feedback from PIC #1

- Mixed public reception with most residents (65%) not in favour of the proposed traffic calming measures.
- Of the 35% supportive, most did not show preference for an option.



- The public's primary concern was Traffic Operations (48%).
- Concerns about Safety, Speeding, and Traffic Signals make up the remainder.



Summary of Public Feedback – PIC #1

- A centre left-turn lane is preferred throughout the corridor, to accommodate left turning movements.
- Need to accommodate street parking is not a priority. Current street parking utilization is very low and there is very little demand, except near Quantztown Park.
- Carlton Road is too busy. Any reduction of lanes will create congestion and increase delays, including blocking driveways and side streets.
- Existing delays approaching Kennedy Road and McCowan Road will get worse.
- Potential queuing approaching Central Park Drive due to the traffic signal.
- Potential impacts to winter maintenance, waste removal, and curbside deliveries, if separate bicycle lanes are provided.
- Curb-side pick-up and drop-off activities in front of Markville Secondary School.
- Concerns about Markville Secondary Plan and growth, in general, contributing to more traffic on Carlton Road.

Myth: Road Diets Make Traffic Worse

A common misconception is that road diets create more traffic congestion. If applied correctly, road diets can maintain a roadway's effective capacity.

A four-lane roadway may already operate like a three-lane road

A corridor like Carlton Road has numerous driveways and side streets, so the majority of through traffic tends to utilize the outside travel lanes to avoid being delayed by left-turning vehicles slowing and stopping in the inside travel lanes. As a result, the four-lanes essentially behave like a three-lane road already. Therefore, if Carlton Road is converted to a three-lane cross-section through a road diet, it is unlikely to increase congestion overall.

Travel time impacts will be marginal vs. gains in safety

It's important to consider the big picture. Improving safety for all road users is the primary objective of this project. Occasionally, this may require accepting a small increase in motor vehicle travel time to gain a large increase in safety for all road users.

Road Diets can be successful for a broad range of traffic volumes

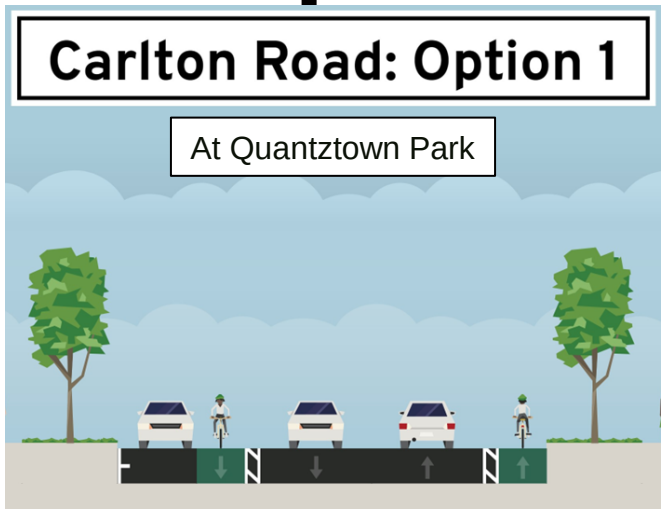
Transportation agencies have developed guidelines for selecting road diet locations. These guidelines help to ensure the effect on traffic operations as a result of road diet is minimized. Based on the industry standards, a roadway with volume less than 10,000 vehicles per day like Carlton Road is a great candidate for road diet, and traffic operation will most likely not be affected at all.

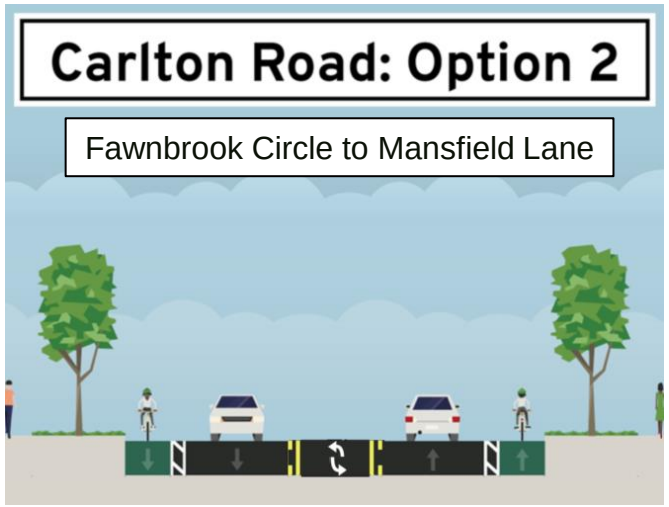
Source: US Federal Highway Administration (FHWA), Road Diet Informational Guide, November 2014

Revised Recommended Preferred Option

Hybrid cross-section consisting of:

- Single through-lane per direction between Loring Cres (E) and Mansfield Lane
- Maintain 2 westbound lanes approaching Waterbridge Lane, and Kennedy Road
- On-street parking in front of Quantztown Park
- A 2-way centre left-turn lane between Fawnbrook Circle and Mansfield Lane
- Uni-directional bike lanes
- Kennedy Rd and McCowan Rd intersections will not be affected by this project, including the approaches to the intersections





Corridor Travel Times

Corridor Travel Time (in minutes)		Existing	Hybrid Option
Morning Rush Hour	Eastbound	3.8	4.0
	Westbound	4.5	5.6
Afternoon Rush Hour	Eastbound	4.0	5.0
	Westbound	4.0	4.0

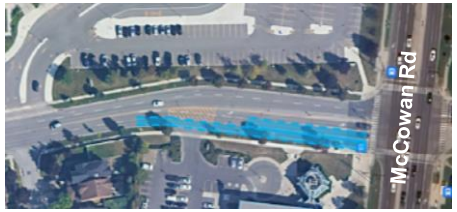
- **Morning Rush Hour**
  - Eastbound (toward McCowan): negligible change in travel time.
  - Westbound (toward Kennedy): 1 minute increase in travel time.

- **Afternoon Rush Hour**
  - Eastbound (toward McCowan): 1 minute increase in travel time.
  - Westbound (toward Kennedy): no change in travel time.

Intersection Queuing
(Existing vs. Post Implementation)

Morning Rush Hour
Carlton Rd & McCowan Rd

Existing
Through - 5 cars
Right - 13 cars



Proposed
Through - 6 cars
Right - 13 cars

Afternoon Rush Hour
Carlton Rd & McCowan Rd

Existing
Through - 6 cars
Right - 7 cars

Proposed
Through - 8 cars
Right - 7 cars

Morning Rush Hour
Carlton Rd & Kennedy Rd

Existing
Left - 13 cars
Through - 20 cars

Proposed
Left - 14 cars
Through - 20 cars

Afternoon Rush Hour
Carlton Rd & Kennedy Rd

Existing
Left - 11 cars
Through - 6 cars

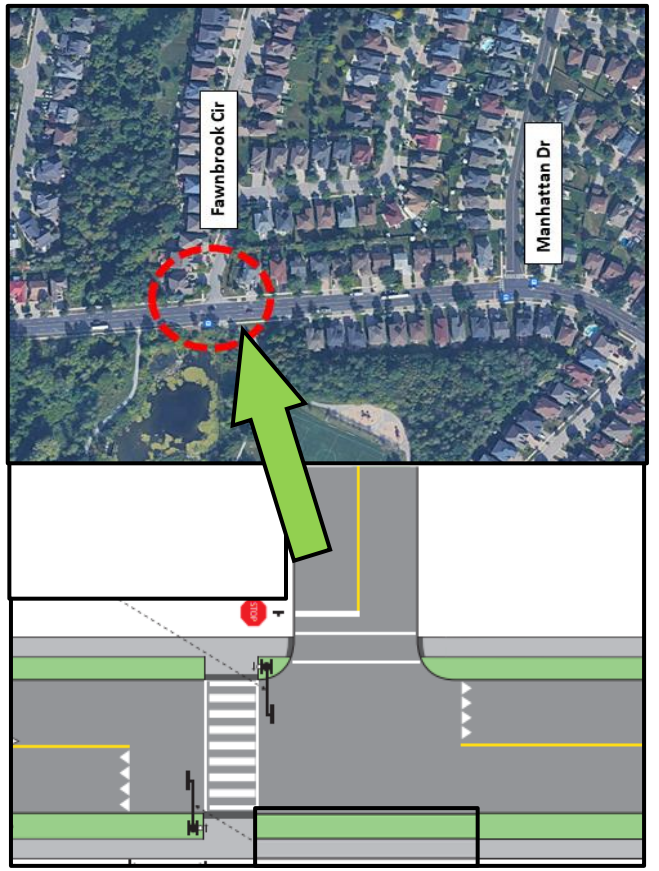
Proposed
Left - 10 cars
Through - 9 cars

** Measurements are approximate and intended to be used as a general indicator of anticipated queues.**

Other Recommendations

New Level 2 Type B Pedestrian Crossover at Fawnbrook Circle:

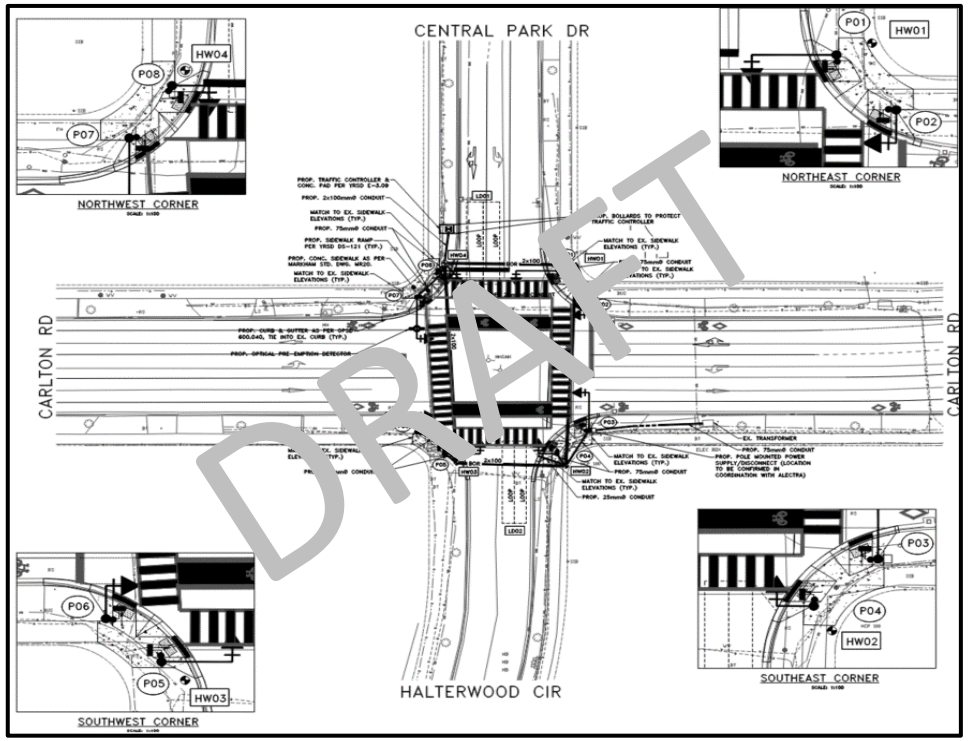
- Provides connectivity to Quantztown Park
- Additional crossing between Waterbridge Lane and Manhattan Drive
- Easy and safer access to YRT stop



Other Recommendations

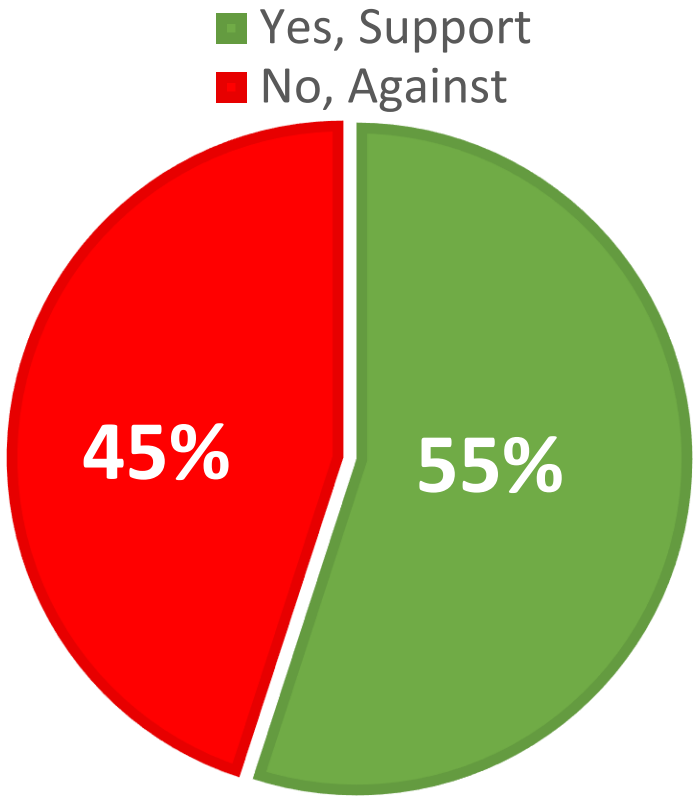
New Traffic Signal at Central Park Drive:

- Provides dedicated left turn lanes
- Provides an orderly progression of traffic and pedestrian movements through the intersection
- Reduces driver confusion caused by the existing all-way stop
- Provides safer and accessible pedestrian crossings



Summary of Public Feedback - PIC #2

- 34 registered attendees at PIC #2, held on May 29, 2024 to present and receive feedback on preferred hybrid design.
- 22 formal comments formally submitted at the PIC and through the project website.
- Comments for PIC #2 were more supportive of the project, understanding a need to improve safety.
- Feedback included constructive suggestions that will be considered when refining the final design.
- Public concerns received are consistent with those received at PIC #1, namely, increased congestion/delay and impact to school traffic operations at Markville Secondary School.



Copper Creek Drive Road Diet

- Major collector roadway with a 4-lane cross-section and bike lanes
- 1.9 km in length, from 9th Line to Donald Cousens Pkwy
- Average Daily Traffic (ADT) volume is 6,700 vehicles
- Posted speed 50 km/h with operating speeds of 62 - 75 km/h, depending on section.
- Roadway was reconfigured to 2-lanes, with a centre left turn lane at select locations, and separated/buffered bike lanes
- Post evaluation concluded operating speeds decreased by 4 – 11 km/h
- Reduced operating speeds allowed for the implementation of 3 formal Pedestrian Cross-overs (PXO)

Next Steps

- Recommend Preferred Option to City of Markham Development Services Committee for Council Approval – **June 2024**
- Complete detailed design – **Summer 2024**
- Construction budget approval – **Fall 2024**
- Implementation – **Summer 2025**
- Post-Project Evaluation & Monitoring – **Fall 2025 to Fall 2026**

Questions?