Minute No. 578
Report – Standing Policy Committee on Infrastructure Renewal and Public Works – June 9, 2022

Item No. 6 **Left Turn Signal at McGillivray Boulevard from Kenaston Common Drive and Low-Mounted Lights at St. Jean Baptiste Street and Provencher Boulevard (Waverley West Ward and St. Boniface Ward)**

COUNCIL DECISION:

Council concurred in the recommendation of the Standing Policy Committee on Infrastructure Renewal and Public Works and adopted the following:

1. That the installation of a left turn signal for traffic turning eastbound onto McGillivray Boulevard from Kenaston Common Drive be approved, funded from the Waverley West Ward allocation of the Land Dedication Reserve Fund to a maximum of $5,000, subject to the following:

    A. That all eligibility criteria for the Land Dedication Reserve Fund be waived in this instance, and that any remaining funds be returned to the Waverley West Ward allocation of the Land Dedication Reserve Fund.

2. That the installation of low-mounted lights at the lighted pedestrian crosswalk at St. Jean Baptiste Street and Provencher Boulevard be approved, funded from the St. Boniface Ward allocation of the Land Dedication Reserve Fund to a maximum of $25,000, subject to the following:

    A. That all eligibility criteria for the Land Dedication Reserve Fund be waived in this instance, and that any remaining funds be returned to the St. Boniface Ward allocation of the Land Dedication Reserve Fund.

3. That the Proper Officers of the City be authorized to do all things necessary to implement the intent of the forgoing.

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DECISION MAKING HISTORY:

Moved by Councillor Allard,

That the recommendation of the Standing Policy Committee on Infrastructure Renewal and Public Works be adopted by consent.

Carried

EXECUTIVE POLICY COMMITTEE RECOMMENDATION:

On June 15, 2022, the Executive Policy Committee concurred in the recommendation of the Standing Policy Committee on Infrastructure Renewal and Public Works and submitted the matter to Council.

STANDING COMMITTEE RECOMMENDATION:

On June 9, 2022, the Standing Policy Committee on Infrastructure Renewal and Public Works did not concur in the recommendation of the Winnipeg Public Service and recommended to the Executive Policy Committee and Council:

1. That the installation of a left turn signal for traffic turning eastbound onto McGillivray Boulevard from Kenaston Common Drive be approved, funded from the Waverley West Ward allocation of the Land Dedication Reserve Fund to a maximum of $5,000, subject to the following:

    A. That all eligibility criteria for the Land Dedication Reserve Fund be waived in this instance, and that any remaining funds be returned to the Waverley West Ward allocation of the Land Dedication Reserve Fund.

2. That the installation of low-mounted lights at the lighted pedestrian crosswalk at St. Jean Baptiste Street and Provencher Boulevard be approved, funded from the St. Boniface Ward allocation of the Land Dedication Reserve Fund to a maximum of $25,000, subject to the following:

    A. That all eligibility criteria for the Land Dedication Reserve Fund be waived in this instance, and that any remaining funds be returned to the St. Boniface Ward allocation of the Land Dedication Reserve Fund.

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DECISION MAKING HISTORY (continued):

STANDING COMMITTEE RECOMMENDATION (continued):

3. That the Proper Officers of the City be authorized to do all things necessary to implement the intent of the forgoing.

Councillor Lukes, Waverley West Ward, submitted a communication dated June 9, 2022 with respect to the matter.

On May 4, 2022, the Standing Policy Committee on Infrastructure Renewal and Public Works further laid the matter over to its meeting on June 9, 2022.

On April 6, 2022, the Standing Policy Committee on Infrastructure Renewal and Public Works laid the matter over to its meeting on May 4, 2022.

On March 8, 2022, the Standing Policy Committee on Infrastructure Renewal and Public Works laid the matter over to its meeting on April 6, 2022.

On November 5, 2021, the Standing Policy Committee on Infrastructure Renewal and Public Works granted an extension of time of 120 days for the Winnipeg Public Service to report back on the matter.

On May 12, 2021, the Standing Policy Committee on Infrastructure Renewal and Public Works concurred in the recommendation of the Assiniboia Community Committee and directed the Winnipeg Public Service to report back to the Standing Committee in 150 days.

COMMUNITY COMMITTEE RECOMMENDATION:

On May 3, 2021, the Assiniboia Community Committee passed the following motion:

WHEREAS the Costco on Kenaston Common has recently expanded their parking lot to accommodate an increase in customers;

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DECISION MAKING HISTORY (continued):

COMMUNITY COMMITTEE RECOMMENDATION (continued):

AND WHEREAS south bound Kenaston Common traffic volumes do not have sufficient time for a left turn onto McGillivray Blvd., resulting in vehicles navigating the turn on yellows and sometimes red lights;

THEREFORE BE IT RESOLVED that the Standing Policy Committee on Infrastructure Renewal and Public Works be requested to direct the Winnipeg Public Service to determine if the following is warranted:

1. A left turn signal for traffic turning eastbound onto McGillivray Boulevard from Kenaston Common Drive; and

2. Allowing both southbound lanes on Kenaston Common Drive to turn left onto McGillivray Boulevard.

ADMINISTRATIVE REPORT

Title: Traffic Study – Kenaston Common Drive and McGillivray Boulevard

Critical Path: Standing Policy Committee on Infrastructure Renewal and Public Works

AUTHORIZATION

Author	Department Head	CFO	CAO
D. Patman, P.Eng	J. Berezowsky	N/A	M. Jack

EXECUTIVE SUMMARY

The McGillivray Boulevard and Kenaston Common Drive/Columbia Drive intersection and adjacent intersections on McGillivray Boulevard were reviewed in July 2021 as part of a Traffic Signal Timing Corridor Review. The corridor review involved reviewing all recent 311 cases, updating available traffic counts, updating signal timing plans to match current timing practices, optimizing the traffic model, and then installing the signal timing. The corridor review resulted in changes to pedestrian timings, all red times, cycle lengths, the amount of time given to each traffic direction, and coordination between signals.

This report presents the findings of a traffic study for the intersection of McGillivray Boulevard and Kenaston Common Drive/Columbia Drive which investigated potential modifications to improve the ability for motorists to exit southbound from the Kenaston Common shopping area. Two specific scenarios were assessed:

1. **The addition of a southbound protected-permissive left turn phase.**
   Adding a separate left turn arrow phase generally results in an increase of overall average intersection delay and reduces the total intersection vehicular capacity because the time for the left turn arrow phase must be taken from other movements, or added to the total cycle length. To benefit from a left turn phase, the left turn vehicular volume must represent a significant portion of the total intersection volume or the intersection must have a demonstrated history of collisions that are attributed to left-turning vehicles.

   A traffic count and site observations were completed in November 2021. Based on this analysis, a southbound left (SBL) turn phase is not warranted and is not recommended at this time.

2. **Permitting both southbound lanes to turn left onto McGillivray Boulevard.**
   Modifying the lane designations from one dedicated southbound left lane with one through lane to one dedicated southbound left lane with one shared southbound left/through lane would require split phasing to completely separate the northbound and southbound movements. Accommodating the split phasing would require the cycle length be increased from 100 seconds to greater than 120 seconds and would have impacts on signal timing along adjacent intersections on the McGillivray Boulevard corridor, as these intersections are coordinated.

The split phasing would decrease delays for the southbound movement but would increase delays for northbound, eastbound, and westbound traffic and would also likely increase delays at adjacent intersections on McGillivray Boulevard because of queuing. Modifying the lane designation to permit both southbound lanes to turn left onto McGillivray Boulevard is not recommended at this time.

Based on site observations of the intersection and the Synchro analysis, the highest delay for the southbound left movement is experienced on peak periods during the weekends. The signal timing plan for the intersection will be adjusted to provide a greater percentage of green time for the southbound movement on weekends, which will help reduce delay for southbound motorists.

RECOMMENDATIONS

That this report be received as information.

REASON FOR THE REPORT

On May 12, 2021; the Standing Policy Committee on Infrastructure Renewal and Public Works concurred in the recommendation of the Assiniboia Community Committee and directed the Winnipeg Public Service to report back in 150 days to determine if the following are warranted:

1. A left turn signal for traffic turning eastbound onto McGillivray Boulevard from Kenaston Common Drive; and

2. Allowing both southbound lanes on Kenaston Common Drive to turn left onto McGillivray Boulevard.

IMPLICATIONS OF THE RECOMMENDATIONS

As this report is for information purposes only, there are no implications.

HISTORY/DISCUSSION

BACKGROUND INFORMATION

The following reasons for the request were included in the May 3, 2021 motion from the Assiniboia Community Committee:

- The Costco on Kenaston Common Drive has recently expanded their parking lot to accommodate an increase in customers.
- Southbound Kenaston Common Drive traffic volumes do not have sufficient time for a left turn onto McGillivray Boulevard, resulting in vehicles navigating the turn on yellows and sometimes red lights.

TRAFFIC CHARACTERISTICS

The intersection of McGillivray Boulevard and Kenaston Common Drive/Columbia Drive is illustrated in Figure 1. It is a signalized four-legged intersection that currently consists of the following approach geometry:

- The eastbound approach on McGillivray Boulevard consists of one left-turn lane (EBL), two through lanes, and one shared right-turn/through lane (EBTR).
- The westbound approach on McGillivray Boulevard consists of one left-turn lane (WBL), two through lanes (WBT), and one right-turn cut-off lane (WBR).
- The southbound approach on Kenaston Common Drive consists of one left-turn lane (SBL), one through lane, and one right-turn cut-off lane (SBTR).
- The northbound approach on Columbia Drive consists of one left-turn lane (NBL), two through lanes, and one right-turn cut-off lane (NBTR).



Figure 1: McGillivray Boulevard and Columbia Drive/Kenaston Common Drive Intersection
(image source: City of Winnipeg iView)

McGillivray Boulevard is a four-lane divided Regional Street. It has a posted speed limit of 70 km/h and carries an average daily traffic (ADT) volume of approximately 14,300 vehicles (2018 Traffic Flow Map) on this segment.

Columbia Drive is a four-lane divided collector street that provides access to the community of Whyte Ridge. It has a default speed limit of 50 km/h and carries an ADT volume of approximately 10,850 vehicles (based on the closest volume count).

Kenaston Common Drive is a four-lane undivided roadway providing access to the Kenaston Common commercial area. The roadway is not owned and maintained by the City of Winnipeg, it is part of the internal roadway network of the Kenaston Common shopping area.

ADDITION OF A SOUTHBOUND PROTECTED LEFT TURN SIGNAL PHASE

Left Turn Phase – Warrant Criteria and Evaluation

Motorists may turn left on a green ball signal indication at signalized intersections after yielding the right-of-way to opposing vehicular and pedestrian traffic. Adding a separate left turn arrow phase generally results in an increase of overall average delay and reduces the total intersection vehicular capacity because the time for the left turn arrow phase must be taken from other movements at the intersection, or added to the total cycle length. Therefore, to benefit from a left turn phase, the left turn vehicular volume must represent a significant portion of the total intersection volume and experience delays in excess of one signal cycle on a regular basis.

The Public Service has a Technical Guideline and Practice it uses for warranting implementation of a left turn phase, developed from the Manual of Uniform Traffic Control Devices for Canada (MUTCDC); a national guideline. A traffic count and vehicle observations were completed in November 2021 to evaluate the warrant. To warrant installation of a separate left turn phase, criteria ‘a’ and at least one of the additional secondary criteria ‘b-e’ must be met:

a) The left turn demand must exceed two vehicles per signal cycle (60 vehicles per hour) for at least four hours of a typical weekday.

   This warrant criterion is met. The left turn demand is 7 - 8 vehicles per signal cycle which greatly exceeds the requirement of two vehicles per signal cycle.

b) More than 25% of the left-turning volume must be delayed by more than one signal cycle during the highest hour during the peak traffic period.

   This warrant criterion is NOT met. During the weekday PM peak period, approximately 12% of the left-turning volume is delayed by more than once signal cycle. During the weekend peak period approximately 20% of the left-turning volume is delayed by more than one signal cycle.

c) More than 12 collisions involving left-turning motorists (same approach) for the most recent three-year reporting period.

   This warrant criterion is NOT met. There have been 7 reported collisions during the three-year period 2017-2019 (0 fatal collisions, 4 injury collisions, and 3 property damage-only collisions).

d) The average number of left turns during the intergreen (the time between the green signal displays, i.e. the amber and red signal displays) exceeds 2.0 PCUs (Passenger Car Units). The PCU count does not include vehicles established in the intersection during the green phase and clearing on the amber/red phases.
This warrant criterion is NOT met. There were fewer than 2 PCUs completing left turn on the intergreen.

e) The left-turn transit demand exceeds 3 in-service vehicles per hour.

This warrant criterion is NOT met. The only transit route that requires this turning movement is the route 677. This route has a maximum frequency of 3 buses per hour during the weekday peak period. The Winnipeg Transit Master Plan (both short and long term scenarios) will be removing this turning movement.

None of the secondary warrant criteria are met and the left turn signal phase is not warranted.

Left Turn Phase Traffic Operations Analysis
Although not warranted, a detailed Synchro traffic operations analysis was completed to determine the potential impacts to vehicular delay. To analyze the level of service impacts of adding a southbound-left (SBL) phase for traffic turning from Kenaston Common Drive onto McGillivray Boulevard, the following three scenarios were modeled in Synchro traffic software for the average, PM peak period, and weekend peak period:

- **Scenario 1: Existing phasing (100 second cycle).** All Scenario 1 signal timing plans use a 100 s cycle length to maintain coordination with the surrounding intersections.

- **Scenario 2: Adding a protected-permissive SBL phase with a 120 second cycle.** The addition of a leading SBL phase requires a longer 120 s cycle length to accommodate the later start of the crosswalk phase in the cycle; the surrounding intersections on McGillivray Boulevard would also need to be changed to match the 120 s to maintain coordination. The east crosswalk (ExW) has a relatively long crossing distance at this location due to the wide median, resulting in a long duration pedestrian phase. Depending on the length of the preceding SBL phase, the ExW either does not fit within a 100 s cycle or would result in phase lengths that are significantly limited in flexibility within the 100s cycle.

- **Scenario 3: Adding a protected-permissive SBL phase while maintaining the 100 second cycle.** This scenario maintains the existing 100 s cycle length but would have to skip the left turn arrow phase whenever a pedestrian call was made to the ExW, as the crosswalk phase and SBL cannot both be accommodated during a 100 s cycle length.

Traffic volumes counts were completed in November 2021 for the traffic modelling. The results for each scenario in terms of the volume to capacity ratio (v/c), delay, and level of service (LOS, rated by letter grade from A to F) are provided in Table 1, Table 2, and Table 3 for the average, Weekend, and PM peak, respectively. The delay reported in the tables is the total average delay given by Synchro.

Table 1: Average Peak Scenarios

Model		Int.	EBL	EBTR	WBL	WBT	WBR	NBL	NBTR	SBL	SBTR
Scenario 1 Existing 100 s Cycle	v/c	-	0.47	0.35	0.61	0.36	0.41	0.14	0.25	0.89	0.51
	Delay (s)	**24.9**	53.8	26.6	44.7	18.4	3.1	19.6	11.0	54.0	23.5
	LOS	**C**	D	C	D	B	A	B	B	D	C
Scenario 2 SBL Phase 120 s Cycle	v/c (max)	-	0.49	0.37	0.56	0.37	0.41	0.18	0.38	0.75	0.46
	Delay (s)	**29.4**	63.1	33.1	59.4	31.8	5.2	37.2	21.3	36.2	24.8
	LOS	**C**	E	C	E	C	A	D	C	D	C
Scenario 3 SBL Phase 100 s Cycle	v/c	-	0.46	0.35	0.60	0.37	0.41	0.38	0.67	0.76	0.51
	Delay (s)	**27.1**	52.1	26.1	54.3	26.4	5.0	49.5	29.3	34.1	23.7
	LOS	**C**	D	C	D	C	A	D	C	C	C

Table 2: Weekend Peak Scenarios

Model		Int.	EBL	EBTR	WBL	WBT	WBR	NBL	NBTR	SBL	SBTR
Scenario 1 Existing 100 s Cycle	v/c	-	0.68	0.48	0.90	0.43	0.53	0.25	0.27	1.00	0.52
	Delay (s)	**31.6**	66.0	30.4	65.3	23.1	5.1	21.5	8.3	76.9	22.8
	LOS	**C**	E	C	E	C	A	C	A	E	C
Scenario 2 SBL Phase 120 s Cycle	v/c (max)	-	0.65	0.46	0.83	0.41	0.51	0.38	0.47	0.85	0.51
	Delay (s)	**33.5**	71.2	35.8	75.9	34.2	5.7	47.4	19.3	43.3	25.9
	LOS	**C**	E	D	E	C	A	D	B	D	C
Scenario 3 SBL Phase 100 s Cycle	v/c	-	0.67	0.44	0.89	0.40	0.51	0.70	0.70	0.85	0.56
	Delay (s)	**32.0**	64.0	28.6	78.5	28.4	5.4	73.1	24.5	41.3	24.4
	LOS	**C**	E	C	E	C	A	E	C	D	C

Table 3: PM Peak Scenarios

Model		Int.	EBL	EBTR	WBL	WBT	WBR	NBL	NBTR	SBL	SBTR
Scenario 1 Existing 100 s Cycle	v/c	-	0.47	0.51	0.76	0.34	0.34	0.82	0.28	0.89	0.80
	Delay (s)	**30.3**	53.9	28.8	42.1	14.5	2.7	74.6	12.8	62.9	40.6
	LOS	**C**	D	C	D	B	A	E	B	E	D
Scenario 2 SBL Phase 120 s Cycle	v/c (max)	-	0.48	0.54	0.72	0.35	0.34	0.67	0.45	0.78	0.73
	Delay (s)	**34.6**	63.1	35.4	56.6	24.8	3.9	66.5	23.7	46.7	40.1
	LOS	**D**	E	D	E	C	A	E	C	D	D
Scenario 3 SBL Phase 100 s Cycle	v/c	-	0.46	0.55	0.75	0.36	0.35	0.82	0.53	0.81	0.76
	Delay (s)	**32.1**	53.1	29.9	52.3	21.8	3.8	83.3	22.6	46.3	37.1
	LOS	**C**	D	C	D	C	A	F	C	D	D

In general, the addition of a SBL protected-permissive left turn phase improves the level of service for the SBL while increasing delays for northbound and eastbound/westbound traffic:

- For the SBL vehicle movement, the addition of a protected-permissive SBL phase decreased the v/c ratio and delay for all time periods.

- For eastbound/westbound traffic, the addition of the SBL phase generally increased the delay for time periods under both Scenario 2 and 3.
- The addition of the SBL phase resulted in an increase to overall intersection delay for all time periods under both Scenario 2 and 3.

PERMITTING BOTH SOUTHBOUND LANES TO TURN LEFT ONTO MCGILLIVRAY BOULEVARD

Modifying the lane designations from a dedicated SBL and one through lane to a dedicated SBL lane and a shared SBL/SB lane would require that the SBL be a protected only left turn and the use of split phasing. Split phasing is a traffic signal operation where all southbound movements (i.e. SB/SBL and the eastside crosswalk) start and terminate together and then all northbound movements (i.e. NB/NBL and the west crosswalk) start and terminate together.

Without split phasing, if one phase terminated earlier than the other, the shared SB/SBL lane may be blocked by a vehicle stopped for the earlier terminated phase while the other phase is still on, which creates an undesirable situation because no SB vehicles can proceed despite the SB green light. Furthermore, split phasing also presents similar, but exacerbated cycle length issues that were described in the previous report section. A cycle length increase would be required at this intersection to accommodate split phasing along with updates to the surrounding intersections along McGillivray Boulevard to maintain coordination. Further investigation would be required to determine the exact cycle length required for split phasing; however, an initial review shows the cycle length would likely be greater than 120 s.

ADDITIONAL ANALYSIS

Based on site observations of the intersection and the Synchro analysis, the highest delay for the southbound left movement is experienced on peak periods during the weekends. The signal timing plan for the intersection will be adjusted to provide a greater percentage of green time for the southbound movement on weekends, which will help reduce delay for southbound motorists.

FINANCIAL IMPACT

Financial Impact Statement **Date:** January 27, 2022

Project Name:

Traffic Study – Kenaston Common Drive and McGillivray Boulevard

COMMENTS:

There is no financial impact associated with the recommendation of this report.

"signed by J. Ruby, CPA, CA"
J. Ruby CPA, CA
Manager of Finance & Administration

CONSULTATION

This Report has been prepared in consultation with: N/A

OURWINNIPEG POLICY ALIGNMENT

The Sustainable Transportation Direction Strategy developed as part of OurWinnipeg forms the policy framework for the Transportation Master Plan (TMP). Sustainable Transportation identified a vision and five Key Strategic Goals which are critical to achieving a balanced and sustainable transportation system for Winnipeg. These goals form the basis for the TMP and the directions and strategies contained within it:

1. A transportation system that is dynamically integrated with land use;
2. A transportation system that supports active, accessible and healthy lifestyle options;
3. A safe, efficient and equitable transportation system for people, goods and services;
4. Transportation infrastructure that is well maintained; and
5. A transportation system that is financially sustainable.

The recommendations within this report are consistent with the Key Strategic Goals.

WINNIPEG CLIMATE ACTION PLAN ALIGNMENT

There is a linkage between making Winnipeg's transportation network more efficient with Key Direction 3.5 "Reduce Traffic Congestion".

WINNIPEG POVERTY REDUCTION STRATEGY ALIGNMENT

N/A

SUBMITTED BY

Department: Public Works
Division: Transportation
Prepared by: K. Patmore, M.Sc., P.Eng., Regional Traffic Engineer
Date: January 27, 2022