

TRANSPORTATION ASSESSMENT

PROPOSED FRACTIONALLY OWNED COTTAGE RESORT COMMUNITY *Township of McKellar*

for

WYERIDGE-MCKELLAR DEVELOPMENTS INC.

&

ROBIN SMITH ENGINEERING

November 2007



Cole Engineering

TRAFFIC UPDATE – November 2007

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JUNE 4, 2007 TRANSPORTATION ASSESSMENT

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1.0 Introduction

This letter and associated analysis builds upon the June 4, 2007 report contained herein and reflects recent traffic data collected. Based on discussions and concerns raised at various public meetings Cole Engineering Group Ltd., on request of Robin Smith Engineering, undertook traffic counts at the subject study area intersections on a weekend in August as well as during the Labour Day weekend. These two additional data surveys, results in a total of three traffic counts being undertaken at the subject study area intersections, two of which occurred during summer long weekends and the third count was undertaken during a typical Friday/Saturday weekend in August. As such, it is our opinion that the data collected at this point constitutes peak traffic conditions.

2.0 Existing Traffic Conditions

As identified, existing turning movement counts at the Highway 124 / Centre Street and Catherine Street / Centre Street intersections were undertaken by CEG staff on Friday, August 17, 2007 from 3:00 p.m. to 7:00 p.m. and on Saturday August 18, 2007 from 10:00 a.m. to 2:00 p.m. as well as on Friday August 31 and Saturday September 1.

The following analyses are based on the new surveyed data. For comparison purposes the traffic volumes employed in our original analysis is provided. The existing weekday p.m. and Saturday peak hour volumes collected in May, August and the Labour Day long weekend are illustrated below in Figure 1, 2 and 3. Generally, all the traffic volumes collected were generally similar to those collected in May 2007 (previous assessment base flows), however the one noticeable increase was the southbound through volume along Highway 124 during the Friday peak hour.

Figure 1: Existing Traffic Volumes – May 2007

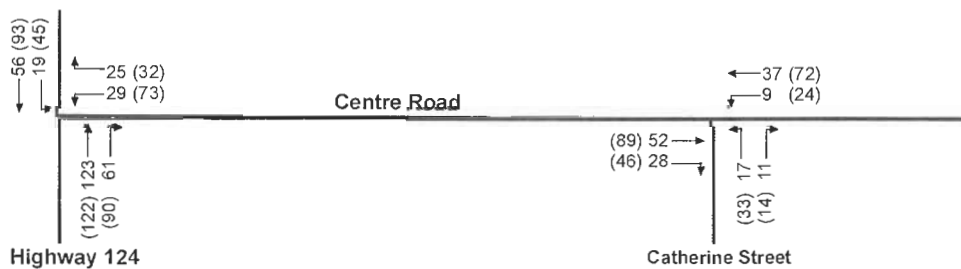


Figure 2: Existing Traffic Volumes – August 2007

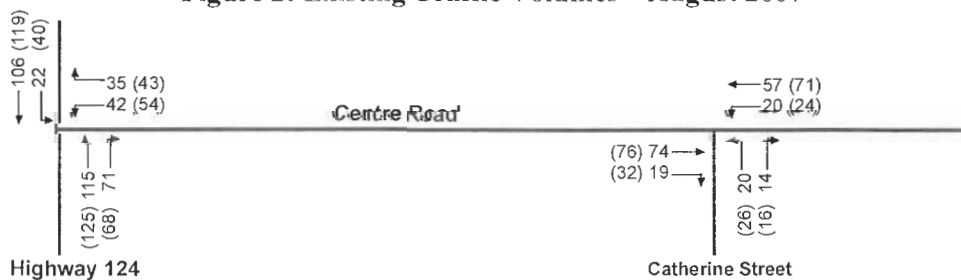
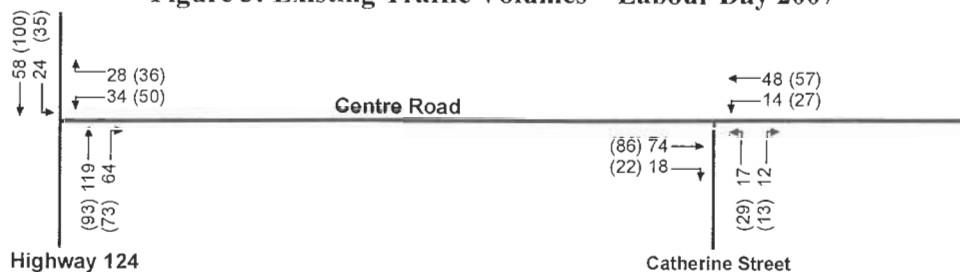


Figure 3: Existing Traffic Volumes – Labour Day 2007



Legend: XX (XX): PM (SAT)

Existing traffic operations were assessed using HCS2000 software. The summary of the analysis is provided in **Table 1** below.

Table 1: Intersection Capacity Analysis – Existing Traffic (August 17/18 Data)

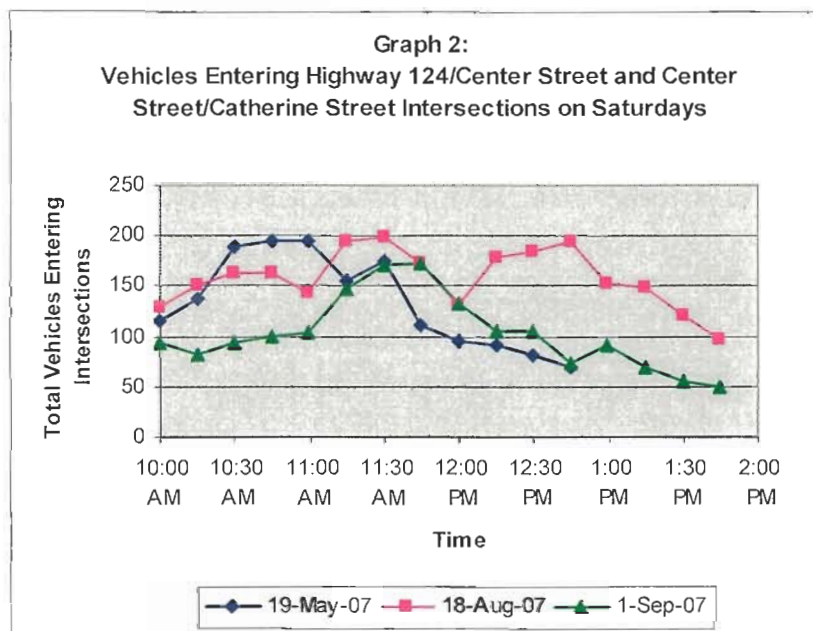
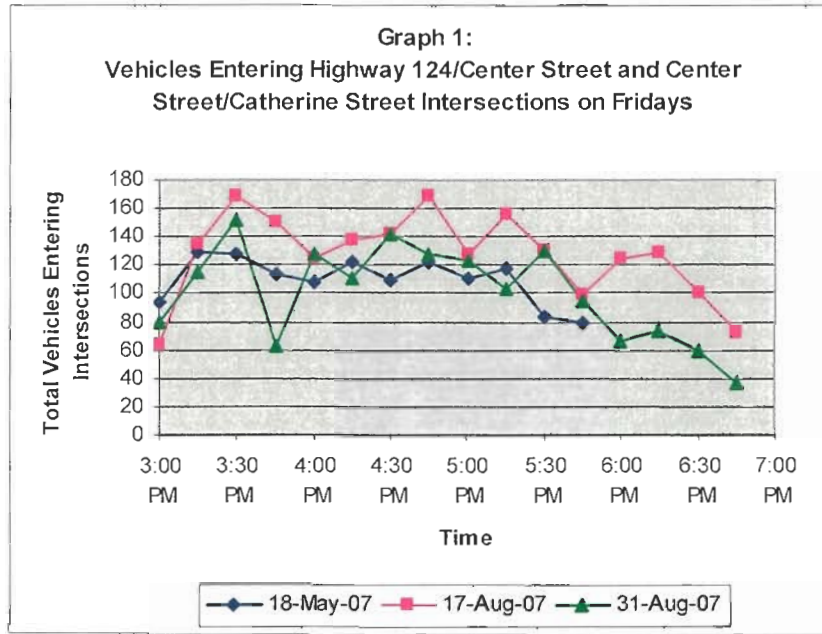
Intersection	Key Movements	PM Peak Hour LOS (v/c)	Saturday Peak Hour LOS (v/c)
Center Street / Highway 124 (Unsignalized)	WB left-through-right	A (0.03)	A (0.03)
	NB through	B (0.16)	B (0.18)
	NB right	A (0.07)	A (0.07)
	SB left-through	B (0.18)	B (0.24)
Center Street / Catherine Street (Unsignalized)	WB left-through	A (0.01)	A (0.02)
	NB left-right	A (0.04)	A (0.05)

Table 2: Intersection Capacity Analysis – Existing Traffic (Labour Day Weekend Data)

Intersection	Key Movements	PM Peak Hour LOS (v/c)	Saturday Peak Hour LOS (v/c)
Center Street / Highway 124 (Unsignalized)	WB left-through-right	A (0.02)	A (0.03)
	NB through	B (0.16)	B (0.13)
	NB right	A (0.06)	A (0.07)
	SB left-through	B (0.12)	B (0.20)
Center Street / Catherine Street (Unsignalized)	WB left-through	A (0.01)	A (0.02)
	NB left-right	A (0.04)	A (0.05)

As indicated above, the Highway 124 / Centre Street and the Centre Street / Catherine Street intersection both continue to operate at excellent levels of service based on assessment of the recent summer counts with no individual movements approaching capacity. This excellent level of operation was further evidenced based on observations made of the intersections operations during the traffic counts.

It was also noted that the total volume of vehicles being serviced by the two intersections remained at similar levels for all survey dates with expected modest traffic variation. The highest level of traffic recorded occurred during the August 17/18 weekend for both the Friday and Saturday study dates. **Graph 1** and **2** below graphically summarize the traffic data collected.



3.0 Background / Site / Total Traffic Conditions

Future Background and Site traffic parameters remain unchanged as previously provided; as such analysis was undertaken on the subject intersection based on the updated 'base' traffic volumes. The 2012 future total traffic volumes are illustrated below in **Figures 4, 5 and 6**.

Figure 4: Future Total Traffic Volumes - May 2007

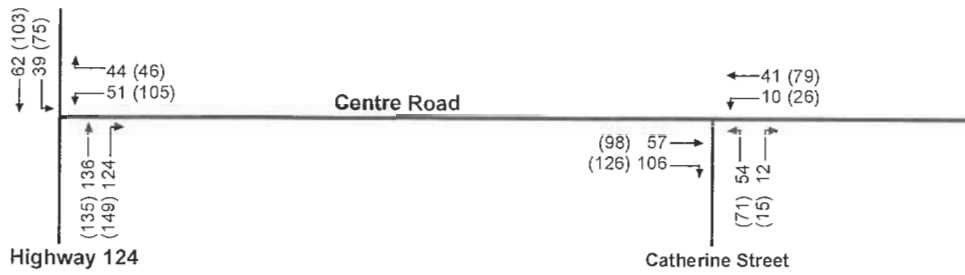


Figure 5: Future Total Traffic Volumes - August 2007

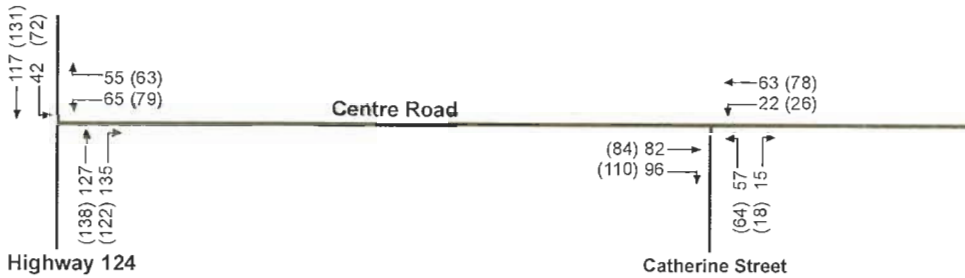
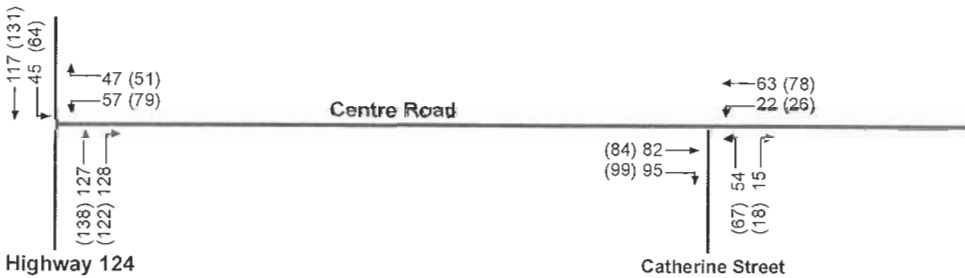


Figure 6: Future Total Traffic Volumes – Labour Day Weekend 2007



Legend: XX (XX): PM (SAT)

Total future 2012 traffic operations were assessed using HCS2000 software. The summary of the analysis is provided in Table 3 and 4 below.

Table 3: Intersection Capacity Analysis – Future Total Traffic (August Data)

Intersection	Key Movements	PM Peak Hour LOS (v/c)	Saturday Peak Hour LOS (v/c)
Center Street / Highway 124 (Unsignalized)	WB left-through-right	A (0.04)	A (0.05)
	NB through	B (0.20)	B (0.23)
	NB right	A (0.13)	A (0.12)
	SB left-through	B (0.27)	B (0.38)
Center Street / Catherine Street (Unsignalized)	WB left-through	A (0.02)	A (0.02)
	NB left-right	B (0.10)	B (0.11)

Table 4: Intersection Capacity Analysis – Future Total Traffic (Labour Day Weekend Data)

Intersection	Key Movements	PM Peak Hour LOS (v/c)	Saturday Peak Hour LOS (v/c)
Center Street / Highway 124 (Unsignalized)	WB left-through-right NB through NB right SB left-through	A (0.03) B (0.19) A (0.12) B (0.26)	A (0.03) B (0.21) A (0.12) B (0.33)
Center Street / Catherine Street (Unsignalized)	WB left-through NB left-right	A (0.02) B (0.09)	A (0.02) B (0.12)

As indicated above, both intersections are expected to continue to operate at excellent levels of service in the total future 2012 traffic condition with no individual traffic movements approaching capacity based on the summer traffic counts.

4.0 Conclusion

Based on this traffic assessment employing August 2007 as well as Labour Day weekend 2007 traffic counts, the study findings continue to indicate that:

- The anticipated site traffic generated by the proposed development has minimal impact to the adjacent streets and study area intersections and sufficient reserve capacity is available to accommodate the expected increases in traffic associated with the subject development proposal.
- The study area intersections will continue to operate with excellent levels of service in the future total traffic scenario.
- External road network improvements i.e., additional lanes or traffic control devices are not required as a result of the proposed development.
- All subsequent analysis are virtually identical to the May traffic data analysis.

Yours truly,

COLE ENGINEERING GROUP LTD.



Richard Pernicky, CET
Project Manager – Transportation



Kim Nystrom
Principal

JUNE 4, 2007 TRANSPORTATION ASSESSMENT

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Appendix A – Level of Service Explanation Sheet

Appendix B - Existing Traffic Level of Service Calculations

Appendix C – 2012 Total Traffic Level of Service Calculations

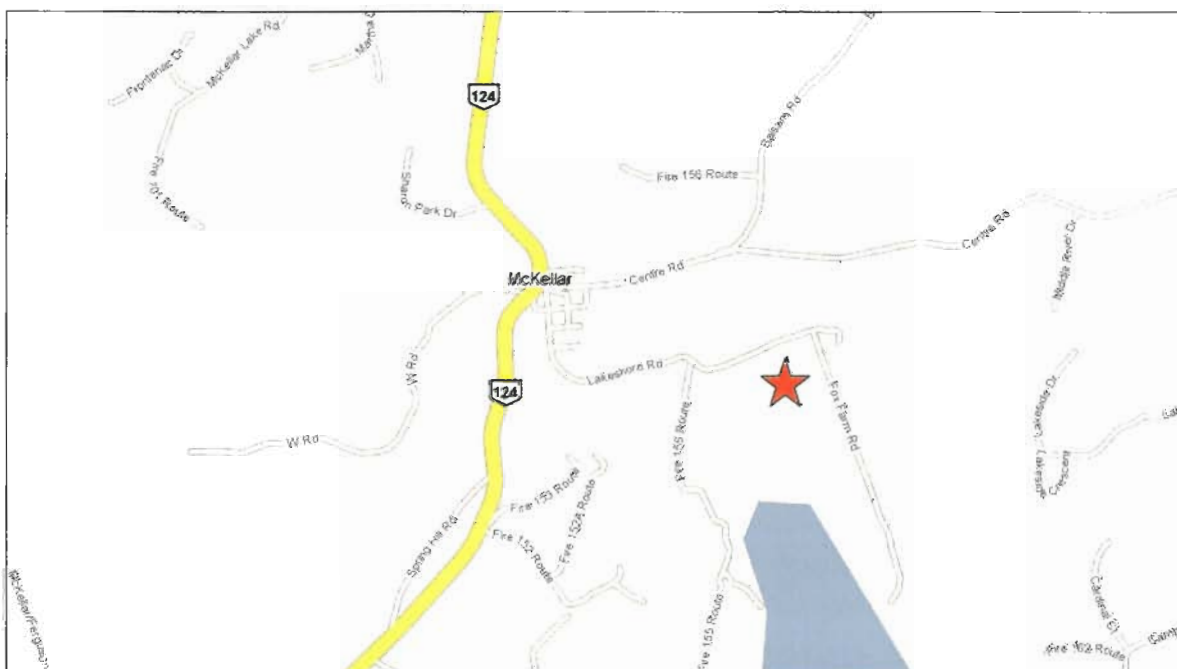
Appendix D– Suggested Road Operational Improvements

1.0 Introduction

Cole Engineering Group Ltd. (CEG) has been retained by Robin Smith Engineering to undertake a Transportation Assessment for the proposed fractionally owned 55-unit cottage resort development located in the Township of McKellar, District of Parry Sound. This detailed traffic assessment builds upon our initial traffic opinion letter of April 30, 2007.

The subject lands consist of 28 ha (70 acre) abutting 2,200m of Manitouwabing Lake frontage and are currently accessed from Lakeshore Road via Fire 155 Route. The site location is shown in Figure 1-1.

Figure 1-1: Site Location



The purpose of this study is to:

- Assess capacity of existing road system;
- Identify potential traffic generated by the proposed site; and,
- Identify operational/safety concerns and possible transportation mitigation measures such as road, intersection, and/or entrance improvements, if necessary.

2.0 Existing Traffic Conditions

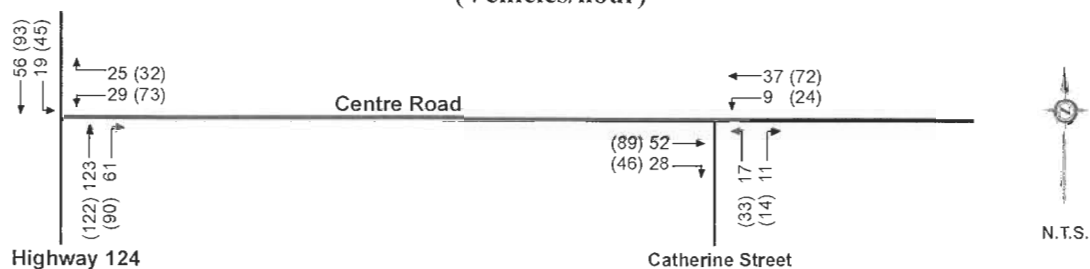
The subject lands are generally located in the southeast quadrant of Lakeshore Road and Fire 155 Route. The key intersections in this study are Highway 124/Centre Road and Centre Road/Catherine Street.

Highway 124 is a 2-lane rural highway under the jurisdictional control of the Ministry of Transportation Ontario (MTO). Notwithstanding the striped two-lane cross-section of the highway, the pavement width at the Centre Road intersection is 14m wide which permits left and right turn lanes to be operationally provided on approach to the intersection.

Centre Road is a 2-lane rural road under the jurisdictional control of the Township of McKellar. Lakeshore Road/Catherine Street is also under the jurisdictional control of the Township of McKellar and maintains a pavement width ranging from 7.5m to 6.0m at its narrowest section. No posted speed limit signage is provided along the subject section of Centre Road or Lakeshore Road/Catherine Street.

Existing turning movement counts at the two key intersections were conducted by CEG on Friday, May 18, 2007 and Saturday May 19, 2007 over the Victoria Day long weekend. The weather during the traffic counts and throughout the long weekend was warm and sunny, thus the traffic volumes depicted can generally be regarded as a near worst case traffic scenario. The existing weekday p.m. and Saturday peak hour volumes are illustrated below in **Figure 2-1**:

**Figure 2-1: Existing Traffic Volumes
(Vehicles/hour)**



LEGEND: XX (XX): Weekday P.M. Peak Hour (Saturday Peak Hour)

Existing traffic operations were assessed using HCS2000 software. The explanation of the technical terms and values is provided shown in **Appendix A**. The summary of the analysis is provided in **Table 2.1** below and the detailed capacity calculation sheets are provided in **Appendix B** with the details related to the individual capacities for each individual lane group provided.

Table 2.1 Intersection Capacity Analysis – Existing Traffic

Intersection	Key Movements	PM Peak Hour LOS (v/c)	Saturday Peak Hour LOS (v/c)
Centre Road / Highway 124 (Unsignalized)	WB left-through-right NB through NB right SB left-through	A (0.02) B (0.16) A (0.06) B (0.10)	A (0.05) B (0.19) A (0.09) B (0.23)
Centre Road / Catherine Street (Unsignalized)	WB left-through NB left-right	A (0.01) A (0.03)	A (0.02) A (0.06)

As indicated above, Highway 124/Centre Road and Centre Road/Catherine Street both operate at excellent levels of service under existing traffic conditions.

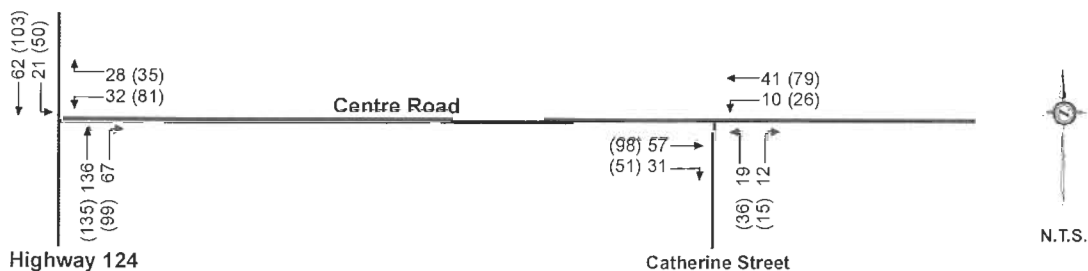
It should be noted, that currently a general store and retail LCBO/Beer Store operates at the southeast corner of Highway 124/Centre Road. The traffic related to this establishment was observed to be very heavy and somewhat disorganized in terms of interaction with the through traffic along Centre Road and Catherine Street. Some general improvements to the parking area and adjacent through lanes will be discussed in the later part of this report which will alleviate some of the congestion associated with the abutting intersections operation.

3.0 Background Traffic Conditions

Future background traffic for the study area is estimated for a 5 year growth period to develop 2012 traffic projections. Future background traffic consists of two components: traffic growth from outside the study area and other development traffic from within the study area.

No historical traffic growth data was available from MTO; therefore a 2 percent per year growth rate was applied to the through volumes measured along Highway 124 to reflect 2012 traffic conditions. To our knowledge there are no other ‘active’ developments that would significantly increase traffic volumes within the study area. Therefore the traffic volumes within the study area were also increased by the standard 2 percent per year growth rate. The 2012 background traffic volumes are illustrated below in **Figure 3-1**.

Figure 3-1: Future Background Traffic Volumes (Vehicles/hour)



LEGEND: XX (XX): Weekday PM Peak Hour (Saturday Peak Hour)

4.0 Site Traffic

Site related traffic during the weekday p.m. and Saturday peak hours was determined based on three methods: *Resort Hotel* ITE trip generation, single family detached residential ITE trip generation and first principles, applied specifically to this development.

Resort Hotel - ITE Rates

Based on the trip generation in ITE Manual (Institute of Transportation Engineering), *Resort Hotels* with 55 units can generate 48 two way trips (35 trips in and 13 trips out) during the a.m. peak hour and 48 two way trips (21 trips in and 27 trips out) in the afternoon peak hour.

Individually Owned Cottage Units - ITE Rates

Based on the information provided to us, 24 individual freehold cottage lots could be developed on the subject lands, assuming 90m of frontage per lot. Based on the trip generation in the ITE Manual, 24 single family homes generate on the order of 24 two way trips (6 trips in and 18 trips out) during the a.m. peak hour and 29 two way trips (18 trips in and 11 trips out) in the afternoon peak hour. However, the nature of individually owned recreational properties typically yields more visitor trip generation. The actual trip generation for recreational properties can range from 50 to 100 percent higher than for urban residential uses; therefore, freehold cottage traffic from this site can be in the order of magnitude of 60 trips during the worst case peak hour.

First Principle's Theory

The cottage resort development will serve as a week-by-week vacation property for member cottagers. The weekly change-over for the next-week cottagers will take place staggered over a three day period being Friday, Saturday and Sunday. Similar to a vacation resort, the units have to be maintained and cleaned upon one family leaving and the next week family arriving. Typically, 'check-out time' for those leaving would be by 11:00 a.m. and the next week's cottagers would not arrive until 3:00 p.m..

Therefore on any of the three 'change-over' days, traffic generated by the development would consist of those cottagers leaving in the morning, likely occurring between the hours of 8:00 and 11:00 a.m., and those cottagers arriving between the hours of 3:00 and 6:00 p.m... Additionally, there would be some local trip traffic generated by the remaining cottagers for which it is not a change-over day.

The resort will typically be a family 'vacation destination' and as such, the majority of the families will travel to the resort in one vehicle. However, it is recognized that there will be a certain percentage, perhaps as much as half of the member families that could have two vehicles at the cottage. For this reason, and to be conservative, we have assumed that there will be two vehicles arriving and leaving from each cottage. There would be a maximum of 20 cottages being changed-over on any day which would result in a maximum of 40 vehicles departing or arriving in the three-hour morning and afternoon periods respectively.

The local trip vehicle usage would typically be accommodated with one vehicle only. Sight-seeing would likely be done on a family basis in one vehicle. Also, short trips into McKellar to

the local businesses, the golf course etc., would also require only one vehicle. However, as the resort will have swimming and recreation facilities on-site, the additional traffic generated for these types of trips is expected to be limited to one or two trips each day for up to 50 percent of the cottagers not in the process of ‘change-over’. Therefore, on a daily basis we have assumed that each non-change over cottage will generate one local round trip.

The resultant ‘worst case’ peak traffic generation projections are outlined below based on the following conservative assumptions:

- a) Assuming all arrivals to the units during change-over occurred during a single one hour period;
- b) Assuming all local day trips (round trip) occurred within the a one hour period;
- c) Assuming all local day trips coincided with the same hour as the new arrivals, and,
- d) Assuming that all the trips occur with the same hour as the adjacent street peak hour.

The worst case hourly traffic generation would be:

- 40 p.m. arrivals by new change-over cottagers;
- 35 departures for local trips; and,
- 35 arrivals from local trips.

All three comparisons indicate that two-way trips range from 48 to 110 trips during the critical peak hour, with the first principles assessment (110 trips) reflecting the most conservative limit of that range.

Based on our knowledge of the operation of these ‘resort’ style cottages and to maintain an ultra-conservative assessment, 110 two-way trips will be assumed for assessment purposes.

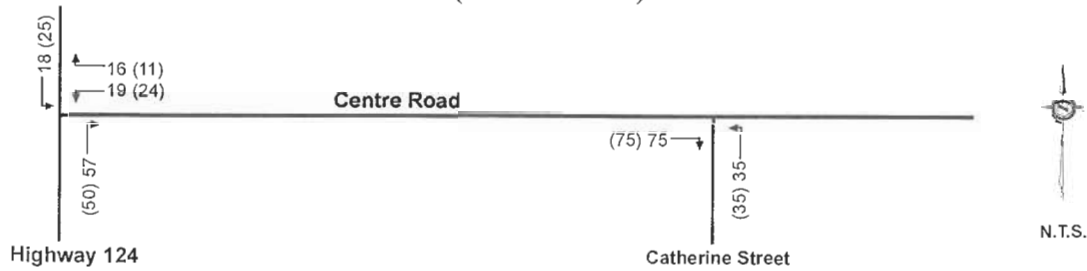
Based on the existing turning traffic travel patterns on Highway 124 to/from Centre Road, the site traffic trip distribution is summarized below in **Table 4.1**.

Table 4.1 Trip Distribution

From (To)	PM (SAT) Peak Hour	
	Inbound	Outbound
North via Highway 124/Centre Road	24% (33%)	46% (36%)
South via Highway 124/Centre Road	76% (67%)	54% (70%)
TOTAL	100% (100%)	100% (100%)

Figure 4-1 illustrates the assigned site traffic to the site access during both the critical a.m. and p.m. peak time periods.

**Figure 4-1: Site Traffic Volumes
(Vehicles/hour)**

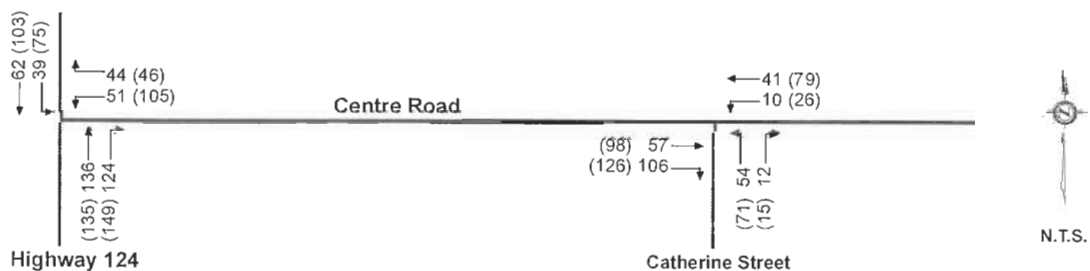


LEGEND: XX (XX): Weekday P.M. Peak Hour (Saturday Peak Hour)

5.0 Future Total Traffic

Future total traffic is a combination of future background and site traffic volumes. **Figure 5-1** below illustrates future a.m. and p.m. peak hour traffic conditions at both intersections.

**Figure 5-1: Future Total Traffic Volumes
(Vehicles/hour)**



LEGEND: XX (XX): Weekday PM Peak Hour (Saturday Peak Hour)

Total future 2012 traffic operations were assessed using HCS2000 software. The summary of the analysis is provided in **Table 5.1** below and the detailed capacity calculation sheets are provided in **Appendix D**.

Table 5.1 Intersection Capacity Analysis – Future Total Traffic

Intersection	Key Movements	PM Peak Hour LOS (v/c)	Saturday Peak Hour LOS (v/c)
Centre Road / Highway 124 (Unsignalized)	WB left-through-right	A (0.03)	A (0.07)
	NB through	B (0.20)	B (0.24)
	NB right	A (0.12)	A (0.14)
	SB left-through	B (0.17)	C (0.38)
Centre Road / Catherine Street (Unsignalized)	WB left-through	A (0.01)	A (0.02)
	NB left-right	A (0.08)	B (0.13)

As indicated above, both intersections are expected to continue to operate at excellent levels of service in the total future 2012 traffic condition with no individual traffic movement approaching capacity.

6.0 Operational and Safety Considerations

A representative from CEG met with the proponents as well as members of the Township of McKellar Council and staff on Friday May 25th, 2007 to review a series of historical operational and safety concerns pertaining to Lakeshore Road/Catherine Street and the intersection of Catherine Street and Centre Road. A number of areas of concern were identified during the visit and are summarized as follows:

- Sight-lines at the intersection of Lakeshore Road and Fire Route 155;
- Congestion at the existing boat launch;
- Pedestrian use and safety along Lakeshore Road from the Municipal dock to the boat launch;
- Road side parking and congestion at the existing Municipal dock and beach; and,
- Parking and congestion at the intersection of Centre Road and Lakeshore Road/Catherine Street.

Based on discussion during the site visit and further subsequent investigations, a number of possible improvements which will help to alleviate concerns have been developed. The possible improvements to be considered at each of the key areas identified above are summarized as follows:

Site Access - Intersection of Lakeshore Road and Fire Route 155:

- Upgrade Fire Route 155 to provide a 7.0m pavement width from the intersection to the subject site;
- Stop control is recommended for Fire Route 155, with Lakeshore Road being under free flow;
- Remove the existing vegetation along the south side ditch to provide the required amount of sight distance;
- Install 'Intersection Ahead' signage along Lakeshore Drive on both approaches to this new intersection; and,
- Install 'Caution' signage warning vehicles turning left from Fire Route 155 that eastbound traffic on Lakeshore Road approaching the intersection may be traveling quickly in order to climb the hill during the winter months.

Lakeshore Drive in Vicinity of Boat Launch:

- Provision of a slip around lane along the north side of Lakeshore Road so through vehicles may manoeuvre around stopped vehicles; and,
- Enforce the existing "No Parking Signage".

Lakeshore Drive:

- Provision of a painted edge line along the south side (lake side) of the roadway to provide a delineation for motorists as well as to provide a modest pedestrian corridor;

- Install warning signs around the horizontal curve, i.e., chevron signs, sharp curve ahead;
- Information signage on approach to Lakeshore Drive to inform motorists that they are entering a scenic corridor and to drive with due regard to increased pedestrian activity and to observe a speed limit of 40km/h; and,
- Install 40km/h posted speed limit signs immediately upon entering Catherine Street/Lakeshore Road and every 200-300m thereof, in both directions.

Municipal Dock and Beach

- Provide additional off-street parking stalls at the ramp to the dock; and,
- Enforce the existing “No Parking Signage”.

Catherine Street/Centre Road Intersection:

- Provision of a stop bar and painted centre line along Catherine Street on approach to Centre Road;
- Improve the asphalt surface and painted delineation of the angled parking stalls at the general store;
- Delineate the traveled portion of Centre Road and Catherine Street from the parking area(s) to the general store with pavement markings, and;
- Provision of additional parallel parking spaces along the north and south side of Centre Road east of Catherine Street as well as along the east side of Catherine Street south of Centre Road. A minimum of 10 stalls can be provided in these three areas.

The above improvements are described based on their general location and are illustrated for reference purposes and is provided in **Appendix D**.

The provision of any or all of the above noted suggestions can, in our opinion, improve the traffic operations of the subject study area in relation to the general store operation and ensuring that the Lakeshore Drive corridor accommodates both vehicular and pedestrian activities in a mutually shared environment.

7.0 Conclusions and Suggested Improvements

Based on this traffic assessment, the study findings indicate that:

- The anticipated site traffic generated by the proposed development can safely be accommodated by the existing road network within the study area with only minor improvements to Lakeshores Road as suggested to improve operation of the road and intersections.
- All streets and intersections in the study area have sufficient reserve capacity to accommodate the expected increases in traffic associated with the subject development proposal and under an ultra-conservative methodology.
- The study area intersections will continue to operate with excellent levels of service in the future total traffic scenario; and,
- External road network improvements i.e., additional lanes traffic control devices are not required as a result of the proposed development.

A number of minor improvements as detailed in Section 6 can be implemented that would:

- a. Alleviate some of the congestion related to the general store traffic;
- b. Enable Lakeshore Road to provide both a friendly and safe pedestrian environment as well as providing a vehicular traffic corridor;
- c. Provide an efficient and operationally safe new site access intersection via Fire Route 155 to Lakeshore Drive.
- d. Alleviate congestion and traffic interruptions at the existing boat launch, and;
- e. Alleviate on street parking concerns at the existing municipal dock and beach.

Yours truly,

COLE ENGINEERING GROUP LTD.



Richard Pernicky, CET
Project Manager – Transportation



Kim Nystrom
Principal

Appendix A

Level of Service Explanation Sheet

LEVEL OF SERVICE DEFINITIONS AT UNSIGNALIZED INTERSECTIONS⁽¹⁾

The level of service criteria for unsignalized intersections are given in the table below. As used here, total delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position. The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation.

Level of Service	Features	Average Total Delay (sec/veh)
A	Little or no traffic delay occurs. Approaches appear open, turning movements are easily made, and drivers have freedom of operation.	≤ 10
B	Short traffic delays occur. Many drivers begin to feel somewhat restricted in terms of freedom of operation.	> 10 and ≤ 15
C	Average traffic delays occur. Operations are generally stable, but drivers emerging from the minor street may experience difficulty in completing their movement. This may occasionally impact on the stability of flow on the major street.	> 15 and ≤ 25
D	Long traffic delays occur. Motorists emerging from the minor street experience significant restriction and frustration. Drivers on the major street will experience congestion and delay as drivers emerging from the minor street interfere with the major through movements.	> 25 and ≤ 35
E	Very long traffic delays occur. Operations approach the capacity of the intersection.	> 35 and ≤ 50
F	Saturation occurs, with vehicle demand exceeding the available capacity. Very long traffic delays occur.	> 50

(1) Highway Capacity Manual 2000.

Appendix B

Existing Traffic

Level of Service Calculations

TWO-WAY STOP CONTROL SUMMARY

Analyst: Joseph Gowrie
 Agency/Co.: Cole Engineering
 Date Performed: 06/09/2007
 Analysis Time Period: Weekday PM Peak Hour
 Intersection: 124 / Centre
 Jurisdiction: Town of Parry Sound
 Units: U. S. Metric
 Analysis Year: Existing - Labour Day 2007
 Project ID: T07-737 McKeller Cottage Resort
 East/West Street: Centre Road
 North/South Street: Highway 124
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume					34	0	28
Peak-Hour Factor, PHF					0.95	0.95	0.95
Hourly Flow Rate, HFR					35	0	29
Percent Heavy Vehicles			--	--	0	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes					0	0	0
Configuration					LTRLR		
Upstream Signal?			No		No		

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		119	64		24	58	
Peak Hour Factor, PHF		0.95	0.95		0.95	0.95	
Hourly Flow Rate, HFR		125	67		25	61	
Percent Heavy Vehicles		0	0		0	0	
Percent Grade (%)		0			0		
Flared Approach: Exists?/Storage					/		/
Lanes		1	1		0	1	
Configuration		T	R		LT		

Delay, Queue Length, and Level of Service

Approach Movement	EB	WB	Northbound			Southbound		
			4	7	8	9	10	11
Lane Config	1	LTR		T	R		LT	
v (vph)		35		125	67		86	
C(m) (vph)		1636		778	1091		740	
v/c		0.02		0.16	0.06		0.12	
95% queue length		0.07		0.57	0.20		0.39	
Control Delay		7.2		10.5	8.5		10.5	
LOS		A		B	A		B	
Approach Delay				9.8			10.5	
Approach LOS				A			B	

TWO-WAY STOP CONTROL SUMMARY

Analyst: Joseph Gowrie
 Agency/Co.: Cole Engineering
 Date Performed: 06/09/2007
 Analysis Time Period: Saturday Peak Hour
 Intersection: 124 / Centre
 Jurisdiction: Town of Parry Sound
 Units: U. S. Metric
 Analysis Year: Existing - Labour Day 2007
 Project ID: T07-737 McKeller Cottage Resort
 East/West Street: Centre Road
 North/South Street: Highway 124
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound				Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R	
Volume					50	0	36	
Peak-Hour Factor, PHF					0.95	0.95	0.95	
Hourly Flow Rate, HFR					52	0	37	
Percent Heavy Vehicles			--	--	0	--	--	
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes					0	0	0	
Configuration					LTRLR			
Upstream Signal?			No		No			

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		93	73		35	100	
Peak Hour Factor, PHF		0.95	0.95		0.95	0.95	
Hourly Flow Rate, HFR		97	76		36	105	
Percent Heavy Vehicles		0	0		0	0	
Percent Grade (%)		0			0		
Flared Approach: Exists?/Storage					/		/
Lanes		1	1		0	1	
Configuration		T	R		LT		

Delay, Queue Length, and Level of Service

Approach Movement	EB	WB	Northbound			Southbound		
			4	7	8	9	10	11
Lane Config	1	LTR		T	R		LT	
v (vph)		52		97	76		141	
C(m) (vph)		1636		730	1091		708	
v/c		0.03		0.13	0.07		0.20	
95% queue length		0.10		0.46	0.22		0.74	
Control Delay		7.3		10.7	8.5		11.3	
LOS		A		B	A		B	
Approach Delay				9.7			11.3	
Approach LOS				A			B	

TWO-WAY STOP CONTROL SUMMARY

Analyst: Joseph Gowrie
 Agency/Co.: Cole Engineering
 Date Performed: 06/09/2007
 Analysis Time Period: Weekday PM Peak Hour
 Intersection: Centre / Catherine
 Jurisdiction: Town of Parry Sound
 Units: U. S. Metric
 Analysis Year: Existing - Labour Day 2007
 Project ID: T07-737 McKeller Cottage Resort
 East/West Street: Centre Road
 North/South Street: Catherine Street
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound				Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R	
Volume		74	18	14	48			
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95			
Hourly Flow Rate, HFR		77	18	14	50			
Percent Heavy Vehicles		--	--	0	--	--		
Median Type/Storage		Raised curb			/ 1			
RT Channelized?								
Lanes		1	0		0	1		
Configuration			TR		LT			
Upstream Signal?		No			No			

Minor Street:	Approach Movement	Northbound				Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R	
Volume		17		12				
Peak Hour Factor, PHF		0.95		0.95				
Hourly Flow Rate, HFR		17		12				
Percent Heavy Vehicles		0		0				
Percent Grade (%)			0			0		
Flared Approach: Exists?/Storage				No	/		/	
Lanes		0		0				
Configuration			LR					

Delay, Queue Length, and Level of Service

Approach Movement	EB	WB	Northbound			Southbound		
			4	7	8	9	10	11
Lane Config	1	LT		LR				
v (vph)		14		29				
C(m) (vph)		1512		869				
v/c		0.01		0.03				
95% queue length		0.03		0.10				
Control Delay		7.4		9.3				
LOS		A		A				
Approach Delay				9.3				
Approach LOS				A				

TWO-WAY STOP CONTROL SUMMARY

Analyst: Joseph Gowrie
 Agency/Co.: Cole Engineering
 Date Performed: 06/09/2007
 Analysis Time Period: Saturday Peak Hour
 Intersection: Centre / Catherine
 Jurisdiction: Town of Parry Sound
 Units: U. S. Metric
 Analysis Year: Existing - Labour Day 2007
 Project ID: T07-737 McKeller Cottage Resort
 East/West Street: Centre Road
 North/South Street: Catherine Street
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound				Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R	
Volume		86	22	27	57			
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95			
Hourly Flow Rate, HFR		90	23	28	60			
Percent Heavy Vehicles		--	--	0	--	--		
Median Type/Storage		Undivided		/				
RT Channelized?								
Lanes		1	0		0	1		
Configuration			TR		LT			
Upstream Signal?		No			No			

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		29		13			
Peak Hour Factor, PHF		0.95		0.95			
Hourly Flow Rate, HFR		30		13			
Percent Heavy Vehicles		0		0			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0		0			
Configuration			LR				

Delay, Queue Length, and Level of Service

Approach Movement	EB	WB	Northbound			Southbound		
			4	7	8	9	10	11
Lane Config	1	LT		LR				
v (vph)		28		43				
C(m) (vph)		1489		811				
v/c		0.02		0.05				
95% queue length		0.06		0.17				
Control Delay		7.5		9.7				
LOS		A		A				
Approach Delay				9.7				
Approach LOS				A				

Appendix C

2012 Total Traffic Level of Service Calculations

TWO-WAY STOP CONTROL SUMMARY

Analyst: Joseph Gowrie
 Agency/Co.: Cole Engineering
 Date Performed: 06/09/2007
 Analysis Time Period: Weekday PM Peak Hour
 Intersection: 124 / Centre
 Jurisdiction: Town of Parry Sound
 Units: U. S. Metric
 Analysis Year: Future Total
 Project ID: T07-737 McKeller Cottage Resort
 East/West Street: Centre Road
 North/South Street: Highway 124
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound				Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R	
Volume					47	0	57	
Peak-Hour Factor, PHF					0.95	0.95	0.95	
Hourly Flow Rate, HFR					49	0	60	
Percent Heavy Vehicles			--	--	0	--	--	
Median Type/Storage		Undivided			/			
RT Channelized?								
Lanes					0	0	0	
Configuration					LTRLR			
Upstream Signal?		No			No			

Minor Street:	Approach Movement	Northbound				Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R	
Volume		127	128	45	117			
Peak Hour Factor, PHF		0.95	0.95	0.95	0.95			
Hourly Flow Rate, HFR		133	134	47	123			
Percent Heavy Vehicles		0	0	0	0			
Percent Grade (%)		0			0			
Flared Approach: Exists?/Storage					/		/	
Lanes		1	1		0	1		
Configuration		T	R		LT			

Delay, Queue Length, and Level of Service

Approach Movement	EB	WB	Northbound			Southbound		
			4	7	8	9	10	11
Lane Config	1	LTR		T	R		LT	
v (vph)		49		133	134		170	
C(m) (vph)		1636		716	1091		660	
v/c		0.03		0.19	0.12		0.26	
95% queue length		0.09		0.68	0.42		1.02	
Control Delay		7.3		11.2	8.8		12.3	
LOS		A		B	A		B	
Approach Delay				10.0-			12.3	
Approach LOS				A			B	

TWO-WAY STOP CONTROL SUMMARY

Analyst: Joseph Gowrie
 Agency/Co.: Cole Engineering
 Date Performed: 06/09/2007
 Analysis Time Period: Saturday Peak Hour
 Intersection: 124 / Centre
 Jurisdiction: Town of Parry Sound
 Units: U. S. Metric
 Analysis Year: Future Total
 Project ID: T07-737 McKeller Cottage Resort
 East/West Street: Centre Road
 North/South Street: Highway 124
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume					51	0	79
Peak-Hour Factor, PHF					0.95	0.95	0.95
Hourly Flow Rate, HFR					53	0	83
Percent Heavy Vehicles			--	--	0	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes					0	0	0
Configuration					LTRLR		
Upstream Signal?			No		No		

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		138	122	64	131		
Peak Hour Factor, PHF		0.95	0.95	0.95	0.95		
Hourly Flow Rate, HFR		145	123	67	137		
Percent Heavy Vehicles		0	0	0	0		
Percent Grade (%)		0			0		
Flared Approach: Exists?/Storage				/			/
Lanes		1	1		0	1	
Configuration		T R			LT		

Delay, Queue Length, and Level of Service

Approach Movement	EB 1	WB 4	Northbound			Southbound		
			7	8	9	10	11	12
Lane Config		LTR	T	R		LT		
v (vph)		53	145	128	204			
C(m) (vph)		1636	686	1091	623			
v/c		0.03	0.21	0.12	0.33			
95% queue length		0.10	0.79	0.40	1.42			
Control Delay		7.3	11.6	8.7	13.6			
LOS		A	B	A	B			
Approach Delay			10.3			13.6		
Approach LOS			B			B		

TWO-WAY STOP CONTROL SUMMARY

Analyst: Joseph Gowrie
 Agency/Co.: Cole Engineering
 Date Performed: 06/09/2007
 Analysis Time Period: Weekday PM Peak Hour
 Intersection: Centre / Catherine
 Jurisdiction: Town of Parry Sound
 Units: U. S. Metric
 Analysis Year: Future Total
 Project ID: T07-737 McKeller Cottage Resort
 East/West Street: Centre Road
 North/South Street: Catherine Street
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		82	95	22	63		
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95		
Hourly Flow Rate, HFR		86	100	23	66		
Percent Heavy Vehicles		--	--	0	--	--	
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		1	0		0	1	
Configuration			TR		LT		
Upstream Signal?		No			No		

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		54	15				
Peak Hour Factor, PHF		0.95	0.95				
Hourly Flow Rate, HFR		56	15				
Percent Heavy Vehicles		0	0				
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage			No	/		/	
Lanes		0	0				
Configuration			LR				

Delay, Queue Length, and Level of Service

Approach Movement	EB	WB	Northbound			Southbound			
			1	4	7	8	9	10	11
Lane Config		LT		LR					
v (vph)		23		71					
C(m) (vph)		1401		766					
v/c		0.02		0.09					
95% queue length		0.05		0.31					
Control Delay		7.6		10.2					
LOS		A		B					
Approach Delay				10.2					
Approach LOS				B					

TWO-WAY STOP CONTROL SUMMARY

Analyst: Joseph Gowrie
 Agency/Co.: Cole Engineering
 Date Performed: 06/09/2007
 Analysis Time Period: Saturday Peak Hour
 Intersection: Centre / Catherine
 Jurisdiction: Town of Parry Sound
 Units: U. S. Metric
 Analysis Year: Future Total
 Project ID: T07-737 McKeller Cottage Resort
 East/West Street: Centre Road
 North/South Street: Catherine Street
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		84	110	26	78		
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95		
Hourly Flow Rate, HFR		88	115	27	82		
Percent Heavy Vehicles		--	--	0	--	--	
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		1	0		0	1	
Configuration			TR		LT		
Upstream Signal?		No			No		

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		67	18				
Peak Hour Factor, PHF		0.95	0.95				
Hourly Flow Rate, HFR		70	18				
Percent Heavy Vehicles		0	0				
Percent Grade (%)		0			0		
Flared Approach: Exists?/Storage		No			/		
Lanes		0	0				
Configuration		LR					

Delay, Queue Length, and Level of Service

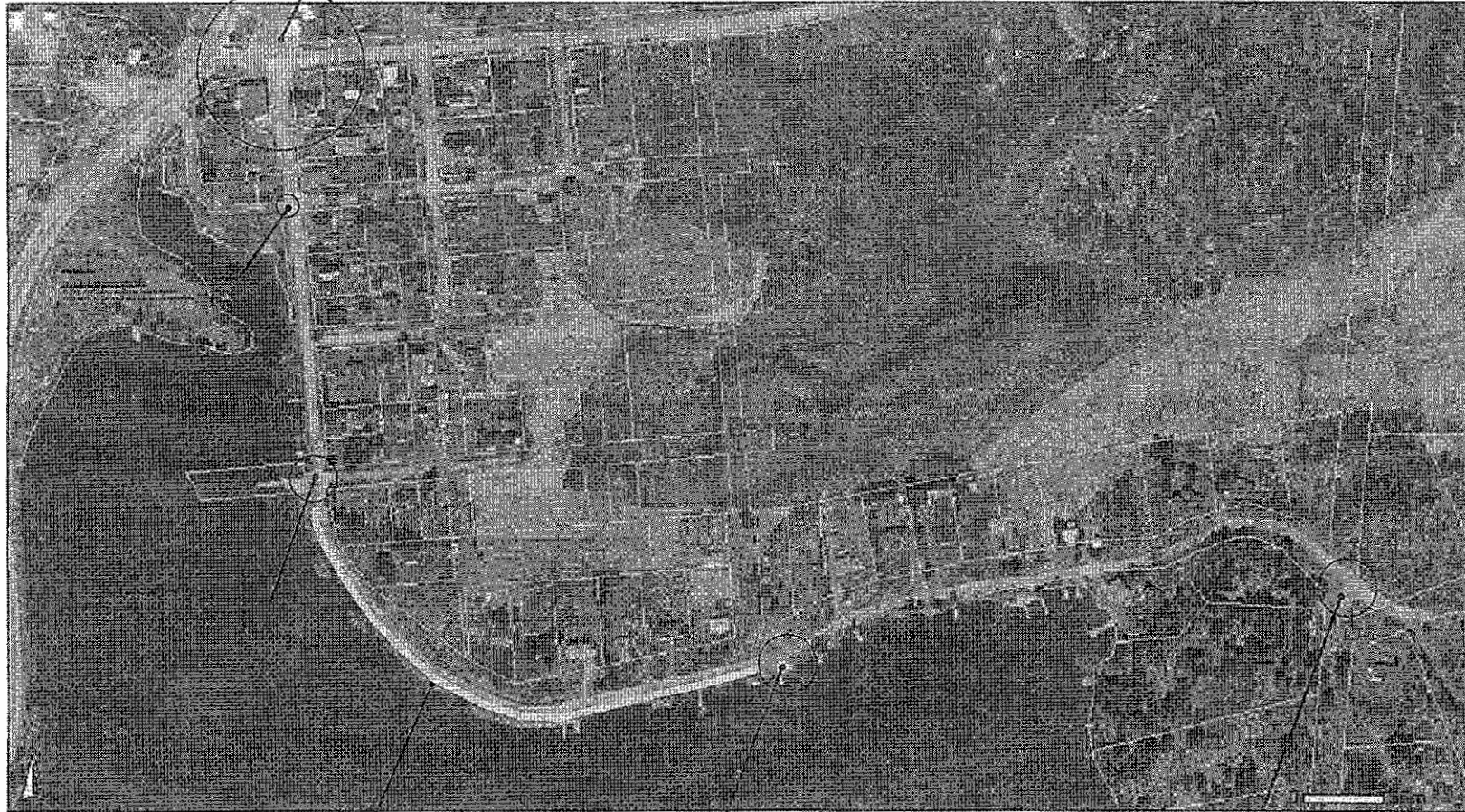
Approach Movement	EB	WB	Northbound			Southbound		
			4	7	8	9	10	11
Lane Config	1	LT		LR				
v (vph)		27		88				
C(m) (vph)		1381		732				
v/c		0.02		0.12				
95% queue length		0.06		0.41				
Control Delay		7.7		10.6				
LOS		A		B				
Approach Delay				10.6				
Approach LOS				B				

Appendix D

Suggested Road Operational Improvements

AREA No.1

- PROPOSED IMPROVEMENTS:**
- 1) Provide for the proposed 2 lanes on each side of Lakeshore Road
 - 2) Provide for the proposed 2 lanes on each side of Lakeshore Road
 - 3) Provide for the proposed 2 lanes on each side of Lakeshore Road
 - 4) Provide for the proposed 2 lanes on each side of Lakeshore Road
 - 5) Provide for the proposed 2 lanes on each side of Lakeshore Road
 - 6) Provide for the proposed 2 lanes on each side of Lakeshore Road
 - 7) Provide for the proposed 2 lanes on each side of Lakeshore Road
 - 8) Provide for the proposed 2 lanes on each side of Lakeshore Road
 - 9) Provide for the proposed 2 lanes on each side of Lakeshore Road
 - 10) Provide for the proposed 2 lanes on each side of Lakeshore Road



AREA No.4 (dock to boat launch)

- PROPOSED IMPROVEMENTS:**
- 1) Provide for the proposed 2 lanes on each side of Lakeshore Road
 - 2) Provide for the proposed 2 lanes on each side of Lakeshore Road
 - 3) Provide for the proposed 2 lanes on each side of Lakeshore Road

AREA No.5

- PROPOSED IMPROVEMENTS:**
- 1) Provide for the proposed 2 lanes on each side of Lakeshore Road
 - 2) Provide for the proposed 2 lanes on each side of Lakeshore Road
 - 3) Provide for the proposed 2 lanes on each side of Lakeshore Road

AREA No.6

- PROPOSED IMPROVEMENTS:**
- 1) Provide for the proposed 2 lanes on each side of Lakeshore Road
 - 2) Provide for the proposed 2 lanes on each side of Lakeshore Road
 - 3) Provide for the proposed 2 lanes on each side of Lakeshore Road



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MCKELLAR COTTAGE RESORT DEVELOPMENT				
SHEET TITLE				
LAKE SHORE ROAD POTENTIAL OPERATIONAL IMPROVEMENTS				
ROBIN SMITH ENGINEERING				
0360 - 4th Line, Enderby, Ontario ph. (705) 882-1224 fax (705) 881-8588 fax. (705) 822-0288				
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