THE LOOMEX GROUP

Municipality of Port Hope Community Risk Assessment

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The Loomex Group
Ontario • Alberta • Quebec
705-775-5022   Loomex.ca

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1.0 Executive Summary

The Loomex Group was contracted to conduct a community risk assessment (CRA) for the Municipality of Port Hope Fire and Emergency Services (Department). The intention of the CRA was to examine public safety risks from a fire services perspective.

The CRA's development process followed the Ontario Fire Marshal and Emergency Management (OFMEM) guidelines. The CRA's development process also benefitted from the valuable insight and information about the risks and potential risks present in the Municipality of Port Hope (Municipality) that were provided by the Department's Fire Chief, Deputy Fire Chief, Fire Prevention Officer, and officers.

The following is a list of considerations that were used to develop Municipality's CRA:

- The Municipality's approximate population is 16,753 residents
- 21 per cent of the Municipality's population is over the age of 55
- The Municipality has nine (9) vulnerable occupancies, including three (3) nursing homes, which require the Department's time and resources to ensure inspections are completed and the required annual fire drills are monitored
- The Municipality has several industrial manufacturing plants that are at high risk; in addition, Cameco Industries has two (2) facilities in the Municipality that provide jobs and economic prosperity to the area, and both facilities house dangerous substances
- The Municipality has several commercial areas, including the downtown area
- The Municipality's building stock is a mixture of residential housing (with single-family dwellings and multi-resident buildings) and commercial and industrial areas within the urban area
- There are three (3) rail lines that run through the southern part of the Municipality that have the potential to cause response issues for the Department
- A review of the past incidents and dollar loss that occurred within the Municipality over the last five (5) years
- A review of the inspections and violations that occurred within the Municipality over the last five (5) years

The first step in the CRA development process was a review of nine (9) community profiles that identified the hazards and risks present to the Municipality. The community profiles that were reviewed are:

- Geography
- Demographics
- Economics
- Building stock
- Critical infrastructure

- Community services
- Public safety response entities
- Past emergency responses and loss history
- Hazards

After the community profiles were reviewed, a risk assessment tool was used to calculate a risk assessment score. The risk assessment score helped to rank the issues, concerns, and risks that are present within the Municipality. The review of the community profiles and risk assessment score also helped The Loomex Group to determine if the Department is meeting the community's expectations and estimate whether the Department is going to be able to continue providing an appropriate level of service for the Municipality in the future.

The final stage of the CRA development process involved creating a risk treatment plan (RTP) for each risk that was identified in the Municipality. The OFMEM Fire Safety Effectiveness Model, known as the "three lines of defence," was one of the guiding principles used to develop the RTPs. The OFMEM model highlights the importance of recognizing the different options that are available for developing community fire safety. In the OFMEM model, the three lines of defence are public education and prevention, fire safety standards and enforcement and emergency response, and they are defined as follows:

1. Public education and prevention programs educate the community about how to be responsible for their life safety, such as by preventing fires.

2. Fire safety standards and enforcement programs ensure that all buildings have the required fire protection systems and are maintained so that both the risk and potential severity of a fire are reduced.

3. Emergency response programs ensure that fire departments have well-trained and equipped firefighters who can prevent injury or loss of life and can stop the spread of fires once they occur. Emergency response is the failsafe when either the prevention or code enforcement programs have failed.

Each RTP that was developed as part of the Municipality's CRA focuses on a single risk and provides a recommended strategy/strategies and the appropriate action the Municipality should take to manage that risk; the potential action is either avoidance, mitigation, sharing, transferring, or determining the acceptance of the risk.

The following is a list of the types of risks that have been identified in the Municipality and the recommended treatment plan for each risk. The risks are presented in order of severity, based on their score as determined by the risk assessment tool.

1. Rail Emergency was the highest risk present to the Municipality, with a score of 125 (which is very high). The recommendation is to mitigate the risk by continuing to develop and offer training about rail emergencies and hazardous materials response, ensuring response plans are up to date, and ensuring evacuation plans/procedures in the Municipality's emergency response plan (ERP) are kept up to date.

2. Fire/Explosion in Industrial Occupancy scored a 120. The recommendation is to mitigate the risk by creating a fire prevention policy that includes public education and code enforcement programs. In addition, the Department should pre-plan all high-risk industrial sites as a step that may help to limit damage and help determine what risks firefighters can expect to encounter at these sites in the event of a fire.

3. Weather Event scored a 114. The recommendation is to mitigate the risk by providing public education about emergencies and promoting the importance of having a 72-hour emergency kit ready for use during an emergency.

4. Fire in Residential Occupancy scored a 102. The recommendation is to mitigate the risk by creating a fire prevention policy that includes public education smoke/CO alarm programs.

5. Fire in Vulnerable Occupancy scored a 100. The recommendation is to accept the risk and continue monitoring these locations, ensuring they are compliant with the Fire Protection and Prevention Act.

6. Road/Highway Emergency scored a 90. The recommendation is to transfer the risk to the governing roads authority and have that agency find a potential solution to any road issues that cause motor vehicle accidents in areas that see a high number of collisions.

7. Hazardous Materials Incident scored an 84. The recommendation is to mitigate the risk conduct inspections to assess the risk, conduct pre-planning and training, and continue monitoring, ensuring that the Department is operating at the level expected by Council.

8. Fire in Commercial Occupancy scored an 80. The recommendation is to mitigate the risk by creating a fire prevention policy that includes public education and code enforcement programs. In addition, the Department should pre-plan all commercial occupancies as a step that may help to limit damage and help determine what risks firefighters can expect to encounter at these sites in the event of a fire.

9. Human Health Emergency scored a 72. The recommendation is to accept the risk and continue monitoring.

10. Critical Infrastructure Failure scored a 60. The recommendation is to accept the risk and continue monitoring.

11. Fire in Downtown Core Area scored a 45. The recommendation is to mitigate the risk by creating a fire prevention policy that includes public education and code enforcement programs.

Refer to Figure 1 for a visual depiction of the risks present in the Municipality. The figure also depicts the risk level of each risk.
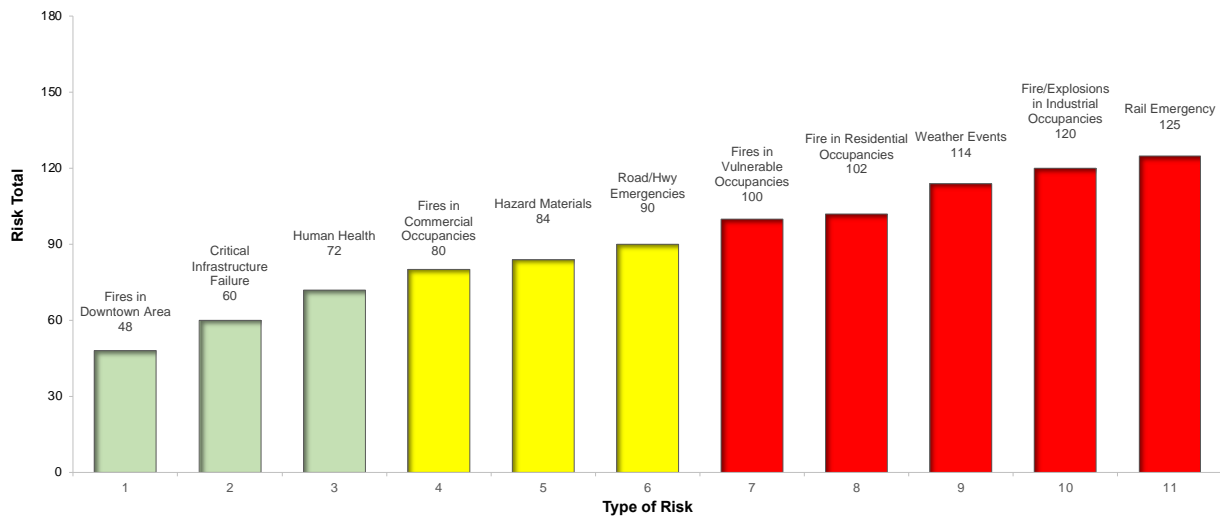
Figure 1: Risks present in Port Hope.

2.0 Introduction

The Loomex Group conducted and produced a CRA for the Municipality that was developed with assistance from the Department. The objective of the CRA was to identify public safety risks and provide informed recommendations about ways in which the Municipality can reduce or mitigate the identified risks. The CRA was completed as part of an overall risk management strategy for the Municipality and is compliant with Ontario Regulation 378/18: Community Risk Assessment (O. Reg. 378/18).

As per O. Reg. 378/18, there are nine (9) mandatory community profiles that must be considered when assessing risks to public safety:

- Geography
- Demographics
- Economics
- Building stock
- Critical infrastructure
- Community services
- Public safety response entities
- Past emergency responses and loss history
- Hazards

After the community profiles have been analyzed, the results from the analyses form the basis of risk treatment plans (RTP). A separate RTP is developed for each public safety risk that is identified in the Municipality and form an integral part of a completed CRA.

The Municipality's CRA is a living document that must remain current. As the Municipality's risks change, the CRA should be updated to reflect these changes. In addition, to remain compliant with O. Reg. 378/18, the Municipality must review its CRA annually, and the entire CRA process must be redone every five (5) years.

2.1   Context

A CRA allows a fire department to make informed decisions about the types and levels of fire protection services that are required in its community based on identified risks. Risk is defined as a measure of likelihood and consequence of an adverse effect on health, property, organizations, environment or the community because of an event, activity, or operation.

Once they are identified, fire and life safety risks are prioritized based on the likelihood of their occurrence and their level of potential impact on the community; fire departments will then utilize this information to determine the best method or methods for managing the risks.

Risk assessments are vital tools that help fire departments ensure that their levels of

service, programs and activities for public fire safety education, fire code inspections and enforcement, and emergency response capabilities directly address the risks in their communities and will effectively prevent and/or mitigate them.

2.2   Approach and Methodology

The Loomex Group assembled a project team (Project Team) that was expressly suited to conduct the CRA for the Municipality. The Project Team was comprised of experts from the Fire Service, each with direct experience managing fire services departments.

The approach and methodology used by The Loomex Group's Project Team for developing the CRA included a background review of documents and maps, direct observation of the environment, and engagement review with the Department's staff. The Project Team also spent time in the community to observe and review all areas and aspects of the Municipality from a first-hand perspective to ensure the accuracy of the identified risks.

While reviewing data is an essential part of developing an informed CRA, stakeholder engagement is also a primary component of the CRA development process, and The Loomex Group prides itself on ensuring that every project the company completes allows the client's needs to be heard and understood. For the Municipality's CRA, stakeholder engagement included sessions with the Department's Fire Chief, Deputy Fire Chief, Fire Prevention Officer, and station officers. The engagement sessions sought to incorporate a community perspective about the Municipality's risks and the ways in which the risks might be mitigated. The insight, perspective, and knowledge of the community and its associated risks that was shared by the Fire Chief and the Fire Prevention Officer during the engagement sessions proved invaluable: the contributions from these Department members were instrumental to the shaping of the final CRA document.

The cumulative information obtained from the review, assessment, and engagement sessions formed the basis of this CRA.

3.0 Ranking Public Safety Risks

3.1   Prioritizing Risks

Ranking and prioritizing risks helps estimate the likelihood of a fire or emergency occurring in the Municipality. Should a fire or emergency event occur, the consequences of not having taken steps to assess community risks can involve the loss of life or property as well as other adverse effects. By ranking the occurrence of identified risks as low, moderate, or high, the Municipality can prioritize and develop mitigation strategies for overall risk management (in the event a fire or other emergency occurs).

Table 1 and Table 2 summarize the various levels of risk (based on the likelihood of occurrence) and the various levels of consequence.

Table 1: Likelihood levels of a risk occurring.

Degree of Likelihood	Specifics
Rare	• May occur in exceptional circumstances • No incidents in the past 15 years
Unlikely	• Could occur at some time, if circumstances significantly change • Five to fifteen (5-15) years since the last incident
Possible	• Might occur under current circumstances • One (1) incident in the past five (5) years
Likely	• Will probably occur at some time under current circumstances • Multiple or recurring incidents in the past five (5) years
Almost Certain	• Expected to occur in most situations unless circumstances change • Multiple or recurring incidents in the past year

Table 2: Consequence levels of a risk.

Degree of Consequence	Specifics
Insignificant	• No life safety issue • Limited value or no property loss • No impact on the local economy • No effect on general living conditions
Minor	• Potential risk to the life safety of residents • Minor property loss • Minimal disruption to business activity • Minimal impact on general living conditions
Moderate	• A threat to the life safety of residents • Moderate property loss • Poses a threat to small local businesses and/or could pose a threat to the quality of the environment
Major	• Potential for a massive loss of life • Would result in significant property damage • Significant threat to large businesses, local economy, and tourism • Impact on the environment that results in a short term, partial evacuation of residents and businesses
Catastrophic	• Significant loss of life • Property damage to a significant portion of the Municipality • Long-term disruption of businesses, local employment, and tourism • Damage to the environment that results in the long-term evacuation of residents and businesses

Figure 2 illustrates the risk level matrix that is used to establish the level of risk in a community. The results of the risk level matrix are based on the likelihood or consequence of each identified risk in the Municipality.

Likelihood		Insignificant	Minor	Moderate	Major	Catastrophic
Almost Certain		Moderate Risk	Moderate Risk	High Risk	High Risk	High Risk
Likely		Moderate Risk	Moderate Risk	Moderate Risk	High Risk	High Risk
Possible		Low Risk	Moderate Risk	Moderate Risk	Moderate Risk	High Risk
Unlikely		Low Risk	Low Risk	Moderate Risk	Moderate Risk	Moderate Risk
Rare		Low Risk	Low Risk	Low Risk	Moderate Risk	Moderate Risk

Consequence

Figure 2: Risk level matrix.

4.0 Community Characteristics Profiles

4.1   Geographic Profile

A geographic profile examines a community's physical features, including the nature and placement of highways, waterways, railways, canyons, bridges, landforms, and wildland-urban interfaces. Physical characteristics may have risk concerns that could potentially impact the access or response time of the fire services.

Figure 3: Map of Port Hope (source: Google Maps).

The Municipality of Port Hope is situated in Northumberland County and has a land area of 278.87 km^2. The Municipality's website describes Port Hope as:

> [A] remarkably picturesque community located on the shore of Lake Ontario and the Northumberland Hills. With a population of approximately 16,500 and thriving business and tourism sectors, our inspiring culture provides our residents and visitors with a diverse range of activities and associations to suit every interest. Our urban/rural heritage figures prominently in our dedication to preserving our past and embracing our future. We have attracted widespread recognition for our historical architecture, including being named "best-preserved Main Street in Ontario," and we feature over 270 designated heritage buildings, the highest number per capita in Canada. Port Hope's vibrant urban core is surrounded by spectacular rambling rural countryside with farmland, rural hamlets and the beautiful Ganaraska Forest […] Residents enjoy numerous opportunities to suit every lifestyle, with a wide variety of employment opportunities, leisure, and education pursuits, all complemented by an exceptional quality of life.

4.2 Geographic Profile Risk

Table 3 outlines the Municipality's geographic features. Based on the knowledge and experience of the Project Team and the Department's staff, this table summarizes the impact that the community's geographic features have on the different components that factor into the delivery of fire services.

Figure 4: Ganaraska River at Port Hope (source: Wikipedia)

Table 3: Geographic profile risks.

Geographic Feature	Training & Equipment Response Impacted?	Response & Travel Times Impacted?	Station Location Impacted?	Response Protocols Impacted?
Provincial Highways	✓	✓	✓	✓
County of Northumberland Roads Network	✓	✓	✓	✓
Municipality of Port Hope Road Network	✓	✓	✓	✓
Private Roads	✓	✓		✓
Bridges		✓		✓

Downtown Core	✔		✔	✔
Ganaraska River	✔	✔		✔
Rolling Farmland	✔	✔	✔	✔
Lake Ontario	✔	✔		✔
CN and CP Railway Line	✔	✔		✔
Hydro Towers/Lines	✔			✔
Airport Flight Path	✔			✔
Forest Areas (Ganaraska)	✔	✔	✔	✔
Wesleyville - O.P.G. Property	✔	✔	✔	✔

4.3   Demographic Profile

A demographic profile considers a community's population in terms of size, distribution, age, gender, cultural background, education level, and socio-economic makeup.

The information used to develop the demographic profile for the Municipality's CRA was primarily provided by the 2016 Statistics Canada (StatCan) Census supplementary information and resources were provided by the Department. It is important to note that the Department must consider and respect the community demographics and target audience that this profile identifies when it develops public safety education and prevention programs, implementation strategies, and resources.

According to the 2016 StatCan Census, the Municipality's population increased by 3.3 per cent during the years of 2011-2016, increasing from 16,214 to 16,753 residents; in addition to its core population, the Municipality has a private school campus that brings transient residents to the area. In total, the Municipality's population density is 60.1 people per square kilometer, and the land area is 278.87 square kilometres.

The Municipality's age demographic is skewed towards older age groups due to the combination of the baby boomer generation and the high number of seniors living facilities in the community. In total, 42.3 per cent of the Municipality's population is over the age of 55, compared to the provincial average of 30.3 per cent.

4.3.1   Age Distribution

Table 4 compares the age distribution in the Municipality to the Province of Ontario (based on the 2016 StatCan Census). This table illustrates that the Municipality surpasses the provincial average in its percentage of residents over the age of 55.

Table 4: Age distribution in the Municipality compared to the Province of Ontario.

Age Range	Port Hope (% of residents)	Ontario (% of residents)
0 to 14 years	17.1%	16.4%
15 to 64 years	61.7%	53.3%
Average age 0 to 64 years	**39.4%**	**34.8%**
55 to 64 years	17.1%	13.6%
65 years and over	25.2%	16.7%
Average age over 65 years	**21.2%**	**15.2%**

4.3.2   Demographic and Cultural Considerations

There are two (2) particularly important factors to consider when developing services and/or programs for a community: language and community culture.

In terms of language, the Municipality is a predominantly English-speaking community, with 92 per cent of its population identifying as English-speaking. Only 7 per cent of the Municipality's population is bilingual in both official languages, and less than 1 per cent speak a language other than English.

In terms of cultural considerations, a large portion of residents in the Municipality are over the age of 55 – a figure that is six (6) per cent higher than the provincial average. Often, it is difficult to introduce fire prevention messaging and education initiatives to an older age group because they have set of established practices and beliefs as well as an unfamiliarity with non-traditional methods of communication (such as social media).

4.3.3   Level of Education

Table 5 compares the level of education between the Municipality's residents and the provincial average. The figures are based on the findings of the 2016 StatCan Census.

Table 5: Education levels of Municipality residents compared to the Province of Ontario.

Education Level	Port Hope (% of residents)	Ontario (% of residents)
No Certificate	16.8%	10.4%
High School	30.9%	24.5%
Some Post-Secondary	52.3%	65.1%

4.3.4 Socio-Economic Makeup

Most of the Municipality's 16,753 residents are above the low-income cut-off point.

As identified in the 2016 StatCan Census, the Municipality's average per person total income in 2015 was $45,906 compared to the provincial average of $47,915. In 2015, the Municipality's average household income was $88,721 compared to the provincial average of $97,856, and the Municipality's unemployment rate was 6.9 per cent compared to provincial average of 7.4 per cent.

4.3.5 Transient and Seasonal Population

There are two (2) main sources that account for the transient and seasonal population in Port Hope. The first source is the number of hotels located throughout the Municipality (the vacancies in which are mostly filled by people who are traveling through the area on Highway 401 and require temporary lodging).

A private school that is located in the area is the second main source of transient/seasonal population in the Municipality. Approximately 244 people live in the school's on-site residences, and several support staff also live on campus.

4.3.6 Other Demographic Considerations

There are nine (9) vulnerable occupancies in the Municipality, including three (3) nursing homes. These occupancies account for 273 residents and 186 staff.

4.4 Demographic Profile Risks

Table 6 outlines the Municipality's demographics and the fire/other emergency risks pertaining to each profile.

Table 6: Port Hope: demographic profile risks.

Demographics Characteristics	Issues/Concerns
Seniors (41.8% of the Municipality's population is over the age of 55)	• Ensuring smoke alarms are working and maintained • Physical concerns about members of this demographic having the ability to exit a building • Education about fire safety and other emergencies (both this group's existing level of knowledge about fire safety and the difficulty of providing new education to them) • The ability of seniors to make their homes fire safe
Children under 14 years (17.1% of the Municipality's population is under the age of 14)	• The level of education about fire safety and other emergencies • COVID-19 impacting fire prevention/education programs
Language	• Less than 1 per cent of residents speak a language other than English and there needs to be a way of ensuring they receive and understand fire safety messages
Education	• 16.8 per cent of the Municipality's population does not have a post-secondary certificate or degree • Ability to understand fire prevention materials • Attitude towards public education
Social Economics	• Lower than average income

Demographics Characteristics	Issues/Concerns
Large Tourist & Seasonal Population	• Language barriers • Difficult to reach this audience with fire safety messaging • Cultural differences that present fire safety concerns • Having little access to local media and messaging or local radio

4.5   Economic Profile

An economic profile examines the areas that influence a community's local economy and the impact(s) caused by the potential loss of those areas when assessing public safety.

The Municipality is at the western edge of the geographic area in the County of Northumberland. Due to its location, the Municipality attracts many people from neighbouring municipalities to the area; most of the people from the neighbouring municipalities come to Port Hope for work, shopping or to utilize recreational facilities.

In terms of employment, there are several manufacturers and government organizations in the Municipality, and these agencies provide a vast number of jobs in the area. The medical services, and other vulnerable occupancies in the Municipality also offer well-paid jobs.

In terms of shopping, there are several big-box department stores and small businesses for retail shopping.

4.5.1   Tourism

Historically, the Municipality has been a tourist attraction for people wanting to experience the "Arts and Culture of the area with its annual festivals, special events and the shows at the Capital Theatre. There are also hotels/bed and breakfasts, and campgrounds for people visiting the scenic geographical area, shopping, or walking in scenic downtown" (www.porthope.ca).

4.5.2   Agriculture

There are numerous farming and agriculture operations, mostly in the northern regions, and are one of the major industries in the Municipality. The farms are primarily family-run that have some livestock but rely on cash cropping as the major source of business. There is a small number of industrial farming operations in the area, and most of these farms are modest outfits, operating on 100 acres of land or less.

4.5.3   Businesses

The charm and heart of the community are in the downtown core, where several annual events take place and tourists are drawn to the local businesses. In addition, the numerous small businesses provide a modest number of jobs in the community.

4.5.4   Industrial Business

There are several industrial and business areas within the Municipality that provide many services and jobs in the area. One of Port Hope's largest industrial businesses has two (2) locations in the Municipality, employing almost 500 people and creating several spin-off jobs.

4.6   Economic Profile Risks

An economic profile risk examines the industrial and/or commercial occupancies that provide significant economic production/jobs in a community. This profile considers the key risks that are present to these types of occupancies as well the likelihood of occurrence, consequence level and overall risk level.

Table 7 illustrates the Municipality's economic profile risks as measured by the likelihood of risk and the consequences that will potentially result after the occurrence of a fire or other emergency. The information in Table 7 was provided by the Department.

Table 7: Economic profile risks.

Identified Occupancy	Key Risk	Likelihood	Consequence	Risk Level
Downtown Core Retail Spaces	Fire	Likely	Major	High
Vulnerable Occupancies	Fire/Explosion	Likely	Major	High
Industrial Occupancies	Fire/Explosion	Possible	Moderate	Moderate
CAMECO Industries	Fire/Explosion	Unlikely	Major	Moderate
Retail Shopping Centres	Fire	Likely	Moderate	Moderate
Residential Occupancies	Fire/Explosion	Likely	Minor	Moderate
Hotels/Motels	Fire	Possible	Moderate	Moderate
Private School Campus	Fire/Explosion	Rare	Moderate	Low

5.0 Community Assets and Services Profiles

5.1   Building Stock

As part of the CRA's development, the Department provided the Project Team with a list of the Municipality's building stock. The types and numbers of building stock found in the Municipality are as follows:

- Group A: 97
- Group B: 15
- Group C: 5,683
- Groups D & E: 106
- Group F: 56

A more detailed summary of the Municipality's building stock is found in Tables 11-16.

To ensure a safer community, the Department should collaborate with the Municipality's Finance Department and Building Department to produce an up-to-date inventory of the type/location of all building stock that is found within the Municipality.

5.2   Residential Housing

The Municipality's residential housing stock primarily consists of single-detached homes, but there are also multi-residential buildings in the community.

According to the 2016 StatCan Census, only 21.7 per cent of the residential units in the Municipality are occupied by renters; most residential units are occupied by the homeowner. Also, according to the 2016 StatCan Census, the average value of a dwelling in the Municipality is lower than the provincial average: the average home value stood at $352,427 compared to the Ontario average of $506,409.

Due to the number of buildings in the Municipality's downtown core that were constructed before the introduction of the Ontario Building Code (OBC) in 1975, there are major concerns about the risks of a fire occurring and causing significant damage. Buildings that were constructed before 1975 do not have the same life safety systems and equipment in place as buildings that were constructed after 1975 (when the OBC's requirements came into effect). The age and type of residential buildings (e.g., multi-residential, single-family dwelling or town/row houses) and commercial buildings (e.g., industrial, retail, and commercial buildings) affect the likelihood and consequences of fire.

Figure 5 illustrates the percentage of buildings constructed in the Municipality in the years since 1960 and compares these numbers with the country-wide percentages over the same time period.

Figure 5: Percentage of dwellings constructed in Port Hope from 1960 to present.
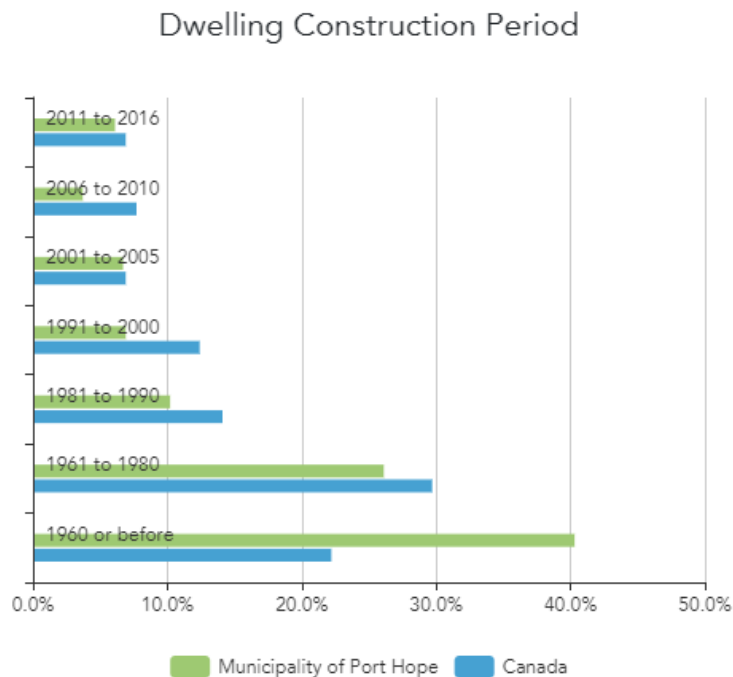
5.3   Inspections

Ontario Regulation 365/13 – Mandatory Assessment of Complaints and Requests for Approval requires that fire safety assessments and inspections be undertaken (if necessary), as directed by the Fire Marshal, for:

1. Every building for which a fire safety complaint is received.

2. Every building for which a request for assistance to comply with the Fire Code is received and the involvement of the Chief Fire Official is required.

Other regulations that govern the type and frequency of building inspections are as follows:

- Ontario Regulation 364/13, Mandatory Inspections – Fire Drill in Vulnerable Occupancy: requires that fire safety assessments, inspections and fire drills be conducted on an annual basis
- Ontario Fire Code Section 2.8.2 – Occupancies that require a Fire Safety Plan: requires the applicable occupancies to have a fire safety plan prepared, approved and implemented in buildings and premises
- Ontario Fire Code Section 2.13 – installations of smoke alarms, and Section 2.16 – installations for carbon monoxide alarms: requires that a smoke/CO program (which includes inspections and enforcement) shall be in place

While building owners must comply with the OBC, there is nothing to trigger compliance inspections unless building permits are required or issued. From a regulatory perspective, the Municipal Building Department is currently maintaining compliance with the OBC.

By performing inspections, the Department is taking steps to actively reduce the risk of fire and fire loss in the community, and by completing these inspections (either by request or complaint), the Department is currently meeting the compliance standard. Some routine inspections, such as those conducted for vulnerable occupancies, were completed by the Department, but a fire prevention policy has not yet been adopted by Port Hope Municipal Council (Council) that sets the standards and frequency of these inspections. Therefore, the Department should consider developing a fire prevention policy for Council's consideration and approval.

The Department currently meets the minimum level of service that is required under the FPPA, but limited staff resources and other commitments impact timely effectiveness.

The Department electronically tracks its inspections and can provide statistics about each inspection that has been completed. The types of statistics that have been tracked include the occupancy type of the building where the inspection occurred and the reason(s) for conducting the inspection, as outlined in Table 8 and Table 9.

Table 8: Inspection by occupancy type.

Year	Commercial	Multi-Residence	Mixed-Use	Vulnerable Occupancies	Other	Totals
2016	0	0	0	1	0	1
2017	0	5	0	5	1	11
2018	0	9	0	26	23	63
2019	24	25	4	14	41	108
2020	23	10	0	14	21	68
Total	52	49	4	60	86	251

Table 9: Reason for inspection.

Year	Complaint	Owner Request	Sale Request	Routine	Licensing	Totals
2016	0	0	0	1	0	1
2017	3	2	0	5	0	10
2018	11	19	0	13	4	47
2019	17	37	4	14	14	86
2020	11	17	4	10	12	54
Total	42	75	8	43	30	198

Table 10 illustrates the results of the inspections, infractions and orders issued. During the CRA development process, it was found that the Fire Prevention Officer has been active in promoting code enforcement to make the community safer. For infractions the Department has moved away for issuing letters to issuing inspection orders as per best practices in the Ontario fire service and the OFMEM guidelines.

Table 10: Violations noted, and notices issued.

Year	Verbal	Letter	FSIR	Order	Total	Resolved
2016	0	0	0	0	0	N/A
2017	0	0	0	0	0	N/A
2018	12	10	16	3	41	32
2019	6	30	13	28	77	50
2020	0	34	12	4	50	36

5.4   Building Stock Profile Risks

A building stock profile risk examines the factors of building use, density, height, area, and a budling's historical or cultural significance to identify issues and concerns. Table 11 to Table 16 summarize the Municipality's building stock, occupancy types, and the associated fire and other emergency issues/concerns for each occupancy type.

Table 11: Group A occupancies – assembly occupancy buildings.

Group A (61)	Issues/Concerns	Likelihood	Consequence	Risk Level
Restaurants (18)	• Unknown if the equipment is serviced • Unknown code compliance • Inspections are conducted only by request or complaint • Ensuring proper maintenance of life safety systems • Could be co-located with other occupancies	Unlikely	Moderate	Moderate

Group A (61)	Issues/Concerns	Likelihood	Consequence	Risk Level
Schools & Colleges (7)	• Assumed to be up to code • Potential for improperly trained supervisory staff • Annual inspections not being completed • Fire safety plans	Unlikely	Moderate	Moderate
Theatres (1)	• Large gatherings of people • Code compliance unknown • Fire safety plan	Rare	Moderate	Low
Community Halls (10)	• Current code compliance is unknown due to limited inspections and fire safety plan • Cooking facility • Could be co-located with other occupancies • Fire safety plan	Rare	Moderate	Low
Arenas and Pools (2)	• Large gatherings of people • Large buildings • Dangerous conditions may be present, such as ammonia, carbon monoxide, and chlorine • Fire safety plan	Rare	Moderate	Low
Libraries (2)	• Large fire load • Combustible materials on site	Rare	Moderate	Low
Funeral Homes (2)	• Gatherings of moderate size • Code compliance unknown	Rare	Minor	Low

Group A (61)	Issues/Concerns	Likelihood	Consequence	Risk Level
Child Care Facilities (5)	• Facility could be located inside a school • Majority are home daycares and not able to be inspected and have risks identified • Fire safety plans	Rare	Minor	Low
Churches (13)	• Retrofit of the buildings • May not meet current Fire Code standards • Large gatherings of people	Rare	Minor	Low
Service Clubs (1)	• No recent inspection	Rare	Minor	Low

Table 12: Group B occupancies – detention/care and treatment buildings.

Group B (10)	Issues/Concerns	Likelihood	Consequence	Risk Level
Nursing Homes (3)	• Large buildings • Vulnerable occupancy, which presents challenges and requires assistance for evacuation • Provincial mandate requiring annual inspections and fire drills • Review of fire safety plan	Possible	Major	Moderate
Municipal Police Stations (1)	• People in cell block • Ammunition storage • Code compliance unknown	Rare	Minor	Low
Group Homes (6)	• Requires annual inspections and fire drills • Vulnerable people with possible mobility/behavioural issues • Assistance required for evacuation • Fire safety plan	Rare	Moderate	Low

Table 13: Group C occupancies – residential buildings.

Group C (5,683)	Issues/Concerns	Likelihood	Consequence	Risk Level
Single-Family Dwellings (5,129)	• The number of homes built before 1975 • Unknown if smoke and carbon monoxide alarms are installed/maintained • The level of public education	Almost Certain	Minor	Moderate
Multi-Unit Residentials (513 units)	• Higher density living • Requirement for more inspections (Retrofit OFC 9.5) • Smoke alarm program • Review of fire safety plans • New building materials for three-storey buildings (lightweight construction) • Building height • Fire safety plan	Likely	Moderate	Moderate
Mixed Occupancies with Residents (30)	• Heritage downtown • Requirement for more inspections • Code compliance required (Retrofit OFC 9.2 & 9.5) • Possible lack of life safety systems and maintenance	Unlikely	Moderate	Moderate

Group C (5,683)	Issues/Concerns	Likelihood	Consequence	Risk Level
Hotels/Motels (5)	• Occupied for long-term accommodation (high risk) • Requirement for more inspections (Retrofit OFC 9.9) • Review of fire safety Plans • Unknown if smoke and carbon monoxide alarms are installed/maintained	Likely	Moderate	Moderate
Licensed B&Bs (3)	• Inspections are required to identify the risks and hazards (Retrofit OFC 9.9)	Unlikely	Insignificant	Low
Retirement Homes (3)	• Medical and mobility issues of occupancy residents • Review of fire safety plans • Fire protection (Retrofit OFC 9.5)	Rare	Moderate	Low

Table 14: Groups D & E occupancies – business/personal services/mercantile buildings.

Groups D & E (176)	Issues/Concerns	Likelihood	Consequence	Risk Level
Retail Businesses (132)	• Improper storage of combustible materials • Requirement for more inspections • Storage of mixed products	Likely	Moderate	Moderate
Retail Lumber Yards (2)	• High hazards and large fire load associated with this type of occupancy • Code compliance unknown (e.g., access, etc.)	Possible	Major	Moderate
Retail Service Stations (6)	• Combustible fuels • Code compliance unknown	Rare	Moderate	Low
Medical Facilities (17)	• Inspections are required to identify the hazards and risks that are present	Rare	Minor	Low
Car Dealerships (5)	• High hazards associated with this type of occupancy • Code compliance unknown	Rare	Moderate	Low
Office Buildings (14)	• Potential improper storage/housekeeping of combustible materials • Number of people in buildings • Code compliance unknown	Rare	Minor	Low

Table 15: Group F occupancies – hazardous industrial buildings.

Group F (122)	Issues/Concerns	Likelihood	Consequence	Risk Level
Industrial Properties (97)	• Hazardous materials • Flammable and combustible materials • Lack of fire protection (not required by Fire Code) • Large buildings/design of buildings • Fire load • Number of people in buildings • Inspections are required to identify the hazards and risks that are present	Unlikely	Major	Moderate
Warehousing (7)	• Large buildings • Large amounts of product on site • Mixed chemical products • Combustible materials • Excessive fire load • Code compliance required	Rare	Moderate	Low
Vehicle Repair Shops (18)	• High hazards associated with this type of occupancy • Code compliance unknown	Rare	Moderate	Low

Table 16: Other occupancies or non-occupancies.

Other	Issues/Concerns	Likelihood	Consequence	Risk Level
Occupancies Not Classified	• Rural occupancies such as livestock and storage facilities • Inspections are required to determine the use of buildings in this occupancy type	Unlikely	Moderate	Moderate
Non-Occupancies	• Ganaraska Forest	Likely	Minor	Low

5.5   Critical Infrastructure (CI) Profile

A critical infrastructure profile examines the capabilities and limitations of critical infrastructure, including electricity distribution, water distribution, telecommunications, hospitals, and critical buildings and services. These facilities and services contribute to the interconnected networks, services, and systems that meet vital human needs, sustain the economy, and protect public safety and security.

The presence/availability and infrastructure capacity of CI could significantly impact such things as dispatch, communications, suppression operations, overall health care, or transportation for the community. These factors may also present unique risk concerns because of their size or design.

Consideration of critical infrastructure helps to set priorities and develop strategies for addressing risk concerns in the community, including public safety education, fire prevention, and emergency response pre-planning.

Table 17 summarizes the types of CI that are present in the Municipality and the fire and other emergency issues/concerns pertaining to each type. The information for the CI review was provided by the Municipality's ERP and its Community Emergency Management Coordinator (CEMC).

Table 17: Critical infrastructure profile risk.

Critical Infrastructure	Observations/Issues/Concerns
Electricity Distribution	• Elexicon Energy is providing services throughout the urban area • Hydro One provides power to rural areas • There have been power outages in the area every year; however, their duration is short (less than 24 hours) • Major power outages occurred in 1998, 2003, and 2013 • Large transmission lines and towers for the distribution of hydro generation • Distribution is mainly above ground
Water Distribution	• The Municipality has a water distribution system in the urban area • Fire hydrants located in the urban area • Water flow concerns in areas of the Municipality • Possibility of water main breaks • Chemical spill • Boil water advisory

Critical Infrastructure	Observations/Issues/Concerns
	• SCADA system malfunction
Stormwater	• Localized flooding
Wastewater	• The Municipality provides wastewater services • Electrical fires • Rescue • Pumping station malfunction
Radio Communication	• County-wide system hosted by the city of Peterborough • Firefighter paging notification and the Municipality's Roads Department share tower services (NB: this is currently under review for tower relocation)
Telecommunications	• Cell service is available in most parts of the Municipality; however, there are some concerns in other areas • Landlines are available in the regions from Bell Canada • Bell lines above ground in some areas
Municipal Buildings, Fire Stations and Roads Department	• Three (3) fire stations • Joint Operations Center • Fuel pumps at the Joint Operations Center
Municipality Administration Building/Emergency Operation Centre (EOC)	• The administration building for the Municipality • Site for Council meetings • The primary EOC is the Canton HUB Facility (currently under review); alternate EOC is the Port Hope Police Station and Joint Operations Center
Community Shelters/Arenas	• Jack Burger Sports Complex (evacuation centre for emergencies) • Operating for extended periods of time • Resources for large evacuation

Critical Infrastructure	Observations/Issues/Concerns
Medical Care Facilities	• Vulnerable people • Compressed gases • Biohazard • Doctor offices (medical centres) in the area
Municipal Police Station	• Possible people in cell block • Ammunition
CN, CP & VIA Railway	• Hazardous materials transported by rail • Transportation accident • Fires on railway property • Passenger train
Paramedic Station	• No concerns
Transportation. Provincial County, and Municipal Roads and Bridges	• Transportation vehicle incidents • Local access to home, work, and recreation • Bridge closures • Long detours are possible
Private roads	• Access to local properties • Road standards • Maintenance of roadway (including during the winter)
Airport	• Transportation accidents • Flight path over the Municipality's rural area
Natural Gas Transmission and Distribution	• Main high-pressure Enbridge pipeline • Evacuation • Fires • Leaks • Disruption in service to residential and commercial use
911 Communication	• Answered in North Bay OPP • Landlines being damaged

Critical Infrastructure	Observations/Issues/Concerns
	• Outages
Central Ambulance Communication center	• Dispatch center is in the municipality of Lindsay
Transfer Stations	• Hazardous materials incidents • Fires

5.6   Community Services Profile

A community services profile examines the types of services and capabilities that are provided by other entities in the community. The presence/absence and the potential abilities of other agencies, organizations, or associations to provide services may help mitigate the impact of the emergencies to which the Department responds. These community services can also potentially reduce risks to public safety by providing a means of delivering public education and prevention programs.

Table 18 summarizes the community service agencies (and their respective services) that may be able to assist to the Department when the Department is responding to emergencies.

Table 18: Community services profile risks.

Service Agency	Assistance Provided	Issues & Concerns
Education School Boards	• Schools are large assembly occupancies that can provide evacuation space and warming/cooling centres • Schools are essential for fire & life safety education programs	COVID-19 pandemic may prevent access to schools.
Health Unit	• Provides vulnerable persons with access to public education • Provides advice and services for exposed firefighters	COVID-19 pandemic may affect support and programs.
Service Clubs	• Service groups run fundraisers to assist community interest groups, such as providing fire prevention resources for	COVID-19 pandemic may affect support and programs.

Service Agency	Assistance Provided	Issues & Concerns
	distribution to the public	
Faith-Based Groups	• There are churches in various parts of the community that may provide support for those who experience a loss caused by an incident	COVID-19 pandemic may affect support and programs.
Red Cross	• Red Cross services could be activated to support the community during a large-scale emergency and may be able to assist with temporary shelter for someone that has experienced a fire in their residence	COVID-19 pandemic may affect support and programs.
Social Services	• A partner with many community service agencies and organizations that could assist in the delivery of fire & life safety education	COVID-19 pandemic may affect community programs.
Victim Services	• Able to provide immediate on-site crisis and trauma service: they can help with urgent practical matters or locate and help arrange other services and resources • Victim services can be activated through the police and/or the Department	No issues.
Meals on Wheels	• Access to residents requiring assistance for meals	No issues.

5.7   Public Safety Response Profile

A public safety response profile examines the types of incidents that have been responded to by entities other than the Department and the response capabilities of these other entities. Examples of other entities include police and paramedic services; these entities are public safety response agencies that are tasked with (or asked to help with) an emergency response.

A public safety response profile also has the potential to contribute to an understanding of incident-related data. The data that is gathered from non-Department public safety response entities can provide insight into potential interdependencies of the Department as well as the mutual benefit of establishing a tiered/joint response to a public safety

risk/emergency. Furthermore, the data that is gained from this profile can also be used to identify opportunities for risk treatment options that are based on the concept of shared responsibilities. Examples of shared services are addressed below.

Fire Department Mutual Aid System

Mutual aid is an agreement that is made between emergency responders. The terms of a mutual aid agreement stipulate how and the degree to which assistance from across jurisdictional boundaries will be coordinated in the event of an emergency. For example, an emergency may occur in a community (such as a disaster or a multiple-alarm fire) and the nature of that emergency may exceed the resource capabilities of the local emergency services responder/provider – if such an event occurs, the affected community can activate its mutual aid agreement and be lent assistance by the neighbouring emergency services entities. The concept of mutual aid agreements is approved by the Ontario Fire Marshal's Office.

The Department is part of the Northumberland Mutual Aid system.

Automatic Aid and Fire Protection Service Agreements

An automatic aid program is designed in such a way as to ensure assistance from the closest available resource is available to provide assistance in the event of an emergency. An automatic aid agreement operates on a day-to-day basis, irrespective of municipal boundaries.

The Department currently has a reciprocal automatic aid agreement with the Municipality of Clarington for responses on the 401 and a first response agreement with the Municipality of Kawartha Lakes and Cavan-Monaghan for the Ganaraska Forest. In addition, there is a service level agreement with Cameco as part of their licensing agreement with the Canadian Nuclear Safety Commission.

Police Services

The Municipality of Port Hope Police Service operates within urban limits, and the Ontario Provincial Police (OPP) provides service to the rural areas of the Municipality as well as along Highway 401. The Canadian National Railway and Canadian Pacific Railway police services provide policing for any incidents that occur on their rail lines.

Emergency Medical Services

The Northumberland Paramedic Services provides emergency healthcare to Northumberland County residents and visitors. There is a tiered response agreement between Northumberland County and the Port Hope Fire Services that makes provisions for emergency medical care being available for the Municipality's residents and visitors.

911

The 911 Public Emergency Reporting Service provides civic address information to emergency responders. 911 calls are answered at an OPP communications centre located in the city of North Bay. The city of Peterborough provides the fire communications for the Department.

Roads

The Province of Ontario, Northumberland County, and the Port Hope Public Works Department provide roadway maintenance services to the area in and around the Municipality. Winter and other road maintenance are vital to the delivery of fire protection services. The Department also has private roads at their disposal, but these roads are not maintained to any standards.

Table 19 summarizes the above information and outlines the Municipality's public safety response agencies and the associated risks faced by the Department when its staff respond to an emergency.

Table 19: Public safety response agencies in the Municipality.

Response Agency	Incidents Responded to	Role at Incident	Issues/ Concerns
Port Hope Police Service & OPP	• Fires • Sudden deaths • Motor vehicle collisions	• Traffic control • Assist with investigations • Required to investigate motor vehicle collisions, sudden deaths, and criminal activity	No issues.
Ontario Fire Marshal Office & Emergency Management (OFMEM)	• Fires/Explosions • Large-scale emergencies	• Investigate explosions and fires that meet the FPPA criteria • Assist police with investigations • Provide advice during a large-scale emergency, if needed • Provide limited equipment for large emergencies	Delayed response time when required.

Response Agency	Incidents Responded to	Role at Incident	Issues/ Concerns
Hydro One/Lakeland Power	• Fires • Downed wires • Electrical fires in transformer stations	• Isolate electrical services • Repair poles and electrical distribution equipment	Long response for crews. Lengthy outages during storms.
Technical Safety Standards Association (TSSA)	• Fires • Carbon monoxide emergency • Elevator emergencies	• Assist with investigations • Provide training	Ensuring firefighters have awareness training for fuel or elevator incidents. Delayed response when required.
Enbridge Gas	• Gas leaks • Carbon monoxide emergencies	• Assist in carbon monoxide investigations • Shut off gas services • Repair gas lines and assist with leaks	Delayed response.
Ministry of Natural Resources and Forestry	• Flooding • Forest fires	• Assist with forecasting flooding • Provide flooding modelling • Control water flow • Firefighting in forested areas	No issues.
Northumberland Paramedic Services	• Fires • Medical emergencies	• Provide treatment • Transport patients or firefighters to a medical facility • Monitor firefighter health at fire scenes	No issues.

Response Agency	Incidents Responded to	Role at Incident	Issues/ Concerns
Ministry of Environment	• Hazardous spills • Hazardous materials incidents response	• Order cleanup of the spill site • Assist with controlling spills and releases of substances	No issues.
CN/CP Rail Police	• Rail incidents, including spills and accidents	• Investigate rail incidents	Delayed response.
Haliburton, Kawartha, Pine Ridge District Health Unit	• Domestic water incidents • Health investigations • Response advice for health emergencies	• Boiling water advisories • Assist with health issues • Exposure investigations	No issues.
Ministry of Transportation	• Fires • Motor vehicle collisions	• Road closures/detours • Winter operations • Road maintenance	No issues.
Port Hope Engineering and Public Works	• Fires • Motor vehicle collisions	• Road closures/detours • Winter operations • Road maintenance	No issues.

6.0 Incident Data

6.1 Past Event and Loss History

A past event and loss history profile examines the emergency responses that have occurred in a community over the past five (5) years. This profile includes an analysis of:

1. The number and types of emergency responses, injuries, deaths, and dollar losses.

2. The evaluation of previous response data. This evaluation helps to identify circumstances and behaviours that may assist in making an informed decision on fire protection services delivery.

Table 20 to Table 24 summarize the Municipality's past event and loss history for the years of 2016-2020.

Table 20: 2016 Municipal fire losses, death, injuries and causes.

Occupancy Class	Fires	$ Loss	Injuries	Deaths	Cause
Group A: Assembly	0	0	0	0	
Group B: Detention, Care, and Treatment	0	0	0	0	
Group C: Residential	14	237,000	7	0	• Cooking • Smoking • Ignition source • Undetermined
Groups D & E: Business & Personal Service/Mercantile	0	0	0	0	
Group F: Industrial	1	0	0	0	• Undetermined
Other					
Totals	**15**	**237,000**	**7**	**0**	

Table 21: 2017 Municipal fire losses, death, injuries and causes.

Occupancy Class	Fires	$ Loss	Injuries	Deaths	Cause
Group A: Assembly	0	0	0		
Group B: Detention, Care, and Treatment	1	1,000	0	0	• Undetermined
Group C: Residential	13	158,500	1	0	• Ignition source • Electrical • Maintenance deficiency
Groups D & E: Business & Personal Service/Mercantile	0	0	0	0	
Group F: Industrial	2	0	0	0	• Undetermined
Other					
Totals	**16**	**159,500**	**1**	**0**	

Table 22: 2018 Municipal fire losses, death, injuries and causes.

Occupancy Class	Fires	$ Loss	Injuries	Deaths	Cause
Group A: Assembly	1	500	0	0	• Suspected arson
Group B: Detention, Care, and Treatment	1	0	0	0	• Ignition source
Group C: Residential	16	1,808,499	2	0	• Electrical • Ignition source • Suspected arson • Maintenance deficiency
Groups D & E: Business & Personal Service/Mercantile	1	150,000	0	0	• Electrical
Group F: Industrial	3	10	0	0	• Ignition source
Other					
Totals	**22**	**1,959,007**	**2**	**0**	

Table 23: 2019 Municipal fire losses, death, injuries and causes.

Occupancy Class	Fires	$ Loss	Injuries	Deaths	Cause
Group A: Assembly	3	20,000	0	0	• Undetermined • Maintenance deficiency
Group B: Detention, Care, and Treatment	0	0	0	0	
Group C: Residential	12	482,000	2	0	• Undetermined • Ignition source • Suspected arson
Groups D & E: Business & Personal Service/Mercantile	1	500	0	0	• Mechanical failure
Group F: Industrial	0	0	0	0	
Other					
Totals	**16**	**502,500**	**2**	**0**	

Table 24: 2020 Municipal fire losses, death, injuries and causes.

Occupancy Class	Fires	$ Loss	Injuries	Deaths	Cause
Group A: Assembly	0	0	0	0	
Group B: Detention, Care, and Treatment	0	0	0	0	
Group C: Residential	8	587,000	0	0	• Ignition source • Electrical • Maintenance deficiency
Groups D & E: Business & Personal Service/Mercantile	0	0	0	0	
Group F: Industrial	1	150	0	0	• Maintenance deficiency
Other					
Totals	**9**	**587,150**	**0**	**0**	

6.2   Department Statistics

Table 25 illustrates the total number of emergencies that occurred in the Municipality in the years 2016-2020. The statistics for this table were provided by the Department. It is important to note that the number of responses is significantly lower in 2020 due to the COVID-19 pandemic.

Table 25: Total number of emergency responses in the Municipality (2016-2020).

Year	2016	2017	2018	2019	2020
Responses	802	805	909	849	593
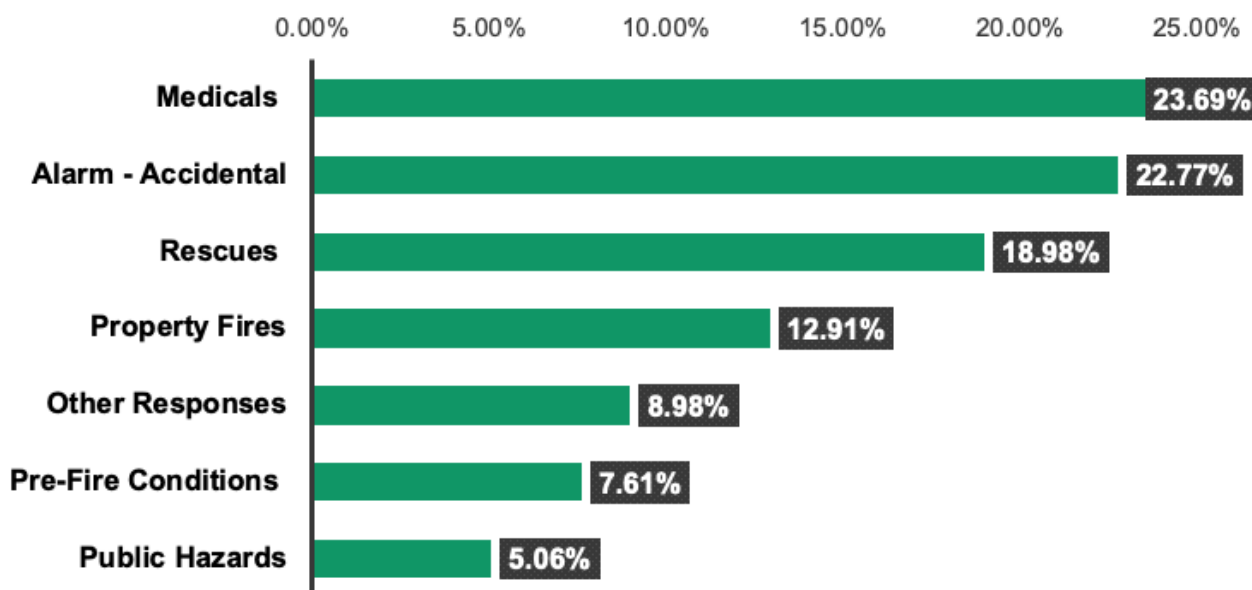
Figure 6: Service call types and percentages for the years 2016-2020.

The Department responded to a total of 2,971 calls over the last five (5) years, with 12.91 per cent of those responses being responses to fires. Upon review of the Department's response statistics, medicals were found to be the cause for most of the Department's responses, accounting for 23.69 per cent of the Department's total responses from the years 2016-2020. A complete list of the service calls made by the Department during the years 2016-2020, ranked in order of frequency (as a percentage), is illustrated in Figure 6.

Table 26 illustrates the types of fire responses made by the Department for the years 2016-2020, and Table 27 shows the structure fire loss by property class.

Table 26: Types of fire responses made by the Department for the years 2016-2020.

Year	Loss Fires Structures	Loss Fires Other	Loss Fires Vehicles	No Loss Fires	Non-Fire Calls
2016	9	1	1	11	539
2017	6	0	4	11	256
2018	8	0	2	24	512
2019	22	0	0	10	572
2020	9	0	0	4	593

Table 27: Municipality structure fires loss by property class for the years 2016-2020.

Year	Group A	Group B	Group C	Group D&E	Group F	Total Loss Yearly
2016	0	0	14	0	1	$237,000
2017	0	1	13	0	0	$159,500
2018	1	1	16	1	3	$1,959,007
2019	3	0	12	1	0	$502,500
2020	0	0	8	0	1	$587,150
Total Loss						**$3,445,157**

6.3   Response Times

There are several components that must be factored together when trying to measure response times in a municipality. Of these components, it is important to note that fire cannot control all aspects of response time; rather, it is a combination of controllable and uncontrollable components that must be considered when trying to measure response time.

For example, with improved technology and fully compliant National Fire Protection Association (NFPA) communications service, the initial call to dispatch time is a controllable component in the response time equation because the time involved at this stage can be decreased because of utilizing technology.

Conversely, the assembly time for a volunteer fire service is a non-controllable component because there is no guarantee about how many people will be on hand to respond to an emergency call or how close the people responding to the call will be to the emergency site.

Travel time is another non-controllable component of response time because travel time is

solely dependent upon the location of the call for service and the type of road network that is available to connect a responder to the emergency scene.

Table 28 summarizes the main components that affect response time to the scene of an emergency.

Table 28: Factors that affect response time.

Component of Response Time	Definition	Controllable or Non-Controllable
Initial Call to Dispatch Time	The time from when the call was received by the dispatch center to the time notification is sent to the fire station.	Controllable
Assembly Time	The time from when the fire station is notified to the time the responding vehicle leaves the station.	Non-Controllable
Travel Time	The time from when the responding vehicle leaves the station to the time it arrives on scene.	Non-Controllable
On-Scene Time	Total time after all controllable and non-controllable components are added together.	

In large urban centers that have full-time firefighters and multiple stations, response times are frequently in the range of five to eight (5-8) minutes. In rural areas, response times are often 10 to 20 minutes, depending on the size of the municipality, number and location of fire stations, road network, etc.

Being able to measure the response time(s) for all emergencies that involve a structure fire is critical because the sooner first responders arrive at the incident, the better their chances for saving lives and limiting property damage. The time/temperature curve chart illustrated in Figure 7 demonstrates the growth rate of fire over time. This chart highlights the importance of having a prompt response time to limit the loss of life and property.

The growth of a fire is heat-generated and is dependent upon fuel and air supply. Once the temperature in a room ablaze reaches approximately 1000º F (590º C), a flashover will occur in the entire room within 6-10 minutes or less. Since the risk of loss of life and property significantly increases following a flashover, the sooner the responding fire department can begin fire suppression, the greater the chance for successfully protecting people and property. Having appropriate response time and firefighter intervention helps increase the chance for any endangered lives to be rescued and improves fire control before a flashover can occur.
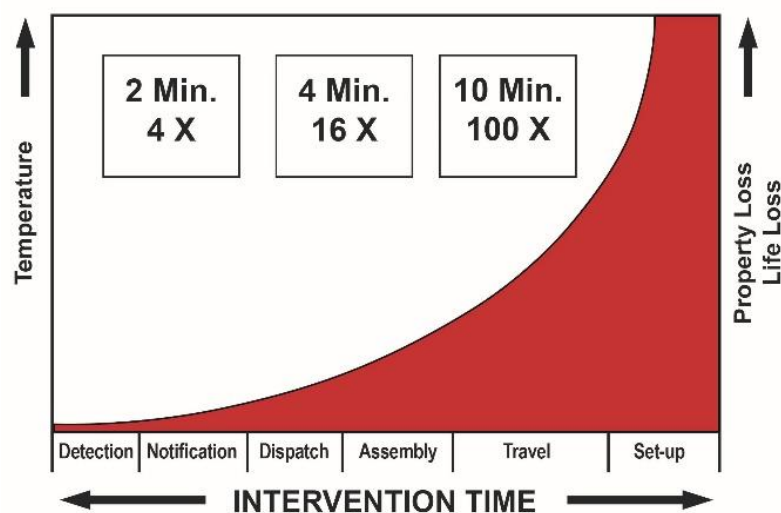
Figure 7: Time/Temperature relationship.

An analysis of the Department's response times found that a combined overall average response time for all three (3) stations for the years 2016-2020 was 8.29 minutes. Individual average station response times are as follows:

- Station 1 (Port Hope): 7.25 minutes
- Station 2 (Welcome): 13.34 minutes
- Station 3 (Garden Hill): 11.12 minutes

6.4   Resource Deployment

Determining the number of firefighters that are required for adequate resource deployment has been an ongoing concern for municipalities. In recent years, the provincial government has influenced the decision-making process for fire department staffing through both the Occupational Health and Safety Act (OHSA) and the Fire Protection and Prevention Act. Under the former, the employer (the Municipality and Council) has responsibilities to protect employees from workplace injuries or death, provide employee training, and provide competent supervisors.

Another resource that can help a fire department determine an appropriate number of staff is the effective fireground staffing model (EFSM). The EFSM was developed by the Office of the Fire Marshal in the 1990s and was part of a comprehensive fire safety model that identified seven (7) sub-models which directly impact fire protection, as indicated in Figure 8. The EFSM has proven to be a valuable tool and it is now widely used across Ontario.
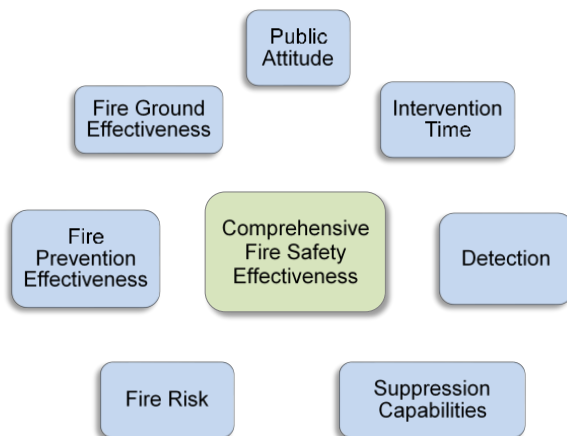
Figure 8: Comprehensive fire safety effectiveness model.

Table 29 applies the method of the EFSM and illustrates the minimum number of firefighters that are required to perform the critical tasks at a single-family home fire.

Table 29: Using the effective fire ground staffing model for a single-family home fire.

Critical Tasks	# of Firefighters Required
Incident Commander	1
First Arriving Pump Operator	1
Fire Attack Sector	2
Search & Rescue	2
Support and Back-up	2
Ground Ladder/Ventilation	2
First Arriving Ladder or Second Arriving Pump Operator	1
Rapid Intervention Team	2
Total	**13**

Table 30 expands upon the critical tasks listed above and illustrates the number of additional firefighters that are required to provide water supply for a fire in a non-hydrant area.

Table 30: Additional firefighters required to provide water in non-hydrant areas.

Critical Tasks	# of Firefighters Required
Water Supply	4
Water Fill	2
Total	**6**

7.0 Community Comparison

Ontario Regulation 378/18 came into effect in July 2019. This regulation stipulates that every municipality in the province must complete a community risk assessment, and the risk assessment component of the CRA must be completed no later than July 1, 2024.

At this time, there is not enough information available to conduct a thorough community comparison for the Municipality; however, because O. Reg. 378/18 requires a municipality to review its CRA annually, this section of the document can be updated at a later date.

8.0 Understanding Hazards: Risk Analysis and Evaluation

A hazards profile examines a community's hazards, including natural hazards and those caused by humans and technology. The likelihood/risk of these hazards occurring was thoroughly examined – by considering the results of each profile discussed in the previous sections of this document – as the Department may be expected to respond to such events should they take place.

Based on consultation with the Municipality's CEMC and information contained within the Municipality's ERP, the top-five risks present to Port Hope are:

1. Energy Emergency (during the summer and winter months)
2. Floods
3. Hazardous Materials Incident
4. Severe Weather (such as tornadoes)
5. Human Health Emergencies

The risk analysis profile predominantly uses past events and the community's loss history to determine the likelihood of an event happening in the future, but other factors can also influence the likelihood scoring; these additional factors stem from the other community profiles that are discussed in this document.

The next factor that must be considered in a hazards profile is consequence. Consequence scoring is based on eight (8) categories:

- Life safety
- Evacuation
- Psycho-social
- Property damage
- Critical infrastructure
- Environmental
- Economic
- Reputational/legal

The final component of the hazards profile is the total risk scoring. Total risk scoring is determined by taking a hazard likelihood score and multiplying it by its consequence score.

The risk scoring methodology that was used to determine the risks for the Municipality can be found in Appendix D.

Table 31 outlines the details of the Municipality's risk assessment, including the definition of and threat level of each identified risk. The information in this table is based on the methodology found in Appendix D.

Table 31: Risk assessment for the Municipality.

Hazard	Definition	Risk Total (L x C)	Level of Risk
Railway Emergency	• Hazardous materials spills caused by train/locomotive derailment; may cause environmental contamination • Explosion: A sudden conversion of potential energy into kinetic energy resulting in a sudden, violent release of gas(es) under pressure • Fire: Uncontrolled and or potentially destructive burning caused by the ignition of fuel or material, combined with oxygen, which gives off heat and light, with or without an open flame • Passenger train derailment	125	Very High
Fire/Explosion in Industrial Occupancy	• Explosion: A sudden conversion of potential energy into kinetic energy resulting in a sudden, violent release of gas(es) under pressure • Fire: Uncontrolled and/or potentially destructive burning caused by the ignition of fuel or material that, when combined with oxygen, gives off heat and light, with or without an open flame	120	High
Weather Event	• Weather events pertain to a wide range of events such as ice storms, tornadoes, windstorms, hail, etc.	108	High
Fire in Residential Occupancy	• Fire: Uncontrolled and/or potentially destructive burning caused by the ignition of fuel or material that, when combined with oxygen, gives off heat and light, with or without an open flame (in residential occupancies such as single-family dwellings to multi-occupant residential	102	High

Hazard	Definition	Risk Total (L x C)	Level of Risk
	buildings/apartment buildings)		
Fire in Vulnerable Occupancy	• Fire: Uncontrolled and/or potentially destructive burning caused by the ignition of fuel or material that, combined with oxygen, gives off heat and light, with or without an open flame (in residential buildings such as assisted living homes, seniors homes, and group homes)	100	Moderate
Road and Highway Emergency	• Fire: Increased traffic volume throughout the Municipality and provincial highways; transportation of hazardous materials within the Municipality and urban areas • Increase in motor vehicle collisions	90	Moderate
Hazardous Materials Incident	• The unintentional release of a material that is hazardous to humans, animals, plants or the environment due to its explosive, flammable, combustible, corrosive, oxidizing, toxic, infectious or radioactive properties	84	Moderate
Fire in Commercial Occupancy	• Fire: Uncontrolled and/or potentially destructive burning caused by the ignition of fuel or material that, combined with oxygen, gives off heat and light, with or without an open flame (in commercial buildings where goods or services are sold – such as restaurants, offices, and drug stores – and the downtown core)	80	Moderate
Human Health Emergency	• Health Emergency: Cases of an illness, specific health-related behaviour, or other health-related events that are more than normal expectancy	72	Moderate

Hazard	Definition	Risk Total (L x C)	Level of Risk
Critical Infrastructure Failure	• CI failure occurs when utilities or services cannot be provided due to mechanical breakdowns, weather events or other issues • Critical infrastructure can be water mains, hydro natural gas, buildings, etc.	60	Low
Fire in Downtown Core Area	• Fire: uncontrolled and/or potentially destructive burning caused by the ignition of fuel or material that, combined with oxygen, gives off heat and light, with or without an open flame. In the downtown core area, goods and services are sold and the potential of residential occupancies attached	45	Low

9.0 Risk Assessment to Risk Treatment

There are many ways to address risk. This CRA recommends addressing a given risk by utilizing one of the following five (5) options:

1. Avoid: eliminate the hazard.

2. Mitigate: reduce the likelihood or impact of the risk.

3. Accept: take no action.

4. Transfer: transfer the risk to another party.

5. Share: transfer part of the risk's ownership to another party.

This CRA has assigned one of the preceding options for each public safety risk that was identified as present in the Municipality.

These options lead to strategies that may include developing policy, training, service delivery agreements, resource allocation, and service level changes.

For each of the risks identified in the Municipality, the Department should utilize the associated RTP that is recommended in this CRA. Each RTP is designed to guide the development and establishment of programs and services that can help mitigate the potential impact of each risk.

9.1   Risks to Public Safety: Hazards in the Municipality

Table 32 to Table 42 summarize the hazards present in the Municipality as well as their risk level and administrative and operational risks or concerns. The information contained in these tables is based on the results of the risk scoring methodology. As stated previously, a description of the risk scoring methodology is given in Appendix D.

Table 32: Public safety risk: rail emergency.

Public Safety Risk: Rail Emergency	Risk Level and Score: Very High (125)
Current Treatment/Capability (Current Services Provided)	Administrative and Operational Risks/Concerns
• The Department is trained and can provide a hazardous materials response to the operational level • The Department can provide fire suppression if no hazardous materials are involved	• A rail emergency may cause a closure of Highway 401 and cause traffic concerns in the area • Fires and/or derailments may cause long-lasting environmental issues • Vulnerable occupancies are close to rail lines: if a derailment occurs and evacuation is needed, it could be challenging for the Department as a train derailment or stoppage may cause access issues to some parts of the Municipality, including large business areas • A passenger train derailment has the potential to cause multiple injuries

Table 33: Public safety risk: fire/explosion in industrial occupancy.

Public Safety Risk: Fire/Explosion in Industrial Occupancy	Risk Level and Score: High (120)
Current Treatment/Capability (Current Services Provided)	Administrative and Operational Risks/Concerns
• The Department provides structural firefighting • The Department is trained for hazardous materials response to the operational level	• A comprehensive fire safety inspection program is not in place • A current operational assessment of the Department's capabilities (as part of a risk treatment plan) has not been completed • A fire prevention policy that provides direction to the Department about the frequency inspections need to occur is a legislative requirement but is not currently in place • There are several industrial plants in the Municipality that may have the potential for a fire or explosion • Pre-planning of the industrial occupancies in the Municipality is required to ensure the safety of firefighters and the occupants of the building but has not yet been completed • There are several large buildings with heavy fire loads • Due to the number of people that may be inside manufacturing facilities, there is the concern of large loss of life

Table 34: Public safety risk: weather event.

Public Safety Risk: Weather Event	Risk Level and Score: High (114)
Current Treatment/Capability (Current Services Provided)	Administrative and Operational Risks/Concerns
• The Department responds to weather events, including high winds, tornadoes, snowstorms, and ice storms, which can lead to severe damage to infrastructure, such as hydro lines or fibre optic networks	• A building collapse would require mutual aid assistance • Accessibility around the Municipality may be a challenge during weather events • Initiatives to increase public education on safe practices for heating and other fire risks associated with this type of situation may need to be implemented • Residents not having a 72-hour emergency kit • History has shown blizzards, heavy snow, ice storms and tornado events occur in the area • Climate change is influencing weather events during all seasons

Table 35: Public safety risk: fire in residential occupancy.

Public Safety Risk: Fire in Residential Occupancy	Risk Level and Score: High (102)
Current Treatment/Capability (Current Services Provided)	Administrative and Operational Risks/Concerns
• The Department offers interior fire attack services, public education, and code enforcement • The Department has limited time available to deliver a prevention program that includes fire safety inspections	• A comprehensive fire safety inspection program is not in place • A current operational assessment of the Department's capabilities (as part of risk treatment) has not been conducted • A fire prevention policy that outlines how frequently the Department needs to conduct inspections is required but is not currently in place • Ensuring that the Department is trained to meet the service level that is expected for these types of emergencies • Ensuring the multi-residential occupancies can maintain code compliance and safety planning (verified through inspections) • Limited available resources for conducting inspections

Table 36: Public safety risk: fire in vulnerable occupancy.

Public Safety Risk: Fire in Vulnerable Occupancy	Risk Level and Score: High (100)
Current Treatment/Capability (Current Services Provided)	Administrative and Operational Risks/Concerns
- The Department provides structural firefighting services - The Department provides interior fire rescue services - Under Ontario provincial legislature, the Department is required to conduct annual fire inspections, witness fire drills, and, once these are both completed, forward a report to the Fire Marshal	- Ensuring that the Department is trained to meet the service level that is expected for these types of emergencies - A current operational assessment of the Department's capabilities (as part of risk treatment) has not been conducted - A fire prevention policy that outlines how frequently the Department needs to conduct inspections is required but is not currently in place - Ensuring all violations are documented - Evacuation procedures could be a challenge for larger occupancies - Inspecting these types of occupancies is very time consuming - COVID-19 vaccine policies have reduced staffing levels - The excessive storing of supplies (due to supply shortage) is compromising compliance with Ontario Fire Code regulations

Table 37: Public safety risk: road and highway emergency.

Public Safety Risk: Road and Highway Emergency	Risk Level and Score: Moderate (90)
Current Treatment/Capability (Current Services Provided)	Administrative and Operational Risks/Concerns
• The Department responds to road incidents, such as motor vehicle collisions, and provides fire suppression, hazardous materials, and rescue services	• Need to ensure there is a training plan/program in place for responding to bus and large truck incidents • high volume of traffic on provincial highways • Unknown materials may be transported through the Municipality, including hazardous materials

Table 38: Public safety risk: hazardous materials incident.

Public Safety Risk: Hazardous Materials Incident	Risk Level and Score: Moderate (84)
Current Treatment/Capability (Current Services Provided)	Administrative and Operational Risks/Concerns
• The Department is trained to an operations level for hazardous materials incidents • The Department's role is to activate the required resources that are needed for adequate response and provide incident command until those resources arrive	• The responding agencies may be located at a distance from the scene of an incident and therefore have a considerable travel time before arriving on scene • Because of the risks involved with hazardous materials, the Municipality's adopted Establishing and Regulating Bylaw needs to clearly specify the expectations of the Department when it responds to these types of incidents • The Department needs to review the fire safety plans for some industrial occupancies to determine what emergency response is required at those locations • Need to confirm if adequate time for conducting inspections and pre-planning for these incidents is being given – these are required to ensure the Department can perform the actions that are needed to keep the Municipality's residents safe

Table 39: Public safety risk: fire in commercial occupancy.

Public Safety Risk: Fire in Commercial Occupancy	Risk Level and Score: Moderate (80)
Current Treatment/Capability (Current Services Provided)	Administrative and Operational Risks/Concerns
- The Department offers interior fire attack services, public education, and code enforcement - The Department has limited time available to deliver a prevention program that includes fire and life safety inspections - The Department has hazardous materials training to the operational level	- A comprehensive fire safety inspection program is not currently in place - A current operational assessment of the Department's capabilities (as part of risk treatment) has not been conducted - A fire prevention policy that outlines how frequently the Department needs to conduct inspections is required but is not currently in place - There are several commercial buildings in the Municipality that may have the potential of an explosion or small hazardous materials spill occurring - Pre-planning of the commercial occupancies needs to be conducted: this is required to ensure the safety of firefighters is protected when they respond to an incident at these locations

Table 40: Public safety risk: human health emergency.

Public Safety Risk: Human Health Emergency	**Risk Level and Score: Moderate (72)**
Current Treatment/Capability (Current Services Provided)	Administrative and Operational Risks/Concerns
• The Department may be required to assist paramedic services with providing access to a patient/patients • The Department may be required to provide transportation for patients in areas where the only access is via water • The Department provides rescue services for incidents such as motor vehicle collisions	• Firefighters being exposed to viruses • Ensuring that the Department is trained to meet the service level that is expected for these types of emergencies • Number of staff available to respond when a call comes in • Providing personal protective equipment (PPE) and vaccines, if available

Table 41: Public safety risk: critical infrastructure failure.

Public Safety Risk: Critical Infrastructure Failure	Risk Level and Score: Low (60)
Current Treatment/Capability (Current Services Provided)	Administrative and Operational Risks/Concerns
• The Department responds to some infrastructure failures, such as downed hydro lines and breaks in natural gas lines • The Department provides a safety zone (and evacuation, if necessary) until the proper authorities arrive to isolate or repair the damaged infrastructure	• It may take time for the repair authorities to arrive at the scene • Ensuring that the Department's firefighters are trained to recognize the risk and safety precautions that are needed for these types of incidents • Lengthy power outages can severely affect the Municipality's vulnerable occupancies • Ensuring an adequate level of public education about the importance of having a 72-hour emergency kit

Table 42: Public safety risk: fire in downtown core area.

Public Safety Risk: Fire in Downtown Core Area	Risk Level and Score: Low (45)
Current Treatment/Capability (Current Services Provided)	Administrative and Operational Risks/Concerns
• The Department responds to fires in the downtown core area and provides interior fire attack, public education, and code enforcement programs	• A comprehensive fire safety inspection program is not in place • There is no fire prevention policy in place to guide the Department on the schedule/frequency of inspections • There are limited resources available for the number of inspections that are required

9.2   Risk Treatment Planning Process

After completing the risk analysis, the next step is to identify the risk treatment for each identified public safety risk. The risk treatment process follows an evidence-based approach that more clearly defines the problems, considers outcomes of proposed actions, assesses options, and provides a recommendation to address the identified issues.

Table 43 to Table 53 outline the proposed RTPs for the public safety risks that have been identified in the Municipality.

Table 43: Risk treatment plan: rail emergency.

Public Safety Risk: Rail Emergency	Risk Level and Score: Very High (125)
Determining Appropriate Fire Protection Services	

What evidence is there to support the need for these services?

There have been derailments and fires along the tracks in the past.

Does the current treatment meet community needs/expectations?

Yes. There have not been any issues that would suggest the Department/Municipality is not meeting community needs/expectations.

Does the community have the capability to deliver these services?

Yes. There have not been any issues that would suggest the Department/Municipality is not meeting the community expectations. If a train derailment occurs, the Department and the Municipality would rely on CN/CP Rail to respond, assist, and lead the cleanup. For a significant event, the neighbouring department could assist under the mutual aid agreement.

Is there a better way to make the community safer?

Yes. CN/CP Rail can provide training to the Department about train derailments, identifying the products in the rail cars, and having some emergency pre-plans prepared.

Are there any emerging risks in the community that are not currently treated or cannot be treated by the fire department?

The Department provides hazardous materials response at the operations level. If a derailment occurs, some residents may be in the evacuation area due to the proximity of the rail lines to other areas of the Municipality (e.g., seniors' residences) – this has the potential to tax the Department's resources, but a response to the railway can be

mitigated through mutual aid agreements and provincial agreements.

Risk Treatment Option	Strategies/Actions	Resources	Timeline
Avoid			
Mitigate	• Continue training about rail emergencies and hazardous materials response • Ensure that evacuation plans in the Municipality's ERP are kept up to date • Ensure that response plans are kept up to date		Ongoing
Accept			
Share			
Transfer			

Table 44: Risk treatment plan: fire/explosion in industrial occupancy.

Public Safety Risk: Fire/Explosion in Industrial Occupancy	Risk Level and Score: High (120)

Determining Appropriate Fire Protection Services	

What evidence is there to support the need for these services?

Although Cameco Industries provides their own fire services internally, the Department is expected to assist if there is an incident at one of the Cameco facilities (if required); consequently, there is the risk of significant losses and life safety support.

Does the current treatment meet community needs/expectations?

Yes. There have not been any issues that would suggest the Department/Municipality is not meeting community needs/expectations; however, consistent inspections have not been conducted in these types of buildings.

Does the community have the capability to deliver these services?

The Department may need assistance with some industrial fires, but there is a mutual aid agreement in place with neighbouring departments to have them assist, if needed.

Is there a better way to make the community safer?

Developing a fire prevention policy that includes a standard for public education and code enforcement programs based on the OFMEM three lines of defence can help reduce fire risk. Pre-planning some of the industrial sites may help with limiting the loss and other adverse outcomes of a fire, should it occur.

Are there any emerging risks in the community that are not currently treated or cannot be treated by the fire department?

There may be unidentified emerging risks not currently treated because inspections are not conducted on a routine basis.

Risk Treatment Options	Strategies/Actions	Resources	Timeline
Avoid			
Mitigate	• Create a fire prevention policy that includes procedures for conducting inspections and providing public education	Staff time needed	Two (2) years

	• Pre-plan high-risk industrial sites to help with limiting damage and help firefighters plan for what they can expect to face under fire conditions at these locations		
Accept			
Share			
Transfer			

Table 45: Risk treatment plan: weather event.

Public Safety Risk: Weather Event	Risk Level and Score: High (114)
Determining Appropriate Fire Protection Services	

What evidence is there to support the need for these services?

The Municipality has had extreme weather in the past. There has also been a significant number of storm and tornado warnings in the area.

Does the current treatment meet community needs/expectations?

Yes. There have not been any issues that would suggest the Department/Municipality is not meeting community needs/expectations.

Does the community have the capability to deliver these services?

To date, the Department has been able to provide the required services; however, if a tornado occurs in the Municipality, the Department may require neighbouring fire departments to assist with the incident (made possible through their established mutual aid agreement). The Municipality may also require assistance from the provincial government.

Is there a better way to make the community safer?

Yes. Initiatives for public education about what to do during an emergency and the importance of residents having a 72-hour emergency kit can be developed. The Department has been providing some public education sessions, but they need to be structured on a more routine basis.

Are there any emerging risks in the community that are not currently treated or cannot be treated by the fire department?

None currently.

Risk Treatment Options	Strategies/Actions	Resources	Timeline
Avoid			
Mitigate	• Continue providing public education about emergencies and the importance of having a 72-hour emergency kit prepared.	Staff time needed	Ongoing

Accept			
Share			
Transfer			

Table 46: Risk treatment plan: fire in residential occupancy.

Public Safety Risk: Fire in Residential Occupancy	Risk Level and Score: High (102)

| **Determining Appropriate Fire Protection Services** | |

What evidence is there to support the need for these services?

The Department has responded to an average of 15.75 residential fires in the past four (4) years that have resulted in losses of over $3.2 million.

Does the current treatment meet community needs/expectations?

Yes. There have not been any issues that would suggest the Department/Municipality is not meeting community needs/expectations; however, a targeted public education initiative, including information about a smoke alarm program and fire escape planning, may be required as a means to fortifying continued public safety.

Does the community have the capability to deliver these services?

Yes. Under their established mutual aid agreement, the Department can access additional staff and equipment for an emergency response, if required. However, the Municipality will still need to review their fire prevention programs.

Is there a better way to make the community safer?

Yes. As recommended by the OFMEM, the three lines of defence should be used as the basis for all life safety programs, and the Department should provide enhanced public education and code enforcement for buildings classified as multi-residential occupancies. The Department should also develop and implement a fire prevention policy.

Are there any emerging risks in the community that are not currently treated or cannot be treated by the fire department?

Because inspections are only conducted on a request and complaint basis, there may be emerging risks that are going unidentified and are therefore not currently being treated.

Risk Treatment Options	Strategies/Actions	Resources	Timeline
Avoid			
Mitigate	• Develop and implement a fire prevention policy that includes public education and smoke/CO	Staff time needed	One (1) year

	alarm programs		
Accept			
Share			
Transfer			

Table 47: Risk treatment plan: fire in vulnerable occupancy.

Public Safety Risk: Fire in Vulnerable Occupancy	Risk Level and Score: High (100)

Determining Appropriate Fire Protection Services	

What evidence is there to support the need for these services?

The community has nine (9) vulnerable occupancies.

Does the current treatment meet community needs/expectations?

Yes. There have not been any issues that would suggest the Department/Municipality is not meeting community needs/expectations.

Does the community have the capability to deliver these services?

The Department has been inspecting these occupancies on an annual basis as per the applicable provincial mandate.

Is there a better way to make the community safer?

Going forward, the Department can continue to conduct inspections, witness fire drills, document violations, and monitor any trends.

Are there any emerging risks in the community that are not currently treated or cannot be treated by the fire department?

None currently.

Risk Treatment Options	Strategies/Actions	Resources	Timeline
Avoid			
Mitigate			
Accept	• Continue monitoring to ensure these occupancies are compliant with the FPPA		Ongoing
Share			
Transfer			

Table 48: Risk treatment plan: road and highway emergency.

Public Safety Risk: Road and Highway Emergency	Risk Level and Score: Moderate (90)
Determining Appropriate Fire Protection Services	

What evidence is there to support the need for these services?

Records show that several incidents occur in the Municipality every year that require the Department to respond to motor vehicle collisions and fires. These incidents involve passenger and commercial vehicles.

Does the current treatment meet community needs/expectations?

Yes. There have not been any issues that would suggest the Department/Municipality is not meeting community needs/expectations.

Does the community have the capability to deliver these services?

Yes. The Department can deliver these services, but they may request additional assistance for large-scale or specialized incidents; the additional assistance can be provided through their established mutual aid agreement.

Is there a better way to make the community safer?

While the Department can ensure an adequate response to these emergencies, engaging an engineer to review the road networks for high collision areas may be a solution that will help prevent future incidents from occurring.

Are there any emerging risks in the community that are not currently treated or cannot be treated by the fire department?

None currently.

Risk Treatment Options	Strategies/Actions	Resources	Timeline
Avoid			
Mitigate			
Accept			
Share			
Transfer	• The governing roads authority		

	should conduct research to try and find the solution to issues that cause motor vehicle accidents in high-collision areas.		

Table 49: Risk treatment plan: hazardous materials incident.

Public Safety Risk: Hazardous Materials Incident	Risk Level and Score: Moderate (84)
Determining Appropriate Fire Protection Services	

What evidence is there to support the need for these services?

The Department currently responds to various hazard materials incidents and due to the many industrial buildings in the Municipality, the Department can expect future incidents may occur.

Does the current treatment meet community needs/expectations?

Yes. There have not been any issues that would suggest the Department/Municipality is not meeting community needs/expectations.

Does the community have the capability to deliver these services?

The Department is currently trained to the operations level and can provide rescue and/or cleanup for any hazardous materials incidents; additional assistance for hazardous materials incidents may be obtained from their established mutual aid agreement and/or their agreement with the Province of Ontario. The current Establishing & Regulating Bylaw allows the Department to response to hazardous materials incidents at an awareness level only. The Establishing Regulating Bylaw should be updated to allow the Department to respond at an operations level.

Is there a better way to make the community safer?

Yes. The Department can conduct inspections and formulate pre-planning for industrial sites that are at high risk for hazardous materials incidents.

Are there any emerging risks in the community that are not currently treated or cannot be treated by the fire department?

None currently.

Risk Treatment Options	Strategies/Actions	Resources	Timeline
Avoid			
Mitigate	• Conduct inspections to assess if there are any risks present, conduct pre-planning and training,	Staff time needed	Ongoing

	and continue monitoring		
Accept			
Share			
Transfer			

Table 50: Risk treatment plan: fire in commercial occupancy.

Public Safety Risk: Fire in Commercial Occupancy	Risk Level and Score: Moderate (80)

| **Determining Appropriate Fire Protection Services** | |

What evidence is there to support the need for these services?

There have been multiple fires in the Municipality over the years, and there is the risk of significant losses and life safety support if a fire or fires occur in the future. The Department is providing interior firefighting services as part of its core services.

Does the current treatment meet community needs/expectations?

Yes. There have not been any issues that would suggest the Department/Municipality is not meeting community needs/expectations; however, consistent inspections have not been conducted in these types of buildings.

Does the community have the capability to deliver these services?

The Department may need assistance with some industrial fires – a mutual aid agreement is in place for neighbouring fire departments to assist, if/when needed.

Is there a better way to make the community safer?

Yes. Developing and implementing a fire prevention policy that includes a standard for public education and code enforcement programs based on the OFMEM three lines of defence can help reduce fire risk in the community. Furthermore, pre-planning of the commercial occupancies can help with limiting the damage and outcome of a fire.

Are there any emerging risks in the community that are not currently treated or cannot be treated by the fire department?

Since inspections are not being conducted on a routine basis, there may be emerging risks that are going unidentified and are therefore not currently being treated.

Risk Treatment Options	Strategies/Actions	Resources	Timeline
Avoid			
Mitigate	• Create and implement a fire prevention policy that includes a procedure for conducting public	Staff time required	Two (2) years

	education and code enforcement programs • Pre-plan high-risk commercial sites to help with limiting damage and help firefighters plan for what they can expect to face under fire conditions at these locations		
Accept			
Share			
Transfer			

Table 51: Risk treatment plan: human health emergency.

Public Safety Risk: Human Health Emergency	Risk Level and Score: Moderate (72)

Determining Appropriate Fire Protection Services	

What evidence is there to support the need for these services?

The Department assists the Northumberland Paramedic Service by responding to health emergencies.

Does the current treatment meet community needs/expectations?

Yes. There have not been any issues that would suggest the Department/Municipality is not meeting community needs/expectations.

Does the community have the capability to deliver these services?

Yes. There have not been any issues that would suggest the Department/Municipality is not meeting community needs/expectations; however, there is the possibility that this could change due to staff shortages or if public needs change in the future.

Is there a better way to make the community safer?

The Department follows the recommendations of the local health unit and the Province of Ontario, as they are the leads/authorities for this type of emergency.

Are there any emerging risks in the community that are not currently treated or cannot be treated by the fire department?

None currently.

Risk Treatment Options	Strategies/Actions	Resources	Timeline
Avoid			
Mitigate			
Accept	• Continue monitoring		Ongoing
Share			
Transfer			

Table 52: Risk treatment plan: critical infrastructure failure.

Public Safety Risk: Critical Infrastructure Failure	Risk Level and Score: Low (60)
Determining Appropriate Fire Protection Services	

What evidence is there to support the need for these services?

Over the years, multiple events have occurred in the Municipality where hydro, natural gas, and water mains have failed or have been damaged; this includes a major water main break that occurred in the community within the last year (as of the writing of this CRA).

Does the current treatment meet community needs/expectations?

Yes. There have not been any issues that would suggest the Department/Municipality is not meeting community needs/expectations.

Does the community have the capability to deliver these services?

Yes. There have not been any issues that would suggest the Department/Municipality is not meeting community needs/expectations.

Is there a better way to make the community safer?

Yes. The Department can provide public education and stress the importance of having a 72-hour emergency kit. The Department can provide messaging/communication to the community through social media.

Are there any emerging risks in the community that are not currently treated or cannot be treated by the fire department?

None currently.

Risk Treatment Options	Strategies/Actions	Resources	Timeline
Avoid			
Mitigate			
Accept	• Continue monitoring		Ongoing
Share			

Transfer			

Table 53: Risk treatment plan: fire in downtown core area.

Public Safety Risk: Fire in Downtown Core Area	Risk Level and Score: Low (45)
Determining Appropriate Fire Protection Services	

What evidence is there to support the need for these services?

There have been four (4) structure fires in the Municipality in the past five (5) years.

Does the current treatment meet community needs/expectations?

No. The Municipality/Department has not conducted a consistent number of inspections in these types of buildings.

Does the community have the capability to deliver these services?

No. Due to the many other obligations and services they must provide, the Department does not have the available time that is needed for conducting a consistent number of inspections and ensuring code enforcement.

Is there a better way to make the community safer?

Yes. Developing and implementing a fire prevention policy that includes a standard for public education and code enforcement programs based on the OFMEM three lines of defence can help reduce fire risk in the community.

Are there any emerging risks in the community that are not currently treated or cannot be treated by the fire department?

None currently.

Risk Treatment Options	Strategies/Actions	Resources	Timeline
Avoid			
Mitigate	• Create and implement a fire prevention policy that includes a procedure for conducting public education and code enforcement programs	Staff time required	Three (3) years
Accept			

Share			
Transfer			

9.3   Public Safety Risk Summary

Table 54 lists the top-five leading risks to the Municipality and their recommended RTPs. The scoring methodology that was used to produce the information in this table is summarized in Appendix D.

Table 54: Top-five leading risks in the Municipality and their risk treatment plans.

Leading Risk	Appropriate Level of Service	Risk Treatment
Rail Emergency	Yes	• Continue training about rail emergencies and hazardous materials response • Ensure that evacuation plans in the Municipality's ERP are kept up to date • Ensure that response plans are kept up to date
Fire/Explosion in Industrial Occupancy	Yes	• Create a fire prevention policy that includes procedures for conducting inspections and providing public education • Pre-plan high-risk industrial sites to help with limiting damage and help firefighters plan for what they can expect to face under fire conditions at these locations
Weather Event	Yes	• Continue providing public education about emergencies and the importance of having a 72-hour emergency kit prepared for when needed
Fire in Residential Occupancy	Yes	• Develop and implement a fire prevention policy that includes public education and smoke/CO alarm programs
Fire in Vulnerable Occupancy	Yes	• Continue monitoring to ensure these occupancies are compliant with the FPPA

Appendix A: Resources

The following documents and resources were used to help develop this CRA:

- Fire Protection and Prevention Act, 1997
- Ontario Regulation 213/07: Fire Code
- Ontario Regulation 378/18: Community Risk Assessments
- Statistics Canada. February 8, 2017. Census Profile, 2016 Census. Statistics Canada Catalogue no. 98-316-X2016001. Ottawa. Version updated June 18, 2019. Ottawa.
- Municipality of Port Hope Hazard Identification and Risk Assessment
- Municipality of Port Hope Fire and Emergency Services

Appendix B: Glossary of Terms

There are varying definitions for the terms that pertain to risk assessment and risk management, depending on the specific context to which a term is being applied. For this CRA, the following definitions are used (which are generally aligned with both the Emergency Management Ontario's Glossary of Terms and the Fire Protection and Prevention Act, 1997:

Assessment: The evaluation and interpretation of available information to provide a basis for decision-making.

Ontario Building Code: A set of ordinances or regulations and associated standards intended to control aspects of design, construction, materials, alteration, and occupancy of structures that are necessary to ensure human safety and welfare, including resistance to collapse and damage.

Catastrophe: An emergency of particularly severe proportions.

Community: A generic term that includes both municipalities and First Nations.

Consequence: The outcome of an event or situation expressed qualitatively or quantitatively, being a loss, injury, or disadvantage.

Critical infrastructure: The application of risk management and business continuity management processes and techniques for the purpose of reducing the vulnerabilities of critical infrastructure in both the physical and cyber realms by decreasing the frequency, duration and scope of disruptions and facilitating response and recovery.

Environmental: Harm to human and non-human (i.e., wildlife, fish, and vegetation) species of life and general decline in quality of life within the community or ecosystem due to air/water/soil contamination. The negative consequences of a hazard on the environment, including the soil, water, air and/or plants and animals.

Economic: Disruptions to businesses and financial activities, monetary losses due to impacts from the event and other negative consequences for the community or regional economy. The negative economic consequences of a hazard, including on businesses, industries, or regional economies.

Evacuation: Potential for formal evacuation, shelter-in-place orders, or people stranded.

Fire department (fire services): means a group of firefighters authorized by a municipality, group of municipalities or by an agreement to provide fire protection services.

Hazard: A phenomenon, substance, human activity, or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social

and economic disruption, or environmental damage. These may include natural, technological, or human-caused incidents or some combination of these.

Hazardous material: A substance (gas, liquid or solid) capable of causing harm to people, property, environment, economy and/or services, e.g., a toxic, flammable, or explosive substance.

Life safety: Injuries or loss of life due to community and/or responder exposure to life-threatening situations

Mitigation: Actions taken to reduce the adverse impacts of an emergency or disaster. Such actions may include diversion or containment measures to lessen the impacts of a flood or a spill.

Probability/Likelihood: The likelihood of an event occurring may result in an emergency, disaster, or service disruption.

Property damage: Monetary losses relating to private and public buildings, property content, irreplaceable assets, significant historic/symbolic landmarks, and critical infrastructure.

Psycho-social: Unusual or uncharacteristic behaviours such as mental health issues (e.g., hoarding).

Public education program: A program that provides focused information to a target audience to educate about protective actions to reduce the risk of life and property damage in an emergency.

Reputational: The perception of one or more organizations or jurisdictions in the minds of its stakeholders, the public, and others who are vital to its success.

Risk: The product of the probability of the occurrence of a hazard and its consequences.

Risk assessment: A methodology to determine the nature and extent of risk by analyzing potential hazards and the evaluation of vulnerabilities and consequences.

Appendix C: Public Safety Response Entities for the Municipality of Port Hope

The table in this appendix helps complete the public safety response profile of a CRA, described in O. Reg. 378/18 as "the types of incidents responded to by other entities in the community and those entities' response capabilities." Activation of the appropriate resource(s) and maintaining scene security until that "other entity" arrives are often the only expectations of community response.

Incident/ Response	Public Safety Response Entity	Response Capabilities
Aviation	Ontario Provincial Police (OPP) Port Hope Police	• Provides scene security and conducts search and rescue operations, evidence searches, and investigations under federal and provincial statutes • Integrates into the incident management system (IMS) and can provide logistics support and media relations
	Transportation Safety Board (TSB)	• Investigates air, rail, marine and pipeline occurrences to advance transportation safety and reduce risk
	Canadian Armed Forces - National Search and Rescue	• Coordinates responses and provides search and rescue services in central Canada out of the Joint Rescue Coordination Centre in Trenton
Dam Failure	Dam Owner Local Conservation Authorities	• Administers and implements the Public Safety Measures Plan • Maintains a comprehensive dam inventory that includes the status of the dam and contact information to assist responders if an emergency occurs • Maintain regulatory enforcement related to dam safety

Incident/ Response	Public Safety Response Entity	Response Capabilities
Electrical Outage	Elexicon and Hydro One Networks	• A customer communications centre receives reports of power outages, which generates an outage report • The Ontario Grid Control Centre, which operates the power system, receives the outage report and notifies the appropriate local crew to assess the situation
Fire and Explosion	OFMEM – Fire Investigation Services Technical Standards and Safety Authority (TSSA)	• Investigates and provides consultation services on the cause, origin and circumstances of fires and explosions as per "Fire Marshal Directive 2015-002: Reporting of Fires and Explosions Requiring Investigation" • TSSA investigates non-compliance with codes and regulations related to technology and equipment before and following a related incident
Flood	Ministry of Natural Resources	• Monitors watershed conditions for flood potential and communicates with dam owners to control water flows
Hazardous Materials Incident	Ministry of the Environment, Conservation and Parks (MECP)	• Responds to an occurrence to assess its environmental and health impacts • Ensures legislated responsibilities are met, including tracking and following up on cleanup, providing advice and information about the incident, coordinating agency response (if needed), and initiating government response, when required • Ensures cost recovery takes place for a response

Incident/ Response	Public Safety Response Entity	Response Capabilities
	OFMEM	• An external resource to the community that provides IMS liaisons, logistics and operations support through specialized functions: emergency management field officers, fire investigators, and hazardous materials specialists • The Provincial Emergency Operations Centre may also assist and provide 24/7 service, including monitoring evolving situations, coordinating a provincial response to major emergencies, activating provincial hazard materials response teams, ensuring response coordination in support of the lead ministry, and requesting federal or large-scale assistance as needed
	Police Services	• Road closures, redirection of traffic, and related criminal and provincial investigations • Integrates into the IMS structure and can provide logistical incident support and media relations
Medical Emergency	Emergency Medical Assistance Team Ministry of Health and Long-Term Care (EMAT)	• The Red Cross is available when health resources are significantly stressed by an emergency or major incident • A flexible, modular team of specific medical services and supports for an incident, including up to 56 beds (20 critical care and 36 intermediate care) • Deployable to road-accessible Ontario communities within 24 hours of approval
	Local MOHTLC – Emergency Health Services	• A series of interrelated land and air emergency medical services designed to provide timely response and pre-hospital care

Incident/ Response	Public Safety Response Entity	Response Capabilities
Road and Highway Emergency	Northumberland County	• Manages the Northumberland County road network and can assist with traffic control, road repairs, evacuation planning, and implementation of emergency highway traffic control measures (with the OPP) • Conducts damage assessment of district transportation system and facilities, helps keep roadways open for response, and coordinates contractor equipment/personnel and engineering expertise as needed
	MTO	• Manages the provincial road network and can assist with traffic control and repairs
	Municipality	• Determines and contracts for work to be performed in the local roads area; may provide traffic control and detours of areas
Structural Failure	OFMEM HUSAR and OPP USAR Teams	• Specializes in rescue skills supplemented by search, medical and structural assessment resources in a mobile, highly integrated team • May respond to various incidents, including structural collapse, earthquakes, tornadoes, severe storms, and explosions
	Industry Technical Rescue Teams	

Appendix D: Risk Scoring Methodology

This appendix summarizes the scores for the risks that are present to public safety in the Municipality. The scores are followed by an explanation of the likelihood and consequence categories and levels. This approach mirrors Emergency Management Ontario's Hazard Identification and Risk Assessment (HIRA) methodology; however, there are important differences in the consequences and hazard types to ensure this risk assessment reflects the delivery of fire protection services rather than an emergency management program, which has a slightly different focus.

If Total Score (L x C) are used, the following categories may be used to organize the results:

N/A	Very Low	Low	Moderate	High	Very High	Extreme
0	0-30	31-60	61-90	91-120	121-150	151-180

Hazard Identification & Risk Assessment: All Scores

The following table is a complete summary of the frequency and consequence scores for all hazards assessed during the CRA development process. The risk of a hazard is calculated by multiplying the likelihood score by the consequence score.

	Likelihood Score	Life Safety	Evacuation	Psycho-Social	Property Damage	Critical Infrastructure	Environmental	Economic	Reputational	Score	Risk Total (Likelihood x Consequence)	Level of Risk
Rail Emergency	5	High (9)	High (3)	Moderate (2)	Moderate (2)	Moderate (2)	Moderate (2)	Moderate (2)	High (3)	25	125	Very High
Fire/Explosion in Industrial Occupancy	5	Moderate (6)	High (3)	Moderate (2)	Moderate (2)	Moderate (2)	High (3)	High (3)	High (3)	24	120	High
Weather Event	6	Moderate (6)	Moderate (2)	Moderate (2)	High (2)	High (3)	Moderate (2)	Moderate (2)	None (0)	19	114	High
Fire in Residential Occupancy	6	Moderate (6)	Moderate (2)	Moderate (2)	High (3)	Low (1)	Low (1)	Low (1)	Low (1)	17	102	High
Fire in Vulnerable Occupancy	4	High (9)	High (3)	High (3)	Moderate (2)	Moderate (2)	Low (1)	Moderate (2)	High (3)	25	100	High
Road/Highway Emergency	6	Moderate (6)	Low (1)	Low (1)	Low (1)	Low (1)	Moderate (2)	Low (1)	Moderate (2)	15	90	Moderate
Hazardous Materials Incident	4	Moderate (6)	Moderate (2)	Moderate (2)	Moderate (2)	Moderate (2)	Moderate (2)	High (2)	Moderate (2)	21	84	Moderate
Fire in Commercial Occupancy	4	Moderate (6)	Moderate (2)	Moderate (2)	High (3)	Moderate (2)	Moderate (2)	Moderate (2)	Low (1)	20	80	Moderate
Human Health Emergency	4	High (9)	Low (1)	High (3)	None (0)	Low (1)	None (0)	High (3)	Low (1)	18	72	Moderate
Critical Infrastructure Failure	5	Low (3)	Low (1)	Low (1)	Low (1)	Moderate (2)	Low (1)	Moderate (2)	Low (1)	12	60	Low
Fire in Downtown Core Area	3	Moderate (2)	Moderate (2)	Moderate (2)	Moderate (2)	Moderate (2)	Low (1)	Moderate (2)	Moderate (2)	15	45	Low

Likelihood Overview

The likelihood table below is copied from Emergency Management Ontario's HIRA methodology. This methodology was used for the CRA to help develop the likelihood of an occurrence.

Likelihood	Category	Chance of Occurring	Description
1	Rare	Occurs every 100 years or more.	Less than a 1 per cent chance of occurrence in any year.
2	Very Unlikely	Occurs every 50 – 99 years.	Between a 1-2 per cent chance of occurrence in any year.
3	Unlikely	Occurs every 20 – 49 years.	Between a 2-5 per cent chance of occurrence in any year.
4	Probable	Occurs every 5 – 19 years.	Between a 5-20 per cent chance of occurrence in any year.
5	Likely	Occurs <5 years.	Over 20 per cent chance of occurrence in any year.
6	Certain	The hazard will occur annually.	100 per cent chance of occurrence in any year.

Consequence Overview

Consequences were scored across the eight (8) categories that are described below. The consequences are based on Emergency Management Ontario's HIRA; however, the consequence categories were reduced from 10 to 8 for the CRA, and a heavier overall weighting was given to the "life safety" category to balance the consequences from a front-line emergency response perspective compared to an emergency management program lens.

Scores are calculated as follows:

- High x 3
- Medium x 2
- Low x 1

The maximum score for any category is 3, except for the life safety category. The life safety category has a 3x weight attached to it, and the maximum score for life safety is 9.

	Life Safety	**Evacuation**	**Psychosocial**	**Property Damage**
None (0)	Not likely to result in injuries or fatalities. No life safety issues.	Not likely to result in an evacuation, shelter-in-place orders or people stranded.	Not likely to result in significant impacts to individuals' mental and emotional wellbeing.	Not likely to result in property damage.
Low (1)	Medical treatment required, but no fatalities. Minor treatment or limited hospitalization.	A small or localized portion of the population is evacuated, sheltered-in-place or stranded.	Moderate and/or generally short-term impacts to one or more individuals' mental and emotional wellbeing.	Could cause minor to moderate damage.
Moderate (2)	Extensive injuries, significant hospitalization, and/or a fatality.	A moderate and generally localized portion of the population evacuated, sheltered-in-place or stranded.	Significant impacts to one or several individuals' mental and emotional wellbeing, including long-term impacts.	Localized severe damage.
High (3)	Large number of severe injuries requiring hospitalization and/or multiple fatalities.	A large or widespread portion of the population is evacuated, sheltered-in-place or stranded.	Widespread community impacts to mental and emotional wellbeing, including long-term impacts.	Widespread severe damage or severe damage to multiple properties.

	Critical Infrastructure	Environmental	Economic	Reputational
None (0)	Not likely to disrupt assets or services.	Not likely to result in environmental damage.	Not likely to disrupt business/financial activities.	Not likely to result in significant legal, political or reputational impacts.
Low (1)	Could cause minor disruption of assets or services.	Could cause localized and reversible damage. Quick clean up possible.	Minor disruption of business/financial activities or the economy of the local area.	Likely to result in limited or short-term legal, political, or reputational impacts.
Moderate (2)	Could cause major but localized or short-term disruptions to critical infrastructure services.	Could cause major but reversible damage. Clean up difficult.	Could result in some losses for one or more businesses or other negative consequences for the regional or community economy.	Likely to result in some significant or long-term legal, political or reputational impacts.
High (3)	Could cause widespread, severe, ongoing disruption of assets or services.	Could cause severe, irreversible damage. Clean up not possible.	Could result in losses for an industry or severe economic impact in the community or region.	Likely to result in significant and/or lasting legal, political or reputational impacts.