Township of Selwyn

Community Risk Assessment

Prepared by:
THE LOOMEX GROUP

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Executive Summary

The Township of Selwyn Fire Department (Department) contracted The Loomex Group to conduct a community risk assessment (CRA) for the Township of Selwyn (the Township). The project had the following objectives:

- Identify and examine the Township's public safety risks from a fire services perspective.
- Develop informed recommendations for ways the Township can mitigate its identified public safety risks.

The Loomex Group developed the CRA per the guidelines of the Ontario Fire Marshal (OFM) and Ontario Regulation 378/18. This work included reviewing the nine community profiles that Ontario Regulation 378/18 stipulates must be examined when assessing public safety risks. The Loomex Group also thoroughly reviewed the Township's demographics and met with key stakeholders from the Township's staff and the Department. The cumulative information The Loomex Group obtained from its reviews, assessments, and engagement sessions formed the basis of this CRA.

After reviewing the community profiles, The Loomex Group used a risk assessment tool to rank the Township's issues, concerns, and risks. The Loomex Group then used the risk assessment tool to calculate the Township's total risk assessment score. The following list presents the risks identified by the Township's CRA based on severity (as determined by the risk assessment tool).

Moderate Risk

1. Weather Event (Risk score: 80)
2. Road/Highway Incident (Risk score: 72)
3. Human Health Emergency (Risk score: 72)

Low Risk

4. Fire/Explosion in Residential Occupancy (Risk Score: 60)
5. Fire/Explosion in Commercial Occupancy (Risk score: 52)
6. Fire/Explosion in Industrial Occupancy (Risk score: 32)
7. Fire/Explosion in Agricultural Occupancy (Risk score: 30)
8. Waterway-Related Emergency (Risk score: 25)

The Loomex Group then created a risk treatment plan (RTP) for each of the Township's identified risks. The Loomex Group used the OFM Fire Safety Effectiveness Model, known as the "three lines of defence," as a guiding principle during the creation of the RTPs, as this model highlights the importance of recognizing the different options

available for developing community fire safety. The finalized RTPs are included in this document. The Township and the Department should review the RTPs and discuss implementing them into their operations.

Disclaimer

The Loomex Group has made every effort to ensure that the information contained in this CRA is accurate and complete. For the Township to satisfy legislative requirements and ensure its risk treatment measures remain effective and up to date, it must complete the entire CRA process every five years.

1.0 Introduction

1.1 Community Risk Assessments: Context

Risk is defined as a measure of the likelihood and consequence of an adverse effect on health, property, an organization, the environment, or a community because of an event, activity, or operation. A CRA is conducted to identify the fire and life safety risks in each community. Once fire and life safety risks are identified, they are prioritized based on the following factors:

- the likelihood of the risks occurring
- the potential consequence to the community if the risks occur

Fire departments use the information gained by prioritizing risks to determine the best method for managing the risks in their communities. CRAs help fire departments with the following:

- structuring levels of service
- developing programs and activities for public fire safety education, fire code inspections, and enforcement initiatives
- structuring emergency response capabilities to mitigate community risks

1.2 Approach and Methodology

The Loomex Group assembled a project team composed of experts from the fire service to conduct the Township's CRA. Each team member has experience managing fire departments and is a specialist in their area of focus.

The CRA's development included the following core components:

- reviewing background information about the Township, including documents and maps
- observing the Township's environment and community during site visits
- holding engagement sessions with key staff members from the Township

These components gave The Loomex Group a first-hand perspective on the information used to identify the Township's risks. This perspective helped The Loomex Group ensure that all data it reviewed was accurate and applicable to the Township's demographics. The findings of The Loomex Group's reviews, assessments, and engagement sessions formed the basis of this CRA.

1.3 Summary of the Community Risk Assessment Development

1.3.1 Community Profiles

The Loomex Group developed this CRA according to the guidelines of the Ontario Fire Marshal and Ontario Regulation 378/18.

As per Ontario Regulation 378/18, the following nine community profiles must be reviewed when assessing community risk:

1. Geographic
2. Demographic
3. Economic
4. Building Stock
5. Critical Infrastructure
6. Community Services
7. Public Safety Response Entities
8. Past Events and Loss History
9. Hazards

The Loomex Group reviewed the nine mandatory community profiles during the first stage of this CRA's development.

1.3.2 Municipal Data and Stakeholder Engagement

In addition to the nine community profiles, The Loomex Group reviewed various statistics about the Township. Those statistics included the following considerations:

- the Township's current agreements and documents related to the delivery of fire services
- the Township's past incidents and dollar loss over the last five years
- the inspections completed and the violations issued within the Township over the last five years

These considerations, along with the findings from the nine community profile reviews, helped The Loomex Group identify the hazards and risks in the Township.

The Loomex Group also held engagement sessions with the following Township staff members:

- Janice Lavalley, CAO

- Gord Jopling, Fire Chief
- Howard Jinkerson, Deputy Chief
- Andrew Bowyer, Fire Prevention Officer

The Loomex Team used the information from the engagement sessions to enhance the knowledge gained from the community profiles and statistical reviews.

1.3.3 Risk Assessment

After collecting and reviewing all required data, The Loomex Group determined the Township's most likely risks and calculated the risk score for each threat. The risk scores were based on each risk's likelihood and potential consequences.

Figure 1 illustrates the Township's identified public safety risks, ranked in order of their total risk scores.

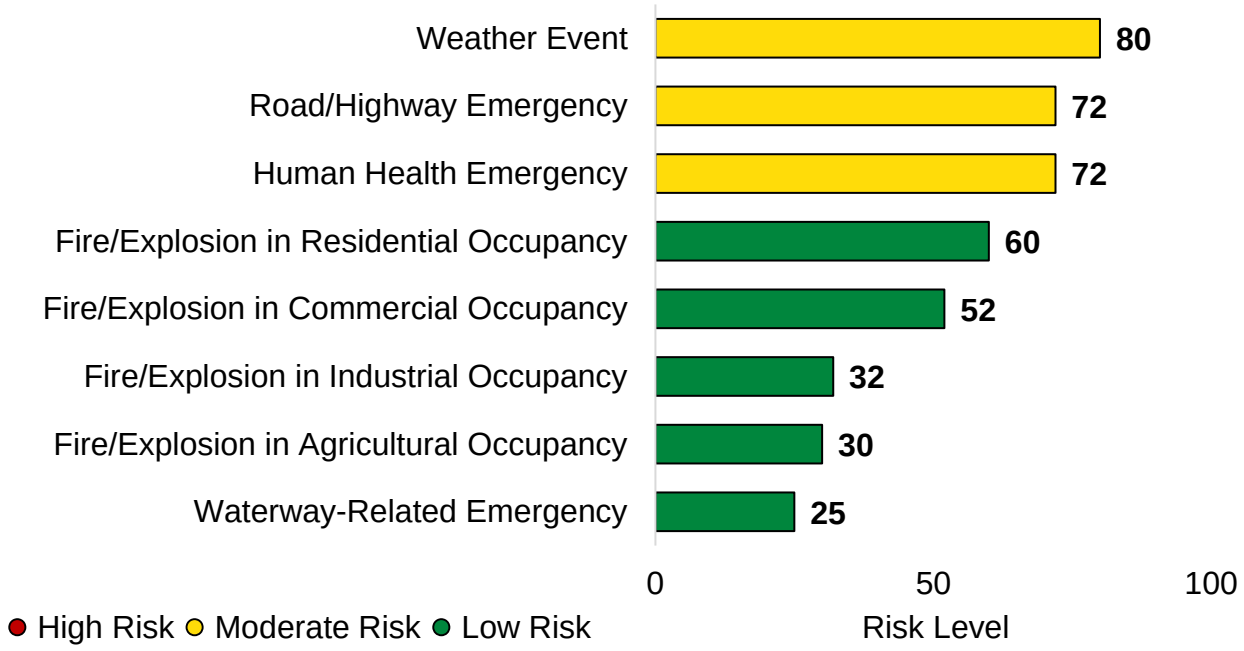

Figure 1. Public safety risks identified in the Township of Selwyn.

1.3.4 Risk Treatment Plans

The final stage of the CRA's development involved creating an RTP for each of the Township's identified risks. The Loomex Group used the Fire Protection and Prevention Act and the OFM Fire Safety Effectiveness Model, known as the "three lines of defence," as a guiding principle for developing the RTPs.

The three lines of defence are:

1. Public education and prevention
2. Fire safety standards and enforcement
3. Emergency response

Using the OFM's model is vital when creating RTPs because the three lines of defence emphasize the importance of a proactive approach to fire safety.

The Loomex Group considered answers to the following questions as it developed the RTPs:

- Is the Department meeting the community's current expectations?
- Can the Department provide an appropriate level of service to the Township in the future (based on expected trends)?

Each RTP that The Loomex Group developed for the Township focuses on a single risk and provides the appropriate action the Township should take to manage that risk. The RTPs assign at least one of the following actions for each risk:

- avoid
- mitigate
- share
- transfer
- determine the acceptance of the risk

Along with the recommended action, each RTP includes a strategy for managing the identified risk.

After developing the RTPs, The Loomex Group drafted the CRA document for the Township.

2.0 Ranking Public Safety Risks

2.1 The Importance of Prioritizing Public Safety Risks

One of the most important steps of the CRA process is ranking public safety risks based on their likelihood of occurrence. When emergency responders understand the likelihood of each risk, they can prioritize the risks and develop strategies to help mitigate the most likely threats. However, it is vitally important for every community to ensure it develops mitigation strategies for all potential risks its CRA identifies, not just those deemed most likely to occur. If a fire or other emergency occurs and a community has not planned for that circumstance, the consequences could include damaged property, tarnished reputations, and lost lives.

To gain a thorough understanding of the risks in their communities, fire departments must assess the likelihood and consequence levels of each risk identified in their community's CRA. Fire departments and other emergency responders can then determine each threat's overall risk level.

2.2 Defining Likelihood and Consequence Levels of Public Safety Risks

Table 1 lists the risk likelihood levels which the Loomex Team used to rank the Township's risks. Table 2 lists the risk consequence levels.

Table 1. Risk likelihood levels.

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 15 years since the last incident
Possible	• Might occur under current circumstances • One incident in the past five years
Likely	• Will probably occur at some time under current circumstances • Multiple or recurring incidents in the past five years
Almost Certain	• Expected to occur in most situations, unless circumstances change • Multiple or recurring incidents in the past year

Table 2. Risk consequence levels.

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 • Could pose a threat to the quality of the environment
Major	• Potential for a massive loss of life • Significant property damage • Significant threat to large businesses, local economy, and tourism • Environmental impact resulting in a short-term, partial evacuation of residents and businesses
Catastrophic	• Significant loss of life • Property damage to a sizable portion of the community • Long-term disruption of businesses, local employment, and tourism • Environmental damage resulting in the long-term evacuation of residents and businesses

2.3 The Risk Level Matrix

Table 3 presents the risk level matrix. This matrix compares the factors of likelihood and consequence to calculate the risk level of a given hazard. Fire departments and other emergency service providers traditionally rank a risk's severity as low, moderate, or high.

Table 3. Risk level matrix.

	Insignificant Consequence	Minor Consequence	Moderate Consequence	Major Consequence	Catastrophic Consequence
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**

The Loomex Group used the risk level matrix for all community profiles except the hazards profile. The hazards profile includes a more detailed analysis of the Township's risks and determines a risk level as well as a risk score.

3.0 Geographic Profile

3.1 Overview of a Geographic Profile

A geographic profile examines a community's physical features, including the nature and placement of the following:

- highways
- waterways
- railways
- canyons
- bridges
- landforms
- wildland-urban interfaces

CRAs include reviews of geographic profiles because a community's physical features may impact fire services access or response times.

3.2 Overview of the Township of Selwyn

The Township of Selwyn is a largely rural community encompassing approximately 315 square kilometres. The Township contains the settlements of Bridgenorth, Ennismore, Lakefield, and Young's Point. A portion of the settlement of Buckhorn also falls within the Township's borders.

The Township's community is connected by approximately 320 kilometres of municipal roads. The area is also connected via county roads and provincial highways.

Due to the large bodies of water within its borders, the Township contains many bridges and causeways. These waterways are home to numerous water control structures (dams) and boat locks of the Trent-Severn Waterway.

Figure 2 shows a satellite photo of the Township and its surrounding area.

Figure 2. Satellite photo of the Township of Selwyn and surrounding area.

3.3 Risks Identified by the Geographic Profile

Table 4 lists the Township's main geographic features and indicates if they impact the following Department aspects:

- training and equipment
- response and travel times
- station locations
- response protocol

Table 4. Geographic profile: risk summary.

Geographic Feature	Training & Equipment Impact	Response & Travel Time Impact	Fire Station Location Impact	Response Protocol Impact
Roads and Highways	✓	✓	✓	✓
Rivers	✓	✓		✓
Bridges and Causeways		✓	✓	✓
Lakes	✓	✓	✓	✓
Dams	✓			✓
Locks	✓	✓		✓
Downtown Core	✓		✓	✓
Trailer Parks		✓	✓	

4.0 Demographic Profile

4.1 Overview of a Demographic Profile

A demographic profile examines a community's population based on the following factors:

- size
- distribution
- age
- gender
- cultural background
- education level
- socioeconomic makeup

When fire departments develop public safety education and prevention programs, implementation strategies, and other support resources, they must consider and respect the demographics and audiences this profile identifies.

4.2 Sources Used for the Demographic Profile

The information used to develop the demographic profile for the Township's CRA is primarily from the 2021 Statistics Canada Census. The Department provided supplementary information and resources as needed.

4.3 Population

According to the 2021 Statistics Canada Census, the Township has a population of 18,653 residents.

4.4 Age Demographics and Age Distribution

Table 5 compares the age distribution of the Township's residents to the provincial average (based on the findings of the 2021 Statistics Canada Census).

Table 5. Age distribution in the Township compared to the Province of Ontario.

Age Range	Township of Selwyn	Province of Ontario
0 to 14 years	14%	16.4%
15 to 64 years	57.3%	66.8%
65 years and over	28.7%	16.7%

The above table shows that the Township's percentage of residents aged 65 and over (at 28.7 per cent) is significantly higher than the provincial average (at 16.7 per cent). The average age of the Township's residents is 47.4, compared to the provincial average of 41.8. The median age of the Township's residents is 52, compared to the provincial median of 41.6.

One possible explanation for this statistic is the Township's suitability for those looking to retire and move from a large urban location to a smaller community.

4.5 Demographic and Cultural Considerations

There are two essential factors to consider when developing community services and programs: language and community culture.

In terms of language, the Township is a predominantly English-speaking community, with 92.4 per cent of residents identifying English as their first language. Only 6.3 per cent identify a language other than English as their primary language.

In terms of demographic considerations, a large portion of the Township's population is over the age of 65. This demographic presents significant challenges for the Department regarding fire prevention and public education initiatives. For instance, it is much more difficult to encourage older adults to change their habits and accept safer fire prevention practices than it is for a younger audience. Additionally, if the Department uses newer methods of communication (such as social media) to distribute fire prevention programs and public education, older community residents may not receive the messages. Some older residents might not use newer communication channels to receive information, instead relying on traditional sources (such as radio, newspaper, or television).

4.6 Level of Education

Figure 3 compares the level of education of the Township's residents to the provincial average (based on the findings of the 2021 Statistics Canada Census).

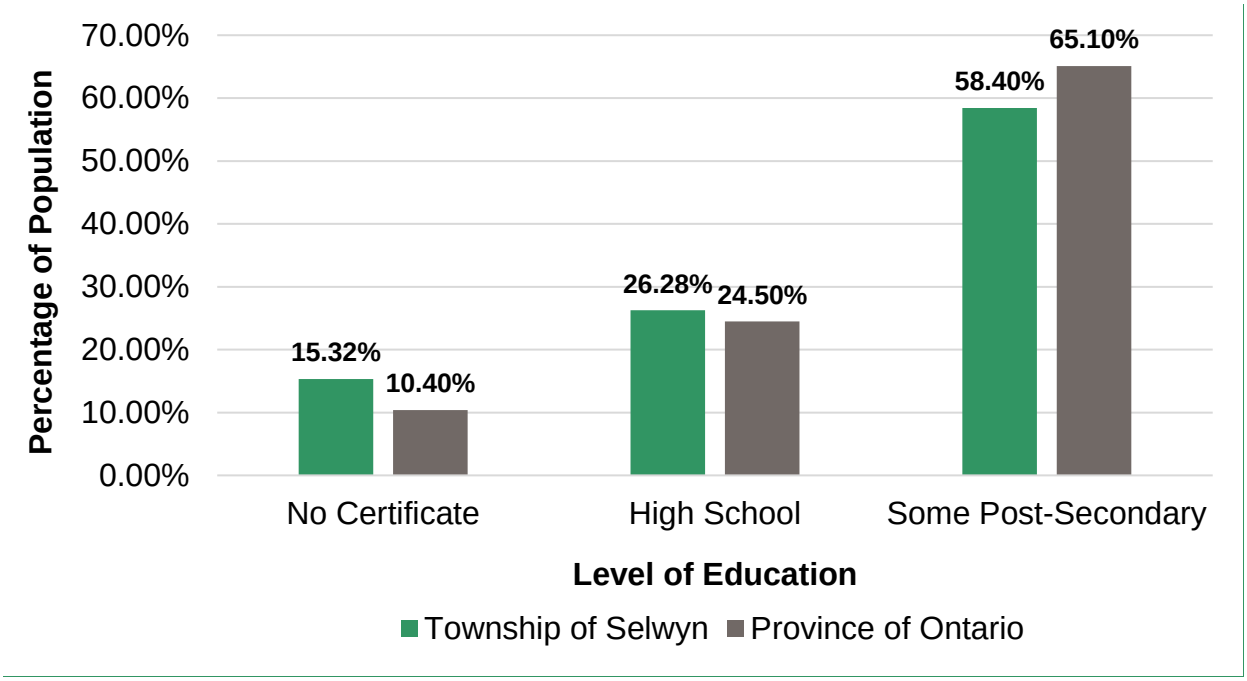

Figure 3. Education levels in the Township of Selwyn and the Province of Ontario.

4.7 Socioeconomic Makeup

According to the 2021 Statistics Canada Census, the average per person total income in the Township is $58,000, which is higher than the federal average of $54,450.

4.8 Transient and Seasonal Population

The Township has approximately 1,381 seasonal residences and 21 trailer parks/campgrounds, some of which have hundreds of sites. In total, there are approximately 2,620 trailer sites in the Township. Because of the high number of seasonal sites within its borders, the Township's population could potentially increase by thousands of people on any given day during the summer months.

Due to the high number of trailer parks in the Township, as well as the increased use of unregulated vacation rental services (such as Airbnb and Vrbo, which is similar to most communities), it is impossible to determine an accurate number of transient residents in the Township at any given time.

4.9 Other Demographic Considerations

The following tables present the number of beds/rooms, students, and campers at the Township's care homes and youth facilities:

- Table 6 lists the number of beds/rooms at the Township's two care facilities.
- Table 7 lists the number of students at the Township's five schools.

- Table 8 lists the weekly number of campers at the Township's two youth camps.

Table 6. Number of beds/rooms per care facility in the Township of Selwyn.

Care Facility	Beds/Rooms
Extendicare Lakefield	100 beds
Regency Retirement Lakefield	83 rooms

Table 7. Number of students per school in the Township of Selwyn.

School	Students
Chemong Public School	484
Lakefield District Public School	682
St. Paul Catholic School	178
St. Martin Catholic Elementary School	400
Private School	68

Table 8. Weekly number of campers per youth camp in the Township of Selwyn.

Camp	Campers Per Week
Camp Moshava Ennismore	300
Hope Valley Day Camp	200

4.10 Risks Identified by the Demographic Profile

Table 9 summarizes the Township's main demographic considerations and the fire and emergency risks most likely to affect them.

Table 9. Demographic profile: risk summary.

Demographic Consideration	Issues/Concerns/Challenges
Seniors (28.7 per cent of the Township's population is over 65 years of age.)	• Seniors may not be verifying that their dwellings have working smoke alarms • Seniors may have mobility issues and need help exiting a building during an emergency • Seniors may not receive or apply new fire safety education
Schools/Children (14 per cent of the Township's population is under 14 years of age.)	• Time and resources are needed to ensure these facilities implement the duties listed in their fire safety plans and fire drills • Time and resources are needed to deliver education about fire and life safety • On-site visits are needed to identify hazards and their risk levels
Language (6.3 per cent of the Township's residents identify English as their second language.)	• The Department should strive to ensure that non-English speaking residents receive public fire safety education
Education (15.32 per cent of the Township's residents do not have a certificate or degree.)	• The Department should strive to ensure all residents receive fire prevention materials and messages • The Department should strive to ensure all residents receive public fire safety education
Socioeconomic	• On average, residents of the Township have a higher income than Canadians overall • The Department should strive to ensure all residents receive public fire safety education
Tourism/Seasonal	• There is a significant population increase in the Township during the summer months • Increase in traffic (both vehicular and watercraft)

Demographic Consideration	Issues/Concerns/Challenges
Camps (for children and youths)	• Time and resources are needed to ensure these facilities comply with implementing the duties in their fire safety plans and fire drills • Time and resources are needed to deliver education about fire and life safety • On-site visits are needed to identify hazards and their risk levels
Occupancies not under the OFM definition of Vulnerable Occupancies	• Time and resources are needed to ensure staff have received training in evacuation procedures • Time and resources are needed to ensure these facilities are compliant with implementing the duties in their fire safety plans • Time and resources are needed to ensure these occupancies comply with the Ontario Fire Code

5.0 Economic Profile

5.1 Overview of an Economic Profile

An economic profile considers a community's economic information from an overall public safety perspective. This profile examines the following topics:

- the factors that influence the community's local economy
- the potential impacts the community would suffer by losing the factors that influence its economy
- the risks facing the industrial and commercial occupancies that provide significant economic production or jobs in the community

5.2 Tourism

The Township contains many attractions and events that enhance the quality of life for residents and tourists alike. Thousands of tourists visit the Township each year to enjoy its beautiful lakes, parks, and recreation facilities. The Township also offers shopping, restaurants, festivals, entertainment, accommodations, and several heritage and cultural sites. Popular activities and attractions in the Township include the following:

- fishing
- camping
- snowmobiling and cross-country skiing
- boating
- golfing
- nature trails

5.3 Agriculture

The Township contains over 240 farms with residences; however, many of these locations have ceased farming activities. Some sites have leased workable acreage to other farming entities, while others conduct hobby farming on a small scale.

5.4 Businesses

There are over 390 businesses listed on the Township's business directory, including:

- financial institutions
- wealth management services
- insurance brokers

- medical and dental offices
- retail businesses
- restaurants
- repair shops and garages
- marinas
- supermarkets
- golf courses

5.5 Industrial Businesses

The Township contains 17 industrial properties. There are also seven warehousing properties that house various businesses. While the tenants in the industrial occupancies tend to remain in place over the long term, the warehousing tenants can change on a month-to-month basis and do not need to notify the Department. Due to the frequency of changeovers in the warehousing properties, the Department may not know what products are housed in those locations. This discrepancy will present challenges for the Department if a fire or other emergency occurs in the warehouses.

5.6 Risks Identified by the Economic Profile

Table 10 summarizes the risks associated with the Township's economic profile. (**Note:** Likelihood, consequence and risk level are defined in tables 1-3.)

Table 10. Economic profile: risk summary.

Occupancy	Main Risk	Likelihood	Consequence	Risk Level
Highways/Roads	Accident, fire, rescue	Almost certain	Moderate	**High**
Industrial	Fire/explosion	Possible	Major	**Moderate**
Warehousing	Fire/explosion	Unlikely	Moderate	**Moderate**
Residential	Fire/explosion	Almost Certain	Minor	**Moderate**
Agricultural	Fire/explosion	Likely	Moderate	**Moderate**
Commercial/Residential (downtown core)	Fire/explosion	Possible	Major	**Moderate**
Commercial	Fire/explosion	Possible	Major	**Moderate**
Marine	Fire/explosion	Unlikely	Minor	**Low**

6.0 Building Stock Profile

6.1 Overview of a Building Stock Profile

A building stock profile examines the types and numbers of building stock within a community. This profile looks at the number and age of buildings and their uses, as per major occupancy classifications in the Ontario Building Code (OBC).

Reviewing a community's building stock and its importance to the community helps identify potential risk concerns. A review of this profile also helps provide information for developing programs and activities to address public safety risks such as fires, explosions, and structural failures.

6.1.1 Fire Marshal Directive 2022-001

Fire Marshal Directive 2022-001 specifies that certain assistants to the Fire Marshal must include information on the presence of truss and lightweight construction systems (commonly referred to as lightweight construction, or LWC) when classifying a community's building stock. That information must be made known and documented in a community risk assessment. This information provides firefighters with information about a building's structural composition so they can plan fire suppression activities, which will help ensure firefighter safety.

See Appendix B for a copy of Fire Marshal Directive 2022 – 001.

6.2 Overview of the Building Stock in the Township of Selwyn

The Department provided The Loomex Group with a list of the Township's building stock as follows:

- Group A (Assembly): 51 occupancies
- Group B (Care & Treatment): 1 occupancy
- Group C (Residential): 7,628 occupancies
- Groups D & E (Mercantile/Commercial): 160 occupancies
- Group F (Industrial): 47 occupancies

6.3 Residential Housing in the Township of Selwyn

The Township's residential housing stock primarily consists of single-family dwellings. According to the 2016 Statistics Canada Census, the Township contained 8,404 residential dwellings at that time. As of 2021, that number had increased to 8,450 private dwellings (an increase of approximately 0.5 per cent).

6.4 Legislations Governing Inspection

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 the following:

- every building for which a fire safety complaint is received
- 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 include the following:

- Ontario Regulation 364/13, Mandatory Inspections – Fire Drill in Vulnerable Occupancy: This legislation 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: This legislation requires applicable occupancies to prepare, receive approval of, and implement a fire safety plan.
- Ontario Fire Code Section 2.13 (installations of smoke alarms) and Section 2.16 (installations of carbon monoxide alarms): This legislation requires applicable occupancies to have a smoke/CO program (including inspections and enforcement) in place.

6.5 Inspection Statistics for the Township of Selwyn Fire Department

Statistics regarding inspections conducted in the Township over the last five years are summarized as follows:

- Table 11 presents the number of inspections conducted from 2018 to 2022.
- Table 12 presents the reasons for the inspections conducted from 2018 to 2022.
- Table 13 presents the number of violations that were noted and the number of notices the Department issued from 2018 to 2022.

Note: Fire departments in Ontario did not conduct property inspections during the COVID-19 pandemic. Therefore, the following tables do not record inspection numbers for 2020 or 2021, as these years saw the highest COVID-19 transmission numbers and the highest level of restrictions. Inspection numbers for 2022 indicate a return to normalcy.

Table 11. Inspections by occupancy type, 2018 to 2022.

Type of Occupancy	2018	2019	2020	2021	2022
Assembly (A)	0	0	0	0	1
Care, Treatment, and Detention (B)	4	5	0	0	4
Residential (C)	20	84	0	0	9
Mercantile/Commercial (D & E)	2	3	0	0	3
Industrial (F)	0	0	0	0	0
Other	0	0	0	0	0
Total Number of Inspections	**26**	**92**	**0**	**0**	**17**

Table 12. Reasons for inspections, 2018 to 2022.

Reason for Inspection	2018	2019	2020	2021	2022
Complaint	1	3	0	0	3
Owner request	1	1	0	0	9
Sale request	0	0	0	0	0
Routine	24	88	0	0	4
Licensing	0	0	0	0	0
Total Number of Inspections	**26**	**92**	**0**	**0**	**17**

Table 13. Violations noted/notices issued, 2018 to 2022.

Year	Verbal	Letter	FSIR	Order	Total	Resolved
2018	1	0	0	0	1	1
2019	2	0	0	1	3	3
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	1	0	0	0	1	1

6.6 Risks Identified by the Building Stock Profile

Tables 14 to 18 summarize the Township's building stock and identify the fire and emergency issues/concerns for each occupancy type. The Loomex Team considered the following factors when identifying the issues and concerns for this profile:

- building use
- building density
- building height and square footage
- building location
- the building's historical or cultural significance
- the building's economic impact

Note: No data is available regarding the number of LWC buildings in the Township. As per Fire Marshal Directive 2022-001, the Township must begin recording data related to the LWC used in the construction of its building stock.

Table 14. Group A: assembly occupancy buildings.

Type of Building	Number of Buildings	Issues/Concerns	Risk Likelihood	Risk Consequence	Risk Level
Restaurants	19	• Cooking fires • Maintenance of life safety systems • Staff training • Regular inspections	Unlikely	Moderate	**Moderate**
Schools and Colleges	5	• Maintenance of life safety systems • Staff training • Regular inspections	Unlikely	Moderate	**Moderate**
Community Halls	5	• Staff training • Occupant load • Regular inspections • Renters need to have knowledge of fire safety procedures	Unlikely	Moderate	**Moderate**
Arenas and Pools	2	• Staff training • Occupant load • Regular inspections • Status of fire safety plan	Unlikely	Moderate	**Moderate**
Service Clubs	4	• Occupant load • Staff training • Regular inspections • Status of fire safety plan	Possible	Moderate	**Moderate**

Type of Building	Number of Buildings	Issues/Concerns	Risk Likelihood	Risk Consequence	Risk Level
Libraries	3	• Combustible fire load • Staff training • Regular inspections	Rare	Moderate	**Low**
Funeral Homes	1	• Regular inspections • Occupant load	Rare	Minor	**Low**
Child Care Facilities	2	• Staff training • Status of fire safety plan • Regular inspections	Rare	Minor	**Low**
Churches	10	• Occupant load • Open flame • Retrofit of older buildings • Regular inspections	Unlikely	Moderate	**Low**

Table 15. Group B: detention, care, and treatment buildings.

Type of Building	Number of Buildings	Issues/Concerns	Risk Likelihood	Risk Consequence	Risk Level
Care and Treatment (B2)	1	• Staff training • Status of fire safety plan • Staffing levels • Vulnerable occupants • The Department requires time and resources to conduct annual inspections and fire drill audits	Possible	Major	**Moderate**

Table 16. Group C: residential buildings.

Type of Building	Number of Buildings	Issues/Concerns	Risk Likelihood	Risk Consequence	Risk Level
Single-family Dwelling	7,520	• New builds use LWC • Homes built prior to 1975 predate the OBC • Smoke & carbon monoxide alarms must be installed and working	Almost Certain	Minor	**Moderate**
Semi-Detached	18	• New builds use LWC • Proper fire separations are needed • Homes built prior to 1975 predate the OBC • Smoke & carbon monoxide alarms must be installed and working	Almost Certain	Minor	**Moderate**
Duplex	24	• New builds use LWC • Proper fire separations are needed • Homes built prior to 1975 predate the OBC • Smoke & carbon monoxide alarms must be installed and working	Almost Certain	Minor	**Moderate**
Multi-unit Residential	21	• New builds use LWC • Proper fire separations are needed • Homes built prior to 1975 predate the OBC • Smoke & carbon monoxide alarms must be installed and working	Almost Certain	Minor	**Moderate**

Type of Building	Number of Buildings	Issues/Concerns	Risk Likelihood	Risk Consequence	Risk Level
Mixed Occupancies with Residents (Downtown Core)	34	• Heritage buildings • Code compliance regarding retrofit requirements (OFC sections 9.2 and 9.5) • Lack of life safety systems	Possible	Major	**Moderate**
Hotel/Motels	5	• Buildings constructed prior to 1975 predate the OBC • May be used for long-term accommodations • Status of fire safety plans	Possible	Moderate	**Moderate**
Retirement Homes	1	• Code compliance regarding retrofit requirements (OFC section 9.5) • Occupant mobility • Status of fire safety plan	Possible	Moderate	**Moderate**
Group Homes	2	• Staff training • Status of fire safety plans • Retrofitting requirements regarding OFC section 9.5	Possible	Moderate	**Moderate**

Table 17. Groups D & E: business and personal service/mercantile buildings.

Type of Building	Number of Buildings	Issues/Concerns	Risk Likelihood	Risk Consequence	Risk Level
Retail Lumber Yard	4	• Large fire loads • Fire access routes • Storage of flammable and combustible materials	Possible	Moderate	**Moderate**
Retail Businesses	105	• Storage of flammable and combustible materials • Building construction (legacy vs. LWC)	Unlikely	Moderate	**Low**
Retail Service Stations	12	• Combustible fuels • Storage quantities	Unlikely	Moderate	**Low**
Medical Facilities	6	• Mobility issues of occupants • Compressed gasses	Unlikely	Minor	**Low**
Car Dealerships	1	• Combustible fuels	Rare	Moderate	**Low**
Grocery Stores	4	• High occupant load • Staff training • Status of fire safety plan	Unlikely	Minor	**Low**
Office Buildings	20	• Staff training	Unlikely	Minor	**Low**

Table 18. Group F: hazardous industrial buildings.

Type of Building	Number of Buildings	Issues/Concerns	Risk Likelihood	Risk Consequence	Risk Level
Industrial Properties	17	• Large fuel loads • Flammable and combustible materials	Possible	Moderate	**Moderate**
Warehouses	7	• Large fuel loads • Improper storage practices • Flammable and combustible materials	Possible	Moderate	**Moderate**
Vehicle Repair Shops	23	• Compressed gases • Hot works • Improper storage practices • Flammable and combustible materials	Possible	Minor	**Moderate**

7.0 Critical Infrastructure Profile

7.1 Overview of a Critical Infrastructure Profile

A critical infrastructure (CI) profile examines the capabilities and limitations of a community's critical infrastructure. CI contributes to the interconnected networks, services, and systems that meet vital human needs, sustain the economy, and protect public safety and security. The most common factors assessed for this profile include the following:

- electricity distribution
- water distribution
- telecommunications
- hospitals
- critical buildings and services

The presence, availability, and capacity of CI can significantly impact factors such as:

- dispatch
- communications
- transportation
- fire suppression operations
- overall healthcare in a community

Furthermore, the presence, availability, and capacity of CI may present unique risk concerns because of its size or design.

Reviewing CI provides valuable information that municipalities can use when setting priorities and developing strategies for addressing risk concerns in their communities, such as public safety education, fire prevention, and emergency response pre-planning.

7.2 Risks Identified by the Critical Infrastructure Profile

Table 19 summarizes the CI in the Township (based on information provided by the Township's Community Emergency Management Coordinator). The table lists the most likely fire and emergency issues/concerns affecting each type of CI, as well as general observations (where applicable).

Table 19. Critical infrastructure profile: risk summary.

Critical Infrastructure	Issues/Concerns	Observations
Water	• Quality • Quantity • Storage • Distribution	• The Township has a reliable distribution system, which is critical for urban fire responses
Electricity	• Hydro generating sites • Transmission • Portable generators	• The transmission of electricity can be unreliable when poles and towers are damaged
Communications	• 911 communications • Telecommunications	• These systems rely heavily on radio towers and phone/internet lines • These systems can be severely affected by damage to poles and towers
Fuel (natural gas, oil, and gasoline)	• Diesel and gasoline storage • Natural gas/propane storage and transmission	• It is critical to keep this infrastructure operating 24 hours a day, year-round
Transportation	• Road, bridge, and causeway closures	• Damage to the Township's transportation networks could cause serious delays during emergency responses

8.0 Community Services Profile

8.1 Overview of a Community Services Profile

A community services profile examines the types of services provided in a community by entities other than the fire department. The presence/absence of other service-providing entities may dictate the types of emergencies to which the fire department responds. Moreover, those other entities may be capable of assisting the fire departments with mitigating the impacts caused by emergencies. Community services can also potentially reduce risks to public safety by providing a means of delivering public education and prevention programs.

8.2 Risks Identified by the Community Services Profile

Table 20 summarizes the community service entities that may be able to assist the Department when it responds to an emergency. The table also includes the issues/concerns associated with each community service entity.

Table 20. Community services profile: risk summary.

Agency	Assistance Provided	Issues/Concerns
Health Unit	The Health Unit provides vulnerable persons with access to public education. The Health Unit also provides advice and services for firefighters who were exposed to contaminants during a response.	No issues or concerns.
Municipal Halls and Community Centres	These facilities are large assembly occupancies that can serve as reception areas and warming/cooling centres.	No issues or concerns.
Schools	Schools are large assembly occupancies that can serve as reception areas and warming/cooling centres. Schools are also essential locations for delivering fire and life safety education programs.	Individuals may have difficulty accessing the schools during an emergency. The buildings require backup emergency power.
Service Clubs	Service groups run fundraisers to assist community interest groups. These groups can also provide fire prevention resources for distribution to the public.	Depending on the type of emergency, these groups may suffer a shortage of available volunteers.

Agency	Assistance Provided	Issues/Concerns
Faith-based Groups	There are churches in various parts of the community that may provide support for those who suffer a loss caused by an incident.	Depending on the type of emergency, these groups may suffer a shortage of available volunteers.
Red Cross	Red Cross services can be activated to support the community during a large-scale emergency. For example, the Red Cross may help organize a temporary shelter for someone who has suffered a fire in their residence.	There may be delayed response times.
Community Care	Connects with seniors and community members in need of services.	No issues.
Peterborough County Disaster Relief Trust Fund	Can be activated by fire services to support the community during a large-scale emergency.	No issues.

9.0 Public Safety Response Profile

9.1 Overview of a Public Safety Response Profile

A public safety response profile examines which service providers (other than the fire department) respond to community emergencies. The profile looks at the types of incidents those entities respond to and includes a review of their response capabilities. Aside from the fire department, the most common examples of public safety response agencies are police and paramedic services.

A public safety response profile can contribute to an understanding of incident-related data. Data gathered from non-fire department public safety response entities can provide insight into a fire department's potential interdependencies. The profile can also give insights into the benefits of establishing a tiered/joint response to a public safety risk or emergency. Finally, the data from this profile can also help identify risk treatment options based on shared responsibilities.

9.2 Common Types of Shared Services

The following subsections describe examples of common shared services and discuss their relation to the Township and the Department.

9.2.1 Fire Department Mutual Aid System

Mutual aid is an agreement between emergency responders. A mutual aid agreement stipulates how and the degree to which assistance from across jurisdictional boundaries will be rendered during 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. If such an event occurs, the affected community can activate its mutual aid agreement and receive assistance by the neighbouring emergency services entities. The Ontario Fire Marshal's Office is the approval authority for fire services mutual aid agreements in Ontario.

As of this CRA, the Department is part of the Peterborough County Mutual Aid System.

9.2.2 Automatic Aid and Fire Protection Service Agreements

Automatic aid programs are designed to ensure that the closest available resource can provide support in the event of an emergency. Automatic aid agreements operate on a day-to-day basis, irrespective of municipal boundaries.

As of this CRA, the Department has an automatic aid agreement with the City of Peterborough. That agreement covers service for a designated area in the southern portion of the Township.

The Department also has an automatic aid agreement with the Township of Cavan Monaghan for the following areas:

- a portion of Highway 7 extending east from Parkhill Road (including Elliot Drive)
- a portion of Highway 7 extending from Parkhill Road north to Stockdale Road
- Lily Lake Road (east from Highway 7 to Stockdale Road)

9.2.3 Police Services

The following two agencies provide policing services for the Township:

- The former Wards of Smith and Ennismore are serviced by the Ontario Provincial Police.
- The former Village of Lakefield is serviced by the Peterborough Police Service.

9.2.4 Emergency Medical Services

The Township receives emergency medical services from Peterborough County-City Paramedics. These paramedics provide both primary care and advanced care (depending on the responding paramedic's level of training). This paramedic service currently has one base located in the Township, which is co-located with the fire station in Lakefield.

9.2.5 911 Public Emergency Reporting Service

The Township receives its public emergency reporting services from the following two agencies:

- The Ontario Provincial Police in Orillia answer 911 for the Township (excluding the Village of Lakefield).
- The Peterborough Police Service answers 911 calls for the Village of Lakefield.

These services transfer all fire-related 911 calls to Peterborough Fire for dispatching.

9.2.6 Roadway Maintenance Services

The Township receives roadway maintenance for its municipal roads from its Public Works Department, which has approximately 15 full-time employees.

The Province of Ontario has a contract with a private company for all provincial highway maintenance.

The County of Peterborough's Public Works Department maintains the county-owned roads within the Township.

9.3 Public Safety Response Entities in the Township of Selwyn

Table 21 summarizes various incidents and the organizations responsible for responding to them. For some incidents, a proper community response only requires responders to activate the appropriate resources and maintain scene security until a representative of the correct organization arrives.

Table 21. Public safety response entities profile: risk summary.

Response Entity	Incident Response	Role at Incident	Issues/Concerns
OPP/Peterborough Police	• Fires • Sudden deaths • Motor vehicle collisions	• Traffic control • Assist with investigations • Respond to criminal activity	• No issues or concerns
Office of the Fire Marshal	• Large/suspicious fires and explosions • Fatal fire investigations	• Investigate fires as per the FPPA • Assist police with investigations • Provide advice during large-scale emergencies • Provide limited specialized equipment	• Delayed response times
Hydro One	• Fires • Downed hydro wires • Electrical fires involving transformers	• Isolate electrical services • Repair hydro infrastructure	• Delayed response times • Potential for lengthy power outages
Technical Standards and Safety Authority	• Fires • Carbon monoxide emergencies • Elevator emergencies	• Assist with investigations • Provide training (limited)	• Delayed response times • Training levels may be limited • Training can be costly

Response Entity	Incident Response	Role at Incident	Issues/Concerns
Bell	• Communication disruptions	• Repair infrastructure	• In some instances, the Department may have to request this agency to attend
Enbridge Gas	• Fires • Carbon monoxide emergencies	• Isolate gas lines • Repair broken or leaking gas lines/mains • Assist with carbon monoxide investigations	• Delayed response times
Peterborough County-City Paramedics	• Fires • Motor vehicle collisions • Medical emergencies	• Monitor firefighter health at emergencies • Provide patient care • Transfer patients to the hospital	• Possibility of delayed response times • Limited resources throughout the county
Peterborough Public Health	• Health emergencies • Water-quality emergencies (regarding potable water and swimming)	• Provide guidance during health emergencies • Issue boil water advisories • Issue swimming advisories (regarding water quality)	• No issues or concerns
Ministry of Transportation (MTO) – Peterborough County and Township of Selwyn	• Fires • Motor vehicle collisions	• Issue road closures and detours • Perform winter operations • Road maintenance	• Delayed responses are possible due to weather and ongoing operations

10.0 Past Events and Loss History Profile

10.1 Overview of Past Events and Loss History Profile

A past events and loss history profile examines the emergency responses that have occurred in a community over the past five years. The profile includes two main components:

- analyzing the number and types of emergency responses, injuries, deaths, and dollar losses over the last five years
- assessing previous response data

By evaluating previous response data, fire departments and municipalities can identify circumstances and behaviours that can assist with making informed decisions about the delivery of fire services in the community.

10.2 Past Events and Loss History Profile for the Township of Selwyn

The following tables present the total loss history of the Township for the years 2018 to 2022:

- Tables 22 to 26 summarize the fires that occurred in the Township from 2022. For each property group, the following is presented:
    - number of fires
    - total dollar loss
    - known causes
- Table 27 lists the number of fires in the Township from 2018 to 2022 in each property group, as well as the total dollar loss.

Note: No fires were reported at Group B (care and treatment) or Group F (industrial) buildings in the Township from 2018 to 2022. In the same period, no deaths or injuries occurred due to fires in the Township.

Table 22. Fire loss frequency, dollar loss, and causes, 2018.

Building Group	Fires	$ Loss	Causes
Group A (Assembly)	0	0	
Group C (Residential)	17	$2,678,500	Undetermined
Groups D & E (Mercantile/Commercial)	0	0	
Other	9	$253,700	Undetermined
Totals	**26**	**$2,932,200**	

Table 23. Fire loss frequency, dollar loss, and causes, 2019.

Building Group	Fires	$ Loss	Causes
Group A (Assembly)	1	$3,000	Equipment malfunction
Group C (Residential)	15	$344,250	Chimney, smoking, electrical
Groups D & E (Mercantile/Commercial)	2	$360,000	Undetermined
Other	9	$313,427	Electrical, mechanical
Totals	**27**	**$1,020,677**	

Table 24. Fire loss frequency, dollar loss, and causes, 2020.

Building Group	Fires	$ Loss	Causes
Group A (Assembly)	0	0	
Group C (Residential)	12	$1,739,000	Smoking, candles, solar panel
Groups D & E (Mercantile/Commercial)	2	$123,000	Undermined
Other	5	$28,000	Electrical, mechanical
Totals	**19**	**$1,890,000**	

Table 25. Fire loss frequency, dollar loss, and causes, 2021.

Building Group	Fires	$ Loss	Causes
Group A (Assembly)	0	0	
Group C (Residential)	10	$987,500	Electrical, carelessness
Groups D & E (Mercantile/Commercial)	3	$4,554,000	Defective item
Other	7	$116,000	Mechanical, electrical, arson
Totals	**20**	**$5,657,500**	

Table 26. Fire loss frequency, dollar loss, and causes, 2022.

Building Group	Fires	$ Loss	Causes
Group A (Assembly)	0	0	
Group C (Residential)	16	$3,402,000	Undetermined
Groups D & E (Mercantile/Commercial)	4	$37,500	Undetermined
Other	5	$81,500	Undetermined
Totals	**25**	**$3,521,000**	

Table 27. Number of fires and yearly dollar loss, 2018 to 2022.

Year	Group A (Assembly)	Group C (Residential)	Groups D&E (Mercantile/Commercial)	Yearly Loss
2018	0	17	0	$2,932,200
2019	1	15	2	$1,020,677
2020	0	12	2	$1,890,000
2021	0	10	3	$5,657,500
2022	0	16	4	$3,521,000
Total Loss				**$15,021,377**

10.3 Department Statistics

According to its statistics, the Department made 6,459 emergency responses from 2018 to 2022. Figure 4 illustrates the number of responses by year. Table 28 (below Figure 4) summarizes the Department's fire responses over the same period.

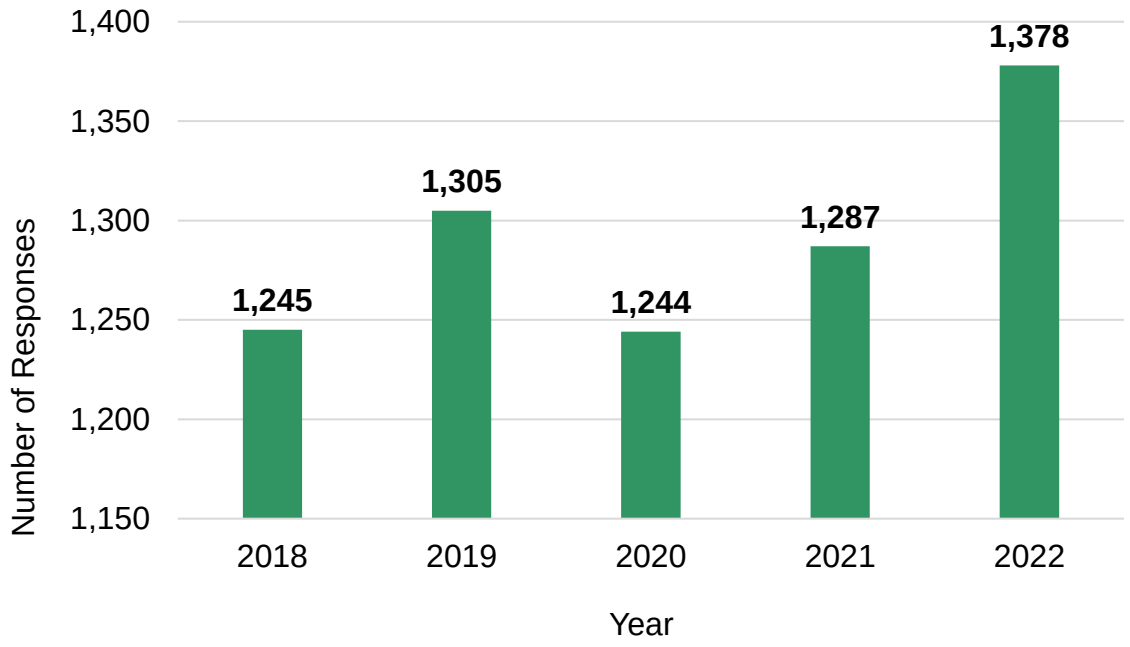

Figure 4. Number of emergency responses by year, 2018 to 2022.

Table 28. Types of fire responses, 2018 to 2022.

Year	Loss Fires Structures	Loss Fires Other	Loss Fires Vehicles	No Loss Fires	Non-Fire Calls
2018	17	1	8	0	1,219
2019	18	0	9	0	1,278
2020	14	0	5	0	1,225
2021	14	0	6	0	1,267
2022	21	0	4	0	1,353

The Department's statistics also show that, on average, the Department responds to roughly 12 water-related emergencies each year.

10.4 Response Times

A fire department's response time (or on-scene time) is separated into three

components: initial call to dispatch time, assembly time, and travel time. These components include controllable and non-controllable factors.

The initial call to dispatch time is a controllable component. When a fire department has improved technology and a fully compliant communications service, it can decrease the time involved during this stage of a response. Conversely, assembly time is a non-controllable component because there is no guarantee about how many firefighters will be on hand to respond to an emergency call or how close those firefighters will be to the emergency site. Travel time is another non-controllable component because it depends on the location of the emergency and the roads that connect responders to the emergency scene.

Table 29 defines the response time components. The table also defines on-scene time.

Table 29. Response time components.

Component	Definition	Controllable or Non-Controllable
Initial Call to Dispatch Time	The time interval during which an initial call is received by the dispatch center to the time the notification is sent to the fire station.	Controllable.
Assembly Time	The time interval during which a fire station is notified of an emergency call to the time the responding vehicle leaves the fire station.	Non-controllable.
Travel Time	The time interval during which a responding vehicle leaves the fire station to the time it arrives on scene at the emergency.	Non-controllable.
On-Scene Time	Total time after all controllable and non-controllable components are added together.	Involves controllable and non-controllable factors.

In large urban areas with full-time firefighters and multiple stations, response times are frequently in the range of five to eight minutes. In rural areas, response times are often ten to 20 minutes, depending on factors such as the size of the municipality, the number and location of fire stations, and the type of available road networks.

It is important for fire departments to know their response times because a fire's growth is heat-generated and is dependent upon fuel and air supply. Once the temperature in a room ablaze reaches approximately 1000 °F (590 °C), a flashover (A flashover is the near-simultaneous ignition of most of the directly exposed combustible material in an enclosed area.) will occur in the room within six to ten minutes (or less). Since the risk of loss of life and property significantly increases following a flashover, a quick response greatly increases the firefighters' ability to protect endangered lives and property.

Appropriate response time and firefighter intervention help increase the chance for any endangered lives to be rescued and fire control to improve before a flashover occurs. The time/temperature curve chart shown in Figure 5 illustrates a fire's growth over time and further emphasizes the importance of tracking and knowing response times.

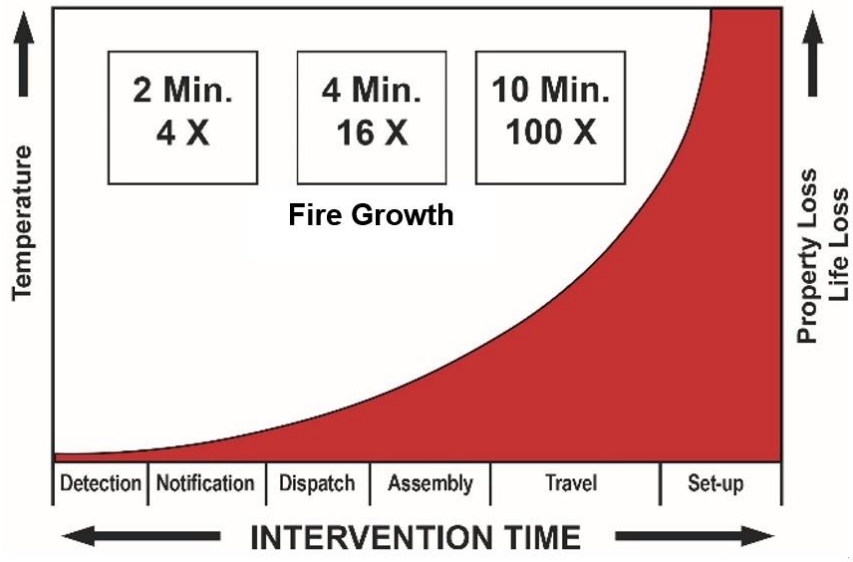

Figure 5. Growth rate of a fire over time.

10.4.1 Average Response Time in the Township of Selwyn

Figure 6 illustrates the Department's average response times for 2018 to 2022 based on the data recorded in the Department's statistics. (**Note:** The timings include responses outside of the Township, which the Department made due to response agreements or requests for mutual aid assistance).

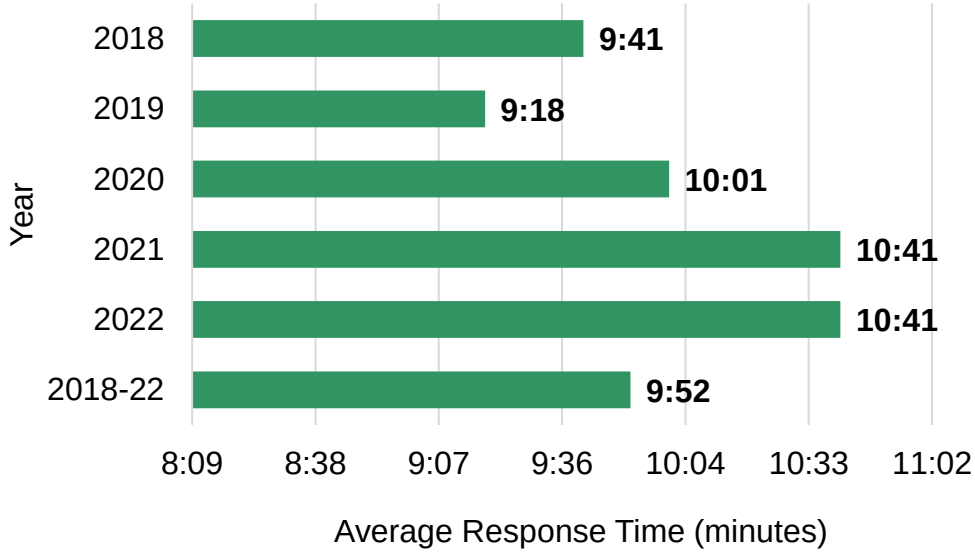

Figure 6. Average response times, 2018 to 2022.

10.5 Resource Deployment

Determining the number of firefighters needed for adequate resource deployment has been an ongoing concern for municipalities for many years.

In recent years, the provincial government has influenced the decision-making process for fire department staffing through the Occupational Health and Safety Act (OHSA) and the Fire Protection and Prevention Act. Under the former, the employer is responsible for protecting employees from workplace injuries and death, providing employee training, and providing competent supervisors. (Based on this legislation's criteria, the Township and Council are considered the employer.) Adhering to legislative requirements is the first step a fire department must take when it makes any staffing decisions.

Another resource that can help a fire department determine the appropriate number of staff is the effective fireground staffing model (EFSM). The Office of the Fire Marshal developed the EFSM in the 1990s as part of a comprehensive fire safety model that identified seven sub-models directly impacting fire protection:

- Public Attitude
- Intervention Time
- Detection
- Suppression Capabilities
- Fire Risk
- Fire Prevention Effectiveness
- Fire Ground Effectiveness

The EFSM has proven to be a valuable tool for helping fire departments determine staffing and resource levels/deployment, and it is now widely used across Ontario.

Table 30 applies the EFSM and lists the minimum number of firefighters required to perform the identified critical tasks at a fire in a single-family home.

Table 30. Firefighters needed for critical tasks at single-family home fires.

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

Table 31 expands upon the critical tasks listed above and lists the number of additional firefighters needed to provide the water supply for a fire in a non-hydrant area.

Table 31. Additional firefighters required to provide water in non-hydrant areas.

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

11.0 Community Comparison

11.1 Context

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 by July 1, 2024. A CRA should compare the municipality in question with municipalities which have a similar size and demographic profile.

11.2 Community Comparison for the Township of Selwyn

As of this CRA, there is not enough information available to conduct a thorough community comparison of the Township.

Ontario Regulation 378/18 requires a municipality to review its CRA annually. As more communities complete CRAs, the Township can use the data from those CRAs to complete this section of the document during one of its annual reviews.

12.0 Hazards Profile

12.1 Overview of a Hazards Profile

A hazards profile examines a community's hazards, including natural hazards and those caused by humans and technology. The three components of a hazards profile are likelihood scoring, consequence scoring, and total risk scoring.

This scoring methodology mirrors Emergency Management Ontario's Hazard Identification and Risk Assessment (HIRA) methodology but views the consequences and hazard types differently than Emergency Management Ontario; this is to ensure that the risk assessment best reflects the delivery of fire protection services.

The first component of a hazards profile is likelihood scoring. This component is determined after thoroughly examining the results of the previously-listed profiles that are reviewed as part of a CRA's development, particularly the past events and the loss history profile.

Table 32 explains each level of likelihood. The Loomex Group used this table when determining the likelihood of each identified hazard within the Township.

Table 32. Hazards profile: likelihood levels.

Likelihood	Category	Occurrence Rate	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 to 99 years.	Between a 1-2 per cent chance of occurrence in any year.
3	Unlikely	Occurs every 20 to 49 years.	Between a 2-5 per cent chance of occurrence in any year.
4	Probable	Occurs every 5 to 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.

The second component of a hazards profile is consequence scoring. The consequences used in this profile include eight of the ten consequences in Emergency Management Ontario's HIRA. A heavier overall weighting is given to the "life safety" category due to the high life safety consequences involved during a front-line emergency response.

Consequence scores are calculated as follows:

- High: 3
- Moderate: 2
- Low: 1
- None: 0

The maximum score is 3 for all categories except life safety. The life safety category has a 3x weight attached to it, and the maximum score for this category is 9. Table 33 explains each consequence level for each of the eight categories.

Table 33. Hazards profile: consequence levels.

Consequence Type	None (0)	Low (1)	Moderate (2)	High (3)
1. Life Safety	Not likely to result in injuries or fatalities. No life safety issues.	Medical treatment is required, but no fatalities are likely. Minor treatment or limited hospitalization.	Extensive injuries, significant hospitalization, or a fatality.	Large number of severe injuries requiring hospitalization. Possibility of multiple fatalities.
2. Evacuation	Not likely to result in an evacuation, shelter-in-place orders, or people becoming stranded.	A small or localized portion of the population is evacuated, told to shelter-in-place, or becomes stranded.	A moderate and generally localized portion of the population is evacuated, told to shelter-in-place, or becomes stranded.	A large or widespread portion of the population is evacuated, told to shelter-in-place, or becomes stranded.
3. Psychosocial	Not likely to result in significant impacts on mental and emotional well-being.	Moderate or generally short-term impacts on one or more mental and emotional well-being.	Significant impacts on the mental and emotional well-being of one or more individuals, including long-term impacts.	Widespread community impacts on mental and emotional well-being, including long-term impacts.
4. Property Damage	Not likely to result in property damage.	Could cause minor to moderate damage.	Localized severe damage.	Widespread severe damage or severe damage to multiple properties.
5. Critical Infrastructure	Not likely to disrupt assets or services.	Could cause minor disruption of assets or services.	Could cause major but localized or short-term disruptions to critical infrastructure services.	Could cause widespread, severe, ongoing disruption of assets or services.

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

The final component of a hazards profile is total risk scoring. Total risk scoring is determined by multiplying a hazard's likelihood score by its consequence score. Each hazard's overall risk level is calculated by multiplying its likelihood score (L) by its consequence score (C). Total scores (L x C) are organized into the following categories:

- **Score of 0: N/A**
- **Score of 1 to 30: Very Low**
- **Score of 31 to 60: Low**
- **Score of 61 to 90: Moderate**
- **Score of 91 to 120: High**
- **Score of 121 to 150: Very High**
- **Score of 151 to 180: Extreme**

12.2 Risks Identified in the Township of Selwyn

Based on the results of the community profiles reviewed during this CRA's development, as well as consultations with the Department's senior staff, fire prevention staff, and the Fire Chief, the Township's top risks (from a fire services perspective) are as follows:

1. Weather Event (Risk score: 80)
2. Road/Highway Incident (Risk score: 72)
3. Human Health Emergency (Risk score: 72)
4. Fire/Explosion in Residential Occupancy (Risk Score: 60)
5. Fire/Explosion in Commercial Occupancy (Risk score: 52)
6. Fire/Explosion in Industrial Occupancy (Risk score: 32)
7. Fire/Explosion in Agricultural Occupancy (Risk score: 30)
8. Waterway-Related Emergency (Risk score: 25)

It is important for the Department to note that if any of those hazards occur, it may be expected to respond.

Table 34 provides a detailed breakdown of the likelihood and consequence scores for each risk.

Table 34. Risk matrix identifying the public safety risks in the Township of Selwyn.

Risk	Likelihood Score (L)	Life Safety Consequence	Evacuation Consequence	Psychosocial Consequence	Property Damage Consequence	Critical Infrastructure Consequence	Environmental Consequence	Economic Consequence	Reputational Consequence	Consequence Score (C)	Risk Total (L x C)	Risk Level
Weather Event	5	3	1	2	3	3	2	2	0	16	80	**Moderate**
Road/Highway Incident	6	6	0	1	1	1	2	1	0	12	72	**Moderate**
Human Health Emergency	4	9	0	3	0	0	0	3	3	18	72	**Moderate**
Fire/Explosion in Residential Occupancy	6	3	1	2	3	0	1	0	0	10	60	**Low**
Fire/Explosion in Commercial Occupancy	4	3	1	2	3	1	2	1	0	13	52	**Low**
Fire/Explosion in Industrial Occupancy	4	3	1	0	2	1	1	1	0	9	32	**Low**
Fire Explosion in Agricultural Occupancy	5	3	0	0	1	0	1	1	0	5	30	**Very Low**
Waterway Related Emergency	5	3	0	1	0	0	1	0	0	5	25	**Very Low**

13.0 Risk Summaries

13.1 Overview of Risk Summaries

The following subsections summarize the Township's hazards from administrative and operational perspectives (based on results obtained by using the risk scoring methodology presented in section 12).

13.2 Weather Event

Risk Level: Moderate

Risk Score: 80

Current Treatment, Capability, and Services Provided

- The Department responds to all types of weather-related emergencies, including windstorms and floods.
- If infrastructure is damaged due to a weather event, the Department provides rescue and evacuation services and will establish a safety zone (if necessary) until the proper authority or agency arrives to repair or isolate the damaged infrastructure.

Administrative and Operational Risks/Concerns/Observations

- It may take time for the proper response authority/agency to arrive at the emergency site.
- Weather-related emergencies can last for many days, and the Department's volunteer firefighters may face challenges balancing employment and personal responsibilities with their emergency response duties.

13.3 Road/Highway Incident

Risk Level: Moderate

Risk Score: 72

Current Treatment, Capability, and Services Provided

- The Department responds to road incidents, such as motor vehicle collisions, and provides fire suppression, extrication, first aid, and hazardous materials responses.

Administrative and Operational Risks/Concerns/Observations

- There is a high volume of traffic on the highways and roadways in the Township.
- Some vehicles may be transporting unknown materials through the Township, including hazardous materials.

13.4 Human Health Emergency

Risk Level: Moderate

Risk Score: 72

Current Treatment, Capability, and Services Provided

- The Department responds to many types of incidents, even if a human health emergency is involved.

Administrative and Operational Risks/Concerns/Observations

- The Department's firefighters may become exposed to a virus, pathogen, or other contagions when responding to an emergency.
- PPE supplies may run short during emergencies.
- If multiple firefighters become ill, the Department's response capabilities will be significantly impacted.

13.5 Fire/Explosion in Residential Occupancy

Risk Level: Low

Risk Score: 60

Current Treatment, Capability, and Services Provided

- The Department provides interior structural firefighting.
- The Department provides interior rescues.
- The Department provides public education.

Administrative and Operational Risks/Concerns/Observations

- A Council-approved fire prevention policy is not in place.
- The Department may face challenges ensuring that the Township's multi-unit residential occupancies have maintained code compliance, as determining this requires on-site inspections.
- The Department has limited resources to conduct inspections.

13.6 Fire/Explosion in Commercial Occupancy

Risk Level: Low

Risk Score: 52

Current Treatment, Capability, and Services Provided

- The Department provides structural firefighting services.
- The Department provides interior fire rescue services.
- The Department provides public education.

Administrative and Operational Risks, Concerns, and Observations

- A comprehensive fire safety inspection program is not in place.
- A Council-approved fire prevention policy regarding inspection frequency is not in place.
- The Township contains commercial occupancies where an explosion or hazardous material spill may occur.
- The Department should continue to pre-plan the Township's commercial occupancies to help protect the safety of the building occupants and responding firefighters.

13.7 Fire/Explosion in Industrial Occupancy

Risk Level: Low

Risk Score: 32

Current Treatment, Capability, and Services Provided

- The Department provides structural firefighting services.
- The Department provides interior fire rescue services.
- The Department provides public education.

Administrative and Operational Risks/Concerns/Observations

- A comprehensive fire safety inspection program is not in place.
- A Council-approved fire prevention policy regarding inspection frequency is not in place.
- The Township contains industrial occupancies where an explosion or hazardous material spill may occur.
- The Department should continue to pre-plan the Township's industrial occupancies to help protect the safety of the building occupants and responding firefighters.

13.8 Fire/Explosion in Agricultural Occupancy

Risk Level: Very Low

Risk Score: 30

Current Treatment, Capability, and Services Provided

- The Department provides interior structural firefighting.
- The Department provides interior rescue.
- The Department provides public education.

Administrative and Operational Risks/Concerns/Observations

- Agricultural operations may experience large fires.

13.9 Waterway-Related Emergency

Risk Level: Very Low

Risk Score: 25

Current Treatment, Capability, and Services Provided

- The Department responds to various emergencies on the Township's waterways year-round. Types of emergencies include fire, missing persons, and boats/snowmobiles/ATVs in distress.
- The Department has three boats throughout the community to make water-related emergency responses.
- The Department responds to emergency calls at properties that are water-access only.

Administrative and Operational Risks, Concerns, and Observations

- Assembling a sufficient firefighting force for water-access properties may take extended time due to capacity limits of the Department's watercraft.
- Firefighters must transport any required equipment by watercraft at the time of the call. The capacity limits of the watercraft may affect response efficiency.
- Weather and time of year may be a factor.

14.0 Risk Treatment Plans

14.1 Overview of Risk Treatment Plans

After identifying and analyzing the Township's public safety risks, the Loomex Team created RTPs.

The RTP process follows an evidence-based approach that helps to define the problems posed by the risks. This approach considers the outcomes of proposed actions, assesses options, and provides recommendations to address the identified issues.

There are many ways to address risk. Each RTP in this CRA recommends at least one of the following five actions:

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.

Along with the recommended actions, the RTPs include strategies for risk mitigation. These strategies address topics such as:

- policies and procedures
- training
- service delivery agreements
- resource allocation
- service level changes

The Department should use the following RTPs to guide the development and establishment of programs and services to mitigate the potential impacts of the community's identified risks.

14.2 Weather Event

Risk Level: Moderate

Risk Score: 80

Determining Appropriate Fire Protection Services

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

The Township has experienced severe weather events in the last few years, including unusually intense windstorms.

Does the current treatment meet community needs/expectations?

Yes: There is no evidence that suggests expectations are not met.

Does the community have the capability to deliver these services?

Yes: As of this CRA, the Department has provided the required services needed to respond to the weather events the Township has faced.

Is there a better way to make the community safer?

Yes: The Department can provide public education regarding the actions Township residents should take during and after weather events. The education should also address emergency preparedness.

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

None currently.

Recommended Risk Treatment Option(s) and Action(s)

Mitigate

- Continue to provide public education regarding what to do during and after emergencies and the importance of emergency preparedness.

Share

- Consider partnering with allied agencies to deliver public education initiatives.

Resources Needed

- Department staff time
- Resources such as handouts or flyers

Timeline

- Ongoing

14.3 Road/Highway Incident

Risk Level: Moderate

Risk Score: 72

Determining Appropriate Fire Protection Services

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

Records indicate that the department responds to several incidents every year involving passenger and commercial vehicles.

Does the current treatment meet community needs/expectations?

Yes: There is no evidence that suggests expectations are not met.

Does the community have the capability to deliver these services?

Yes: The Department can deliver these services, but it may need additional or specialized assistance for some scenarios (which it can receive through the established mutual aid program).

Is there a better way to make the community safer?

Yes: The county and the MTO could hire a traffic engineer to study high-collision areas of their roadways to find solutions that will reduce future incidents.

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

None currently.

Recommended Risk Treatment Option(s) and Action(s)

Mitigate

- Review the current roads under municipal control for high-collision areas.
- Identify resources needed for future budget deliberations.

Transfer

- The county and the MTO could hire a traffic engineer to study high-collision areas of their roadways to find solutions that will reduce future incidents.

Resources Needed

- Professional engineering services (this would be the county or the MTO’s responsibility as these roadways fall under county/MTO jurisdiction)

Timeline

- The timeline will depend on budget approval and schedule.

14.4 Human Health Emergency

Risk Level: Moderate

Risk Score: 72

Determining Appropriate Fire Protection Services

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

In March 2020, the WHO officially declared a global pandemic due to COVID-19. Countries around the world are now starting to recover from the pandemic.

Does the current treatment meet community needs/expectations?

Yes: There is no evidence that suggests expectations are not met.

Does the community have the capability to deliver these services?

Yes: The Department can respond to human health emergencies, such as the COVID-19 pandemic; however, the Department had to continually adapt its service delivery to respond effectively.

Is there a better way to make the community safer?

Yes: The Township should consider reviewing and updating its business continuity plan.

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

None currently.

Recommended Risk Treatment Option(s) and Action(s)

Mitigate

- The Township should continue to maintain a PPE cache for all municipal staff.
- The Department's staff should receive ongoing training about ways to reduce the likelihood of contracting communicable diseases.
- The Township should consider reviewing and updating a business continuity plan.

Resources Needed

- Resources (to maintain an adequate PPE cache)
- Department staff time (for training)
- Resources (to review and update business continuity plan)

Timeline

- Ongoing

14.5 Fire/Explosion in Residential Occupancy

Risk Level: Low

Risk Score: 60

Determining Appropriate Fire Protection Services

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

The Department responded to 70 residential structure fires from 2018 to 2022. Those incidents resulted in over $9,000,000 in losses.

Does the current treatment meet community needs/expectations?

Yes: There is no evidence that suggests expectations are not met.

Does the community have the capability to deliver these services?

Yes: The Department can deliver structural firefighting services.

Is there a better way to make the community safer?

Yes: The Department should use the OFM's three lines of defence model to develop public education and code enforcement programs for the Township's multi-residential occupancies. The Department should also develop a fire prevention policy for Council's approval that includes a smoke/CO alarm program and addresses home fire escape planning.

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

None currently.

Recommended Risk Treatment Option(s) and Action(s)

Mitigate

- Develop a fire prevention policy for Council's approval and adoption.
- Develop public education programs to target the leading causes of residential fires in the Township.

Resources Needed

- Department staff time

Timeline

- 1-2 years

14.6 Fire/Explosion in Commercial Occupancy

Risk Level: Low

Risk Score: 52

Determining Appropriate Fire Protection Services

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

Over the last five years, the Department has responded to 11 fires in commercial occupancies. The damages from those fires have resulted in over $5,000,000 in losses.

Does the current treatment meet community needs/expectations?

There is no evidence that suggests expectations are not met. However, the Department does not conduct a consistent number of inspections in these occupancies.

Does the community have the capability to deliver these services?

Yes: The Department may need assistance with some large commercial fires. However, the Department is a member of the Peterborough County Mutual Aid System, which ensures assistance is available if needed.

Is there a better way to make the community safer?

Yes: The Department can develop a fire prevention policy for Council's approval that includes public education and code enforcement programs based on the OFM's three lines of defence model. Implementing this kind of policy 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?

The Department is not conducting routine inspections in the Township's commercial occupancies, which means some of these sites may have unidentified risks.

Recommended Risk Treatment Option(s) and Action(s)

Mitigate

- Draft a fire prevention policy for Council's approval. The policy should include public education and code enforcement programs.
- Continue to pre-plan the Township's high-risk commercial sites to help limit potential losses due to fires and protect firefighter safety.

Resources Needed

- Department staff time and resources

Timeline

- Developing a fire prevention policy: fourth quarter of 2023
- Pre-planning activities: ongoing

14.7 Fire/Explosion in Industrial Occupancy

Risk Level: Low

Risk Score: 32

Determining Appropriate Fire Protection Services

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

There are 17 industrial occupancies in the Township.

Does the current treatment meet community needs/expectations?

Yes: There is no evidence that suggests expectations are not met.

Does the community have the capability to deliver these services?

Yes: The Department may need assistance with large industrial fires; however, the Department is part of the Peterborough County Mutual Aid System, which ensures assistance is available if needed.

Is there a better way to make the community safer?

Yes: The Department can develop and implement a fire prevention policy. The policy should include a standard regarding public education and code enforcement programs based on the OFM's three lines of defence, as this can help reduce fire risk. The Department can also continue to pre-plan some of the Township's industrial sites, which may help with limiting the loss and other adverse outcomes of a fire.

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 the Department is not conducting routine inspections in the Township's industrial occupancies.

Recommended Risk Treatment Option(s) and Action(s)

Mitigate

- The Department should develop and implement a fire prevention policy. The policy should include a standard regarding inspections, public education, and code enforcement programs based on the OFM's three lines of defence.
- The Department should continue to pre-plan the Township's high-risk industrial sites to help limit the damage that results from fires and help firefighters plan for what they can expect to face under fire conditions at these locations.

Resources Needed

- Department staff time and resources

Timeline

- Ongoing

14.8 Fire/Explosion in Agricultural Occupancy

Risk Level: Very Low

Risk Score: 30

Determining Appropriate Fire Protection Services

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

The Department responds to these types of incidents annually.

Does the current treatment meet community needs/expectations?

Yes: There is no evidence that suggests expectations are not met.

Does the community have the capability to deliver these services?

Yes: The Department may need assistance with some large agricultural fires; however, the Department is a member of the Peterborough County Mutual Aid System, which ensures assistance is available if needed.

Is there a better way to make the community safer?

Yes: The OFM recommends that fire departments use the three lines of defence as a basis for all life safety programs. The Department should use the three lines of defence model to develop enhanced public education for the Township's agricultural occupancies.

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

None currently.

Recommended Risk Treatment Option(s) and Action(s)

Mitigate

- Provide public education programs/resources to target the leading causes of agricultural fires in the Township.

Resources Needed

- Staff time

Timeline

- Ongoing

14.9 Waterway-Related Emergency

Risk Level: Very Low

Risk Score: 25

Determining Appropriate Fire Protection Services

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

The Department responds to several waterway-related emergencies each year.

Does the current treatment meet community needs/expectations?

Yes: There is no evidence that suggests expectations are not met.

Does the community have the capability to deliver these services?

Yes: As of this CRA, the Department has received sufficient resources to equip and train its firefighters.

Is there a better way to make the community safer?

Yes: The Department can deliver a public relations/education program for users of the Township's waterways.

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

None currently.

Recommended Risk Treatment Option(s) and Action(s)

Mitigate

- Continue to provide public education regarding emergencies and the importance of emergency preparedness.

Share

- Consider partnering with allied agencies to provide public education for users of the Township's waterways.

Resources Needed

- Staff time
- Resources such as handouts or flyers

Timeline

- Ongoing

Appendix A: Resources

The Loomex Group used the following resources to help develop this community risk assessment:

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.

Appendix B: Fire Marshal Directive 2022 – 001

TOPIC: Use of Information on Lightweight Construction to Inform Fire Suppression Pre-Planning Activities

This directive is issued under the provisions of the *Fire Protection and Prevention Act, 1997*, (FPPA) S.O. 1997, chapter 4, clause 9.(1)(b). It is the responsibility of every assistant to the Fire Marshal to follow the Fire Marshal's directive as set out in subsection 11.(1) of the FPPA. Further, under clause 9.(2)(b) of the FPPA, the Fire Marshal has the duty to advise municipalities in the interpretation and enforcement of this Act and the regulations.

Background

It has been well established that buildings constructed with truss and lightweight construction systems[i] (commonly referred to as lightweight construction) may be susceptible to pre-mature failure and rapid collapse under certain fire conditions, and thereby pose a risk to responding fire crews. Given this risk, it is important for responding fire departments to be aware of the presence of lightweight construction buildings to inform delivery of fire suppression service and protect the safety of firefighters.

Following the tragic passing of two volunteer firefighters, Ken Rea and Ray Walter, who were killed while battling a fire in Listowel when the roof of the building they were inside collapsed, the focus is to provide firefighters with the necessary information about a building's structural composition to safely plan fire suppression activities and help ensure their safety.

Building stock profile, including any building-related risks known to the fire department, must be considered in the development of Community Risk Assessment required under Ontario Regulation 378/18 - Community Risk Assessments (CRA)[ii].

Identifying the presence of lightweight construction where it is known to exist in a community's building stock is required[iii] by Worksheet #2 "Building Stock Profile" included in Appendix A of Office of the Fire Marshal technical guideline TG-02-2019 (as revised on February 25, 2022). Where this information is used to inform fire suppression pre-planning activities, the goal of providing firefighters with necessary information to help ensure their safety is met.

Directive

Those assistants to the Fire Marshal, as identified in clause 11.(1)(a) of the FPPA (the fire chief of every department), are directed to:

- Ensure that information on the presence of truss and lightweight construction systems (lightweight construction) in a community's building stock, that is known

and documented in the Community Risk Assessment, is used to inform fire suppression pre-planning activities conducted within the community:

- by the local fire department; and
- by other municipalities providing fire suppression services through fire protection agreements.

Those assistants to the Fire Marshal, as identified in clause 11.(1)(b) of the FPPA (the clerk of every municipality that does not have a fire department) are directed to:

- Ensure that information on the presence of truss and lightweight construction systems (lightweight construction) in the community's building stock, that is known and documented in the Community Risk Assessment, is provided to those fire departments who provide fire protection services to the community, to inform their fire suppression pre-planning activities.

Rationale

As truss and lightweight construction systems may be susceptible to pre-mature failure and rapid collapse under certain fire conditions, and pose a risk to responding fire crews, information pertaining to the presence of lightweight construction that is known and documented in a Community Risk Assessment must be used to inform pre-planning activities so that firefighters responding to a fire emergency may appropriately plan their fire response strategy.

Jon Pegg
Ontario Fire Marshal
February 25, 2022

[i] Buildings constructed using:
i. lightweight pre-engineered floor or roof systems containing lightweight elements such as wood I-joists, cold formed steel joists, wood truss assemblies with metal or wood plates and metal web wood joists; or
ii. lightweight floor or roof systems containing solid sawn lumber joist less than 38 mm by 235 mm.

[ii] The CRA is an in-depth and comprehensive assessment to inform fire protection service levels and requires the identification, analysis, evaluation and prioritizing of risk, based on nine mandatory profiles. The regulation outlines a standard set of information profiles that must be considered when conducting a community risk assessment. The information and data gathered to address each of the profiles will assist in determining and prioritizing the risks to public safety in the community, and determining the fire protection services to be provided by municipalities and fire departments in territories without municipal organization to address those risks.

[iii] Section 2.(3) of the regulation requires that a CRA be in the form, if any, that the Fire Marshal provides or approves. The minimum expected level of information and detail that must be considered with respect to each of the mandatory profiles is outlined in Worksheets 1-9 included in Appendix A of TG-02-2019. While different styles and formats of the worksheets may be used, the information that is collected and considered for each profile must at minimum include the information outlined in the Appendix A worksheets.

Appendix C: Glossary of Terms

There are varying definitions for the terms used in risk assessment and risk management, depending on the context to which a term is applied. For this CRA, The Loomex Group used the following definitions, as they generally align 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.

Catastrophe: An emergency of particularly severe proportions.

Commercial Occupancy: A building where goods or services are sold, such as restaurants, offices, drug stores, and the downtown area.

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

Consequence: A result or effect of an action or condition that is expressed qualitatively or quantitatively. A consequence can manifest as a loss, injury, or disadvantage.

Critical infrastructure: The infrastructure that contributes to the interconnected networks, services, and systems that meet vital human needs, sustain the economy, and protect public safety and security.

Environmental Impact: Harm to human and non-human (animal or vegetable) species of life and a general decline in the 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 Impact: Disruptions to businesses and financial activities, monetary losses due to impacts from an emergency, and other negative consequences for the affected community or regional economy. This impact refers to the negative economic consequences of a hazard on businesses, industries, and regional economies.

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

Explosion: A sudden conversion of potential energy into kinetic energy resulting in a sudden, violent release of gas(es) under pressure.

Fire: Uncontrolled or potentially destructive burning caused by the ignition of fuel or material, which, when combined with oxygen, gives off heat and light, with or without an open flame.

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

Flooding: An overflow or inundation of water from a river or other body of water, or overland, which causes or threatens damage.

Hazard: A phenomenon, substance, human activity, or condition that may cause a loss of life, an injury, or other health impacts. A hazard can also result in property damage, loss of livelihoods and services, social and economic disruption, and environmental damage. The origin of a hazard can be 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, the environment, the economy, or services. Materials with combustible, corrosive, explosive, flammable, infectious, oxidizing, radioactive or toxic properties are considered hazardous.

Life safety: Injuries or loss of life due to a community or emergency responder becoming exposed 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.

Ontario Building Code (OBC): A set of ordinances or regulations and associated standards intended to control aspects of design, construction, materials, alteration, and occupancy in structures. The OBC's contents are necessary to ensure human safety and welfare, including resistance to collapse and damage.

Probability/Likelihood: The likelihood of an event occurring that 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.

Psychosocial: Unusual or uncharacteristic behaviours, such as mental health issues. For example, hoarding can be deemed a psychosocial behaviour.

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 the organization's 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.

Vulnerable occupancy: A building such as a hospital, long-term care home, or group home.

Appendix D: Data from Figures

For accessibility purposes, Tables 35, 36, 37 and 38 present the data from Figures 1, 3, 4, and 6.

Table 35. Public safety risks identified in the Township of Selwyn.

Type of Risk	Risk Level
Weather Event	80
Human Health Emergency	72
Road/Highway Incident	72
Fire/Explosion in Residential Occupancy	60
Fire/Explosion in Commercial Occupancy	52
Fire/Explosion in Industrial Occupancy	32
Fire/Explosion in Agricultural Occupancy	30
Waterway-Related Emergency	25
Fire/Explosion in Residential Occupancy	78
Fire/Explosion in Commercial Occupancy	78
Human Health Emergency	72

Table 36. Education levels in the Township of Selwyn and the Province of Ontario.

Education Level	Township of Selwyn	Province of Ontario
No Certificate	15.32%	10.4%
High School	26.28%	24.5%
Some Post-Secondary	58.4%	65.1%

Table 37. Number of emergency responses by year, 2018 to 2022.

Year	Responses
2018	1,245
2019	1,305
2020	1,244

Year	Responses
2021	1,287
2022	1,378

Table 38. Average response times, 2018 to 2022.

Year	Average Response Time
2018	9:41
2019	9:18
2020	10:01
2021	10:41
2022	10:41
2018-2022	**9:52**