

The Corporation of the City of Kawartha Lakes

Council Report

Report Number ENG2017-003

Date: March 21, 2017

Time: 2:00 p.m.

Place: Council Chambers

Ward Community Identifier: 4

Subject: *Request for Traffic Control – Portage Road and Kirkfield Road*

Author/Title: Joseph Kelly, Senior Engineering Technician

Signature: 

RECOMMENDATION(S):

RESOLVED THAT Report ENG2017-003, *Request for Traffic Control – Portage Road and Kirkfield Road*, be received;

THAT an all-way stop be installed at the intersection of Portage Road and Kirkfield Road;

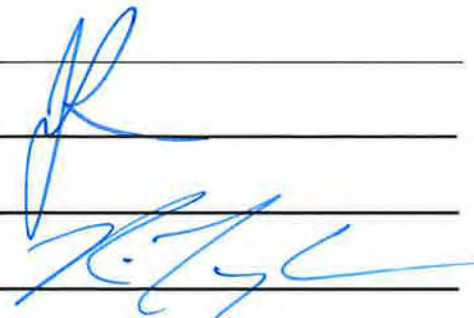
THAT the necessary By-law for the above recommendations be forwarded to council for adoption; and

THAT the Mayor and Clerk be authorized to execute any documents and agreements required by the approval of this application/agreement/decision.

Department Head:

Corporate Services Director / Other:

Chief Administrative Officer:



Background:

The City of Kawartha Lakes Engineering Department has received several requests/complaints regarding the Portage Road (CKL Rd 48) and Kirkfield Rd (CKL Rd 6) intersection in the hamlet of Kirkfield. The majority of the complaints are with respect to the overall perceived level of safety at the intersection with requests for the installation of an all-way stop or traffic control signal.

This report addresses those concerns.

Both roads are classified as arterial roads. Kirkfield road, running north/south, is currently stop controlled. A key map can be seen in Appendix A.

A justification review was carried out to determine if implementing an all-way stop or traffic light would be an appropriate action. For justification purposes, Portage road is considered the major road and Kirkfield road is considered the minor road.

An eight hour peak traffic count was performed on May 15, 2015, the Friday of the Victoria Day long weekend. It was expected to experience greater than average traffic volumes by up to 20% and was chosen purposefully to obtain data representative of peak summer months. Results of the count can be seen in Appendix B.

All-way Stop Warrants:

The Ontario Traffic Manual (OTM) has two methods to determine if an all-way stop is warranted.

1) All-way Stop Minimum Volume Warrant (Major Roads)

The OTM suggests that an all-way stop control may be considered on major roads where conditions are met for all of the following:

- a) Total hourly vehicular volume on all approaches must exceed 500 per hour; AND
- b) Combined vehicle and pedestrian volume on a minor street must exceed 200 units per hour; AND
- c) Average delay to traffic on minor street must exceed 30 second; AND
- d) Volume split does not exceed 70/30

With a total volume averaging 422 vehicles per hour (84%), a minor street combined volume of 122 units an hour (62%) and a volume split of 73/27, the All-way Stop Minimum Volume Warrant (Major Roads) is not met. Results can be seen in Appendix C.

2) All-way Stop Collision Warrant

An all-way stop control may be considered on an intersection with a high accident frequency. For the purpose of this warrant, a high accident frequency is an average of four collisions per year over a three-year period. Only those accidents susceptible to relief through multi-way stop control must be considered.

The intersection has a reportable collision average of 0.7 collision per year over the last three years of available data. Therefore, the All-way Stop Collision Warrant is not met (Appendix C).

Sight Distance

All-way stops may be used where the minimum sight distance is not achieved. There is a convenience store located at the southeast corner of the intersection. Parking utilized in the boulevard in front of the store on Portage Road presents a temporary hazard by reducing the sight distance for the south approach to substandard levels. East of the intersection there is a hill which affects drivers' behavior at the stop sign. During the eight hour count, while multiple cars, trucks, and delivery trucks utilized the boulevard in front of the store, staff witnessed three near misses at the intersection. It should be noted that the parking spaces at the south side of the store on Kirkfield Road appear to be underutilized. A site picture and sight distance estimates can be seen in Appendix D.

Interviews with staff at the Kirkfield Service Centre revealed that no-parking signs have been attempted in the past but had a high non-compliance rate and were not enforced. It is unknown if this was before the latest parking By-law. CKL By-law 2012-173 (Parking By-law) prohibits parking within 9m of an intersection without signage and up to a distance of 30m with signage. With signage, it is within the scope of the By-law to prohibit parking on the boulevard without further amendment.

Traffic Control Signal Justifications:

The OTM has seven signal justification methods. The OTM states "for a traffic signal to be technically justified, at least one of the justifications must be fulfilled. Unless one or more of the signal justifications are met, the installation of signals would not normally proceed as it would likely result in an increase in overall intersection delay and/or have as negative impact on intersection safety."

The following justification methods are deemed most appropriate for this intersection:

- Minimum Vehicle Volumes
- Delay to Cross Traffic
- Combination Warrant
- Collision Experience
- Pedestrian Volume

No justification averaged more than 73% justified. Results can be seen in Appendix E.

Rationale:

The Traffic Signal Justification Warrants are not met. The All-way Stop Control Warrants are not met; however, sight distances are intermittently compromised throughout the day. Good engineering judgment should be used to determine if the warrant recommendations are appropriate for this intersection.

On the surface, parking is causing the sight distance deficiency so prohibiting it is one solution. Ideally, drivers would comply with new no parking signs and park on the Kirkfield Road boulevard which is currently underutilized; sight distance would then be restored. In reality we can expect high non-compliance with the no parking signs. This would facilitate a need for barriers such as curbs, bollards, or concrete planters in order to achieve the proper sight distance. There is the risk that whatever barrier is chosen to redirect parking could itself obstruct views.

Driver behavior at this intersection is hesitant. The sight distance deficiency is certainly a factor. Prohibiting the parking via physical barrier will restore the sight distance however it is difficult to gauge how the hill will continue to factor in driver behavior. Technically, at the sight distance required for the speed limit, cars are visible on the hill from the stop. Further east (40m) cars disappear in the hill for a moment and reappear just before the required sight distance. This may be contributing to driver hesitation.

As a result of the justification review carried out by staff, it is concluded that the installation of an all-way stop at the intersection Portage Road and Kirkfield Road (CKL Road 48 and CKL Rd 6) is recommended due to sight distance deficiencies and anxious/hesitant driver behavior. Sign placement should meet the Ontario Traffic Manual minimum as seen in Appendix F.

Other Alternatives Considered:

Install physical barriers such as concrete planters to prohibit parking in front of the store. This would restore the sight distance. This alternative is not recommended since the hill 100m east of the intersection seems to be affecting drivers' behavior at this unique intersection and may continue to affect their behavior after the mitigation of sight distance deficiencies.

A do nothing approach is not recommended.

Financial Considerations:

The cost is anticipated to be approximately \$20,000 for the installation of the all way stop , line and symbol markings and overhead flashing light.

Relationship of Recommendation(s) To Strategic Priorities:

The City's Strategic Plan outlines Council's Vision of a Vibrant and Growing Economy, An Exceptional Quality of Life and a Healthy Environment.

Providing life safety and protection is a priority objective of the City.

Review of Accessibility Implications of Any Development or Policy:

There are no accessibility implications associated with the recommended course of action.

Servicing Comments:

N/A

Consultations:

Mike Farquhar, Supervisor, Engineering – Technical Services
Aaron Sloan, Manager, Municipal Law Enforcement
Andrew Veale, Councillor – Ward 4

Attachments:

Appendix A: Key Map



ENG2017-003-
Appendix A.pdf

Appendix B: Traffic Count



ENG2017-003-
Appendix B.pdf

Appendix C: All-way Stop Warrant



ENG2017-003-
Appendix C.pdf

Appendix D: Site Picture and Sight Distance Estimate



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Appendix D.pdf

Appendix E: Traffic Control Justifications



ENG2017-003-
Appendix E.pdf

Appendix F: Recommended Sign Placement



ENG2017-003-
Appendix F.pdf

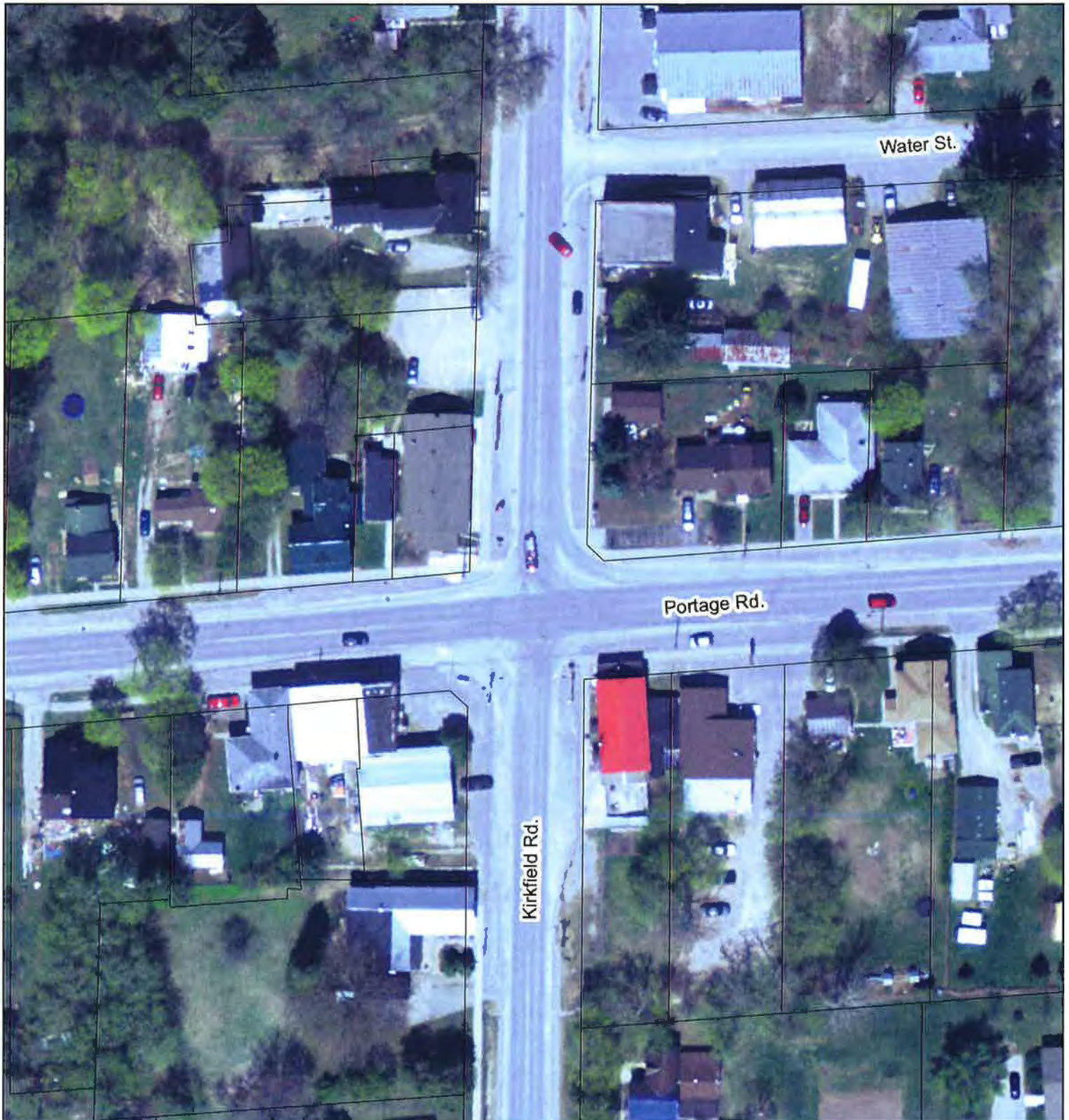
Phone: 705-324-9411 ext. 1151

E-Mail: jrojas@city.kawarthalakes.on.ca

Department Head: Juan Rojas, Director of Engineering & Corporate Assets

Department File: Engineering

ENG2017-003
Appendix A
Kirkfield - Key Map



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The foregoing information is given for convenience only and it should be clearly understood that you must satisfy yourself as to whether the premises and the zoning or proposed use thereof are in conformity with all applicable by-laws and regulations of the municipality.

All distances and locations are approximate and are not of survey quality. This map is illustrative only. Do not rely on it as being a precise indicator of privately or publicly owned land, routes, locations or features, nor as a guide to navigate.

0 25 50
Meters



Portage Rd and Kirkfield Rd																																																																													
Morning Peak Diagram					Specified Period From: 6:00:00 To: 9:00:00		One Hour Peak From: 8:00:00 To: 9:00:00																																																																						
Municipality: CKL Site #: 0000000001 Intersection: Portage Road & Kirkfield Rd TFR File #: 1 Count date: 15-May-2015					Weather conditions: Clear Person(s) who counted: Leanne Scott																																																																								
** Non-Signalized Intersection **					Major Road: Portage Road runs W/E																																																																								
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Portage Rd and Kirkfield Rd

<h3 style="margin: 0;">Mid-day Peak Diagram</h3>	Specified Period From: 11:00:00 To: 13:00:00	One Hour Peak From: 12:00:00 To: 13:00:00
Municipality: CKL Site #: 0000000001 Intersection: Portage Road & Kirkfield Rd TFR File #: 1 Count date: 15-May-2015	Weather conditions: Clear Person(s) who counted: Leanne Scott	
** Non-Signalized Intersection **		Major Road: Portage Road runs W/E

North Leg Total: 132 North Entering: 72 North Peds: 1 Peds Cross: 2	<table style="width: 100%;"> <tr> <td>Cyclists</td><td>1</td><td>0</td><td>0</td><td>1</td></tr> <tr> <td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr> <td>Cars</td><td>18</td><td>36</td><td>17</td><td>71</td></tr> <tr> <td>Totals</td><td>19</td><td>36</td><td>17</td><td></td></tr> </table>	Cyclists	1	0	0	1	Trucks	0	0	0	0	Cars	18	36	17	71	Totals	19	36	17		<table style="width: 100%;"> <tr> <td>Cyclists</td><td>2</td></tr> <tr> <td>Trucks</td><td>0</td></tr> <tr> <td>Cars</td><td>58</td></tr> <tr> <td>Totals</td><td>60</td></tr> </table>	Cyclists	2	Trucks	0	Cars	58	Totals	60	East Leg Total: 332 East Entering: 93 East Peds: 1 Peds Cross: 2
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Comments

Volumes increased due to Friday of a long weekend (Victoria Day). Parking at store caused sight issue. Witnessed three near misses.

Portage Rd and Kirkfield Rd

Afternoon Peak Diagram	Specified Period From: 14:00:00 To: 18:00:00	One Hour Peak From: 14:45:00 To: 15:45:00
Municipality: CKL Site #: 0000000001 Intersection: Portage Road & Kirkfield Rd TFR File #: 1 Count date: 15-May-2015	Weather conditions: Clear Person(s) who counted: Leanne Scott	
** Non-Signalized Intersection **		Major Road: Portage Road runs W/E

North Leg Total: 197 North Entering: 89 North Peds: 0 Peds Cross: \bowtie	<table style="width: 100%;"> <tr><td>Cyclists</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>16</td><td>50</td><td>23</td><td>89</td></tr> <tr><td>Totals</td><td>16</td><td>50</td><td>23</td><td></td></tr> </table>	Cyclists	0	0	0	0	Trucks	0	0	0	0	Cars	16	50	23	89	Totals	16	50	23			<table style="width: 100%;"> <tr><td>Cyclists</td><td>2</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>106</td></tr> <tr><td>Totals</td><td>108</td></tr> </table>	Cyclists	2	Trucks	0	Cars	106	Totals	108	East Leg Total: 436 East Entering: 98 East Peds: 0 Peds Cross: \times
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Cyclists	3																																																																					
Totals	338																																																																					

Peds Cross: \times West Peds: 0 West Entering: 333 West Leg Total: 422	<table style="width: 100%;"> <tr><td>Cars</td><td>74</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cyclists</td><td>0</td></tr> <tr><td>Totals</td><td>74</td></tr> </table>	Cars	74	Trucks	0	Cyclists	0	Totals	74		<table style="width: 100%;"> <tr><td>Cars</td><td>8</td><td>61</td><td>19</td><td>88</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cyclists</td><td>0</td><td>1</td><td>0</td><td>1</td></tr> <tr><td>Totals</td><td>8</td><td>62</td><td>19</td><td></td></tr> </table>	Cars	8	61	19	88	Trucks	0	0	0	0	Cyclists	0	1	0	1	Totals	8	62	19		Peds Cross: \bowtie South Peds: 3 South Entering: 89 South Leg Total: 163
Cars	74																															
Trucks	0																															
Cyclists	0																															
Totals	74																															
Cars	8	61	19	88																												
Trucks	0	0	0	0																												
Cyclists	0	1	0	1																												
Totals	8	62	19																													

Comments

Volumes increased due to Friday of a long weekend (Victoria Day). Parking at store caused sight issue.

Witnessed three near misses.

Portage Rd and Kirkfield Rd

Eight Hour Peak Diagram

Eight Hour Peak

From: 8:00:00

To: 16:00:00

Municipality: CKL

Site #: 0000000001

Intersection: Portage Road & Kirkfield Rd

TFR File #: 1

Count date: 15-May-2015

Weather conditions:

Clear

Person(s) who counted:

Leanne Scott

**** Non-Signalized Intersection ****

Major Road: Portage Road runs W/E

North Leg Total: 1017

North Entering: 494

North Peds: 18

Peds Cross: 2

Cyclists	Trucks	Cars	Totals
6	0	125	131
9	0	228	237
8	0	118	126
23	0	471	494

Cyclists	Trucks	Cars	Totals
25	0	498	523

East Leg Total: 2486

East Entering: 709

East Peds: 16

Peds Cross: 8

Cyclists	Trucks	Cars	Totals
66	0	622	688



Portage Rd (CKL Rd 48)

Cyclists	Trucks	Cars	Totals
11	0	131	142
57	3	1474	1534
1	0	71	72
69	3	1676	1748

Peds Cross: 8

West Peds: 7

West Entering: 1748

West Leg Total: 2436

Cars	Trucks	Cyclists	Totals
363	0	24	387



Kirkfield Rd (CKL Rd 6)

Cars	Trucks	Cyclists	Totals
44	0	1	45
252	0	10	262
97	0	20	117

Cars	Trucks	Cyclists	Totals
115	0	4	119
453	0	59	512
64	0	14	78
632	0	77	709

Portage Rd (CKL Rd 48)



Cars	Trucks	Cyclists	Totals
1689	3	85	1777

Peds Cross: 2

South Peds: 23

South Entering: 424

South Leg Total: 811

Comments

Volumes increased due to Firday of a long weekend (Victoria Day). Parking at store caused sight issue. Witnessed three near misses.

Portage Rd and Kirkfield Rd

Total Count Diagram

Municipality: CKL

Site #: 0000000001

Intersection: Portage Road & Kirkfield Rd

TFR File #: 1

Count date: 15-May-2015

Weather conditions:

Clear

Person(s) who counted:

Leanne Scott

**** Non-Signalized Intersection ****

Major Road: Portage Road runs W/E

North Leg Total: 1017

North Entering: 494

North Peds: 18

Peds Cross: 18

Cyclists	Trucks	Cars	Totals
6	0	125	131
9	0	228	237
8	0	118	126
23	0	471	



Cyclists	Trucks	Cars	Totals
25	0	498	523

East Leg Total: 2487

East Entering: 709

East Peds: 16

Peds Cross: 16

Cyclists	Trucks	Cars	Totals
66	0	622	688

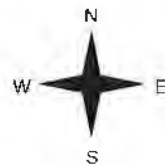


Portage Rd (CKL Rd 48)

Cyclists	Trucks	Cars	Totals
11	0	131	142
57	3	1475	1535
1	0	71	72
69	3	1677	



Kirkfield Rd (CKL Rd 6)



Cars	Trucks	Cyclists	Totals
115	0	4	119
453	0	59	512
64	0	14	78
632	0	77	



Portage Rd (CKL Rd 48)



Cars	Trucks	Cyclists	Totals
1690	3	85	1778

Peds Cross: 18

West Peds: 7

West Entering: 1749

West Leg Total: 2437

Cars	Trucks	Cyclists	Totals
363	0	24	387



Cars	Trucks	Cyclists	Totals
44	0	1	45
252	0	10	262
97	0	20	117
393	0	31	

Peds Cross: 18

South Peds: 23

South Entering: 424

South Leg Total: 811

Comments

Volumes increased due to Friday of a long weekend (Victoria Day). Parking at store caused sight issue. Witnessed three near misses.

Portage Rd and Kirkfield Rd Traffic Count Summary

Intersection: Portage Road & Kirkfield Rd

Count Date: 15-May-2015

Municipality: CKL

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds		Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
9:00:00	13	22	12	47	4	88	9:00:00	6	20	15	41	1
10:00:00	12	26	21	59	0	102	10:00:00	6	25	12	43	4
11:00:00	10	20	12	42	3	75	11:00:00	1	21	11	33	0
12:00:00	12	23	18	53	0	111	12:00:00	6	30	22	58	6
13:00:00	17	36	19	72	1	116	13:00:00	4	28	12	44	4
14:00:00	14	26	18	58	5	103	14:00:00	9	26	10	45	0
15:00:00	27	33	15	75	5	148	15:00:00	4	52	17	73	3
16:00:00	21	51	16	88	0	175	16:00:00	9	60	18	87	5
Totals:						918	45 262 117 424 23					
East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds		Hour Ending	Includes Cars, Trucks, & Cyclists				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
9:00:00	6	42	17	65	4	138	9:00:00	11	57	5	73	2
10:00:00	13	75	14	102	1	202	10:00:00	5	89	6	100	0
11:00:00	5	63	7	75	2	253	11:00:00	10	155	13	178	1
12:00:00	12	55	17	84	2	306	12:00:00	17	197	8	222	0
13:00:00	12	67	14	93	1	332	13:00:00	18	210	11	239	1
14:00:00	6	74	12	92	3	369	14:00:00	27	240	10	277	1
15:00:00	11	70	18	99	1	423	15:00:00	25	293	6	324	2
16:00:00	13	66	20	99	2	434	16:00:00	29	293	13	335	0
Totals:						2457	142 1534 72 1748 7					
Calculated Values for Traffic Crossing Major Street												
Hours Ending:	9:00	10:00	11:00	12:00			13:00	14:00	15:00	16:00		
Crossing Values:	47	45	35	50			59	53	86	92		

City of Kawartha Lakes
All Way Stop Warrants



Location: Portage Rd (CKL Rd 48) and Kirkfield Rd (CKL Rd 6)

Warrant	Description	Arterial/ Collector	Local	Actual Count	Meets Warrant?
Minimum Vehicle Volume	A. Total vehicular volume entering intersection from all approaches to exceed specified amount for each hour of an eight hour period and	500 veh/hr. *	350 Veh for highest hour *	422	No (84%)
	B. Combined vehicle and pedestrian volume for minor street to average 200 units per hour for eight hour period.	200	N/A	123	No (62%)
	C. Average delay for vehicles entering intersection over eight hours.	30 seconds	N/A	<30 seconds	No
Directional Split	Major/Minor directional split of vehicle entering intersection over eight hours not to exceed.	70/30 *	65/35 4- way 75/25 3- way *	73/27	No
Accident Criteria	A. Average reported accidents (susceptible to relief through multi-stop control) per year for a three year period.	4	4	2	No
	B. Adequate trail of less restrictive remedies has failed to reduce accident frequency.				N/A
Interim Measure	All way stops may be used as an interim measure where traffic signals are warranted.				N/A
Sight Distance	All way stops may be used where the minimum sight distance is not achieved.				Temp Compromised
Warrant Met?	The warrant is deemed to be met if the minimum vehicle volume AND directional split is met OR the accident criteria is met OR minimum sight distance is not achieved.				Intermittently Met
Recommendation:					

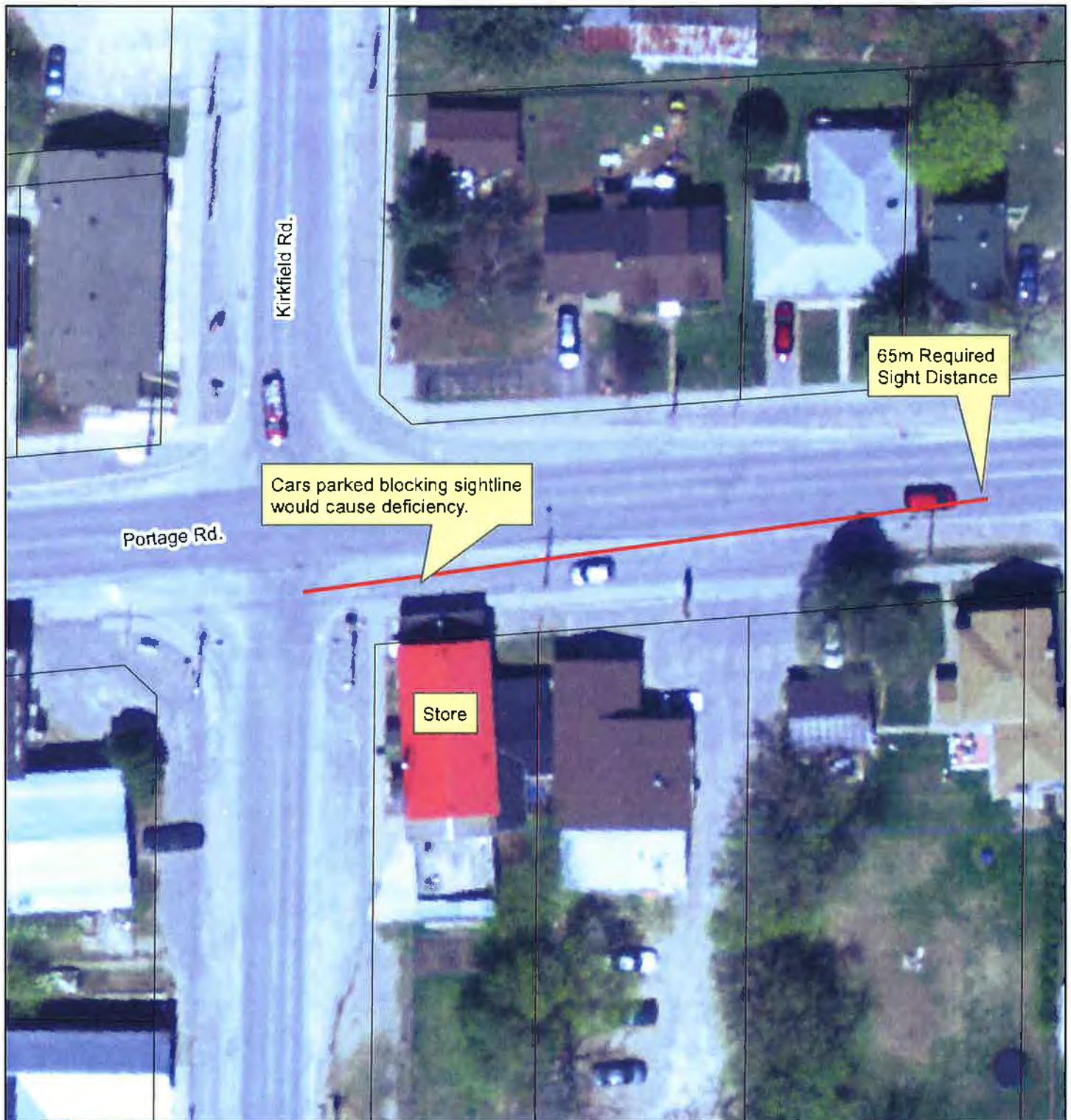
- Minimum Vehicle Volume (Arterial) must be Yes for A, B and C (Just 'A' for local roads)
- Accident Criteria must be Yes for A and B
- Must meet both Minimum Vehicle Volume AND Directional Split, or just Accident Criteria.

ENG2017-003
Appendix D – Site Picture



Source: Google Streetview 2012

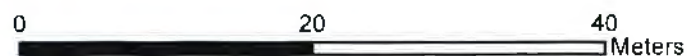
ENG2017-003
Appendix D
Sight Distance



Map produced by the City of Kawartha Lakes Engineering Department with data extracted under license. Reproduction without permission is prohibited.

The foregoing information is given for convenience only and it should be clearly understood that you must satisfy yourself as to whether the premises and the contents of proposed alterations are, or would be, in conformity with all applicable Bylaws and Regulations of the municipality.

All dimensions and positions are approximate and are not of survey quality. This map is illustrative only. Do not rely on it as being a precise indicator of privately owned land, lot locations or features, nor as a guide to navigation.



Portage Rd and Kirkfield Rd

Count Date: 15-May-2015

Intersection: Portage Road & Kirkfield Rd

Municipality: CKL

Major Road: Portage Road

Major Road Runs: E/W one lane each way

Operating Speed of Major Road: 50 km/hr

Operating under restricted flow conditions

Warrant #1: Minimum Vehicular Volumes.

A. All Approaches.

Not Satisfied

No. of Lanes	Minimum Requirements					Hours Ending								Percentage Warrant
	1 Lane Each Way	2 Lanes Each Way	3 Lanes											
Flow Condition	1 Lane F. Flow (Code 1)	1 Lane R. Flow (Code 2)	2 Lane F. Flow (Code 3)	2 Lane R. Flow (Code 4)	or More R. Flow (Code 5)	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	
100%	480	720	600	900	1125	226	304	328	417	448	472	571	609	100%
80%	385	575	480	720	900									Yes: No: X
All Approaches	100% Fulfilled													0
	80% Fulfilled											80	80	
	Actual % if Below 80%					31	42	46	58	62	66	79		384
											Total:		464	
											Actual Average (Total/8):		58%	

B. Minor Street Both Approaches.

100%	120	170	120	170	170	88	102	75	111	116	103	148	175	100%
80%	95	135	95	135	135									Yes: No:
Minor Street Both Approaches	100% Fulfilled												100	100
	80% Fulfilled											80		80
	Actual % if Below 80%					52	60	44	65	68	61			350
											Total:			530
											Actual Average (Total/8):			66%

Portage Rd and Kirkfield Rd

Count Date: 15-May-2015

Intersection: Portage Road & Kirkfield Rd

Municipality: CKL

Major Road: Portage Road

Major Road Runs: E/W one lane each way

Operating Speed of Major Road: 50 km/hr

Operating under restricted flow conditions

Warrant #2: Delay to Cross Traffic.

A. Major Street Both Approaches.

Not Satisfied

No. of Lanes	Minimum Requirements					Hours Ending									Percentage Warrant
	1 Lane Each Way		2 Lanes Each Way		3 Lanes										
Flow Condition	1 Lane F. Flow (Code 1)	1 Lane R. Flow (Code 2)	2 Lane F. Flow (Code 3)	2 Lane R. Flow (Code 4)	or More R. Flow (Code 5)	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00		
100%	480	720	600	900	1125	138	202	253	306	332	369	423	434	100%	
80%	385	575	480	720	900									Yes:	X
All Approaches	100% Fulfilled													0	
	80% Fulfilled													0	
	Actual % if Below 80%					19	28	35	43	46	51	59	60	341	

Total: 341

Actual Average (Total/8): 43%

B. Traffic Crossing Major Street.

100%	50	75	50	75	75									100%
80%	40	60	40	60	60	47	45	35	50	59	53	66	92	Yes: No: X
All Approaches	100% Fulfilled											100	100	200
	80% Fulfilled													0
	Actual % if Below 80%					63	60	47	67	79	71			385

Total: 585

Actual Average (Total/8): 73%

Portage Rd and Kirkfield Rd

Count Date: 15-May-2015

Intersection: Portage Road & Kirkfield Rd

Municipality: CKL

Major Road: Portage Road

Major Road Runs: E/W one lane each way

Operating Speed of Major Road: 50 km/hr

Operating under restricted flow conditions

Warrant #3: Accident Experience.

Not Satisfied

A. Reportable accidents within a twelve month period averaged over 36 consecutive months susceptible to correction by a traffic signal.

Minimum Requirements	Actual Number of Accidents	Average Number of Accidents	Fulfilled
5	2 in 3 years	0 per year	13%
B. Adequate trial of less restrictive remedies has failed to reduce accident frequency.			No
C. Either Warrant 1 (Minimum Vehicular Volume) or Warrant 2 (Delay to Cross Traffic) satisfied 80% or more.			No

Warrant #4: Combination Warrant. (Used if no warrant satisfied 100%)

Not Satisfied

Minimum Requirements	Warrant Satisfied 80% or More	Fulfilled
Two Warrants Satisfied 80%	Warrant 1 (Minimum Vehicular Volume) Warrant 2 (Delay to Cross Traffic) Warrant 3 (Accident Experience)	No No No

Conclusion: Traffic signal not warranted.

ENG2017-003

Appendix F

Recommended Sign Placement



Map produced by the City of Kawartha Lakes Engineering Department with data obtained under license. Reproduction without permission is prohibited.

The foregoing information is given for convenience only and it should be clearly understood that you must satisfy yourself as to whether the premises and the existing or proposed use thereof are, or would be, in conformity with all applicable by-laws and regulations of the municipality.

All distances and locations are approximate and are not of survey quality. This map is illustrative only. Do not rely on it as being a precise indicator of privately or publicly owned land, routes, locations or features, nor as a guide to navigate.

0 50 100 Meters

Projection: Transverse Mercator
Coordinate System: NAD83, Zone 17