

FINAL REPORT

**Town of Arnprior**  
**2008 Master Traffic Study**

Presented to:

**The Town of Arnprior**  
Public Works and Engineering

105 Elgin Street West  
Arnprior, Ontario  
K7S 0A8

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*Engineers, Project Managers & Planners*



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## 1.0 INTRODUCTION

CastleGlenn Consultants Inc. was retained in the fall of 2007 to undertake the Master Traffic Study on behalf of the Town of Arnprior. The study was commenced to provide the Town of Arnprior Council with a strategic plan that would identify future infrastructure requirements associated with proposed residential, industrial, and commercial growth planned for the community. The identification of existing and future roadway/intersection improvements and their associated costs, would allow the Town of Arnprior to ensure a cohesive, affordable and organized approach to prioritizing future transportation initiatives. In addition, the Master Traffic Study assessed parking-related issues in the downtown core and investigated the potential need and triggers for additional public parking facilities.

It should be emphasize that this evaluation was oriented at a transportation planning level involving the assessment of the existing traffic and parking characteristics, identification of future traffic conditions and traffic flow mitigation measures as well as that development of infrastructure policies to aid in the identification of future infrastructure requirements. Phases subsequent to this transportation evaluation would involve a detailed planning and engineering design phase prior to any commitment of funds or commencement of construction activities.

### 1.1 OBJECTIVES

For the purposes of the Town of Arnprior Master Traffic Study, this transportation evaluation focused on achieving the following objectives:

- Develop policy documents that would address future roadway right-of-way protection and outline traffic impact assessment requirements;
- Assess current parking characteristics (i.e. utilization and turn-over) in downtown Arnprior and the need and triggers for additional public off-street parking facilities;
- Identify future roadway infrastructure requirements and associated improvement costs for the 2015 and 2025 time horizons; and
- Address roadway network issues as identified by the municipality.

### 1.2 STUDY AREA

The Town of Arnprior is a community (population of approximately 7,200<sup>1</sup>) within the County of Renfrew that consists of a diverse economic base, a vibrant downtown core, an abundance of heritage sites, a variety of residential buildings interspersed throughout the community as well as several recreational paths and parks.

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<sup>1</sup> "Municipal Statistics" (2001 estimate). [Town Statistics](http://www.arnprior.ca/townstats.htm). www.arnprior.ca/townstats.htm

This Master Traffic Study mainly focused on a study area that is bound by the current municipal limits of the Town of Arnprior. Municipal roadways which fall under the jurisdiction of the Town of Arnprior were evaluated as part of this study to assess the future functionality of road and infrastructure needs as development within the Town limits are achieved over the next two decades.

An assessment of parking characteristics in downtown Arnprior was also undertaken as part of the Master Traffic Study. This component of the study focused on the parking facilities located in the area bounded to the north by Madawaska Street, to the south by McGonigal Street to the east by Daniel Street North and to the west by Hugh Street North.

### **1.3 METHODOLOGY**

The evaluation of transportation-related policies involved:

- A review of relevant documentation for each specific policy that included a literature search of comparable issues in similar size municipalities, federal and provincial guidelines (where available), policy documentation from other jurisdictions, and documentation/literature specific to the topics for each policy; and
- The development of municipal policy documents addressing each policy issue inclusive of a policy statement for inclusion within the official plan update.

The parking survey component of this evaluation included:

- A site survey to record the type of parking facilities and amount of parking stalls currently provided in downtown Arnprior;
- An on-street and off-street parking survey to document the existing parking characteristics such as utilization and turnover; and
- An analysis of the existing parking characteristics to evaluate the need and triggers for additional public off-street parking facilities.

The roadway network component of this evaluation included:

- The collection and review of all relevant information, such as historical traffic information, local plans of development, transportation studies, local unit cost information, local design standards and anticipated planning density assumptions;
- a site survey was undertaken to document existing lane configurations, pavement width of roadways, traffic controls and signage, posted speeds, sidewalks and intersection configurations;
- confirmation of assumptions regarding the magnitude, density and land use composition of each of the Town of Arnprior's development initiatives;
- traffic operational analysis of existing conditions including level-of-service, estimates of delay and volume-to-capacity ratios;

- development of background growth assumptions consistent with the modeling efforts produced to simulate the 2015 and 2025 horizon years adopted by the County of Renfrew<sup>2</sup>;
- superposition of site generated-traffic from each assumed development initiative using a layering approach onto the future roadway network;
- traffic forecasts for each horizon year (morning and afternoon peak hours of travel demand);
- identification of changes to existing travel patterns associated with the future roadway (2015/2025) networks including new links, closures, and municipal plans; and
- development of a preferred staging strategy that would assign short, medium and long term horizons to each development initiative; [Note: some of these initiatives may be beyond the 2025 time horizon.]
- definition of the required roadway and intersection improvements through a review of the results of the traffic operational analysis for the two horizon years (2015 and 2025);
- development of cost estimates associated for each of the recommended improvements; and
- confirmation of assumptions that are necessary to trigger the infrastructure improvements and detail the rationale and methodology for establishing the transportation component of development charges.

## **2.0 SUMMARY OF TRANSPORTATION – RELATED POLICIES**

A set of policies were developed for the Town of Arnprior to formalize procedures and standards regarding transportation related initiatives such as the classification of roadways, roadway widening and traffic impact assessments. Adoption of these policies would facilitate the goal of providing a consistent approach to the development of a high quality transportation system/network and encourage the more efficient provision of timely information to the Town as concerns the potential impact of development initiatives. *The Town of Arnprior is encouraged to consider incorporating...*

- *the policy statements within the Roadway Classification and Roadway Widening Policy and the Traffic Impact Study Guidelines within the next Official Plan update; and*
- *the above policy documents within existing municipal practices and processes.*

A brief summary of the proposed policy statements for each issue is discussed below (Appendix “A” details each of the policy documents in their entirety).

### **2.1 ROADWAY CLASSIFICATION AND ROADWAY WIDENING POLICY**

This policy was intended to classify the existing Town of Arnprior roadway network into relevant cross-sections based on purpose, traffic volumes and function, establish guidelines for assessing the need and justification for roadway widening and identify the right-of-way

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<sup>2</sup> Arnprior / McNab-Braeside Township Area Transportation Planning Study (County of Renfrew/Morrison Hershfield, Aug 2006)

requirements for municipal infrastructure that is to be protected as concerns future expansion of the roadway network.

Policy Statement: *It shall be the policy of the Town of Arnprior to ...*

- *undertake an engineering evaluation to assess the roadway improvements necessary to comply, to the greatest extent possible, with the typical cross-sections as specified by the Town of Arnprior basic roadway cross-sections. [Existing roadways that do not meet the basic roadway cross-section criteria would be considered for such an engineering evaluation should issues of safety, operational concerns or the potential to integrate with other scheduled improvements be identified.];*
- *establish an infrastructure modification implementation schedule; and*
- *acquire and protect the necessary right-of-way as a planning initiative to allow the implementation of the recommended roadway infrastructure improvements and the construction of future links.*

## **2.2 TRAFFIC IMPACT STUDY GUIDELINES AND POLICY**

This policy document is intended to address the requirements necessary to ensure that development approval processes incorporate an assessment of transportation impacts to the municipal roadway network and transportation systems of the Town of Arnprior.

Development proponents would be required to undertake such assessments documenting the impact of their proposed development in order to identify any adverse traffic impacts and propose suitable mitigation measures that minimize such impacts and concerns prior to obtaining approval of such applications. A traffic impact assessment would be required prior to consideration of zoning, sub-division or site plan approval. Such an assessment would only be required for those development applications that may impose a potential impact to the municipal roadway network. The following traffic impact assessment guidelines have been developed to assist the municipality, the development community and those consultants acting on behalf of development proponents, in undertaking such assessments that support the development application before the Town of Arnprior.

Policy Statement: *It shall be the policy of the Town of Arnprior ....to ensure that development applications are accompanied by a traffic impact assessment as described within the Town's Traffic Impact Assessment Guidelines;*

- *to provide guidance to development proponents regarding assessment assumptions and interpretation of assessment results to ensure that suitable mitigation measures will be implemented to minimize the effects associated with proposed development initiatives;*
- *to provide guidance to development proponents regarding suitable mitigation measures that are to be implemented that would minimize the effects of the development upon the Town's transportation infrastructure; and*
- *to determine the developer proponent's responsibility (financial and otherwise) in implementing the required mitigation measures.*

### 3.0 DOWNTOWN PARKING SURVEY

As part of the Master Traffic Study a parking survey was conducted within the downtown core of Arnprior to document current parking characteristics (i.e. utilization and turn-over) and assess the need and triggers for additional public off-street parking facilities.

The following sections provide a summary of the findings and results of the survey. A detailed synopsis of the survey methodology has been provided in Appendix “C” for further reference.

#### 3.1 PARKING SURVEY OVERVIEW

The parking supply available within the downtown core of the Town of Arnprior currently provides over 200 on-street parking stalls and approximately 380 off-street stalls. A parking survey was conducted over two days during the first week of December<sup>3</sup> (2007) to quantify the current on-street and off-street parking demands:

- The on-street parking survey was conducted on Wednesday, December 5<sup>th</sup>, 2007 between 10:00 a.m. and 4:00 p.m. along Madawaska Street, Elgin Street, McGonigal Street and John Street; and
- The off-street parking survey was conducted on Thursday, December 6<sup>th</sup>, 2007 between 10:00 a.m. and 4:00 p.m. at the Town parking lot, the former Loeb parking lot, the Heritage Plaza parking lot and the Priority Realty parking lot. [The off-street component surveyed only 180 of the total 380 off-street stalls as the majority of parking facilities are privately owned and located on the periphery of the downtown area.]

Exhibit 3.0 illustrates the parking survey study area and parking facilities included as part of the survey.

#### 3.2 SURVEY FINDINGS

Detailed analyses of the data collected during the on-street and off-street parking surveys was performed to determine the existing usage characteristics of the available downtown parking supply. The following usage characteristics were used to identify supply deficiencies and evaluate suitable mitigation measures:

- **Usage** – The total number of different vehicles parked in an area during a time period.
- **Turnover** – The number of different vehicles that use a parking stall during a given period of time.
- **Utilization** – The number ratio between usage and capacity of the total parking stalls.
- **Duration** – The consecutive length of time a single vehicle occupies a parking stall.

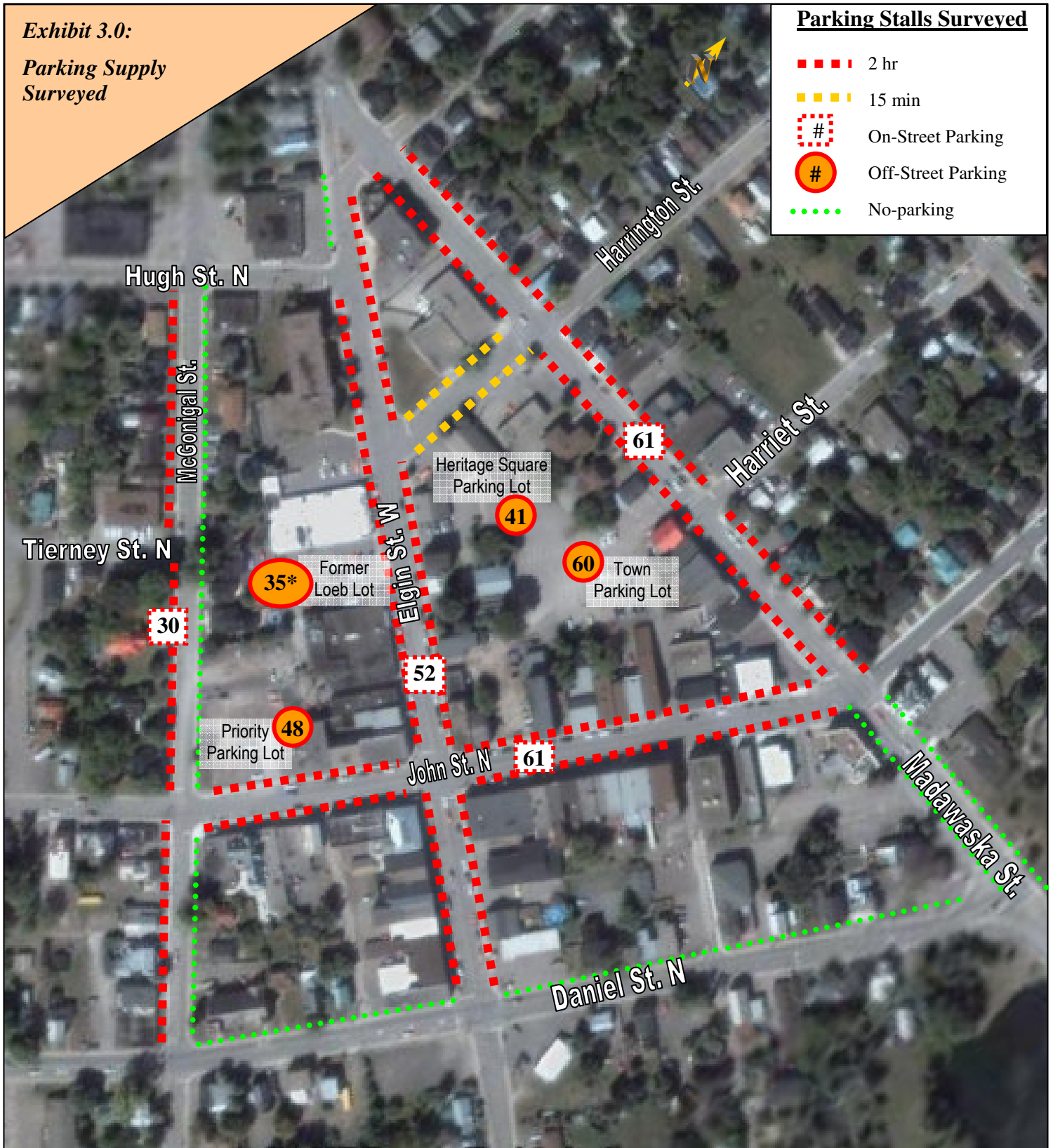
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<sup>3</sup> Parking demand characteristics during the month of December are typically higher due to the Christmas shopping season.

**Exhibit 3.0:**  
**Parking Supply**  
**Surveyed**

**Parking Stalls Surveyed**

- ■ ■ ■ 2 hr
- ■ ■ ■ 15 min
- ⊠ # On-Street Parking
- # Off-Street Parking
- ● ● ● No-parking



\* Since the time of this survey, the Giant Tiger site has been redeveloped and the former Loeb building structure has been demolished. The capacity of the new lot on the south side of Elgin Street has been increased from the 35 stall indicated to 61 stalls.

### ***On-Street Parking***

Table 3.1 summarizes the results of the analysis undertaken to rationalize the data collected during the on-street parking survey on December 5<sup>th</sup>, 2007. In general, the results indicated:

- A total of 1,063 different vehicles used the available on-street parking stalls during the 6-hour survey period;
- An average turnover of 5.2 vehicles per parking stall (1,063 different vehicles that occupied the 204 stalls over the 6-hour survey period). Elgin Street exhibited the highest average turnover of 7.5 vehicles per parking stall over the survey period. (388 different vehicles that occupied the 53 stalls over the 6-hour survey period).
- Nearly 54% (109 stalls out of 204 stalls surveyed) of the on-street parking supply was utilized during the 6-hour survey period. Elgin Street had the greatest average utilization of 72% (37 stalls out of 52 stalls surveyed) over the 6-hour survey period as well as the maximum peak period utilization (85%) between 12:02 p.m. and 12:17 p.m. The parking supply available on John Street and Elgin Street had utilization rates approximately twice that of the parking on Madawaska Street and McGonigal Street.
- Motorists using the on-street parking stalls parked for an average duration of 41 minutes with only 10% (104 vehicles) of the observed vehicles occupying the stalls for longer than 1-hour. During the survey period 4% (39 vehicles of the 1063 unique vehicles) of the vehicles exceeded the posted 2-hour parking time limit. John Street was observed to have the highest number of vehicles (14 vehicles) in violation of the posted parking time restriction. The average duration observed along each surveyed roadway remained comparable, within a 5 minute difference.

### ***Off-Street Parking***

For the off-street parking component of the survey, as utilization was the parking characteristic of interest, the license plate information of each vehicle occupying the off-street stalls was not required for this survey. Tables 3.2 through 3.6 summarize the utilization characteristics of the off-street parking lots during the 6-hour parking survey conducted on December 6<sup>th</sup>, 2007.

The rationalized results of the off-street parking survey revealed that:

- 68% (126 stalls out of 184 stalls surveyed) of the total off-street parking stalls were utilized during the 6-hour survey period;
- The highest average number of off-street stalls (71% or 130 out of 184 spaces) were utilized between 10:00 a.m. – 11:00a.m. and 2:00 pm - 3:00 p.m. The lowest average utilization rate for off-street parking was observed to be 63% during 3:00 to 4:00 pm; and
- On average the available parking stalls in the Town Lot were 80% utilized with peak occupancy (84%) occurring between 10:00 a.m. and 11:00 a.m.

**Table 3.1: Results of the On-Street Parking Analysis**

Street	Block	Number of Parking Stalls	Accumulation/ Utilization				Duration				Usage (# of Different Cars Parked)	Average Turnover	
			Average	Minimum	Peak %, (# of spaces filled)	Peak Survey Period	Average Duration (min.)	# of Cars in Excess of 2 hr.	# of Cars in Excess of 1.5 hr.	# of Cars in Excess of 1 hr.			
Madawaska	A	8	44.2%					120.5	3	4	5	10	1.25
	B	13	41.2%					18.6	0	0	1	97	7.46
	C	6	19.2%					29.7	1	1	2	13	2.17
	D	9	30.6%					31.0	0	0	4	30	3.33
	E	8	27.1%					28.1	1	1	1	26	3.25
	F	9	55.0%					35.2	0	1	5	42	4.67
	G	8	28.8%					57.8	2	2	4	15	1.88
	Total	61	35.4%	14.7%	50.8%	31	14:04 to 14:17	43.7	7	9	22	233	3.82
John	A	9	63.9%					34.5	0	5	7	55	6.11
	B	9	60.2%					51.1	6	7	10	39	4.33
	C	11	79.5%					47.3	5	6	7	61	5.55
	D	12	63.9%					34.2	1	3	7	74	6.17
	E	13	67.3%					36.0	2	4	7	80	6.15
	F	7	60.7%					32.4	0	1	3	43	6.14
	Total	61	66.5%	56.5%	79.0%	49	14:02 to 14:20	39.3	14	26	41	352	5.77
Elgin	A	5	78.0%					91.1	4	5	5	14	2.80
	B	11	71.8%					27.2	0	2	3	95	8.64
	C	10	66.5%					28.8	2	3	6	76	7.60
	D	7	60.0%					26.9	1	1	1	51	7.29
	E	14	70.7%					24.6	0	0	3	132	9.43
	F	5	89.0%					92.3	4	4	5	20	4.00
	Total	52	71.2%	59.6%	84.6%	44	12:02 to 12:17	39.2	11	15	23	388	7.46
McGonigal	A	14	27.0%					34.2	2	2	9	38	2.71
	B	9	30.5%					30.1	1	2	3	31	3.44
	C	7	51.3%					58.7	4	5	6	21	3.00
	Total	30	33.7%	16.7%	56.7%	17	15:44 to 15:49	38.7	7	9	18	90	3.00
Survey Area		204	53.6%				40.5	39	59	104	1063	5.21	

\*. Parking stalls along each street were subdivided into blocks (See Appendix "B") to provide a representation of parking characteristics within general locations along the corridors.

Table 3.2: Town Lot (60 Available Stalls)							
Time		Usage			Utilization		
Start	End	Hourly Average	Max	Min	Average	Max	Min
10:00	11:00	50	52	47	84%	87%	78%
11:00	12:00	49	53	45	82%	88%	75%
12:00	1:00	48	52	43	80%	87%	72%
1:00	2:00	46	48	43	76%	80%	72%
2:00	3:00	50	53	47	83%	88%	78%
3:00	4:00	46	49	42	76%	82%	70%
<b>Overall Avg/Max/Min:</b>		48	53	42	80%	88%	70%

Table 3.3: Priority Parking (48 Available Stalls)							
Time		Usage			Utilization		
Start	End	Hourly Average	Max	Min	Average	Max	Min
10:00	11:00	36	37	36	76%	77%	75%
11:00	12:00	36	37	34	75%	77%	71%
12:00	1:00	33	37	31	69%	77%	65%
1:00	2:00	38	39	37	80%	81%	77%
2:00	3:00	39	41	37	82%	85%	77%
3:00	4:00	36	37	35	74%	77%	73%
<b>Overall Avg/Max/Min:</b>		36	41	31	76%	85%	65%

Table 3.4: Heritage Square (41 Available Stalls)							
Time		Usage			Utilization		
Start	End	Hourly Average	Max	Min	Average	Max	Min
10:00	11:00	23	26	22	57%	63%	54%
11:00	12:00	25	27	20	60%	66%	49%
12:00	1:00	20	24	14	49%	59%	34%
1:00	2:00	22	25	18	53%	61%	44%
2:00	3:00	19	22	16	47%	54%	39%
3:00	4:00	19	21	17	46%	51%	41%
<b>Overall Avg/Max/Min:</b>		21	27	14	52%	66%	34%

Table 3.5: Former Loeb Parking Lot (35 Available Stalls)							
Time		Usage			Utilization		
Start	End	Hourly Average	Max	Min	Average	Max	Min
10:00	11:00	21	23	19	59%	66%	54%
11:00	12:00	18	22	12	50%	63%	34%
12:00	1:00	23	25	19	65%	71%	54%
1:00	2:00	20	25	15	57%	71%	43%
2:00	3:00	22	27	17	63%	77%	49%
3:00	4:00	15	18	12	44%	51%	34%
<b>Overall Avg/Max/Min:</b>		20	27	12	56%	77%	34%

Table 3.6: Summary of Off-Street Parking Results (184 Available Stalls)							
Time		Usage			Utilization		
Start	End	Hourly Average	Max	Min	Average	Max	Min
10:00	11:00	131	138	124	71%	75%	67%
11:00	12:00	127	139	111	69%	76%	60%
12:00	1:00	124	138	107	67%	75%	58%
1:00	2:00	126	137	113	68%	74%	61%
2:00	3:00	131	143	117	71%	78%	64%
3:00	4:00	116	125	106	63%	68%	58%
<b>Overall Avg/Max/Min:</b>		126	143	106	68%	78%	58%

### 3.3 A CLOSER LOOK AT PARKING UTILIZATION

Given the above findings the need for additional off-street parking in downtown Arnprior was investigated. Current literature suggests that parking utilization rates, (or the extent to which the parking supply is used), in excess of 85%<sup>4</sup> are considered to represent “constrained” parking conditions as motorists looking for a vacant stall will not easily find one and may circulate the area before finding an available stall. As well, parking at this threshold becomes inconvenient for priority uses (i.e. deliveries, customers and short errands).

In general, throughout the entire survey period the average utilization rate for the available on-street parking supply in downtown Arnprior was observed to be approximately 54 percent. Similarly, the available off-street parking supply was observed to be approximately 68 percent throughout the survey period.

For the purposes of this evaluation, a lower utilization rate was assumed to be more representative of the local conditions associated with smaller municipalities. Table 3.7; illustrates for each distinct parking area (on-street and off-street lots) the proportion of time throughout the survey period where either an 80% and 70% utilization rate was achieved. A review of the occupancy information determined for specific parking locations within the downtown area indicated that:

#### *On-Street Parking Stalls*

- The 10 on-street parking stalls on Elgin Street (between Harrington Street and Harriet Street) nearest Town Hall were determined to achieve at least an eighty percent utilization rate (8 out of 10 stalls occupied) during 65 percent of the survey periods. These on-street stalls were found to exhibit a consistently high utilization profile.
- The remaining 42 on-street parking stalls on Elgin Street (south of Harriet Street) were determined to achieve an 80 percent utilization rate only 20 percent of the time surveyed. Also, a 70 percent utilization rate was achieved 25 percent of the time surveyed. In short, approximately a quarter of the time surveyed at least 70 percent of all the on-street stalls on Elgin Street (south of Harriet Street) were found to be occupied.
- The 23 on-street parking stalls on the north side of John Street (between Elgin Street and McGonigal Street) were determined to achieve an 80 percent occupancy rate approximately 17 percent of the time the stalls were surveyed. A 70 percent utilization rate was achieved 67 percent of the time surveyed. This implies that these 23 on-street stalls exhibited a consistently high utilization profile.
- The remaining 38 on-street parking stalls on John Street (between Elgin Street and Madawaska Street) did not achieve an 80 percent occupancy rate during the time surveyed. A 70 percent utilization rate was achieved 17 percent of the time surveyed.

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<sup>4</sup> Litman, Todd “Parking Management: Strategies, Evaluation and Planning”, Victoria Transport Policy Institute, August 24, 2007.

- Of the 53 on-street stalls on Madawaska Street (between Harrington Street and John Street) the 6 stalls between (Harriet Street and Bell Street) achieved a utilization of 80 percent for only a short duration (15 minutes maximum) during 1 survey period. In general the corridor offers substantial availability.
- Of the 30 on-street parking stalls on the west side of McGonigal Street (between Hugh Street and Daniel Street N.), it was only the 7 parking stall located to the south (between John Street and Daniel Street) that achieved a utilization of 80 percent however this was only for a short duration (30 minutes maximum) that occurred during 2 of the 27 times the corridor was surveyed. A utilization rate of 70 percent was achieved on these 7 stalls for 22 percent of the time the survey was conducted. In general the corridor offers substantial availability.

**Table 3.7: Summary of Utilization Characteristics of On-Street Stalls and Off-Street Lots**

<i>Location of Downtown Parking Supply</i>	<i>Total Stalls</i>	<i>Percentage of Survey Time that the Stalls achieved at least:</i>	
		<i>80% Utilization</i>	<i>70 % Utilization</i>
<b><i>On-Street Parking Supply</i></b>			
<i>Elgin Street</i> (between Harrington Street and Harriet Street)	10	65%	95%
<i>Elgin Street</i> (between Harriet Street and Daniel Street)	42	20%	25%
<i>John Street</i> (between Elgin Street and McGonigal Street)	23	17%	67%
<i>John Street</i> (between Elgin Street and Madawaska Street)	38	0%	17%
<i>Madawaska Street</i> (between Harrington Street and John Street excluding the west side of Harriet Street and Bell Street)	47	0%	0%
<i>Madawaska Street</i> (Harriet Street and Bell Street – West Side Only)	6	5%	5%
<i>McGonigal Street</i> (between Hugh Street and John Street. – West Side Only)	23	0%	0%
<i>McGonigal Street</i> (between John Street and Daniel Street N. – West Side Only)	7	7%	22%
<b><i>Off-Street Parking Supply</i></b>			
<i>Town Parking Lot</i>	60	56%	100%
<i>Priority Parking Lot</i>	48	21%	87%
<i>Heritage Square Lot</i>	41	0	0
<i>Former Loeb Lot</i>	35	0	11%

### ***Off-Street Parking Lots***

- Each of the 60 off-street parking stalls in the *Town Parking Lot* was surveyed 73 times (between the hours of 10:00 a.m. and 4:00 p.m.). A utilization of at least 80 percent of the stalls (48 stalls occupied) was achieved in the peak hours between 10:00 a.m. and 11:00 a.m. and 2:00 p.m. to 3:00 p.m. It is of interest to note that a utilization rate of 70 percent was achieved throughout the entire survey period. These 60 off-street stalls in the *Town Parking Lot* were found to exhibit a consistently high utilization profile.

- The *Priority Parking Lot* located on the north-east corner of John Street and McGonigal Street provides for 48 parking stalls. Each of the stalls was surveyed 39 times (between the hours of 10:00 a.m. and 4:00 p.m.). A utilization of at least 80 percent of the stalls (39 stalls occupied) was achieved in the peak hours between 1:00 p.m. and 3:00 p.m. It is of interest to note that a utilization rate of 70 percent (34 stalls occupied) was achieved throughout the entire survey period excluding the lunch hour. The 48 off-street stalls in the Priority Parking Lot were found to exhibit a fairly well used pattern throughout the day although with some residual capacity.
- The *Heritage Square Parking Lot* is located on the south-east corner of Harriet Street and Elgin Street and the *Former Loeb Parking Lot* is located opposite the Heritage Square Parking Lot and south-west of the Harriet Street/Elgin Street intersection. The two lots combined at the time of the survey provided for 76 parking stalls. In general these two off-street lots offer substantial availability. *[Since the time of this survey, the Giant Tiger site has been redeveloped and the former Loeb building structure has been demolished. The capacity of the new lot on the south side of Elgin Street has been increased from the 35 stall indicated in Exhibit 3.0 to 61 stalls. The combined Heritage Square Parking Lot and Giant Tiger (former Loeb) Parking Lot now provide for a total of 102 parking stalls.]*

### ***An Assessment of the Need for Additional Parking***

Although several of the parking stalls examined in this study were found to exhibit utilization rates bordering the 80% threshold (i.e. in stalls on John Street parking, Elgin Street, the parking Priority Parking lot, and the Town Parking lot) during a portion of the survey period, it should be appreciated that:

- As regards the 204 *on-street parking stalls* that were surveyed; the results suggest that a 54% utilization rate was achieved averaged over the entire survey period, although some stalls were occupied more frequently than others, it was determined that an under-utilization of parking exists along the periphery of the downtown area. In general, the 91 stalls along McGonigal Street and Madawaska [with the exception of the 7 stalls on McGonigal Street between John Street and Daniel Street N], reached a 70% utilization rate but this was found to occur less than 5% of the survey time.
- As regards the 184 *off-street parking stalls* that were surveyed; the stalls located in the Heritage Square Parking Lot and the Former Loeb Parking Lot were observed to be underutilized. These two lots (76 parking stalls) reached a 70% utilization rate ranging from 0-11% of the times surveyed. On the other hand, the remaining off-street lots (108 stalls in the Town Parking Lot and Priority Parking Lot) achieved a 70% utilization rate approximately 96% of the times surveyed and an 80% utilization rate 44% of the time surveyed. In short, the Town Parking Lot and Priority Parking Lot are well utilized.
- Of the total available parking supply surveyed the exhibiting appreciably high utilization rates only represent approximately half of total available parking supply in the downtown area. The remaining parking supply represents a significantly large and underutilized portion of the total parking supply. If all the highly utilized areas were to experience peak demand characteristics at the same time the remaining underutilized parking stalls can continue to provide a relatively convenient supply of parking for downtown patrons; and

- The peak use of the most highly utilized parking locations occurs for short duration periods during varying times of the day. This implies that motorists seeking parking during peak times may experience some difficulty finding an available stall adjacent to their destination. However, as peak periods for each location do not occur concurrently sufficient parking within relatively close proximity of the intended destination does exist.

While some locations approach high utilization rates during peak periods the remaining utilization within the study area during those periods indicates that sufficient parking is available to meet the peak demand.

### 3.4 CONCLUSION

Based on the above analysis it was determined that **additional off-street parking within downtown Arnprior is not required at this time.** The under-utilization of several available parking supplies, particularly along the periphery of the downtown area, indicates that the implementation of parking management strategies may be beneficial to the community.

The Town of Arnprior may wish to explore the following strategies:

- Recognizing that parking demand characteristics during the month of December are typically higher due to the Christmas shopping season, it is still considered worthwhile to undertake additional study of the downtown core during the peak summer-time usage to assess the impacts of seasonal-demand;
- Provide “gateway” signage that is consistent (size, shape, symbol, colour, theme etc), and easily recognizable and visible at each of the entrance ways into the off-street parking lots (where public parking is permitted) located within the downtown core.
- consider revising the on-street parking time limits applicable to Madawaska Street and McGonigal Street within the downtown core (which are currently under-utilized) from a 2-hour duration to a 3-hour duration in an effort to entice motorist to shift longer duration parking away from Elgin Street to the on-street parking stalls along Madawaska Street and McGonigal Street;
- consider increasing the frequency of on-street parking enforcement/inspections to assure adherence to the 2-hour duration limit within the downtown core along John Street and Elgin Street at those times when peak demand is most likely to occur; and
- update the existing official plan and zoning by-laws to incorporate policies that:
  1. would require new developments proposed within the downtown area to provide sufficient off-street parking to accommodate the future parking demand;
  2. include a description of the provisions and conditions necessary that would permit the Town of Arnprior to implement “cash-in-lieu of parking” arrangements;

3. Encourage the use of shared-parking arrangements involving adjacent property owner(s) that would provide for the effective joint use of off-street parking resources.

*In conclusion, the Town of Arnprior is encouraged to...*

- *Explore parking management strategies that would improve the utilization of all available parking stalls within the downtown area; and*
- *Ensure future developments within the downtown area that would provide sufficient off-street parking to accommodate patrons, residents, visitors, deliveries separate from facilities used to collect/store garbage/rubbish.*

#### **4.0 ROADWAY NETWORK COMPONENT**

This section serves to document the system of existing roadways within the municipality and their current operational characteristics;

##### **4.1 ARTERIAL AND COLLECTOR ROADWAYS**

The Town of Arnprior is currently served by the Trans-Canada Highway system where Highway 417 to the east of Arnprior transitions to the two-lane Highway 17 west of the Town limits.

Highway 17 serves as the primary access used by motor-vehicle traffic to access the urban area of Arnprior. The existing configuration of the Highway 17 corridor currently connects to:

- Three roadways that fall within the jurisdiction of the County of Renfrew. (County Road 15, County Road 2 and County Road 29).
  - The *Highway 17/County Road 15* (Pine Grove Road) intersection is controlled by two-way STOP controlled access;
  - The *Highway 17/County Road 2* (White Lake Road/Daniel Street) intersection is controlled by traffic signals;
  - The *Highway 17/County Road 29* intersection is located south of the Town of Arnprior, outside of the immediate study area and provides convenient access to the downtown of Arnprior via Madawaska Boulevard; and
- The *Highway 17/Baskin Drive* intersection and the Baskin Drive corridor presently fall within the jurisdiction of the Town of Arnprior.

Tables 4.1 and 4.2 provide a listing of approximately 20 collector and 7 arterial roadways that form the primary municipal roadway network supporting the Town of Arnprior. The tables provide related/associated information concerning the jurisdiction, posted speed, provision of pedestrian facilities and the type of cross section of each roadway facility. (See Appendix H - Exhibit H for map.) This information was later used in forecasting infrastructure improvements and cost estimation.

**Table 4.1: Existing “Collector” Roadways.**

<b>Roadway</b>	<b>Limits</b>		<b>Jurisdiction</b>	<b>Posted Speed</b>	<b>Sidewalks</b>	<b>Cross Section</b>
	<b>From</b>	<b>To</b>				
Allan Drive	Edey Street	Baskin Drive	Arnprior	40km/hr	W	Urban
Baskin Drive	Daniel Street	Town of Arnprior Boundary	Arnprior	40km/hr	--	Rural
Bridge Street	Second Avenue	Madawaska Boulevard	Arnprior	40km/hr	--	Urban
Caruso Street	Division Street	Sullivan Crescent	Arnprior	40km/hr	S <sup>1</sup>	Urban
Charles Street	Daniel Street	East of River Ridge/Fairview	Arnprior	40km/hr	N <sup>2</sup>	Urban
Decosta Street	Madawaska Boulevard	Hartney Street	Arnprior	50km/hr	--	Rural
Edey Street	Daniel Street	Edward Street	Arnprior	40km/hr	N & S	Urban
Hugh Street N.	McGonigal Street	Madawaska Street	Arnprior	--	E & W	Urban
Jack Crescent	Madawaska Boulevard	Short Road	Arnprior	40km/hr	W	Urban
John Street N.	Robert Simpson Park	CP Railway	Arnprior	40km/hr	W & E	Urban
John Street S.	CP Railway	Edey Street	Arnprior	40km/hr	W & E	Urban
McGonigal Street	Hugh Street N.	Daniel Street	Arnprior	40km/hr	N & S	Urban
McLachlin Street	Madawaska Street	Caruso Street	Arnprior	40km/hr	W & E	Urban
McLean Avenue	McNab Street	Riverview Drive	Arnprior	40km/hr	--	Rural
McNab Street	McLean Avenue	Madawaska Boulevard	Arnprior	40km/hr	W & E	Urban
Ottawa Street	John Street N.	Harrington Street	Arnprior	40km/hr	N & S	Urban
Riverview Drive	McLean Avenue	Second Avenue	Arnprior	40km/hr	W & E	Urban
Staye Court Drive	Daniel Street	East of Daniel Street	Arnprior	40km/hr	--	Urban
Vandusen Drive	White Lake Road	Richard Lane	Arnprior	50km/hr	--	Rural
Victoria Street	John Street N.	Elgin Street	Arnprior	40km/hr	N & S	Urban
William Street	Daniel Street	Division Street	Arnprior	40km/hr	S	Urban

1. Between Sullivan & Ida
2. West of Fairview Crescent

**Table 4.2: Existing “Arterial” Roadways.**

Roadway	Limits		Jurisdiction	Posted Speed	Sidewalks	X-Section
	From	To				
Baskin Drive W.	Division Street	Daniel Street	Arnprior	50km/hr <sup>1</sup>	--	Rural
Daniel Street N.	Madawaska Boulevard	CP Railway	County of Renfrew	50km/hr	W & E	Urban
Daniel Street S.	CP Railway	Highway 17	County of Renfrew	50km/hr	W & E	Urban
Division Street	Baskin Drive	Elgin Street W	County of Renfrew	50 km/hr	--	Urban
Division Street	Elgin Street W	Town of Arnprior Boundary	Arnprior	50 km/hr	--	Urban
Elgin Street W.	Division Street	Madawaska Boulevard	Arnprior	40km/hr	N & S	Urban
Madawaska Street	Town of Arnprior Eastern Boundaries	Elgin Street	County of Renfrew	50km/hr	N & S	Urban
Vanjumar Road	White Lake Road	Russett Drive	County of Renfrew	60km/hr <sup>2</sup>	--	Rural
White Lake Road	Highway 17	Town of Arnprior Boundary	County of Renfrew	60 km/hr	--	Rural

1. Posted speed reduced to 40km/hr in vicinity of school zone.

2. Posted speed reduced to 40km/hr in vicinity of curve Vanjumar Road and Russett Drive

## 4.2 TRAFFIC OPERATIONS – EXISTING CONDITIONS

Existing traffic volumes along major roadways and at key intersections within the Town of Arnprior were determined by referencing traffic counts, relevant traffic studies [*The Arnprior/McNab-Braeside: Township Area Transportation Planning Study* [Morrison Hershfield, 2006] and the *Arnprior Proposed Development: Madawaska Boulevard Traffic Impact Study* [D.J. Halpenny & associates Ltd, 2006]] and incorporating estimates based on the knowledge of existing development intensities in concert with traffic generation literature (ITE: Trip Generation, 7th Ed.). (See Appendix “O”)

Intersection capacity analysis (using Synchro 6™ traffic analysis software) was used to assess the traffic operational characteristics associated with each intersection within the roadway network (See Appendix “S” for the intersection capacity results).

Table 4.3 provides a summary of the results of this intersection capacity analysis. The table indicates that all intersections analysed within the Town of Arnprior are currently operating at an *overall* satisfactory levels of service [(LOS) “A” or “B”]. In addition, with the exception of a single intersection, the entire roadway network in terms of individual lane operations was found to operate at LOS of “C” or better.

**Table 4.3: Intersection Capacity Analysis Results: (Current (2008) Traffic Volumes)**

	<b>Intersection (North-South / East-West)</b>	<b>Existing Traffic Control</b>	<b>Overall Intersection LOS</b>	<b>Worst Case Approach LOS</b>	<b>Worst Case V/C Ratio / Delay (sec.)</b>
<b>Intersections Under County of Renfrew Jurisdiction</b>					
R1	White Lake Rd / Vanjumar Rd	STOP - Controlled	"A"	"C" (EB)	0.31 / 15.7
R2	White Lake Rd / Vandusen Dr	STOP - Controlled	"A"	"B" (EB)	0.12 / 11.7
R3	Daniel Street / Staye Court Dr	STOP - Controlled	"A"	"F" (WB)	0.43 / 83.4
R4	Daniel St / Baskin Dr	Traffic Signals	"B"	"B" (SB-T)	0.62 / 14.0
R5	Daniel St / Arthur St	Pedestrian Actuated Traffic Signals*	"A"	"B" (WB)	0.07 / 12.4
R6	Daniel St / Charles St	STOP - Controlled	"B"	"B" (WB)	0.11 / 13.4
R7	Daniel St / Edey St	Traffic Signals	"B"	"B" (SB)	0.53 / 12.3
R8	Daniel St / Michael St	STOP - Controlled	"A"	"B" (WB)	0.02 / 11.9
R9	Daniel St / James St	STOP - Controlled	"A"	"B" (WB)	0.09 / 11.9
R10	Daniel St / Havey St	STOP - Controlled	"A"	"B" (WB)	0.02 / 11.9
R11	Division Street S / Baskin Dr	STOP - Controlled	"A"	"B" (EB)	0.13 / 12.0
R12	Division St / Elgin St	STOP - Controlled	"B"	"B" (NB)	0.37 / 11.2
R13	Division St / Caruso St	STOP - Controlled	"A"	"B" (WB)	0.04 / 10.7
<b>Intersections Under Town of Arnprior Jurisdiction</b>					
A1	Stonehaven Way / Baskin Dr	STOP - Controlled	"A"	"B" (NB)	0.04 / 11.4
A2	Baskin Dr / Winner's Circle Dr	STOP - Controlled	"A"	"B" (NB)	0.14 / 10.3
A3	John St / Madawaska St.	Traffic Signals	"B"	"B" (NB)	0.32 / 18.2
A4	John St / Ottawa St	STOP - Controlled	"A"	"B" (WB)	0.04 / 11.1
A5	Norma St / Elgin St	STOP - Controlled	"A"	"B" (SB)	0.02 / 10.5
A6	Ida St / Elgin St	STOP - Controlled	"A"	"B" (SB)	0.02 / 10.5
A7	Jack Cres. W / Madawaska Blvd	Traffic Signals	"A/B"	"B" (WB)	0.62 / 11.8
A8	Sheffield St / Madawaska Blvd	STOP - Controlled	"A"	"C" (NB)	0.12 / 23.8
A9	Jack Cres. E (Moe Robillard St.) / Madawaska Blvd	STOP - Controlled	"A"	"D" (NB)	0.28 / 33.1

\* The Daniel Street/Arthur Street intersection is controlled with a single set of traffic signals on the south side of the intersection which are activated by pedestrian crossings of Daniel Street. The above analysis assumed a STOP controlled operation.

The single exception to these otherwise satisfactory traffic operations was the *Daniel Street* (County Road 2) / *Staye Court Drive* (Intersection R3) intersection. The analysis indicated an operational estimate of LOS "F" for the eastbound shared-left-through-right lane configuration. The estimated delay for this eastbound movement was estimated at approximately 74 seconds assuming current traffic operations. A possible solution to this could be the implementation of traffic signals. However, standard practices would eliminate this option<sup>5</sup> due to the proximity of the currently signalized Daniel St / Baskin Dr intersection (R4) and the potential for traffic that would queue beyond the available storage capacity on Daniel Street (See Table 6.6 of this document).

<sup>5</sup> The "*Arnprior/McNab-Braeside: Township Area Transportation Planning Study*" [Morrison Hershfield, 2006] suggested that the *Daniel Street-County Road 2/Staye Court Drive* intersection be signalized by 2010. If implemented, this solution would result in a 120 metre storage length existing between the STOP bar of this intersection and the adjacent *Daniel Street/Baskin Drive* intersection. TAC standards (Page 2.3.1.17: Table 2.3.1.1) normally suggest a separation of approximately 400m between traffic signals.

Therefore, it is proposed that:

- A new roadway linking Staye Court Drive to Baskin Drive be constructed to maintain access to the residential/commercial developments adjacent to Staye Court Drive. This new link is assumed to intersect with Baskin Dr approximately 70 m west of Daniel St; and
- Left-turn movements at the Daniel St / Staye Court Dr intersection (R3) be prohibited using physical modifications to the eastbound and westbound approaches.

These set of improvements (Improvement #1) would work in conjunction with each other to improve current and future traffic operations along the Daniel Street corridor.

An intersection capacity analysis of this scenario indicated that the Daniel St / Staye Court Drive intersection (R3) improved to an overall LOS “A” with a worst case approach LOS “B” in the eastbound direction. The delay exhibited on the eastbound approach was 14.4 seconds. All surrounding intersections were negligibly effected by the resulting diversion of traffic due to the new roadway link.

## **5.0 FUTURE LAND USE POTENTIAL AND TRAFFIC FORECASTS**

The potential future development of lands within the Town of Arnprior and the surrounding areas will have an impact on infrastructure requirements. The following sections serve to document development forecast assumptions, their associated traffic characteristics and resulting vehicular traffic forecasts for the 2015 (short-term 7 years) and 2025 horizon (longer-term 17 years) years.

### **5.1 LAND USE FORECAST**

Development assumptions regarding lands within, and adjacent to the Town of Arnprior were reviewed with municipal staff to gain an appreciation of the likely development patterns that would occur over the two horizon years. Table 5.1 summarizes the resulting forecast development potential.

- *2015 Horizon Year: “Short-Term Growth:* During the 7 year period (between the 2008 and 2015 horizon years) the Town of Arnprior exhibited a potential to develop just under 1,000 dwellings and 320,000 square feet of commercial/industrial space
- *2025 Horizon Year: “Long-Term Growth”:* During the 17 year period (between the 2008 and 2025 horizon years) the Town of Arnprior exhibited a potential to develop 2,180 dwellings and just over 767,000 square feet of commercial/industrial space

Exhibit 5.0 illustrates the general location these “potential” developments and “known” developments and the boundaries of several sub-areas (Areas 1 to 8) used for traffic forecasting purposes. The land use assumptions associated with each horizon year were documented [See Appendix “K”: Table K-1]. [Table K-1 contains all available information on each development such as area, location, access arrangement, expected build-out date, number of units, type of units, and current approval status.]

For several developments a land use density was required in order to calculate the net developable area (in square-feet of gross-floor-area [SF GFA]) from the gross developable areas provided by the Town. The land use density for commercial and light industrial land uses was estimated using similar areas within the Town of Arnprior containing existing developments similar in form to the proposed developments. [Appendix “M” documents the methodology and calculations involved in estimating the land use densities for commercial and light industrial land uses.]




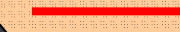
Each of the individual land uses were assigned a land use number that best corresponded to the land uses documented within the “Trip Generation Manual” (7<sup>th</sup> Edition Institute of Transportation Engineers (ITE)).

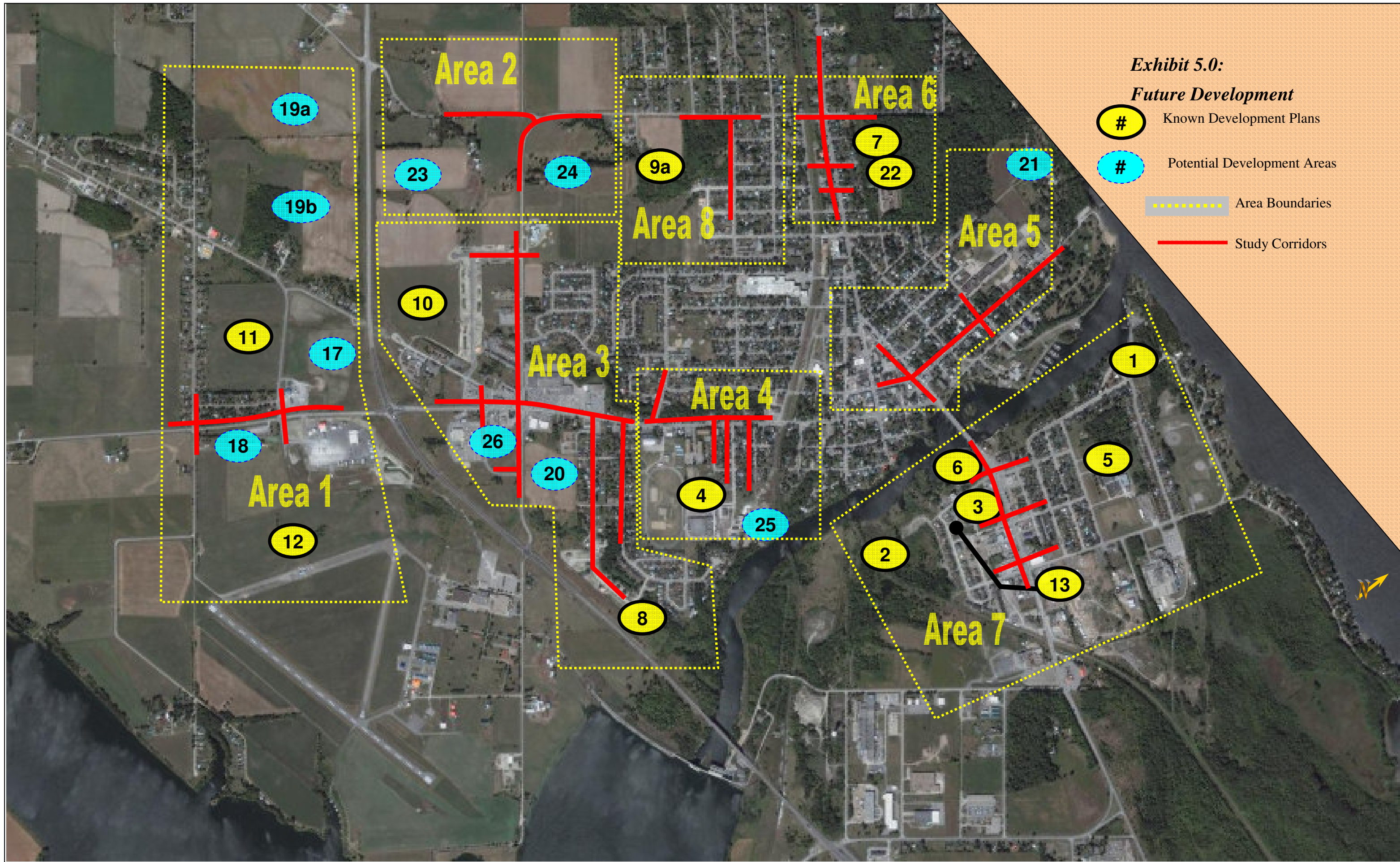
**Table 5.1: Summary of Development Potential**

Land Use	2008 to 2015		2008 to 2025	
	Residential	Commercial / Industrial	Residential	Commercial / Industrial
Single Family Detached Housing	409 Units		1118 Units	
Apartment	52 Units		267 Units	
Residential Condominium/Townhouse	465 Units		675 Units	
Assisted Living	60 Units		60 Units	
Congregate Care Facility			60 Units	
General Light Industrial		30,300 SF GFA*		210,700 SF GFA*
Commercial		289,000 SF GFA*		557,100 SF GFA*
<b>Total</b>	<b>986 Units</b>	<b>319,300 SF GFA *</b>	<b>2,180 Units</b>	<b>767,800 SFGFA*</b>

\* SF GFA – Square Feet of Gross Leasable Area

**Exhibit 5.0:**  
**Future Development**

-  Known Development Plans
-  Potential Development Areas
-  Area Boundaries
-  Study Corridors



## 5.2 TRAFFIC GENERATION

The associated estimates of traffic generation related to each of the proposed land uses were referenced [See Appendix “J”: Table J-1 and J-2] to determine the amount of traffic that could likely be generated from/to each individual developments.

Table 5.2 and 5.3 provide an aggregate summary the morning and afternoon inbound/outbound traffic associated with the land use potential within each horizon year. The tables indicate that the afternoon peak hour time period represents the highest impact in terms of traffic volumes.

In aggregate, during the afternoon peak hour of travel demand:

- The forecast development over the next 7 years (between the 2008 and 2015 horizon years) was found to result in an additional 1,760 vehicles-per-hour being added to the local roadway network;
- The forecast development over the following 10 years (between the 2015 and 2025 horizon years) was found to result in an additional 2,330 vehicles-per-hour being added to the local roadway network; and
- During the 17 year period (between the 2008 and 2025 horizon years) the Town of Arnprior exhibited a potential to develop 2,180 dwellings and just over 767,000 square feet of commercial/industrial space which was found to potentially result in an additional 4,090 vehicles-per-hour being added to the local roadway network.

The above developments reflect a considerable increase in overall traffic volumes on the roadway network within the Town of Arnprior for the *short* and *long* term horizon periods.

**Table 5.2: Total Summary of Land Use Traffic Generation Characteristics  
2015 Horizon Year [Vehicles-Per-Hour]**

Land Use	Intensity	Morning Peak Hour		Afternoon Peak Hour	
		Inbound	Outbound	Inbound	Outbound
Single Family Detached Housing	409 Units	77	232	259	152
Apartment	52 Units	5	22	21	11
Residential Condominium/Townhouse	465 Units	35	169	161	80
Congregate Care Facility	60 Units	2	2	6	5
<b>Sub-Total Residential Traffic Generation:</b>		<b>119</b>	<b>425</b>	<b>447</b>	<b>248</b>
General Light Industrial	30,300 SF GFA*	23	5	7	23
Commercial	289,000 SF GFA*	170	108	494	538
<b>Sub-Total Non-Residential Traffic Generation:</b>		<b>193</b>	<b>113</b>	<b>501</b>	<b>561</b>
Total		312	538	948	809
Total Traffic Generated		850		1,757	

\* SF GFA – Square Feet of Gross Leasable Area

**Table 5.3: Total Summary of Land Use Traffic Generation Characteristics  
(2025 Horizon Year) [Vehicles-Per-Hour]**

Land Use	Intensity	Morning Peak Hour		Afternoon Peak Hour	
		Inbound	Outbound	Inbound	Outbound
Single Family Detached Housing	1118 Units	210	631	709	417
Apartment	267 Units	27	109	107	58
Residential Condominium/Townhouse	675 Units	50	247	235	116
Assisted Living	60 Units	5	3	6	7
Congregate Care Facility	60 Units	2	2	6	5
<b>Sub-Total Residential Traffic Generation:</b>		<b>294</b>	<b>992</b>	<b>1063</b>	<b>603</b>
General Light Industrial	210,700 SF GFA	161	33	46	161
Commercial	557,000 SF GFA	366	233	1063	1152
<b>Sub-Total Non-Residential Traffic Generation:</b>		<b>527</b>	<b>266</b>	<b>1109</b>	<b>1313</b>
Total		821	1,258	2,172	1,916
Total Traffic Generated		2,079		4,088	

\* SF GFA – Square Feet of Gross Leasable Area

### 5.3 TRAFFIC FORECASTS

The traffic forecasts were prepared using a “superposition” approach that combined various layers of traffic to determine estimates of future traffic volumes. This approach involved combining:

- An estimate of current (2008) traffic volumes; [A summer peak adjustment factor ranging from 0% to 20% was applied to individual study corridors (See Appendix “N”) that were anticipated to experience increased travel demand during the summer.]
- An estimate of new traffic that would be generated from proposed development initiatives that would be completed within the 2008-to-2015 time frame and/or the 2015-2025 time frame; and
- A background growth factor of 1%-per-annum [This was applied to several key study corridors to account for unanticipated background traffic growth that may affect the overall study area.].

**Current (2008) traffic volumes** information was obtained from the following sources:

The Town of Arnprior;

- Arnprior / McNab-Braeside Township Area – Transportation Planning Study [Morrison Hershfield, 2006]; and
- Arnprior Proposed Development – Madawaska Boulevard Traffic Impact Study [D.J. Halpenny & Associates Ltd, 2006].

Where gaps in information existed, estimates were derived by assessing available information and developing assumptions based upon a review of the adjacent land uses and the typical traffic volumes that such land uses were likely to generate.

A *sub-area analysis* was initiated which saw the study area subdivided into 8 distinct zones. (See Exhibit 5.0) Travel demand forecasts were developed for each individual zone during the 2015 and 2025 horizon periods (for both morning and afternoon peak hours of travel demand).

The “superposition” approach involved developing for each sub-area an estimate of travel demand which took into account current (2008) traffic volumes and traffic generated by those developments contained within the areas boundaries. As well, a fraction of the trips generated by developments outside of the immediate study area were distributed to neighbouring areas in order to account for through traffic.

***New Infrastructure:*** Travel demand estimates also took into account the potential traffic diversions that would result from changes to roadway infrastructure that include the proposed twinning of Highway 17. (See Appendix “N” for a summary of the forecast and traffic distribution assumptions by sub-area.)

Forecast traffic volumes (See Appendix “O”, “P”, and “Q”) complete with directional link traffic and intersection turning movements were developed for each of the sub-areas and for each horizon year.

Table 5.4 provides a summary of forecast traffic volumes on the major roadways within the Town of Arnprior.

### ***Local Impacts Associated with Twinning of the Highway 17 Corridor***

The proposed modifications to the Highway 17 corridor in the vicinity of Arnprior were, for the purposes of this study, assumed to be completed between the 2008 and the 2015 horizon years. These modifications were assumed to include the following associated improvements:

- Installation of the White Lake Road/Daniel Street (County Road 2) interchange with Highway 17;
- Twinning of the White Lake Road/Daniel Street (County Road 2) corridor between Vanjumar Road and Baskin Drive including an upgrade of the roadway to an Urban Arterial cross-section (excluding bike lanes); and
- Installation of traffic signals at the eastbound and westbound ramps to the new White Lake Road/Daniel Street (County Road 2) interchange.

**Table 5.4: Summary of Average Annual Daily Traffic Growth on Major Study Corridors**

Corridor	Roadway Segment			AADT Volumes (vehicles-per-day)			Average Growth Rate 2008 – 2025 (%/annum)
	From	To	# of Lanes	2008	2015	2025	
<b>Roadways Under County of Renfrew Jurisdiction</b>							
Division Street	N. of Caruso Street	Caruso Street	2	4,800	5,200	6,600	2.2%
	Caruso Street	S. of Caruso Street	2	4,600	5,000	6,500	2.4%
Daniel Street	Hwy 17	Baskin Drive	2	9,600	18,700	26,100	10.1%
	Baskin Drive	Arthur Street	2	9,100	15,800	24,700	10.1%
White Lake Road	Campbell Drive	Vanjumar Road	2	4,000	4,900	5,100	1.6%
	Vanjumar Road	Hwy 17	2	8,500	16,000	22,100	9.4%
<b>Roadways Under Town of Arnprior Jurisdiction</b>							
Madawaska Boulevard	W. of Jack Crescent W.	Jack Crescent W.	4	13,300	18,200	19,800	2.9%
	Jack Crescent W.	Jack Crescent E. (Moe Robillard St.)	4	11,800	15,500	17,100	2.6%
	Jack Crescent E (Moe Robillard St.)	E. of Jack Crescent E. (Moe Robillard St.)	4	11,500	14,600	16,100	2.4%
John Street	N. of Madawaska St.	Madawaska St.	2	3,000	3,200	3,900	1.8%
	Madawaska St.	S. of Madawaska St.	2	2,200	2,400	2,700	1.3%
Baskin Drive	E. of Daniel Street	Daniel Street	2	3,300	3,300	5,770	1.3%
	Daniel Street	Stonehaven Way	2	6,000	9,400	15,300	9.1%
	Stonehaven Way	W. of Stonehaven Way	2	4,000	6,900	12,700	12.8%

The impact of the above changes to the Highway 17 corridor upon the travel patterns within the Town of Arnprior were simulated for the purposes of producing traffic forecasts.

As concerns the *County of Renfrew*, Table 5.4 indicates:

- the potential for significant growth (almost tripling) traffic volumes along the Daniel Street/White Lake Road (County Road 2) corridor on either side of Highway 17 (from Vanjumar Road through to Arthur Street). This forecast growth was attributed to:
  - the diversion of traffic that would occur given the proposed interchange at the Daniel Street/White Lake Road (County Road 2) corridor;
  - Traffic volumes affecting White Lake Road south of the Highway 17 corridor were attributed to anticipated developments within Area 1; and
  - Traffic volumes affecting Daniel Street north of the Highway 17 corridor were attributed to anticipated developments within Areas 2,3 and 4.

As concerns the *Town of Arnprior*, Table 5.4 indicates:

- The forecast growth in traffic volume along the Madawaska Boulevard corridor east of the Madawaska River Bridge were attributed to the 6 potential development initiatives identified within Area 7 that were assumed to be phased, and completed by 2025. Traffic generated by these developments would use Madawaska Boulevard in order to access the downtown of Arnprior or Highway 17 and the surrounding area.

- Traffic volumes along Baskin Drive east of Daniel Street were observed to decrease between 2008 and 2015 and then subsequently rise by the 2025 Time Frame:
  - The initial drop in traffic volumes was attributed to an assumption that the Baskin Drive/Highway 17 intersection would be converted to a flyover having no direct access to the Highway 17 corridor. This would result in the diversion of traffic destined from/to Highway 17 to the future interchange location at the Daniel Street/White Lake Road (County Road 2) corridor.
  - The subsequent rise in traffic volumes by 2025 was attributed to development in Area 3.
- Traffic volumes along Baskin Drive west of Daniel Street are also forecast to increase. The increases were attributed to:
  - changes to the Highway 17 corridor involving the conversion of the Highway 17/Division Street intersection to a fly-over. This was found to result in the diversion of traffic destined from/to Highway 17 to the future interchange location at the Daniel Street/White Lake Road (County Road 2) corridor; and
  - the proposed commercial and residential developments planned within Area 2 and Area 3;

The average annual percentage growth in forecast traffic resulted in:

- Rates of annual growth of less than 3 percent along the Madawaska Boulevard, John Street, and Division Street corridors.
- Rates of annual growth of 9 to 13 percent along the White Lake Road/Daniel Street (County Road 2) and Baskin Drive corridors. This level of growth can be attributed to the infrastructure improvements associated with the proposed Highway 17 twinning combined with the large number of commercial and residential developments.

## 6.0 ANALYSIS AND EVALUATION

This section presents the analysis and evaluation that was undertaken to determine the necessity of future roadway upgrades/modifications within the study area and serves to identify potential forecast deficiencies of the roadway network servicing the Town of Arnprior.

The analyses included the following components:

- A) intersection capacity analysis;
- B) an assessment of roadway classifications; and
- C) a left-turn storage assessment.

For analysis purposes it was assumed that:

- Improvements which impact the intersection of a higher tier roadway (i.e. Ministry of Transportation of Ontario) with a lower tier roadway (i.e. County of Renfrew) would fall within the jurisdiction of the higher tier authority;
- The timing of the MTO Highway 17 upgrades would coincide with improvements to the cross-roads that fall within the County of Renfrew's jurisdiction. These improvements would occur sometime prior to the 2015 horizon year. It is understood that the Ministry of Transportation of Ontario (MTO) has proposed, as part of the construction of the new

interchange at White Lake Road/Daniel Street (County Road 2), to twin the White Lake Road/Daniel Street (County Road 2) corridor from Vanjumar Road to Baskin Drive<sup>6</sup>;

- Infrastructure improvements would occur in a sequential manner such that improvements proposed for earlier horizon years would remain in place, and may subsequently be further improved, to meet the demands for future horizon periods; and
- Developments 19A and 19B would be provided with access to the proposed northerly extension of Vanjumar Road (approximately 1,180 metres in length) that would connect Russett Drive to Pine Grove Road.<sup>7</sup>

### ***A) Intersection Capacity Analysis***

Each of the existing/proposed signalized intersections was modelled using Synchro 6™ traffic software as un-coordinated traffic signals. While there may be merit to coordinating signal timings along major corridors within the study area it should be noted that this would effectively “choke” the flow of vehicles from the minor legs of each intersection in order to provide a greater flow rate to the major roadway corridor. This could prove to be detrimental to minor-leg traffic operations as the high traffic volumes along major roadways (specifically Daniel St) could cause the actuated phase to constantly operate at its maximum split during peak hours, thus reducing available green time to minor leg approaches. As such it was important to show that these intersections were capable of operating in an un-coordinated fashion until such time as the benefits of coordinated signal timing could be verified.

Travel demand forecasts representing the 2015 and 2025 horizon periods were analysed (See Appendix “T” and “U”). The afternoon peak hour of travel demand was used for analysis purposes as this time period represented the larger traffic volumes exhibited on the study corridors.

### ***Intersection Capacity Analysis Results***

Table 6.1 and Table 6.2 provide a summary of the intersection capacity analysis results for the 2015 and 2025 forecast horizon years. The results provide an estimate of the forecast overall intersection level-of-service (LOS) and other operational characteristics (i.e. movement LOS, volume-to-capacity ratio, delay) representative of the “worst-case” turning movements. For the purposes of this analysis a LOS “E” was assumed to exhibit “less-than-satisfactory” traffic operations.

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<sup>6</sup> The “*Arnprior/McNab-Braeside: Township Area Transportation Planning Study*” [Morrison Hershfield, 2006], Page 22.

<sup>7</sup> Ibid, Page iii.

**Table 6.1: Summary of Intersection Capacity Analysis Results: (2015 Horizon Years – Afternoon Peak Hour)**

Intersection (North-South / East-West)		Assumed Traffic Control	Overall Intersection LOS	Worst Case Approach LOS <sup>1</sup>	Worst Case V/C Ratio / Delay (sec.)
<b>Intersections Under County of Renfrew Jurisdiction</b>					
R1	*White Lake Rd / Vanjumar Rd	STOP – Controlled	"C"	"F" (EB)	3.43 / --
R2	White Lake Rd / Vandusen Dr	STOP - Controlled	"A"	"B" (EB)	0.16 / 13.2
R3	* Daniel Street / Staye Court Dr	STOP–Controlled – RI-RO	"A"	"B" (EB)	0.23 / 14.2
R4	*Daniel St / Baskin Dr	Traffic Signals	"D"	"E" (WB-L)	0.79 / 66.7
R5	*Daniel St / Arthur St	Pedestrian Actuated Traffic Signals**	"A"	"C" (WB)	0.11 / 15.5
R6	*Daniel St / Charles St	STOP – Controlled	"A"	"C" (WB)	0.14 / 16.8
R7	*Daniel St / Edey St	Traffic Signals	"A"	"D" (EB)	0.40 / 44.0
R8	Daniel St / Michael St	STOP – Controlled	"C"	"C" (WB)	0.05 / 22.5
R9	Daniel St / James St	STOP - Controlled	"A"	"C" (WB)	0.26 / 24.9
R10	Daniel St / Havey St	STOP - Controlled	"A"	"C" (WB)	0.05 / 22.4
R11	Division Street S / Baskin Dr	STOP - Controlled	"A"	"B" (EB)	0.24 / 13.7
R12	Division St / Elgin St	STOP - Controlled	"B"	"B" (NB)	0.44 / 12.6
R13	Division St / Caruso St	STOP - Controlled	"A"	"B" (WB)	0.05 / 11.2
<b>Intersections Under Town of Arnprior Jurisdiction</b>					
A1	Stonehaven Way / Baskin Dr	STOP - Controlled	"A"	"C" (SB)	0.14 / 16.8
A2	Baskin Dr / Winner's Circle Dr	STOP - Controlled	"A"	"B" (NB)	0.41 / 13.8
A3	John St / Madawaska Street.	Traffic Signals	"B"	"B" (NB)	0.33 / 18.3
A4	John St / Ottawa St	STOP - Controlled	"A"	"B" (WB)	0.04 / 11.1
A5	Norma St / Elgin St	STOP - Controlled	"A"	"B" (SB)	0.02 / 11.3
A6	Ida St / Elgin St	STOP - Controlled	"A"	"B" (SB)	0.04 / 11.7
A7	Jack Cres. W / Madawaska Blvd	Traffic Signals	"B"	"B" (WB)	0.73 / 13.0
A8	Sheffield St / Madawaska Blvd	STOP - Controlled	"A"	"E" (NB)	0.29 / 39.7
A9	Jack Cres. E (Moe Robillard St.) / Madawaska Blvd	STOP - Controlled	"B"	"F" (SB)	0.76 / 93.7

\* Intersection Analysis assumes that the White Lake Road/Daniel Street corridor has been twinned (4-Lane divided + Auxiliaries)

1.EB = eastbound, WB = westbound, NB = northbound, and SB = southbound.

Where no turning movement (L=left, R=right, Th=through) is indicated the results reflect the characteristics of the entire approach.

\*\* The Daniel Street/Arthur Street intersection is controlled with a single set of traffic signals on the south side of the intersection which are activated by pedestrian crossings of Daniel Street. The above analysis assumed a STOP controlled operation.

**Table 6.2: Summary of Intersection Capacity Analysis Results: (2025 Horizon Years – Afternoon Peak Hour)**

Intersection (North-South / East-West)		Assumed Traffic Control	Overall Intersection LOS	Worst Case Approach LOS <sup>1</sup>	Worst Case V/C Ratio / Delay (sec.)
<b>Intersections Under County of Renfrew Jurisdiction</b>					
R1	*White Lake Rd / Vanjumar Rd	Traffic Signals – (2015)	"E"	"F" (EB-L)	1.47 / 234.8
R2	White Lake Rd / Vandusen Dr	STOP - Controlled	"A"	"C" (EB)	0.27 / 15.0
R3	* Daniel Street / Staye Court Dr	STOP–Controlled – RI-RO	"A"	"C" (WB)	0.35 / 18.8
R4	*Daniel St / Baskin Dr	Traffic Signals	"F"	"F" (NB-L)	1.43 / 245.6
R5	*Daniel St / Arthur St	Pedestrian Actuated Traffic Signals**	"B"	"E" (WB)	0.26 / 35.5
R6	*Daniel St / Charles St	STOP – Controlled	"C"	"E" (WB)	0.34 / 41.3
R7	*Daniel St / Edey St	Traffic Signals	"A"	"D" (EB)	0.41 / 53.8
R8	Daniel St / Michael St	STOP - Controlled	"E"	"F" (WB)	0.14 / 57.8
R9	Daniel St / James St	STOP - Controlled	"C"	"F" (WB)	0.69 / 106.0
R10	Daniel St / Havey St	STOP - Controlled	"F"	"F" (WB)	0.48 / 83.3
R11	Division Street S / Baskin Dr	STOP - Controlled	"D"	"F" (EB)	0.87 / 62.0
R12	Division St / Elgin St	STOP - Controlled	"B"	"B" (NB)	0.49 / 13.7
R13	Division St / Caruso St	STOP - Controlled	"A"	"B" (WB)	0.07 / 12.3
<b>Intersections Under Town of Arnprior Jurisdiction</b>					
A1	Stonehaven Way / Baskin Dr	STOP - Controlled	"E"	"F" (NB)	0.80 / 78.4
A2	Baskin Dr / Winner's Circle Dr	STOP - Controlled	"C"	"F" (NB)	1.07 / 104.8
A3	John St / Madawaska St.	Traffic Signals	"B"	"B" - WB	0.67 / 13.5
A4	John St / Ottawa St	STOP - Controlled	"A"	"B" - WB	0.05 / 11.9
A5	Norma St / Elgin St	STOP - Controlled	"A"	"B" (SB)	0.06 / 11.7
A6	Ida St / Elgin St	STOP - Controlled	"A"	"B" (SB)	0.07 / 13.9
A7	Jack Cres. W / Madawaska Blvd	Traffic Signals	"B"	"B" (WB)	0.73 / 12.3
A8	Sheffield St / Madawaska Blvd	STOP – Controlled – RI-RO	"A"	"B" (SB)	0.03 / 10.5
A9	Jack Cres. E (Moe Robillard St.) / Madawaska Blvd	Traffic Signals	"B"	"B" (WB)	0.74 / 13.2

\* Intersection Analysis assumes that the White Lake Road/Daniel Street corridor has been twinned (4-Lane divided + Auxiliaries)

1.EB = eastbound, WB = westbound, NB = northbound, and SB = southbound.

Where no turning movement (L=left, R=right, Th=through) is indicated the results reflect the characteristics of the entire approach.

\*\* The Daniel Street/Arthur Street intersection is controlled with a single set of traffic signals on the south side of the intersection which are activated by pedestrian crossings of Daniel Street. The above analysis assumed a STOP controlled operation.

Table 6.1 details the 2015 time horizon results and indicates that:

- All of the intersections analysed, with the exception of three intersections, will continue to operate at satisfactory levels of service (Overall LOS “C” or better) into the 2015 horizon year, without changes to current infrastructure. These three intersections are:
  - The intersection of White Lake Rd / Vanjumar Rd which will require traffic signals by 2015;
  - The intersection of Sheffield St / Madawaska Blvd. [For the purposes of this study, it was determined that restricted movements would best deal with the resulting poor operational efficiency. See Table 6.3]; and
  - The intersection of Daniel St / Baskin Dr which will require a dedicated eastbound right-turn lane by 2015.

Table 6.2 details the 2025 time horizon results and indicates that:

- Twelve out of the 22 intersections analysed, will continue to operate at satisfactory levels of service (LOS) “A” or “B” into the 2025 horizon year given the modification assumed in 2015. The improvements necessary to address the deficiencies of the 10 intersections identified are addressed in Table 6.3.

Table 6.3, Table 6.4 and Exhibit 6.0 provide a summary of corrective measures to address the identified deficiencies forecast to occur within the 2015 and 2025 time horizons. These tables:

- were derived through additional intersection capacity analysis that was undertaken to determine the appropriate mitigation strategies (See Appendix “T” and “U”);
- present eight (8) suggested infrastructure improvements along with the resulting level-of-service and suggest the likely jurisdiction responsible for the improvements; and
- correspond to Appendix “V” which provides conceptual illustrations of each of the suggested infrastructure improvements.

The proposed mitigation measures which follow the tables and exhibits have been organized by jurisdiction for ease of reference.

**Table 6.3: Summary of Suggested Intersection Improvements for the 2015 Horizon Year**

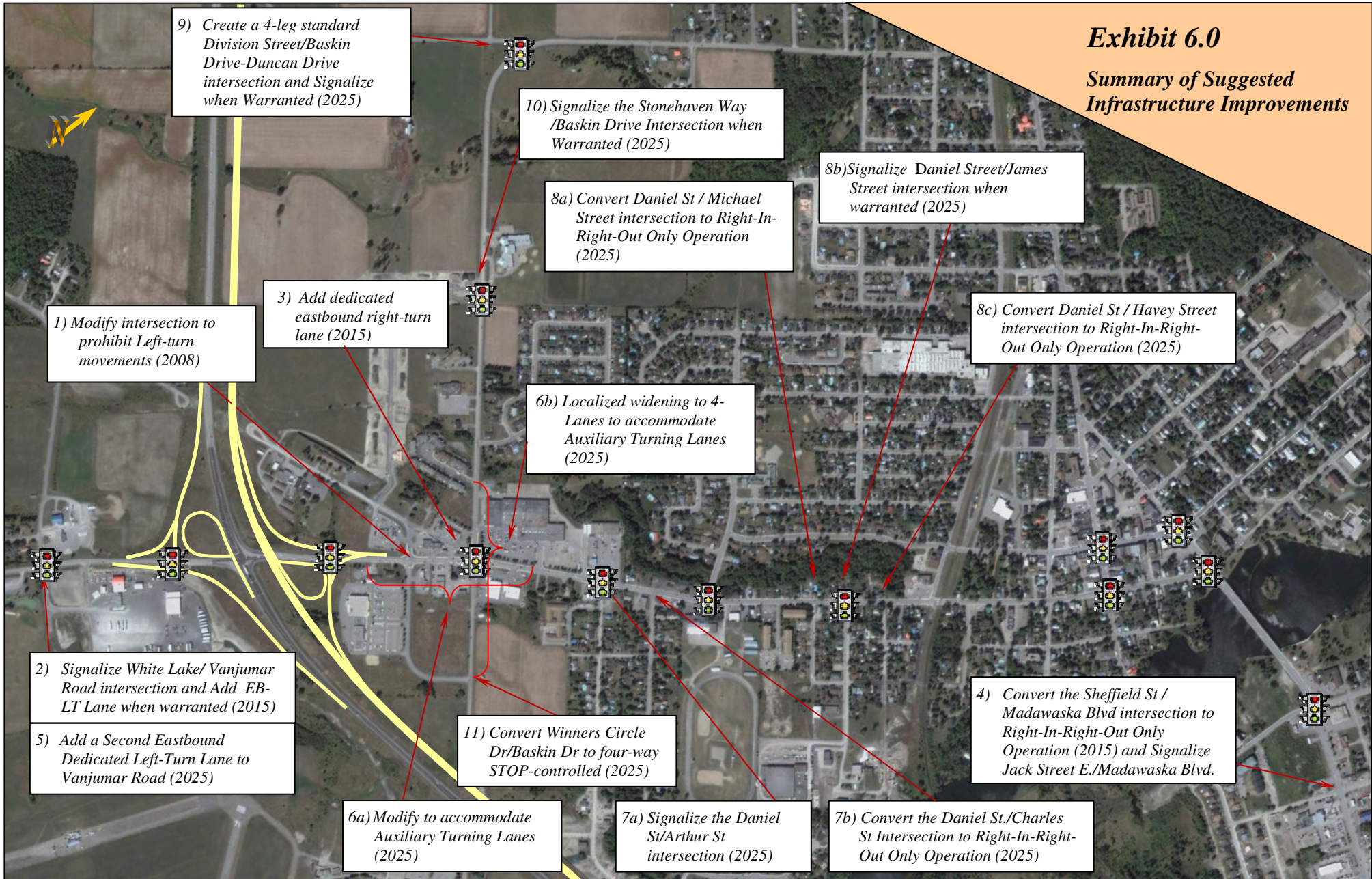
<b>2015 Horizon Year</b>			<b>Resulting Impact</b>		
<b>Intersection (North-South / East-West)</b>	<b>Corrective Measure</b>		<b>Overall Intersection LOS</b>	<b>Worst Case Approach LOS</b>	<b>Worst Case V/C Ratio / Delay (sec.)</b>
<b>Intersections Under County of Renfrew Jurisdiction</b>					
2	R1: White Lake/Vanjumar Rd	<i>Signalize Intersection &amp; Add a dedicated Eastbound Left Turn Lane (from Wabalac Drive to Vanjumar Rd) with the adjacent lane becoming a shared through/right lane.</i>	"B"	"C" (EB-L)	0.71 / 22.8
3	R4: Daniel St/Baskin Dr	<i>Add a channelized dedicated eastbound right-turn lane.</i>	"D"	"D" (SB)	0.88 / 48.1
<b>Intersections Under Town of Arnprior Jurisdiction</b>					
4	A8: Sheffield St/Madawaska	<i>Convert the Sheffield St / Madawaska Blvd Intersection to Right-In-Right-Out Only Operation: It is proposed that the left turn movements at this intersection (A8) and through movements from the minor-legs be prohibited when warranted.</i>	"A"	"B" (SB)	0.03 / 10.4
	A9: Jack Cres. E (Moe Robillard St.) / Madawaska Blvd	<i>Signalize the Jack Cres. E (Moe Robillard St.) / Madawaska Blvd Intersection: It is proposed that this intersection (A9) be signalized.</i>	"B"	"B" (WB)	0.77 / 15.1

**Table 6.4: Summary of Suggested Intersection Improvements for the 2025 Horizon Year**

2025 Horizon Year			Resulting Impact		
Intersection (North-South / East-West)	Corrective Measure		Overall Intersection LOS	Worst Case Approach LOS	Worst Case V/C Ratio / Delay (sec.)
<b>Intersections Under County of Renfrew Jurisdiction</b>					
5	R1: White Lake /Vanjumar Rd	Add a Second Eastbound Dedicated Left-Turn Lane to Vanjumar Road: Forecast Traffic volumes for the left turn movement exceed 500 vehicles-per-hour during both AM and PM Peak hours. It was assumed that development of the double left turn lanes would require a median to be developed on Vanjumar Road on either side of White Lake Road.	"C"	"D" (EB-L)	0.85 / 35.2
6	R3: Daniel St/Staye Court Dr	Widen Daniel Street and Baskin Dr: Widening of the Daniel St and Baskin Dr corridors would be required in order to accommodate dual left-turn lanes on all 4 approaches to Intersection R4. Intersection R4 would also require the addition of a dedicated right-turn lane on the westbound approach and the channelization of the SB, EB, and WB right-turn movements. See Improvement 6, Appendix "V" that depicts a conceptual lane arrangement.)	"A"	"B" (WB)	0.26 / 13.9
	R4: Daniel St/Baskin Dr		"D"	"D" (SB)	0.90 / 49.2
7	R5: Daniel St/Arthur St	Signalize the Daniel St/Arthur St intersection: It is proposed that this intersection (R5) be signalized and that physical roadway modifications be included at Intersection R6 (located 115m to the north) to accommodate right-in/right-out movements only.	"B"	"C" (WB)	0.09 / 26.0
	R6: Daniel St/Charles St	Convert the Daniel St./Charles St Intersection to Right-In-Right-Out Only Operation: It is proposed that the left turn movements into and out of this intersection (R6) be prohibited at the time when traffic signals are warranted at Intersection R5 (Daniel St./Charles Street).	"A"	"B" (WB-L)	0.06 / 11.3
8	R8: Daniel St/Michael St	Convert Daniel St / Michael Street intersection to Right-In-Right-Out Only Operation: It is proposed that the left turn movements into and out of this intersection be prohibited at the time when traffic signals are warranted at Intersection R9 (Daniel St/James St).	"C"	"D" (WB)	0.04 / 32.3
	R9: Daniel St/James St	Traffic Signals When Warranted: Signalization of the Daniel Street/James Street intersection.	"A"	"D" (WB)	0.42 / 47.4
	R10: Daniel St/Havey St	Convert Daniel St / Havey Street intersection to Right-In-Right-Out Only Operation: It is proposed that the left turn movements into and out of this intersection be prohibited at the time when traffic signals are warranted at Intersection R9 (Daniel St/James St).	"C"	"C" (WB)	0.11 / 24.4
9	R11: Division St./Baskin Dr	Create a 4-leg standard Division Street/Baskin Drive-Duncan Drive intersection and Signalize when Warranted: This reconfiguration would create a standard four-way signalized intersection with Division Street S. Each approach to the intersection was envisioned to have a shared through/right/left turn lane.	"A"	"B" (NB)	0.57 / 13.9
<b>Intersections Under Town of Arnprior Jurisdiction</b>					
10	A1: Stonehaven Way/Baskin Dr	Signalize the Stonehaven Way /Baskin Drive Intersection: It is proposed that signals be implemented at Intersection A1 when warranted. The one-way entrance to A.J. Charbonneau Public School located north of this intersection would be included as the north-leg of the intersection. The three remaining legs of the intersection were each envisioned to have a shared through/right/left turn lane approach.	"A"	"C" (NB)	0.30 / 30.7
11	A2: Baskin/Winners Circle	Convert to a four-way STOP-controlled intersection.	"C"	"C" (EB)	-- / 17.6

## Exhibit 6.0

### Summary of Suggested Infrastructure Improvements



***As concerns the County of Renfrew:***

The following improvements are envisioned to meet *current (2008) operational concerns*:

- Modifications (conversion to right-in-right-out access) to *Intersection R3* (Daniel Street (County Road 2)/Staye Court Drive) (See Appendix “V”, Improvement 1) along with the creation of an additional roadway that would link Staye Court Drive to Baskin Drive is recommended. The White Lake Road/Daniel Street (County Road 2) corridor (See Appendix “S”) is currently constrained within the vicinity of the Staye Court Drive to Baskin Drive. Although the twinning of the corridor was found not to be currently (2008) required the proposed connecting link from Staye Court Drive to Baskin Drive was found to provide satisfactory traffic operations. [This improvement differs from the recommendation for signalization suggested in the “*Arnprior/Mcnab-Braeside Township Area Transportation Planning Study*”, (Morrison Hershfield).]

As regard the *2015 traffic operational improvements*:

- Sometime before the 2025 time frame it was recognized that the White Lake Road/Daniel Street (County Road 2) corridor (See Appendix “T”) would be widened to a 4-lane configuration (See Appendix “V”, Improvement 2 and Improvement 3). For the purposes of this study the timing of the widening was thought to coincide with MTO’s current initiative to 4-lane the Highway 17 corridor. This initiative is currently estimated to take place sometime prior to the 2015 time horizon. This 4-laning would commence at Vanjumar Road and terminate at Edey Street.
- It is recommended that a centre median would be provided from the proposed Highway 17 north ramp terminal through to Arthur Street during the 2015 horizon year.
- It is recommended that *Intersection R1* (White Lake Road/Vanjumar Road) be provided with traffic signals and a dedicated eastbound left turn lane by the 2015 time horizon.
- It is recommended that *Intersection R4* (Daniel Street/Baskin Drive) be provided with a channelized dedicated eastbound right turn lane by the 2015 time horizon.

As regards the *2025 traffic operational improvements*:

- It is recommended that *Intersections R1* (White Lake Road/Vanjumar Road) be upgraded to provide double eastbound left turn lanes.
- At the 2025 time horizon a portion of the White Lake Road/Daniel Street (County Road 2) and Baskin Drive corridors would be required to be further widened to include additional auxiliary turn lanes at *Intersection R4* (Daniel Street/Baskin Drive). (See Appendix “V”, Improvement 6).
- The following intersection modifications at *Intersection R4* (Daniel Street/Baskin Drive) (See Appendix “V”, Improvement 6) are recommended:
  - All approaches to the intersection would be upgraded to provide double left-turn lanes by the 2025 horizon year (as opposed to a single dedicated left-turn lane).
  - A westbound dedicated right-turn lane is to be provided.
  - Channelization of the southbound, eastbound, and westbound right-turn movements at the intersection is also recommended.

This study concluded that the ultimate widening of the Daniel Street corridor was more likely to be required by the need for additional auxiliary turning lanes rather than additional through lanes as suggested within the aforementioned study. [The need for additional auxiliary lanes is consistent with the findings of the “*Arnprior/Mcnab-Braeside Township Area Transportation Planning Study*”<sup>8</sup> albeit the number and location of double left turn lanes differs from the findings of this study.] Although further investigation into the appropriate turning lane configuration should be performed closer to the 2025 horizon year, it remains prudent to assure that sufficient right-of-way is reserved to accommodate the double left turn lanes at *Intersection R4* (Daniel Street/Baskin Drive).

- It is recommended that *Intersection R5* (Daniel Street/Arthur Street) be signalized by the 2025 horizon year. [This would involve conversion of the existing partial pedestrian actuated traffic signals located on the south side of the Arthur Street intersection facing Daniel Street to a fully signalized intersection. Should the commercial/retail development located on the west side of Daniel Street opposite Arthur Street redevelop, opportunities should be explored to relocate the existing retail accesses opposite Arthur Street. (See Appendix “V”, Improvement 7)];
- It is recommended that *Intersection R9* (Daniel Street/James Street) be signalized by the 2025 horizon year; (See Appendix “V”, Improvement 8)
- It is recommended that the following local roadways (Charles Street, Michael Street, and Havey Street) that connect to Daniel Street be converted to right-in-right-out operation by the 2025 horizon year. (See Appendix “V”, Improvement 8) This initiative was aimed at consolidating accesses from the adjacent residential developments to reduce congestion along the Daniel Street corridor.
- It is recommended that the existing “T”-intersection at *Intersection R11* (Division Street/Baskin Drive) be realigned to form a four-way signalized intersection with Duncan Drive by the 2025 horizon year. This initiative was aimed at accommodating the increasing volumes along Division Street and Baskin Drive. Further investigation closer to the 2025 horizon year should be undertaken in order to confirm the lane configuration (See Appendix “V”, Improvement 9) and required signal phasing strategy.

#### ***As concerns the Town of Arnprior:***

The following improvements are envisioned to meet *forecast 2015 operational* concerns:

- It is recommended that *Intersection A8* (Sheffield Street/Madawaska Boulevard) be reconfigured to accommodate right-in-right-out movements only (See Appendix “V”, Improvement 4)
- It is recommended that *Intersection A9* (Jack Crescent E (Moe Robillard St.) / Madawaska Boulevard) be upgraded to accommodate traffic signals.
- The forecast through-traffic along the Madawaska Boulevard corridor is anticipated to result in decreased levels-of-service and increased delays to northbound and southbound approaches to *Intersection A8*. With the advent of two signalized intersections (*Intersections A7*(Jack Crescent W./Madawaska Boulevard) and *A9* (Jack Crescent E (Moe Robillard St.)/Madawaska Boulevard) located adjacent to the Sheffield Street intersection:
  - satisfactory levels-of-service would be achieved into the 2025 horizon year.

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<sup>8</sup> Ibid, Page iii.

- motorists would access the Madawaska Boulevard corridor via one of these two adjacent signalized intersections as the available capacity was found to accommodate the anticipated diversion of traffic from Sheffield Road.

As regards the *2025 traffic operational improvements*:

- It is recommended that *Intersection A1* (Stonehaven Way/Baskin Drive) be signalized by the 2025 horizon year. [This improvement was required to accommodate increased growth in traffic attributed to the future developments along the Baskin Drive corridor. The advent of pedestrian actuated traffic signals is intended to enhance the safety of pedestrians crossing Baskin Drive in addition to accommodating student crossings associated with A.J. Charbonneau Public School.]
- It is recommended that access to the lands located on the north side of Baskin Drive opposite Winner’s Circle be provided by way of the northerly extension of Winner’s Circle to form a fourth leg to the existing “T” intersection. Initial findings indicate that the 4-leg *Intersection A2* (Baskin Drive/Winner's Circle Drive) could provide satisfactory operation as a four-way STOP-controlled intersection. However, this finding is a function of the land use assumptions and should be confirmed through a traffic impact assessment. The need for traffic signals at Intersection A2 would be dependent upon the scope of new development initiatives north of Baskin Drive.

***B) Roadway Classification Assessment***

As developments are implemented throughout the Town of Arnprior, the need to upgrade roadway classifications to suit the changing roadside characteristics will arise. Roadway classification is affected by several factors including traffic volumes, roadway function, and adjacent development characteristics. Traffic volumes along each of the study area roadway were compared to an estimate of link capacity based on the assumed existing roadway cross-section. Typically the average annual daily traffic (AADT) range necessary to justify each roadway classification are as follows:

- Arterial Roads – AADT is typically between 5,000 and 50,000 vehicles per day; and
- Collector Roads – AADT is typically between 1,000 and 20,000 vehicles per day.

(See Appendix “A” for a more detailed description of typical roadway characteristics based on classification.)

Taking into account the anticipated development characteristics adjacent to each roadway link, intersection capacity analysis (See Appendix “R”) results were used to identify the necessity and timing of potential roadway improvements.

Table 6.5 summarizes the suggested roadway link improvements required within the study area for the 2015 and 2025 horizon years.

**Table 6.5: Summary of Suggested Roadway Link Improvements (2015 and 2025 Horizon Years)**

Corridor	Roadway Segment				
	From	To	Existing	Proposed (2015)	Proposed (2025)
<b>Roadways Under County of Renfrew Jurisdiction</b>					
<i>Division Street</i>	Baskin Drive	Elgin Street	2 lane, UC	2 lane, UC	2 lane, UA
<i>Daniel Street</i>	Hwy 17 westbound ramp	N. of Baskin Drive	2 lane, RA	4 lane (+ Auxiliaries), UA <sup>3</sup>	4 lane (+ Auxiliaries), UA <sup>3</sup>
	N. of Baskin Drive	Edey Street	2 lane, RA	4 lane UA <sup>3</sup>	4 lane, UA <sup>3</sup>
<i>White Lake Road</i>	Vanjumar Road	Hwy 17 eastbound ramp	2 lane, RA	4 lane, UA <sup>3</sup>	4 lane, UA <sup>3</sup>
<i>Vanjumar Road</i>	White Lake Road	Russett Drive	2 lane, RA	2 lane, RA	2 lane, UA
<b>Roadways Under Town of Arnprior Jurisdiction</b>					
<i>Baskin Drive</i>	Daniel Street	Division Street	2 lane, RA	2 lane, RA	2 lane, UA

1. LR – Local Road, RC – Rural Collector, UC – Urban Collector, RA – Rural Arterial, UA – Urban Arterial
2. The number of lanes refers to the total number of through lanes in each direction.
3. These improvements were assumed to be implemented along with the MTO extension of Highway 417.

With regards to the roadway upgrades which fall into the jurisdiction of the County of Renfrew, it is suggested that:

- The Division Street corridor should be upgraded by the 2025 time frame from an Urban Collector to an Urban Arterial cross-section;
- The Vanjumar Road corridor should be upgraded from a Rural Arterial to an Urban Arterial cross-section by the 2025 time frame; and

It was assumed that the White Lake Road/Daniel Street (County Road 2) corridor would be upgraded to an Urban Arterial in conjunction with the twinning of the roadway prior to the 2015 horizon year.

With regards to the roadway upgrades which fall into the jurisdiction of the Town of Arnprior:

- It is recommended that the Baskin Drive corridor be upgraded to an Urban Arterial cross-section between Division Street and Daniel Street by the 2025 horizon year in order to reflect the forecasted residential developments within the surrounding area.

It was assumed that these improvements would be implemented in parallel with other improvements suggested to the roadway network.

#### ***Baskin Drive and the Issue of Jurisdiction***

- The Baskin Drive corridor currently falls under the jurisdiction of the Town of Arnprior. As the proposed White Lake Rd / Daniel St interchange will soon become the nearest access to Highway 17 from communities west of Arnprior such as Braeside and Mansfield

the Baskin Dr corridor will be the primary route for commuters from these communities to travel en route to the interchange. With the Baskin Dr corridor anticipated to service communities outside the Town of Arnprior it is suggested that the Baskin Dr corridor be considered for addition to the County Road network.

### ***C) Left-Turn Storage Assessment***

Table 6.6 indicates the “required” left-turn vehicle storage at various intersections where the left-turn traffic volume was found to be in excess of 150 vehicles-per-hour during either morning or afternoon peak hours of travel demand for each of the three horizon years. As well, the table indicates the “available” left-turn storage capacity based upon physical limitations. (i.e proximity to adjacent intersections, back-to-back left turn operations etc.). Each of the horizon year results assume that the proposed intersection improvements associated with an earlier horizon year had been implemented. This assumption permitted a determination of the suitability of each improvement to accommodate subsequent increases in travel demand.

Table 6.6 indicates the four intersections, all of which fall within the County of Renfrew’s jurisdiction, that were determined to result in “required” left-turn vehicle storage requirements that exceed the “available” storage length.

*During the 2015 horizon year:*

- A total of approximately 60 metres of eastbound left-turn storage is required at *Intersection R1* (White Lake Road/Vanjumar Road) to meet the 2015 horizon year forecast of approximately 380 vph. This distance exceeds the 55m separation between Wabalac Drive and White Lake Road. Table 6.3 indicated the 2015 upgrades to this intersection (See Appendix “V”, Improvement 2) which provided for a single eastbound left turn lane approximately 30m in length. However, it is evident that potential development if realized could result in left turn storage demand exceeding the available storage length. The ultimate configuration (See Appendix “V”, Improvement 5) of *Intersection R1* (White Lake Road/Vanjumar Road) anticipated by the 2025 horizon year provides for the advent of double eastbound dedicated left-turn lanes which could satisfy the 2015 storage requirement. It may prove advantageous to advance the 2025 ultimate design to satisfy left turn storage requirements depending on development being realized.
- The westbound left turn storage requirements associated with *Intersection R4* (Daniel Street /Baskin Drive) have been forecast to require approximately 50 metres of left turn storage length. The adjacent access to the commercial/retail development located north of Baskin Drive is approximately 26 meters to the east of this intersection. The access is not anticipated to result in traffic operational concerns.

**Table 6.6: Forecast Left-Turn Storage Capacity and Requirements (2008, 2015, and 2025 Horizon Years)**

Intersection	Approach	PM Peak Hour Volumes		AM Peak Hour Volumes		Max. # of Vehicles Requiring Storage	Left Turn Configuration	Changes to Left Turn Provisions	Cycle Length (sec.)	Required Storage (m)	Anticipated Storage (m)	
		Left	Through	Left	Through							
<b>Current (2008) Volumes</b>												
R1	White Lake Rd / Vanjumar Rd	EB	110	10	180	10	190	Shared	--	60	36	55
R4	Daniel St / Baskin Dr	NB	154	242	206	375	206	Dedicated	--	45	29	60 <sup>4</sup>
R9	Division St / Elgin St	NB	182	10	146	5	192	Shared	--	60	36	60
<b>2015 Horizon Year Volumes</b>												
R1	White Lake Rd / Vanjumar Rd	EB	379	16	368	12	379	Dedicated	Dedicated EB LT Lane.	50	59	55
		SB	130	249	152	118	379	Shared	--		59	85
R4	Daniel St / Baskin Dr	WB	158	107	95	21	158	Dedicated	--	100	49	26
		NB	364	523	350	531	364	Dedicated	--		114	> 200
		SB	179	569	123	336	179	Dedicated	--		56	70
R9	Division St / Elgin St	NB	194	15	157	6	209	Shared	--	60	39	60
A2	Baskin Dr / Winner's Circle Dr	NB	251	0	123	0	251	Shared	--	60	47	170
<b>2025 Horizon Year Volumes</b>												
R1	White Lake Rd / Vanjumar Rd	EB	582	18	509	19	600	Dedicated	Second dedicated EB LT lane.	90	168	110
		SB	159	268	255	127	427	Shared	--		120	85
R4	Daniel St / Baskin Dr	EB	291	120	223	98	291	Dedicated	A second dedicated LT lane added to all four approaches.	100	91	65
		WB	198	145	128	35	198	Dedicated			62	110 <sup>5</sup>
		NB	484	737	413	659	484	Dedicated			151	> 200
		SB	275	757	157	468	275	Dedicated			86	180
A2	Baskin Dr/Winner's Circle Dr	NB	322	0	138	0	322	Shared	--	60	60	170
R9	Division St / Elgin St	NB	212	15	171	6	227	Shared	--	60	43	60

1. For calculation purposes a cycle length of 60 seconds was assumed at all un-signalized intersections.
2. The left-turn stacking distances were calculated on intersection approaches possessing high left-turn volumes (greater than 150 vehicles)
3. LT = Left Turn, TH = Through, RT = Right Turn, NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound.
4. Assumed 1/2 of 120 metre existing suicide lane will be available for dedicated left-turn lane.
5. Assumed the removal of the commercial access located 26 metres east of the intersection following the 2015 horizon year.

*During the 2025 horizon year:*

- The 2025 improvements associated with *Intersection R1* (White Lake Road/Vanjumar Road) (See Appendix “V”, Improvement 5) involve the following:
  - The advent of a double eastbound left-turn lane: The required left-turn storage is anticipated to extend past Wabalac Drive by the 2025 horizon year. The forecast storage distance of 168 metres could potentially interfere with the Wabalac Drive/Vanjumar Road intersection located 55 metres west of *Intersection R1*.
    - While this would conflict with motorists exiting Wabalac Drive headed towards Highway 17 it should be noted that motorists using the Wabalac Drive corridor may still access White Lake Road via Vandusen Drive to the south.
    - It should also be understood that the few motorists (the majority of whom would live on Wabalac Dr) who would be affected by this would only experience this level of congestion during peak periods of travel demand which accounts for only a fraction of the day.
    - Further study should be undertaken closer to the 2025 horizon year to determine potential additional mitigation measures.
  - The advent of a 120 metre storage requirement for the southbound left-turn movement at *Intersection R1* may interfere with the commercial access located along the east side of White Lake Road located approximately 85 metres north of Vanjumar Road. This may necessitate the inclusion of physical modifications (such as a median along White Lake Road) that would prohibit left-turn movements into or out-of the commercial access by the 2025 horizon year. Access to White Lake Road would be provided by the Vanjumar Road access.
- The eastbound left-turn movement at *Intersection R4* (Daniel Street /Baskin Drive) was found to require approximately 91 metres of storage length. This could potentially block/interfere with the commercial/retail access north of Baskin Drive located approximately 37 metres west of Daniel Street as retail traffic attempt the southbound left turn out of the retail development. While double eastbound dedicated left-turn lanes (See Appendix “V”, Improvement 6) would reduce the severity of this interference, longer queues would likely extend past the commercial/retail access. It should be noted that these longer queues will only take place during the peak periods of travel demand and not the entire day. As well, with the advent of the improved Daniel Street/Arthur Street intersection access to the commercial/retail site would be improved.

## **6.1 REQUIRED IMPROVEMENT COSTS AND STAGING**

This section provides a summary of estimated construction costs associated with the recommended intersection and roadway improvements. A staging strategy is also presented. Projects which fall within the Town of Arnprior's jurisdiction are noted separately from those that would fall within the County of Renfrew's jurisdiction.

The following materials were considered when calculating the cost of improvements:

- Granular sub-base and base courses
- Asphalt concrete pavement
- Concrete curb and gutter
- Concrete medians and islands
- Sidewalks
- Signs and pavement markings
- Traffic lights (where warranted)
- Street lights (where warranted)

Special consideration was given for removal of the following items, when warranted:

- Asphalt
- Sidewalks
- Curb

The cost of upgrading Daniel Street (between the proposed Highway 17 ramps to Arthur Street) from a two-lane to a six-lane divided urban arterial was included as a separate cost for Improvement 3. Also, the cost of upgrading White Lake Road from a two-lane to four-lane arterial was included as a separate cost for Improvement 2. These costs were included separately as they are anticipated to coincide with MTO improvements. As well, the suggested configuration of Daniel Street may vary slightly from previous concepts presented to the Town of Arnprior.

Construction costs associated with access modifications (such as the median along White Lake Road to prohibit left turns in and out of the commercial site located in the north-east quadrant of White Lake Road/Vanjumar Road intersection) have been excluded.

## ***Estimated Construction Costs and Staging Strategy***

### ***Stage 1 (2008) - \$ 138,300***

- *Improvement #1a: Provision of roadway linking Baskin Drive to Staye Court Drive, [Town of Arnprior Jurisdiction]*
- *Improvement #1b: Physical modifications to Intersection R3 (Staye Court Dr/Daniel St) to restrict minor-leg approaches to right-in-right-out only [Renfrew County Jurisdiction]*

### ***Stage 2 (2015 Horizon Year) - \$ 684,700 (+\$1,340,300 for initial widening of County Rd 2)***

- *Improvement #2: Widening of White Lake Road from Highway 17 ramps to Vanjumar Drive as part of MTO improvements (included as separate cost). Signalize Intersection R1 (White Lake Rd/Vanjumar Rd) and add dedicated eastbound left-turn lane. [Renfrew County Jurisdiction]*
- *Improvement #3: Widening of Daniel Street from Highway 17 ramps to Edey Street as part of MTO improvements (included as separate cost). Add a channelized dedicated eastbound right-turn lane to Intersection R4 (Daniel St/Baskin Dr)*
- *Improvement #4a: Include physical modifications to Intersection A8 (Sheffield St/Madawaska Blvd) restricting minor-leg approaches to right-in-right-out only. [Renfrew County Jurisdiction]*
- *Improvement #4b: Signalize Intersection A9 (Jack Crescent E (Moe Robillard St.)/Madawaska Boulevard) [Renfrew County Jurisdiction]*

### ***Stage 3 (2025 Horizon Year) – \$ 2,414,000***

- *Improvement #5: Add a second dedicated eastbound left-turn lane to Intersection R1 (White Lake Rd/Vanjumar Rd) [Renfrew County Jurisdiction]*
- *Improvement #6: Widen Daniel St and Baskin Dr to accommodate additional auxiliary lanes at intersection R4 (Daniel St/Baskin Dr) [Renfrew County Jurisdiction]*
- *Improvement #7: Signalize Intersection R5 (Daniel St/Arthur St) and include physical modifications to Intersection R6 (Daniel St/Charles St) prohibiting left-turn movements [Renfrew County Jurisdiction]*
- *Improvement #8: Signalize Intersection R9 (Daniel St/James St) and include physical modifications to Intersections R8 (Daniel St/Michael St) and R10 (Daniel St/Havey St) to prohibit left-turn movements [Renfrew County Jurisdiction]*
- *Improvement #9: Convert Intersection R11 (Division St/Baskin Dr) to a 4-leg standard Division St/Baskin Dr-Duncan Dr intersection and install signals when warranted. [Renfrew County Jurisdiction]*
- *Improvement #10: Signalize Intersection A1 (Stonehaven Way/Baskin Dr) [Town of Arnprior]*
- *Improvement #11: Convert Intersection A2 (Winner's Circle Dr/Baskin Dr) to a four-way STOP-controlled intersection [Town of Arnprior]*

**Total Cost – \$ 3,231,600:** (+\$1,340,300 for initial widening of County Rd 2) [See Appendix “W”]

The cost estimates provided have been based on existing material and installation costs and the assumption that the proposed improvements will be provided by the earliest year of need. It would be the responsibility of the appropriate jurisdictional authority to conduct ongoing infrastructure assessments to determine the precise timing of each network improvement. However, in some instances it may be prudent to implement the suggested improvements to coincide with other improvements being performed within the study area. In such a case it would be the responsibility of the Town of Arnprior to liaise with the appropriate agencies in order to determine the exact timing of the improvements.

*It is recommended that ...*

- *the infrastructure improvements outlined within this document are incorporated within the planning policies, planning framework and transportation plans of the Town of Arnprior.*

## **6.2 BREAKDOWN OF INFRASTRUCTURE COSTS BY TYPE OF DEVELOPMENT**

Each of the improvements defined in Section 6.0 would provide improved levels-of-service for not only the existing traffic but for traffic generated by new developments. The traffic generated by these new developments would be added to the roadway network and be the source of congestion without the advent of the suggested improvements. As such it is important to isolate the portion of infrastructure costs to which each development should be charged as each development is anticipated to come on-stream.

Although the infrastructure improvements required by 2015 and 2025 horizon years would likely be triggered by the advent of developments within the Town of Arnprior it can be appreciated that the additional traffic generated by these developments will not be the sole benefactors to the increased levels-of-service provided by an improved roadway network. As such it was deemed appropriate to reduce the development charges based on the “benefit to existing traffic” resulting from the suggested improvements.

Table 6.7 contains the calculated portion of 2025 forecast average annual daily traffic volumes (AADT) along major study area corridors which existing AADT volumes would represent. On average the existing traffic along these major study area corridors would represent approximately 50% of the total 2025 forecasted traffic volumes. Therefore, it could be reasonably assumed that the new developments should be responsible for 50% of the cost of implementing the infrastructure improvements identified in this study. The remaining 50% of improvement costs would be the responsibility of the appropriate roadway jurisdictional authority (Town of Arnprior, County of Renfrew, Ministry of Transportation of Ontario, or some combination thereof).

Each development was allotted a development charge based upon the portion of additional traffic they were anticipated to create within the roadway network and the total cost of infrastructure improvements within the Town of Arnprior (minus the 50% of total costs reduced due to a benefit to existing traffic).

**Table 6.7: Portion of 2025 Forecast Traffic Attributed to Existing Traffic**

Corridor	Roadway Segment			AADT Volumes (vehicles-per-day)			Portion of Existing Traffic (2025)
	From	To	# of Lanes	2008	2015	2025	
<b>Roadways Under County of Renfrew Jurisdiction</b>							
Division Street	N. of Caruso Street	Caruso Street	2	4,800	5,200	6,600	72.7%
	Caruso Street	S. of Caruso Street	2	4,600	5,000	6,500	70.8%
Daniel Street	Hwy 17	Baskin Drive	2	9,600	18,700	26,100	36.8%
	Baskin Drive	Arthur Street	2	9,100	15,800	24,700	36.8%
White Lake Road	Campbell Drive	Vanjumar Road	2	4,000	4,900	5,100	78.4%
	Vanjumar Road	Hwy 17	2	8,500	16,000	22,100	38.5%
<b>Roadways Under Town of Arnprior Jurisdiction</b>							
Madawaska Boulevard	W. of Jack Crescent W.	Jack Crescent W.	4	13,300	18,200	19,800	67.2%
	Jack Crescent W.	Jack Crescent E. (Moe Robillard St.)	4	11,800	15,500	17,100	69.0%
	Jack Crescent E (Moe Robillard St.)	E. of Jack Crescent E. (Moe Robillard St.)	4	11,500	14,600	16,100	71.4%
John Street	N. of Madawaska St.	Madawaska St.	2	3,000	3,200	3,900	76.9%
	Madawaska St.	S. of Madawaska St.	2	2,200	2,400	2,700	81.5%
Baskin Drive	E. of Daniel Street	Daniel Street	2	3,300	3,300	5,770	57.2%
	Daniel Street	Stonehaven Way	2	6,000	9,400	15,300	39.2%
	Stonehaven Way	W. of Stonehaven Way	2	4,000	6,900	12,700	31.5%
<b>Total:</b>				<b>95,700</b>	<b>139,100</b>	<b>184,470</b>	<b>51.9%</b>

**Table 6.8: Summary of Development Unit Charges for the Town of Arnprior**

Land Use	Land Use #	Total Land Use Charges	Total Trips	Unit Charges (\$/Unit or \$/ SF GFA)
Single Family Detached Housing	210	\$1,418,920	1968	\$473 / dwelling
Apartment	220	\$217,740	302	\$304 / dwelling
Residential Condominium/Townhouse	230	\$467,205	648	\$258 / dwelling
Assisted Living	254	\$15,140	21	\$94 / unit
Congregate Care Facility	253	\$10,095	14	\$63 / unit
General Light Industrial	110	\$288,400	400	\$0.51 / SF
Commercial	820	\$1,920,000	2663	\$1.28 / SF
<b>Total:</b>		<b>\$4,337,500</b>	<b>6016</b>	--

Table 6.8 contains the unit charges for each future land use type identified within the Town of Arnprior. [A summary of the total charges for each development can be found in Appendix “X”, Table X-1 & Table X-2.]

It is recommended that...

- *the Town of Arnprior in concert with County of Renfrew, are encouraged to assure that the costs associated with the identified improvements are taken into consideration during subsequent development charge review processes.*

## **7.0 OTHER ISSUES**

This section identifies the impacts associated with additional future roadway network issues that would be relevant to the municipality. Several key issues were identified in communications with the Town of Arnprior and residents of the municipality relating to:

- Parking adjacent to the Memorial Hospital;
- Traffic calming opportunities within the Town of Arnprior; and
- Railway crossing locations within the Town of Arnprior.

Also outlined below are recommendations which the Town of Arnprior could implement in order to correct or improve each identified network issue.

### **7.1 HOSPITAL PARKING**

John Street N (40 km/h) is designated as a collector roadway in the Official Plan, is characterized by a curb-to-curb surface width of approximately 8.4 metres and provides access to:

- regional facilities such as the Arnprior and District Memorial Hospital and the Primary Health Care Centre.
- several local educational institutions (St. Joseph’s School, Arnprior District High School, and Walter Zadow Public School, Pineridge Children’s Centre); and
- the Robert Memorial Park.
- a predominately residential area that accommodates both low density (single family homes) and high density dwelling units (low-rise apartments).

#### ***The Problem Statement – The Parking Issue***

Given the mixed land use within the area, the competition for available on-street parking is perceived as issue. Hospital visitors, school and day care visitors, and visitors to the adjacent residences as well as residents who do not have access to on-site parking all compete for the available free on-street parking stalls on the surrounding local roadways.

The high demand for free on-street parking is worsened by the somewhat deficient supply

of on-street parking in that the surrounding local roadways were constructed with narrow widths that can not support parking along both sides of the road right-of-way.

### ***The Parking Supply***

On-street parking within the immediate area of the Hospital site is permitted along John Street N. on the west side of the street only and has a two-hour duration restriction. On-street parking is also permitted along the south side of the Ewen Street corridor. The current 2-hour duration restriction along John Street serves to only provide a consistent turn-over of short-term parking. Motorists are encouraged to make their visits short when the 2-hour duration is enforced.

The Hospital provides visitors with the option of parking off-street as parking lots are located at the front and back of the Arnprior and District Memorial Hospital. The cost to parking on-site is \$2.00 per visit; however parking tokens are available to those individuals visiting the Primary Health Care Centre. Despite the availability of the off-street parking supply afforded by the hospital site, hospital and clinic visitors remain more likely to take advantage of the free on-street parking.

### ***A Proposed Solution***

With regard to the use of free on-street parking by hospital patrons, it is not recommended that the stalls facing the hospital be metered, as this would simply result in the demand for free parking spilling over onto the adjacent residential streets. In fact, this measure would actually make the problem of a shortage of on-street parking worse. A policy that would force hospital visitors to use the off-street pay parking lots provided by the hospital should only be implemented in the case where safety and traffic operations are adversely affected.

Should the supply of on-street parking on the west side of John Street be found to:

- effect emergency vehicle (ambulance) access to the site adversely (The newest site plans for the hospital site should be reviewed to determine any potential concern.); OR
- effect traffic circulation/operations along the John St N. corridor adversely;

the Town of Arnprior is encouraged to consider:

- removal of the conflicting (approximately 10 stalls) on-street parking supply along John Street; and
- the prohibition of day-time on-street parking on Ewen Street. [Night time parking (after 7:00 p.m.) could be provided to accommodate local Ewen Street residents requirements.]

With regard to the high demand for on-street parking by residents; In many older communities that were built well before the proliferation of the private automobile, numerous structures/dwellings were constructed without the advent of on-site

driveways/garages to accommodate motor vehicles. Such older residential developments have no other choice but to use available on-street parking. In such cases where the supply of off-site parking is constrained municipalities often implement systems of reserved on-street parking for existing local residents. Should this be found to be the case in the John Street area...

*It is recommended that a policy statement be implemented that would include signage that would reserve segments of on-street parking along those corridors where a shortage of off-street residential parking exists. Local residents could be provided with on-street permits which must be displayed on the vehicles. As well, permit holders would be required to find an alternate temporary parking during night-time scheduled winter maintenance operations. Local enforcement would be used to assure non-permitted vehicles are ticketed/towed in accordance with existing local parking policies.*

With regard to the high demand for short-term on-street parking associated with schools/ day-cares etc.:  
The Town of Arnprior is encouraged to continue its policy of implementing short-term on-street parking provisions within the vicinity of schools/day cares and institutions requiring short-term parking, pick-up/drop-off provisions. The suggested permitted time duration for these on-street stalls should be less than 1-hour. The location of such permitted parking should be considered only along those locations where emergency vehicle access would not be adversely affected.

## **7.2 TRAFFIC CALMING ISSUES**

Traffic calming and traffic management devices are defined as physical roadway design elements intended to reduce vehicle speeds and/or redirect motorists within a given roadway network. Typically these devices would incorporate three major roadway design elements:

- Narrowing the real or apparent width of the roadway;
- Introducing curvature in the roadway; and
- Changing the vertical profile of the roadway (i.e. speed humps).

Several such opportunities for traffic calming and management have been identified within the Town of Arnprior.

### ***Issue 1: John Street N Corridor***

The Town of Arnprior has become aware of a concern regarding the speed of vehicles along the John Street corridor north of Madawaska Street. One possible solution involved replacing the existing two-way STOP controlled John Street/Ottawa Street intersection with four-way STOP-control to reduce the speed of motorists along John Street. An

additional suggestion included the reduction of the existing 40 km/hr speed limit along the John Street corridor north of Madawaska Street to 30 km/hr.

### ***Related Concerns***

- The John Street corridor provides critical access to the Memorial Hospital for emergency services vehicles;
- Within the vicinity of the John Street N corridor are two schools under County of Renfrew jurisdiction: Arnprior District High School and St. Joseph's School; and
- Intersection operations at the John Street/Ottawa Street intersection are anticipated to operate at an overall acceptable LOS "A" into the 2025 horizon year.

### ***An All-Way Stop is not a Solution***

Typically it is against best engineering practice to implement all-way STOP controlled intersections as a method of reducing speeds as opposed to poor intersection operation. Motorists are often observed to simply "race-up" to the STOP sign, "proceed slowly" through the intersection, then "accelerate" back to their original speed. Literature suggests that:

*"All-way stops have a very limited area of influence immediately around the STOP sign location before vehicles actually increase their speeds to a rate that is faster than before the all-way stops were installed."*<sup>9</sup>

All-way STOP controls are only effective in mitigating traffic control problems related to conflicting traffic flow. As such, it would be inadvisable to suggest the implementation of an All-way STOP-controlled intersection in order to mitigate the issue of speeders along John Street.

### ***A Proposed Solution***

The Town of Arnprior is encouraged to survey the extent of speeding along the John Street corridor and within the vicinity of schools/daycares/institutions by discretely measuring speeds during a 2-to-3 day period of operations during both peak, off-peak, week-day and weekend day time periods. This information (average speed, 85 percentile speed and compliance rate) would be useful in determining the extent of the speeding problem.

Should the problem be substantiated, a potential traffic calming measure would be to introduce the concept of *speed tables or speed cushions* along the John Street corridor.

- *Speed humps* are raised devices, parabolic in shape, placed across the road to slow traffic;

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<sup>9</sup> E. Clark, David, <http://www.ite.org/traffic/documents/AB00H1902.pdf>, 1998.

- *Speed tables* are raised devices with an elongated flat surface typically at least a car length in width and thought to be an ideal solution for roads with typical residential speeds; and
- *Speed cushions* are devices with three separate sections intended to permit vehicles with wider wheel bases to navigate through the device without experiencing any change to the roadway surface. *Speed cushions* pads accommodate the axle spacing of large emergency vehicles (2.6m axle) (See Exhibit 7) so as not requiring the vehicle to slow down or experience a decrease in their vehicles response time.

***Exhibit 7.0: Speed Cushions as Traffic Calming Devices.***



A clear distinction should be made between *speed bumps* which most motorist experience in parking lots versus the above traffic calming solutions. These devices are intended through their design to slow traffic more gradually than conventional speed bumps.

Issues related to traffic calming include:

- *Placement and design issues:* These issues relate to such issues as assuring proper drainage subsequent to the placement of the device and accommodating the presence of existing adjacent driveway accesses.

- *Maintenance Issues:* These issues often relate to the build-up and removal of snow in the vicinity of the devices.

As regards the John Street corridor, the issue of speeding along the corridor may well prove to be a seasonal concern. As such, the municipality should be encouraged to consider the installation of temporary rubber cushions which can be installed in early spring and removed prior to winter. The traffic calming devices would be attached to the asphalt with recessed bolts and consist of adjoining rubber pads installed across the width of the roadway. As well, the temporary installation permits the municipality to test the resulting effectiveness of various devices in various configurations at different locations/intervals. [Numerous vendors such as Traffic LOGIX™ provides such temporary devices.] Recognizing the above benefits, it is recommended that the Town of Arnprior consider the application of temporary removable traffic calming devices rather than permanent facilities.

Literature suggests that the axle width of typical ambulance vehicles (which frequent the hospital site along the John Street corridor) range in width between 1.9-to-2.1 meters. The appropriateness of *Speed cushions* remain to be evaluated in that should the spacing of 2.1 meters be adopted to accommodate ambulances, passenger vehicles would also likely navigate through the same groove width to avoid slowing down. Although this could occur, the width of the groove itself may be used as a means to demand greater driver attentiveness and also result in a slowing down of passenger vehicles.

It is recommended that the Town of Arnprior ...

- *Undertake speed surveys to quantify and confirm the extent of speeding traffic (non-compliance with current speed limits) on those corridors where speeding has been perceived as a concern;*
- *Subsequent to speed surveys documenting the presence of excessive speeding, the Town of Arnprior is encouraged to consider the temporary seasonal installation of traffic calming measures to test the appropriateness of such measures in addressing the issue of speeding. Such measures would include prior consultation with the surrounding community residents, employers/employees and the relevant emergency services departments as well as an evaluation of the potential impacts to on-street parking, sight lines and provision of adequate lighting and signage that would ensure night-time visibility or such measures.*
- *Subsequent to the above surveys, consultation and planning activities, it is recommended that Council authorize the temporary seasonal installation of traffic calming measures (which could include the introduction of temporary speed humps, speed tables and roadway narrowing) along the John Street N corridor (between Ottawa Street and Victoria Street).*

## ***Issue 2: Friday Street Corridor***

A perception exists that eastbound motorists on Baskin Drive choose to use Friday Street as a “short-cut” to access the commercial development (Tim Horton’s/McDonalds, Petro Canada etc.) fronting Staye Court Drive, to avoid the traffic lights and congestion at the Daniel Street/Baskin Drive intersection and the right turns at the Daniel Street/Staye Court Drive intersection. Residents have complained of speeding along the Friday Street corridor as well. The Town of Arnprior has expressed interest in exploring traffic management measures that would deter people from using Friday Street as a “short-cut” route. The Town of Arnprior recently decreased the posted speed along Friday Street to 40 km/hr as an initial mitigation measure.

### ***Related Concerns***

Residential development growth is planned within the area west of Staye Court Drive and south of Friday Street. The effect of completion of the community as regards traffic on Friday Street remains to be determined.

### ***A Proposed Solution***

In general, implementing speed limits is anticipated to have little effect on the proportion of “cut-through” traffic using Friday Street.

As such, it is recommended that the Town of Arnprior...

- *Undertake a licence plate matching survey to quantify and confirm the extent of cut-through traffic using the Friday Street corridor;*
- *Undertake a speed survey to quantify and confirm the extent of speeding along the Friday Street corridor.*

Should “speed” be determined to be a significant concern, it is recommended that the Town of Arnprior....

- *Undertake the necessary consultation and planning activities necessary to consider the installation of temporary seasonal installation of traffic calming measures (which could include the introduction of temporary speed humps, speed tables and roadway narrowing) along the Friday Street corridor (between Stonehaven Way and Stay Court Drive).*

Should “cut-through” traffic be determined to be a significant concern, it is recommended that the Town of Arnprior....

- *consider implementing such measures that could include traffic calming measures or road closures (permanent or temporary) if found to be necessary to address the issue of cut-through traffic.*

### 7.3 RAILWAY CROSSING LOCATIONS

The former Canadian Pacific Railway (CPR) corridor (now owned and operated by RailAmerica) which runs east-west through the downtown core of the Town of Arnprior intersects with a total of nine at-grade crossings (two of which are pedestrian crossings) within the Town limits north of the Madawaska River. These are:

- Division Street (Rail crossing signal controlled);
- Vancourtland Street (Rail crossing signal controlled);
- McLachlin Street (Rail crossing signal controlled);
- Edward Street (Rail crossing signal controlled);
- MacDonald Street (Rail crossing signage only);
- Hugh Street South (Pedestrian Crossing – barrier and sign controlled);
- John Street (Rail crossing signal controlled);
- Daniel Street (Rail crossing signal controlled); and
- Thomas Street (Pedestrian Crossing – barrier and sign controlled)

Current and forecast traffic volumes were assessed along with estimates of rail traffic along the corridor to determine the warrants for infrastructure improvements to north-south travel demand across the railway corridor.

Transport Canada's *Technical Standards and Inspection, Testing and Maintenance Requirements (RTD10) - Draft (October 24th, 2002)* outlines the following railway crossing protection warrants regarding railway crossings control devices:

- Grade Separation: is considered when the cross product of average annual daily traffic and daily train volume reaches the 200,000 level;
- Crossing Signals: Cross product of average annual daily vehicular traffic and daily train volume reaches 1000; sight line deficiency; site specific track and/or road geometric factors.
- Gates: Cross product of average annual daily vehicular traffic and daily train volume reaches 50,000; train speed 80 km/hr or higher; 2 or more tracks to allow train passing; site specific traffic and/or geometric factors

Table 7.1 contains a summary of the cross-product calculations for each of the roadways crossing the former CPR line. It should be noted that the cross-product on its own does not represent the sole justification for the implementation of infrastructure improvements but can provide an indication of the need for such improvements. Table 7.1 indicates that:

- The warrants for crossing signals are currently (2008) satisfied at the Division Street and John Street corridor crossings. Crossing signals currently exist at both intersections;

- The warrants for railway crossing gates at the Daniel Street crossing would be satisfied sometime before the 2015 horizon year; and
- The Vancourtland Street, McLachlin Street, Edward Street, and MacDonald Street track/road crossings are all forecast to be below the threshold that would warrant crossing signals by the 2025 horizon year.

### ***Proposed Solutions***

This would point to several potential infrastructure changes to the existing crossings of the former CPR corridor. Therefore, it is recommended that the Town of Arnprior...

- *notify the County of Renfrew and the Rail Authorities (Transport Canada & RailAmerica) of the study findings that railway crossing gates at the Daniel Street rail crossing is anticipated to be warranted at some point prior to the 2015 horizon year; and*

***Table 7.1: Preliminary Warrant Analysis for Railway Crossing Controls.***

Railway Crossing	Conflicting Average Annual Daily Vehicle Traffic (Vehicles/Day)			Cross Product of AADT with Current Estimate of Daily Rail Traffic		
	Existing	2015	2025	Existing	2015	2025
<b><i>Crossings Under County of Renfrew Jurisdiction</i></b>						
Division Street	4,400	4,740	4,990	26,400	28,440	29,940
Daniel Street	7,970	15,540	23,130	47,820	93,240	138,780
<b><i>Crossings Under Town of Arnprior Jurisdiction</i></b>						
Vancourtland Street	70	80	85	420	480	510
McLachlin Street	80	90	95	480	540	570
Edward Street	70	80	85	420	480	510
MacDonald Street	40	40	50	240	240	300
John Street	2,200	2,440	2,680	13,200	14,640	16,080

1. AADT volumes for the McLachlin Street, Edward Street and MacDonald Street corridors were estimated using 2005 traffic counts performed by the Town of Arnprior.
2. AADT volumes at the Vancourtland Street crossing were estimated from volumes obtained along similar adjacent roadways.
3. A growth factor of 1%/annum was applied in each direction along the Vancourtland Street, McLachlin Street, Edward Street, and MacDonald Street corridors in order to obtain the 2008, and 2025 traffic volumes.
4. AADT volumes along the Division Street, Daniel Street, and John Street corridors were obtained from previous estimates of link volumes within this study.
5. The current estimate of Average Daily Rail Traffic used was 6 trains-per-day.

It is recommended that a *policy statement be adopted that would respond to those rail authorities which deem it necessary to invoke closures of local roadway crossings with the objective of consolidating the number of crossings of the railway corridor north of the Madawaska River.*

Assuming the continued use of the railway corridor for rail purposes, it is recommended that the Town of Arnprior consider as candidates for closure should the need arise.

- *the closures of the Vancourtland Street/Rail crossing; and*
- *the closure of MacDonald Street/Rail crossing.*

It should be noted that a construction cost estimate associated with these rail improvements has been excluded. Further investigation into the necessity and potential of such rail/road upgrades should be performed as traffic crossing the rail corridor is found to increase.

## **8.0 FINDINGS AND CONCLUSIONS**

The following section serves to summarize the findings and recommendations of this report as they relate to the Town of Arnprior.

### **8.1 FINDINGS**

#### ***Transportation Policies***

A set of documents which include relevant standards, guidelines, and supporting policy statements that address roadway classification, roadway widening and traffic impact study guidelines have been prepared. Adoption of these policies would facilitate the goal of providing a consistent approach to the development of a high quality transportation system/network and encourage the more efficient provision of timely information to the the Town as concerns the potential impact of development initiatives.

#### ***Parking Study Findings***

An analysis of parking characteristics (i.e. utilization and turn-over) within the downtown core of Arnprior indicated that additional off-street parking within downtown Arnprior is not required at this time (2008). Currently, available parking is under-utilized, particularly along the periphery of the downtown area. Implementation of parking management strategies that would maximize the existing parking capabilities may be beneficial to the community.

#### ***Roadway Network Findings***

Forecast traffic volumes for peak morning and afternoon hours of travel demand were created for the current 2008, (medium-term) 2015, and (long-term) 2025 horizon years. Analysis of each horizon year was undertaken to determine the necessity of current and future roadway upgrades/modifications within the study area. This analysis served to identify potential forecast deficiencies of the roadway network servicing the Town of Arnprior.

The analysis included intersection capacity analysis, an assessment of roadway classification, a left-turn storage analysis, and identification of potential mitigation measures. Afternoon peak hour travel demand forecasts representing the 2015 and 2025 horizon periods were analysed.

#### 2008 Horizon Year

The intersection capacity analysis of the intersections within the study area assuming the existing (2008) time frame determined that all of the intersections considered, with the exception of the *Daniel Street/Staye Court Drive* intersection, were found to operate at satisfactory levels-of-service. It was found that conversion of this intersection to right-in-right-out operation offered the most effective solution to meet long-term requirements for this intersection. This conclusion accounted for the proximity of the adjacent signalized intersection (*Daniel Street/Baskin Drive*) within 155 meters (120m of total vehicle storage distance) and the location (approximately 180 meters) from the proposed north ramp terminal of the proposed Hwy 17 interchange.

#### 2015 Horizon Year

All of the intersections analysed, with the exception of the following four intersections:

- *White Lake Road/Vanjumar Road;*
- *Daniel Street/Baskin Drive;*
- *Sheffield Street/Madawaska Boulevard;*
- *Jack Crescent E. (Moe Robillard Street)/Madawaska Boulevard;*

are anticipated to operate at adequate levels of service (LOS “D” or better) without further changes to infrastructure by the forecast 2015 horizon year. The suggested improvements for the above four intersections include auxiliary turning lanes, signalization and turning restrictions and additional core through lanes on Daniel Street between Vanjumar Road and Arthur Street.

#### 2025 Horizon Year

Ten out of the 22 intersections analysed are anticipated to continue to operate at satisfactory levels of service (LOS “B” or better) without further changes to infrastructure beyond those provided to mitigate 2015 operational constraints. Seven of the ten intersections identified with unsatisfactory levels of service are located along the White Lake Road/Daniel Street corridor. These seven intersections were found to require auxiliary turning lanes, signalization and turning restrictions. The remaining three intersections were located along the Baskin Drive Drive corridor and include:

- *Division Street/Baskin Drive;*
- *Stonehaven Way/Baskin Drive;* and
- *Baskin Drive/Winner's Circle.*

These intersections were found to require localized roadway widening, signalization, signage and, (as concerns the *Division Street/Baskin* intersection), realignment

[The improvements necessary to address the each of the deficiencies identified for the 2015 and 2025 time frames are addressed in Table 6.3 and 6.4 respectively.]

### ***Estimated Construction Costs***

Conceptual construction cost estimates were developed for each of the suggested roadway improvements. These cost estimates were exclusive of several anticipated improvements understood to coincide with the proposed modifications to the Highway 17 corridor which were assumed to be completed between the 2008 and 2015 horizon years. The total estimated construction cost of the identified improvements was estimated at \$4.4M.

### ***Other Network Issues***

The following issues were identified as areas of local municipal concern:

- Access to on-street parking within the vicinity of the Arnprior and District Memorial Hospital;  
The land uses along the John Street corridor in the vicinity of the hospital are mixed and include the hospital, clinics, daycare, residential homes, small businesses, schools and a recreational area. Motorists (and their passengers which include hospital/clinic patients/visitors, school and daycare staff/visitors/deliveries, local residents and their visitors/deliveries) compete for the available free on-street parking supply on the surrounding local roadways. In addition, the available supply of on-street parking is somewhat deficient in that the surrounding local roadways were constructed (in the early part of the last century) with narrow widths that can not support parking along both sides of the road right-of-way. The current 2-hour duration parking fronting the hospital competes with the \$2 off-street parking available on the hospital site. This study concludes that should the need for available on-street parking for residents be confirmed that a policy that would reserve segments of on-street parking for local "permitted" residents be considered. Local enforcement would be used to assure non-permitted vehicles are ticketed/towed in accordance with existing local parking policies
- Speeding and Cut-through traffic;  
The Friday Street and John Street corridors were noted as areas where speeding was a concern. Cut-through traffic was noted as a concern along the Friday Street corridor. This study concluded that there currently exists no evidence other than perception that substantiates these claims. The Town of Arnprior is therefore encouraged to undertake those surveys (speed surveys, licence plate matching surveys) to document the occurrence and frequency of these concerns. If substantiated, this study concludes that the provision of "All-Way-STOP" signage is inadvisable as a

means of mitigating the concerns of speed. The central finding of this study is one that encourages the Town of Arnprior to consider other traffic calming solutions which are temporary, seasonal and involve the consideration of such impacts as the effects upon adjacent on-street parking, drainage, driveway accesses and pedestrian activity.

- **Railway crossing locations and configurations.**  
The existing railway corridor (owned and operated by RailAmerica) through the Town of Arnprior consist of a total of 9 at-grade crossings on the north side of the Madawaska River, 2 of which are pedestrian only crossings. This study assessed the configuration and location of the existing at-grade railway crossings. The study concluded that
  - the warrants for railway crossing gates at the Daniel Street crossing would be satisfied sometime before the 2015 horizon year; and
  - should the need for a reduction/consolidation in the number of crossings be identified by the railway authority the Vancourtland Street and MacDonald Street crossings were determined to be candidate locations for closure given the proximity to adjacent crossings.

## **8.2 RECOMMENDATIONS**

The following recommendations have been made as regards the Town of Arnprior.

### ***Transportation Related Policies***

The following two documents were produced as part of this study.

- Roadway Classification and Roadway Widening Policy (Policy 1)
- Traffic Impact Study Guidelines and Policy (Policy 2)

*The Town of Arnprior is encouraged to consider incorporating...*

- *the policy statements within the Roadway Classification and Roadway Widening Policy and the Traffic Impact Study Guidelines within the next Official Plan update; and*
- *the above policy documents within existing municipal practices and processes.*

### ***Parking Recommendations***

It is recommended that the Town of Arnprior ...

- continue to undertake parking surveys of the downtown core area during the peak summer-time time period to assess the impacts of seasonal-demand upon the parking supply;
- Provide “gateway” signage that is consistent (size, shape, symbol, colour, theme etc), and easily recognizable and visible at each of the entrance ways into the off-street parking lots (where public parking is permitted) located within the downtown core.

- consider revising the on-street parking time limits applicable to Madawaska Street and McGonigal Street within the downtown core (which are currently under-utilized) from a 2-hour duration to a 3-hour duration in an effort to entice motorists to shift longer duration parking away from Elgin Street to the on-street parking stalls along Madawaska Street and McGonigal Street;
- consider increasing the frequency of on-street parking enforcement/inspections to assure adherence to the 2-hour duration limit within the downtown core along John Street and Elgin Street at those times when peak demand is most likely to occur; and
- update the existing official plan and zoning by-laws to incorporate policies that:
  1. would require new developments proposed within the downtown area to provide sufficient off-street parking to accommodate the future parking demand;
  2. include a description of the provisions and conditions necessary that would permit the Town of Arnprior to implement “cash-in-lieu of parking” arrangements;
  3. Encourage the use of shared-parking arrangements involving adjacent property owner(s) that would provide for the effective joint use of off-street parking resources.

*In conclusion, the Town of Arnprior is encouraged to...*

- *Explore parking management strategies that would improve the utilization of all available parking stalls within the downtown area; and*
- *Ensure future developments within the downtown area that would provide sufficient off-street parking to accommodate patrons, residents, visitors, deliveries separate from facilities used to collect/store garbage/rubbish.*

### ***Network Improvement Recommendations***

The analysis of the current 2008, (medium-term) 2015, and (long-term) 2025 roadway network conditions within the Town of Arnprior would suggest the following improvements within the jurisdiction of both the Town of Arnprior and the County of Renfrew.

Subsequent to a review of the suggested roadway improvements identified within this document (See Section 6.1) the Town of Arnprior is encouraged to liaise with other relevant jurisdictional authorities with the goal of initiating and coordinating the required planning efforts. When such infrastructure becomes warranted, a multi-jurisdictional approach is encouraged to facilitate the implementation of each improvement.

*It is recommended that ...*

- *the infrastructure improvements outlined within this document are incorporated within the planning policies, planning framework and transportation plans of the Town of Arnprior; and*

- *the Town of Arnprior in concert with County of Renfrew, are encouraged to assure that the costs associated with the identified improvements are taken into consideration during subsequent development charge review processes.*

***Other Issues: Parking in Vicinity of Arnprior and District Memorial Hospital***

Should the supply of on-street parking on the west side of John Street be found to:

- adversely effect emergency vehicle (ambulance) access to the site (The newest site plans for the hospital site should be reviewed to determine any potential concern.); OR
- be the cause of a significant adverse effect to traffic circulation/operations along the John St N. corridor;

The Town of Arnprior is encouraged to consider:

- removal of the conflicting (approximately 10 stalls) on-street parking supply along John Street; and
- the prohibition of day-time on-street parking on Ewen Street. [Night time parking (after 7:00 p.m.) could be provided to accommodate local Ewen Street residents requirements.]

***Other Issues: On-Street Parking where No Off-street Residential Parking is Provided.***

Should the supply of on-street parking be found to accommodate those residential buildings which have no other choice but to use available on-street parking:

*It is recommended that a policy statement be implemented that would include signage that would reserve segments of on-street parking along those corridors where a shortage of off-street residential parking exists. Local residents could be provided with on-street permits which must be displayed on the vehicles. As well, permit holders would be required to find an alternate temporary parking during night-time scheduled winter maintenance operations. Local enforcement would be used to assure non-permitted vehicles are ticketed/towed in accordance with existing local parking policies.*

***Other Issues: Parking in Vicinity of Schools/Day-Cares [Pick-up/Drop-Off]***

The Town of Arnprior is encouraged to continue its policy of implementing short-term on-street parking provisions within the vicinity of schools/day cares and institutions requiring short-term parking, pick-up/drop-off provisions. The suggested permitted time duration for these on-street stalls should be less than 1-hour. The location of such permitted parking should be considered only along those locations where emergency vehicle access would not be adversely affected.

***Other Issues: Speeding and Cut-Through Traffic***

Should the problem of excessive speeding along the John Street corridor be substantiated by a speed survey, it is recommended that the Town of Arnprior ...

- *Undertake speed surveys to quantify and confirm the extent of speeding traffic (non-compliance with current speed limits) on those corridors where speeding has been perceived as a concern;*
- *Subsequent to speed surveys documenting the presence of excessive speeding, the Town of Arnprior is encouraged to consider the temporary seasonal installation of traffic calming measures to test the appropriateness of such measures in addressing the issue of speeding. Such measures would include prior consultation with the surrounding community residents, employers/employees and the relevant emergency services departments as well as an evaluation of the potential impacts to on-street parking, sight lines and provision of adequate lighting and signage that would ensure night-time visibility or such measures.*
- *Subsequent to the above surveys, consultation and planning activities, it is recommended that Council authorize the temporary seasonal installation of traffic calming measures (which could include the introduction of temporary speed humps, speed tables and roadway narrowing) along the John Street N corridor (between Ottawa Street and Victoria Street).*
- *Subsequent to the above surveys, consultation and planning activities, it is recommended that Council authorize the temporary seasonal installation of traffic calming measures (which could include the introduction of temporary speed humps, speed tables and roadway narrowing) along the Frieday Street corridor (between Stonehaven Way and Stay Court Drive).*

As regards, the proportion of “cut-through” traffic effecting roadways within the Town of Arnprior it is recommended that the Town of Arnprior...

- *Undertake licence plate matching survey where cut-through traffic is a concern to quantify and confirm the extent of cut-through traffic;*
- *Should such surveys prove that “cut-through” traffic is a significant concern, it is recommended that the Town of Arnprior consider implementing such measures that could include traffic calming measures or road closures (permanent or temporary) if found to be necessary to address the issue of cut-through traffic.*

#### ***Other Issues: Railway Crossing North of Madawaska River***

It is recommended that the Town of Arnprior...

- *notify the County of Renfrew and the Rail Authorities (Transport Canada & RailAmerica) of the study findings that railway crossing gates at the Daniel Street rail crossing is anticipated to be warranted at some point prior to the 2015 horizon year; and*

It is recommended that a *policy statement be adopted that would respond to those rail authorities which deem it necessary to invoke closures of local roadway crossings with the objective of consolidating the number of crossings of the railway corridor north of the Madawaska River.*

Assuming the continued use of the railway corridor for rail purposes, it is recommended that the Town of Arnprior consider as candidates for closure should the need arise.

- *the closures of the Vancourtland Street/Rail crossing; and*
- *the closure of MacDonald Street/Rail crossing.*

### **8.3 WHERE DO WE GO FROM HERE?**

This Master Traffic Study addresses key policy issues, downtown parking provisions, and roadway network issues as presented by Planning Services of the Town of Arnprior. This study offers:

- A set of transportation policies to formalize procedures and standards relating to roadway initiatives;
- An assessment of the current downtown parking demand and provisions; and
- A list of potential infrastructure improvements to key study area corridors and intersections within the Town of Arnprior boundaries.

*It is recommended that ...*

1. *The approach to addressing the issues identified in this planning study be received by the Town of Arnprior;*
2. *The Town of Arnprior be informed that this Master Traffic Study represents a planning overview and as such, the associated approval requirements necessary to realize each network element remain to be completed; and.*
3. *Subsequent to the Town of Arnprior's endorsement of the general findings and recommendations, the Town is encouraged to pursue those initiatives necessary to confirm the detailed planning, engineering, and feasibility of the initiatives associated with roadway network requirements.*