February 2020

The Township of Lanark Highlands

and the

Lanark Highlands Fire Service

<u>Community Risk Assessment</u>

Peter McLaren
Reeve

Gene Richardson
Fire Chief

Table of Contents

INTRODUCTION

This document has been completed in accordance with the Office of The Fire Marshal and Emergency Management, Regulation 378/18, that came into effect July 1st, 2019. Part of this regulation requires that a new Community Risk Assessment (CRA) is to be completed every five years. The Regulation also requires fire departments to review their CRA every 12 months to ensure it accurately reflects the Mandatory Profiles and fire and emergency risks. The completion of a Community Risk Assessment will allow a municipality and its Fire Service to make sound decisions on the level of fire protection it will provide its residents.

Risk is the measure of the probability and possibility of an event occurring that will have adverse effects on the community including the health, property, organization, environment, and/or community.

It is this identification of such fire and life safety risks and their prioritization based on the probability and the impacts such events have on the community that will provide a basis for which a plan on how to prevent and mitigate such events from occurring is amassed. It is this assessment that also directs fire services in identifying the levels of service to be provided in relation to public fire safety education, Fire Code inspections and enforcement and emergency response in preventing and mitigating the events identified.

The CRA profile is based on nine mandatory sections that include:

1. Geographic Profile
2. Building stock profile
3. Critical infrastructure profile
4. Demographic profile
5. Hazard profile
6. Public safety response profile
7. Community services profile
8. Economic profile
9. Past loss and event history profile

The data worksheets for each profile are included in this document, and it is these worksheets that will assist in assigning risk levels to best treat each risk and the resources to do so. The different levels of treatment risks are:

- **Avoid the Risk** – *implementation of programs to prevent fires or emergencies from occurring*

- **Mitigate the Risk** -*Programs and initiatives implemented to reduce the probability and/or consequences of a fire or emergency*

- **Accept the Risk** – *after identifying and prioritizing a risk, it is determined that there are no specific programs or initiatives to be implemented to address this risk*

- **Transfer the Risk** – *the fire department has chosen to transfer the impact and/or management of the risk to another organization or body or outside agency.*

Fire departments should maintain documentation required by O. Reg. 378/18. This documentation should include:

- Any changes to any of the mandatory profiles

- Any changes to assigned risk levels or fire protection services that occur as a result of the review, and

- Any other information the fire department deems appropriate to the review or any resultant changes to fire protection services.

If it is found upon completion of the review within the 12-month (annual review) period, that no changes are required to any of the profiles or fire protection services, then a review could consist of documentation that reflects these findings.

NOTE: It should be noted that due to the confidential nature of some of the information contained within the CRA, access to the report should be discrete. This sensitive information was obtained from the Township's Hazard Identification & Risk Assessment (HIRA).

Dates of Review and Updates

Year: 2021

Profile	Issues/Concerns	Treatment of Risk	Preferred Treatment Option

Year: 2022

Profile	Issues/Concerns	Treatment of Risk	Preferred Treatment Option

Year: 2023

Profile	Issues/Concerns	Treatment of Risk	Preferred Treatment Option

Year: 2024

Profile	Issues/Concerns	Treatment of Risk	Preferred Treatment Option

Year: 2025

Profile	Issues/Concerns	Treatment of Risk	Preferred Treatment Option

Risk Summary

The following summary outlines the top risks to life safety and property along with the suggested means of reducing or the mitigation of the noted risks. It is the Preferred Treatment Options in which Council and the Fire Chief will identify as areas that need to be addressed through public education, Fire Code enforcement, or within the level of fire service provision. It is these decisions that will form the basis of the Lanark Highlands Community Risk Reduction Plan.

As with any plan, a thorough review coupled with sound strategic planning will reap successes either in the form of fewer fires, reduced fire related injuries, lower dollar property loss through ongoing fire prevention initiatives, early warning detection systems and proactive inspections and public education.

Top Risk or Issues/Concerns	Preferred Treatment Option(s)
Bodies of water	• Implement water safety public education initiatives through brochures and signage near bodies of water • Implementation of an off-shore ice rescue program • Review water rescue requirements under present legislation, regulations and costs to implement. Another alternative is a stand-by agreement with a neighbouring municipality and their fire service, that responds to summer marine emergencies and this should in the form of an automatic aid agreement. • Promote water safety programs through swimming organizations and other first responders such as the OPP and Paramedics • Fire service develop response protocols, Standard Operating Guidelines and enhance level of service provision • Promote winter activity safety on ice through signage along the shore and submissions to local media outlets • Promote safety equipment that should accompany those that venture onto the ice, such as whistles, wearing of floatation suits, air horns, throw ropes, etc.
Inland Rescues – Trench / Confined Space / Low Angle	• Enter into response agreements with outside fire services to respond and mitigate • Develop SOGs, response protocols and training at the Basic Level for the Lanark Highlands firefighters

Structure Fires	- Increased public education focusing on preventive maintenance of electrical / mechanical equipment - Promote the dangers of unattended candles during festive seasons or ethnic traditions - Provide information on need to have working smoke alarms and carbon monoxide detectors in the home - Develop and practice a home escape plans through discussions with children during school visits - For new home builds or major renovations, promote residential sprinkler systems - Provide training on the use of fire extinguishers - Before the wood burning season begins, promote the need to have chimneys cleaned and inspected - Take advantage of speaking engagements that include senior citizens to discuss safe cooking procedures and what to do in the event of a grease fire - Work with local industry and commercial establishments on the advantages of maintaining electrical / mechanical equipment and continued good housekeeping practices - Initiate a home inspection program focussing on residences furthest away from a fire station - Develop plans on initiating and continuing regular fire inspections based on the frequency outlined in the FUS inspection schedule - Enforcement of Fire Code Violations
Hazardous Material Incidents	Enter into a response agreement with an outside fire service that has the equipment and level of expertise in mitigating such events
Lanark Highlands Fire Service	- Continued recruitment of firefighters to increase the number of fire fighters available to respond to an incident during the daytime - Enter into a response agreement with an outside fire service for the provision of an elevated aerial device to be used during major fires as a means of extinguishment, provide rescue, ventilation, etc. - For LHFS to acquire their own aerial device in the future - Monitor response timelines and staffing

	• Review station response boundaries
	• Review station locations
	• Review current radio network system to explore avenues of improved radio coverage across the Township.
	• Explore new opportunities of entering into automatic aid agreements with neighbouring fire services

The following tables represent the compilation of an in-depth analysis of the risks identified during the completion of the nine mandatory profiles. Each worksheet contains the related risks and associated information that were identified. Within each profile, the recommended level of treatment and the suggested means of handling the risks have been included (where applicable).

Council with the assistance of the Fire Chief will be able to use this information in the formulation of the Community Risk Reduction Plan.

OFMEM Fire Statistics from 2015 to 2017

Year	2015
Number of Structure Fires	10
Number of Fire Fighter Injuries	0
Number of Civilian Injuries and Deaths	2
Total Dollar Loss	$1,446,000
Fire Cause Determination	Cooking Equipment, or Electrical distribution equipment, or Exposure to other fire, or Undetermined

Year	2016
Number of Structure Fires	5
Number of Fire Fighter Injuries	0
Number of Civilian Injuries and Deaths	0
Total Dollar Loss	$740,500
Fire Cause Determination(s)	Undetermined

Year	2017
Number of Structure Fires	7
Number of Fire Fighter Injuries	0
Number of Civilian Injuries and Deaths	0
Total Dollar Loss	$1,054,800
Fire Cause Determination(s)	Heating equipment – chimney, or Undetermined

PROFILE WORKSHEETS

Worksheet 1: Geographic Profile

Lanark Highlands is a township in eastern Ontario, in Lanark County. The Municipality occupies a land mass of 1,048 km^2, with a present population of approximately 5,400. Which gives it a population density of just over 5 residents per square kilometre.

Geographic Profile Risks

List the geographic features in your community and how they may influence the delivery of fire protection services.

Geographic Profile Risks

Geographic Feature	Potential Impact on the Delivery of Fire Protection Services
Rivers	- Impacts training and equipment for response service delivery - Impacts response / travel timelines to fire calls - Recreational / tourist activities impact the delivery of public fire safety messaging - Mississippi River crosses the Township from the west to the east - The Clyde River runs from the north to the south where it meets up with the Mississippi River - These rivers and many streams are prone to flooding in the spring impacting property, infrastructure and response times
Lakes	- Impacts training, equipment for response service delivery - Impacts response times and travel routes to fire calls - Dozens of lakes that impact road infrastructure and accessibility - During summer months increased risk of boating accidents / drownings as tourists are not familiar with the lakes and their risks - In the winter snowmobiles / ice fisherman may fall through the ice as they are not familiar with the thickness of the ice or water currents under the ice - Response capabilities are hampered due to lack of access points or the parties involved are not familiar with their exact location - Fire service is permitted to only provide land-based rescue

Geographic Profile Risks

Geographic Feature	Potential Impact on the Delivery of Fire Protection Services
	• Many of the over 100 lakes in the township are only accessible through wildland or logging roads only • Both permanent and seasonal residents reside on lakes • Lanark Highlands houses 57% of the lakes found within the County of Lanark • Prone to rise over their banks in the spring
Highways/County Roads	• There are 5 county roads that transect Lanark Highlands • Highway 511 runs the length of the township in a north to south direction • County roads 8, 9, 12 and 16 intersect Highway 511 along its route • Hwy 511, the County and Township road network experience high volumes of heavy trucks hauling payload from the large quarry within the township • There is also a high volume of heavy-duty logging and quarry related vehicles that travel on all the road systems
Topography – Canadian Shield and Rolling Hills	• Impact travel routes • Risk of injuries are heightened in these areas due to ruggedness and being not familiar with the terrain • Poor or limited access points impact ability to respond in a timely manner • Tourists are unfamiliar with where they are when calling for assistance • LHFS does not have the means of transporting staff and equipment to the patient(s) in remote areas, and the safe removal of the injured party(s).
Township Road System	• Some areas of the township have roads that are gravel based and very narrow. These roads are single lane and if there were to be oncoming traffic to a fire apparatus that was responding to that area, would find that there is nowhere in which to turn around or allow the other vehicle to pass.

Geographic Profile Risks

Geographic Feature	Potential Impact on the Delivery of Fire Protection Services
	• Corners in some areas are very tight and difficult to navigate • Situations such as this increase the risk of apparatus being involved in a motor vehicle collision • Fire apparatus are forbidden to travel single lane roads unless the fire call is actually along that stretch of road • Some township roads are of such condition, even though they may be straight with few curves, the roads condition is such, that travel at higher speeds could damage fire apparatus • A poor network of roads impedes fire apparatus from arriving at a fire call in a timely manner
Forest, Brush Cover and Open Fields (Wildland)	• Over 80% of the Township's geography falls within this profile • Risk of fire in areas of the Municipality that are protected by LHFS or the MNRF • Township has a fire response agreement with the MNRF for the protection of some crown land • Lack of access points due in part to wilderness conditions, makes it difficult to execute the removal of injured parties and locate and attend forest fires. • Lack of all terrain vehicle impedes response capabilities as more personnel are required to manually carry equipment into remote locations.

Note: The information on this worksheet should be considered in conjunction with the information on all other worksheets, and not in isolation. Worksheet 10 allows fire departments to consider all of the information on all worksheets together in order to make decisions about the provision of fire protection services in their municipality/community.

Worksheet 2: Building Stock Profile

The building stock profile should consider the characteristics of the buildings in the community. This can include the use of the buildings, building density, building age and construction, and building height and area. This information will assist fire departments to identify the issues/concerns that will impact the delivery of fire protection services.

Assign probability, consequence and risk levels to each.

Assigning a risk level assists fire departments in prioritizing risks, which helps to determine how to address or treat each risk. The **Risk Level Matrix** in this section can assist fire departments to determine risk levels based on the probability and consequence levels of each identified risk. Risks can be assigned as low risk, moderate risk or high risk. The risk levels for each risk can be noted in the **Assigned Risk Level** column on the relevant worksheets in Appendix A.

The matrix below can be used to determine the assigned risk level.[1] Plot the assigned probability and consequence levels on the relevant worksheets in Appendix A to assign a risk level for each identified risk.

FIGURE 1: Risk Level Matrix

Risk Level Matrix

Probability / Consequence	INSIGNIFICANT	MINOR	MODERATE	MAJOR	CATASTROPHIC
ALMOST CERTAIN	Moderate Risk	Moderate Risk	High Risk	High Risk	High Risk
LIKELY	Moderate Risk	Moderate Risk	Moderate Risk	High Risk	High Risk
POSSIBLE	Low Risk	Moderate Risk	Moderate Risk	Moderate Risk	High Risk
UNLIKELY	Low Risk	Low Risk	Moderate Risk	Moderate Risk	Moderate Risk
RARE	Low Risk	Low Risk	Low Risk	Moderate Risk	Moderate Risk

Building Stock Profile Risks

List the building stock/occupancy types in your community and the fire and other emergency issues/concerns for each.

Assign probability, consequence and risk levels to each.

Building Stock Profile Risks

Occupancy Classification		Issues/Concerns (i.e. age of buildings; use of buildings; building density, height and area; historic and culturally significant buildings; etc.)	Probability (refer to Table 1 for suggested probability levels)	Consequence (refer to Table 2 for suggested consequence levels)	Assigned Risk Level (refer to the Risk Level Matrix for suggested risk levels)
Group A	Assembly	• Heavy timber construction • High fire load • High occupancy • Historical significance	Possible	Moderate	Moderate Risk
Group B	Detention Occupancies	• There are no detention centres in Lanark Highlands	N/A	N/A	N/A
	Care and Treatment / Care	• Elderly residents with mobility and cognitive behavioral issues • Homes that were not required to upgraded with sprinklers	Possible	Major	Moderate risk
Group C	Single family	• Lack of smoke and CO alarms	Almost Certain	Major	High Risk

Building Stock Profile Risks

Occupancy Classification		Issues/Concerns (i.e. age of buildings; use of buildings; building density, height and area; historic and culturally significant buildings; etc.)	Probability (refer to Table 1 for suggested probability levels)	Consequence (refer to Table 2 for suggested consequence levels)	Assigned Risk Level (refer to the Risk Level Matrix for suggested risk levels)
		• Lack of a home escape plan • Lack of fire extinguishers • Lack of residential sprinklers • Many structures of an older age (balloon construction) • Hoarding or poor housekeeping practices • Many homes in remote areas of the Township			
	Multi-unit residential	• High occupancy • Lack of an escape plan • Lack of, or inoperable fire extinguishers, and knowledge on their operation	Possible	Moderate	Moderate Risk

Building Stock Profile Risks

Occupancy Classification		Issues/Concerns (i.e. age of buildings; use of buildings; building density, height and area; historic and culturally significant buildings; etc.)	Probability (refer to Table 1 for suggested probability levels)	Consequence (refer to Table 2 for suggested consequence levels)	Assigned Risk Level (refer to the Risk Level Matrix for suggested risk levels)
		• Not constructed to OBC or OFC Standards			
	Hotel / Motel	• Transient population not familiar with the building's safety features (i.e emergency exits, location of pull station, not familiar with location of fire extinguishers) • Include Bed and Breakfast facilities in this category	Possible	Moderate	Moderate Risk
	Mobile Homes & Trailers	• High combustibility due to construction materials • High fire loads and in some cases hoarding	Possible	Moderate	Moderate Risk

Building Stock Profile Risks

Occupancy Classification		Issues/Concerns (i.e. age of buildings; use of buildings; building density, height and area; historic and culturally significant buildings; etc.)	Probability (refer to Table 1 for suggested probability levels)	Consequence (refer to Table 2 for suggested consequence levels)	Assigned Risk Level (refer to the Risk Level Matrix for suggested risk levels)
		• Over 300 trailers in the township housing over 5,000 seasonal residents • Seasonal usage • Trailer parks with limited access routes			
	Other	• N/A	N/A	N/A	N/A
Groups D & E	**Business & Personal Service / Mercantile**	• Small local business • Possibly heavy timber construction or common basements	Possible	Major	Moderate Risk
Group F	**Industrial**	• Unknown chemicals on-site • Lack of current emergency plan • High fire loads • Lack of sprinklers and alarm systems (not required by code)	Possible	Major	Moderate Risk

Building Stock Profile Risks

Occupancy Classification		Issues/Concerns (i.e. age of buildings; use of buildings; building density, height and area; historic and culturally significant buildings; etc.)	Probability (refer to Table 1 for suggested probability levels)	Consequence (refer to Table 2 for suggested consequence levels)	Assigned Risk Level (refer to the Risk Level Matrix for suggested risk levels)
		• Quarries with high explosives on-site			
Other	**Occupancies not classified in OBC such as farm buildings.**	• Very old construction of heavy timbers • High fire loads i.e. hay, straw, farm equipment • Risk to livestock • Open concept in driving sheds and barns • Lack of fire stops • Poor housekeeping • Many vacant abandoned structures • Farm structures being used for non-intended purposes i.e. illegal grow ops	Likely	Major	High Risk

Note: The information on this worksheet should be considered in conjunction with the information on all other worksheets, and not in isolation. Worksheet 10 allows fire departments

to consider all of the information on all worksheets together in order to make decisions about the provision of fire protection services in their municipality/community.

Worksheet 3: Critical Infrastructure Profile

Consider the community's critical infrastructure including electricity distribution, water distribution, telecommunications, hospitals, and airports and how they relate to fire and other emergency risks in the community.

Critical Infrastructure Profile Risks
List the critical infrastructure in your community and the fire and other emergency issues/concerns relating to each.

Critical Infrastructure Profile Risks

Identified Critical Infrastructure	Issues/Concerns
Electricity transmission and distribution	• Hydro lines go down • Fires within transformer stations and on poles • Adverse effect to commerce if power is out
Radio Communications	• Effects multiple departments of the Municipality • Lack of means to notify first responders • Lack of communications if communications centre must be evacuated and moved to back up location • Very poor coverage in areas of the township with no contact with fire service communication dispatch center • Lack of uninterrupted power supply to radio systems and computers
Telecommunications	• Telephone lines/cell towers go down • Lack of means of notifying first responders • Commerce relies on operating telephone lines to complete transactions • Lack of cell phone coverage throughout the township. Many areas do not have any coverage at all.
Roads	• Impacted by weather events, traffic accidents, volume of traffic, damaged due to significant environmental events

Critical Infrastructure Profile Risks

Identified Critical Infrastructure	Issues/Concerns
	• Many are seasonal, once use for logging purposes and not upgraded, other roads just in poor condition • Roads department not able to fulfill its responsibilities due to unforeseen circumstances
Natural Gas	• Concerns are leaks in transmission lines • Gas company infrastructure failures • Lack of NG could affect areas of commerce such as restaurants • Lack of gas would affect heating appliances
Continuity of Government	• Municipal government closed due to extreme weather events, computer hacking, health emergency, disrupted power supply
Financial Institutions	• Disruption to commerce due to power failure, weather events, computer hacking, health emergency, • Disruption in computer system that prevents other businesses from operating/completing transactions
Emergency Operations Centre	• Unable to operate due to power disruption and lack of back-up power supply, computer system failure, health emergency, extreme weather event,
Emergency Shelters	• Lack of / or failure of generators • Evacuated due to hazardous materials incident • Unable to accommodate mass numbers of civilians • In operation for extended periods of time • Food and accommodations/sleeping arrangements • Lack of adequate quantities of potable water

Note: The information on this worksheet should be considered in conjunction with the information on all other worksheets, and not in isolation. Worksheet 10 allows fire departments

to consider all of the information on all worksheets together in order to make decisions about the provision of fire protection services in their municipality/community.

Worksheet 4a: Demographic Profile

Consider the characteristics of your community's demographic profile to identify potential fire safety issues/concerns. This will help the fire department prioritize its overall risk and decisions about the provision of fire protection services. For example, traditionally older adults, young children, recent immigrants, and people with disabilities are at the highest risk of fire. Knowing if your community has a high number of people in any of these demographic groups helps your fire department prioritize your public fire safety education and Fire Code inspection and enforcement programs.

Demographic profile characteristics to consider include: age, culture, education, socio-economics, transient populations or other unique population characteristics in your community.

The following population distribution chart can assist with identifying high-risk or vulnerable demographic groups in your community.

Demographic Profile

Ages of population	# of People	% of Total Population
0-4	230	4.3
5-9	240	4.4
10-14	225	4.2
15-19	245	4.5
20-24	230	4.3
25-29	275	5.1
30-34	270	5.0
35-39	240	4.4
40-44	270	5.0

Demographic Profile

Ages of population	# of People	% of Total Population
45-49	350	6.5
50-54	480	8.9
55-59	565	10.5
60-64	545	10.2
65-69	500	9.3
70-74	305	5.7
75-79	190	3.5
80-84	115	2.1
85 and over	75	1.4
Total Population	5,335	100%

Population Distribution

Total - Distribution (%) of the population by broad age groups - 100% data	100.0	Male	Female
0 to 14 years	13.0	13.7	12.3
15 to 64 years	64.9	63.6	66.3
65 years and over	22.1	22.7	21.3
85 years and over	1.4	0.7	2.1
Average age of the population	51.2	51.1	51.3
Median age of the population	47.7	47.1	48.1

Breakdown of Population by Ethnicity

Total - Visible minority for the population in private households - 25% sample data	Total	Male	Female
	5,315	2,615	2,700
Total visible minority population	45	20	25
South Asian	10	0	0
Chinese	10	0	0
Black	15	0	0
Filipino	0	0	0
Latin American	0	0	0
Arab	10	0	0
Southeast Asian	0	0	0
West Asian	0	0	0
Korean	0	0	0
Japanese	0	0	0
Visible minority (not identified elsewhere)	0	0	0
Multiple visible minorities	0	0	0
Not a visible minority	5,275	2,695	2,580

Education

Total - Highest certificate, diploma or degree for the population aged 15 years and over in private households - 25% sample data	Total 4,625	Male 2,355	Female 2,365
No certificate, diploma or degree	885	470	420
Secondary (high) school diploma or equivalency certificate	1,355	680	675
Postsecondary certificate, diploma or degree	2,385	1,210	1,170
Apprenticeship or trades certificate or diploma	440	350	95
Trades certificate or diploma other than Certificate of Apprenticeship or Certificate of Qualification	190	125	65
Certificate of Apprenticeship or Certificate of Qualification	255	220	30
College, CEGEP or other non-university certificate or diploma	**1,205**	**555**	**650**

University certificate or diploma below bachelor level	100	40	60
University certificate, diploma or degree at bachelor level or above	635	265	370
Bachelor's degree	445	170	275
University certificate or diploma above bachelor level	65	25	40
Degree in medicine, dentistry, veterinary medicine or optometry	0	0	0
Master's degree	120	65	50
Earned doctorate	0	0	0

Socioeconomic
Breakdown of Income

Total - Total income groups in 2015 for the population aged 15 years and over in private households - 100% data	Total 4,625	Male 2,345	Female 2,280
Without total income	170	80	90
With total income	4,455	2,265	2,185
Percentage with total income	96.3	96.6	95.8
Under $10,000 (including loss)	570	240	330
$10,000 to $19,999	885	375	510
$20,000 to $29,999	665	290	380
$30,000 to $39,999	550	265	285
$40,000 to $49,999	480	255	225
$50,000 to $59,999	350	215	140
$60,000 to $69,999	260	175	90
$70,000 to $79,999	210	145	70
$80,000 to $89,999	160	100	65
$90,000 to $99,999	115	75	45
$100,000 and over	200	150	55
$100,000 to $149,999	160	110	50
$150,000 and over	45	35	10

Workforce

Total - Population aged 15 years and over by Labour force status - 25% sample data	Total	Male	Female
	4,625	2,350	2,270
In the labour force	2,745	1,430	1,370
Employed	2,565	1,315	1,260
Unemployed	175	120	60
Not in the labour force	1,880	925	950
Participation rate	59.4	60.9	58.1
Employment rate	55.5	56.0	55.5
Unemployment rate	6.4	8.4	4.5

Homeownership

Total - Private households by tenure - 25% sample data	2,290
Owner	2,095
Renter	195
Condominium	10

Consider the following questions to help identify the demographic groups within your community and the associated fire safety issues/concerns:

- Are there specific age groups that make up a large portion of your community? If yes, who are they?

- Are there groups whose language and/or cultural practices impact fire safety in your community? If yes, who are they?

- Are there transient populations in your community (e.g. post-secondary school students, migrant workers, seasonal tourists, etc.)? If yes, who are they?

- Are there specific socio-economic groups and/or circumstances that impact fire safety in your community? If yes, who/what are they?

- Are there demographic groups within your community that have cognitive or physical disabilities served by community service agencies? If yes, who are they?

List any other unique demographic groups or characteristics in your community that impact fire safety.

Worksheet 4b: Demographic Profile

Use the answers to the questions above to list the identified demographic groups in the first column of the worksheet below.

Demographic Profile Risks

List the demographic groups of concern in your community and the fire and other emergency issues/concerns relating to each group.

Demographic Profile Risks

Identified Demographic Group	Issues/Concerns
Immigrant population	• Language barriers • Cultural traditions that present fire safety concerns • Of the total population of 5,335 in 2016, of those, only 45 were immigrants
Seniors population	• There are a number of seniors living in the community • Of the total population, 23.5% are seniors over the age of 65 • It is forecast that the number of seniors will increase over the next 10 years as the baby boomers retire • Some of the seniors will have mobility and cognitive issues that may require constant care • Seniors apartments in Lanark Village
Large population of summer tourists	• How does the fire department reach this audience with fire safety messages if they don't live in the community? • The number of local natural attractions such as lakes, rivers, highlands, campgrounds and cottages bring numbers of non-permanent residents • Fire and Life Safety messaging will require many means of delivery such as signage, social media, pamphlets, ads in newspapers, etc. • Between 5, 000 and 7,000 seasonal residents • 10 campgrounds within the township • 1049 seasonal residences

Demographic Profile Risks

Identified Demographic Group	Issues/Concerns
	• Many do not know the property identification number or street/road name when calling 911

Note: The information on this worksheet should be considered in conjunction with the information on all other worksheets, and not in isolation. Worksheet 10 allows fire departments to consider all of the information on all worksheets together in order to make decisions about the provision of fire protection services in their municipality/community.

Worksheet 5: Hazard Profile

List potential hazards in the community including but not limited to hazardous materials spills, floods, freezing rain/ice storms, forest fires, hurricanes, tornadoes, transportation emergencies (i.e. air, rail or road), snow storms, windstorms, extreme temperature, cyber-attacks, human health emergencies, and energy supply (i.e. pipelines, storage and terminal facilities, electricity, natural gas and oil facilities).

Hazard Profile Risks
List the hazards in your community and the fire or other emergency risk of each.
Assign probability, consequence and risk levels to each risk identified.

Hazard Profile Risks

Identified Hazard	Probability (refer to Table 1 for suggested probability levels)	Consequence (refer to Table 2 for suggested consequence levels)	Assigned Risk Level (refer to the Risk Level Matrix for suggested risk levels)
Ice storm (power interruptions/ disruptions in communications/ delayed access)	Possible	Minor	Moderate
Flood (obstructed access/increased calls for rescue/assistance)	Possible	Minor	Moderate
Extreme Temperatures	Possible	Minor	Moderate
Wildland Urban-Interface Fires	Possible	Moderate	Moderate
Utility Disruption	Almost Certain	Moderate	Moderate
Communications Disruption	Possible	Minor	Minor
Snowstorm/Blizzard/Hail	Possible	Minor	Moderate
Severe Wind Event - Tornado	Possible	Catastrophic	High

Hazard Profile Risks

Identified Hazard	Probability (refer to Table 1 for suggested probability levels)	Consequence (refer to Table 2 for suggested consequence levels)	Assigned Risk Level (refer to the Risk Level Matrix for suggested risk levels)
Hazardous Materials Event	Possible	Moderate	Moderate
Drought - Low Water	Possible	Minor	Moderate
Potable Water Emergency - Wells	Possible	Moderate	Moderate
Critical Infrastructure Failure	Possible	Moderate	Moderate
Influenza Outbreak	Likely	Major	High
Road Incident - Mass Casualty	Possible	Moderate	Moderate
Cyber Attack on Municipal Servers	Possible	Major	Moderate
Earthquake/Landslide	Minor	Unlikely	Low
Severe Thunderstorm	Likely	Moderate	Moderate
Erosion	Minor	Possible	Moderate
Large Fire	Likely	Major	High
High Angle Rescue	Unlikely	Minor	Low
Trench Rescue	Possible	Major	Moderate
Special Events i.e. Fire Scene Crowd Control, Stage/Viewing Stands Collapse	Rare	Moderate	Low
Mail Delivery	Rare	Minor	Low
Explosion - Quarry	Possible	Major	Moderate

Hazard Profile Risks

Identified Hazard	Probability (refer to Table 1 for suggested probability levels)	Consequence (refer to Table 2 for suggested consequence levels)	Assigned Risk Level (refer to the Risk Level Matrix for suggested risk levels)
Landslide - Quarry	Possible	Major	Moderate
Sawmills - Fire - Dust Explosion	Possible	Major	Moderate
Motor Vehicle Collisions	Likely	Major	High
Aircraft Crash	Unlikely	Major	Moderate

Note: The information on this worksheet should be considered in conjunction with the information on all other worksheets, and not in isolation. Worksheet 10 allows fire departments to consider all of the information on all worksheets together in order to make decisions about the provision of fire protection services in their municipality/community.

Worksheet 6: Public Safety Response Profile

Consider other public safety response agencies (i.e. police, EMS, rescue) that might be tasked with or able to assist in the response to emergencies or in mitigating the impact of emergencies. Also consider the types of incidents each is able to respond to and any issues or concerns that may impact fire department response.

Public Safety Response Profile Risks

List the other public safety response agencies in your community and the incidents they respond to.

Public Safety Response Profile Risks

Identified Public Safety Response Agency	Types of Incidents They Respond To	What is Their Role at the Incident	Issues/Concerns
Ontario Provincial Police	• MVC's • Fire Scenes	• Scene control, traffic control, investigations	• None
Lanark County Paramedic Service	• Medical Calls • Fire stand-by	• Take control and provide direction, upon arrival, in the treatment of the sick and injured.	• What level of service will the fire department provide before and after EMS' arrival? • Most likely will assist in a supporting role unless it is a mass casualty event
Outside Fire Services	• Automatic or Mutual Aid Incidents • Respond to technical rescues/HazMat	• Fire Suppression • Cover stations directly involved with the incident	• Fire service may not need to provide full response / may

Public Safety Response Profile Risks

Identified Public Safety Response Agency	Types of Incidents They Respond To	What is Their Role at the Incident	Issues/Concerns
	incidents that are not considered as being Mutual Aid as there may be the need to recover costs from those involved • Lanark County Rescue Services	• Technical Rescue • Haz Mat Mitigation • Trench Rescue • High Angle Rescue • MVC Extrication	provide more of a supporting response • Initial response in rescue role during technical rescue incidents • Be the lead agency during hazmat incidents
St John Ambulance	• Public events in which large number of people in attendance	• Supporting Lanark County Paramedic Service	• They are not permitted to transport casualties, but able to render medical aid to those injured or ill.
OFMEM	• Suspicious fires, • Any fire in which there is either a civilian or fire fighter fatality, • High dollar loss fires • Fires at retirement or nursing homes	• Investigation - Lead agency working in conjunction with the police	• None
Lanark Highlands Fire Service - LHFS	• Fires • MVCs • Ice/Water rescues	• Suppress and extinguish fires	• Lack of fire fighters in the daytime

Public Safety Response Profile Risks

Identified Public Safety Response Agency	Types of Incidents They Respond To	What is Their Role at the Incident	Issues/Concerns
at the present level of response is a risk	• Tiered medical • Hazmat awareness level • Public Education	• Fire cause determination • Rescues • Property conservation • Vehicle extrication	• FF vacancies on the department that are difficult to fill even though there is an ongoing recruitment drive • Long distances to travel • Inadequate radio coverage over the areas of the township • Some FFs not attending training sessions • Lack of calls in some stations • Not able to maintain skill sets due to lack of attending training and attending fire calls • Do not perform off shore ice/water rescues • Difficulty meeting NFPA 1720 standards for turn out and response

Public Safety Response Profile Risks

Identified Public Safety Response Agency	Types of Incidents They Respond To	What is Their Role at the Incident	Issues/Concerns
			times and number of fire fighters on scene within 14 min. • Some stations have surpassed their life span while others are not appropriate to meet the needs of todays fire service • Network of roads hampers response times to some locations of the township • Could expose the municipality to liabilities

Note: The information on this worksheet should be considered in conjunction with the information on all other worksheets, and not in isolation. Worksheet 10 allows fire departments to consider all of the information on all worksheets together in order to make decisions about the provision of fire protection services in their municipality/community.

Worksheet 7: Community Services Profile

Consider community service agencies, organizations or associations that provide services that support the fire department in the delivery of public fire safety education, Fire Code inspection and enforcement and emergency response. This may include services in-kind, financial support, provisions of venues for training, increased access to high-risk groups in the community, and temporary shelter for displaced residents following an incident.

Community Services Profile Risks
List the community service agencies and the types of services they can provide.

Community Services Profile Risks

Community Service Agencies	Types of Assistance they Can Provide	Issues/Concerns
Canadian Red Cross	• Temporary shelter, clothing, food following an incident	None
Lanark Civitan Club	• Services in-kind (e.g. funding / physical labour / facilities)	None
Meals on Wheels / Home Support Workers	• Access to homebound populations	None
Lanark Highlands Youth Centre	• Public Education and guidance to community's youth	None
Royal Canadian Legion - Lanark, Ladies Auxiliary	• Support at events, provide food in event of evacuation, large incident, disaster relief	None
Royal Canadian Legion	• Public Education funding	None
Evergreen Lodge - Masons	• Public Education funding	None
Local Churches	• Food during evacuations, disaster relief	None
Lanark Fish & Game Club	• Public Education funding	None

Note: The information on this worksheet should be considered in conjunction with the information on all other worksheets, and not in isolation. Worksheet 10 allows fire departments to consider all of the information on all worksheets together in order to make decisions about the provision of fire protection services in their municipality/community.

Worksheet 8: Economic Profile

Consider the industrial or commercial sectors that provide significant economic production and jobs to the local economy and the impact to the community's economy if a fire or other emergency occurred in occupancies housing those sectors.

Economic Profile Risks

List the industrial or commercial occupancies that provide significant economic production and jobs in the community. List the fire or other emergency risks in each occupancy. Assign probability, consequence, and risk levels for each risk identified.

Economic Profile Risks

Identified Occupancy	Key Risk	Probability (refer to Table 1 for suggested probability levels)	Consequence (refer to Table 2 for suggested consequence levels)	Assigned Risk Level (refer to the Risk Level Matrix for suggested risk levels)
Vulnerable Occupancies	Fire	Possible	Minor	Moderate
Vulnerable Occupancies	Weather Event	Possible	Moderate	Moderate
Saw Mill	Fire	Possible	Major	Moderate
Saw Mill	Weather Event	Possible	Major	Moderate
Saw Mill	Dust Explosion	Possible	Major	Moderate
Grocery Stores	Fire	Possible	Major	Moderate
Grocery Stores	Weather Event	Possible	Minor	Moderate
Grocery Stores	Power Outage	Likely	Major	High

Economic Profile Risks

Identified Occupancy	Key Risk	Probability (refer to Table 1 for suggested probability levels)	Consequence (refer to Table 2 for suggested consequence levels)	Assigned Risk Level (refer to the Risk Level Matrix for suggested risk levels)
Grocery Stores	Telecommunications Disruption	Possible	Moderate	Moderate
Grocery Stores	Natural Gas Disruption	Unlikely	Minor	Low
Trucking Firms	Fire	Possible	Minor	Moderate
Trucking Firms	Weather Event	Possible	Moderate	Moderate
Restaurants/Fast Food Outlets	Weather Event	Possible	Minor	Moderate
Restaurants/Fast Food Outlets	Telecommunications Disruption	Possible	Moderate	Moderate
Restaurants/Fast Food Outlets	Power Outage	Likely	Moderate	Moderate
Restaurants/Fast Food Outlets	Fire	Possible	Major	Moderate
Small Business	Fire	Possible	Major	Moderate
Small Business	Weather Event	Possible	Minor	Moderate
Small Business	Power Outage	Likely	Moderate	Moderate
Small Business	Telecommunications Disruption	Unlikely	Minor	Low
Municipal Operations	Weather Event	Possible	Major	Moderate

Economic Profile Risks

Identified Occupancy	Key Risk	Probability (refer to Table 1 for suggested probability levels)	Consequence (refer to Table 2 for suggested consequence levels)	Assigned Risk Level (refer to the Risk Level Matrix for suggested risk levels)
Municipal Operations	Flooding	Likely	Major	High
Municipal Operations	Power Outage	Likely	Major	High
Municipal Operations	Campgrounds/Seasonal Lodging	Unlikely	Moderate	Moderate
Municipal Operations	Cyber Attack	Possible	Catastrophic	High
Municipal Operations	Fire	Possible	Major	Moderate
Municipal Operations	Wildland Fires	Likely	Minor	Moderate
Municipal Operations	Road Closure of Long Duration	Possible	Insignificant	Low
Municipal Arena	Power Outage	Possible	Insignificant	Low
Municipal Arena	Weather Event	Possible	Moderate	Moderate
Municipal Arena	Natural Gas Disruption	Unlikely	Minor	Low
Schools	Fire	Possible	Major	Moderate
Schools	Weather Event	Possible	Moderate	Moderate
Schools	Natural Gas Disruption	Unlikely	Moderate	Moderate
Schools	Power Outage	Likely	Moderate	Moderate

Economic Profile Risks

Identified Occupancy	Key Risk	Probability (refer to Table 1 for suggested probability levels)	Consequence (refer to Table 2 for suggested consequence levels)	Assigned Risk Level (refer to the Risk Level Matrix for suggested risk levels)
Schools	Potable Water Emergency	Unlikely	Moderate	Moderate
Schools	Influenza Outbreak	Possible	Moderate	Moderate
Municipality	Hazardous Materials Incident	Possible	Moderate	Moderate
Quarry	Explosion	Possible	Moderate	Moderate
Quarry	Landslide	Possible	Minor	Moderate
Campgrounds/Seasonal Lodging	Fire	Possible	Moderate	Moderate
Campgrounds/Seasonal Lodging	Weather Event	Possible	Moderate	Moderate
Financial Institutions	Telecommunications Disruption	Possible	Moderate	Moderate
Financial Institutions	Fire	Possible	Moderate	Moderate
Financial Institutions	Cyber Attack	Rare	Insignificant	Low

Note: The information on this worksheet should be considered in conjunction with the information on all other worksheets, and not in isolation. Worksheet 10 allows fire departments to consider all of the information on all worksheets together in order to make decisions about the provision of fire protection services in their municipality/community.

Worksheet 9a: Past Loss and Event History Profile

Consider previous response data to identify trends regarding the deaths, injuries, dollar loss, and causes of fire in various occupancy types. This assists in determining the leading causes of fires and high-risk locations and occupancies. In the absence of fire loss data, local knowledge may be the most reliable predictor of fire risk in your community. Also, provincial statistics can assist in determining the types of occupancies and locations where fire losses, injuries and deaths most commonly occur.

Municipal Fire Losses, Deaths, Injuries, and Causes
Past Loss and Event History Profile

		YEAR: **2015**					YEAR: **2016**					YEAR: **2017**				
		# of Fires	$ Loss	# of Injuries	# of Deaths	Causes	# of Fires	$ Loss	# of Injuries	# of Deaths	Causes	# of Fires	$ Loss	# of Injuries	# of Deaths	Causes
Group A	Assembly	0	0	0	0	N/A	1	$225,000	0	0	Undetermined	0	0	0	0	N/A
Group B	Detention	0	0	0	0	N/A	0	0	0	0	N/A	0	0	0	0	N/A
	Care & Treatment / Care	0	0	0	0	N/A	0	0	0	0	N/A	0	0	0	0	N/A
Group C	Residential	10	$1,419,500	1	1	Design/Construction/Maintenance Deficiency, or Mechanical/ Electrical Failure, or	3	$366,000	0	0	Undetermined	6	$974,800	0	0	Design/Construction/Maintenance Deficiency, or Mechanical/ Electrical Failure, or

						Misuse of Ignition Source, or Exposure, or Undetermined									Misuse of Ignition Source, or Exposure, or Undetermined
	Mobile Homes & Trailers	0	0	0	0	N/A	0	0	0	0	N/A	0	0	0	0	N/A
Groups D & E	Business & Personal Service/Mercantile	0	0	0	0	N/A	0	0	0	0	N/A	0	0	0	0	N/A
Group F	Industrial	0	0	0	0	N/A	0	0	0	0	N/A	0	0	0	0	N/A
Other – Properties not classified by OBC		0	0	0	0	N/A	0	0	0	0	N/A	0	0	0	0	N/A
Properties classified under National Farm Building Code		0	0	0	0	N/A	1	$3,000	0	0	Undetermined	1	$80,000	0	0	
TOTALS		10	$1,419,500	1	1	Design/Construction/Maintenance Deficiency, or Mechanical/ Electrical Failure, or Misuse of Ignition Source, or Exposure, or Undetermined	5	$594,000	0	0	Undetermined	7	$1,054,800	0	0	Design/Construction/Maintenance Deficiency, or Mechanical/ Electrical Failure, or Misuse of Ignition Source, or Exposure, or Undetermined

Worksheet 9b: Past Loss and Event History Profile

Past Loss and Event History Profile Risks

List the causes for each occupancy type identified on the previous worksheet.

Assign probability, consequence and risk levels to each cause identified.

Past Loss and Event History Profile

Occupancy Type/Location	Causes	Probability (refer to Table 1 for suggested probability levels)	Consequence (refer to Table 2 for suggested consequence levels)	Assigned Risk Level (refer to the Risk Level Matrix for suggested risk levels)
Group C - Residential	Mechanical / Electrical Failure	Possible	Major	Moderate
Group C - Residential	Improper Maintenance - Chimney	Possible	Moderate	Moderate
Group C - Residential	Lighting Equipment	Possible	Moderate	Moderate
Group C - Residential	Undetermined	Possible	Moderate	Moderate
Group C - Residential	Cooking	Possible	Moderate	Moderate
Group C - Residential	Exposure	Unlikely	Minor	Low

NOTE: The information on Worksheet 9b should be considered in conjunction with the information on all other worksheets, and not in isolation. Worksheet 10 allows fire departments to consider all of the information on all worksheets together in order to make decisions about the provision of fire protection services in their municipality/community.

The following table is the compilation and in-depth analysis of the risks identified during the completion of the nine mandatory profiles as previously mentioned. The worksheet contains the risks that were identified, the recommended level of treatment and the recommended means of handling the risks. Council with the assistance of the Fire Chief will use this information in the formulation of the Community Risk Reduction Plan.

Worksheet 10 - Identifying Treatment Options for the Top Risks in the Community

Mandatory Profiles	Top Risk or Issues/Concerns	Preferred Treatment Option
	Body of water impacts training, equipment for response	**Avoid and Mitigate Risk** - Implement water/ice rescue training protocols, SOGs, Policies and activities. Evaluate the needs of acquiring additional equipment specific to vessel-based ice rescues. This will include immersion suits, helmets, 1000' floating ropes, inflatable vessel, PFDs, etc.
	Body of water impacts response time	**Accept Risk** - Implement appropriate response protocols, SOGs, and activities
Geographic Profile	Body of water – recreational/tourist activities	**Avoid and Mitigate Risk** – Public education programs required. Install signage at key locations of bodies of water identifying the risks of thin ice. Have pamphlets available at lodging locations warning of the dangers of thin ice and how a person may self rescue. List items persons should have when going on the ice such as ice picks, throw rope, whistle or a loud horn, cell phone in a waterproof kit. The use of social media networks will assist in educating the public on the dangers of being near/on water in both the summer and winter months. Educate seasonal residents on the importance of knowing their exact address as by not doing so delays the fire services response.
	Bodies of Water – Marine firefighting, remote island fire fighting and rescue	**Accept and Transfer Risk –** Review the required equipment, legislation and regulations for the implementation of a summer water marine response. This would include the purchase of a boat, motor,

		trailer, safety equipment, emergency response equipment (medical and firefighting), specialized training and vessel registration. Also explore opportunities with neighbouring fire services if they have marine response capabilities to enter into an automatic aid agreement for their responding and mitigating such emergencies.
	Wildland and Rock High Grounds	**Avoid Risk** - Implement appropriate public education on the dangers of climbing on rock high grounds and hiking in the wildlands. This could include signage, social media and pamphlets. Place information ads in local papers.
	Grass / Wildland / Forests	**Avoid and Mitigate Risk –** Promote no burning fire bans and the outdoor burning by-law. Educate residents on importance of maintaining access routes into their property. Control vegetation growth along roadways. Promote safe campfire practices. Partner with MNRF on safe burning practices, through public education opportunities.
	Road Network	**Avoid Risk –** The network and condition of the roads hampers the fire service from arriving at a fire call in a timely manner. Some roads may cause damage to fire apparatus is driven on too fast. California Rd is a single lane logging road that could use improvements in widening it and the removal of some of the curves. In the spring many roads are washed out due to flooding. Control vegetation growth along roads. Some roads are closed for long duration due to extreme weather events. Land owners should be made aware of their responsibilities in maintaining any private roads. A long-term road improvement strategy would improve the quality of the roads and improve fire service response times.
	Fires	**Avoid and Mitigate Risk** - Increase public education on preventive maintenance due to design/construction/maintenance deficiencies, mechanical/electrical. fires, misuse of ignition source/materials first ignited

Building Stock Profile	Fires	**Avoid and Mitigate Risk** – Industrial/commercial i.e. fires and the major impact they may cause to ongoing commerce in the area. Staff out of work, loss of business, other businesses see downturn in sales as residents could be out of work. Increase frequency of fire inspections, enforcement and public education may assist in reducing the risk of fire occurring.
	Fires	**Avoid and Mitigate Risk** – Older buildings within older areas of rural communities. Heavier timber construction. Should be fire inspected annually and public education opportunities for building owners and staff on fire prevention, fire extinguisher use etc.
	Residential Dwellings – lack of smoke and CO alarms, home escape plans, fire extinguishers, vacant and derelict structures, poor housekeeping practices	**Avoid and Mitigate Risk –** Implement aggressive public education initiatives promoting smoke /CO alarms, escape plans to the school children, fire extinguishers and residential sprinklers. Promote the need for well maintained wood burning chimneys and their cleaning before the season begins.
	Farm Land – Vacant structures	**Avoid Risk –** Contact property owners to establish what the plans are for unused structures. Promote the need to securing and making safe vacant structures or the demolition of them
	Heritage Structures	**Avoid Risk –** Conduct fire inspections on an annual basis if structure is occupied. Promote smoke alarms and fire extinguishers. Contact property owners to establish what the plans are for the vacant designated heritage structures. Promote the need to securing and making safe, any vacant structures.
	Vulnerable Occupancies	**Avoid Risk –** Implement public education on safe cooking and smoking practices. Know and practice escape routes out of their building. Address the needs of those that may have mobility and cognitive behavioral issues, in escaping a fire.

	Sawmills, Logging Operations	**Avoid Risk –** Possible large fires due to fire load, dust explosions, multiple structures involved. Maintain ongoing fire inspections and act on violations. Provide public education of fire safety, housekeeping, significant sized openings between the piles of logs to act as fire breaks.
Critical Infrastructure Profile	Electricity	**Accept Risk** – Loss of power will adversely effects on all forms of daily life. Businesses, schools, industries, residences, emergency services all rely heavily on power.
	Water	**Accept Risk** – Failure of maintaining potable drinking water from water supply system. Failure due to mechanical or human means will place the community at risk for public safety. Will affect health care, schools, commerce etc. If not corrected in a timely manner could lead to diseases or death.
	Telecommunications	**Accept Risk –** Loss of cell coverage throughout the township or poor/no coverage in other areas. Township should work with cell phone communication companies to explore opportunities of improving coverage.
	Natural Gas	**Accept Risk –** Loss of supply of natural gas in the event of transmission line breakages. Work with local service authorities in relation to public education initiatives in such events.
	Continuity of Government	**Avoid and Mitigate –** During implementation of the emergency plan. Staff unable to attend work locations due to weather event, do they have access to the township's computer network from home and able to work from home. Emergency Operations Centre activated, but in the event of a power outage, delay in obtaining back-up power as no on-site generator
	Senior Citizens	**Avoid Risk** – It has been identified that seniors are looking at the Lanark Highlands area as a great place to retire. They want a community that provide the services they may require, and also ones that they could become involved in. This would be achieved by joining senior's groups and service clubs. There will be

Demographic Profile		the requirement to provide public education to the new residents
	Senior Citizens	**Avoid and Mitigate Risk** – Through continued public education opportunities at Fairs, club meeting, promotional events such as fire prevention week. Further Public Education opportunities should discuss the following topics of interest that relate to seniors. • Importance of working smoke and CO alarms • Safe cooking practices, dangers of using oils and grease for cooking • Develop and practise an escape plan for their place of residency. • How to extinguish a cooking related fire • How to operate a fire extinguisher, conduct clinics • Prevent burns by not carrying burning pots and pans outside • Prevent clothing from catching fire by not wearing flowing styled clothing near open flames
	Youth	**Avoid and Mitigate** - Initiate a junior fire fighter program in conjunction with the Youth Centre in Lanark Village. May reduce the risk of youth becoming junior fire starters. Explore opportunities for youth in high school to complete their required community service hours by assisting the fire service in some manner.
	Schools	**Avoid and Mitigate –** Promote fire safety, develop and practice escape plan, not to play with ignition sources, conduct fire drills in the schools, promote fire prevention week through a contest for the best fire prevention poster or family escape plan. LHFS should develop and review pre-incident plans for all of the schools.
	Seasonal Residents	**Avoid and Mitigate Risk –** Aggressive public education initiative promoting smoke and CO alarms, escape plans, fire extinguishers. Residents not aware of the

		address they are at, suggest it be written out and posted near a phone.
	Local Residents – lines of communications	**Avoid and Mitigate –** Enhance lines of communication regarding open air burning permits, fireworks by-laws, public education and fire prevention topics of interest. Provide updates on FD activities. Provide public Education literature within the tax bills when they are sent out or via social media.
Hazard Profile	Fires	**Avoid and Mitigate Risk** – Through public education opportunities in schools by having children work on developing an escape plan in the home. Educating them on what to do when smoke alarms are activated. How to crawl on the floor through smoke.
	Fires	**Avoid and Mitigate Risk** -Due to the time it will take to respond to areas furthest from the fire stations, the department should promote the three lines of defence to those residents. This could be done through public educations means along with the distribution of fire prevention educational material.
	Fires	**Avoid and Mitigate Risk** – The department should promote the value of residential sprinklers especially when new or major renovation construction takes place. Residential sprinklers save lives and property and will increase the value of one's property and save money on fire insurance.
	Explosives Depot/Storage	**Avoid Risk –** Ensure safe storage and usage practices are in place. Develop and review pre-incident plans for each location. Request communication on when large quantities are being transported through the township.
	Weather Event	**Accept Risk –** Tornadoes, Ice and snowstorms, extreme heat and cold events, intense rainstorms, flooding. Although these cannot be completely avoided, they can, in most cases be predicted, which will allow for public awareness releases.
	Motor Vehicle Collisions	**Accept Risk –** Mass casualties, road closures of long durations. Fire service to assess roads and frequency

		of events to ensure they are prepared for any type of event.
Public Safety Response Profile	Outside Fire Services	**Transfer Risk -** LHFS does not provide advanced hazardous materials or technical rescue response and mitigation. As such the department should enter into response agreements with outside fire services that do provide such service(s). Technical rescues could include confined space, high angle rope, trench etc.
	Outside Fire Services	**Avoid and Mitigate Risk -** LHFS does not have an aerial apparatus. During a large fire an aerial device may be required in a timely manner. Without having their own aerial device, mutual aid could be delayed in responding. Ensuring that the Department has entered into a standby agreement with an outside fire service for an aerial device, the response would be an immediate response without delay. If no agreement is available, then the purchase of an aerial device may be required.
	Lanark Highlands Fire Service	**Avoid and Mitigate Risk** - Like so many other fire services in Ontario, LHFS has problems with personnel being available to respond Mon to Fr from 8 a.m.to 5 P.M. The days of employers permitting an employee that beings to the local fire department to leave work to attend a call, are, for the most part, over. Therefore, daytime availability of fire fighters has diminished. LHFS should increase their staffing to at least 20 firefighters per station with a recruitment focusing on new members who are available during daytime hours.
	Lanark Highlands Fire Service – Fire Training	**Avoid and Mitigate Risk** – Provide live fire training to all the members of the department on annual basis to keep related skills up to an acceptable level.
	Lanark Paramedic Service	**Avoid and Mitigate Risk –** Fire chief should monitor response/arrival times of paramedic services and communicate concerns to the Paramedic Chief. The tiered medical agreement between the Lanark County Fire Services and the Paramedic Service should be

		reviewed and changes made accordingly to better serve the township. LHFS should promote and take advantage of any joint training opportunities.
	Smith Falls Fire Dispatching Service	**Avoid –** During the next contract renewal, discussions should include areas of concern to meet NFPA 1221, Compliance for Fire Communications Centres as well as any other concerns there might be.
Community Services Profile	No concerns	**Accepted risk** – There are many community groups who would be more than willing to assist at an incident if requested. If anything, the community many have too many groups wanting to offer assistance, which is great thing to have. Lanark Highlands has a very active service-based environment that is community focussed.
Economic Profile	Electricity	**Avoid and Mitigate Risk** – Promote to business owners the advantages of having a standby generator in the event they lose power. By having a generator could prevent the loss of food due to spoilage, lost sales due to no means of completing transactions, lack of power to operate equipment, no lighting in the place of business.
	Fires	**Accepted Risk** – Loss of business commerce and income to families due to fires. There is also the spin-off is loss of commerce to other non affected businesses.
Past Loss and Event History Profile	Fires	**Avoid and Mitigate Risk** – Through public education on dangers of unattended cooking, uncleaned chimneys, older electrical and mechanical equipment not upgraded and lack of good housekeeping practices.
	Undetermined Causes for Fires	**Avoid and Mitigate** – Ensure members of the department have been trained to the National Fire Protection Associated Standard on Fire Cause Determination. Utilize the resources available through the OFMEM on determining causes. Note if there is a trend developing and act accordingly.

APPENDIX A: OFMEM COMMUNIQUE 2019-05

ONTARIO REGULATION 378/18
COMMUNITY RISK ASSESSMENT

Communiqué 2019-05
July 4, 2019

The Office of the Fire Marshal and Emergency Management (OFMEM) is pleased to announce that the **Ontario Regulation 378/18** that was filed on May 8, 2018 came into force on July 1, 2019. This regulation, made under the Fire Protection and Prevention Act, 1997 (FPPA) requires all municipalities and fire departments in territories without municipal organization to complete a community risk assessment and use its community risk assessment to inform decisions about the provision of fire protection services.

This regulation will ensure municipalities, and fire departments in territories without municipal organization, make evidence-based decisions on the provision of fire protection services based on the unique needs and circumstances of each of their communities in accordance with 2.(1) of the FPPA.

Ontario Regulation 378/18 can be viewed online at **www.ontario.ca/laws**
While the regulation came into effect on July 1, 2019, municipalities and fire departments may have up to July 1, 2024 to complete their community risk assessment.

The OFMEM is currently developing a guideline to assist municipalities and fire departments in completing their risk assessments in accordance with the regulation. The guideline will be made available to the fire service through a subsequent Communique and posted on the OFMEM website.

Enquiries regarding the Ontario Regulation 378/18 may be directed to Office of the Fire Marshal and Emergency Management via email **askofmem@ontario.ca**.

Community Risk Assessment Guideline Office of the Fire Marshal and Emergency Management

Download the CRA Guideline [1.2 MB]
Sample Worksheets

TABLE OF CONTENTS

July, 2019

OFMEM Section: Public Safety Education at 1-800-565-1842

Abstract

The Office of the Fire Marshal and Emergency Management (OFMEM) has developed this guideline to assist municipalities and fire departments in a territory without municipal organization, to conduct community risk assessments and use its community risk assessment to inform decisions about the provision of fire protection services, in accordance with *Ontario Regulation 378/18* (*O.Reg. 378/18*), and the *Fire Protection and Prevention Act 1997 (FPPA).* For further information or assistance contact the Public Safety Education Manager at 1-800-565-1842.

This guideline provides:
An outline of recommended best practices to conduct a community risk assessment in order to make informed decisions about the provision of fire protection services;
Descriptions of the nine mandatory profiles outlined in *O. Reg. 378/18* that must be addressed in the community risk assessment, including examples of where this data and information can be obtained;

Worksheets that can be used or modified to document and analyse data/information related to the nine mandatory profiles that must be addressed in the community risk assessment in accordance with *O. Reg. 378/18*, and,
Worksheets that can be used or modified to assist in assigning risk levels and identifying preferred treatment options.

1.0 SCOPE
This document has been prepared by the Office of the Fire Marshal and Emergency Management to assist municipalities and fire departments in territories without municipal organization to conduct community risk assessments to meet the requirements of Ontario Regulation 378/18.

2.0 INTRODUCTION
Community risk assessments allow fire departments to make informed decisions about the types and levels of fire protection services they will provide based on identified risks.

Risk is defined as a measure of the probability and consequence of an adverse effect to health, property, organization, environment, or community as a result of an event, activity or operation.

By identifying all fire and life safety risks in their community and prioritizing them based on the probability of them occurring and the impact they would have if they occurred, fire departments are able to determine which risks to address and how best to address them. Risk assessments allow fire departments to ensure their levels of service, programs and activities for public fire safety education, Fire Code inspections and enforcement, and emergency response directly address the identified risks and are most effective at preventing and mitigating them. The *Fire Protection and Prevention Act, 1997 (FPPA)* mandates that every municipality in Ontario shall establish a program which must include public education with respect to fire safety and certain components of fire prevention, and provide such other fire protection services as it determines may be necessary in accordance with its needs and circumstances. In the fire service, these elements are commonly referred to as the Three Lines of Defence:

- Public Fire Safety Education
- Fire Safety Standards and Enforcement
- Emergency Response

In order to meet these obligations, municipalities need to make informed decisions with respect to the types and levels of fire protection services they provide. This requires an understanding of the risks facing the community that can be identified through a community risk assessment. Once identified, the risks can be prioritized to assist in making informed decisions about risk treatment options and the provision of fire protection services.

Ontario Regulation 378/18: Community Risk Assessments (O. Reg. 378/18) requires that every municipality and every fire department in a territory without municipal organization complete a community risk assessment and use it to inform decisions on the provision of fire protection services. The Community Risk Assessment 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.

The mandatory profiles identified in Schedule 1 of O. Reg. 378/18 were determined from examining various current industry models on risk assessment. Many of these models provide comprehensive coverage pertaining to identification of data and information relating to community risks. However, it should be noted that these risk assessment models may or may not include all of the nine mandatory profiles as identified in Schedule 1 of O. Reg. 378/18. Municipalities and fire departments in territories without municipal organization may use other tools, models or guidelines to conduct their community risk assessments provided that their final community risk assessment meets all the requirements outlined in O. Reg. 378/18., including consideration of each of the nine mandatory profiles identified in Schedule 1 of the regulation (see Appendix E).

The Guideline provides suggestions as to how to record and analyze the data/information using the sample worksheets that are provided in the Guideline. Municipalities and fire departments in territories without municipal organization have flexibility to include any additional information (e.g. maps, charts, diagrams) they deem appropriate to best assist them in analyzing their data and information in order to make informed decisions on fire protection services.

The Emergency Management and Civil Protection Act (EMCPA) requires every municipality to conduct an all-hazards risk assessment, which informs continuous improvement of emergency management programs and improves public safety. A completed Hazard Identification Risk Assessment (**HIRA**) may provide some of the information/data required to fulfil the needs of a Community Risk Assessment under O. Reg. 378/18, although there will be specific fire related information that is not contained in the HIRA that will be gathered as part of this process. The HIRA and the Community Risk Assessment are separate processes but should be viewed as complementary to one another.

Note: For the purposes of this guideline, the terms "fire department" and "fire departments" will be considered to include every municipality and every fire department without municipal organization.

3.0 CONDUCTING A COMMUNITY RISK ASSESSMENT

3.1 Identifying Risks – Mandatory Profiles

The first step in conducting a community risk assessment is to identify the various fire and life safety risks in the community. This can be done by gathering data about the make-up of the community and the activities occurring there.

O. Reg. 378/18 requires fire departments to consider the following profiles when completing their community risk assessment to ensure the risk assessment best considers all potential risks in the community:

- Geographic Profile
- Building Stock Profile
- Critical Infrastructure Profile
- Demographic Profile
- Hazard Profile
- Public Safety Response Profile
- Community Services Profile
- Economic Profile
- Past Loss and Event History Profile.

Fire departments need to gather and review data and information about each of these profiles to identify the fire and life safety risks that could impact the community.

Worksheets 1 to 9 in Appendix A of this guideline can be used to record and organize the data and information for each profile. The worksheets can be filled in electronically. Fire and emergency risks and issues/concerns can be noted in the appropriate columns of each worksheet as they are identified. These worksheets can be modified or adapted to suit local needs based on available data or information.

A description of each profile, including potential sources of data and information for each, is provided below.

3.1.1 Geographic Profile
Geographic profile refers to the physical features of the community, including the nature and placement of features such as highways, waterways, railways, canyons, bridges, landforms, and wildland-urban interfaces.

Physical features of the community may present inherent risks that need to be taken into account when determining the type and level of fire protection services that should be provided by the fire department. Physical features may also impact emergency response access and response times.

Identifying any geographic features that might have implications with respect to risk or response allows fire departments to consider these issues when determining appropriate types and levels of fire protection services.

For example, a lake may have implications with respect to water and/or ice rescue services and the equipment and training that would be required to provide those services. The lake may also impact emergency response access and response times to certain areas within the community. Additionally, a lake may be a seasonal tourist attraction and the associated activities may present unique risks that could influence decisions on specific public fire safety education and Fire Code inspection and enforcement programs and activities.

Where to find/collect this information

Information related to the Geographic profile may be obtained from:
Local knowledge of the area and by using maps of the municipality's natural (i.e. lakes, rivers, etc.) and human-made (i.e. highways, bridges, railways, etc.) features, and
Local municipal departments (i.e. highways/roads, conservation authorities, etc.) who should have information about the location and uses of geographic and physical features of the community.

3.1.2 Building Stock Profile
Building Stock profile refers to the types, numbers, uses, and ages of the various buildings within the community.

Fire departments should consider the potential fire risks associated with different types/classifications or uses of buildings given their prevalence in the community and the presence of fire safety systems and equipment at the time of construction.

Older buildings typically do not contain the same fire safety and fire protection systems required in newer buildings. This may impact the fire risk in older buildings. Also, how buildings are used can influence the fire risks in each building. For example, industrial chemical storage facilities are likely to present higher fire risks than buildings containing commercial retail

activities. The age and type of residential buildings (e.g. high-rise vs. single family dwelling vs. town/row houses) can influence the probability and consequence of fire in those buildings. Past inspection practices and frequencies also can be a factor when considering risk associated with any particular building occupancy classification categories. For instance, a robust inspection program in higher risk occupancies can have a positive influence on mitigating some of the inherent risks associated with that particular type of building. Conversely, a lack of historical inspection data in relation to a particular occupancy classification category also should be considered when determining risk.

These building characteristics can have significant impact on the public fire safety education, Fire Code inspection and enforcement and emergency response activities the fire department may determine are necessary to address the risks.
Where to find/collect this information

O. Reg. 378/18 does not specify which source of this information has to be referenced to complete the risk assessment. Fire departments have the flexibility to choose which source they feel will provide the optimum level of detail they are most comfortable with as an accurate reflection of the building stock in their community. Consideration should be given to consistency in terms of data sources when conducting new risk assessments and annual reviews.

Information related to the Building Stock profile may be obtained from:
Categorizing buildings in accordance with the Standard Incident Report (SIR) property classification system which corresponds with the Ontario Building Code (OBC) occupancy classification system. As the Ontario Fire Code (OFC) requires that buildings be classified in accordance with the OBC, this approach makes it easy to consider issues like the type of construction and fire safety equipment/features that should be present in the different classifications of buildings, based on their size, age, design, and use;

Municipal building departments that have information regarding the age, number, types, uses, etc. of buildings in the municipality;

Municipal Property Assessment Corporation (MPAC – **www.mpac.ca**) data that assesses and classifies all properties within Ontario, and
Fire department pre-plans that identify uses and potential risks within specific buildings or areas of the community.

3.1.3 Critical Infrastructure Profile

Critical Infrastructure profile refers to the facilities or services that contribute to the interconnected networks, services, and systems that meet vital human needs, sustain the economy, and protect public safety and security (i.e. electricity distribution, water distribution, telecommunications, hospitals, and airports).

Consideration of the presence, availability, capacity, and stability of infrastructure elements can help identify potential impacts that may result if any of these systems are compromised. Understanding how infrastructure impacts things like emergency services dispatch, communications, fire department emergency operations, overall health care or transportation can assist in determining preferred treatment options to address specific risks.

<u>Where to find/collect this information</u>

Information related to the Critical Infrastructure profile may be obtained from:
Local municipal departments (i.e. public works, water and sanitation departments, etc.) and other local utility companies that have information about the location, uses, capacity, etc. of the critical infrastructure in the community, and

A completed Hazard Identification Risk Assessment.

3.1.4 Demographic Profile

Demographic profile refers to the composition of the community's population considering such factors as population size and dispersion, age, gender, cultural background, level of education, socio-economic make-up, and transient population.

Awareness of the characteristics of the population in the community assists the fire department to determine if specific segments of the population are at high-risk of fire. This awareness allows fire departments to best identify high-risk behaviours that need to be changed, as well as specific techniques to communicate with high-risk groups.

Fire protection services, including public fire safety education and Fire Code inspections and enforcement programs, should be tailored to high-risk groups so that fire safety programs are delivered in the most relevant and meaningful ways and can have the greatest impact. For example, delivering fire safety messages using communications techniques popular with specific high-risk segments of the population increases the likelihood the messages are received by those segments and therefore are most effective at reducing the fire risk.

Where to find/collect this information

Information related to the Demographic profile may be obtained from:
Local municipal departments that keep information regarding the demographic make-up of their populations, including trends and projections regarding how the demographics may change in the coming years. The amount of this type of information that is available from municipal departments may vary between municipalities, and
Statistics Canada (**www.statscan.gc.ca**) census profiles of every community in Ontario, including demographic information.

3.1.5 Hazard Profile

Hazard profile refers to the hazards in the community, including natural hazards, hazards caused by humans, and technological hazards. This may include but not be limited to hazardous materials spills, floods, freezing rain/ice storms, forest fires, hurricanes, tornadoes, transportation emergencies (i.e. air, rail or road), snow storms, windstorms, extreme temperature, cyber-attacks, human health emergencies, and energy supply (i.e. pipelines, storage and terminal facilities, electricity, natural gas and oil facilities, etc.).
Fire departments should consider all potential hazards that pose a significant risk to or may have a significant impact on the community, and to which fire departments may be expected to respond.

Where to find/collect this information

Information related to the Hazard profile may be obtained from:
Local municipal or government departments (i.e. public safety, police, emergency management, etc.) with information about the natural and technological hazards within the community and the risk they pose;

Local historical incident data related to emergency incidents, and
A completed Hazard Identification Risk Assessment.

3.1.6 Public Safety Response Profile

Public Safety Response profile refers to the agencies and organizations in the community (i.e. police, EMS, rescue) that may respond to certain types of incidents.
The fire department should consider other public safety response agencies (i.e. police, EMS, rescue) that might be tasked with or able to assist in the response to emergencies or in mitigating the impact of emergencies. This will assist the fire department to prioritize community risks and to determine the level of fire protection services it provides. For example,

the presence of a private fire and rescue service at a local industrial facility may influence decisions about the type and the level of fire protection services a municipal fire department may provide to that facility.

Where to find/collect this information

Information related to the Public Safety Response profile may be obtained from:
Local municipal departments (i.e. police, EMS, emergency management, etc.), and
Private companies or industrial facilities who may have information about the response capabilities of other entities within the community.

3.1.7 Community Services Profile

Community Services profile refers to community agencies, organizations or associations that can provide services that support the fire department in the delivery of public fire safety education, Fire Code inspections and enforcement, or emergency response.
Community service agencies may be able to provide services in-kind, financial support, provisions of venues for training, increased access to high-risk groups in the community, or temporary shelter for displaced residents following an incident.

Where to find/collect this information

Information related to the Community Services profile may be obtained from:
General local knowledge;

Local municipal departments (i.e. social services);
Community service agencies (i.e. agencies providing English as a second language services, resettlement agencies, agencies working with older adults, the Canadian Red Cross, etc.) who have information about the various services provided by community organizations and their clients within the community.

3.1.8 Economic Profile

Economic profile refers to the economic sectors affecting the community that are critical to its financial sustainability.

When prioritizing risk in the community, the fire department should consider the impact of fire and other emergencies on the industrial or commercial sectors that provide significant economic production and jobs to the local economy. This will assist in determining the type and level of fire protection services provided in these sectors in the community.

For example, if a town has a large industrial or commercial occupancy that has a significant impact on the local economy, the fire department may consider increasing its public fire safety education and Fire Code inspection and enforcement activities to reduce the probability of a significant incident requiring a large-scale emergency response.

Where to find/collect this information

Information related to the Economic profile may be obtained from:
Local municipal departments (i.e. economic development, employment, and social services) that have information about the economic sectors that are critical to the community's economic well-being. This will help determine the economic impact (e.g. loss of business or jobs) if a fire occurs in a specific occupancy or area of the community.

3.1.9 Past Loss and Event History Profile
Past Loss and Event History profile refers to the community's past emergency response experience, including analyzing the following:

a) The number and types of emergency responses, injuries, deaths, and dollar losses.
b) A comparison of the community's fire loss statistics with provincial fire loss statistics.

Fire departments should evaluate previous response data to identify trends regarding the circumstances, behaviours, locations, and occupancy types of previous fires. This assists in determining the leading causes or behaviours resulting in fires, and high-risk locations and occupancies. Public fire safety education and Fire Code inspection and enforcement programs can then be designed to specifically target high-risk behaviours among various population groups and to focus prevention activities in high-risk neighbourhoods or locations. This targeted approach allows public fire safety education and Fire Code inspection and enforcement programs to directly address fire risks, thereby increasing their fire prevention effectiveness.

Where to find/collect this information

Information related to the Past Loss and Event History profile may be obtained from:
Standard Incident Reports completed by the fire department. These can be obtained through fire department records or by emailing the Office of the Fire Marshal and Emergency Management (OFMEM) at **OFMstatistics@ontario.ca**.;

Trends and statistics about fire causes and fire and life safety issues across the province located on the **OFMEM's website**, and

Information, available on request from the OFMEM, relating to fire losses in neighbouring communities.

For those communities where trends are not easily identifiable due to a lack of fire incidents, it may be helpful to look at trends across the province or in neighbouring municipalities that are similar in size and make-up.

It is suggested that a minimum of three (3) years' worth of data is analyzed in order to identify any potential patterns or trends and to avoid random events from unduly skewing the data.

4.0 PRIORITIZING RISKS

The mandatory profiles allow fire departments to identify the features and characteristics of their community that may impact fire and life safety risks. Once risks have been identified they should be prioritized. This section discusses how risks can be prioritized based on the probability of the risk happening and the consequence if the risk occurs. **Table 1: Probability Levels** and **Table 2: Consequence Levels** can be used to help determine the probability and consequence of each risk identified on the worksheets. The probability and consequence of each risk can then be noted in the appropriate columns on the relevant worksheets in Appendix A.

As noted in the introduction, risk is defined as a measure of the probability and consequence of an adverse effect to health, property, organization, environment, or community as a result of an event, activity or operation.

4.1 Probability

The probability or likelihood of a fire or emergency within a community is often estimated based on the frequency of previous experiences. A review of past events involves considering relevant historical fire loss data, learning from the experiences of other communities, and consulting members of the community with extensive historical knowledge. Professional judgment based on experience should also be exercised in combination with historical information to estimate probability levels. The probability of an event can be categorized into five levels of likelihood:

Table 1: Probability Levels

Description	Specifics
Rare	• may occur in exceptional circumstances

	• no incidents in the past 15 years
Unlikely	• could occur at some time, especially if circumstances change • 5 to 15 years since the last incident
Possible	• might occur under current circumstances • 1 incident in the past 5 years
Likely	• will probably occur at some time under current circumstances • multiple or recurring incidents in the past 5 years
Almost Certain	• expected to occur in most circumstances unless circumstances change • multiple or recurring incidents in the past year

Assign a probability level to each identified risk or hazard on the relevant worksheets in Appendix A.

4.2 Consequence

The consequence of a fire or emergency is the potential losses or negative outcomes associated with the event. The application of professional judgment and reviews of past occurrences are important methods used for determining consequence levels. Estimating the consequence level of an incident or event should involve an evaluation of four components:

Life Safety: Injuries or loss of life due to occupant and firefighter exposure to life threatening fire or other situations.

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

Economic Impact: Monetary losses associated with property income, business closures, a downturn in tourism and/or tax assessment value, and employment layoffs.

Environmental Impact: Harm to human and non-human (i.e. wildlife, fish and vegetation) species of life and a general decline in quality of life within the community due to air/water/soil contamination as a result of the incident and response activities.

The consequence of an event can be categorized into five levels based on severity:

Table 2: Consequence Levels	
Description	**Specifics**
Insignificant	• no life safety issue • limited valued or no property loss

	• no impact to local economy, and/or • no effect on general living conditions
Minor	• potential risk to life safety of occupants • minor property loss • minimal disruption to business activity, and/or • minimal impact on general living conditions
Moderate	• threat to life safety of occupants • moderate property loss • poses threat to small local businesses, and/or • could pose a threat to the quality of the environment
Major	• potential for a large loss of life • would result in significant property damage • significant threat to large businesses, local economy and tourism, and/or • impact to the environment would result in a short term, partial evacuation of local residents and businesses
Catastrophic	• significant loss of life • multiple property damage to a significant portion of the municipality • long-term disruption of businesses, local employment, and tourism, and/or • environmental damage that would result in long-term evacuation of local residents and businesses

Assign a consequence level to each identified risk or hazard on the relevant worksheets in Appendix A.

5.0 ASSIGNING RISK LEVEL

Assigning a risk level assists fire departments in prioritizing risks, which helps to determine how to address or treat each risk. The **Risk Level Matrix** in this section can assist fire departments to determine risk levels based on the probability and consequence levels of each identified risk. Risks can be assigned as low risk, moderate risk or high risk. The risk levels for each risk can be noted in the **Assigned Risk Level** column on the relevant worksheets in Appendix A.
The matrix below can be used to determine the assigned risk level.**[1]** Plot the assigned probability and consequence levels on the relevant worksheets in Appendix A to assign a risk level for each identified risk.

Risk Level Matrix

Probability	INSIGNIFICANT	MINOR	MODERATE	MAJOR	CATASTROPHIC
ALMOST CERTAIN	Moderate Risk	Moderate Risk	High Risk	High Risk	High Risk
LIKELY	Moderate Risk	Moderate Risk	Moderate Risk	High Risk	High Risk
POSSIBLE	Low Risk	Moderate Risk	Moderate Risk	Moderate Risk	High Risk
UNLIKELY	Low Risk	Low Risk	Moderate Risk	Moderate Risk	Moderate Risk
RARE	Low Risk	Low Risk	Low Risk	Moderate Risk	Moderate Risk

Consequence →

6.0 RISK TREATMENT OPTIONS

Once risk levels have been assigned, fire departments can determine how best to treat each risk and the resources required to do so.

Options for treating risks include the following:
- Avoid the Risk
- Mitigate the Risk
- Accept the Risk
- Transfer the Risk

6.1 Avoid the Risk

Avoiding the risk means implementing programs and initiatives to prevent a fire or emergency from happening.

For example, public fire safety education initiatives aim to change people's behaviours so that fires may be prevented and people react appropriately when fires do occur. Fire Code inspections and enforcement help to ensure that buildings are in compliance with the Ontario Fire Code.

6.2 Mitigate the Risk

Mitigating the risk means implementing programs and initiatives to reduce the probability and/or consequence of a fire or emergency.

For example, a routine Fire Code inspection and enforcement program to ensure Fire Code compliance helps to reduce the probability and consequence of a fire.

A pre-planning program involving fire suppression crews allows the fire department to gain knowledge about specific buildings in the community and their contents, fuel load, fire protection systems, etc. This information can be provided to the fire inspection staff who can ensure the building is compliant with the Fire Code. Also, it can assist suppression crews to plan fire suppression operations should a fire occur in a building. These activities can reduce the probability and consequence of a fire.

6.3 Accept the Risk

Accepting the risk means that after identifying and prioritizing a risk, the fire department determines that no specific programs or initiatives will be implemented to address this risk. In this treatment option, the fire department accepts that the potential risk might happen and will respond if it occurs.

For example, typically fire departments do not implement programs to prevent motor vehicle collisions. Yet it is generally accepted that collisions will happen and that the fire department will respond when they do. Similarly, environmental hazards (e.g. ice storms) and medical calls cannot be prevented by a fire department program or initiative, yet fire departments typically respond when these emergencies occur.

When accepting risks, fire departments should consider their capacity (i.e. equipment, personnel, training, etc.) to respond.

6.4 Transfer the Risk

Transferring the risk means the fire department transfers the impact and/or management of the risk to another organization or body. Contracting public fire safety education, Fire Code inspection and enforcement, or emergency response services to a neighbouring municipality or another organization are examples of transferring the management of risks to another body. For example, a community may enter into a fire protection agreement with a neighbouring community with respect to any or all of the three lines of defence.

7.0 SETTING THE TYPE AND LEVEL OF FIRE PROTECTION SERVICES

When setting the type and level of fire protection services, all Three Lines of Defence should be considered in terms of the impact each will have on the probability or consequence of identified risks. Once fire departments have determined the preferred treatment option for each risk, they can plan and implement activities that address those risks. Things to consider include the fire department's current resources, staffing levels, training, equipment and authority versus those that may be required to implement the preferred treatment options. After considering these issues, the preferred treatment option (e.g. avoid the risk, mitigate the risk, accept the risk, or transfer the risk) can be noted in the **Preferred Treatment Option** column of worksheet 10 in Appendix A.

Fire departments should also ensure that operational policies and standard operating guidelines address the levels of service and activities required to address each risk. This includes setting goals and objectives, and determining resources, training, equipment, activities, and programs required across each of the Three Lines of Defence.
The process of making informed decisions about the provision of fire protection services should include careful consideration of the following:

Implementation of public fire safety education, Fire Code inspections and enforcement, and emergency response activities that are appropriate to address the causes, behaviours or issues associated with identified risks.

Capabilities and capacity of the fire department (e.g. financial and staffing resources, training, equipment, authority, etc.) that may be required to implement preferred treatment options. Strategic partners with common interests, available resources, or skill sets that could assist in addressing risks using the applicable risk assessment profiles.

Establishing and Regulating By-laws, operational policies and standard operating guidelines that reflect the fire protection services to be provided to address the identified risks. Establishment of goals and objectives, strategies, timelines, and evaluation for the proposed fire protection services to be provided.

Communication with municipal council and the public to outline the types and levels of fire protection services that will be provided.

8.0 REVIEW

O. Reg. 378/18 requires fire departments to complete a new community risk assessment at least every five years. The regulation also requires that fire departments review their

community risk assessment at least once every 12 months to ensure it continues to accurately reflect the community and its fire and emergency risks. The purpose of this review is to identify any changes in the mandatory profiles that may result in a change in risk level, or a change in the type or level of fire protection services the fire department determines necessary to address the risks. This review is intended to ensure that the fire protection services provided continue to be evidence-based and linked to the identified risks.

This review process may or may not involve a close examination of all of the nine community profiles, depending on whether any changes related to the profiles have occurred since the completion of the risk assessment or the last review. For example, changing demographic profiles (e.g. an aging population or an increase in the number of immigrants) or changing geographic profiles (e.g. the planned construction of a new highway) may impact the risks identified in the community risk assessment and the fire department activities and resources required to address them. A review may or may not result in any changes to the assigned risk levels or fire protection services. However, a review can provide evidence-based justification for decisions that may impact the delivery of fire protection services.

Fire departments should maintain documentation that the reviews required by O. Reg. 378/18 have been conducted. This documentation should include:

- Any changes to any of the mandatory profiles;
- Any changes to assigned risk levels or fire protection services that occur as a result of the review, and
- Any other information the fire department deems appropriate to the review or any resultant changes to fire protection services.
- If no significant changes occur in the community within a 12-month period, and no changes are required to the profiles or fire protection services, then a review could simply consist of documentation to that effect.

APPENDIX B: HOW THE RISK LEVELS IN THE RISK LEVEL MATRIX WERE DETERMINED

The risk levels in the Risk Level Matrix on page 15 were determined using the following methodology. The probability and consequence levels outlined in Table 1: Probability Level (page 13) and Table 2: Consequence Level (pages 14-15) have different definitions, but are given the same weighted numerical values[2] (see the numerical values in red below) to reflect the fact that *probability and consequence are equally important*. While it is human tendency to place more weight on consequence than probability, using the same weighted numerical values ensures that probability and consequence are given equal value. This approach is consistent with current risk management industry practices. The risk levels in the Risk Level Matrix were determined by multiplying the numeric values for probability and consequence.

Risk Level Matrix

	INSIGNIFICANT 1	MINOR 10	MODERATE 100	MAJOR 1,000	CATASTROPHIC 10,000
ALMOST CERTAIN 10,000	Moderate Risk 10,000	Moderate Risk 100,000	High Risk 1,000,000	High Risk 10,000,000	High Risk 100,000,000
LIKELY 1,000	Moderate Risk 1,000	Moderate Risk 10,000	Moderate Risk 100,000	High Risk 1,000,000	High Risk 10,000,000
POSSIBLE 100	Low Risk 100	Moderate Risk 1,000	Moderate Risk 10,000	Moderate Risk 100,000	High Risk 1,000,000
UNLIKELY 10	Low Risk 10	Low Risk 100	Moderate Risk 1,000	Moderate Risk 10,000	Moderate Risk 100,000
RARE 1	Low Risk 1	Low Risk 10	Low Risk 100	Moderate Risk 1,000	Moderate Risk 10,000

Probability (vertical axis) × *Consequence* (horizontal axis)

Low Risk:	probability x consequence = 1; 10; or 100
Moderate Risk:	probability x consequence = 1,000; 10,000; or 100,000
High Risk:	probability x consequence = 1,000,000; 10,000,000; or 100,000,000

APPENDIX C: ONTARIO REGULATION 378/18

ONTARIO REGULATION 378/18
made under the
FIRE PROTECTION AND PREVENTION ACT, 1997
COMMUNITY RISK ASSESSMENTS

Mandatory use
1. Every municipality, and every fire department in a territory without municipal organization, must, complete and review a community risk assessment as provided by this Regulation; and use its community risk assessment to inform decisions about the provision of fire protection services.

What it is
2. (1) A community risk assessment is a process of identifying, analyzing, evaluating and prioritizing risks to public safety to inform decisions about the provision of fire protection services.
(2) A community risk assessment must include consideration of the mandatory profiles listed in Schedule 1.
(3) A community risk assessment must be in the form, if any, that the Fire Marshal provides or approves.

When to complete (at least every five years)
3. (1) The municipality or fire department must complete a community risk assessment no later than five years after the day its previous community risk assessment was completed.
(2) If a municipality, or a fire department in a territory without municipal organization, comes into existence, the municipality or fire department must complete a community risk assessment no later than two years after the day it comes into existence.
(3) A municipality that exists on July 1, 2019, or a fire department in a territory without municipal organization that exists on July 1, 2019, must complete a community risk assessment no later than July 1, 2024.

(4) Subsection (3) and this subsection are revoked on July 1, 2025.
When to review (at least every year)
4. (1) The municipality or fire department must complete a review of its community risk assessment no later than 12 months after,
the day its community risk assessment was completed; and
the day its previous review was completed.

(2) The municipality or fire department must also review its community risk assessment whenever necessary.

(3) The municipality or fire department must revise its community risk assessment if it is necessary to reflect,

any significant changes in the mandatory profiles;

any other significant matters arising from the review.

(4) The municipality or fire department does not have to review its community risk assessment if it expects to complete a new community risk assessment on or before the day it would complete the review.

Commencement

5. This Regulation comes into force on the later of July 1, 2019 and the day it is filed.

Schedule 1:

Mandatory Profiles

Geographic profile: The physical features of the community, including the nature and placement of features such as highways, waterways, railways, canyons, bridges, landforms and wildland-urban interfaces.

Building stock profile: The types of buildings in the community, the uses of the buildings in the community, the number of buildings of each type, the number of buildings of each use and any building-related risks known to the fire department.

Critical infrastructure profile: The capabilities and limitations of critical infrastructure, including electricity distribution, water distribution, telecommunications, hospitals and airports.

Demographic profile: The composition of the community's population, respecting matters relevant to the community, such as population size and dispersion, age, gender, cultural background, level of education, socioeconomic make-up, and transient population.

Hazard profile: The hazards in the community, including natural hazards, hazards caused by humans, and technological hazards.

Public safety response profile: The types of incidents responded to by other entities in the community, and those entities' response capabilities.

Community services profile: The types of services provided by other entities in the community, and those entities' service capabilities.

Economic profile: The economic sectors affecting the community that are critical to its financial sustainability.

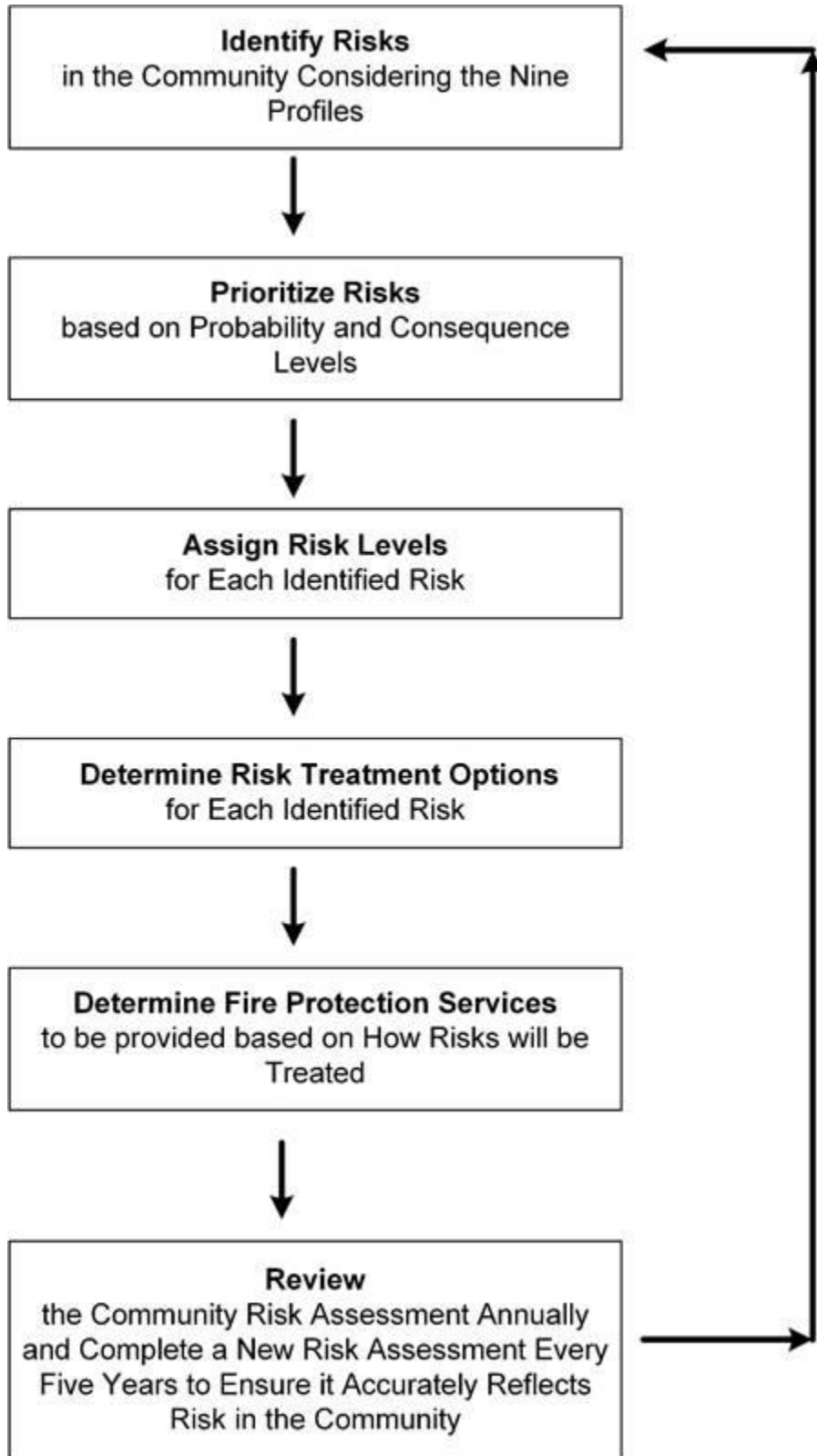Past loss and event history profile: The community's past emergency response experience, including the following analysis:

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

2. Comparison of the community's fire loss statistics with provincial fire loss statistics.

Note: Each profile is to be interpreted as extending only to matters relevant to fire protection services.

APPENDIX D: CRA FLOW CHART

```
┌─────────────────────────────────────┐
│            Identify Risks            │ ◄─────────────┐
│  in the Community Considering the    │               │
│              Nine Profiles           │               │
└─────────────────────────────────────┘               │
                    │                                  │
                    ▼                                  │
┌─────────────────────────────────────┐               │
│           Prioritize Risks           │               │
│  based on Probability and Consequence│               │
│                Levels                │               │
└─────────────────────────────────────┘               │
                    │                                  │
                    ▼                                  │
┌─────────────────────────────────────┐               │
│          Assign Risk Levels          │               │
│        for Each Identified Risk      │               │
└─────────────────────────────────────┘               │
                    │                                  │
                    ▼                                  │
┌─────────────────────────────────────┐               │
│    Determine Risk Treatment Options  │               │
│        for Each Identified Risk      │               │
└─────────────────────────────────────┘               │
                    │                                  │
                    ▼                                  │
┌─────────────────────────────────────┐               │
│   Determine Fire Protection Services │               │
│   to be provided based on How Risks  │               │
│            will be Treated           │               │
└─────────────────────────────────────┘               │
                    │                                  │
                    ▼                                  │
┌─────────────────────────────────────┐               │
│                Review                │               │
│  the Community Risk Assessment       │               │
│  Annually and Complete a New Risk    │ ──────────────┘
│  Assessment Every Five Years to      │
│  Ensure it Accurately Reflects       │
│         Risk in the Community        │
└─────────────────────────────────────┘
```

APPENDIX E: REFERENCES

- DBP Management, *5 Ways to Manage Risk*, *dbpmanagement.com*
- Dillon Consulting, The Corporation of the City of Mississauga, Community Risk Identification: Introduction and Methodology, July 2017
- Government of Ontario, *Fire Protection and Prevention Act, 1997, S.O. 1997, c. 4*
- Government of Ontario, *Ontario Regulation 378/18: Community Risk Assessments*, May 2018
- National Fire Protection Association, *NFPA 1300, Standard on Community Risk Assessment and Community Risk Reduction Plan Development*, Proposed Second Draft, January 14, 2019
- National Fire Protection Association Urban Fire and Life Safety Task Force, *Community Risk Reduction: Doing More With More*, June 2016
- Office of the Fire Marshal and Emergency Management, *Comprehensive Fire Safety Effectiveness Model: Fire Prevention Effectiveness Model – Position Paper*, September 1997
- Office of the Fire Marshal and Emergency Management, *Comprehensive Fire Safety Effectiveness Model: Fire Risk Sub-Model*, June 2009
- Office of the Fire Marshal and Emergency Management, *Public Fire Safety Guideline 04-40A-03: Simplified Risk Assessment*, January 2006
- U.S. Fire Administration, *Risk Management Practices in the Fire Service*, January 2018
- Vision 20/20, *Community Risk Assessment: A Guide for Conducting a Community Risk Assessment*, Version 1.5, February 2016
- Vision 20/20, *Community Risk Reduction Planning: A Guide for Developing a Community Risk Reduction Plan*, Version 4, June 2016
- **END NOTES**
- **[1]** See Appendix B for a description of how risk levels (low, moderate, and high) were determined.
- **[2]** The numeric scale used here is taken from Dillon Consulting, *The Corporation of the City of Mississauga, Community Risk Identification: Introduction and Methodology,* July 2017.