The Economic Potential of a Hagersville By-pass

A Major Research Paper
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In partial fulfillment of the requirements for the degree of Masters of Planning (MPLAN) School of Environmental Design and Rural Development University of Guelph December, 2014

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**Dedication**

This paper is dedicated to my family, my wife Marion for all her support, understanding and the continuing push to have me reach my full potential. To my children; Abigail, Aislinn & Willem; It is never too late to learn.

**Acknowledgement**

This paper would not have been produced without the assistance of Dr. Harry Cummings & Dr. John Devlin for invaluable reviews, comments and support. Tyson Haedrich for making the information at Haldimand County available, and a number of people that were asked about their point of view and ideas about a by-pass around Hagersville. These include: Mayor Ken Hewitt, Councillor Tony Dalimonte, Toby Barrett MPP and Rob Phillips.
Abstract

The Economic Potential of a Hagersville By-pass

Transportation is a continuously evolving aspect of planning that requires long range forecasting and social and economic impact assessments. The ability to forecast the future in transportation is also based on current trends in housing, commercial and industrial development. The planned community of Townsend is a prime example of the major implications long range transportation planning can have on a region when the end result do not meet the expectations. This research paper is exploring past decisions, based on trends and development in the industrial sector, and the current implications these decisions have on the rural community of Hagersville, in Haldimand County, after the projected increase in population and development failed to materialize in Townsend and the Nanticoke Industrial Park, and was subsequently abandoned in the 1980’s. A historical account of the origins and development of the communities involved is outlined, which is followed by a description of the current state of the region. Comparisons are made with successful by-passes in parts of Southern Ontario, which will highlight successes and failures. This paper also relies on accounts from the local business community, municipal engineering department and officials. The analysis will present particular findings that will allow the Province of Ontario, and the County of Haldimand, to make a decision on whether a by-pass around the town of Hagersville is in the best interest of the region and its future. It has to be kept in mind that a possible by-pass around Hagersville would not only serve that community directly, but may have a larger impact on the region of Haldimand and Norfolk as a whole. The possibility to create better access into rural areas may be beneficial from an economic point of view due to the opportunities that may arise as a result.
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1. INTRODUCTION

The Town of Hagersville is located in the rural county of Haldimand and is uniquely situated on Provincial highway #6 and the southeast corner of the Mississaugas of the New Credit Reserve. The town has been a subject of hot debate for a number of decades due to the increase of traffic resulting from the establishment of Nanticoke Industrial Park in the late 1960's. The development of Nanticoke, which is located on the north shore of Lake Erie, led to the creation the Regional Municipality of Haldimand/Norfolk 1974. This new municipality was envisioned to become the home of the master planned, regional urban center of Townsend New Town. This planned community was conceived in order to address the projected increased demand for housing as Nanticoke Industrial Park continued to be developed and was to encompass all the needs and services that residents would look for when settling in a new area. Townsend was to be the city where residents can live, work and play.

The Townsend New Town project was to be home to an estimated 100,000 people. A bypass around Hamilton, Caledonia and Hagersville, with a realignment of Highway #6 south of Hagersville directly into the industrial park, was part of the Townsend project in order to divert heavy traffic from the downtown cores of small rural towns and improve the flow and efficiency.

![Figure 1: Projected extent of Townsend with Nanticoke Park](image)
of traffic. The projected route, south of Hagersville, is indicated by the dashed red line in Figure 1. The overall realignment of Highway 6, which would address anticipated traffic volumes, was to be from Highway 403 in Hamilton to Nanticoke. Certain portions of the realignment have been constructed; the link from Highway 403 to the Hamilton International Airport and the by-pass around the town of Caledonia in Haldimand County. When it became clear in the mid 1980's that Townsend New Town was not progressing as planned, the project was subsequently abandoned by the provincial government. The result is a number of unfinished development projects that have impacted rural communities both negatively and positively. The research that is presented in this paper has as an objective the identification of the potential economic impacts of a by-pass around the town of Hagersville in Haldimand County, and the region as a whole.

1.1. Purpose of a By-pass

A by-pass is essentially a means to divert traffic out of the urban core of a town or village, in order to reduce or improve, congestion and, increase public safety, by reducing the potential risk of accidents, but also reducing access to local goods and services. A by-pass around a town can have a positive impact on the revitalization efforts of the downtown area, or the promotion of development along the new by-pass, but may also pose concerns for local merchants, particularly those businesses that rely on drive by traffic, who may feel their business is affected due to the reduced exposure to traffic. (Caltrans, 2006). There is also a potential for a change in environmental conditions as there may be a significant reduction in noise and pollutants, such as emissions, oil and fuel leakage (Elias, Hakkert, Plaut and Shiftan, 2006).

The construction of a by-pass may also benefit the regional economy as a mechanism for economic growth and employment opportunities (Srinivasan, 2002). By-passes are frequently
used in North America and a large number of studies have been produced over time analysing the impacts on a community that is experiencing the effects of a by-pass. A by-pass may initially seem to be an ideal solution to traffic congestion in small towns, but may also present a number of factors that can have a negative effect on the local, and regional economy, thus creating divisions within the local community and at a government level.

1.2. Methodology and Organization

This paper explores the origins of the core problem by analysing the sequence of events through historical data. Communities and regions that have been impacted or played a factor in the by-pass proposal are examined and discussed using historical records and first-hand accounts in order to narrow down the root of the problem. The historical research is based on a past community plan and a number of articles from the local community paper which provides a valuable insight and first-hand account of direct impacts on the local community. Case studies from the local area, specifically Caledonia and Hamilton, are analyzed and used for comparison. Individuals from the local business community, municipal officials and elected representatives from local and provincial government have been consulted to provide insight and their different ideas and concerns.

This paper is organized in a number of major components, consisting of 1) an outline of the problem, 2) historic background information and context on the communities that are affected or impacted by the by-pass conundrum, 3) a deeper understanding of the problem and the economic factors that are affecting the situation, 4) an outline of possible scenarios, 5) a review of national and international literature, 6) Economic impact assessments, 7) Initiatives and, 8) Case studies of local, small towns that have been by-passed. The findings are presented
as recommendations in order for the County of Haldimand and the Province of Ontario to move forward to address the truck traffic situation in Hagersville, should they choose to do so.

1.3. Terminology Notes

The property known as Nanticoke Industrial Park is generally referred to as Nanticoke and both terms, or its acronym NIP, may be used intermittently throughout this paper, but have the same meaning. Also, Townsend may be referred to as Townsend New Town, but implies the same. Haldimand County, the County, or Haldimand are one and the same and will be used interchangeably over the course of this paper. Stelco was a steel manufacturer from Hamilton that initiated the construction of the industrial park at Nanticoke. Stelco was eventually acquired by US Steel, which then took over the management and ownership of the Nanticoke plant and park. Thus, Stelco and US Steel refer to the same company at the same location.

2. BACKGROUND & CONTEXT

To gain insight into a problem is to develop an understanding of its history. Thus, to obtain a full grasp on the by-pass issue that has been circling the town of Hagersville for the last four decades, a brief overview is provided to establish baselines and context. The complexity of a regional problem is in part due to the uniqueness of the communities that it encompasses. A strong understanding of these communities is imperative to the development of a successful resolution of a problem that has the potential to affect an entire region. As such, a condensed
history of the involved communities is presented here, as well as a brief description of Highway #6 itself.

Haldimand County has a population of around 44,876, down 0.7% when compared to the 2006 census (StatsCan, 2011). The surrounding municipalities have generally seen an increase in population, with the exception of Wainfleet (StatsCan, 2011). The vast majority of residents, (67.1%), are between the ages of 15-64, with 15.7% being 65 and over. The number of private dwellings is 16,822, an increase of 3.2% when compared to 2006, but far below the national increase of 7.1% (StatsCan, 2011). These basic figures show that the population in Haldimand County has declined somewhat over the previous five years. However, surrounding municipalities such as Norfolk and Brant Counties, have seen population increases.

2.1. History of Highway #6

Roads are of vital importance to any municipality and Haldimand County is no different. The earliest construction of a plank road between Hamilton and Port Dover occurred in 1839, completed in 1843 and was not to exceed a maximum width of 66 feet, or roughly 20 meters (MacDonald, 2004). This new road allowed for a faster connection between Lake Ontario and Lake Erie, and resulted in the forming of a number of settlements along the route. Hagersville is one of these towns. It was not until 1920 that the Province of Ontario created a provincial highway network which formally recognized the former plank road as Highway #6. The section between Hamilton and Port Dover was added to the highway in 1927 (Bevers, 2014). The highway runs from the northern town of Espanola, where it meets up with the Trans Canada Highway, south to Port Dover in Norfolk County.
The provincial highways are designed and dedicated roads for (heavy) truck traffic and managed by the Ontario Ministry of Transportation (MTO). As such, Highway #6 is a truck route (Haedrich, 2014) which runs through a number of small rural villages and towns like Puslinch, Aberfoyle, Morriston, Freelton, Hagersville and Jarvis.

2.2. Highway #6 Current Situation

The highway portion between Hamilton and Port Dover has seen some major realignments due to the expected growth of Townsend New Town. Highway #6 has been relocated to exit Highway 403, by-pass Hamilton Mountain West and provide a direct link to the Hamilton International Airport. This was realized only a few years ago. The airport link has been designed in such manner so that the road can be widened to a 4 lane highway. The portion between Mount Hope and Caledonia is a 4 lane highway, until it by-passes the town of Caledonia in Haldimand County, where it turns into 2 lanes. This by-pass was completed in 1984 to divert the increased truck traffic destined for Nanticoke. The section between Caledonia and Port Dover is essentially unaltered and runs right through Hagersville and Jarvis.

2.3. History of Hagersville

The town of Hagersville was founded around 1855 along the Plank Road, now known as Highway 6. The railroad was in place by 1870 and connected Lake Erie with Hamilton. By 1879, Hagersville became a prosperous town that relied on the traffic of Plank Road. The first of several gypsum mines, which was readily available in the vicinity, was opened in 1888 and were situated on the southwest side of town (Brown, 1992). A number of businesses were located in the center of town, such as banks and a hotel. Hagersville has established itself over the past
decades as a trucking town and there are still a number of trucking related businesses in town to this day (Barrett, 2014).

2.4. Hagersville Current Situation

The town is situated at the crossroads of Highway 6 and Indian Line, or Haldimand Road 20. The town has a population of around 2800 and has a healthy business sector which caters to most of the resident's needs. The built up area is right at the edge of the road allowance and there is limited space for any road improvements, let alone widening. There is a consistent flow of traffic traveling through and from the town. The majority of this traffic can be attributed to the number of transport and aggregate companies that are situated within the town or a short distance from it. Urban growth is limited to the southeast corner due to the presence of former mining pits on the southwest corner, the Mississaugas of the New Credit reserve on the northwest corner and an active aggregate pit on the northeast portion of town (Figure 2). The current businesses include, but are not limited to, a car dealership, hardware store, two (2) grocery stores, several banks and an appliance warehouse. There are also a number of trucking companies present. Hagersville provides a diversity of retail products and can be considered a destination point for the communities of Jarvis, Fisherville and Townsend, while also serving as a center for the New Credit Reserve. The town is predominantly surrounded by agricultural

Figure 2: Hagersville
lands and a hydro corridor is situated on the eastside of town. A single rail line is running through the western extent of Hagersville and is currently in operation.

2.5. History of Nanticoke Industrial Park

Nanticoke Industrial Park, is situated along the north shore of Lake Erie, comprises of 4,500 acres of heavy industrially zoned land, and was first conceived in the late 1960’s by the Steel Company of Canada (Stelco). The area at that time consisted of a small farming village (Nanticoke) but much of the farmland had been bought up by Stelco in Hamilton, as it was chosen for a state of the art steel mill plant so that a projected increase in demand for steel could be met. The location on Lake Erie was deemed ideal due to its proximity to the United States and the opportunity to construct a shipping harbour. The construction of the new plant started in 1974 with production starting in 1980 (Funding Universe, 2014). The new plant was more modern than the Hamilton counterpart and also much more efficient as it was using less water for production (Wikipedia, 2014).

At the same location were new plants constructed by Texaco (now known as ESSO), and Ontario Power Generation (OPG), North America’s largest coal generating station (MOH, 1977). The property was entirely owned and operated by Stelco (Haldimand County, 2014). Nanticoke is located about one hour from the US border at Buffalo, NY and had the possibility to initiate a ferry service between Nanticoke and Erie, Pennsylvania (TEMS, 2003). It was also the preferred location for a nuclear power plant (Heldson, 2009).
2.6. Nanticoke Industrial Park Current Situation

Nanticoke is currently home to a small number of industrial businesses, US Steel Canada, OPG and an Esso refinery (Figure 3). OPG is currently dormant due to the intensification of wind and solar projects in Haldimand/Norfolk, and is awaiting its ultimate fate. US Steel is also facing an uncertain future with the closure of the steel plant in Hamilton. Even more sobering news, US Steel has filed for bankruptcy protection as of September 15, 2014 and there is an added level of uncertainty present at the Nanticoke plant (Pearce, 2014), with a potential sale of the property looming (Craggs, 2014).

There are about 4,500 fully serviced acres available that have access to rail, air, highway and the Great Lakes (Haldimand County, 2014). The entire property is owned and operated by US Steel Canada, but Haldimand County is actively promoting the area as well due to the potential significant positive economic growth new industry would bring to Haldimand County. The village of Nanticoke has been absorbed into the boundaries of the industrial park, but still is an active settlement and is indicated by the red marker in Figure 3.
2.7. History of Townsend

Townsend has its roots back to the early 1800's as a small farming community. It has been relatively undisturbed since that time until the provincial government saw the need in the 1970's to direct new growth to established city and suburban centers. Part of this was the creation of a greenbelt to contain sprawl, and the setting up of regional municipalities in the areas surrounding Toronto and Hamilton (Marshall, 2009). The Province bought thousands of acres of land in Haldimand County, so that the Townsend New Town component could be realized as part of the provincial growth plan. Townsend was to become a planned community that would be home to 100,000 people and be employed at the nearby, up and coming, Nanticoke Industrial Park (MOH, 1977). Figure 4 illustrates the location of Townsend (circled) and Nanticoke, indicated in red. Townsend was central to the region and based on the initiative that was taking place at Nanticoke, a logical location, due to its close proximity to Nanticoke and the opportunity to master plan an entire community, without impacting existing towns. The original farming community disappeared after the provincial government bought up the land for the development (Martin & Rose, 2014).
2.8. Townsend Current Situation

This small town failed to develop as a city and now serves as a residential bedroom community without a commercial component. There is a large retirement home present, and a number of government agencies have office space in town. Shopping opportunities are located in nearby Jarvis and Hagersville, which may be considered the main shopping center due to its diversity in services and products. There are wide roads leading into the town, reminiscent of the intended growth that was destined for Townsend, but only a small parcel, known as Phase 1, has been developed and is home to about 1000 residents. The remainder of the land that was acquired by the provincial government has been sold off. Some of this land has been rezoned back to agricultural lands (Martin & Rose, 2014). When the Region of Haldimand/Norfolk de-amalgamated in 2001, the new county line was drawn through the town (Martin & Rose, 2014).

3. PROBLEM STATEMENT

The problem that is facing Hagersville is unique as the town is stuck with the result of a partially finished project; that of the planned community of Townsend and Nanticoke Industrial Park. One extremely important issue that Hagersville is experiencing due to the abandonment of the project, is the presence of heavy traffic travelling through the town.

3.1. Core Problem

The town of Hagersville is located directly on Highway #6 and handles a large volume of traffic. It is capable to do so as it is designated as an Ontario Provincial Highway. The core
problem is that heavy transport traffic dramatically increased when development occurred at Nanticoke in the 1960's. The heavy industry that is located there is relying on Highway #6 to transport its goods to and from Nanticoke. Highway #6 is the only direct road running north and south in the area that is capable of handling the constant heavy load. Problems and concerns arise when this heavy traffic enters a town that had not seen heavy traffic in such volumes prior to the development of Nanticoke. As such, a rural community is having trouble to adjust to the increase of heavy transport and has virtually no space within its downtown core to make major changes to allow for transport trucks to move more efficiently through town. The increased truck traffic lies at the root of the problem and a by-pass around the town of Hagersville seems to be the most logical option.

3.2. Research Problem

The issue of constructing a Highway #6 by-pass around Hagersville stems from the development of the Nanticoke Industrial Park in the 1960's and the proposed Townsend planned community that had been envisioned to be home to 100,000 people. In order to accommodate the increase of vehicles and transport trucks, a provincially endorsed by-pass around Hagersville was proposed and designed in the 1970's. The fact that Townsend never materialized as anticipated due to the lack of growth at Nanticoke, has put the town of Hagersville in a precarious spot.

The development that did occur at Nanticoke resulted in a dramatic increase of heavy traffic travelling between Hamilton and Nanticoke. Also, residents that live in Townsend use the highway as their route to and from work. A number of studies have been carried out by the Ontario Ministry of Transportation (MTO), as well as Haldimand County to determine the
volume, type, destination and origin of traffic. The discussion of a by-pass has been ongoing for several decades.

An in depth analysis of the background rationale and current travel patterns may lead to a desirable alternative to the transportation issue that has been at the forefront for a number of years in Hagersville, and Haldimand County as a whole.

3.3. Economic Impact Factors

A major project can have deep lasting consequences particularly to the economics of an affected rural, or urban, area. A town by-pass is such a situation in which successful, established businesses can experience a positive effect, that sees their business increase or become more efficient. It is also likely that a negative occurrence takes place, in which case businesses can see their revenue and customer base decline as the result of a by-pass. A negative impact is particularly present with "in/out" businesses, such as coffee shops and gas stations (Phillips, 2014).

The economic impacts of by-passes on small rural towns have been studied and analyzed in a great number of publications and reports. A variety of impacts a by-pass could potentially have on the type of business, or location have been isolated by Burris (1996). Burress (1996) has recommended several principles for assessing the economic impacts of a by-pass. These include:

1) Long-term effects of a by-pass generally generate positive impacts on a community and differences between by-passes can be ignored.

2) Short-term effects beyond the retail and travel industry can be ignored for the same reason.

3) There will be a short-term economic impact on retail and travel related businesses. Specific policies can be implemented in order to account for short-term adjustment costs. It must
be noted that these short term policies depend on the situation and the types of businesses that are affected and further research is required to develop effective economic incentives (Burress, 1996).

3.4. Goals and Objectives

The purpose of this paper is to identify key factors that have, or may have significant influence on the existing economic situation in Haldimand County, and may determine if a future decision on the construction of a town by-pass around Hagersville is warranted. Haldimand County, and the Province of Ontario, would both experience changes if a by-pass were to be constructed and it is of vital importance to recognize the changes that can be anticipated and reduce any type of negative impact that can be experienced by the business community and the local residents.

It becomes much easier to determine the benefits for Hagersville, and Haldimand County as a whole, when economic impact factors have been identified. Thus, based on these findings it can then be determined if a by-pass is an economic benefit, or a negative liability. As such, the research has three major goals:

A) To determine the impact on the Hagersville community if a by-pass were build or if the status quo is maintained; would there be a benefit to the community and region as a whole. This involves the analysis of the Townsend New Town planned community concept, the developments that have taken place to implement this ambitious plan and the status of Nanticoke Industrial Park which is closely tied to the recent economic changes in Hamilton, particularly the uncertain situation of the US Steel plant.
The goal of this research is to explore the multitude of factors that are at play in the core problem; heavy traffic travelling to their destinations through Hagersville.

B) Are the economic benefits of greater value than the costs if a by-pass were to be constructed; the availability of heavy industrially zoned lands at Nanticoke would become more easily and safely accessible and the substantial potential of future industrial development would be enhanced.

This can be arguably lead to the question: if you build it, will they will come? The current status of Nanticoke as an established industrial park has become part of the fabric of Haldimand County, which is investing time and money to promote the industrial park as a place to locate an industry. The County has identified the existing industry as important contributors to the local economy and important community partners. Most recently, US Steel made a $300,000 donation to the Hagersville hospital (WHGH, 2012), and OPG is an annual team sponsor for the Haldimand Youth Soccer organization. Thus, continuous development of the park would be in the best interest of Haldimand County as new industries could lead to further development of small rural towns, see an increase in population and higher revenues for the municipalities.

C) To provide the local and provincial government with sufficient information to make an informed choice on potential solutions and/or alternatives to the core problem, that of heavy traffic in a small rural town. This traffic significantly increased due to industrial activity and has altered the traffic situation in Hagersville. There currently is no alternative around the town and it may be assumed that any future industries at Nanticoke will most likely use Highway #6 through Hagersville to reach their destination, as the road is designed for heavy traffic and is the most direct route.
There have been many opportunities over the past decades to implement a traffic strategy for Hagersville, but for one reason or another, this never occurred. The research in this paper may shed some light on the influences a by-pass may have on the community.

4. METHODOLOGY

This major research paper explores the origins of the heavy truck problem in Hagersville, by analyzing the sequence of events that led up to the construction and subsequent abandonment of the large industrial development at Nanticoke in the 1970’s, and the associated planned community of Townsend. This sequence is established using local historical records and are complimented with the Provincial plan for the Townsend community, in order to provide a full, detailed understanding of the situation as it existed at that time. The decisions that were made over time are also further investigated by comparing these decisions with major global events to illustrate the significant impact these events had on the local planning process. A case study approach is utilized to draw comparisons to similar situations that have occurred in the vicinity of Hagersville, in order to establish base line data that can be applied to develop potential strategies to address the heavy traffic situation in Hagersville.

There are also a great number of studies that have analyzed the impacts of a by-pass on small communities in the United States, and abroad, as a generalization by authors such as Drabenstott, Henry and Gibson (1987); or as a case study approach as presented by Elias, Hakkaet, Plaut and Shiftan (2006); and the Wisconsin Department of Transportation (1998). Some of these publications will be addressed in the literature review. Consultation and general
conversations with representatives of various levels of government, as well as business owners, have been used to gain insight into personal opinions, ideas and concerns. An analysis of social and economic factors has been carried out to understand the deeply rooted local socio-economic base makeup of the Hagersville area. Conclusions and recommendations are drawn from this analysis and presented as viable options to address the truck traffic situation in Hagersville by means of a town by-pass, or through modifications to the existing situation.

5. PROS & CONS

One of the economic ramifications of constructing a bypass around Hagersville could be interpreted as better access to Nanticoke Industrial Park. The truck traffic issue in Hagersville is essentially a side effect of the overall regional transportation network. The Ministry of Transportation (MTO) determined in 2012 that the Highway #6 corridor in Haldimand County serves as a point of origin and destination (Murray, 2013). Murray further states that by-passes are generally less effective in these cases and suggests that other alternatives will need to be considered to alleviate truck traffic concerns, but fails to disclose any probable options (2013).

5.1. Pros of a By-pass

If a by-pass were to be constructed, there could be a significant increase in industrial activity at Nanticoke due to the direct access from the GTA and the US. In essence, a by-pass around Hagersville would have the opportunity to significantly boost the economic engine at Nanticoke while at the same time address the truck traffic concerns that have plagued
Hagersville for the last decades. It would also allow for more efficient delivery methods between places of business, thus increasing the efficiency to local markets as there is a direct route from Hamilton and major provincial highways to Nanticoke. Reducing the travel time and the reduction in travel congestion could be considered as a significant feature of a decision regarding a by-pass as businesses rely heavily on the timely and efficient transportation of their products to maintain high standards in customer service and their fiscal responsibility.

An increase in new housing development to accommodate the expected influx of new residents employed at the new industries that would be established at Nanticoke can also be expected and an efficient road network that services both the industrial component, as well as the residential areas is of vital importance to maintain a sustainable living and working environment.

Social interaction may improve as more people could move into the area, increasing participation in recreational and other social activities. A reduction in noise, and air pollutants from heavy traffic would enhance the atmosphere within the town and encourage outdoor activities.

5.2. Cons of a By-pass

The most important concern that is coming out of the business community, is the loss of drive by and walk in traffic, particularly for local gas stations and coffee shops, both of which are located in the central part of town (Phillips, 2014). The other concern is that the entire town may become less accessible due to the lack of entry points from a by-pass (Phillips, 2014). However, this concern can be addressed by having a design that includes exit points that lead into town. A by-pass may potentially transplant an in-town problem to the outskirts of town, thus placing frustrations, traffic and associated issues with those that have had no previous exposure
to such traffic. Also, there may be sprawl of businesses to the outskirts of town in order to obtain exposure to the highway by-pass, which may be seen as a positive. However, it is likely that a new traffic bottleneck is created if lands adjacent to the by-pass may become subject to commercial development.

The cost of constructing a by-pass is not to be underestimated and can be very expensive. Land would have to acquired, possibly through expropriation, and a long consultation process would have to be initiated with a large number of stakeholders. The actual construction of the road, intersections and overpasses would be millions of dollars and requires a long-term commitment from all stakeholders.

5.3 Pros of status quo

The cost of construction does not have to be considered, and local businesses that are dependent on walk, and drive by will not experience any reduction in income. These businesses may actually see their revenue increase if there is a gradual increase in traffic. An increase in businesses that rely on a similar clientele can also be expected. In general, small restaurants and gas stations may be expecting their annual revenues to increase gradually over time. The addition of new small businesses may be possible, due to the steady growth of the population, who are expecting certain services within the community, which may be provided over time depending on demand.

5.4. Cons of status quo

If a by-pass was not constructed and everything remained status quo, a slow, but steady increase of truck traffic may occur if Nanticoke grows. There are serious concerns, regarding
public safety, with the heavy traffic navigating through the core of Hagersville. A string of recent incidents, including an accident between a tanker truck and a pedestrian, amplifies these concerns (Spectator, 2014). The implications would include, but are not limited to:

1) Higher risk to public safety; Large trucks will need more time to come to a full stop and their manoeuvrability is much less than a standard vehicle. Also, the large size obstructs views for pedestrians, causing a higher risk of accidents, particularly when navigating a turn. The main intersection does not provide enough room to make a turn safely. Other road users frequently move over to create more space, but curbs are still being breached.

2) Streetscaping plans may be rendered useless due to the constant heavy traffic that is damaging the infrastructure at an accelerated pace. Moreover, constant tremors and vibrations from this heavy traffic could affect building foundations. The elegance and intimacy experience that is created with a streetscape will be negatively impacted by heavy commercial and industrial traffic.

3) Traffic has to slow down due to speed limits and signalled intersections. This causes bottlenecks due to the slow acceleration speed of trucks which often pass through the main intersection of town when the light has turned to a red.

4) Trucks that have pulled aside to use the local services further obstruct traffic flow and affect visibility, increasing the danger to the public.

5) Air quality concerns due to idling and excessive noise due to braking and accelerating.

The above mentioned concerns would certainly be addressed if a bypass were to be constructed around the town of Hagersville. The possibility of economic growth as a result of the status quo may be slow, whereas a town by-pass may stimulate this growth at a faster pace.
6. LITERATURE OVERVIEW

The literature on by-pass impacts is vast and diverse. The application of a by-pass is not restricted to North-America and the literature presents numerous situations of impact assessments and studies from countless global situations. The review presented here is looking at some of the local information, as well as American cases, since situations in Canada and the United States are fairly similar. Sources from other parts of the globe are reviewed as well to present a balanced approach.

6.1. Local Literature

The Townsend Community Plan (1977) is a vital resource as it is outlining the rationale for a Highway #6 realignment based on the plans that were scheduled for Townsend. The plan discusses the need for a planned community that would eventually house 100,000 people based on projections that were dependent on the success of the Nanticoke facilities (MOH, 1977). The plan included considerations for transportation and Highway #3 and #6 had been identified to undergo major modifications to alleviate anticipated transportation issues. Ironically, the section east of Townsend, the proposed southern portion of the Hagersville bypass, could have been undertaken within the first 10 years (MOH, 1977), but failed to materialize. The expectations were high as projected employees for Stelco were around 11,000, with regional population to grow to around 181,000 by 2001 (MOH, 1977). The Townsend plan was very ambitious and optimistic, but was basing all its success on the economic growth that was expected to take place at Nanticoke.
Nanticoke Through the Years (Dosser, 1990) discusses the evolution of Nanticoke over the last 200 years. The section on industrialization, which took place in the late 1960's, provides further insight into how Nanticoke became the location of choice for heavy industrial development. The overview of the construction of the Stelco plant, Ontario Power Generation and the Texaco refinery, allow for a clear understanding of the scope of the project and how the costs were significantly higher than anticipated. This may have had an impact on the overall development of Nanticoke; costs were escalating and possibly outweighing the benefits. It may have been due to these factors that the development of Nanticoke was scaled back, which in turn had an impact on Townsend and the proposed realignment of Highway #6.

Haldimand County has undertaken a number of traffic studies to determine the volume, source and destination of travellers. There are numerous council reports and recommendations available that relate to traffic calming measures, public comments, streetscaping and so on. The Ontario Ministry of Transportation (MTO) has equally done their share of studies and reports. MTO has determined, based on a 2011 traffic study, that the volume of traffic is not significant enough to implement a by-pass strategy. Rather, Hagersville serves as a point of departure and destination (Murray, 2013). On the other hand, MTO recognized that Hagersville acts as an impediment to the flow of traffic (Sonnenberg, 2012), and that a long-term strategy needs to be developed to address the operational concerns which could include the realignment, or expansion of Highway #6 south of Caledonia (Haldimand County, 2004). Most importantly, MTO had designed an alternative route in the 1970's, from highway 403 in Hamilton to Port Dover, based on the projected residential and industrial growth. These engineering drawings are available through Haldimand County and show that the entire Highway #6 corridor was to be realigned from Highway 403 to Nanticoke.
Furthermore, there is a study conducted in 2003 by TEMS, that examined the possibility of a ferry service for commercial traffic. This ferry would run between Nanticoke and Erie Pennsylvania. Erie, as it turns out, has already constructed a complete ferry dock that is available for service with Canada, but is yet to find a connection in Southern Ontario (Barrett, 2014). The study indicated that Nanticoke would be a suitable location for such service. A market analysis was carried out and indicated that there is a significant volume of goods that are transported over land and across the border. There is also a substantial portion moved via water and rail. Nanticoke has been deemed suitable and sustainable for freight ferry service based on the volume of daily trade between the two nations. The availability of rail service to the site and the ability to develop a shipping harbour, would be an incentive for long distance shippers who generally would have to sail to major ports (TEMS, 2003).

This plan has not been implemented and this report is available through Haldimand County. A bypass around Hagersville could have motivated the implementation of the ferry service based on the increase of commercial traffic. An increase in rail service and the possible creation of an international port would have a significant influence on the local, regional and provincial economy.

6.2. North American Literature

The University of Kentucky has performed an in depth analysis of a number of by-passes in the state of Kentucky. Eight small towns were subject of a study and the report of that study concludes that a town by-pass does not have an extremely adverse effect on the local economy, but rather sees a slight shift in location of businesses but no significant reduction in economic activity within a town that has a by-pass (Thompson, Miller and Roenker, 2001). Analysis also
showed that there were no significant negative implications on overall employment, or population. Moreover, it was determined that a by-pass may actually boost employment growth, but re-allocate economic activity to other areas. This is echoed in the finding of retail establishments relocating to a by-pass, in order to maintain, or increase its exposure to traffic. The study also found that the sampled population did not experience any negative effects from a bypass and were generally in favour (Thompson et al, 2001). Some concerns that did arise were related to environmental impacts, such as increased industrial pollution, and the loss of agricultural land (Thompson et al, 2001).

Corner and Finchum (2001), who carried out an analysis of 14 small towns in Oklahoma that have been impacted by a by-pass determined, based on sales tax data, that economic impacts fluctuated based on the type of business. There have been three different types of businesses identified: those that are traffic dependant, traffic related and non-traffic related. Overall size of a town can determine the level of success. Towns with a population less than 2,500 were least successful and most likely to experience a negative effect. Towns that had a population of 2,500 or more, experience negative economic impacts, but were not as significant as those of the small towns.

Chase and Gustavson (2004) prepared a report for the Province of Nova Scotia in which they studied comparable communities that have a similar population size of 2,500 to 7,500 in order to determine the economic impacts of a by-pass. The results were generally consistent across the board and found that there were some short-term impacts on those communities, long term impacts were considered to be minimal or virtually non-existent. Chase and Gustavson point out that the magnitude of these impacts depends on the size, economic structure and characteristics of the town. Small, local businesses may experience a negative economic effect
from the construction of a by-pass, but are considered to be of a temporary nature. The long-term benefits of a by-pass will prove to be offsetting the short-term impacts. The negative impacts of a by-pass can be alleviated if the area has a strong economic base, or if there is a history of the area being a trade center. Also, Chase and Gustavson propose that proper economic development and planning strategies should be implemented to "soften the blow".

The State of Oregon has developed a handbook that explicitly deals with towns that have a highway functioning as the downtown main street (1999). There are a number of typical issues addressed that relate to traffic calming, streetscaping and general traffic concerns. Access is one of these concerns and considered to be a bad feature as too much access would affect the circulation, flow of traffic and potentially add to congestion. The handbook presents concerns, analyses, potential problems and offers several solutions. It provides some economic analysis, cost of congestion, potential liability of traffic related incidents and analysis of focus while travelling at various speeds. The book is a significant source of information on how to address current conditions in a traffic congested, cluttered and visually non-appealing main street of a rural town. This handbook is particularly helpful to address concerns and problems that Hagersville is currently facing and may prove to be a valuable resource especially if a by-pass is not found to be a real possibility in the near future for Hagersville.

6.3. Global Literature

Elias, Hakkert, Plaut and Shiftan (2006) studied the influence of a by-pass on the development of a small town in northern Israel. Various calculations were made to determine the impacts on neighbourhood development and property values. Elias et al. determined that there was a correlation between increasing value of land due to the construction of a by-pass,
thus making certain neighbourhood highly sought after (2006). Furthermore, the study examined the road accident rate, which indicated that the presence of a by-pass has a positive effect on the number of accidents as the trend displays a consistent decline in incidents. According to Elias et al., the impact of a by-pass on a small town in Israel had positive social and economic impacts based on the reduction of accidents and the increased property values (2006).

One of the key objectives from an Australian study was to re-evaluate findings from a 1993 study that focussed on the economic ramifications on small towns that were by-passed (Parolin, 2012). The general conclusion was that negative impacts appear to be reduced over the long-term, which echoes the earlier study from 1993. After the construction of a by-pass, these small communities did suffer from short-term negative influences on the local economy. However, over time, these effects diminished and the towns of Yass and Gunning in particular, transformed into vibrant, growing centres that have significant business. Goulburn, another town that was by-passed, utilized the new road to encourage its tourism industry as well as to increase its role as a regional transportation centre. The study concludes that there are definite economic benefits associated with a by-pass, but these will not be immediate. A positive gain can be anticipated over a longer period of time (Parolin, 2012).

Van Berkel (2013) argues that a by-pass is a virus, as it tends to upset the economic dynamic of a community by relocating a roadway outside its urban boundary, thus leading to the relocation of the commercial and industrial sector. A by-pass, as he sees it, disrupts the social and economic make up of a community as a by-pass effectively would remove the traffic that is needed to create the atmosphere. Van Berkel is interested in the urban design aspect of the potential impact of a by-pass, and provides alternatives that can be incorporated in the existing road and town design, in order to address traffic related concerns. The suggestion of determining
the root causes of the traffic impediment, driving for leisure, commuting to work, or trucking, and then applying a strategy that will create an ideal road design for particular categories of traffic is an interesting approach. The focus of the author is more on the urban design aspect of transportation, rather than addressing the actual traffic concerns. Van Berkel developed the concept as a remedy against the construction of a by-pass, and may prove to be of some value should Hagersville be in need of existing road re-design.

6.4. Conclusions

The literature on impacts of road by-passes is vast as case studies and technical data is widely available from all over the world. The highlighted documentation in this paper only represents a fraction of the information but does provide some valuable insights and conclusions. The general impression of a by-pass on the economy is that there are some short-term economic impacts that can be anticipated after construction. However, these impacts seem to become less prominent as economic development and other opportunities seem to increase. The size of the town, along with the makeup of its economic core may determine the severity of short-term impacts, but overall the experiences in the literature are positive in the long run.

There are also several alternatives that can be applied to the existing situation, should no re-alignment take place. The handbook that was created by the State of Oregon appears to be most suitable as a source of reference, as the physical environment is very similar to that of Hagersville. This handbook proposes a number of remedies and modifications to existing situations that can lead to a successful alteration to the traffic situation in a small rural town.
7. ECONOMIC IMPACT ASSESSMENT

Economic impacts are arguably the most important aspect to take into consideration when proposing a highway by-pass, particularly for a small rural town. The economics of a town, no matter what size can determine its success, or failure. There are a large number of factors that have the ability to change the economic status of, not only Hagersville, but Haldimand county in its entirety. It can be argued that the economic shifts in Haldimand county, due to a by-pass around Hagersville, can have dramatic positive effects on the region. Townsend and Nanticoke did not experience the anticipated growth and the by-pass was never constructed. This may be partially due to the economics of the 1970's when the oil crisis caused a significant negative effect on the United States economy (ActionFortex, 2014), which, in turn, directly affected the Canadian economy as well. Several projects, that were capable to increase economic activity in the area, have been suggested over the years, but never made it beyond a feasibility study.

7.1. The 1973 Oil Crisis

The oil crisis started as a result of an oil embargo on the United States by Arab members of the Organization of Petroleum Exporting Countries (OPEC), after the United States started to re-supply the State of Israel (U.S. Dept. of State, 2014). The United States were very much dependent on foreign oil at that time which caused a drastic upward spike in the price of oil. At the same time, the American Dollar started to slide, and a global recession seemed very likely. Negotiations started to take place to lift the oil embargo, but it was not until a year later that an agreement was struck, and the embargo lifted.
Canadian industry is closely tied to the American economy, particularly the automotive industry. The majority of automobiles sold in the United States in the early 1970's consisted of large, heavy vehicles with big engines. The oil crisis introduced the small 4 cylinder vehicles that were far more efficient, due to less weight and engine size. These vehicles came from foreign production companies in Europe and Japan (Wikipedia, 2014). As such, the North-American auto industry became increasingly exposed to an import market due to the consumer demand for smaller, more efficient vehicles. This automatically led to a decline in the steel requirements for the American product, as the automobile production levels started to slide. When large vehicles were losing popularity, smaller vehicles required less steel to produce, and the North American automobile producers started to lose market share due to imports.

Another important factor to consider is the drop of the American Dollar in value rapidly over the course of the 1970's, partially due to "the Nixon Shock", an economic measure to tackle inflation (Wikipedia, 2014), which made importing from Canada much more expensive. This resulted in the Canadian economy taking a hit, especially in the automotive and steel industry due to the restraints of the American automobile industry and the lesser value of the American Dollar, compared to the Canadian currency. Importing from Canada became too expensive.

The new plant that Stelco was constructing in the late 1960's was completed at exactly the wrong time. The economic changes, due to the oil crisis in 1973, made international trade difficult as demand dropped and prices increased. The plant was, and still is, a state of the art facility with room to expand in order to meet future demand. However, it had no chance of living up to its potential. The subsequent stalling of the developments at Nanticoke in the 1980's led to the demise of Townsend as a major urban center.
7.2. The 1979 Energy Crisis

To make the economic development of Nanticoke more complicated, a second worldwide energy crisis unfolded in 1979. The roots of this energy crisis can also be found in the Middle East, when the Shah of Iran was overthrown. The new leader cut production, prices soared and the United States were thrown into a recession (Sawyers, 2013). This crisis was equally cruel to the auto industry as the cost of oil skyrocketed to close to US $30 (Thorndike, 2005).

North-American consumers continued the switch to import vehicles due to fuel economy and more effective marketing campaign from foreign automobile producers (Wikipedia, 2014). In fact, the push to switch from gas guzzlers to economy vehicles almost occurred overnight, and the North American automobile producers could not fill the demand, as the smaller, more efficient vehicle was largely produced by Japanese companies (Sawyers, 2013). This continuing slide of the American automobile product led to a further reduction in steel requirements from Canada, as the demand could be met in the domestic steel industry and importing became too expensive.

The fact that the cost of importing steel into the U.S. was higher, the drop in steel production in Canada, and Nanticoke in particular, became more obvious. With the anticipated growth at Nanticoke of the steel industry waning and the downward spiral in the manufacturing industry in Ontario, growth had effectively been stalled (Drummond, 2006). This downward trend in the need for steel from Canada, particularly Hamilton and Nanticoke, hampered the massive expansion of steel manufacturing that Stelco had envisioned at Nanticoke.
The chart below is an automobile sales comparison chart for 1979 and 1982, which has been reproduced from a similar chart that appeared in Automotive News magazine (2013), and shows significant decline in unit sales for North American automobile manufacturers.

<table>
<thead>
<tr>
<th></th>
<th>1979 Unit Sales</th>
<th>1978 Unit Sales</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toyota</td>
<td>507,816</td>
<td>441,800</td>
<td>+14.9</td>
</tr>
<tr>
<td>Datsun</td>
<td>472,252</td>
<td>338,096</td>
<td>+39.7</td>
</tr>
<tr>
<td>Honda</td>
<td>353,291</td>
<td>274,876</td>
<td>+28.5</td>
</tr>
<tr>
<td>GM</td>
<td>4,887,281</td>
<td>5,341,700</td>
<td>-8.5</td>
</tr>
<tr>
<td>Ford</td>
<td>2,101,550</td>
<td>2,536,738</td>
<td>-17.2</td>
</tr>
<tr>
<td>Chrysler</td>
<td>909,025</td>
<td>1,087,987</td>
<td>-16.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1982 Unit Sales</th>
<th>1978 Unit Sales</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toyota</td>
<td>527,158</td>
<td>441,800</td>
<td>+19.3</td>
</tr>
<tr>
<td>Datsun</td>
<td>470,246</td>
<td>338,096</td>
<td>+39.1</td>
</tr>
<tr>
<td>Honda</td>
<td>365,865</td>
<td>274,876</td>
<td>+33.1</td>
</tr>
<tr>
<td>GM</td>
<td>3,515,660</td>
<td>5,341,700</td>
<td>-34.2</td>
</tr>
<tr>
<td>Ford</td>
<td>1,345,698</td>
<td>2,536,738</td>
<td>-47.0</td>
</tr>
<tr>
<td>Chrysler</td>
<td>793,930</td>
<td>1,087,987</td>
<td>-27.0</td>
</tr>
</tbody>
</table>

Figure 5: 1979 and 1982 Automobile Sales Comparison

7.3. The Recession of the 1980's

The energy crisis led the way to a full-on global recession in the early 1980's, which was associated with a sharp increase in unemployment, a national average of 10.6% in the United States (Moy, 1985), with the highest U.S. rate recorded in Michigan, the primary hub for the automobile industry (Wikipedia, 2014). The inflation rate was already high due to the prior oil and energy crisis, but soared to a rate of 13.5% by 1980. The United States started its recovery in 1983 and Canada followed shortly after that in 1984 (Wikipedia, 2014).

The recession in Canada was arguably the most severe of the Organization for Economic Cooperation and Development (OECD) members, with unemployment peaking at 12.8% in the
fourth quarter of 1982 (Moy, 1985). After a steady decline throughout 1983, the rate bumped back up to 11.4% in early 1984 only to go back down again by the end of the year (Moy, 1985). Moy further notes that the job creation in the 1980's was not as strong in Canada when compared to the U.S. (1985), thus displaying a trend that was also present at the Nanticoke Stelco plant, where the anticipated growth was not occurring.

The 1980's also experienced a significant shift towards Neo-Liberalism, and the encouragement of free-trade and privatization became predominant in the market economy rationale, which caused soaring interest rates, high unemployment and made competition with foreign markets much stiffer for Nanticoke (Stanford, 2014). Moreover, Neo-Liberalism also saw a dramatic shift since the 1980's from manufacturing to the service industry (Crow and Albo, 2005). The recession of the early 1980's, combined with a shift from manufacturing to service and the increased pressure of the international market, due to an increased interest in free trade, were some of the contributing factors explaining the lack of growth at Stelco and the stalled the growth in Townsend. The minimal growth that may have taken place at the industrial park did not result in enough traffic volume to warrant a by-pass around Hagersville. The entire Townsend project, with its associated realignment of Highway #6 around Hagersville was abandoned in 1985, shortly after the by-pass was completed around Caledonia, located 12 kilometers north of Hagersville.

An unfortunate series of events since the early 1970's has prevented a successful end result for the industrial park at Nanticoke and the affected communities of Hagersville and Townsend. The turmoil in the global economy, shifts in market shares, and demand for steel products as a result of the crisis and recession has reduced the regional plan to a partially completed project and has created some significant transportation issues. Hagersville has become
a bottleneck in the provincial highway system. However, an alternative to a heavy truck nuisance has yet to be found. Hagersville is currently caught in a vicious circle. The Province is not willing to construct a highway by-pass around town, based on current traffic patterns. This traffic might increase if Nanticoke becomes the center of development but this is currently unlikely due to the poor access through Hagersville.

It is crucial to point out that Stelco started construction of the Nanticoke plant in the late 1960's, just prior to the economic meltdown, and was expected to be completed by the 1979-80 (MOH, 1977). Townsend was slated for full scale development in the later part of the 1970's to coincide with the completion of the steel plant. Figure 6, a graph developed by Jim Stanford in 2014, but slightly modified, clearly highlights the drop in national exports in the early and mid-1970's, as well as the early 1980's and how these drops correspond with the large scale developments at Nanticoke and Townsend. Several serious development proposals have been submitted in order to make use of the available lands at Nanticoke, but all have been rejected for peculiar reasons, which will be discussed in the following sections.

7.4. Feasible Proposals

A by-pass proposal has the potential to divide a town based divergent opinions, not to mention the economic interaction between businesses and their target clientele, particularly businesses that rely heavily on drive-by clientele such as gas stations and coffee shops. These
businesses could suffer significant negative effects of a by-pass around a town. However, there are a number of proposals that have been suggested over the last number of years to boost the economic development at Nanticoke. Two have been selected to demonstrate the value each proposal would bring to Haldimand County, and the Province of Ontario. Neither of these proposals has yet been implemented; the commercial ferry service between Nanticoke and Erie, Pennsylvania, and the construction of a nuclear power plant.

These examples are discussed in greater detail to highlight their ability to improve the local economy, but also reiterate the importance of a Highway #6 by-pass around Hagersville. If not constructed, the transportation bottleneck severely hamper the successful implementation of either the commercial ferry service or the proposed nuclear power plant. Both projects would have had the capability to create a substantial economic impact on the community, but are partially dependent on efficient, unobstructed access to the Nanticoke Industrial Park, which is where both these two assets would have been located.

7.4.1. Nanticoke Ferry Service

Private companies have been scoping the north shore of lake Erie for a number of years to determine the feasibility of a potential commercial ferry service that would create a direct route to Ohio in the United States. The service would rely on commercial and industrial truck traffic, which currently account for 88 million dollars per day of international trade between Ontario and Ohio, on a daily basis (Preston, 2009). The majority of these goods are electronics, vehicles, steel and wood products (TEMS, 2003). The ferry service would make it possible to move heavy products, such as steel, vehicles and wood in a more efficient manner, particularly if these products could be transported via rail. The more valuable, but lighter products, such as
electronics, could still be delivered by truck, keeping the transportation costs down as less fuel would be needed to transport a higher valued product. The direct connection with Ohio would be an additional international point of entry which would reduce the overall wait time at the border, while reducing vehicle idling at the same time, making entry more efficient and reduce the overall impact on the environment.

Nanticoke, along with Port Stanley and Port Burwell have all been subject to feasibility studies. Nanticoke was considered first in 2003 due to its ideal location and its distance of 49 kilometers from Erie, Pennsylvania (TEMS, 2003). Nanticoke is centrally located in order to access highways 6 and 24, providing vital connections to Hamilton, Toronto, London, and Kitchener. The possible creation of a commercial ferry service was based on market data which indicated that over US $1 billion was moved between the United States and Canada, of which 60% was hauled by truck (TEMS, 2003). Logistical companies, or shippers, would consider the use of a ferry if there would be a direct net financial benefit to their bottom line; reduced number of driving hours, highway permit fees and tolls, weight and axle limitations on local and provincial roads, the cost of insurance and improved overall delivery reliability of the product (TEMS, 2003).

The proposed location for the ferry terminal at Nanticoke, which is assumed to operate year-round, is within a few blocks of Highway 6 on an existing pier, thus providing convenient access to the Southern Ontario and GTHA region. The existing rail line, once extended, could be used for container shipping purposes as well (TEMS, 2003).

The feasibility study’s preliminary findings have determined that there is a potentially strong market for this type of service, as long as it is a frequent and reliable ferry system. Furthermore, frequency and reliability are critical elements to the success of the system as
shippers rely on these factors to deliver their goods in a timely and efficient manner (TEMS, 2003).

The report concludes with the recommendations of an economic, environmental and financial study to take place in order to develop a concrete implementation plan. Also, it strongly recommends for stakeholders to liaise with the Province of Ontario to implement the necessary improvements to highway #6 in order to make the ferry service successful. (TEMS, 2003). The current status of Highway #6 is deemed inadequate for the volume of anticipated traffic. To this date, the necessary improvements have not been made in order to implement a commercial ferry service, and focus has now shifted to other, small rural towns along the north shore of Lake Erie, to become a host for a commercial ferry service. The State of Ohio has been committed for a number of years to establish a commercial, and possibly passenger service, between Ohio and Ontario and three lakeside communities in Ohio have allocated $30 million dollars in federal funding to demonstrate their commitment to the project (Martin, 2009). Feasibility studies have been carried out for several Ontario lakeside communities, but were eventually all rejected for a multitude of reasons. The fact that American port officials and politicians were enthusiastic and supportive of the project that could have spurred some significant economic benefits for all

Figure 7: Projected ferry crossing
stakeholders, did not benefit the effort to develop a ferry service on the Canadian side of the border (Sonnenberg, 2010). Port Stanley was the latest Ontario community to pursue the ferry service in 2009, only to raise concerns with regard to an increase of truck traffic (Preston, 2009). Both U.S. and Canadian officials were in discussion to realize this service, but the town has explicitly stated that it does not want to see an influx of trucks, as the town wants to focus more on tourism (Associated Press, 2012). In other words, Port Stanley was not a willing host. Instead, attention shifted to Port Burwell, which was willing, but the preliminary study pointed out that there was a speculative business model and provided limited opportunities for the service (Sonnenberg, 2010). Initially the provincial and federal government were eager to support the project in order to motivate economic development, but as governments in Canada changed, the level of excitement diminished to a point where there is not a lot of support left (Kroll, 2010).

It would seem logical that Nanticoke is the ideal location for an international commercial ferry crossing as it is an industrial property, that is sparsely populated, thus the impact on the local population would be minimal, provided there is proper access to the ferry terminal. Also, Haldimand County is a willing host for this potential endeavour.

7.4.2. Nuclear Energy Plant

Nanticoke has also been considered for a nuclear facility, that was to be constructed near the OPG plant by Bruce Power, a private enterprise from Kincardine, Ontario. Bruce power took out an option on a site at Nanticoke in 2008, with the intent to purchase and, on which it would construct a nuclear facility (Bruce Power, 2008). Bruce Power had identified a need for a new facility based on the fact that the current planned amount of power, and that what is needed in the future, showed a gap (Helsdon, 2009). Moreover, the existing Ontario Power Generation
(OPG) coal plant was intended for decommissioning in 2014. A plant at Nanticoke was expected to fill that gap, as it would become a clean energy center that combines nuclear with wind and solar (Helsdon, 2009). The environmental assessment process had already been started and construction was projected for 2012. Nanticoke was considered an ideal sited based on its location, lake access and easy accessible high-voltage transmission lines (Hamilton, 2008).

The location of Nanticoke is similar to that of Bruce Power in Kincardine; on the lakeshore in a low density populated area. It can be assumed that the proposed plant would use the existing hydro grid that OPG was using to transport its energy to the hydro grid. The plant would have created $8 million in local tax revenues, 1,400 employment opportunities, motivate property values to increase and boost the local economy (Helsdon, 2009).

The EA for the project was cancelled in 2009 by the Canadian Environmental Assessment Agency, citing Section 27 of the CEAA that relates to significant adverse effects a project could have on the environment. The Province of Ontario stated that the high cost of constructing the facility was part of its decision not to support the venture (Mittelstaedt, 2009). Also, by that time, there was a significant shift in the electricity market causing a plunge in demand and new facilities were not required to supply the current demand (Mittelstaedt, 2009).
The project had the potential to infuse the local economy with hundreds of jobs and a monetary impact of half a billion dollars (Hamilton, 2008).

7.5 Overall Economic Impact on the Hagersville

The positive financial impacts these facilities would have had on the local community would have been far reaching. The creation of a commercial ferry service would generate a number of temporary construction jobs, complemented with an unspecified number of permanent employment opportunities. The ferry service would have required a crew to operate the service on a daily basis, with a maintenance crew as back up. The economic impacts of such a service would benefit Hagersville, which could have seen increased interest from potential new residents, thus assisting local businesses by increasing their customer base, and the entire region. Certain specific industries could have been contracted to supply, or maintain the ferry service. Local trucking companies, some of which are located in Hagersville, could have been a likely choice for logistical services due to their proximity to the ferry.

The nuclear plant that was proposed and subsequently cancelled would have also provided a large number of temporary construction jobs, and a range of permanent jobs in order to operate the large facility. New people would have moved into the area in order to be closer to work and Haldimand County as a whole could have experience a small housing boom as a result. The cancellation of this plant may have been for economic reasons as it was certainly not based on its proposed location (Hamilton, 2008).

The overall economic impact of both these projects could have made significant positive changes in the area, but the proposals never went beyond an initial feasibility assessment. Bruce Power had identified in their initial assessment that there was no direct link to the proposed site,
and several secondary roads would have to be accessed (Bruce Power, 2008). An increase in traffic, particularly ferry related, would have a significant negative effect on the town of Hagersville, as large volumes of truck traffic would travel through town due to the lack of a bypass. Moreover, both proposals would have benefitted from a realignment of Highway #6 into the Nanticoke park, in order to establish a direct link to the Hagersville hospital, should those services be required and to divert dangerous goods from the town roads, thus reducing the potential dangers of accidents and spills. The initial studies that were produced by Bruce Power indicated that long-term waste storage is to be located at the Bruce County plant, and that materials are to be shipped from Nanticoke to this facility (Bruce Power, 2008). Radio-active waste would be transported through a rural town, and this concern raises once more the importance of a town by-pass.

8. INITIATIVES

Present in-town development and future initiatives are confined to the parameters of the Ontario Planning Act and the 2014 Provincial Policy Statement (PPS). The PPS provides valuable information that could be used to the advantage of the County and its request for a Hagersville by-pass. Haldimand County has been attempting to address the traffic situation using municipal resources and initiatives and a possible creation of an alternative route around Hagersville using the municipal road network is being considered. A municipal alternative would result in potentially less heavy traffic travelling through the downtown core of Hagersville, while maintaining the desired level of drive by traffic that particular businesses depend on.
Streetscaping is utilized in order to discourage heavy truck traffic from the main road in Hagersville and to reduce the use of shortcuts in town.

8.1. 2014 Provincial Policy Statement

A closer examination of the most recent Provincial Policy Statement (PPS) reveals that "Major goods movement facilities and corridors shall be protected for the long term", according to section 1.6.8.2 (2014). This can be interpreted as any projected development that is taking place along a highway corridor is subject to severe scrutiny, in order to determine if the corridor, or any major logistical enterprises, are going to be affected in a negative manner.

An example of such a situation can be found in Hagersville, where a local childcare provider has constructed a new facility to meet growing demand. The property is located along Highway #6, within the urban town limits, using direct access from an existing property. The owner has finished the construction, but is still not able to relocate her business due to the concerns the Ministry of Transportation (MTO) has with regard to the point of access. The business was ready to relocate before the start of the new school year, but has been delayed by several months due to MTO concerns (Donato, 2014). Concern may be related to the number of access points that are located on a provincial highway. In order to maintain, or improve traffic flow, the number of access points should be limited, or reduced if possible. If the highway was realigned around town, the County would have been in charge of the process. A situation like this has a negative impact on the local business which, is forced to maintain a rental agreement, while incurring the cost of the new building. It would be of economic benefit for the County, if Highway #6 was realigned and the old highway was transferred over to the County.
Another crucial element of the PPS are the goals that have been set out to achieve long-term economic prosperity. The two elements that are deemed most important by the Province, as they are mentioned first in section 1.7, are:

a) *promoting opportunities for economic development and community investment-readiness;*

b) *optimizing the long-term availability and use of land, resources, infrastructure, electricity generation facilities and transmission and distribution systems, and public service facilities (PPS, 2014).*

It is interesting to note that these elements relate directly to Nanticoke and Highway #6, but have yet to be implemented. Nanticoke is ready, and has been ready for the last three decades, but the lack of adequate infrastructure is severely hampering the industrial development. There are 4,500 acres ready for development and investment with utilities readily available on site. Generally, all the infrastructure is in place to successfully locate an industrial company to Nanticoke, except a highway to access the property swiftly and without causing a major inconvenience to Hagersville.

### 8.2. Hagersville Streetscaping

As noted previously, Hagersville is at the crossroads of Haldimand Road 20, also known as King Street and classified as an arterial road, and provincial Highway #6. In essence, there are two separate jurisdictions in place with regard to road control and maintenance, but Haldimand County has control of the Highway 6 portion where it passes through Hagersville (GSP, 2011). Streetscaping has been carried out in a number of locations throughout Haldimand County, with the first phase of streetscaping completed in Hagersville in 2012. This phase encompassed the
market square and the main intersection. This work was carried out in order to achieve an attractive, "stronger, more comfortable, and healthier" downtown (GSP, 2011). This process has done nothing to address the heavy traffic situation, but discussions are still on-going to address points of concern within the town limits. One particular case is the offset intersection at Railway Street and Marathon Street, one block north of the main intersection. A coffee shop located on Railway Street creates an area where traffic slows down to turn, or where drivers temporarily park large vehicles, in order to use the service. Some suggestions include 1) the realignment of the intersection so that it meets perpendicular (see Figure 9), 2) center median to reduce conflict points, 3) road narrowing, or 4) control by means of a traffic light (Stantec, 2013). The answer for this particular situation has yet to be found, but available options may address some of the current traffic volume concerns.

Further streetscaping efforts may alter some of the behaviours associated with heavy truck traffic, such as illegal parking, speeding and turning practices, but it does not have the capability to reduce the volume of heavy traffic due to the lack of a viable alternative.

The social purpose of streetscaping is to enhance the community, making it safer and providing a pleasant social interactive area where people feel comfortable in congregating and moving about. The constant presence of heavy traffic does not benefit the streetscaping

Figure 9: Proposed re-alignment
efforts, and may prove to be a destructive force on the beautified core of the town.

8.3. Alternate Route

Recently, an alternate route has been considered and researched by Haldimand County as the province is not intending to by-pass the town anytime soon (Murray, 2013). This may be a solution since MTO's decision not to move forward with a Highway #6 by-pass around the town. The cost for the alternative route would be the responsibility of the County and as such, may not be feasible due to a potential high cost associated with it.

There is also a possibility that truck traffic that is destined for Nanticoke may start using Highway #3 through Cayuga as an alternative in the near future. The bridge at Cayuga was constructed over 80 years ago and has been subject of weight restrictions for a number of years due to its age. A new bridge is currently being constructed, which will be wider than its predecessor and able to withstand the volume and weight of transports. It is slated to be completed in 2015 and may become an alternative for transports travelling from the Hamilton north end to Nanticoke, especially now that the Red Hill Creek Expressway has become a reality as well (Haedrich, 2014). Transports would still have to travel through small rural towns like Binbrook, which is located south of Stoney Creek on the east mountain. In essence, nothing would change, but rather the problem would be transplanted to another small community that does not have an alternate route for heavy traffic. Also, an alternate route through Cayuga may only be hypothetical, and may prove to be completely unfounded.

MTO has recently decided to install traffic lights at the intersection of First Line and Highway 6, due to a large number of vehicles turning to use the gas stations, which are located on the New Credit reserve (Dalimonte, 2014). The installation should be completed in the next
couple of years and may lead the way to implement a strategic truck route alternative around Hagersville. The alternative has already been identified and is suggesting the use of local roads. These will need to be improved so that they are able to handle the volume and weight (see Figure 10). Further adjustments would have to be made to remove the number of turns, possibly through expropriation, to create an alternative that is more efficient than the existing situation. This may pose a challenge, as there are a number of residents on the identified alternative that will need to be consulted and be in favour of the project. Also, the need to control intersections at Haldimand road 9 and 20, as well as Concession 11 and Highway #6 by means of signalization, may be crucial to maintain the efficiency of the proposal. These are all costs that will need to be absorbed by the County. Most importantly, the alternative route has to be more efficient in order to increase usage. Highway #6 is a designated truck route and the alternative route proposed by Haldimand County cannot force truckers to use it. Thus, the success of the alternative is highly speculative.

Figure 10: Possible route of a municipal by-pass
9. CASE STUDIES REVIEW

The economic downturn of the 1980's has had a significant effect on the unemployment figures of rural areas in particular, and has been substantially higher than urban area unemployment (Drabenstott, Henry and Gibson, 1987). Haldimand County has not been immune to these trends, where the failure of Nanticoke translated in lower job creation, less urban development, thus stunting population growth. On the other hand, other than the annoyance heavy traffic brought to the area, nothing has really changed for Hagersville. The examination of the Caledonia, and Mount Hope by-pass will show that there were considerable changes to these communities after a by-pass was constructed.

9.1. Caledonia, Haldimand County

This small town with a population of around 10,000 is situated along both banks of the Grand River. Its history goes back to around the middle of the 19th century, when the area was settled and a bridge was constructed across the river. The road that ran across was initially known as the Hamilton Plank Road as it was constructed out of timbers and logs (MacDonald, 2004), and was renamed in the 1930's to Provincial Highway #6.

The town is the largest urban center in Haldimand County and is considered a popular place to reside for Greater Toronto and Hamilton Area (GTHA) commuters. A variety of large chain stores have locations along Argyle Street, the main street in town and formerly known as Highway #6, which are mixed in with small, local businesses. Some of these businesses had been established before the by-pass was constructed, and have continued to enjoy success after it opened in 1984.
Caledonia has benefitted from the Townsend New Town plan as the by-pass was completed in 1984, just prior to the cancellation of the project (see Figure 11). The by-pass loops around town well before it enters the north side of the urban area and both sides of the town are readily accessible by means of a signal controlled intersection. The old route through town has been transformed into the major shopping district for the town and a multitude of traffic calming measures have been implemented over the years such as signalized intersections and, more recently, intense streetscaping on the north side of the bridge. These modifications have ensured that it takes substantially more time to drive through town in order to re-enter Highway #6 on the south side, thus demonstrating that the by-pass is far more efficient for those that have no need to stop in town.

The goal of the Caledonia by-pass was to reduce the volume of heavy trucks travelling through the town, which was increasing due to the Nanticoke development (Martindale, 2014). The by-pass may have been more pressing in Caledonia because the town is divided by the river, thus reducing the number of alternate routes available as a bridge is needed to cross the river. If some incident would close the bridge in Caledonia, the closest crossing would have been in
York, 8 kilometers downstream. The by-pass around Caledonia resulted in a new bridge being constructed over the Grand River.

Initial investigations, prior to the construction of the by-pass included improvements to the highway between Hamilton and Caledonia in order to address some congestion concerns. MTO adjusted the width of intersections to improve the flow of traffic. If these changes would prove to be successful in handling the increased volume, the proposed Hamilton-Nanticoke expressway would not need to be constructed (Sachem, 1978). This expressway was projected to run from Highway 403 in Hamilton, to Nanticoke, and would be basically a realignment of Highway #6. These improvements made some difference, but proved to be insufficient as the by-pass around Caledonia eventually was constructed. The Grand River Sachem reported that construction was to start in the summer of 1978 and be wrapped up in 1980 (1978). The project was to be phased in over several years depending on traffic patterns and to ensure adequate service between Hamilton and Nanticoke (Sachem, 1978).

During the summer of 1978 it became clear that the project was delayed due to a funding denial from the federal government with regard to the location and construction of CNR rail lines that were meant to transport cargo and raw materials to and from Nanticoke (1978). The lack of funding caused the delay in the overall construction process. The by-pass was eventually constructed in 1981 at a cost of 8.8 million dollars and after two and a half years it finally was providing the much needed traffic relief for the rural town as it was officially opened (Sachem, 1983). From that point onwards, trucks were encouraged to use the town by-pass as this became the official truck route. Signage was installed along the existing route to create awareness of the alternative (Sachem, 1983).
The impact of the heavy traffic prior to the opening of the by-pass was substantial with noise being a major concern. Argyle Street is a busy shopping district, with a dense business cluster. The noise produced by heavy traffic would be amplified due to the distance between structures and made it impossible to have a normal conversation (Martindale, 2014). The air pollution was another added factor that significantly altered a shopping experience. Congestion of traffic and idling vehicles made the overall experience unpleasant. Once the by-pass was in place, the business community of Caledonia seized the moment and initiated a revitalization of the downtown area, as the heavy traffic had dwindled significantly, other than those businesses that relied on deliveries (Martindale, 2014). The business area had improved so much, that new businesses were opening up, and residents were more inclined to spend their money in the local community, due to the peaceful atmosphere, rather than driving to the city for their needs (Sachem, 1984). Overall, the by-pass gave the downtown of Caledonia the much needed relief it needed from heavy truck traffic. The by-pass resulted in an efficient alternative for commercial traffic, while maintaining the direct access for tourists, residents and local commercial traffic. The relocation of heavy traffic also resulted in a successful rejuvenation of the business area, as well as significant improvements in the shopping experience as streetscaping was implemented, as well as renovations to existing businesses and the gentle influx in the establishment of new businesses.

Among the important ingredients to attract a clientele to a by-passed town, are the unique services it has to offer. Caledonia has some national chain stores that are not found elsewhere within the County. Also, established businesses with a specialized service have also continued to flourish. The general consensus of the community was that the by-pass was desperately needed
and the short term costs, which have not been identified due to a lack of data, were outweighed by the long-term benefits.

It is the intention to connect the Hamilton airport link, which was completed in 2004 (Bevers, 2014), with the Caledonia bypass to divert high volumes of traffic from the existing four lane highway between Mount Hope and Caledonia. This project is currently being considered for future study and is recognized by MTO as a project that could "support growth, improve traffic flow and increase safety in southern Ontario" (MTO, 2013). A by-pass around Hagersville, which is consistent with the MTO vision for future transportation needs in Ontario, is regrettably not mentioned.

9.2. Mount Hope, City of Hamilton

Mount Hope is a small village located just south of Hamilton, and is the location of the Hamilton International Airport. It consists of a small number of residences and a few small businesses that cater to the local population, or provide a service within the geographical area. A variety of commercial and light industrial businesses have been established in the latter part of the twentieth century due to the establishment of the airport (GHS, 2007). The airport was first established in 1940 as a Royal Canadian Air Force training facility. It gradually saw its purpose change over time to become an international civilian airport (HIA, 2014). The airport services international locations for both passengers and freight and was established in 1964 as a civil airport (Pryde Schropp McComb, 2011).

Mount Hope has the distinction of having been by-passed twice. The first by-pass was relatively minor and was constructed in the 1950's when automobiles became more prevalent and
the village displayed a lack of adequate space due to the increase of traffic (GHS, 1985). This by-pass was opened in 1957 and veers slightly to the east of the village (see Figure 13).

Up until 2004, Highway #6 ran directly through the City of Hamilton's urban core and was the only route that was available to access the airport. In order to increase accessibility and use of the airport, a major re-alignment of Highway #6 was necessary. The second by-pass was to benefit the international airport. This link can be considered a phase in the Hamilton/Nanticoke expressway, that was intended to connect with Nanticoke in the 1980's. It was opened in 2004 and provides a direct connection from Highway 403 to the Hamilton airport, which has become a major hub for mail delivery services, as well as passenger flights.

Currently, a large portion of the lands surrounding the airport have been rezoned for commercial/industrial purposes and are intended to relate to the business that an airport can bring to Hamilton. It is anticipated that the airport will see significant growth in cargo activity (Pryde Schropp McComb, 2011). The airport is displaying continuing growth in both passenger and cargo, as its catchment area comprises roughly 4.2 million people (Pryde Schropp McComb, 2011). The bypass from Highway 403 was constructed to create better access to the Hamilton airport and to reduce the traffic congestion in Hamilton, by removing a provincial highway from the urban streets of Hamilton.
The lands surrounding the airport are directly accessible from the current Highway #6 by-pass, with an exit to the airport, or at the intersection with Upper James Street, which is a short distance from the newly created airport business park. The City of Hamilton has seized the opportunity to rezone land that abut the airport to encourage industrial development. The current by-pass provides ample service for vehicular traffic and has the option to be widened from 2 lanes to 4, should this be necessary in the future. Noise, congestion and traffic volume concerns have been removed from the urban streets of Hamilton and the village of Mount Hope, as traffic that is destined for the airport, or other areas south of Hamilton, is kept onto provincial highways reducing these concerns. Mount Hope has benefitted tremendously from a by-pass, which has created more opportunities for the existing airport and related businesses.

Mount Hope is distinctly different than Caledonia. The village is home to an international airport, serving a large customer base in Southern Ontario and abroad. Also, it has become a major center for cargo. The main attraction to Mount Hope is the airport and the warplane museum, which is located at the airport. The village does not offer the same unique shopping opportunities that are found in Caledonia, but rather is more service oriented with business ventures like landscaping, limousine and a motel. A good number of these businesses rely on the opportunities from the airport, with a few exceptions. Mount Hope is experiencing some significant residential growth, an increase of almost 60% from 2006 (1,193) to 2011 (1,904) that can most likely be attributed to the new by-pass, which allows fast access to the GTHA (City Data, 2014).

Towns that have been by-passed need to have something within the town that is a point of attraction or interest. Mount Hope has the warplane museum and the airport itself, out of which a large number of related businesses have been established. New residential development was
encouraged due to the direct access to a major Ontario highway, all within a few minutes driving distance. Caledonia offers unique boutique shopping opportunities, in conjunction with nationwide retailers and serves as the major area shopping center for Haldimand County and the 6 Nations and New Credit reserves. Caledonia and Mount Hope are different, but have demonstrated that a by-pass has worked to the advantage of both towns. The economic environment has improved substantially for both towns and the social dynamics are continuing to improve due to residential development, attracting a new demographic, as well as the atmosphere within the town by means of significant streetscaping efforts that encourage social interaction.

The use of a by-pass to alleviate heavy traffic from the downtown corridor of Caledonia has proven successful and motivated the business community to make improvements to the local shopping experience. Air and noise pollution has been greatly improved and the town is experiencing economic growth. New large scale residential development is continuing to take place and the town has greatly reduced the risk of serious accidents that include heavy traffic.

Mount Hope is experiencing a similar trend and has also seen significant residential development. Efficient access to the airport has created new opportunities for the City of Hamilton to grow its industrial sector. Both Caledonia and Mount Hope benefitted from a by-pass and based on these situations, Hagersville could experience similar benefits of a by-pass around town. It is likely that population growth would take place and new business opportunities present itself. A by-pass could have long-term economic benefits for the town itself, and the region.
10. OPTIONS & RECOMMENDATIONS

Hagersville and its traffic woes has a lot of history. A grand, regional plan that was to boost job growth, economic development and the rise of an urban center that was to house 100,000 residents was, to say the least, ambitious. Combine this with a couple of severe energy crises, recessions and a change of consumer behaviour, in order to arrive at the situation Hagersville is in today. No matter how complex the problem is, how many different factors and levels of government are involved, Hagersville has been dealing with enough heavy truck traffic over the last three decades to continue the push for a town by-pass. This by-pass would have to be initiated by the provincial government and there is simply no interest to do so. Based on the historic, and current information, several feasible scenarios can be applied to address the heavy traffic situation in Hagersville.

10.1. Increase Streetscaping

The options include to leave the situation as it is, with heavy traffic continue to travel through the core of town, but develop some traffic calming measures. Traffic calming measures can be integrated into the streetscaping efforts that have been planned for the downtown core. The main intersection has already been accentuated by new pavement and furnishings, but medians, parking bays and road narrowing options could be integrated into the design for future efforts. A combination of streetscaping and traffic calming measures could result in a downtown area that becomes more difficult to navigate for larger vehicles, and the need to slow down becomes a necessary aspect of traffic behaviour. The slower pace, partially due to the acceleration speed of tractor-trailers, combined with the obstacles that are present to reduce
speed, may lead to a significant amount in added travel time. The intense streetscaping may deter large transport trucks from using the corridor through Hagersville, thus looking for an alternate route.

This option does not allow, or limits, future developments within the business core of Hagersville due to the difficulty of delivering products and/or general access. It may actually lead to more congestion. Transport trucks may find an alternate route around the town, without consent from the County, transplanting the problem, and potentially increasing road maintenance costs as the secondary road system is not designed for heavy transports.

The modifications of the current road system by means of streetscaping in Hagersville will certainly help in beautifying the main street, but may not pose a serious solution to the problem of heavy traffic through town. Heavy traffic can be more destructive on infrastructure and would negatively affect all the efforts to spruce up the town, thus adding costs to the maintenance of streetscaping efforts. This option is certainly not the preferred approach to the problem of heavy truck traffic.

10.2. Nanticoke Promotion

Nanticoke can be considered the root of the heavy traffic problem. At the same time, the property offers a wealth of economic opportunities for both Haldimand County and Ontario. It is of significant economic importance to attract new industries to the Nanticoke area as this would increase employment opportunities for the region and potentially provide an increase in construction of residential dwellings, thus boosting the local economy, ensuring a stable and sustainable municipality. An important partnership between the Hamilton International Airport, which sees the majority of its business come from the cargo and freight sector and can service a
global market, and Nanticoke could be developed to encourage economic growth for both parties. Frequent shipments between Nanticoke and the Hamilton airport could become more prevalent and it is strongly encouraged to increase this truck traffic volume so that an alternative access to Nanticoke will need to be considered.

The effective promotion of Nanticoke and the utilization of serviced, heavy industrial lots is dependent on the acquisition of the vacant property by Haldimand County. The land is currently owned by U.S. Steel who may not have the pressing desire to develop the property. U.S. Steel would have the final decision on any proposal. Haldimand County is the stakeholder that would see long term benefits from industrial development, and it is of great importance that U.S. Steel is willing to sell the remainder of the property to Haldimand County, at a fair market value, so that a strategic awareness campaign can be developed to attract new businesses to the industrial park who would become an integral part of the tax base for the County.

Acquisition of the land should be the priority for Haldimand County, followed by a strategic partnership with the Hamilton Airport in order to establish a direct logistical system with a major cargo and freight center. Once these components are in place, the argument for a by-pass around Hagersville becomes more realistic as there are benefits for a number of stakeholders; Hagersville, Haldimand County, future industries, the Hamilton International Airport and the Province of Ontario. This option is one of the preferred options, but should be exercised after an in-depth study is undertaken that assesses the potential, impacts and costs associated with the proposal.
10.3. Provincial By-pass

A by-pass may seem to be the obvious solution to alleviate the heavy truck traffic in Hagersville. It also presents itself as the most logical option if the long term economic benefits are taken into consideration. In the case of Hagersville and Haldimand County, a by-pass would allow less accessible, but valuable land, to become available for development, while at the same time, alleviate the in-town traffic situation.

A direct link can be created between Nanticoke and Mount Hope, by means of a by-pass, that has the ability to promote both the airport and the industries at Nanticoke. Cargo is a big part of the airport, and its close proximity to Nanticoke may translate into more business for the airport, but, moreover increase the service area for businesses located at the industrial park. The most important factor that needs to be considered in the logistical industry is the efficiency and reliability of product delivery. This can be improved substantially if there was a by-pass around Hagersville to directly connect two major industrial, and economically important centers. Therefore a by-pass around Hagersville should be constructed for the following reasons:

1) A by-pass around town would alleviate the heavy traffic from rural town streets, reducing the noise, pollution, vibrations, overall risk of accidents, visibility is increased, the chance of tanker trucks accidents would be minimized or removed all together. A recent example of a devastating industrial event is shown in Figure 13: Lac Mégantic Aftermath.
accident in a small town would be the train derailment in Lac Mégantic (see Figure 13), where 47 people died and the fires and explosions destroyed forty structures and over fifty vehicles (TSB, 2014).

2) The industrial lands at Nanticoke would become directly accessible for large vehicles, potentially reducing valuable travel times, creating the ability to produce higher rates of efficiency for companies.

3) Potential for an international crossing at Nanticoke would alleviate stresses at the Niagara, and Windsor border crossings. This could be a commercial ferry service only and would be beneficial to the Province of Ontario as this would create a new port of entry into Canada, thus potentially increase cross-border trade due to the reduced congestion and wait-times at border crossings.

4) The by-pass would be consistent with the general planning goal of people residing where they are working. Easy and efficient access to a place of business would motivate people to relocate to that area. As a result, economic spin-offs would include a multitude of new businesses that cater to a variety of needs. An increased demand in the local housing market would, potentially increase property values.

5) A by-pass would provide a viable, efficient alternative should there be any road closures due to accidents, constructions, or protests. History has shown a number of serious accidents that have caused significant road closures and delays. Construction also has a tendency to create congestion while protests, which have been taking place generally on the weekends by people from First Nations communities to develop awareness to their causes and concerns, have people scrambling to find alternate routes around the closed off areas. Although
these events are not a regular occurrence, they do cause enough bottlenecks and inconvenience on the travelling public and the local residents when they do happen.

10.4. Municipal Truck By-pass

The designation of an alternative truck route by the County is certainly a feasible option, but one needs to consider that the problem of heavy trucks is transplanted to the outlying area, and will impact residents that live on rural roads, that have been designated as a truck route alternative. The single, most important aspect of this idea, and may ultimately render it useless, is enforcement. Haldimand County certainly can develop a truck route alternative, but because Highway #6 is designed and designated by the province as a truck route, enforcement of a municipal alternative is not possible. The substantial investment in modifying existing rural roads, in order to be capable of handling the capacity of heavy loads, may not be validated in the end. One option that can be considered is the ability to enforce a municipal truck by-pass if the alternative has been recognized by the Province as a viable, safe alternative for truck traffic. This scenario would set a precedent, but may provide some benefits to both Haldimand County and the Province of Ontario.

Heavy traffic would be diverted from the main street in Hagersville, which is the ultimate goal. This would re-locate a potential traffic concern to the outlying areas, but would impact a much smaller number of residents, depending on the route that has been selected. There would be some significant costs involved in upgrading certain road sections so that the load capacity is increased. Also, there may be a need to acquire some property, potentially through expropriation, from landowners to reduce the number of turns and stops. The construction of a municipal truck by-pass with the approval of the province as an enforceable truck alternate around town would
be a precedent but could be more cost effective through a cost-sharing partnership between the County and the Province. Cost per kilometer to upgrade roads to truck standards is around 1 million dollars (Vo, 2013), but would provide a unique alternative by redirecting heavy traffic out of Hagersville, without major realignments, and alterations to the rural landscape.

Perhaps the Province of Ontario is able to set a precedent and allow the County to dedicate a municipal truck by-pass that is enforceable, thus reducing the cost of the construction of a by-pass for the province. This proposal may be feasible. The signalled intersection at First Line and Highway #6 could act as a transitional point where a left hand turn could be made to access the alternate route around town. From this point the town limits start, and no heavy traffic would be allowed.

A provincially approved, municipal by-pass could set a precedent for other small rural towns that are in a similar situation. By allowing the use of a municipal road network as a designated truck route, significant costs could be avoided by the Province, as the bulk of the costs and future maintenance would be the responsibility of the municipality. Initial cost-sharing would realize a truck route faster, and show that there is a commitment from both the Province and the County, to spark a renewed interest in the economic potential of Nanticoke.

10.5. Recommendations

A detailed study should be undertaken by the Province of Ontario and Haldimand County to accurately assess the value and implications of improving accessibility to Nanticoke by means of a by-pass around Hagersville. It is important to turn a negative side effect, that of heavy truck traffic, into a positive by evaluating the opportunities that could be seized upon, rather than focussing on the negative aspects of heavy traffic through the town. This detailed study on the
economic benefits and short comings of a by-pass around Hagersville could provide positive views on a regional, and provincial significant asset of Nanticoke which, when developed and accessed properly, can be a major economic engine for the entire province of Ontario, especially if efficient connections could be established between Nanticoke, the Hamilton International Airport and the GTHA.

A second study should be carried out to examine the cost and work involved in creating a municipal by-pass, taking residential concerns, expropriation and Provincial interests into account. The trick in getting heavy traffic to use a non-enforceable by-pass is to minimize the ease of access through town by incorporating significant streetscaping efforts, some of which have already been completed.

11. CONCLUSION

The town of Hagersville in Haldimand County has been the subject of numerous studies that relate to a heavy truck traffic problem. This situation was created when Nanticoke was selected in the 1960's, by then Stelco, for a new, state of the art steel plant. This development was estimated to draw 100,000 people to the area of Haldimand and Norfolk Counties. A coal fired power plant and a oil refinery were also in the construction phase at Nanticoke, adding to the pressure to provide housing and services to the area. Due to a number of economic factors, some of which were beyond the control of the Nanticoke industries and the Ontario government, the demand for steel products dropped, which affected the production expectations at Canadian steel operations, and the projected economic and population boom never materialized. This
resulted in the overall project, which included the new urban center of Townsend, being scrapped in the mid-1980's. Partial realignment of Highway #6, the main road that provided access to Nanticoke, had taken place but was never completed beyond Caledonia. The proposed by-pass around the town of Hagersville never occurred and resulted in the heavy traffic that was destined for Nanticoke, to travel through the small rural town. This traffic has had serious implications on the traffic flow through town, and is a source of air and noise pollution that is being amplified due to the narrow road allowance in the built up area. The risk of accidents has increased as well, due to the extra manoeuvring time that is required for large transports. The ramifications of a hazardous spill within the urban boundary would be amplified due to the close proximity to residents and businesses.

A number of potentially economically significant proposals have been suggested for Nanticoke, but were all ultimately rejected for one reason or another and development has been virtually non-existent at Nanticoke, partially because the property is owned by U.S. Steel, a private enterprise. Private ownership has most likely been hampering the successful development of Nanticoke, and the area could be of significant economic value to Haldimand County and the Province of Ontario, if Haldimand County had ownership, and full control of the property.

Numerous reports and studies have examined the impacts of by-passes on communities and the majority have come to the conclusion that there are certainly a number of short-term impacts that are felt by the local business communities, particularly those that rely on drive by business. However, the long-term benefits outweigh these impacts and small towns generally prosper after some time with rejuvenation and revitalization taking place and new businesses opening up. It is therefore extremely important that strategies and policies are created to reduce the short-term impacts on those businesses that are most dependent on drive by traffic. These can
be identified through community consultation and should be part of the process, if, or when a by-pass is approved for construction.

Haldimand County is at a crossroads with regard to the by-pass issue. The Province has concluded that the traffic volume and destination does not warrant the construction of a by-pass. The County has recognized that there is enough traffic to address the situation and has been exploring the municipal by-pass option. Both stakeholders have a valid point in this case, but only focus on a small aspect of a larger situation. In order for a by-pass to be constructed around Hagersville, major development would have to take place at Nanticoke. This would automatically lead to more heavy traffic on Highway #6 and encourage the construction of a by-pass.

Both municipal and provincial officials have been highlighting a problem with heavy traffic and attempted to find a solution to that without much success. It would be more productive to look at the positive side of the issue. Nanticoke has a significant economic potential that could benefit Ontario as a whole. Haldimand County, in conjunction with the Province, are strongly encouraged to develop a long-term strategy to acquire the privately owned, vacant industrial lands at Nanticoke. It is then imperative that the potential of those lands, with respect to Ontario as a whole, are assessed and address the truck traffic situation by examining the possibility of creating a viable, sustainable point of access to Nanticoke industrial park via a by-pass around Hagersville. Strong partnerships with the Hamilton International Airport and the Erie Pennsylvania Port Authority, would encourage transport and trade in an international capacity, through air, and water cargo services.

Preliminary discussions should be taking place with potential industrial partners, port authorities and freight carriers, to present a comprehensive plan that is outlining the full potential
of Nanticoke. This plan also has to convey the important message of the economic value to Ontario of this endeavour. It is of vital importance to recognize the positive aspects of a bad situation and attempt to improve upon it.

A second study that is evaluating the possibility to establish a municipally owned, and enforced, truck route also needs to be considered and may prove to be the key to unlocking the potential of Nanticoke, perhaps on a temporary basis. Hagersville did not create the current traffic situation, but is certainly at the heart of the problem. Once the heavy traffic is able to circumvent the bottleneck in Hagersville, either through a provincial by-pass, or one that is established using a municipal road network and is enforceable, the opportunities at Nanticoke are plenty full. Nanticoke is ready and has the ability to boost both the economy of Haldimand County and the Province of Ontario.
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