Community Risk Assessment-Fire & Rescue Services

2024

Town of Riverview

November 2024

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Introduction

The purpose of this document is to conduct a community risk assessment, from the standpoint of fire and rescue services for the Town of Riverview. As defined in NFPA 1300, *Standard on Community Risk Assessment and Community Risk Reduction Plan Development (2020)*, a risk assessment is a comprehensive evaluation that identifies, prioritizes, and defines the risks that pertain to the overall community.

This assessment does not replace the broader risk assessment contained within the *Municipal Emergency Measures Plan* (Moncton, Riverview, Dieppe-2022), which is an "all hazards" plan written from an emergency management perspective. This community risk assessment focuses on the community risks responded to, in some cases daily, by Riverview Fire and Rescue.

The document does not contain a Community Risk Reduction Plan. This document will feed into a service mandate for Riverview Fire and Rescue, and a future community risk reduction plan. The layout of this risk assessment follows NFPA 1300 (2020), Section 5.3.2.

Chief True would like to thank the town staff who assisted with this assessment process: CAO Colin Smith, Deputy Chief of Fire Prevention John Malloy, Deputy Chief of Operations Geoff Fisher, Lt. Josh McKinnon and Firefighter Derek Ferguson. Also special thanks to Shanel Akerley, Economic Development Manager, for assisting with demographics information.

Demographics Profile

Background

According to Statistics Canada the population in Riverview grew by 4.7% between 2016 and 2021, with a 2021 population count of 20,584. However, Statistics Canada's annual estimate of population for 2021 was 20,749 (0.8% higher). The most recent estimate of Riverview's population for 2022 is 21,352, representing an increase of 2.9% over a single year. The Moncton Census Metropolitan Area (CMA) which includes Moncton, Riverview and Dieppe witnessed the fastest population growth in the country between 2021 and 2022.

The *Town of Riverview Housing Needs Assessment Report* completed by *Stantec* in November of 2023 projects the population of Riverview to be 22,971 by 2031. We consider this to be a conservative projection and for the purposes of this assessment, we are assuming the population of Riverview will reach 23,000 people at some point between the years 2026 and 2031.

Riverview's population has a median age of 46.8 years. Canada overall in the 2021 census had a median age of 41.6 years (https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=9810002701). As per the TOR *Housing Needs Assessment Report*, the proportion of the population 65 years of age and over in 2021 was 22%. It is projected that those aged 65 and over will represent greater than 25% of the population by 2031. In short, Riverview currently has an older population in comparison to the rest of Canada, and this trend is projected to continue.

In addition to age, ethnic diversity is a second significant demographic factor. As noted in the *Greater Moncton Immigration Trends Report* prepared by Jupia Consultants Inc. (2024), the number of permanent residents (PR) to the Moncton CMA set a new record in 2023, with the area attracting 44% of all PR admissions to New Brunswick. Specific to Riverview, the town has welcomed 330 PRs over the last 5 years. It is important to note that this figure does not include all categories of newcomers (i.e., refugees, asylum seekers, non-permanent residents, etc.). As a result, Riverview is becoming a more ethnically diverse community. Although the federal government in October of 2024 announced plans to gradually reduce the number of permanent resident admissions, in the short term we would anticipate continued immigration settlement within Riverview.

Discussion

In relationship to age, the U.S. Fire Administration reports that persons aged 65-74 have a 2.2 times greater risk of dying in a fire, and those aged 75-84 have a 3.1 times higher risk of dying in a fire. In the United States, the fire death rate within these populations has increased from 2012 to 2021 (https://www.usfa.fema.gov/statistics/deaths-injuries/older-adults.html). Although Canada does not have a national fire administration agency similar to the United States, there are similar findings in Canada. In a report on *Fire Risk in Senior Population* written by the University of the Fraser Valley they found that the prevalence of fire related fatalities is the highest in the senior population with 1.33 fatalities per 100,000 population. This makes seniors

2.5 times more likely to have died at all fires in comparison to the adult population. The report predicts the fire fatalities among seniors to increase as the baby-boom generation enters its senior years.

A research paper entitled *The older adult: Associated fire risks and current challenges for the development of future fire safety intervention strategies* outlines some of the fire risks identified within the homes of seniors. Cooking activity was found to be the most observed risk, while other detected risks included smoking materials, issues related to smoke alarms and lastly electrical appliances. In combination with these observable risks within the home, seniors themselves can display mobility impairment, decline in neurological function and reduced hearing.

Empirical evidence related to ethnicity and risk of fire is difficult to obtain as AHJs typically do not record the ethnicity of property owners who experience a fire, and fire is a universal danger. Having said this, many fire departments have recognized the increased risk of fire for new immigrants to Canada. The Halton multicultural Council in the GTA for instance authored a report that captured cultural practices that can pose a risk of fire (i.e. candle use and cooking practices). Incidents such as the one in Halifax in February of 2019 where seven children from a Syrian refugee family were killed in a house fire is a tragic reminder of the risk posed by fire (https://www.cbc.ca/news/canada/nova-scotia/fatal-fire-spryfield-1.5024174). In Riverview, the fire department witnessed a 68% increase in commercial and residential fire alarms (no fire) in 2023 compared to 2022 (139 calls versus 82). This is in part due to the sheer growth in building stock (units added), but crews also reported a number of kitchen related incidents among newcomers to Canada.

Cassidy, P., McConnell, N. & Boyce, K. (2021). *The older adult: Associated fire risks and current challenges for the development of future fire safety intervention strategies.* Fire and Materials, 45:553-563.

Garis, L. & Biantoro, C. (June 2019). *Fire Risk in Senior Population: Analysis of Canadian Fire Incidents.* University of the Fraser Valley, School of Criminology & Criminal Justice. https://cjr.ufv.ca/wp-content/uploads/2019/06/Fire-Risk-in-Senior-Population-June-2019.pdf (accessed April 5, 2024).

Statistics Canada. 2023. (table). *Census Profile. 2021 Census of Population*. Statistics Canada Catalogue no. 98-316-X2021001. Ottawa. Released November 15, 2023. https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/index.cfm?Lang=E (accessed March 28, 2024).

Geography/Topography Profile

Background

New Brunswick is part of the Appalachian region, one of Canada's seven physiographic regions. About 5 per cent of the province is farmland. Most of the remainder of the province, some 83 per cent, is under forest cover (https://www.thecanadianencyclopedia.ca/en/article/geography-of-new-brunswick). While much of southeast New Brunswick is flat, there are also areas with gently rolling hills. Riverview rests at approximately 150 meters above sea level.

Riverview is bound by the Petitcodiac River to the north, a tidal river which empties into the Bay of Fundy. To the south, east and west Riverview is largely surrounded by forested lands.

(Source: Google Maps, Obtained on April 4, 2024)

Discussion

Geography/topography is a significant factor in relationship to community risk. As mentioned, the Petitcodiac river which runs along Riverview's northern border is tidal, featuring a tidal bore. The tidal bore ranges in height from 0.5 to 1 meter and produces a wave that can reach speeds up to 13 km/hr. This presents water as a significant hazard.

Forested land to the south, east and west of Riverview. According to the Province of New Brunswick, 68% of NB forest (by volume) consist of softwood trees (conifers), while the remainder are hardwoods (deciduous). Forest stands are largely softwood or mixed wood, with only 28% being hardwood stands (https://www2.gnb.ca/content/gnb/en/corporate/promo/our-forest-are-for-everyone.html). As will be discussed, this leads to the risk of forest fires and wildland urban interface fires.

Economic Profile

Background

The 2021 Census data indicates that the median total income for individuals (15 and older) in Riverview during 2020 was $40,800. By way of comparison the median individual income in Moncton during 2020 was $38,000 and for New Brunswick overall it was $37,600. When looking at household incomes, Riverview likewise has higher median incomes. In 2020 the median household income in Riverview was $79,500, whereas Moncton's was $68,000 and New Brunswick's was $70,000.

Drawing upon *New Brunswick's 2021 Child Poverty Report Card* provided by the Human Development Council, Riverview had an overall poverty rate of 11.1% with a 15.5% child poverty rate. Comparatively Moncton had an overall poverty rate of 20.6% with a 26.0% child poverty rate. Having said this, there are several comparable municipalities in the province with slightly lower poverty rates in comparison to Riverview (i.e. Dieppe and Rothesay).

In short, Riverview may not be characterized as affluent, but it neither is it a "poor" or "low income" community. There are those in Riverview who live in poverty, and these rates may be higher now due to high inflation over the past two years, but overall Riverview is an older community with established families who have household incomes that exceed the provincial average.

Discussion

Several academic studies have established the relationship between low socio-economic status and an elevated risk of dying in a residential fire. Specifically low socio-economic status is associated with increased risk when comparing fatal with non-fatal fires and when comparing individuals dying in residential fires with survivors (Jonosson et al, 2002) There may be several underlying explanations, but one significant one is the lack of fire protection devices (i.e. smoke alarms) in low-income homes (Shai, 2006).

Human Development Council (November 2021). *New Brunswick's 2021 Child Poverty Report Card.* *https://campaign2000.ca/wp-content/uploads/2021/11/New-Brunswicks-2021-Child-Poverty-Report-Card.pdf* (accessed April 18, 2024).

Jonosson, A., McIntyre, C. & Runefors, M. (2022). Fire Fatalities and Fatal Fires-Risk Factors and Risk Groups.

Shai, D. (March-April 2006). Income, Housing and Fire Injuries: A census Tract Analysis. Public Health Reports, Vol. 121

Building Stock Profile

Background

Building stock is a term that is used to describe the total number of buildings within a defined boundary, such as a municipality. In the context of firefighting, as stated by the Fire Underwriters Survey, "Municipal building stock details such as size, construction, exposures, occupancy, and fire protection systems, lay the foundation of a municipal risk assessment…". (https://www.fireunderwriters.ca/).

Unfortunately, neither the Town of Riverview nor the Southeast Regional Service Commission (Plan 360) have a building stock report to draw upon. As a result, we are using information from the 2021 Census, annual reports from Plan 360, and information from our internal fire inspection cell to inform discussion.

Housing and Dwelling Characteristics, 2021 Census

Total - Occupied private dwellings by structural type of dwelling - 100% data	8,650
Single-detached house	5,500
Semi-detached house	690
Row house	475
Apartment or flat in a duplex	160
Apartment in a building that has fewer than five storeys	1,365
Apartment in a building that has five or more storeys	70
Movable dwelling	390

Statistics Canada. 2023. (table). Census Profile. 2021 Census of Population. Statistics Canada Catalogue no. 98-316-X2021001. Ottawa. Released November 15, 2023. https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/index.cfm?Lang=E (accessed March 28, 2024).

Permits Issued (New Construction)

Year	Industrial	Institutional	Commercial	Multi Dwelling Units	Residential (*)
2016	2	1	-	9	17
2017	1	-	1	16	28
2018	-	1	1	17	17
2019	2	-	-	2	20
2020	-	1	-	16	23
2021	1	-	3	8	47
2022	-	1	3	3	40
2023	-	-	1	10	31
Totals	**6**	**4**	**9**	**81**	**223**

* Residential includes homes, mini/mobile homes

(Source: Plan 360 Annual Reports, 2016-22. Information for 2023 obtained from Kirk Brewer, Planner /Development Officer, Plan 360)

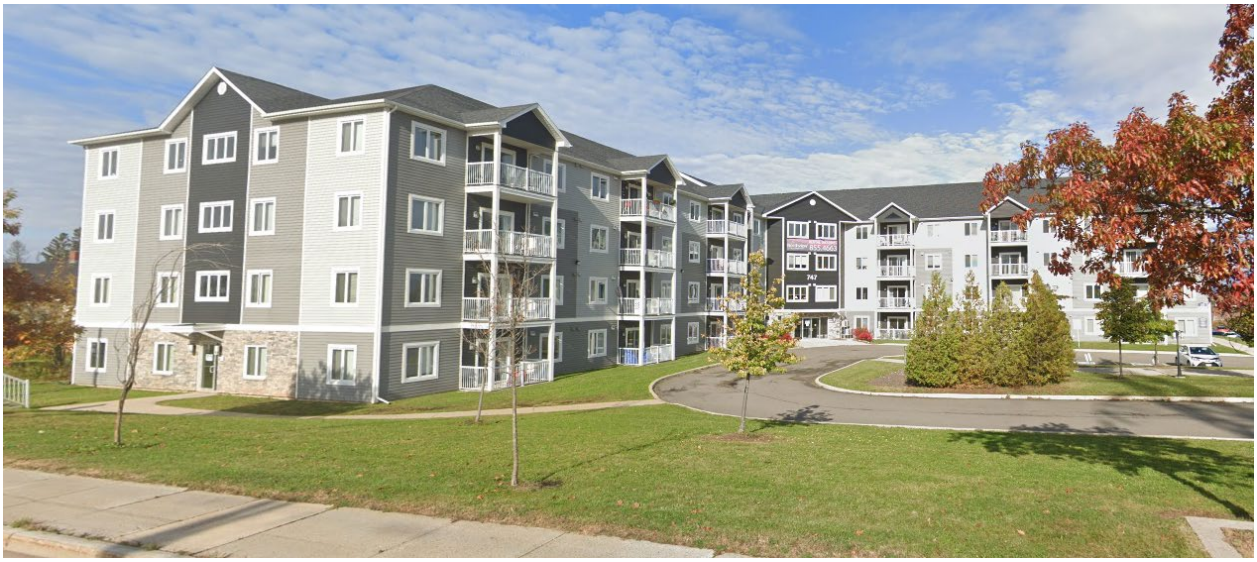
Discussion

Predominance of Single-Family Homes shifting to Multi-Unit Residential

Although we do not have access to a building stock report for the Town of Riverview, we can draw important observations out of the above information tables. Riverview has historically been dominated by single family homes, with the 2021 census showing 6,190 out of 8,650 (72%) of occupied private dwellings being single or semi-detached houses. However, the number of permits issued for new construction drawn from the annual reports from Plan 360 demonstrate significant growth in multi-unit dwellings. A total of 81 permits were issued in Riverview over the last eight years (2016-23) for multi-dwelling units. The TOR *Housing Needs Assessment Report* states that the percentage of dwelling units categorized as both low-rise and mid-rise multi-unit apartment structures in 2021 is 16.6%. This is expected to increase to 17.9% by 2041.

Riverview has several (relatively new) low-rise (1-4 floors) apartment buildings and two mid-rise (5-12) apartment buildings. Two additional mid-rise apartment buildings are now under construction in 2024. The newer apartment buildings feature sprinkler systems and water standpipes which facilitate interior fire suppression. The presence of sprinkler systems within apartment buildings is significant. The *National Fire Protection Association* (NFPA) states that when we compare fires reported in properties with no automatic extinguishing systems (AES), versus when sprinklers were present, the civilian fire death and injury rates per fire were 89 percent and 27 percent lower, respectively. The rate of firefighter injuries per fire was 60 percent lower (https://www.nfpa.org/education-and-research/research/nfpa-research/fire-statistical-reports/us-experience-with-sprinklers).

Low-rise Apartment Building with Sprinkler System and Standpipes, Coverdale Rd., Riverview



(Source: Google Maps, Obtained on April 5, 2024)

Although buildings that feature sprinkler systems and fire standpipes are more resistant to the risk of fire, these systems do have limitations. Specifically exterior fire spread extending to the attic space can result in significant fire damage, as witnessed in a relatively new four storey (42 unit) apartment building fire in Fredericton in September of 2023 (pictured below).

Low-rise Apartment Building Fire, Union St., Fredericton, NB (2023)

Source: https://atlantic.ctvnews.ca/mobile/renews-my-hope-in-humanity-overwhelming-support-for-110-displaced-tenants-after-fredericton-fire-1.6576425. Obtained on April 5, 2024.

Riverview also has an older stock of low-rise apartment buildings which do not feature sprinkler or stand-pipe systems. Many of these older low-rise apartment buildings do however have brick (non-combustible) facades and some feature cinder block interior walls, limiting fire spread withing the structure.

Low-rise Apartment Building without Sprinkler System and Standpipes, Pine Glen Rd. Riverview

(Source: Google Maps, Obtained on April 5, 2024)

Lastly, Riverview has a large stock of what is often referred to as Garden Apartments (1-3 floors, no elevators, exterior access only). These present a significant fire risk as they feature lightweight construction materials, and most often have combustible siding.

Garden Apartments, Whitepine Rd., Riverview

(Source: Google Maps, Obtained on April 5, 2024)

Additionally, some of these garden apartments are developed within apartment complexes. This increases the risk of fire spread to adjacent structures within the cluster of adjacent apartment buildings. This is referred to as a high risk of "exposure" fires.

Garden Apartment Complex, Whitepine Rd., Riverview

(Source: Google Maps, Obtained on April 5, 2024)

Age of Building Stock

Without a comprehensive building stock report, we must rely on general observation and knowledge of the jurisdiction. As mentioned already, Riverview's building stock has been historically dominated by construction of single-family homes. Single family homes in the west end of Riverview are generally in the thirty-five to fifty year range. Homes in central Riverview span from forty to seventy years, with the oldest houses closer to the Petitcodiac River.

In the east end of Riverview there is a wide mixture within the building stock age. There are older homes built after World War II near the site of the old Canadian Forces Station Coverdale.

(Source: HMCS Coverdale, http://jproc.ca/rrp/rrp2/coverdale.html. Obtained on April 25, 2024)

The Point Park neighbourhood in the east end consists of homes built forty to fifty years ago, and then there is a large volume of new homes in the east end built within the last twenty years, with active development of new homes into the current year.

The age of multi-unit residential dwellings has a wide range. The oldest apartment buildings, such as those at the bottom of Pine Glen Rd., are forty to fifty years old. On the other hand, there are a large number of garden apartments and low-rise apartment buildings constructed within the last eight years, with active construction into the current year. As noted previously, *Plan 360* reports 81 building permits issued for multi-unit dwellings from 2016 to 2023. There are several property rezoning applications in 2024 before council (at the time of writing) related to further multi-unit residential developments.

In conclusion, a large bulk of single-family homes in Riverview now fall within the thirty-five to fifty year age range. Multi-unit residential building stock age is varied, but nearly half of these structures are less than ten years old.

Age of housing is important as research clearly indicates that older houses are associated with fire injuries (Shai, 2006). Older housing for instance was built when there was far less demand for electricity, leading to residents overloading outlets or using extension cords. Additionally, there is general deterioration of electrical systems over time. It is reasonable to anticipate that the stock of single-family homes in Riverview may increase the frequency of structure fires due to their age. There is generally less risk due to the building age associated with multi-unit dwellings in Riverview.

Shai, D. (March-April 2006). Income, Housing and Fire Injuries: A census Tract Analysis. Public Health Reports, Vol. 121

Hazards

In this document we are adopting the definition of hazard that is found in NFPA 1300, *Standard on Community Risk Assessment and Community Risk Reduction Plan Development*. A hazard is condition, situation or behavior that presents the potential for harm or damage to people, property or the environment. As noted in the introduction, this community risk assessment will narrowly focus on hazards relevant to the fire service. The hazards are *not* assessed from a broader emergency management perspective.

Structure Fire

The hazard of structure fires is primarily the threat it poses to people and property, although structure fires on occasion can present a hazard to the environment as well (i.e. air quality, ground contamination).

As discussed earlier in this paper, there is a mixture of factors within the community that impact the hazard level. Across North America the general trend has been toward fewer structure fires over the last couple of decades. Specific to Riverview there is a mixed building stock in terms of age. The majority of multi-unit buildings are less than fifteen years old, but there is a greater age range when we look at the stock of single-family homes. There is a large stock of homes now in the thirty-to-fifty-year range. Additionally, Riverview has an older average population, and that trend is expected to continue. Lastly, there is an influx of newcomers who appear to have a lower level of fire prevention education. On the other hand, Riverview has a strong economy and poverty levels are relatively low. Overall, it may be reasonable to expect the hazard presented by structure fires to grow moderately, given the raw population increase, growth in the senior population as well as newcomers to the country, and lastly a portion of the building stock that has now reached an age where fires may become more prevalent.

Forest Fire

As noted previously, Riverview does have extensive forested land to the south. However, the Town itself consists largely of developed land. The largest parcels of forested land within Riverview itself lie in the west end of Riverview, and in Mill Creek Nature Park. The hazard in this case relates primarily to property loss.

The loss of Mill Creek Nature Park due to forest fire would however have a significant negative impact on the economy and public image of Riverview.

Wildland/Urban Interface Fire

Wildland/Urban interface fires are of course often tied to forest fires. There are several hundred homes and properties in Riverview where forested land meets developed property. The hazard in this case relates to both people and property. This hazard is lowered slightly by the volume of deciduous trees, where fire generally moves slower and closer to the ground.

Hazardous Materials

Hazardous materials may pose a hazard to life, property and the environment. Riverview is not a transportation corridor as are neighboring communities such as Moncton and Dieppe. Likewise, the community does not host large industrial operations. Having said this, there are still sources of hazardous materials that would be found in any large town, including ammonia (rinks), chlorine (large pools), and hydrocarbon fuels.

Water/ Swiftwater

Riverview does have a significant water hazard with Mill Creek running through a large portion of the town, with a head pond located in Mill Creek Nature Park. Additionally, the Petitcodiac River poses a swift water hazard during portions of the tide cycle which occurs twice daily. The hazard in this case relates to people who may enter the water and risk drowning.

Ice

The head pond located within the Mill Creek Nature Park presents ice as a hazard to people. Mill Creek itself, to a lesser extent, may present ice as a hazard to those who are on, or next to, this body of water in the wintertime. Specific hazards to life include both drowning and hypothermia.

Confined Space

This hazard primarily poses a danger to people. Confined spaces may contain chemical, physical or atmospheric hazards (or all three). Within the Town of Riverview, town owned utilities and the wastewater treatment plant (Transaqua) present numerous confined spaces.

Low Angle Environment

This hazard poses danger to people. Riverview has slopes where an injured person may require rescue primarily in Mill Creek Nature Park, as well as along the banks of the Petitcodiac River. Beyond this, there are times where low angle rescue is needed along our highways when motor vehicle accident patients are brought up out of a ditch.

High Angle Environment

Due to the topography of the region (being relatively flat), the hazard to people is lower in this hazard category. Having said this, Riverview does share two bridges with Moncton where a high angle rescue may be required, and during the construction of tall buildings a high angle rescue environment may be encountered (i.e. construction cranes).

Off Road Environment

This hazard poses a danger to people who utilize forested land and trail systems, sometimes related to work, but most often for recreational purposes. Riverview contains a growing network of trails within the Mill Creek Nature Park and serves as the starting point of the Dobson Trail.

Event History/Past Loss

Structure Fire

Riverview Fire & Rescue in the summer of 2024 began to track structure fire outcomes as a standard reporting metric. The provincial Fire Investigation Reporting System captures assessed property values, but not loss, associated with fires. We therefore have no strong empirical data that informs past loss related to structure fires.

A qualitative analysis reveals that Riverview has been fortunate to have suffered a limited volume of significant fire loss over its fifty-year history. The single fatality due to fire within the town limits of Riverview occurred in a single-family residence in 2010, with a female occupant being rescued, but passing away a few weeks later due to her injuries. As Riverview is largely a "bedroom" community, most fires have occurred in single family homes or duplexes. In terms of property loss, significant fire events include:

- August 1998- A fire occurred on the roof of the Air Traffic Control Centre during roofing repairs, impacting air traffic control operations.
- August 2000- Four-unit, two-story condo fire heavily impacting three of four units. Fifteen people were displaced as a result of this fire.
- September 2005- A fire occurred within the administration building at the Greater Moncton Sewerage Treatment Plant causing extensive damage.
- June 2006- Two-story barn fire in the west end of Riverview with a loss of animals.
- August 2010- Fire and explosion at a two-story daycare on Hillsborough Rd. in Riverview with two employees sustaining burn injuries. The structure was ultimately demolished due to structural damage.
- September 2024- An exterior fire occurred on a three-story wood frame apartment building in Riverview, impacting three units. The fire was stopped just short of entering the attic.

Forest Fire

The Town of Riverview has not had a significant forest fire within the confines of the town itself, although there have been numerous small fires that were caught early, preventing conflagration. There have been two significant forest fires located just outside of town limits in the past twenty-five years which posed a threat to the municipality:

- June 2004- Justin Street forest fire, Lower Coverdale. This fire located just southeast of Riverview consumed 125 acres (51 hectares) of forest.
- August 2017- Pine Glen Rd forest fire, Pine Glen. This fire was located approximately 6 km south of Riverview and burned about 19 acres (8 hectares) of forest.

Wildland/Urban Interface Fire

A review of calls indicates one wildland/urban interface fire within Riverview:

- July 1997- A large brush fire near the Coverdale Recreation Centre threatened homes in the Bridgedale neighborhood.

Hazardous Materials

Riverview has experienced few significant hazardous material incidents. There are several "routine" responses to small hydrocarbon spills annually, usually associated with vehicles and motor vehicle accidents. One recent event would qualify as a notable occurrence:

- July 2024- A spill of several hundred liters of diesel entered the storm water system from the ruptured tank of a commercial vehicle.

Water/Ice Rescue

Riverview Fire and Rescue on average responds to 2-4 water rescue calls annually on the Petitcodiac River. Fortunately, the majority of these prove to be false alarms. Despite the hazard associated with ice that is present, the department has not responded to an ice rescue call in the last ten years. There are four significant water rescue events to highlight:

- February 1984- Three teenagers were successfully rescued from the Petitcodiac River after an ice pan broke away from the shore, and they floated down river.
- April 1997- A young boy was rescued from an ice pan on Petitcodiac Lake.
- July 1997- A vehicle entered the Petitcodiac near the Causeway (where the Brenda Robertson Bridge is currently located) and became submerged. The female occupant was rescued, but later died in hospital.
- December 2007- A woman who fell from the Gunningsville Bridge into the Petitcodiac River was successfully rescued.

Confined Space Rescue

Despite the confined space hazards that are present in Riverview, there has not been a significant confined space rescue incident within the town.

Low Angle Rescue

A majority of low angle rescues that Riverview Fire and Rescue has responded to have occurred as a result of mutual aid within southeast New Brunswick. The July 1997 water incident, noted in the water rescue section, along the Petitcodiac River incorporated elements of a low angle rescue with responders on shore.

High Angle Rescue

A review of calls indicates one high angle rescue call within Riverview:

- September 2023- Two youths were rescued in a joint Riverview and Moncton operation underneath the Brenda Robertson Bridge, with the youth being lowered from a cement pillar down to the water's edge.

Off-Road Rescue

Off-road rescues can be associated with low angle rescues, but also includes the broader array of rescues that may be required in wooded land or on trail systems. This includes medical emergencies, lost people, and off-road vehicles accidents, where technical rescue skills may not be required, but patient care and transportation are provided. On an annual basis Riverview Fire & Rescue will respond to between two and five such calls.

Call Breakdown, 2019-2023

Type of Emergency Calls	2019	2020	2021	2022	2023
Structure Fires	5	6	14	8	9
Fires (Other i.e. Chimney, Electrical, etc...)	21	23	27	9	18
False Alarms (Malicious)	0	0	0	0	0
Alarms (No Fire - Residential or Commercial)	88	82	66	82	139
Vehicle Collisions, Water/Tech Rescue	82	82	76	79	86
Public hazards (Spills, Gas Leaks, Etc.)	65	91	41	50	65
Public assistance, Miscellaneous	11	15	35	38	55
Vehicle Fires	3	6	3	9	8
Grass/Brush Fires	10	25	8	23	11
Mutual Aid Provided	8	6	10	2	2
Total Non-Medical Emergency Calls	**293**	**336**	**280**	**300**	**393**
Medical First Responder Calls	767	629	746	1121	1551
Total Number of Emergency Calls	**1060**	**965**	**1026**	**1420**	**1944**

Risk Assessment Matrix Model

A risk assessment matrix was used based upon both probability/likelihood of an incident as well as impact/consequence of an occurrence. The model that was utilized is outlined below.

Probability/Likelihood

Rank	Description
1 - rare	• May occur in exceptional circumstances. • No incidents in the past 15 years
2- unlikely	• Could occur at some time, especially if circumstances change. • 5 to 15 years since the last incident
3- Possible	• Might occur under current circumstances. • 1 incident in the past 5 years
4 – Likely	• Will probably occur at some time under current circumstances. • Multiple or recurring incidents in the past 5 years
5 – Almost certain	• Expected to occur in most circumstances unless circumstances change. • Multiple or recurring incidents in the past year

Impact/Consequence

Consequences for fire services should consider the following components.

- Life safety
- Property loss
- Economic impact
- Environmental impact

Rank	Description
1 - insignificant	• No life safety issue • Limited valued or no property loss • No impact to local economy and/or • No effect on general living conditions
2- minor	• Potential risk to life safety of occupants • Minor property loss • Minimal disruption to business activities • Minimal impact on general living conditions

3- moderate	• Threat to life safety of occupants • Moderate property loss • Poses threat to small businesses • Could pose a threat to the quality of the environment.
4 – major	• Potential for large loss of life • Would result in significant property damage. • Significant threat to large businesses, local economy, and tourism • Impact on the environment would result in a short-term, partial evacuation of local residents and businesses.
5 – catastrophic	• Significant loss of life • Multiple properties damaged within a significant portion of the municipality • Long term disruption of businesses, local employment, and tourism • Environmental damage would result in long term evacuation of local residents and businesses.

Risk Matrix

Likelihood	5	Moderate	Moderate	High	High	High
	4	Moderate	Moderate	Moderate/ High	High	High
	3	Low	Moderate	Moderate	Moderate	High
	2	Low	Low	Moderate	Moderate	Moderate
	1	Low	Low	Low	Moderate	Moderate
		1	2	3	4	5
	Consequence					

Risk Assessment Session & Results

On May 1, 2024 a risk assessment workshop was held at Riverview Fire and Rescue, chaired by the CAO for the Town of Riverview. The session included the Fire Chief, the Deputy Chief of Operations, the Deputy Chief of Fire Prevention, one Lieutenant and one firefighter from operations. The preceding community profile was used to inform discussion.

The group identified twelve risk areas that required further assessment:

1) Wildland urban interface fire risk
2) Structure fire risk associated with increasing cultural diversity
3) Structure fire risk associated with aging building stock (single family homes)
4) Structure fire/exposure risk associated with new single-family home construction
5) Structure fire risk associated with multi-unit residential properties (sprinkler/stand-pipe protected)
6) Structure fire risk associated with multi-unit residential properties (**no** sprinkler/stand-pipe protection)
7) Structure fire risk associated with commercial properties
8) Structure fire risk associated with critical infrastructure
9) Water related risk associated with the Petitcodiac River
10) Off-road rescue risk associated with forested areas and trail systems
11) Confined spaces risk associated with various properties
12) Low angle risk associated with properties that have slopes

Workshop Results

Wildland urban interface fire risk

Probability/likelihood Score (1-5)	Impact/Consequence Score (1-5)	Risk Matrix Result
4	4	High Risk

Discussion notes:

- Forested land to the south of Riverview which comes into direct contact with residential properties. A significant number of properties could be at risk in an event.
- Historical events in the region such as the Middlesex Rd. (Colpitts Settlement) fire in 2013 where residential property was lost, as well as the Justin Street (Lower Coverdale) forest fire 2004 where homes were at risk.

Structure fire risk associated with increasing cultural diversity

Probability/likelihood Score (1-5)	Impact/Consequence Score (1-5)	Risk Matrix Result
4	3 to 4	Moderate/High Risk

Discussion notes:

- The committee noted the increase in commercial fire alarms (2022 and into 2023), several of which are associated with cooking incidents within apartment buildings.
- Crews are noticing large families (extended families) who often occupy apartments.
- The level of fire safety education varies amongst different countries of origin.

Structure fire risk associated with aging building stock (single family homes)

Probability/likelihood Score (1-5)	Impact/Consequence Score (1-5)	Risk Matrix Result
4	2	Moderate

Discussion notes:

- The committee noted that homes in west Riverview and central Riverview are entering a time frame where more fires may be anticipated.

Structure fire/exposure risk associated with new single-family homes (exposure risk)

Probability/likelihood Score (1-5)	Impact/Consequence Score (1-5)	Risk Matrix Result
4	3	Moderate/High Risk

Discussion notes:

- Smaller lots in recent developments, with less space between homes compared to older parts of Riverview.
- Siding and insulation can facilitate rapid fire spread.
- Crews have seen this risk on calls in Riverview over the past several years.

Structure fire risk associated with multi-unit residential properties (sprinkler/stand-pipe)

Probability/likelihood Score (1-5)	Impact/Consequence Score (1-5)	Risk Matrix Result
4	3	Moderate/High Risk

Discussion notes:

- Although these buildings have sprinkler protection, many still exhibit wood frame construction. External fire spread into the attic is a continued risk.
- Access to some of the buildings with fire trucks can be a challenge (particularly at night when parking lots are full).

Structure fire risk associated with multi-unit residential properties (no sprinkler/stand-pipe)

Probability/likelihood Score (1-5)	Impact/Consequence Score (1-5)	Risk Matrix Result
4	4	High Risk

Discussion notes:

- Several of these low-rise apartment buildings are wood frame construction, with the risk of complete destruction due to fire.
- Many of these buildings have aging residents with mobility issues.

Structure fire risk associated with commercial properties

Probability/likelihood Score (1-5)	Impact/Consequence Score (1-5)	Risk Matrix Result
3	2	Low Risk

Discussion notes:

- No large industrial park within Riverview. Riverview properties are predominately residential and multi-unit residential.
- Risk of property loss but a limited risk to life safety.

Structure fire risk associated with critical infrastructure

Probability/likelihood Score (1-5)	Impact/Consequence Score (1-5)	Risk Matrix Result
1	3	Low Risk

Discussion notes:

- The wastewater treatment facility and Nav Canada were considered as examples.
- Generally, Type I or Type II construction with sprinkler protection.

Water related risk associated with the Petitcodiac River

Probability/likelihood Score (1-5)	Impact/Consequence Score (1-5)	Risk Matrix Result
4	3	Moderate/High Risk

Discussion notes:

- Two to four calls on average per year on the Petitcodiac River.
- Depending on time of day (tide cycle) it exhibits fast moving water. Also, there are very challenging conditions during the wintertime.

Off-road rescue risk associated with forested area and trail systems

Probability/likelihood Score (1-5)	Impact/Consequence Score (1-5)	Risk Matrix Result
5	3	High Risk

Discussion notes:

- Four to five calls on average per year.
- Some of these calls occur during inclement weather (i.e. winter storms)

Confined spaces risk associated with various properties

Probability/likelihood Score (1-5)	Impact/Consequence Score (1-5)	Risk Matrix Result
2	3	Moderate Risk

Discussion notes:

- The wastewater treatment plant and Town of Riverview properties are examples.
- No documented incidents within the last ten years, however the hazard exists.

Low angle risk associated with properties that have slopes

Probability/likelihood Score (1-5)	Impact/Consequence Score (1-5)	Risk Matrix Result
3	2	Low Risk

Discussion notes:

- Mill Creek Nature Park contains some hazards areas that may result in a low angle rescue, as well as the banks of the Petitcodiac River.
- Generally low risk to first responders.

Conclusion

This community risk assessment, completed from a fire and rescue perspective, highlights an evolution of risk within the Town of Riverview. The listing of hazards may be very similar to what it would have looked like twenty years ago, but the risk profile does not remain static.

Climate change has brought to the fore what is assessed to be a high risk of wildland urban interface fires in the Town of Riverview. This risk includes the potential significant loss of property, population evacuation, and the loss of Riverview's primary asset which is its closeness to nature.

A second area of high risk is the stock of multi-unit residential properties that have no sprinkler or stand-pipe protection. The building stock profile notes that some of these apartment buildings are more resilient to fire (i.e. brick and mortar), while several others feature wood frame construction and combustible siding. Within many of these buildings we have the concurrent risk of senior citizens (who may have mobility limitations) occupying these structures. There is potential for high loss of life in a worst-case scenario.

A third area recognized through the assessment process is the risk of off-road rescues associated with our forest and trail systems. The trail system in Mill Creek is actively expanding. This "high" risk assessment is driven primarily by a high likelihood of occurrence.

Identified areas of moderate-high risk are predominately related to fire. Specifically, we recognize that combustible building siding combined with reduced distances between homes (and in some cases apartment buildings) increases the risk of exposure fires. Secondly, many apartment buildings with sprinkler and stand-pipe protection feature combustible siding and unprotected attic space, thus they remain prone to significant fire loss. Lastly, within this report we identified that cultural diversity is of benefit to the community, but there is a need to ensure that fire prevention messaging reaches a diverse population.

The one area of moderate-high risk unrelated to fire is water rescue incidents associated with the Petitcodiac River. These rescues can carry a high life safety risk to both the public and responders.

It is important to note that even with hazards deemed to be of lower risk (often attributable to low frequency), it is important for the fire service to have the capability to respond. An important axiom remains that with each passing day without a significant incident brings you one day closer to when that incident will occur.

It is our intent to utilize this community risk assessment to inform risk prevention and mitigation measures for the Town of Riverview. The assessment will further inform the service mandate of Riverview Fire and Rescue.