

Item No. 3
Halifax Regional Council
December 3, 2013

TO: Mayor Savage and Members of Halifax Regional Council

Original Signed by Director

SUBMITTED BY: _____
David Hubley P.Eng., A/Director Transportation and Public Works

DATE: November 6, 2013

SUBJECT: Caldwell Road Access from Inishowen Subdivision

INFORMATION REPORT

ORIGIN

Item 10.2 raised at the October 8, 2013, meeting of Halifax Regional Council. Councillor Nicoll submitted a petition containing 476 signatures from residents of Inishowen subdivision requesting HRM provide a safe, reliable way of leaving their subdivision during peak traffic times. They are requesting to have traffic lights installed at one of the three intersections to allow entrance and exit to Inishowen subdivision.

LEGISLATIVE AUTHORITY

Section 31 “Petitions and Communications” of Administrative Order Number One Respecting the Procedures of the Council.

BACKGROUND

Inishowen Subdivision is located west of Caldwell Road between Portland Street to the north and Deerbrooke Drive in the south. The subdivision has three intersections with Caldwell Road; a t-intersection at Wexford Road and Caldwell Road, a 4-legged intersection at Delta Drive and Caldwell Road and a 4-legged intersection at Cherrywood Drive/Deerbrooke Drive and Caldwell Road. All the intersections are free-flow on Caldwell Road with stop control on the intersecting side streets. Caldwell Road is classified as a major collector roadway, whereas Wexford Road, Delta Drive, and Cherrywood Drive/Deerbrooke Drive are classified as local roadways. See attachment A-1.

DISCUSSION

As part of the 2013 Capital Program, modifications are being made to Caldwell Road from Hampton Green to Portland Street/Cole Harbour Road. A southbound left turn is being constructed at Hampton Green and an additional northbound left turn lane is being constructed at Caldwell Road.

Traffic Services has adopted the Transportation Association of Canada (TAC) methodology to determine whether traffic signals or all-way stops are warranted at an intersection. In the case of traffic signals, the TAC standard requires that a location generate 100 points in the warrant matrix before traffic signals are considered for installation. These warrant points are generated by characteristics such as: traffic and pedestrian volumes, turning movements, intersection geometry, number of travel lanes, and proximity to adjacent traffic signals. This method of analysis allows staff to measure and compare intersections on a fair and objective basis to establish priorities.

Using data from the most recent six hour counts, the warrant analysis at the following locations revealed the following:

Caldwell Road/Hampton Green - 70 warrant points
Caldwell Road/Delta Drive - 56 warrant points
Caldwell Road/Astral Drive - 63 warrant points

None of these locations come close to the 100 points required before traffic signals would be considered. Given that these intersections are the busiest along this corridor, by extrapolation neither Caldwell Road at Cherrywood Drive/Deerbrooke Drive nor Caldwell Road at Wexford Road would warrant traffic signals either.

As per TAC, all-way stop control may be warranted at intersections which have a significant and relatively equal volume of approaching traffic on each of the intersecting roadways, where there is significant delay to minor road vehicular traffic or where an unusual collision history exists. All-way stops require a minimum volume of 200 vehicles/pedestrians per hour from the minor road and an equal volume of traffic; or no more than twice as much traffic on the main road as on the side road. The traffic volume on Caldwell Road in comparison to the noted side streets is significantly higher. Table 1 and Table 2 below illustrate the differences in PM peak traffic volumes from the side street as compared with Caldwell Road:

Table 1: AM Peak Hour Traffic Volumes

	Minor Road (Stop)	Caldwell Road (Free-Flow)	Ratio of Traffic (Caldwell Road to side street)
Wexford Drive	52	1116	21:1
Delta Drive	134	1060	8:1
Cherrywood Drive & Deerbrooke Drive	109	1026	9:1

Table 2: PM Peak Hour Traffic Volumes

	Minor Road (Stop)	Caldwell Road (Free-Flow)	Ratio of Traffic (Caldwell Road to side street)
Wexford Drive	18	1424	79:1
Delta Drive	167	1025	6:1
Cherrywood Drive & Deerbrooke Drive	63	1201	19:1

Traffic volumes on Caldwell Road are much higher than the maximum ratio of 2:1 required for an all-way stop and none of the side streets have traffic volumes of 200 vehicles in any of the peak hours.

Due to the high volume of traffic on Caldwell Road there will be delays to motorists wishing to turn left onto Caldwell Road during the peak hours. Site observations were completed in June in the PM peak to determine the delay to left turning motorists. The results can be found in Table 3:

Table 3: Left Turn Delay PM Peak Hour

	# of Left Turns	Average Delay for Left Turning Vehicles (sec)
Delta Drive (west side)	10	53
Delta Drive (east side)	13	54
Cherrywood Drive	14	55
Deerbrooke Drive	8	43

Traffic leaving Inishowen does experience delays trying to enter Caldwell Road as confirmed by field observations and using traffic counts in simulation software. While installing an all-way stop would decrease the delay to motorists leaving Inishowen, the increase in delay to traffic on Caldwell Road would be much greater because traffic volumes on Caldwell Road are substantially higher. Table 4 below illustrates the intersection delay conditions in the PM peak hour with theoretical all-way stops at the noted side streets along Caldwell Road:

Table 4: All-Way Stop Delay in PM Peak

	Minor Road (Stop) Delay (sec)	Caldwell Rd (Stop) Delay (sec)
Wexford Drive	10	148
Delta Drive	10	102
Cherrywood Drive & Deerbrooke Drive	10	66

Delay (in seconds) in the PM peak direction as calculated by simulation software using recent counts

Comparing Table 4 with Table 3 the delay to left turning vehicles from Inishowen has decreased from over 50 seconds to 10 seconds. On Caldwell Road, the existing delay would be zero

seconds as it is free-flow. By switching traffic control from a two-way stop to an all-way stop it is evident that a marginal decrease in delay from the minor roads is negated by the substantial increase in delay to Caldwell Road. Under an all-way stop, the intersection performance is pushed to capacity in the case of Cherrywood Drive/Deerbrooke Drive, or over capacity (traffic jam) in the case of the other two intersections. In addition, an all-way stop would have the undesirable effect of causing shortcutting traffic through Inishowen as motorists on Caldwell Road will look for ways to bypass the congestion by using the residential areas.

All-way stops may help reduce the instances of right angle collisions at intersections. TAC warrants all-way stops when there is a significant history; five or more reported collisions per year of right angle type collisions. Collision data for the last five-years was obtained from the RCMP for the intersections of Caldwell Road and Delta Drive and Caldwell Road and Cherrywood Drive/Deerbrooke Drive. With only one right angle collision in the last five years at all of the intersections combined, the collision criteria for an all-way stop is not met.

Due to the low minor road traffic volumes, and the substantial increase in delay to traffic on Caldwell Road, all-way stops are not warranted at any of the intersections in Inishowen.

FINANCIAL IMPLICATIONS

There are no financial implications associated with this report.

COMMUNITY ENGAGEMENT

Community engagement was not deemed to be necessary in this process because decisions were based on operational procedures.

ATTACHMENT

Caldwell Road Access from Inishowen Subdivision Map A-1

A copy of this report can be obtained online at <http://www.halifax.ca/council/agendasc/cagenda.html> then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

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Report Approved by: _____
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Caldwell Road Access from Inishowen Subdivision Map A-1

