



## Special Council Meeting Agenda

April 2, 2024, 4:30 pm

Location: Essex Municipal Building, 33 Talbot Street South and by livestream at  
<https://www.youtube.com/@EssexOntario>

Accessible formats or communication supports are available upon request. Please contact the Clerk's Office at [clerks@essex.ca](mailto:clerks@essex.ca) or 519-776-7336 extension 1100 or 1101.

The purpose of this meeting is to present the Town of Essex Community Risk Assessment and Fire Master Plan.

Pages

**1. Call to Order**

**2. Land Acknowledgement**

We acknowledge that this land is the traditional territory of the Three Fires Confederacy of First Nations (comprised of the Ojibway, the Odawa, and the Potawatomi Peoples), and of the Huron-Wendat Peoples. We value the significant historical and contemporary contributions of local and regional First Nations and all of the Original Peoples of Turtle Island who have been living and working on the land from time immemorial.

**3. Declarations of Conflict of Interest**

**4. Adoption of Published Agenda**

**4.1 Special Council Meeting Agenda for April 2, 2024**

Moved by \_\_\_\_\_

Seconded by \_\_\_\_\_

**That** the published agenda for the April 2, 2024 Special Council Meeting be adopted as presented / amended.

**5. Public Presentations**

1

RE: Community Risk Assessment and Fire Master Plan presented by Terry Gervais, Vice President, Government Services Division, and Chris Burke, Fire and Safety Specialist, Loomex Group

Moved by \_\_\_\_\_

Seconded by \_\_\_\_\_

**That** the presentation entitled Community Risk Assessment and Fire Master Plan presented by Terry Gervais, Vice President, Government Services Division, and Chris Burke, Fire and Safety Specialist, Loomex Group, be received and adopted as presented.

**6. Adjournment**

Moved by \_\_\_\_\_

Seconded by \_\_\_\_\_

That the meeting be adjourned at \_\_\_\_\_.

# Town of Essex

## Community Risk Assessment & Fire Master Plan

### April 2024 Council Presentation



# Agenda

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- |   |  |
|---|--|
| 1 | Community Risk Assessment: Overview and Key Findings |
| 2 | Fire Master Plan: Overview and Key Findings          |
| 3 | Questions or Comments                                |



# Community Risk Assessment



# Community Risk Assessment (“CRA”): Background

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- O. Reg. 378/18 came into effect on July 1, 2019.
- O. Reg. 378/18 requires all municipalities and fire departments to conduct a CRA before July 1, 2024.
- A CRA identifies and examines which threats a community is most likely to face.
- CRAs examine risks from a fire services perspective – this differs from a hazard identification and risk analysis, which is used for emergency management programs.
- CRAs provide information that municipalities can use to make decisions about the fire protection services they need.



# **Mandatory Community Profiles**

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



# The Importance of Identifying Risks

- CRAs allow municipalities to understand which risks are most likely to occur locally and which are most likely to have serious consequences.
- In the context of a CRA, risk is determined by evaluating a threat's likelihood and consequence levels.
- After a municipality learns which fire and life safety risks it is most likely to face, it can determine how to manage those risks.






# **Determining Risk Scores**

## **Likelihood Levels**

- Rare
- Unlikely
- Probable
- Likely
- Almost Certain

## **Consequence Levels**

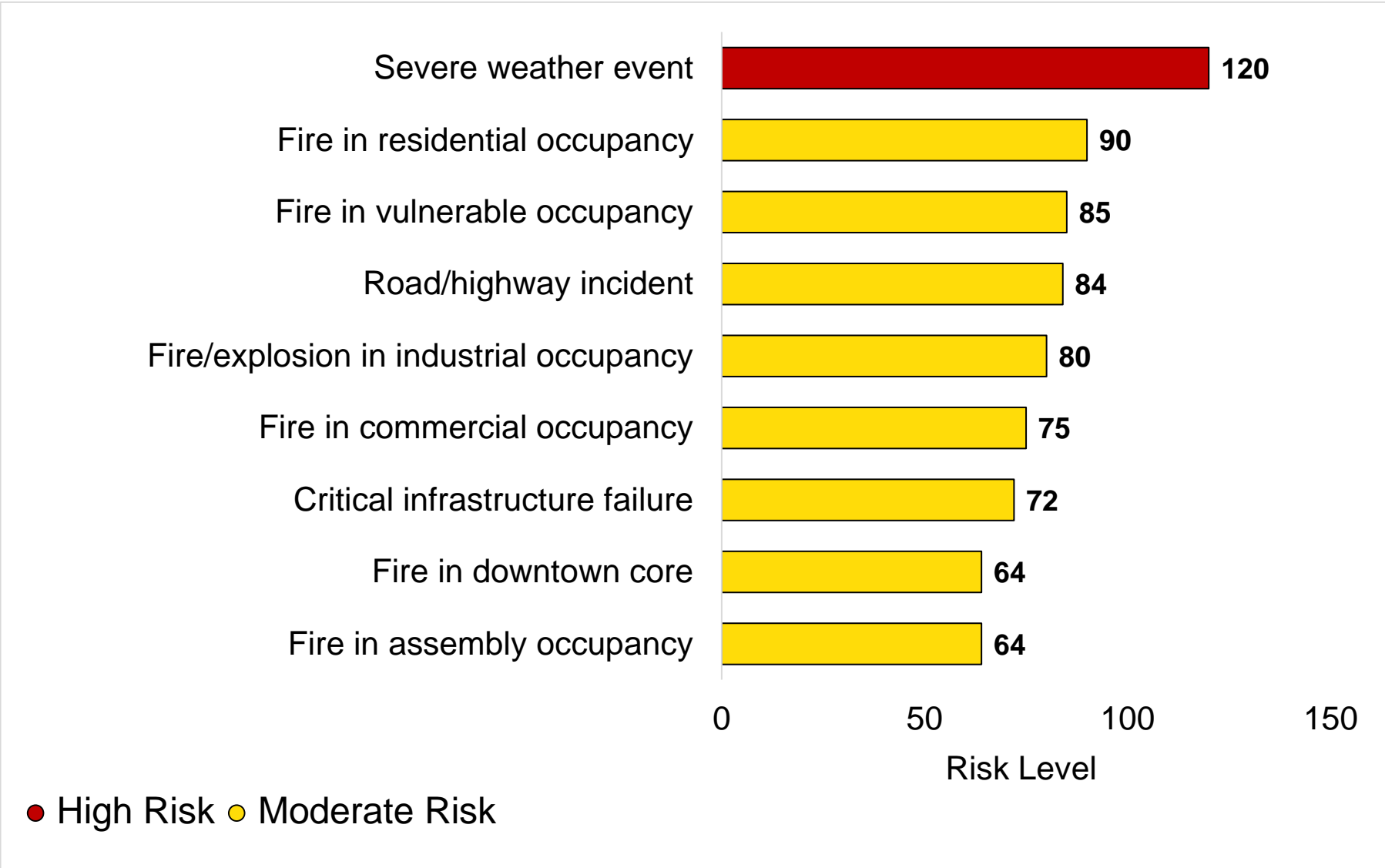
- Insignificant
- Minor
- Moderate
- Major
- Catastrophic



	Insignificant Consequence	Minor Consequence	Moderate Consequence	Major Consequence	Catastrophic Consequence
Almost Certain					<b>HIGH</b>
Likely					
Possible			<b>MODERATE</b>		
Unlikely					
Rare	<b>LOW</b>				

**Risk Level Matrix**

# Public Safety Risks Identified in the Town of Essex





# **Risk Treatment Plans (“RTPs”)**

- RTPs are developed for each identified public safety risk.
- RTPs are created by using an evidence-based approach that clearly defines the problems posed by a given risk.
- RTPs consider the potential outcomes of proposed actions, assess options, and provide recommendations for addressing a risk’s identified issues.
- RTPs may recommend training, service delivery agreements, resource allocation, or service level changes.

## RTPs cont.

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- Each RTP developed for the Town of Essex CRA recommends at least one of the following risk treatment options:
  - **Avoid:** Eliminate the hazard.
  - **Mitigate:** Reduce the likelihood or impact.
  - **Accept:** Take no action.
  - **Transfer:** Transfer the risk to another party.
  - **Share:** Share part of the risk with another party.
- After reviewing the RTPs, Essex Fire and Rescue (“the Department”) should implement programs and services accordingly.

# **Top 5 Safety Risks Identified in the Town of Essex**

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# Risk #1: Severe Weather Event

<b>RTP</b>	<b>Mitigate</b> <ul style="list-style-type: none"><li>• Continue providing public education about the importance of emergency preparedness, including what to do before, during, and after an emergency.</li></ul>
<b>Resources Needed</b>	<ul style="list-style-type: none"><li>• Implementing this RTP will require the Department's time and resources.</li><li>• Preparing and distributing public education information (such as flyers and handouts about 72-hour emergency kits) will require resources.</li></ul>
<b>Timeline</b>	<ul style="list-style-type: none"><li>• The Department should incorporate the strategies in this RTP into its regular operations.</li></ul>

# Risk #2: Fire in Residential Occupancy

**RTP**

**Mitigate**

- The Department should conduct regular inspections of select residential occupancies in Essex, such as multi-unit dwellings and hotels/motels.
- The Department should continue delivering fire safety messages by attending community events and relaying information through various news outlets.

**Resources Needed**

- Implementing this RTP will require the Department to allocate an adequate amount of time and resources to ongoing public education.

**Timeline**

- The Department should incorporate the strategies in this RTP into its regular operations.

# Risk #3: Fire in Vulnerable Occupancy

<b>RTP</b>	<b>Mitigate</b> <ul style="list-style-type: none"><li>• Continue completing annual inspections of the vulnerable occupancies in Essex.</li><li>• Ensure that all vulnerable occupancies in Essex have a current fire safety plan in place.</li><li>• Verify that the staff working in Essex's vulnerable occupancies understand their fire safety and emergency response obligations.</li><li>• Continue witnessing and auditing the annual fire drills at the vulnerable occupancies in Essex.</li><li>• Complete the pre-incident planning process for all vulnerable occupancies in Essex.</li></ul>
<b>Resources Needed</b>	<ul style="list-style-type: none"><li>• Implementing this RTP will require the Department to allocate an adequate amount of time and resources to ongoing public education.</li></ul>
<b>Timeline</b>	<ul style="list-style-type: none"><li>• The Department should incorporate the strategies in this RTP into its regular operations.</li></ul>



# Risk #4: Road/Highway Incident

<b>RTP</b>	<b>Mitigate</b> <ul style="list-style-type: none"><li>• The Department should continue providing ongoing training to its personnel about vehicle firefighting, auto extrication/rescues, and hazardous materials responses.</li><li>• The Department should ensure that its personnel receive training about responding to incidents that involve electric vehicles.</li></ul>
<b>Resources Needed</b>	<ul style="list-style-type: none"><li>• Implementing this RTP will require the Department's time and resources.</li></ul>
<b>Timeline</b>	<ul style="list-style-type: none"><li>• The Department should incorporate the strategies in this RTP into its regular operations.</li></ul>

# Risk #5: Fire/Explosion in Industrial Occupancy

<b>RTP</b>	<b>Mitigate</b> <ul style="list-style-type: none"><li>• Ensure the Department has the time and resources needed to inspect the industrial occupancies in Essex.</li><li>• The Department should complete the pre-incident planning process for the industrial occupancies in Essex.</li><li>• The Department should review the fire safety plans and the material safety data sheets (as applicable) at the industrial occupancies in Essex.</li></ul>
<b>Resources Needed</b>	<ul style="list-style-type: none"><li>• Implementing this RTP will require the Department's time and resources.</li></ul>
<b>Timeline</b>	<ul style="list-style-type: none"><li>• The Department should incorporate the strategies in this RTP into its regular operations.</li></ul>

## Next Steps

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- The CRA was used to assist with the development of the Fire Master Plan
- Review and update the CRA annually.
- Develop a process for collecting and maintaining data to keep the CRA current.
- Use the CRA to develop future strategic planning for the Department.



# Fire Master Plan

# Purpose of a Fire Master Plan (“FMP”)

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Ensure a community complies with the Fire Protection and Prevention Act and other legislation.

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Provide a clear picture of a community's current and anticipated fire protection needs.

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Recommends strategies to protect lives and property by enhancing public education, code enforcement, and fire suppression services.

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Provide information to guide administrative, operational, and budgetary decisions.

# Approach and Methodology

Start-up Meeting



Stakeholder Engagement



Data Collection & Analysis



Draft & Final Report



# Context of the Recommendations

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- The FMP includes **24 recommendations** for Council and the Department to consider.
- The recommendations are either policy decisions (which are under Council's authority) or operational decisions (which are under the Department's authority).
- Each recommendation includes the following considerations:
  - When should the recommendation be addressed?
  - Will the recommendation have to be included in the Department's budget through the regular budgeting process?
  - Does the Council need to approve the recommendation?
  - Is the recommendation mandatory for legislative compliance?

# Number of Recommendations by Subject

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- Overview of Essex Fire and Rescue: 2
- Bylaws: 4
- Stakeholder Engagement: 2
- Emergency Management: 2
- Occupational Health and Safety: 2
- Fire Prevention: 1
- Levels of Service: 2
- Training: 4
- Performance Standards and Operational Models: 1
- Fire Stations: 1
- Water Supply: 1
- Asset Management: 2

# **List of Recommendations in the Town of Essex FMP**

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# Overview of Essex Fire and Rescue



# Overview of Essex Fire and Rescue

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- Essex Fire and Rescue is a volunteer fire department that operates out of three fire stations.
- As of this FMP, the Department's full complement of 54 suppression staff includes the following members:
  - 3 chief officers
  - 3 volunteer district chiefs
  - 12 volunteer captains
  - 36 volunteer firefighters
- The Department also has a support staff of two part-time members.

# Overview of Essex Fire and Rescue Recommendations

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1. The Fire Chief should prepare a report for Council's consideration and approval to change the administrative assistant role from a part-time position to a full-time position.

**Mandatory: N | Council approval: Y | Budget impact: Y | Timeframe: Short-term**

2. The Fire Chief should prepare a report for Council's consideration and approval that recommends hiring a full-time support firefighter after the contract for the current part-time position ends.

**Mandatory: N | Council approval: Y | Budget impact: Y | Timeframe: Long-term**

A wooden gavel with a brass band is positioned in the foreground, resting on a wooden block. In the background, a brass scale of justice and an open book are visible, suggesting a legal or judicial context.

# Bylaws





# Overview of Bylaws

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- Importance of bylaws
- Establishing and regulating bylaws
- Other fire protection bylaws

# Bylaw Recommendations

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1. The Fire Chief should update the Town of Essex Establishing and Regulating By-law (as needed) if the Department implements any of the recommendations in this fire master plan.

**Mandatory: Y | Council approval: Y | Budget impact: N | Timeframe: Immediately**

2. The Fire Chief should complete an annual review of the Town of Essex Establishing and Regulating By-law to verify that it remains current with all emergency and non-emergency services the Department provides.

**Mandatory: N | Council approval: Y | Budget impact: N | Timeframe: Ongoing**

3. The Fire Chief should review all fire service by-laws in the Town of Essex and update them to ensure they are current and applicable. The Fire Chief should then present all updated by-laws to Council for consideration and approval.

**Mandatory: N | Council approval: Y | Budget impact: N | Timeframe: Short-term**

## **Bylaw Recommendations cont.**

4. The Fire Chief should establish a schedule for reviewing all fire service by-laws in the Town of Essex on a regular basis.

**Mandatory: N | Council approval: N | Budget impact: N | Timeframe: Short-term**



# Stakeholder Engagement

# Stakeholder Engagement Sessions

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- Types of engagement:
  - one-on-one meetings
  - online public survey
  - SWOT analysis
- The purpose of the engagement sessions was to collect first-hand insights about the Department and the Essex community from applicable stakeholders.

# Public Survey

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- The FMP development process included a short online survey that was made available to residents and business owners in Essex.
- The survey included 15 questions related to the following topics:
  - Have you had any previous interactions with the Department?
  - What is your general opinion of the Department?
  - Which fire protection services offered by the Department are most important to you?

# Public Survey Results

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According to the survey respondents, the most important services provided by the Department are:

1. Fire responses (average score: 9.8 out of 10)
2. Responses to natural disasters in the community (average score: 9.3 out of 10)
3. Medical response (average score: 9.2 out of 10)
4. Vehicle collision response (average score: 8.9 out of 10)
5. Fire code enforcement (average score: 8.4 out of 10)



# Stakeholder Engagement Recommendations

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1. The Fire Chief should review the results of the public survey to identify ways the Department's services can provide more value to the Town of Essex's residents and businesses.

**Mandatory: N | Council approval: N | Budget impact: N | Timeframe: Immediately**

2. The Fire Chief should review the results of the SWOT analysis to determine whether the Department should update its operations to incorporate suggestions provided during the analysis.

**Mandatory: N | Council approval: N | Budget impact: N | Timeframe: Immediately**



# Emergency Management

# Overview of Emergency Management

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- Municipalities must meet specific requirements to receive their annual compliance recognition:
  - Emergency Management and Civil Protection Act, R.S.O. 1990
  - O. Reg. 380/04: Standards
- Municipalities are responsible for fulfilling these obligations, not fire departments.



# Emergency Management Recommendations

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1. The Town of Essex should assign an individual from outside the Department to serve as either the primary or alternate community emergency management coordinator. Ideally, the incumbent should have an administrative background.

**Mandatory: N | Council approval: Y | Budget impact: N | Timeframe: Short-term**

2. The Community Emergency Management Coordinator should continue organizing annual emergency management training and exercises for the Town of Essex Municipal Emergency Control Group. Both the training and exercises should continue to incorporate external resources in order to ensure all participants can practise fulfilling their assigned duties.

**Mandatory: N | Council approval: N | Budget impact: N | Timeframe: Ongoing**

A photograph of a fire station interior. In the foreground, several firefighter jackets are hanging on a red metal rack. The jackets are tan with reflective yellow and blue stripes on the sleeves. A black fire helmet is visible behind one of the jackets. In the background, a fire truck is parked, and the station's floor is polished and reflective. A semi-transparent dark grey banner is overlaid across the bottom half of the image, containing the text "Occupational Health and Safety" in white.

# Occupational Health and Safety



# **Overview of Occupational Health and Safety**

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- Joint health and safety committee
- Personal protective equipment
- Fit testing
- Firefighter health and wellness programs
- Officer development program

# Occupational Health and Safety Recommendations

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1. The Fire Chief should form a committee to develop and manage a fitness program to complement the Department's existing wellness programs.

**Mandatory: N | Council approval: N | Budget impact: Y Timeframe: Short-term**

2. The Fire Chief and the wellness committee should explore the possibilities of forming a partnership with local fitness facilities to provide the Department's firefighters with better access to fitness equipment.

**Mandatory: N | Council approval: Y | Budget impact: Y | Timeframe: Short-term**



A photograph of a fire station interior. In the foreground, a coiled white fire hose is mounted on a metal reel. In the background, a red fire extinguisher is visible on a wall, and a red fire door is slightly ajar, revealing a glimpse of the outside. The scene is lit with warm, reddish light.

# Fire Prevention

# Overview of Fire Prevention

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- The three lines of defence:
  1. Public Education
  2. Code Enforcement
  3. Fire Suppression
- Considerations:
  - Public education initiatives
  - Inspections
  - Smoke/CO alarm program
  - Investigations
  - Pre-incident planning process

# Fire Prevention Recommendations

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1. The Fire Chief should prepare a report for Council's consideration and approval that recommends appointing a full-time training/prevention officer who will dedicate half of their work hours to managing the Department's fire prevention division. The officer would also perform suppression duties during daytime hours (as needed).

**Mandatory: N | Council approval: Y | Budget impact: Y | Timeframe: Short-term**





# Levels of Service

# Overview of Levels of Service

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- Core services
- Specialized services:
  - Hazardous materials response
  - Auto extrication
  - Rope rescue
  - Water/ice rescue

# Levels of Service Recommendations

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1. The Fire Chief should review the Department's medical tiered response agreement and update it accordingly. The Fire Chief should then submit the revised agreement to Council for consideration and approval.

**Mandatory: N | Council approval: Y | Budget impact: N | Timeframe: Immediately**

2. The Fire Chief should keep track of all calls the Department receives for advanced services. If there is a significant number of calls for advanced services that the Department does not currently provide, the Fire Chief should prepare a report for Council's consideration and approval that recommends updating the Department's list of approved advanced services.

**Mandatory: Y | Council approval: Y | Budget impact: Y | Timeframe: Short-term**





# Training

# Overview of Training

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- Legislation
- Certification
- Types of training
- Training challenges:
  - Time challenges
  - Cost challenges
  - Process challenges
  - Documentation challenges
- Training facility



# Training Recommendations

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1. The Fire Chief should develop a process for having para-trainers assist with the Department's training program.

**Mandatory: N | Council approval: N | Budget impact: N | Timeframe: Immediately**

2. The Fire Chief should establish a training committee to help plan and implement the Department's training program.

**Mandatory: N | Council approval: N | Budget impact: Y | Timeframe: Short-term**

3. The Fire Chief should explore opportunities that allow officers to complete training and obtain certifications beyond what the Department currently offers.

**Mandatory: N | Council approval: N | Budget impact: Y | Timeframe: Immediately**

## Training Recommendations cont.

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4. The Fire Chief should prepare a report that recommends appointing a full-time training/prevention officer who will dedicate half of their work hours to managing the Department's training and development program. The Fire Chief should then submit the report to Council for consideration and approval.

**Mandatory: N | Council approval: Y | Budget impact: Y | Timeframe: Short-term**



# Performance Standards and Operational Models



# Overview of Performance Standards

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- Importance of response times, leadership, and crew size
- Effective response force
- Response benchmarks
- Post-incident analysis and review
- Response statistics
- Deployment models

# Performance Standards Recommendations

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1. The Fire Chief should continue monitoring the Department's effective response force to determine whether the Department needs to increase its staffing levels, specifically during the daytime.

**Mandatory: Y | Council approval: N | Budget impact: N | Timeframe: Ongoing**







# Overview of Fire Stations

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- Storage issues
- Training rooms
- Washroom/shower facilities
- Fire apparatus bay areas
- Space constraints
- New construction vs. renovation


# Fire Station Recommendations

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1. The Fire Chief should develop a report for Council that recommends replacing Station 3 – Harrow with a new fire station at 2225 Roseborough Road. The report should include a cost analysis and outline the benefits of building a new fire station at the proposed site.

**Mandatory: N | Council approval: Y | Budget impact: Y | Timeframe: Short-term**



A photograph of two firefighters in orange protective suits and yellow helmets, equipped with air tanks, fighting a fire. A large, powerful spray of water is directed at the flames, which are visible on the left side of the image. The scene is dynamic, with motion blur on the water spray.

# Water Supply



# Overview of Water Supply

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- Insert

# Water Supply Recommendations

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1. The Fire Chief should ensure that the Department's tanker shuttle service meets all applicable fire service guidelines.

**Mandatory: N | Council approval: N | Budget impact: N | Timeframe: Ongoing**





# Asset Management



# **Overview of Asset Management**

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- Fire apparatus considerations
- Fleet renewal and rationalization
- Fire equipment

# **Fleet Deployment Considerations**

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- Current fire fleet
- Type of responses
- Staffing levels
- Apparatus licensing, certifications, and qualifications
- Age of vehicles for insurance and grading purposes



# Asset Management Recommendations

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1. The Fire Chief should prepare a report for Council's consideration and approval that recommends continued investment in the Department's radio communications equipment. The report should address the state of the current radio system and indicate whether the Department should upgrade to fire-quality radios.

**Mandatory: Y | Council approval: Y | Budget impact: Y | Timeframe: Short-term**

2. The Fire Chief should attempt to form partnerships with external agencies to share the costs of radio purchases and increase interoperability.

**Mandatory: N | Council approval: N | Budget impact: Y | Timeframe: Short-term**



**Questions or  
Comments?**



# Thank you!

Feel free to reach out to us  
if you have any questions.



## PHONE NUMBER

705-775-5022



## EMAIL ADDRESS

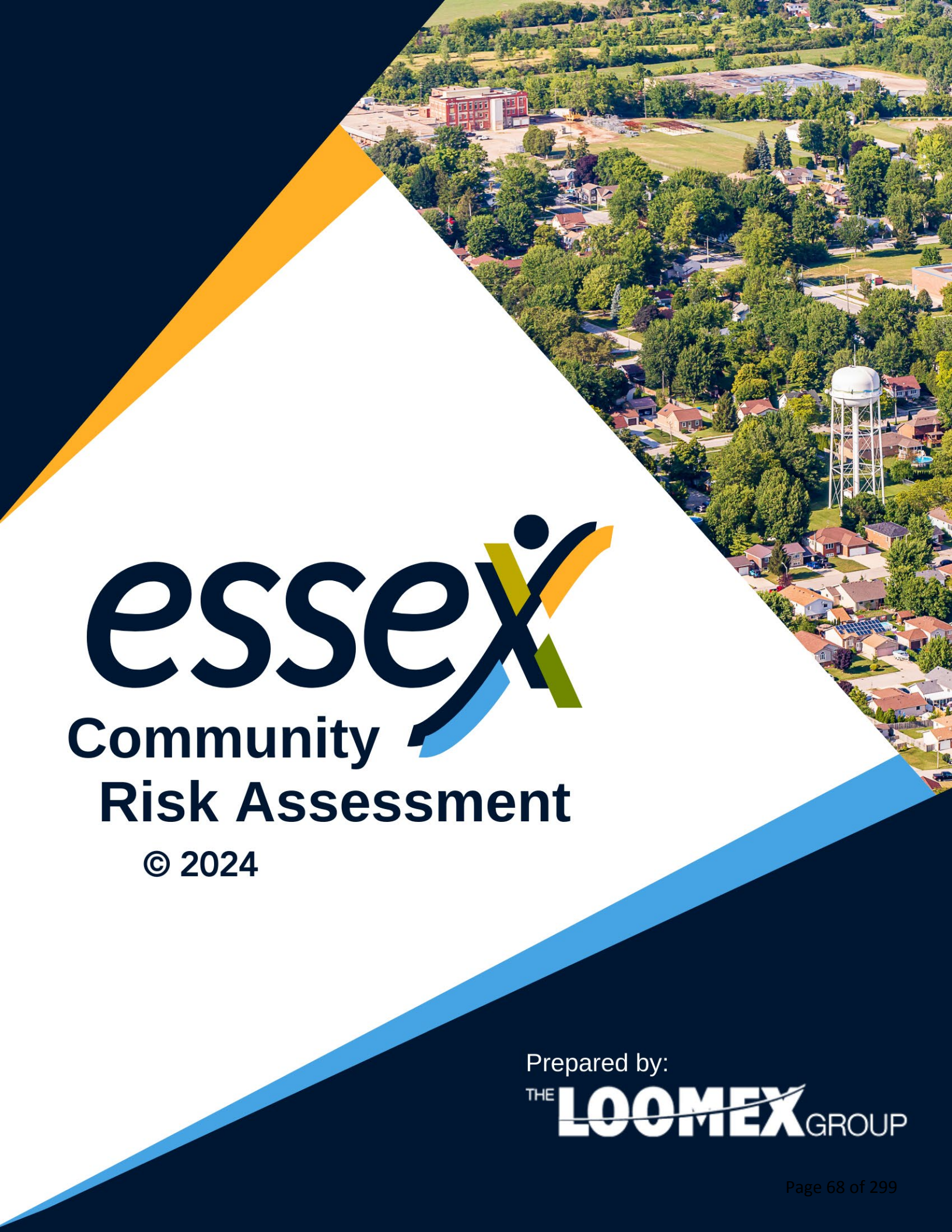
info@loomex.ca



## WEBSITE

www.loomex.ca





# essex

Community  
Risk Assessment

© 2024

Prepared by:

THE **LOOMEX** GROUP

# **Town of Essex Community Risk Assessment**

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Cover photo source: Town of Essex website.

## **Disclaimer**

The Loomex Group has made every effort to ensure that the information provided in this community risk assessment is accurate and complete.

The Town of Essex should review its community risk assessment annually to ensure the document remains up to date. The town should also consider completing a new community risk assessment if its circumstances change significantly.

In order to meet legislative requirements of O. Reg. 378/18, the Town of Essex or its fire department must complete a new community risk assessment no later than five years after the day its previous community risk assessment was completed.



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## Executive Summary

### Purpose

In July 2023, the Town of Essex contracted The Loomex Group to develop a community risk assessment (“**CRA**”).

The project had the following objectives:

- Fulfill the mandate of O. Reg. 378/18, which requires every municipality in the province to complete a CRA by July 1, 2024.
- Identify and examine Essex’s public safety risks from a fire services perspective.
- Recommend strategies that Essex and Essex Fire and Rescue (“**the Department**”) can use to mitigate the town’s public safety risks.

### Process

The Loomex Group developed this CRA by reviewing the nine community profiles mandated by O. Reg. 378/18. This process followed the instructions given in the worksheets created by the Ontario Fire Marshal (“**OFM**”) as part of OFM-TG-02-2019.

The Loomex Group also conducted site visits and met with stakeholders from Essex. The visits and consultations provided first-hand insights into the town’s current and potential public safety risks.

After completing its analyses and stakeholder engagement, The Loomex Group used a risk assessment tool to calculate the risk score of each hazard it identified in Essex. The Loomex Group then evaluated the administrative and operational concerns associated with each threat.

### Findings

This CRA identifies nine public safety risks in Essex that are real and measurable threats. The Loomex Group determined each risk’s likelihood and consequence to calculate its total risk score. Section 12 of this CRA details the methodology for determining risk scores.

Table 1 lists the six potential risk level categories.



Table 1: Risk level categories

Category	Total Score
Very Low	1 to 30
Low	31 to 60
Moderate	61 to 90
High	91 to 120
Very High	121 to 150
Extreme	151 to 180

Figure 1 illustrates the public safety risks identified in Essex, ranked in order of their risk levels and total risk scores.

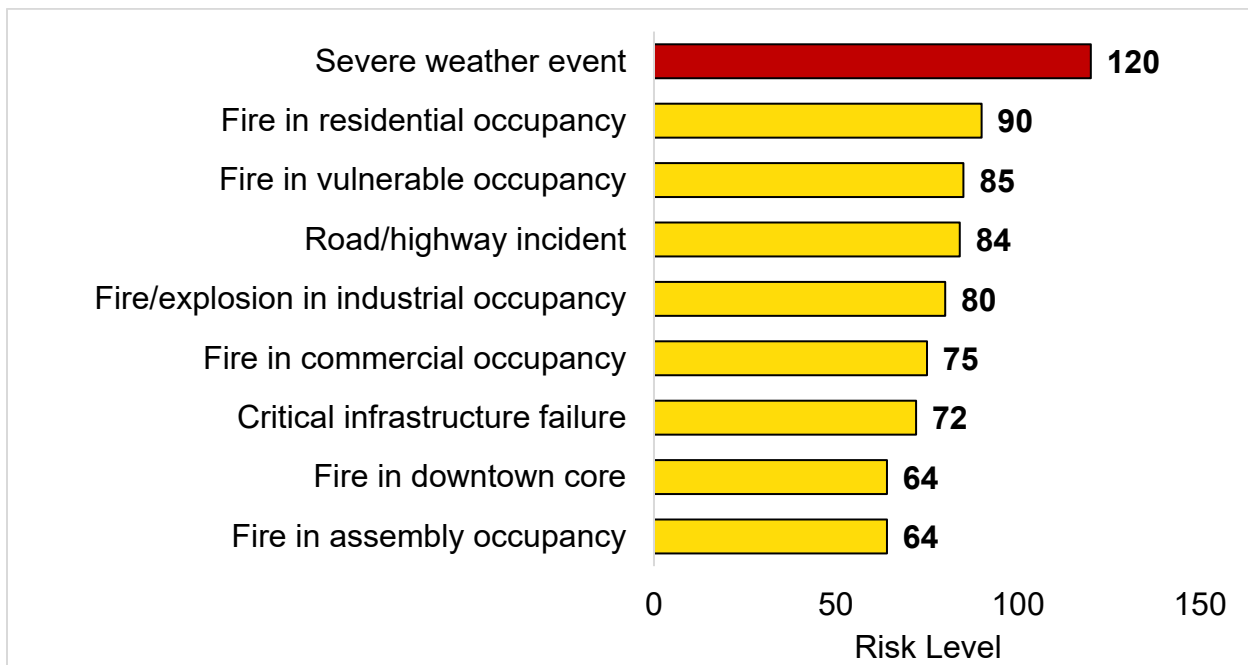


Figure 1. Public safety risks identified in the Town of Essex.

In addition to the nine risks, this CRA provides information about other concerns in Essex that could not be included in a risk level matrix due to a lack of definite statistics. These concerns are discussed throughout the document as applicable. It is important for the town and the Department to familiarize themselves with all additional concerns because they include potential threats and issues that may intensify the danger of the town's identified risks.

## Recommendations

The final step of this CRA's development was the creation of a risk treatment plan ("**RTP**") for each public safety risk identified in Essex.

The Loomex Group based the RTPs on the three lines of defence model. This model recommends using proactive fire prevention and protection initiatives to help reduce the need for fire suppression services. The Loomex Group believes that following the three lines of defence is the best way to protect communities from fires and other life safety threats.

The Town of Essex Council ("**Council**") and the Department should review the RTPs in this CRA and discuss implementing them into their operations.

## 1.0 Introduction

### 1.1 Community Risk Assessments: Context

A CRA is a document that identifies and evaluates fire and life safety risks.

Risks are defined as events that can harm any one or more of the following:

- communities
- organizations
- human health
- properties
- the environment

All municipalities must plan ways to manage and mitigate the risks identified in their CRAs. Failing to do so could lead to consequences such as damaged property, tarnished reputations, and lost lives. To help municipalities avoid potential consequences, CRAs include RTPs that outline the actions, strategies, resources, and timelines fire departments will need to implement effective risk mitigation measures.

As a best practice, a fire department should develop strategies to address all risks identified in its CRA, starting with the risks most likely to occur.

### 1.2 Approach and Methodology

#### 1.2.1 Guiding Principle

The Loomex Group used the OFM's three lines of defence as its guiding principle throughout this project.

The three lines of defence are as follows:

1. **Public education and prevention:** To address this line of defence, fire departments must develop programs to teach members of the community how they can take steps to protect their life safety (such as by preventing fires).
2. **Fire safety standards and code enforcement:** To address this line of defence, fire departments must develop programs to ensure all buildings in the community adhere to the Ontario Fire Code ("**OF**C") and maintain the required fire protection systems to reduce the risk and potential severity of fires.
3. **Emergency response:** To address this line of defence, fire departments must have well-trained and equipped firefighters who can prevent injury or loss of life and stop the spread of fires. Emergency response is the failsafe when either fire prevention or code enforcement programs have failed.

The three lines of defence recommend a proactive approach to community fire safety. By focusing on fire prevention and public education programs, fire departments can help reduce the need for fire suppression services.

The Honourable John B. Webber first outlined the three lines of defence in the Report of the Public Inquiry into Fire Safety in Highrise Buildings (published in 1983). The OFM has since endorsed the model, including it as a vital part of OFM TG-02-2019 and other documents. The concept of this model also aligns with the requirements of the Fire Prevention and Protection Act (“**FPPA**”).

### **1.2.2 Data Collection Process**

The Loomex Group gathered information for this CRA using the following data collection methods:

- document reviews
- site visits
- engagement sessions

These forms of data collection provided The Loomex Group with the information needed to identify and thoroughly assess Essex’s public safety risks from a fire services perspective.

### **1.2.3 Development Process**

The Loomex Group developed this CRA in accordance with the instructions of O. Reg. 378/18 and OFM-TG-02-2019.

As per O. Reg. 378/18, a CRA must review the following nine community profiles:

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

The Loomex Group completed the nine community profiles by following the instructions in the worksheets created by the OFM as part of OFM-TG-02-2019.

In addition to reviewing the community profiles and completing the OFM worksheets, The Loomex Group held engagement sessions with the Department's Fire Chief, Deputy Chief, and Assistant Deputy Chief. These stakeholders provided valuable first-hand insights into Essex's operations and demographics.

### 1.2.4 Ranking Public Safety Risks

After identifying the public safety risks in Essex, The Loomex Group assessed the likelihood and consequence levels of each threat (as per the OFM definitions summarized below).

The Loomex Group then ranked the identified risks based on their level of severity and the threat posed to the community.

#### Likelihood Levels

The OFM states that a fire department should use professional judgment along with historical information about past incidents in the community to estimate how likely it is for a given emergency to occur.

Table 2 shows how the OFM classifies risk likelihood levels.

Table 2. OFM risk likelihood levels.

Likelihood Level	Specifics
Rare	<ul style="list-style-type: none"><li>• May occur in exceptional circumstances.</li><li>• No incidents in the past 15 years.</li></ul>
Unlikely	<ul style="list-style-type: none"><li>• Could occur at some time if circumstances significantly change.</li><li>• Five to 15 years since the last incident.</li></ul>
Possible	<ul style="list-style-type: none"><li>• Might occur under current circumstances.</li><li>• One incident in the past five years.</li></ul>
Likely	<ul style="list-style-type: none"><li>• Will probably occur at some time under current circumstances.</li><li>• Multiple or recurring incidents in the past five years.</li></ul>
Almost certain	<ul style="list-style-type: none"><li>• Expected to occur in most situations unless circumstances change.</li><li>• Multiple or recurring incidents in the past year.</li></ul>



## Consequence Levels

The OFM defines the consequence of a fire or other emergency as the potential losses or negative outcomes that result from the incident. When estimating consequence levels, fire departments should consider the potential impacts on lives, property, the local economy, and the environment.

Table 3 shows how the OFM classifies risk consequence levels.

Table 3. OFM risk consequence levels.

Consequence Level	Specifics
Insignificant	<ul style="list-style-type: none"> <li>• No life safety issue.</li> <li>• Limited value or no property loss.</li> <li>• No impact on the local economy.</li> <li>• No effect on general living conditions.</li> </ul>
Minor	<ul style="list-style-type: none"> <li>• Potential risk to the life safety of residents.</li> <li>• Minor property loss.</li> <li>• Minimal disruption to business activity.</li> <li>• Minimal impact on general living conditions.</li> </ul>
Moderate	<ul style="list-style-type: none"> <li>• Definite threat to the life safety of residents.</li> <li>• Moderate property loss.</li> <li>• Poses a threat to small local businesses.</li> <li>• Could pose a threat to the quality of the environment.</li> </ul>
Major	<ul style="list-style-type: none"> <li>• Potential for a massive loss of life.</li> <li>• Significant property damage.</li> <li>• Significant threat to large businesses, local economy, and tourism.</li> <li>• Environmental impact resulting in a short-term, partial evacuation of residents and businesses.</li> </ul>
Catastrophic	<ul style="list-style-type: none"> <li>• Significant loss of life.</li> <li>• Property damage to a significant portion of the community.</li> <li>• Long-term disruption of businesses, local employment, and tourism.</li> <li>• Environmental damage resulting in the long-term evacuation of residents and businesses.</li> </ul>

## Risk Level Matrix

After assessing the likelihood and consequence levels of the public safety risks identified in Essex, The Loomex Group used the risk level matrix shown in Table 4 to determine the overall level of community risk in the town.

The matrix works by comparing likelihood and consequence levels to calculate total risk levels.

Table 4. Risk level matrix.

	Insignificant Consequence	Minor Consequence	Moderate Consequence	Major Consequence	Catastrophic Consequence
Almost Certain	<b>Moderate risk</b>	<b>Moderate risk</b>	<b>High risk</b>	<b>High risk</b>	<b>High risk</b>
Likely	<b>Moderate risk</b>	<b>Moderate risk</b>	<b>Moderate risk</b>	<b>High risk</b>	<b>High risk</b>
Possible	<b>Low risk</b>	<b>Moderate risk</b>	<b>Moderate risk</b>	<b>Moderate risk</b>	<b>High risk</b>
Unlikely	<b>Low risk</b>	<b>Low risk</b>	<b>Moderate risk</b>	<b>Moderate risk</b>	<b>Moderate risk</b>
Rare	<b>Low risk</b>	<b>Low risk</b>	<b>Low risk</b>	<b>Moderate risk</b>	<b>Moderate risk</b>

## 2.0 Overview of Community, Fire Department, and By-laws

### 2.1 Overview of the Town of Essex

Essex is one of Canada's most southerly municipalities. According to Essex's official website, the town experiences hot summers and mild winters, and there is rich agricultural land throughout the region.

Essex comprises four urban communities:

- **Essex Centre:** Essex Centre is the largest urban community in Essex. It contains many local shops and services, and its location provides easy access to the area's main transportation routes.
- **Harrow:** Harrow contains prime agricultural land and is home to Canada's research centre for greenhouse vegetables and field crops. Harrow also offers several local shops and services, and the community is a hub for some of the region's largest manufacturing companies, such as Sellick Equipment Limited and Atlas Tube.
- **Colchester:** Colchester is a waterfront community on the shores of Lake Erie. The community has several popular attractions, including a marina, a public beach, several wineries, and the Lake Erie Waterfront Trail.
- **McGregor:** McGregor is a predominantly agricultural community. The area also hosts various outdoor sports and an annual music festival. McGregor is also home to the Essex County Steam and Gas Engine Museum.

Essex is also home to several other smaller communities.

Essex's official website also notes that the town was named one of the safest places to live in Canada in 2012.

### 2.2 Overview of Essex Fire and Rescue

#### Structure and Personnel

The Department provides fire suppression, code enforcement, and public education for the residents, businesses, and visitors of Essex.

The Department consists of the following personnel:

- 1 full-time fire chief
- 1 full-time deputy chief
- 1 full-time assistant deputy chief
- 1 part-time administrative assistant

- 3 district chiefs
- 12 captains
- 48 firefighters
- 1 part-time support staff member

## **Fire Stations**

The Department's personnel operate from the following three fire stations:

- Station 1 (located at 55 Alice Street North in Essex Centre)
- Station 2 (located at 3575 North Malden Road in Gesto)
- Station 3 (located at 25 Centre St. E. in Harrow)

Each station has a complement of 21 firefighters, including each stations' district chief, captains, and firefighters.

## **2.3 Establishing and Regulating By-law**

A community's establishing and regulating by-law ("**E&R By-law**") specifies which services the local fire department must provide.

As of this CRA, the E&R By-law in Essex is By-law no. 2012.

### **2.3.1 Services Listed in By-law no. 2012**

#### **Core Services**

Under By-law 2012, Council is responsible for approving the Department's core services, which include the following:

- fire suppression services
- fire prevention services
- fire safety education services
- mitigation and prevention services (regarding risks created by the presence of unsafe levels of carbon monoxide)
- communication services
- training services (regarding persons who provide fire protection services, rescue services, and emergency services, as well as the delivery of such services)

#### **Specific Fire Protection and Emergency Services**

According to schedules "C" and "D" of By-law 2012, the Department must provide

specific fire protection and emergency services, including:

- basic firefighting services (including structural and rescue services)
- vehicle rescue, extrication, and firefighting services
- grass, brush, and forestry firefighting services
- marine firefighting services (for small vessels)
- marine firefighting services (for large vessels)
- shore-based water and ice rescue services
- basic medical assistance (including CPR and defibrillation services)
- hazardous material response services (at the awareness level)
- emergency assistance (for police crews, ambulance crews, and the public)

### **Limited/Agreement Services**

Under By-law 2012, the Department provides services as part of the following agreements:

- mutual aid
- automatic aid
- fire protection agreements
- transportation incidents involving vehicles, trains, watercraft, and aircraft

### **Services Not Provided**

Under By-law 2012, the Department is not required to provide the following services:

- dive rescue services
- trench rescue services

### **2.3.2 Mutual Aid and Automatic Aid Agreements**

A mutual aid agreement is an agreement between fire departments that stipulates how and when they will respond to incidents beyond their jurisdiction. A community can activate its mutual aid agreement when a fire occurs that requires a response beyond the capabilities of the local fire department.

As of this CRA, Essex and the Department participate in the County Mutual Aid Plan (the terms of which are currently under review). Under the County Mutual Aid Plan, the OFM has appointed a county fire coordinator (the Fire Chief of Windsor Fire and Rescue Services) to work with local fire chiefs during responses to major incidents. The



county fire coordinator is responsible for coordinating mutual aid fire services agreements for the City of Windsor and all municipalities in the County of Essex. The county fire coordinator is also responsible for arranging specialty teams (such as hazardous materials teams) as needed. The county fire coordinator can also arrange a mobile communications and command vehicle (if required).

### **2.3.3 Automatic Aid Programs and Fire Protection Service Agreements**

A municipality can take part in an automatic aid agreement to provide or receive the initial or supplemental response to fires and other emergencies. These agreements operate at all times, irrespective of municipal boundaries, and aim to ensure that the closest emergency services provider can respond to an incident. Willing parties can also enter into other types of agreements, such as fire protection service agreements.

As of this CRA, the County of Essex and the City of Windsor have implemented a county-wide automatic aid agreement.

## 3.0 Geographic Profile

### 3.1 Context of a Geographic Profile

As per OFM-TG-02-2019, a geographic profile examines a community's physical features, including the nature and placement of the following:

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

A CRA reviews these features because they may impact how quickly emergency responders can arrive at an incident or access an emergency site. When a fire department is aware of those potential impacts, it can plan its services and response procedures accordingly.

### 3.2 Geography of the Town of Essex

#### Size

Essex is 277.53 square kilometres in area, with a population density of 76.4 persons per square kilometre.

#### Boundaries

The town's boundaries are as follows:

- North: County Road 8
- East: County Road 23
- South: Lake Erie
- West: County Road 20/41, Smith Road, and County Road 11

#### Landscape

According to the town's website, Essex has a "unique mix of urban centres, rural landscapes and lakeside vistas." As a result of its abundant land and temperate climate, Essex is home to a significant number of wineries and agricultural operations.

## **Bodies of Water**

Essex is bordered to the south by Lake Erie. Colchester Beach and Harbour is located on the shore of the lake and is a popular destination for fishing and boating.

Essex is also home to a small portion of Cedar Creek and several other small bodies of water.

During the winter, the shoreline of Lake Erie is prone to extensive erosion due to unfrozen lake surfaces and higher wave action from high wind and precipitation events. This erosion may lead to the loss of shoreline, breakwall failures, shoreline flooding, and bank failures.

## **Forested Areas and Trails**

Essex contains several trails, including the following:

- Chrysler Canada Greenway, which runs from Harrow to Windsor
- Cypher Systems Group Greenway, which runs from Amherstburg through Essex toward Lakeshore
- Kinsmen Participark Trail, a 1.47-kilometre-long trail in Harrow
- Sadler's Nature Park and Trail, a nature park in Essex Centre that includes a kilometre-long walking path which connects to the Cypher Systems Group Greenway
- Tulley Meadows Bush and Trail, a woodland and trail in Essex Centre

Essex also contains a portion of Cedar Creek Provincial Park.

## **Downtown Core**

Essex's primary downtown core located in the community of Essex Centre.

## **Roadways**

Municipal roads in Essex are maintained by the town's Infrastructure and Development Department.

Several county roads and highways run through Essex and connect the town to neighbouring municipalities, including:

- County roads 8, 11, 12, 13, 15, 18, 20, 23, 34, 41, and 50.
- Highway 3, which connects Essex to the United States of America via the Ambassador Bridge in Windsor.

County roads and Highway 3 are maintained by the County of Essex and the Province of Ontario respectively.

### 3.3 Commercial Oil Wells

Essex is part of an area in Ontario which has been used for oil, natural gas and water well drilling for many years. Some wells remain operational throughout Essex.

Many oil and gas wells have been abandoned and plugged for over fifty years. Unfortunately, the materials used to plug these wells have corroded over time. As a result, dangerous gases (such as hydrogen sulphide) have surfaced and can pose a threat if they migrate to aquifers or otherwise pollute the environment.

There are 26,674 recorded oil and gas wells in Ontario, primarily located in Southwestern Ontario. Over half of the recorded wells are plugged and no longer in use, while the status of 6,210 wells is unknown. Another 3,000 “orphan wells,” wells with no registered owner, may exist; however, the number and location of these wells are largely unknown.

According to Ontario’s oil and gas legislation and the Water Resources Act, landowners must plug any wells found on their property regardless of when the well was drilled, who drilled the well, or how much the process will cost the landowner.

### 3.4 Proximity to Nuclear Power

According to the 2022 County of Essex Emergency Response Plan, Essex is within the Ingestion Planning Zone (“**IPZ**”) and the Contingency Planning Zone (“**CPZ**”) of the Enrico Fermi Nuclear Power Plant (“**Fermi 2**”) in Newport, Michigan, U.S.A. The Fermi 2 IPZ is the area within 80-kilometre radius of the reactor facility. The CPZ is a smaller area within that radius.

Figure 2 shows a diagram of the Fermi 2 CPZ and IPZ, including subzones<sup>1</sup>.

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<sup>1</sup> <https://www.ontario.ca/document/provincial-nuclear-emergency-response-plan-pnerp-master-plan/chapter-2-planning-basis>

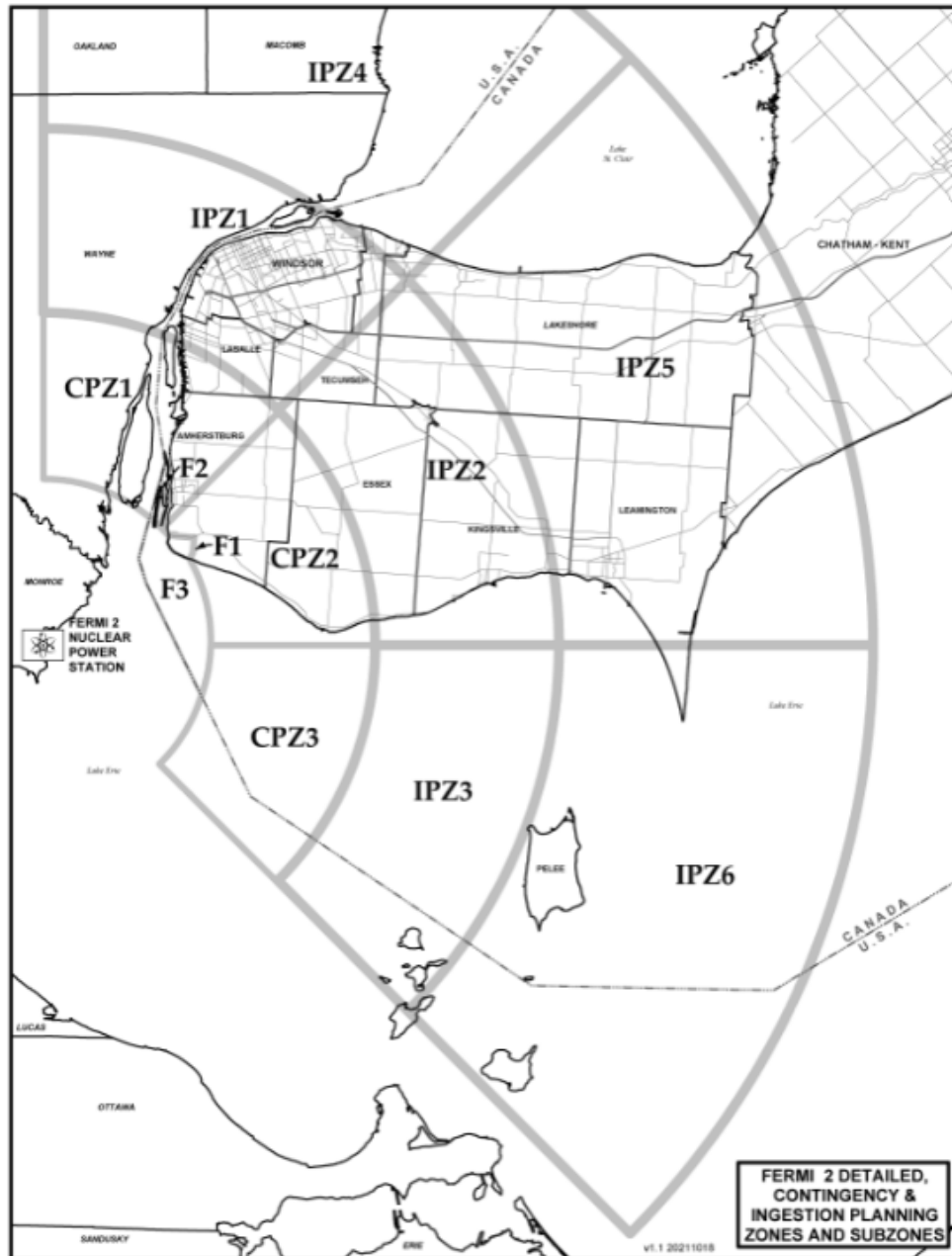


Figure 2. Ingestion planning zone around Fernald 2.

As seen in Figure 2, Essex is located within the CPZ2 and IPZ2 subzones. The IPZ also encompasses Essex County, the City of Windsor, and an area of Chatham-Kent.

Due to the risks of nuclear facilities, provincial plans and arrangements are undertaken in this area for the following reasons:

- Protect the food chain.
- Protect drinking water supplies.



- Restrict the consumption and distribution of potentially contaminated produce, wild-grown products (such as mushrooms and game), milk from grazing animals, rainwater, and animal feed.
- Restrict the distribution of non-food commodities until further assessments are performed.

The Provincial Nuclear Emergency Response Plan also designates Essex and the City of Windsor as host municipalities in the event of a nuclear emergency at Fermi 2. As such, the town must prepare reception centres and evacuation centres for evacuees.

### 3.5 Geographic Profile Summary

Table 5 lists Essex's main geographic features. The table indicates if the features impact training and equipment, response and travel time, station locations, or response protocol.

Table 5. Geographic features in the Town of Essex.

Geographic Feature	Training & Equipment Impact	Response & Travel Time Impact	Fire Station Location Impact	Response Protocol Impact
Agricultural land and wineries	✓	✓		✓
Colchester Beach and Harbour	✓	✓	✓	✓
Lake Erie shoreline	✓	✓	✓	✓
Trails	✓	✓	✓	✓
Downtown Essex	✓	✓	✓	✓
Provincial highways	✓			✓
County roads	✓			✓
Municipal roads	✓	✓	✓	✓
Commercial oil wells	✓	✓		✓

### 3.6 Risks Identified by the Geographic Profile

Table 6 summarizes the risks identified by the geographic profile for Essex.

Table 6. Geographic profile risk summary.

Risk	Likelihood	Consequence	Risk Level
Road/highway incident	Almost certain	Minor	<b>Moderate</b>
Fire in downtown core	Possible	Moderate	<b>Moderate</b>

For more information about these risks, refer to the following sections of this CRA:

- Section 12: This section contains the risk level matrix used to calculate the overall likelihood levels and risk scores for the indicated risks.
- Section 13: This section contains the RTPs developed for the indicated risks.

### **Additional Considerations**

In addition to the risks listed in the table above, the Department should remain aware of the risks posed by the potential erosion of the Lake Erie shoreline, as well as abandoned oil wells.

## 4.0 Building Stock Profile

### 4.1 Context of a Building Stock Profile

As per OFM-TG-02-2019, a building stock profile examines the types, numbers, ages, and uses of the buildings in a community. For reference purposes, the profile categorizes buildings according to the major occupancy classifications defined in the Ontario Building Code (“**OBC**”).

A CRA includes a building stock profile because fire departments must know the different types, classifications, and uses of buildings in the community. Each kind of building has different safety concerns, such as:

- Older buildings often lack the fire and life safety systems included in newer buildings.
- Industrial chemical storage facilities are likely at a higher fire risk than commercial retail occupancies.
- The configuration and age of a residential occupancy can influence the probability and consequence of a fire. For example, single-family dwellings present different risks than townhouses or row houses.

Due to considerations like these, it is important to note which types of buildings are prevalent in the community, as well as where they are located.

By reviewing the information in a building stock profile, a fire department can develop initiatives to address public safety risks such as fires, explosions, and structural failures.

### 4.2 Ontario Fire Marshal Directive 2022-001

On February 25, 2022, the OFM issued Directive 2022-001. The directive is in response to facts regarding the use of truss and lightweight construction systems (“**LWC**”).

According to the OFM, LWC may experience premature failure and rapid collapse under certain fire conditions. Because of those risks, a fire department needs to know which buildings in its community have LWC. That information is essential for delivering effective fire suppression services and protecting the safety of responding fire crews.

Directive 2022-001 requires a CRA to indicate how many local buildings have LWC. (If a municipality does not have a list that indicates which local buildings use LWC, it should strive to compile those records.) Overall, the intent of Directive 2022-001 is to provide firefighters with information that they can use to complete the pre-planning process and deliver suppression services safely and effectively.

For a copy of Directive 2022-001, refer to Appendix D.

## LWC Occupancies in Essex

At the time of this CRA's development, Essex did not have complete records of which local buildings have LWC. It is imperative that the town starts tracking this information and includes in its CRA when the document undergoes its required update.

### 4.3 Building Stock in the Town of Essex

Table 7 lists the building stock in Essex (based on information provided by the Department).

Table 7. Buildings per classification in the Town of Essex.

OBC Classification	Type of Occupancy	# of Buildings in Essex
Group A	Assembly occupancy	73
Group B	Care and treatment occupancy	15
Group C	Residential occupancy	8,207
Groups D & E	Mercantile/commercial occupancy	75
Group F	Industrial occupancy	29
Other/non-occupancies	N/A	440

### Building Stock Summary

Tables 8 to 13 summarize Essex's building stock and identify the fire and life safety issues/concerns for each occupancy type. The building stock summary considers the following factors to determine the fire and life safety issues/concerns:

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

Note: As of this CRA, Essex did not have complete records regarding which local buildings have LWC.

Table 8. Group A occupancies in the Town of Essex.

Type of Building	Number of Buildings	Number of LWC Buildings	Issues/Concerns	Risk Likelihood	Risk Consequence	Risk Level
Restaurant	14	No data.	<ul style="list-style-type: none"> <li>Patrons may not be aware of secondary exits.</li> <li>Staff may not be aware of emergency procedures or the fire safety plan.</li> <li>Equipment requires proper servicing.</li> <li>Compliance levels of life safety systems.</li> </ul>	Possible	Minor	<b>Moderate</b>
School	8	No data.	<ul style="list-style-type: none"> <li>Status of the fire safety plan.</li> <li>Staff may not be aware of emergency procedures or the fire safety plan.</li> <li>Need confirmation that six fire drills are completed during the school year.</li> </ul>	Unlikely	Moderate	<b>Moderate</b>
Community hall	1	No data.	<ul style="list-style-type: none"> <li>Patrons may not be aware of secondary exits.</li> <li>Staff may not be aware of emergency procedures or the fire safety plan.</li> <li>Routine inspections are required for code compliance.</li> <li>Some public functions serve alcohol.</li> </ul>	Unlikely	Moderate	<b>Moderate</b>
Arena or pool	2	No data.	<ul style="list-style-type: none"> <li>Large occupant loads.</li> <li>Patrons may not be aware of secondary exits.</li> <li>Staff may not be aware of emergency procedures or the fire safety plan.</li> <li>Routine inspections are required for code compliance.</li> </ul>	Unlikely	Moderate	<b>Moderate</b>

Type of Building	Number of Buildings	Number of LWC Buildings	Issues/Concerns	Risk Likelihood	Risk Consequence	Risk Level
Service club	12	No data.	<ul style="list-style-type: none"> <li>• Renters may not be aware of emergency procedures.</li> <li>• On-site equipment (such as commercial cooking equipment) must comply with OFC requirements.</li> <li>• Large gatherings of people.</li> <li>• Status of the fire safety plan.</li> </ul>	Unlikely	Minor	Low
Library	3	No data.	<ul style="list-style-type: none"> <li>• Patrons may not be aware of secondary exits.</li> <li>• Staff may not be aware of emergency procedures or the fire safety plan.</li> <li>• Routine inspections are required for code compliance.</li> </ul>	Unlikely	Minor	Low
Childcare facility	5	No data.	<ul style="list-style-type: none"> <li>• Staff may not be aware of emergency procedures or the fire safety plan.</li> <li>• Routine inspections are required for code compliance.</li> </ul>	Unlikely	Minor	Low
Church	26	No data.	<ul style="list-style-type: none"> <li>• On-site equipment (such as commercial cooking equipment) must comply with OFC requirements.</li> <li>• Large gatherings of people.</li> <li>• Status of the fire safety plan.</li> <li>• Use of open flames (such as candles).</li> </ul>	Unlikely	Minor	Low
Museum or art gallery	1	No data.	<ul style="list-style-type: none"> <li>• Patrons may not be aware of secondary exits.</li> <li>• Staff may not be aware of emergency procedures or the fire safety plan.</li> <li>• Routine inspections are required for code compliance.</li> </ul>	Unlikely	Minor	Low



Type of Building	Number of Buildings	Number of LWC Buildings	Issues/Concerns	Risk Likelihood	Risk Consequence	Risk Level
Community hall	1	No data.	<ul style="list-style-type: none"><li>• Patrons may not be aware of secondary exits.</li><li>• Staff may not be aware of emergency procedures or the fire safety plan.</li><li>• Routine inspections are required for code compliance.</li></ul>	Unlikely	Minor	Low

Table 9. Group B occupancies in the Town of Essex.

Type of Building	Number of Buildings	Number of LWC Buildings	Issues/Concerns	Risk Likelihood	Risk Consequence	Risk Level
B2: Care and treatment facility	3	No data.	<ul style="list-style-type: none"><li>• Staff may need help evacuating building occupants.</li><li>• Need time to verify that fire safety plans are in place.</li><li>• Need time to verify that fire drills are completed.</li><li>• Need to verify that staff have the required training.</li><li>• Flammable and combustible materials on-site.</li></ul>	Possible	Moderate	Moderate
B3: Care facility	12	No data.	<ul style="list-style-type: none"><li>• Staff may need help evacuating building occupants.</li><li>• Need time to verify that fire safety plans are in place.</li><li>• Need time to verify that fire drills are completed.</li><li>• Need to verify that staff have the required training.</li><li>• Flammable and combustible materials on-site.</li></ul>	Possible	Moderate	Moderate

Table 10. Group C occupancies in the Town of Essex.

Type of Building	Number of Buildings	Number of LWC Buildings	Issues/Concerns	Risk Likelihood	Risk Consequence	Risk Level
Single-detached house	7,095	No data.	<ul style="list-style-type: none"> <li>Homes constructed before 1975 predate the OBC.</li> <li>Need time and resources to verify that smoke/carbon monoxide alarms are installed and maintained.</li> <li>Need time and resources to verify that residents have home escape plans.</li> <li>Time and resources are needed to deliver public education to all residents.</li> <li>No LWC documentation.</li> </ul>	Almost certain	Moderate	High
Semi-detached housing unit	55	No data.	<ul style="list-style-type: none"> <li>Need time and resources to verify that smoke/carbon monoxide alarms are installed and maintained.</li> <li>Need time and resources to verify that residents have home escape plans.</li> <li>Time and resources are needed to deliver public education to all residents.</li> <li>No LWC documentation.</li> </ul>	Almost certain	Moderate	High
Residential, business, or apartment unit	73	No data.	<ul style="list-style-type: none"> <li>Homes constructed before 1975 predate the OBC.</li> <li>Need time and resources to verify that smoke/carbon monoxide alarms are installed and maintained.</li> <li>Need time and resources to verify that residents have home escape plans.</li> <li>Time and resources are needed to deliver public education to all residents.</li> <li>No LWC documentation.</li> </ul>	Likely	Moderate	Moderate

Type of Building	Number of Buildings	Number of LWC Buildings	Issues/Concerns	Risk Likelihood	Risk Consequence	Risk Level
Row-house unit	295	No data.	<ul style="list-style-type: none"> <li>• Need time and resources to verify that smoke/carbon monoxide alarms are installed and maintained.</li> <li>• Need time and resources to verify that residents have home escape plans.</li> <li>• Time and resources are needed to deliver public education to all residents.</li> <li>• No LWC documentation.</li> </ul>	Likely	Moderate	<b>Moderate</b>
Apartment unit in a duplex	75	No data.	<ul style="list-style-type: none"> <li>• Need time and resources to verify that smoke/carbon monoxide alarms are installed and maintained.</li> <li>• Need time and resources to verify that residents have home escape plans.</li> <li>• Time and resources are needed to deliver public education to all residents.</li> <li>• No LWC documentation.</li> </ul>	Likely	Moderate	<b>Moderate</b>
Apartment unit in a building with fewer than five storeys	380	No data.	<ul style="list-style-type: none"> <li>• Need time and resources to verify that smoke/carbon monoxide alarms are installed and maintained.</li> <li>• Need time and resources to verify that residents have home escape plans.</li> <li>• Time and resources are needed to deliver public education to all residents.</li> <li>• Status of the fire safety plan.</li> <li>• High-density living configurations.</li> <li>• Detailed building inspections are required.</li> <li>• Status of the life safety systems.</li> <li>• No LWC documentation.</li> </ul>	Likely	Moderate	<b>Moderate</b>

Type of Building	Number of Buildings	Number of LWC Buildings	Issues/Concerns	Risk Likelihood	Risk Consequence	Risk Level
Apartment unit in a building with more than five storeys	60	No data.	<ul style="list-style-type: none"> <li>• Need time and resources to verify that smoke/carbon monoxide alarms are installed and maintained.</li> <li>• Need time and resources to verify that residents have home escape plans.</li> <li>• Time and resources are needed to deliver public education to all residents.</li> <li>• Status of the fire safety plan.</li> <li>• High-density living configurations.</li> <li>• Detailed building inspections are required.</li> <li>• Status of the life safety systems.</li> <li>• No LWC documentation.</li> </ul>	Likely	Moderate	<b>Moderate</b>
Hotel/motel	3	No data.	<ul style="list-style-type: none"> <li>• High-density living configurations.</li> <li>• Staff must complete the appropriate training.</li> <li>• Detailed building inspections are required.</li> <li>• Status of fire safety plan.</li> </ul>	Likely	Moderate	<b>Moderate</b>
Seasonal dwelling unit	169	No data.	<ul style="list-style-type: none"> <li>• Homes constructed before 1975 predate the OBC.</li> <li>• Need time and resources to verify that smoke/carbon monoxide alarms are installed and maintained.</li> <li>• Need time and resources to verify that residents have home escape plans.</li> <li>• Time and resources are needed to deliver public education to all residents.</li> <li>• No LWC documentation.</li> </ul>	Likely	Moderate	<b>Moderate</b>

Type of Building	Number of Buildings	Number of LWC Buildings	Issues/Concerns	Risk Likelihood	Risk Consequence	Risk Level
Mobile home park	2	2	<ul style="list-style-type: none"><li>• Need time and resources to verify that smoke/carbon monoxide alarms are installed and maintained.</li><li>• Need time and resources to verify that residents have home escape plans.</li><li>• Time and resources are needed to deliver public education to all residents.</li></ul>	Likely	Moderate	Moderate



Table 11. Group D and E occupancies in the Town of Essex.

Type of Building	Number of Buildings	Number of LWC Buildings	Issues/Concerns	Risk Likelihood	Risk Consequence	Risk Level
Retail business	31	No data.	<ul style="list-style-type: none"> <li>Staff may not be aware of emergency procedures or the fire safety plan.</li> <li>Patrons may not be aware of secondary exits.</li> <li>Routine inspections are required.</li> <li>Storage of significant fuel loads (such as tires and oils).</li> </ul>	Possible	Minor	<b>Moderate</b>
Retail service station	3	No data.	<ul style="list-style-type: none"> <li>Flammable fuels on-site.</li> <li>Status of staff training regarding fires and fuel spills.</li> </ul>	Possible	Moderate	<b>Moderate</b>
Grocery store	5	No data.	<ul style="list-style-type: none"> <li>Staff may not be aware of emergency procedures or the fire safety plan.</li> <li>Patrons may not be aware of secondary exits.</li> <li>Routine inspections are required.</li> </ul>	Possible	Minor	<b>Moderate</b>
Office building	23	No data.	<ul style="list-style-type: none"> <li>Patrons may not be aware of secondary exits.</li> <li>Routine inspections are required.</li> </ul>	Possible	Minor	<b>Moderate</b>
Medical/dental office	6	No data.	<ul style="list-style-type: none"> <li>Patrons may not be aware of secondary exits.</li> <li>Routine inspections are required.</li> </ul>	Possible	Minor	<b>Moderate</b>
EMS station	2	No data.	<ul style="list-style-type: none"> <li>No issues or concerns.</li> </ul>	Possible	Minor	<b>Moderate</b>
Fire station	3	No data.	<ul style="list-style-type: none"> <li>No issues or concerns.</li> </ul>	Possible	Minor	<b>Moderate</b>
Police station	2	No data.	<ul style="list-style-type: none"> <li>Staff may need help to evacuate building occupants.</li> <li>Need to ensure fire safety plans are in place.</li> <li>Staff must complete the required training.</li> </ul>	Possible	Minor	<b>Moderate</b>

Table 12. Group F occupancies in the Town of Essex.

Type of Building	Number of Buildings	Number of LWC Buildings	Issues/Concerns	Risk Likelihood	Risk Consequence	Risk Level
Warehouse	3	No data.	<ul style="list-style-type: none"><li>Fuel loads.</li><li>Staff may not be aware of emergency procedures.</li><li>Unknown commodities on-site.</li><li>Hazardous materials on-site.</li></ul>	Possible	Moderate	Moderate
Industrial site	16	No data.	<ul style="list-style-type: none"><li>Fuel loads.</li><li>Staff may not be aware of emergency procedures.</li><li>Unknown commodities on-site.</li><li>Hazardous materials on-site.</li></ul>	Possible	Moderate	Moderate
Grain elevator	2	No data.	<ul style="list-style-type: none"><li>Staff may not be aware of emergency procedures.</li><li>Unknown commodities on-site.</li><li>High risk of dust explosion.</li></ul>	Possible	Moderate	Moderate
Water and wastewater facility	7	No data.	<ul style="list-style-type: none"><li>Staff may not be aware of emergency procedures.</li><li>Unknown commodities on-site.</li><li>Hazardous materials on-site.</li></ul>	Possible	Minor	Moderate
Waste transfer station	1	No data.	<ul style="list-style-type: none"><li>Fuel loads.</li><li>Staff may not be aware of emergency procedures.</li><li>Unknown commodities on-site.</li><li>Hazardous materials on-site.</li></ul>	Possible	Minor	Moderate

Table 13. Other occupancies or non-occupancies in the Town of Essex.

Type of Building	Number of Buildings	Number of LWC Buildings	Issues/Concerns	Risk Likelihood	Risk Consequence	Risk Level
Non-classified occupancy	440	No data.	<ul style="list-style-type: none"><li>• Occupancies include greenhouses, farms, and vacant buildings.</li><li>• Inspections are required to determine the use of non-classified occupancies.</li><li>• The use or contents of a non-classified occupancy may present fire or other life safety risks/hazards.</li></ul>	Possible	Minor	Moderate

#### 4.4 Legislation Governing Inspections

According to O. Reg. 365/13, fire departments must work under the direction of the OFM to complete the following tasks:

- Complete a fire safety assessment and inspection for every building for which a fire safety complaint is received.
- Complete a fire safety assessment and inspection for every building for which a request for assistance to comply with the Fire Code is received and the involvement of the Chief Fire Official is required.

Other regulations that govern building inspections are as follows:

- O. Reg. 364/13: This legislation requires vulnerable occupancies to undergo fire safety assessments and inspections and complete annual fire drills.
- OFC, section 2.8.2: This legislation requires applicable occupancies to have a fire safety plan prepared, approved, and implemented.
- OFC, section 2.13: This legislation mandates the installation of smoke alarms.
- OFC, section 2.16: This legislation mandates the installation of carbon monoxide alarms.

Fire safety legislation also requires each municipality to have a smoke/CO program that includes OFC inspection and enforcement components.

#### 4.5 Public Education Initiatives and Fire Inspections in the Town of Essex

##### Public Education Initiatives

Table 14 summarizes the number of public events the Department attended from 2018 to 2022. The table also indicates how many hours the Department allocated to attending public events in each of those years.

Table 14. Fire department participation in community events.

Event Statistics	2018	2019	2020	2021	2022
Number of events attended	95	103	10	24	83
Number of hours allocated to event attendance	240	263	12	40	255

(Note: Due to COVID-19 restrictions, the Department attended relatively few public events in 2020 and 2021.)

One of the Department's annual public education initiatives is Fire Prevention Week. During Fire Prevention Week, each of the Department's stations participated in smoke alarm surveys. Smoke alarm survey numbers from 2018 to 2022 are as follows:

- There were 2,259 responses in 2018.
- There were 848 responses in 2019.
- There were 104 responses in 2020.
- There were 859 responses in 2021.
- There were 194 responses in 2022.

As part of the smoke alarm survey, the Department distributed door hangers that provided the residents of Essex with instructions for checking the functionality of the smoke alarms in their residences.

The Department has also implemented a residential smoke/CO alarm awareness program. The program has received support from the Rotary Club of Essex, which generously donated 120 battery-powered smoke/CO alarms for the Department to distribute to local senior citizens. Safe Community Project Zero (facilitated by Enbridge Gas) and the Rotary Club of Harrow have also donated battery-powered smoke/CO alarms for the residents of Essex. The Department's staff is available to help install alarms for any residents who cannot complete the installation independently.

### Inspection Statistics

According to its records, the Department inspected 580 residential occupancies between 2018 and 2022 as part of its smoke alarm program. Statistics related to these inspections are presented as follows:

- Table 15 summarizes the number of inspections the Department completed from 2018 to 2022.
- Table 16 summarizes the reasons for the inspections the Department conducted from 2018 to 2022.
- Table 17 summarizes the number of violations the Department identified and the number of notices it issued from 2018 to 2022.

Table 15. Inspections by occupancy type, 2018 to 2022.

Type of Occupancy	2018	2019	2020	2021	2022
Group A (assembly)	89	96	86	54	68
Group B (care and treatment)	15	18	14	16	14

Type of Occupancy	2018	2019	2020	2021	2022
Group C (residential)	78	69	94	157	182
Group D & E (mercantile/commercial)	123	139	115	74	48
Group F (industrial)	6	9	18	12	7
Other/non-occupancy	4	5	1	7	4
<b>Total Number of Inspections</b>	<b>315</b>	<b>336</b>	<b>328</b>	<b>320</b>	<b>323</b>

Table 16. Inspection reasons, 2018 to 2022.

Year	Complaint Inspection	Owner Request	Safety Concern or Smoke Alarm	Routine Inspection	Licensing Inspection	Total
2018	8	36	102	166	3	315
2019	4	37	125	170	0	336
2020	23	38	107	160	0	328
2021	22	79	99	120	0	320
2022	12	67	76	110	58	323
<b>Total</b>	<b>69</b>	<b>257</b>	<b>509</b>	<b>726</b>	<b>61</b>	<b>1,622</b>

Table 17. Violations and issued notices, 2018 to 2022.

Year	Verbal Notice	Letter Notice	Order Notice	Fire Inspection Report	Total	Resolved
2018	102	0	0	17	119	100%
2019	124	0	0	17	141	100%
2020	104	0	0	15	119	100%
2021	92	0	0	19	111	100%
2022	59	0	0	67	126	100%
<b>Total</b>	<b>481</b>	<b>0</b>	<b>0</b>	<b>135</b>	<b>616</b>	<b>100%</b>

#### 4.6 Risks Identified by the Building Stock Profile

Table 18 summarizes the risks identified by the building stock profile for Essex.



Table 18. Building stock profile risk summary.

Risk	Likelihood	Consequence	Risk Level
Fire in residential occupancy	Almost certain	Minor	<b>Moderate</b>
Fire in vulnerable occupancy	Likely	Moderate	<b>Moderate</b>
Fire/explosion in industrial occupancy	Likely	Moderate	<b>Moderate</b>
Fire in commercial occupancy	Likely	Minor	<b>Moderate</b>
Fire in assembly occupancy	Possible	Moderate	<b>Moderate</b>

For more information about these risks, refer to the following sections of this CRA:

- Section 12: This section contains the risk level matrix used to calculate the overall likelihood levels and risk scores for the indicated risks.
- Section 13: This section contains the RTPs developed for the indicated risks.

## 5.0 Critical Infrastructure Profile

### 5.1 Context of a Critical Infrastructure Profile

As per OFM-TG-02-2019, a critical infrastructure (“CI”) profile examines the capabilities and limitations of a community’s CI.

CI includes the interconnected networks, services, and systems that meet vital human needs, sustain the economy, and protect public safety. Typical forms of CI include the following:

- electricity distribution
- water distribution
- telecommunications
- hospitals

A CRA includes a CI profile because the presence, availability, and capacity of CI can significantly impact factors such as:

- dispatch
- communications
- transportation
- fire suppression services
- community healthcare

If any of its CI services or systems become compromised, a community may be put at a high level of risk. The size or design of a specific type of CI may also pose a risk to the community.

A fire department can use the information in a CI profile to set response priorities and develop strategies to ensure it can meet the community’s public safety education, fire prevention, and emergency response pre-planning needs.

### 5.2 Critical Infrastructure Profile Summary

Table 19 summarizes the CI found in Essex (according to information provided by the town). The table lists the fire and emergency issues/concerns associated with each type of CI, as well as general observations (where applicable).

Table 19. Critical infrastructure in the Town of Essex.

Critical Infrastructure	Issues/Concerns/Observations
Electricity distribution	<ul style="list-style-type: none"> <li>Essex has two electricity providers:                             <ul style="list-style-type: none"> <li>Entegrus Energy Inc. is located in Harrow and Essex Centre.</li> <li>Hydro One services outlying areas.</li> </ul> </li> <li>Essex contains large transmission lines and towers, which may be damaged by severe weather.</li> <li>Most electrical CI in Essex uses above-ground distribution.</li> </ul>
Water distribution	<ul style="list-style-type: none"> <li>There are two water treatment plants in Essex:                             <ul style="list-style-type: none"> <li>Most residents of wards 1 and 2 receive their water supply from the Union Water Treatment Plant. Some residents receive their water from the Amherstburg Treatment Plant.</li> <li>Residents of wards 3 and 4 receive their water supply from the Harrow and Colchester South Water Treatment Plant.</li> </ul> </li> <li>Essex has a contract with the Ontario Clean Water Agency regarding the operation of the town's two water treatment plants.</li> <li>Potential risks associated with the water distribution CI in Essex include:                             <ul style="list-style-type: none"> <li>water main breaks</li> <li>chemical spills</li> <li>boil water advisories</li> <li>SCADA system malfunctions</li> </ul> </li> </ul>
Radio communication systems and 911 communication systems	<ul style="list-style-type: none"> <li>Windsor Fire Rescue Services provides dispatch services for the Department.</li> <li>911 communication systems rely heavily on radio towers and phone/internet lines, which may be damaged by severe weather.</li> <li>There are radio and 911 communication towers located in Harrow and Essex.</li> </ul>
Telecommunications	<ul style="list-style-type: none"> <li>Bell Media, Telus, and Rogers provide telecommunication services in Essex.</li> </ul>

Critical Infrastructure	Issues/Concerns/Observations
Cellular towers	<ul style="list-style-type: none"> <li>Bell Media and Telus provide cellular service in Essex.</li> </ul>
Provincial, county, and municipal roads and bridges	<ul style="list-style-type: none"> <li>Essex maintains a system of urban and rural roads, many of which connect to nearby county and provincial highways.</li> <li>Damage to the roads and bridges in Essex could cause serious delays during emergency responses.</li> </ul>
Police services (OPP)	<ul style="list-style-type: none"> <li>Essex has a contract with the OPP regarding police services.</li> <li>A team of 23 sworn officers and two civilian staff members provide 24-hour-a-day police protection throughout Essex.</li> </ul>
EMS (Essex-Windsor Emergency Medical Services)	<ul style="list-style-type: none"> <li>Essex-Windsor Emergency Medical Services is the sole provider of ambulance services in Essex County.</li> <li>Essex-Windsor Emergency Medical Services responds to urgent calls, life-threatening emergencies, and requests for patient transfers.</li> </ul>
Central Ambulance Communication Centre	<ul style="list-style-type: none"> <li>EMS is often in a Code Red or Code Black scenario.</li> <li>EMS crews respond to fires and medical calls.</li> </ul>

### 5.3 Risks Identified by the Critical Infrastructure Profile

Table 20 summarizes the risks identified by the CI profile review for Essex.

Table 20. Critical infrastructure profile risk summary.

Risk	Likelihood	Consequence	Risk Level
Severe weather event	Almost certain	Moderate	High
Road/highway incident	Almost certain	Minor	Moderate
Critical infrastructure failure	Almost certain	Minor	Moderate

For more information about these risks, refer to the following sections of this CRA:

- Section 12: This section contains the risk level matrix used to calculate the overall likelihood levels and risk scores for the indicated risks.
- Section 13: This section contains the RTPs developed for the indicated risks.

### **Additional Considerations**

The Department relies on several types of CI when making emergency responses. For example, the Department requires the roads, highways, and bridges in Essex to be accessible and in good repair when it responds to motor vehicle accidents. If there is a CI failure, it may impact the safety, effectiveness, or timeliness of an emergency response.

Due to the role CI plays in the Department's operations, it is imperative for Essex to ensure its CI remains in place and functioning. This responsibility involves performing routine maintenance, monitoring for incidents that could damage the CI (such as severe weather), and repairing any damaged CI as soon as possible.

## 6.0 Demographic Profile

### 6.1 Context of a Demographic Profile

As per OFM-TG-02-2019, a demographic profile examines a community's population based on the following factors:

- size and dispersion
- age
- gender
- cultural background
- level of education
- socioeconomic makeup
- transient population

When a fire department knows its community's demographics, it can identify specific groups that may be at high risk of suffering or causing a fire or other emergency. The fire department can then develop programs and outreach initiatives to communicate with those groups and reduce fire risk in the community.

As it develops public safety initiatives, a fire department must ensure it respects the demographics in its community. Doing so will allow the fire department to provide all community residents with programs and services that are meaningful to them.

### 6.2 Population

According to Statistics Canada's 2021 Census of Population, Essex has a population of 21,216 year-round residents. Essex has the 85<sup>th</sup> largest population in Ontario and the 213<sup>rd</sup> largest population in Canada.

Essex's population increased by 3.9 per cent from 2016 to 2021. During this period, Ontario's population grew by 5.8 per cent, and Canada's population grew by 5.2 per cent.

In 2021, there were 8,391 private dwellings occupied by permanent residents of Essex, representing an increase of 3.8 per cent from 2016.

### 6.3 Age

Table 21 compares the age distribution in Essex to the Province of Ontario (based on the findings of the 2021 Statistics Canada census).



Table 21. Age distribution in the Town of Essex vs. the Province of Ontario.

Age Range	Essex	Ontario
0 to 14 years	15.3%	15.8%
15 to 64 years	62.8%	65.6%
65 years and over	21.9%	18.5%
85 years and over	2.6%	2.4%

Based on the census data, the average age in Essex is 44.1 (compared to the provincial average of 41.8). The median age in Essex is 46.8 (compared to the provincial average of 41.6).

## 6.4 Language and Cultural Considerations

It is essential for fire departments to acknowledge language and cultural considerations when developing community programs and services. From a communications perspective, not all residents speak English as their first language. This means fire prevention and public education materials must account for possible language barriers. From a cultural perspective, many groups have differing fire safety practices, which means fire departments must ensure they develop programs that promote safety while respecting cultural beliefs.

According to the 2021 Statistics Canada census, Essex is a predominantly English-speaking community, with 92.6 per cent of its population identifying English as their first language. Overall, 99.8 per cent of the town's residents can hold a conversation in English, and 6.9 per cent are bilingual in English and French.

## 6.5 Level of Education

Table 22 compares the highest level of education in Essex to the provincial average (based on the findings of the 2021 Statistics Canada census).

Table 22. Education levels in the Town of Essex vs. the Province of Ontario.

Education Level	Essex	Ontario
No certificate	12.8%	15.3%
High school	28.9%	27.2%
Some post-secondary	38.5%	57.5%

## 6.6 Socioeconomic Makeup

Table 23 lists the socioeconomic makeup of Essex in 2020, according to the 2021 Statistics Canada census.

Table 23. Socioeconomic statistics for the Town of Essex, 2020.

Statistic	Essex	Ontario
Number of total income recipients aged 15 years and over in private households.	17,430	11,782,845
Average total income among recipients	\$51,350	\$56,350
Average after-tax income among recipients	\$43,960	\$46,280
Average family size of economic families	3.0 people	3.1 people
Average total income of economic family	\$123,400	\$137,200
Prevalence of low income based on the Low-income measure, after tax	7.3%	10.1%

## 6.7 Transient and Seasonal Population

Throughout the summer, Essex's population grows by approximately 7,000 people.

Temporary residents visit Essex to stay at campgrounds, marinas, and cottages. There are several children's campgrounds within Essex, including Camp Cedarwin (operated by Scouts Canada), Kiwanis Sunshine Point Camp, and Gesstwood Camp and Education Centre.

In addition, an undetermined number of migrant workers live in Essex each year during the growing and harvesting seasons. In most cases, these workers live in seasonal housing facilities.

## 6.8 Schools, Day Cares, and Vulnerable Occupancies

The Department must keep itself aware of all schools, day cares, and vulnerable occupancies in Essex, as these sites may be at a heightened risk of fire or other emergencies.

Tables 24 to 26 list the schools, day cares, and vulnerable occupancies in Essex. The tables indicate applicable demographic considerations for each site.

Table 24. List of schools in the Town of Essex.

School	Type of School	Students	Staff
Essex Public School	Elementary	606	78 full-time 15 part-time
Colchester North Public School	Elementary	276	26
Harrow Public School	Elementary	398	40
Essex District High School	Secondary	701	73
Holy Name Catholic Elementary School	Elementary	363	37
St. Anthony Catholic Elementary School	Elementary	206	25 full-time 5 part-time
École élémentaire catholique Sainte-Ursule	Elementary (French immersion)	202	25 full-time 4 part-time
Ebenezer Christian Academy	Elementary (private)	30	8 full-time 4 part-time

Table 25. List of day care facilities in the Town of Essex.

Day Care Centre	Children	Staff
Once Upon A Time Child Care Centre	64	20
Before and After School Program (Once Upon A Time Child Care Centre)	56	20
Story Book Early Learning Centre	122	37 full-time 24 part-time
Harrow Daycare	73	10 full-time 2 part-time
First Steps Childcare Centre	99	25 full-time 13 part-time

Table 26. List of vulnerable occupancies in the Town of Essex.

Vulnerable Occupancy	Type of Facility	Beds	Min. Staff
Community Living: 85 Gosfield Townline E	Residential care	5	1
Community Living: 94 Kingsway Cres.	Residential care	3	1
Community Living: 167 Maidstone Ave. E	Residential care	4	1
Community Living: 168 Albert St.	Residential care	3	1
Community Living: 169 Fairview Ave. W	Residential care	4	1
Community Living: 27 Shepley Ct.	Residential care	3	1
Community Living: 315 Brien Ave. W	Residential care	2	1
Community Living: 7414 County Rd. 18	Residential care	3	1
Community Living: 9511 Walker Rd.	Residential care	3	1
Community Living: 12064 County Rd. 15	Residential care	4	1
Harrowood Seniors Community	Long-term care	67	2
St. Francis Advocates	Residential care	5	1
Village Lodge Rest Home	Rest home	14	1
Extendicare Iler Lodge Retirement Residence	Long-term care	130	7
Christian Horizons	Residential care	3	1

According to numbers provided by the town, Essex has 252 residents living in vulnerable occupancies.

## 6.9 Demographic Profile Summary

Table 27 summarizes the demographic considerations identified in Essex, as well as issues, concerns, and observations for each demographic category.

Table 27. Demographic profile summary for the Town of Essex.

Demographic Consideration	Issues/Concerns/Observations
Age	<ul style="list-style-type: none"> <li>• Children may not have an adequate level of education about fire safety and other emergencies.</li> <li>• 21.9% of Essex's population is over the age of 65.</li> <li>• It takes time and resources to verify that seniors have working smoke alarms in their residences.</li> <li>• Some seniors may require assistance to evacuate in the event of an emergency.</li> <li>• It can be difficult to provide fire safety and other emergency information to seniors because of their existing knowledge, practices, and beliefs.</li> <li>• Seniors may not have the ability to ensure their homes have fire safety measures in place.</li> <li>• Some seniors may rely on traditional sources of communication (such as radio, newspaper, or television) to receive information. If the Department exclusively uses newer methods of communication (such as social media) to deliver information, some seniors may not receive it.</li> </ul>
Level of education	<ul style="list-style-type: none"> <li>• 12.8% of Essex's population does not have a high school diploma or equivalent.</li> <li>• The Department must strive to provide all residents with fire and life safety education that is clear, applicable, and meaningful to their demographic.</li> </ul>
Socioeconomic makeup	<ul style="list-style-type: none"> <li>• As of 2020, the average before-tax income for an individual in Essex was \$51,350. The average before-tax income for an economic family in Essex was \$123,400.</li> <li>• The Department must ensure all residents have access to fire prevention materials (such as fire alarms) regardless of income.</li> </ul>

Demographic Consideration	Issues/Concerns/Observations
Transient and seasonal population	<ul style="list-style-type: none"> <li>Essex has an annual influx of about 7,000 seasonal residents/tourists during the summer.</li> <li>Many children visit Essex's camp facilities during the summer.</li> <li>An underdetermined number of migrant workers live in Essex during the growing and harvest seasons.</li> <li>An increase in residents leads to an increased traffic volume.</li> <li>It takes time and resources to ensure that all seasonal residents receive fire safety education.</li> </ul>
Schools	<ul style="list-style-type: none"> <li>It takes time and resources to conduct inspections, witness fire drills, and review fire safety plans.</li> <li>It takes time and resources to deliver education about fire and life safety.</li> <li>On-site visits to schools are required to identify hazards and determine risk levels.</li> </ul>
Day cares	<ul style="list-style-type: none"> <li>It takes time and resources to conduct inspections, witness fire drills, and review fire safety plans.</li> </ul>
Vulnerable occupations	<ul style="list-style-type: none"> <li>It takes time and resources to conduct inspections, witness fire drills, and review fire safety plans.</li> </ul>

## 6.10 Risks Identified by the Demographic Profile

Table 28 summarizes the risks identified by the demographic profile for Essex.

Table 28. Demographic profile risk summary.

Risk	Likelihood	Consequence	Risk Level
Fire in residential occupancy	Almost certain	Minor	<b>Moderate</b>
Fire in vulnerable occupancy	Likely	Moderate	<b>Moderate</b>
Fire in assembly occupancy	Possible	Moderate	<b>Moderate</b>

For more information about these risks, refer to the following sections of this CRA:

- Section 12: This section contains the risk level matrix used to calculate the overall likelihood levels and risk scores for the indicated risks.
- Section 13: This section contains the RTPs developed for the indicated risks.

## 7.0 Hazard Profile

### 7.1 Context of a Hazard Profile

As per OFM-TG-02-2019, a hazard profile examines the natural, technological, and human-made threats a community might face, such as:

- severe weather (such as freezing rain, ice storms, tornadoes, or hurricanes)
- forest fires
- floods
- transportation emergencies
- cyber-attacks
- human health emergencies
- energy supply disruptions
- hazardous materials spills

It is vital for the local fire department to review all potential risks identified in the hazard profile section of its community's CRA. The fire department must also understand which of those risks it is expected to respond to if an emergency occurs.

### 7.2 Hazards in the Town of Essex

#### Road/Highway Incident

A road/highway incident can impact Essex in the following ways:

- Fires may occur.
- Explosions may occur.
- Injuries may occur.
- Deaths may occur.
- The Department may need to rescue trapped or injured people.

#### Severe Weather Event

A severe weather event can impact Essex in the following ways:

- Power interruptions may occur.
- Communication systems may become disrupted.
- Essex's residents may be unprepared for severe weather.



- Visitors in Essex may be unprepared for severe weather, especially those unfamiliar with the area.
- Some severe weather conditions can result in periods of low visibility.
- Some severe weather conditions may cause delays in emergency responses.
- Severe weather conditions may cause motorists to become stranded on the highways, which may require the Department to assist them.
- A severe weather event may reduce the Department's service delivery. Potential impacts include service delays and the inability to deliver services.

Note: While conducting an on-site visit in Essex in the summer of 2023, The Loomex Group's personnel witnessed firsthand a severe weather event that disrupted the town's services for an extended period.

### Human Health Emergency

A human health emergency can impact Essex in the following ways:

- Some health emergencies may require Essex to issue evacuation or quarantine orders.
- A health emergency may cause businesses to close.
- First responders may become exposed to pathogens while responding to health emergencies.

### Localized Flooding

Localized flooding can impact Essex in the following ways:

- Emergency responders may need to rescue endangered people.
- Flooding may prevent emergency responders from accessing certain areas of Essex.

## 7.3 Risks Identified by the Hazard Profile

Table 29 summarizes the risks identified by the hazard profile for Essex.

Table 29. Hazard profile risk summary.

Hazard	Likelihood	Consequence	Risk Level
Severe weather event	Almost certain	Moderate	High
Road/highway incident	Almost certain	Minor	Moderate

For more information about these risks, refer to the following sections of this CRA:

- Section 12: This section contains the risk level matrix used to calculate the overall likelihood levels and risk scores for the indicated risks.
- Section 13: This section contains the RTPs developed for the indicated risks.

### **Additional Considerations**

In addition to the risks listed in the table above, the Department should remain aware of the risks posed by human health emergencies and localized flooding.

## 8.0 Public Safety Response Entities Profile

### 8.1 Context of a Public Safety Response Entities Profile

As per OFM-TG-02-2019, a public safety response entities profile examines the organizations that respond to emergencies in the community. Aside from a fire department, the most common examples of public safety response agencies are police and paramedic services.

A public safety response entities profile considers the following questions:

- What incidents do the non-fire department organizations respond to?
- What are the response capabilities of the non-fire department organizations?
- Does the fire department have any potential interdependencies?

The data in this profile gives insight that allows a fire department to consider the level of fire protection services it provides. For instance, a community may have an industrial facility with an internal fire services crew. If so, the local fire department can set the level of service it provides to the facility accordingly.

A public safety response entities profile can also provide insight into the benefits of establishing a tiered/joint response to various emergencies. Such insights can help a fire department identify risk treatment options based on shared responsibilities.

### 8.2 Public Safety Response Entities Profile Summary

Table 30 lists the public safety response agencies for Essex and notes the potential issues that might affect their operations during an emergency response.

Table 30. Public safety response agencies in Town of Essex

Response Agency	Types of Incidents	Role at Incident	Issues or Concerns
Essex-Windsor EMS	<ul style="list-style-type: none"> <li>Fires</li> <li>Explosions</li> <li>Medical emergencies</li> <li>Structural failures</li> <li>Road and highway incidents</li> <li>Hazardous materials incidents</li> </ul>	<ul style="list-style-type: none"> <li>Care for patients.</li> <li>Transport patients as needed.</li> <li>Monitor firefighter health at fire scenes.</li> </ul>	<ul style="list-style-type: none"> <li>Delayed response times are possible.</li> </ul>
Ontario Provincial Police	<ul style="list-style-type: none"> <li>Fires</li> <li>Explosions</li> <li>Sudden deaths</li> <li>Structural failures</li> <li>Road and highway incidents</li> <li>Hazardous materials incidents</li> </ul>	<ul style="list-style-type: none"> <li>Ensure the incident scene is secure.</li> <li>Assist with investigations.</li> <li>Investigate collisions, deaths, and criminal activity.</li> <li>Control traffic.</li> </ul>	<ul style="list-style-type: none"> <li>Delayed response times are possible.</li> </ul>
E.L.K./Entegrus	<ul style="list-style-type: none"> <li>Fires</li> <li>Downed power lines</li> <li>Electrical fires in transmission equipment</li> </ul>	<ul style="list-style-type: none"> <li>Ensure the affected area is safe/secure.</li> <li>Isolate electrical services.</li> <li>Repair electrical infrastructure.</li> <li>Restore electrical services.</li> </ul>	<ul style="list-style-type: none"> <li>Delayed response times are possible.</li> <li>Lengthy outages are possible.</li> </ul>
Hydro One	<ul style="list-style-type: none"> <li>Fires</li> <li>Downed power lines</li> <li>Electrical fires in transmission equipment</li> </ul>	<ul style="list-style-type: none"> <li>Ensure the affected area is safe/secure.</li> <li>Isolate electrical services.</li> <li>Repair electrical infrastructure.</li> <li>Restore electrical services.</li> </ul>	<ul style="list-style-type: none"> <li>Delayed response times are possible.</li> <li>Lengthy outages are possible.</li> </ul>
Telecommunications companies	<ul style="list-style-type: none"> <li>Communication service disruptions</li> </ul>	<ul style="list-style-type: none"> <li>Repair damaged lines and systems.</li> </ul>	<ul style="list-style-type: none"> <li>No issues or concerns.</li> </ul>

Response Agency	Types of Incidents	Role at Incident	Issues or Concerns
Office of the Fire Marshal	<ul style="list-style-type: none"> <li>• Fires</li> <li>• Explosions</li> <li>• Large-scale emergencies</li> </ul>	<ul style="list-style-type: none"> <li>• Investigate explosions and fires that meet the FPPA's criteria (per Directive 2023-001).</li> <li>• Assist police with investigations.</li> <li>• Provide advice during large-scale emergencies (if needed).</li> <li>• Provide limited equipment for large-scale emergencies.</li> </ul>	<ul style="list-style-type: none"> <li>• Delayed response times are possible.</li> </ul>
Windsor-Essex County Health Unit	<ul style="list-style-type: none"> <li>• Domestic water incidents</li> <li>• Health investigations</li> </ul>	<ul style="list-style-type: none"> <li>• Issue boiling water advisories.</li> <li>• Assist with health issues.</li> <li>• Conduct exposure investigations.</li> <li>• Provide advice regarding responses to health emergencies.</li> </ul>	<ul style="list-style-type: none"> <li>• No issues or concerns.</li> </ul>
Town of Essex Infrastructure and Development Department	<ul style="list-style-type: none"> <li>• Fires</li> <li>• Motor vehicle collisions</li> </ul>	<ul style="list-style-type: none"> <li>• Close roads.</li> <li>• Complete required winter operations.</li> <li>• Repair roads.</li> <li>• Conduct water/wastewater operations.</li> </ul>	<ul style="list-style-type: none"> <li>• No issues or concerns.</li> </ul>
Technical Standards and Safety Authority	<ul style="list-style-type: none"> <li>• Fires</li> <li>• Carbon monoxide emergencies</li> <li>• Elevator emergencies</li> </ul>	<ul style="list-style-type: none"> <li>• Assist with investigations.</li> <li>• Provide limited training as needed.</li> </ul>	<ul style="list-style-type: none"> <li>• Delayed response times are possible.</li> <li>• Training levels may be limited.</li> <li>• Training can be costly.</li> </ul>

Response Agency	Types of Incidents	Role at Incident	Issues or Concerns
Enbridge Gas	<ul style="list-style-type: none"> <li>Gas leaks</li> <li>Carbon monoxide emergencies</li> </ul>	<ul style="list-style-type: none"> <li>Assist in carbon monoxide investigations.</li> <li>Shut off gas services.</li> <li>Repair damaged gas lines.</li> <li>Assist in detecting gas leaks.</li> </ul>	<ul style="list-style-type: none"> <li>Delayed responses are possible due to lengthy travel times.</li> </ul>
Ministry of the Environment	<ul style="list-style-type: none"> <li>Hazardous spills</li> <li>Hazardous materials incidents</li> </ul>	<ul style="list-style-type: none"> <li>Order the cleanup of spill sites.</li> <li>Help control spills and the release of substances.</li> </ul>	<ul style="list-style-type: none"> <li>No issues or concerns.</li> </ul>
Ministry of Transportation (for provincial highways only)	<ul style="list-style-type: none"> <li>Fires</li> <li>Motor vehicle collisions</li> </ul>	<ul style="list-style-type: none"> <li>Close roads.</li> <li>Ensure road safety during the winter.</li> <li>Repair roads.</li> </ul>	<ul style="list-style-type: none"> <li>No issues or concerns.</li> </ul>

### **8.3 Risks Identified by the Public Safety Response Entities Profile**

The public safety response entities profile for Essex does not identify any current threats to the town. However, the town and the Department should review the information in this profile carefully, as it is important for them to know the capabilities and limitations of the available public response agencies. It is also in the town's best interest to maintain good working relationships with those organizations. Doing so will help improve communication and response efforts during emergencies.

Essex must also recognize that the Department is not equipped to deal with all potential incidents that can occur in the community. Some responses may require equipment the Department lacks. Other incidents may require emergency responders to have specialized training that the Department's personnel haven't received. If such an incident occurs, the Department's only responsibilities may be to contact the appropriate response agency and maintain scene security until a representative of that organization arrives.



## 9.0 Community Services Profile

### 9.1 Overview of a Community Services Profile

As per OFM-TG-02-2019, a community services profile examines the organizations in a community that can assist the local fire department with various duties, such as:

- distributing public safety education
- conducting OFC inspections or enforcement
- making emergency responses

Community service groups can also provide the following support or resources:

- financial assistance
- venues for training or exercises
- access to high-risk groups
- temporary shelter

It is important to consider these organizations and the assistance they provide, as the presence or absence of community services may dictate the types of emergencies to which the local fire department responds.

### 9.2 Community Services Profile Summary

Table 31 summarizes the community services that may have the capacity to assist the Department when it responds to an emergency. The table also notes issues and concerns regarding each community service (where applicable).

Table 31. Community services in the Town of Essex.

Community Service	Assistance Provided	Issues/Concerns/Observations
Health unit	The health unit provides vulnerable persons with access to public education. The health unit also provides advice and services for firefighters who were exposed to contaminants during a response.	<ul style="list-style-type: none"><li>There are no issues or concerns.</li></ul>
Municipal halls and community centres	These buildings are large assembly occupancies that can serve as evacuation spaces and warming/cooling centres.	<ul style="list-style-type: none"><li>There are no back-up power supplies (such as a generator) to provide electricity if the facilities are required during a power outage.</li></ul>
Schools	Schools are large assembly occupancies that can serve as evacuation spaces and warming/cooling centres. Schools are also locations where fire departments can deliver fire and life safety education programs.	<ul style="list-style-type: none"><li>Human health emergencies may affect the availability of school facilities.</li><li>Some schools may not have emergency power or backup power generators.</li></ul>
Faith-based groups	Churches may offer support services for those who suffer a loss due to a fire or other emergency.	<ul style="list-style-type: none"><li>Human health emergencies may affect the availability of community services and groups.</li></ul>
Red Cross	Red Cross services can support the community during a large-scale emergency. For example, the Red Cross could help organize a temporary shelter for someone who has suffered a fire in their residence.	<ul style="list-style-type: none"><li>Delayed deployment times are possible.</li><li>There are costs involved with contacting the Red Cross for assistance (depending on the scale of the emergency and its circumstances).</li></ul>
Service clubs	Service groups can run fundraisers to assist community interest groups. For example, the groups can help circulate fire safety materials to seniors or provide bicycle safety materials to cyclists.	<ul style="list-style-type: none"><li>Human health emergencies may affect the staffing levels or availability of service groups.</li></ul>
Victim Services of Windsor & Essex County	Victim services are activated through the police or fire department to provide immediate on-site crisis and trauma services. Victim services can also help with urgent practical matters and help arrange other support and resources.	<ul style="list-style-type: none"><li>There are no issues or concerns.</li></ul>

### **9.3 Risks Identified by the Community Services Profile**

The community services profile for Essex does not identify any current threats to the town. However, the town and the Department should review the information in this profile carefully. Knowing the availability and limitations of the identified community services will help Essex integrate support from those organizations into its emergency responses as needed.

## 10.0 Economic Profile

### 10.1 Context of an Economic Profile

As per OFM-TG-02-2019, an economic profile examines the economic sectors that affect a community and support its financial sustainability. The profile views economic information from an overall public safety perspective while considering the following questions:

- What sectors influence the community's local economy?
- What potential impacts would the community suffer if it loses the sectors influencing its economy?
- Are there industrial or commercial occupancies in the community that provide significant economic production or jobs? If so, what are the potential risks that could impact those occupancies?

The information in an economic profile can help a fire department determine which fire protection services its community's different economic sectors require. A fire department can also use the information in the profile to identify actions it can take to reduce the risk of emergencies in the local industrial or commercial occupancies, which can help reduce the risk of emergencies that require large-scale responses.

### 10.2 Employment Statistics

#### 10.2.1 Economic Industries

The major employers in Essex (by industry) are as follows:

##### **Manufacturing Industry**

- AtlasTube
- EnerQuest Services
- Sellick Equipment
- Delta Wire

##### **Healthcare Industry**

- Revera Long-Term Care

##### **Logistics Industry**

- Robinson Transport & Warehousing

## **Industrial Services**

- Essex Weld Solutions

### **10.2.2 Commute Times**

Most residents employed in Essex's labour force drive to work and report an average work commute of less than 30 minutes.

### **10.2.3 Unemployment Rate**

According to the 2021 Statistics Canada census, the unemployment rate in Essex is 15.7 per cent (compared to the provincial average of 12.2 per cent).

## **10.3 Tourism**

The Essex community attracts a significant number of tourists, especially during the summer.

The main tourist attractions in Essex are as follows:

- aquatic amenities (including Lake Erie, which tourists make use of for boating and swimming activities)
- golf courses
- hiking and walking trails
- cycling trails
- local shops
- wineries
- Harrow Fair
- Essex Fun Fest

## **10.4 Agriculture and Food Manufacturing**

Essex has established the Heritage Farm program, which recognizes family-owned farms which have been operating for over fifty years. According to the town's website, "heritage farms are an important element of [the town's] local history and celebrate family legacy."<sup>2</sup>

Essex also has the equipment and resources to support the various facets of food manufacturing, including food processing, packaging, warehousing, distribution, retail,

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<sup>2</sup> <https://www.essex.ca/en/discover/heritage-farm-program.aspx>

and food service.

### 10.5 Risks Identified by the Economic Profile

Table 32 summarizes the risks identified by the economic profile for Essex.

Table 32. Economic profile risk summary.

Risk	Likelihood	Consequence	Risk Level
Fire/explosion in industrial occupancy	Likely	Moderate	<b>Moderate</b>
Fire in commercial occupancy	Likely	Minor	<b>Moderate</b>
Fire in downtown core	Possible	Moderate	<b>Moderate</b>

For more information about these risks, refer to the following sections of this CRA:

- Section 12: This section contains the risk level matrix used to calculate the overall likelihood levels and risk scores for the indicated risks.
- Section 13: This section contains the RTPs developed for the indicated risks.

## 11.0 Past Loss and Event History Profile

### 11.1 Context of a Past Events and Loss History Profile

As per OFM-TG-02-2019, a past loss and event history profile examines statistics about the fires and other emergencies a community has experienced in recent years.

Completing a past loss and event history profile involves the following tasks:

- Analyze the number and types of responses, injuries, deaths, and dollar losses.
- Assess previous response data.
- Compare local fire loss statistics with provincial fire loss statistics.

The data in a past loss and event history profile provides valuable insights regarding the trends, circumstances, behaviours, locations, and occupancies involved with previous fires. This information can guide a fire department as it develops public education initiatives and code inspection and enforcement programs to address the high-risk demographics and occupancies in its community.

A fire department should also review response data about its non-fire calls (such as responses to motor vehicle collisions and medical calls) to determine the level of risk and frequency of those emergencies. By reviewing response data about both fire calls and non-fire calls, a fire department gains an overall understanding of the type and level of fire protection services its community requires.

### 11.2 Loss History in the Town of Essex, 2018 to 2022

The past loss and event history profile for Essex assesses the town's fire loss statistics from the past five years (2018 to 2022).

Tables 33 to 37 show the following statistics for Essex:

- the number of fires in Essex per building group
- the percentage of total fires in Essex per building group
- the percentage of total fires in Ontario per building group
- the amount of dollar loss in Essex per building group
- the number of injuries and deaths caused by fires in Essex per building group
- the known causes of dollar loss fires in Essex per building group

Note: As of this CRA, provincial dollar loss data for 2022 is unavailable.



Table 33. Fire loss statistics in the Town of Essex for 2018.

Occupancy	Fires	Essex %	ON %	\$ Loss	Injuries	Deaths	Causes
Group A (Assembly)	0	0%	2%	\$0	0	0	• N/A
Group B (Detention, Care, and Treatment)	1	7%	1%	\$0	0	0	• Cooking
Group C (Residential)	9	60%	47%	\$557,000	0	0	• Cutting/welding • Smoking materials
Groups D & E (Commercial and Mercantile)	0	0%	4%	\$0	0	0	• N/A
Group F (Industrial)	0	0%	5%	\$0	0	0	• N/A
Other	5	33%	42%	\$54,000	0	0	• Undetermined • Electrical
<b>Totals</b>	<b>15</b>			<b>\$611,000</b>	<b>0</b>	<b>0</b>	

Table 34. Fire loss statistics in the Town of Essex for 2019.

Occupancy	Fires	Essex %	ON %	\$ Loss	Injuries	Deaths	Causes
Group A (Assembly)	0	0%	2%	\$0	0	0	• N/A
Group B (Detention, Care, and Treatment)	0	0%	1%	\$0	0	0	• N/A
Group C (Residential)	7	50%	46%	\$82,500	0	0	<ul style="list-style-type: none"> <li>• Cutting/welding</li> <li>• Smoking materials</li> <li>• Cooking</li> <li>• Candles</li> <li>• Suspected arson</li> </ul>
Groups D & E (Commercial and Mercantile)	2	14%	4%	\$21,000	0	0	<ul style="list-style-type: none"> <li>• HVAC malfunction</li> <li>• Smoking materials</li> </ul>
Group F (Industrial)	0	0%	5%	\$0	0	0	• N/A
Other	5	36%	42%	\$22,000	0	0	<ul style="list-style-type: none"> <li>• Undetermined (vehicle)</li> <li>• Electrical</li> <li>• Mechanical</li> </ul>
<b>Totals</b>	<b>14</b>			<b>\$125,500</b>	<b>0</b>	<b>0</b>	

Table 35. Fire loss statistics in the Town of Essex for 2020.

Occupancy	Fires	Essex %	ON %	\$ Loss	Injuries	Deaths	Causes
Group A (Assembly)	0	0%	2%	\$0	0	0	• N/A
Group B (Detention, Care, and Treatment)	0	0%	1%	\$0	0	0	• N/A
Group C (Residential)	14	58%	49%	\$577,850	0	0	<ul style="list-style-type: none"> <li>• Electrical appliances</li> <li>• Exposures</li> <li>• Woodstove</li> <li>• Arson</li> </ul>
Groups D & E (Commercial and Mercantile)	0	0%	4%	\$0	0	0	• N/A
Group F (Industrial)	0	0%	5%	\$0	0	0	• N/A
Other	10	42%	41%	\$103,000	0	0	<ul style="list-style-type: none"> <li>• Electrical</li> <li>• Mechanical</li> <li>• Arson</li> </ul>
<b>Totals</b>	<b>24</b>			<b>\$680,850</b>	<b>0</b>	<b>0</b>	

Table 36. Fire loss statistics in the Town of Essex for 2021.

Occupancy	Fires	Essex %	ON %	\$ Loss	Injuries	Deaths	Causes
Group A (Assembly)	1	5%	2%	\$5,000	0	0	<ul style="list-style-type: none"> <li>Electrical</li> </ul>
Group B (Detention, Care, and Treatment)	0	0%	1%	\$0	0	0	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Group C (Residential)	11	58%	49%	\$308,000	0	0	<ul style="list-style-type: none"> <li>Undetermined</li> <li>Exposures</li> <li>Accidental</li> <li>Smoking materials</li> <li>Electrical</li> </ul>
Groups D & E (Commercial and Mercantile)	0	0%	4%	\$0	0	0	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Group F (Industrial)	0	0%	5%	\$0	0	0	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Other	7	37%	39%	\$120,000	0	0	<ul style="list-style-type: none"> <li>Mechanical</li> <li>Electrical</li> <li>Arson</li> </ul>
<b>Totals</b>	<b>19</b>			<b>\$433,000</b>	<b>0</b>	<b>0</b>	

Table 37. Fire loss statistics in the Town of Essex for 2022.

Occupancy	Fires	Essex %	ON %	\$ Loss	Injuries	Deaths	Causes
Group A (Assembly)	0	0%	No data.	\$0	0	0	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
Group B (Detention, Care, and Treatment)	0	0%	No data.	\$0	0	0	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
Group C (Residential)	7	39%	No data.	\$1,040,500	0	0	<ul style="list-style-type: none"> <li>• Undetermined</li> <li>• Electrical</li> <li>• Exposures</li> <li>• Smoking materials</li> </ul>
Groups D & E (Commercial and Mercantile)	0	0%	No data.	\$0	0	0	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
Group F (Industrial)	2	11%	No data.	\$1,400,000	0	0	<ul style="list-style-type: none"> <li>• Undetermined</li> <li>• Cutting/welding</li> </ul>
Other	9	50%	No data.	\$260,000	0	0	<ul style="list-style-type: none"> <li>• Mechanical</li> <li>• Electrical</li> <li>• Arson</li> <li>• Overheated engine</li> </ul>
<b>Totals</b>	<b>18</b>			<b>\$2,700,500</b>	<b>0</b>	<b>0</b>	

Table 38 summarizes the information from the above tables. (Note: The Ontario percentage in this table only includes data from 2018 to 2021.)

Table 38. Total fire loss statistics in the Town of Essex, 2018 to 2022.

Occupancy	Fires	Essex %	ON %	\$ Loss
Group A (Assembly)	1	1%	2%	\$5,000
Group B (Detention, Care, and Treatment)	1	1%	1%	\$0
Group C (Residential)	48	53%	48%	\$2,565,850
Groups D & E (Commercial and Mercantile)	2	2%	4%	\$21,000
Group F (Industrial)	2	2%	5%	\$1,400,000
Other	36	40%	41%	\$559,000
<b>Totals</b>	<b>90</b>			<b>\$4,550,850</b>

### 11.3 Response Statistics for Essex Fire and Rescue

#### 11.3.1 Fire Call Responses and Non-Fire Call Responses

Table 39 lists the Department's number of fire call responses from 2018 to 2022, noting the number of fires per category, as well as the number of non-fire calls, such as road/highway incidents and false alarms.

Table 39. Fire responses in the Town of Essex, 2018 to 2022.

Year	Loss Fires: Structures	Loss Fires: Other	Loss Fires: Vehicles	No Loss Fires	Non-Fire Calls	Total Calls
2018	10	4	1	1	306	322
2019	9	5	0	0	259	273
2020	14	10	0	0	275	299
2021	12	7	0	0	286	305
2022	9	9	0	0	310	328
<b>Total</b>	<b>54</b>	<b>35</b>	<b>1</b>	<b>1</b>	<b>1,436</b>	<b>1,527</b>
<b>Average</b>	<b>10.8</b>	<b>7</b>	<b>0.2</b>	<b>0.2</b>	<b>287.2</b>	<b>305.4</b>

### 11.3.2 Response Times

According to its records, the Department responded to 1,527 incidents from January 2018 to December 2022.

Table 40 uses the Department's response data for the emergency responses it completed from 2018 to 2022 to show the Department's average response times (dispatch time to on-scene time) for those years.

Table 40. Average response times, 2018 to 2022.

Year	Calls Reviewed	Average Minutes per Call
2018	322	9m 46s
2019	273	9m 26s
2020	299	9m 42s
2021	305	9m 31s
2022	328	9m 42s
<b>2018 to 2022</b>	<b>1,527</b>	<b>9m 38s</b>

### 11.4 Risks Identified by the Past Loss and Event History Profile

As noted above, the Department responded to 91 fires between 2018 and 2022. Some of the fires that occurred in residential and commercial occupancies occurred in the downtown core of Essex Centre.

Table 41 summarizes the risks identified by the past loss and event history profile for Essex.

Table 41. Past loss and event history profile risk summary.

Risk	Likelihood	Consequence	Risk Level
Fire in residential occupancy	Almost certain	Minor	<b>Moderate</b>
Fire in vulnerable occupancy	Likely	Moderate	<b>Moderate</b>
Road/highway incident	Almost certain	Minor	<b>Moderate</b>
Fire/explosion in industrial occupancy	Likely	Moderate	<b>Moderate</b>
Fire in commercial occupancy	Likely	Minor	<b>Moderate</b>
Fire in downtown core	Possible	Moderate	<b>Moderate</b>
Fire in assembly occupancy	Possible	Moderate	<b>Moderate</b>



For more information about these risks, refer to the following sections of this CRA:

- Section 12: This section contains the risk level matrix used to calculate the overall likelihood levels and risk scores for the indicated risks.
- Section 13: This section contains the RTPs developed for the indicated risks.

## 12.0 Scoring Methodology and Risk Matrix

### 12.1 Context of Risk Scores

The Loomex Group determined risk scores for the hazards it identified in Essex by assessing each threat's likelihood and consequence levels. This process involved using a hazard identification and risk assessment ("HIRA") scoring methodology developed by Emergency Management Ontario ("EMO"). However, The Loomex Group modified the consequence portion of the HIRA scoring system (as discussed below) to ensure that the scoring system in this CRA reflects the realities of delivering fire protection services.

### 12.2 Likelihood Scoring

The first component of the risk-scoring process is likelihood scoring. Likelihood levels are determined by thoroughly examining the results of the nine community profiles reviewed during a CRA's development. Particular focus is given to the findings of the past loss and event history profile.

Table 42 explains each level of risk likelihood.

Table 42. Risk matrix likelihood levels.

Likelihood	Category	Rate of Occurrence	Likelihood Per Year
1	Rare	Occurs every 100 years or more.	Less than 1%
2	Very Unlikely	Occurs every 50 to 99 years.	1–2%
3	Unlikely	Occurs every 20 to 49 years.	2–5%
4	Probable	Occurs every five to 19 years.	5–20%
5	Likely	Occurs within a five-year period.	21–99%
6	Certain	The hazard occurs annually.	100%

### 12.3 Consequence Scoring

The second component of the risk score process is consequence scoring. To complete the consequence scoring for this CRA, The Loomex Group used eight of the ten consequence categories in EMO's HIRA methodology (as defined in Table 43).

Table 43. Risk matrix consequence levels.

Consequence Type	No Consequence	Low Consequence	Moderate Consequence	High Consequence
Life safety	Not likely to result in injuries or fatalities.  No life safety issues.	Medical treatment may be required, but no fatalities are involved.  Minor treatment or limited hospitalization may be required.	Extensive injuries occur and hospitalization is required.  A fatality may be involved.	Many severe injuries requiring hospitalization have occurred.  Multiple fatalities may be involved.
Evacuation	Not likely to result in an evacuation, a shelter-in-place order, or people stranded.	A small or localized portion of the population is evacuated, sheltered-in-place, or stranded.	A moderate and generally localized portion of the population is evacuated, sheltered-in-place, or stranded.	A large or widespread portion of the population is evacuated, sheltered-in-place, or stranded.
Psychosocial	Not likely to result in significant impacts on an individual’s mental health and emotional well-being.	Moderate or generally short-term impacts on the mental health and emotional well-being of one or more people.	Significant and possibly long-term impacts on the mental health and emotional well-being of one or more people.	Widespread and possibly long-term impacts on the mental health and emotional well-being of the community.
Property damage	Not likely to result in property damage.	Could cause minor to moderate property damage.	Severe but localized property damage.	Widespread or severe damage to multiple properties.
Critical infrastructure	Not likely to disrupt assets or services.	Could cause a minor disruption of assets or services.	Could cause major but localized, short-term disruptions to critical infrastructure services.	Could cause widespread, severe, and ongoing disruptions of assets or services.
Environmental	Not likely to result in environmental damage.	Could cause localized but reversible environmental damage.  A quick cleanup is possible.	Could cause major but reversible environmental damage.  Clean-up efforts are difficult.	Could cause severe, irreversible environmental damage.  Clean-up efforts are not possible.
Economic	Not likely to disrupt business or financial activities.	Could cause minor disruptions to businesses or financial activities.  A minor disruption to the local economy is possible.	Could result in losses for one or more businesses.  Could result in other negative consequences for the regional or local economy.	Could result in losses for an industry.  Could cause severe economic impacts on the community or region.
Reputational	Not likely to result in significant legal, political, or reputational impacts.	Likely to result in limited or short-term legal, political, or reputational impacts.	Likely to result in significant or long-term legal, political, or reputational impacts.	Likely to result in significant or lasting legal, political, or reputational impacts.

The Loomex Group calculated consequence scores for this CRA by using the following weighting structure:

- High consequence: Score of 3
- Moderate consequence: Score of 2
- Low consequence: Score of 1
- No consequence: Score of 0

In the life safety category, The Loomex Group multiplied the consequence score by a factor of 3, making 9 the maximum score for this category. The heavier overall weighting for this category is due to the potential for severe life safety consequences during a front-line emergency response.

## 12.4 Total Risk Scoring

Each hazard's overall risk level is calculated by multiplying its likelihood score by its consequence score.

After multiplying the likelihood and consequence scores, each risk is categorized by its total risk score (as defined in Table 44).

Table 44. Risk level categories.

Category	Total Score
Very Low	1 to 30
Low	31 to 60
Moderate	61 to 90
High	91 to 120
Very High	121 to 150
Extreme	151 to 180

## 12.5 Risks Identified in the Town of Essex

Table 45 lists the public safety risks identified in Essex. The table presents the information as a risk matrix, which ranks the risks based on the severity of their total risk scores (as per the methodology defined above).

Table 45. Risk matrix for the Town of Essex.

Risk	Likelihood Score	Life Safety Consequence	Evacuation Consequence	Psychosocial Consequence	Property Damage Consequence	Critical Infrastructure Consequence	Environmental Consequence	Economic Consequence	Reputational Consequence	Consequence Score	Total Risk Score	Risk Level
Severe weather event	6	6	3	2	2	2	2	2	1	20	120	High
Fire in residential occupancy	6	9	1	1	1	1	1	0	1	15	90	Moderate
Fire in vulnerable occupancy	5	6	1	2	2	1	1	2	2	17	85	Moderate
Road/highway incident	6	6	1	1	1	2	1	1	1	14	84	Moderate
Fire/explosion in industrial occupancy	5	6	2	1	2	1	1	2	1	16	80	Moderate
Fire in commercial occupancy	5	6	1	1	2	1	1	2	1	15	75	Moderate
Critical infrastructure failure	6	3	1	1	1	2	1	2	1	12	72	Moderate
Fire in downtown core	4	6	1	2	2	1	1	2	1	16	64	Moderate
Fire in assembly occupancy	4	6	1	2	2	1	1	2	1	16	64	Moderate

## 13.0 Risk Treatment Plans

### 13.1 Overview of Risk Treatment Plans

The following RTPs address the fire and life safety risks identified in Essex. There is one RTP for each risk.

Each RTP begins by identifying which community profile is applicable to the risk under discussion. The RTP then presents administrative and operational observations about the risk and considers the following five questions:

1. What evidence is there to support the need for services that address this risk?
2. Does the current treatment meet the community's needs and expectations?
3. Is the community capable of delivering the required services?
4. Is there a way to make the community safer?
5. Are there any emerging risks the Department cannot manage or is not managing?

Based on the answers to those questions, the RTP recommends at least one of the following actions to address the risk under discussion:

1. Avoid: Eliminate the hazard.
2. Mitigate: Reduce the likelihood or impact of the risk.
3. Accept: Take no action.
4. Transfer: Transfer the risk to another party.
5. Share: Transfer part of the risk's ownership to another party.

All recommended actions include appropriate risk management strategies, covering topics such as:

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

The RTPs then list the resources and timelines needed to implement the strategies.

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

## 13.2 Severe Weather Event

**Risk Level: High**

**Risk Score: 120**

### Applicable Community Profile

This risk was identified by the critical infrastructure profile and the hazard profile.

### Current Treatment, Capability, and Services Provided

- The Department responds to all types of weather-related emergencies in Essex, including snowstorms and windstorms.
- If severe weather damages any infrastructure in Essex, the Department provides rescue/evacuation services and establishes a safety zone (if necessary) until the proper authority arrives to repair or isolate the damaged infrastructure.

### Administrative and Operational Risks, Concerns, and Observations

- If a severe weather event causes damage to any buildings or infrastructure in Essex, it may take time for the proper authority to arrive at the scene of the damage.
- Severe weather can last for many days. If Essex experiences a prolonged severe weather event, the Department's firefighters may struggle to balance their personal and work commitments with their emergency response duties.

### Determining Appropriate Fire Protection Services

#### What evidence is there to support the need for services that address this risk?

Essex has experienced several severe weather events in the last few years, including snowstorms, tornadoes, and localized flooding. Some incidents caused significant damage to homes and farms. Other incidents caused traffic issues on the nearby highways, which impacted the town's main roadways.

#### Does the current treatment meet the community's needs and expectations?

The current treatment seems to meet the community's needs and expectations.

#### Is the community capable of delivering the required services?

In most cases, the Department can deliver the required services. However, responding to a prolonged severe weather event may put a strain on the Department's firefighters and resources.

If the Department needs additional resources or specialized assistance during a severe

weather event, it can receive support through its mutual aid agreement.

**Is there a way to make the community safer?**

The Department can continue providing public education about the importance of emergency preparedness, including what to do before, during, and after an emergency.

The Department can ensure that Essex continues conducting annual emergency management exercises.

**Are there emerging risks that the Department cannot manage or is not managing?**

As of this CRA, there are no unmanaged emerging risks.

**Recommended Risk Treatment Action and Strategy**

Mitigate

- The Department should continue providing public education about the importance of emergency preparedness, including what to do before, during, and after an emergency.

**Resources Needed**

- Implementing this RTP will require the Department's time and resources.
- Preparing and distributing public education information (such as flyers and handouts about 72-hour emergency kits) will require resources.

**Timeline**

Ongoing

- The Department should incorporate the strategies in this RTP into its regular operations.



### 13.3 Fire in Residential Occupancy

**Risk Level: Moderate**

**Risk Score: 90**

#### Applicable Community Profile

This risk was identified by the building stock profile, demographic profile, and past loss and event history profile.

#### Current Treatment, Capability, and Services Provided

- The Department responds to fires in Essex's residential occupancies and provides exterior and interior fire attack services and rescue services (as needed).
- If an incident occurs that exceeds the Department's resources or capabilities, the Department can request additional or specialized assistance through its mutual aid agreement.
- The Department inspects residential occupancies in Essex when it receives a complaint or request. The Department maintains details of all inspections in its records, and it sends follow-up notices as required.
- As part of its Alarm for Life program, the Department checks, tests, and replaces smoke/CO alarms in Essex's residential occupancies (as needed). The Department uses the results of its Alarm for Life program to identify which residential occupancies in Essex require more targeted fire prevention and public education initiatives.
- The Department uses social media to distribute fire safety messages. The Department also distributes fire safety information at various public events.

#### Administrative and Operational Risks, Concerns, and Observations

- The Department should increase the frequency of inspections at the high-density dwellings and multi-residential dwellings in Essex to verify that those occupancies fulfill their code compliance and safety planning obligations.

#### Determining Appropriate Fire Protection Services

##### What evidence is there to support the need for services that address this risk?

The Department has responded to 48 residential fires in Essex over the past five years, which represents 53 per cent of the total structure fires that occurred in the town during those years.

The 48 residential fires in Essex over the past five years resulted in a combined dollar loss of approximately \$2,265,850.

**Does the current treatment meet the community's needs and expectations?**

The current treatment seems to meet the community's needs and expectations.

**Is the community capable of delivering the required services?**

In most cases, the Department should have the capacity to deliver the required services. If an incident occurs that exceeds the Department's resources or capabilities, the Department can request additional or specialized assistance through its mutual aid agreement.

**Is there a way to make the community safer?**

The Department can continue to conduct regular inspections of Essex's multi-unit residential occupancies, motels/hotels, and other boarding/lodging occupancies. The Department can also expand its door-to-door smoke/CO alarm program. However, completing those tasks requires a significant amount of the Department's time and resources.

The Department can also continue delivering fire safety messages to the residents of Essex by attending community events and relaying important messages through social media and similar means.

**Are there emerging risks that the Department cannot manage or is not managing?**

As of this CRA, there are no unmanaged emerging risks.

### **Recommended Risk Treatment Action and Strategy**

**Mitigate**

- The Department should conduct regular inspections of select residential occupancies in Essex, such as multi-unit dwellings and hotels/motels.
- The Department should continue delivering fire safety messages by attending community events and relaying information through various news outlets.

### **Resources Needed**

- Implementing this RTP will require the Department to allocate an adequate amount of time and resources to ongoing public education initiatives.

### **Timeline**

**Ongoing**

- The Department should incorporate the strategies in this RTP into its regular operations.

### 13.4 Fire in Vulnerable Occupancy

**Risk Level: Moderate**

**Risk Score: 85**

#### Applicable Community Profile

This risk was identified by the building stock profile, demographic profile, and past loss and event history profile.

#### Current Treatment, Capability, and Services Provided

- The Department responds to fires in Essex's vulnerable occupancies and provides exterior and interior fire attack services and rescue services (as needed).
- The Department provides code enforcement services and public education services for the vulnerable occupancies in Essex.
- If an incident occurs that exceeds the Department's resources or capabilities, the Department can request additional or specialized assistance through its mutual aid agreement.
- The Department conducts annual inspections of the vulnerable occupancies in Essex.
- The Department witnesses and audits the annual fire drills in Essex's vulnerable occupancies.

#### Administrative and Operational Risks, Concerns, and Observations

- The Department has not completed the pre-incident planning process for the vulnerable occupancies in Essex.

#### Determining Appropriate Fire Protection Services

##### What evidence is there to support the need for services that address this risk?

There has been one vulnerable occupancy fire in Essex in the past five years.

As of this CRA, there is a significant number of seniors living in Essex. 21.9 per cent of Essex's population is age 65 or older, which is higher than the provincial average of 18.5 per cent. Essex has 252 residents living in vulnerable occupancies.

##### Does the current treatment meet the community's needs and expectations?

The current treatment seems to meet the community's needs and expectations.

### **Is the community capable of delivering the required services?**

The Department can complete the required inspections of the vulnerable occupancies in Essex. The Department also has the capability to witness and audit the required fire drills at the town's vulnerable occupancies. However, completing those tasks requires a significant amount of the Department's time and resources.

### **Is there a way to make the community safer?**

The Department can conduct the pre-incident planning process for all vulnerable occupancies in Essex. Doing so will provide information that the Department can use to enhance the safety of building occupants and responding fire crews.

### **Are there emerging risks that the Department cannot manage or is not managing?**

As of this CRA, there are no unmanaged emerging risks.

## **Recommended Risk Treatment Action and Strategy**

### **Mitigate**

- The Department should continue completing annual inspections of the vulnerable occupancies in Essex.
- The Department should ensure that all vulnerable occupancies in Essex have a current fire safety plan in place.
- The Department should verify that the staff working in Essex's vulnerable occupancies understand their fire safety and emergency response obligations.
- The Department should continue witnessing and auditing the annual fire drills at the vulnerable occupancies in Essex.
- The Department should complete the pre-incident planning process for all vulnerable occupancies in Essex.

## **Resources Needed**

- Implementing this RTP will require the Department's time and resources.

## **Timeline**

### **Ongoing**

- The Department should incorporate the strategies in this RTP into its regular operations.

### 13.5 Road/Highway Incident

**Risk Level: Moderate**

**Risk Score: 84**

#### Applicable Community Profile

This risk was identified by the geographic profile, critical infrastructure profile, hazard profile, and past loss and event history profile.

#### Current Treatment, Capability, and Services Provided

- The Department responds to several types of road/highway incidents, such as motor vehicle collisions, and provides fire suppression and auto extrication/rescue services (as needed).
- If an incident occurs that exceeds the Department's resources or capabilities, the Department can request additional or specialized assistance through its mutual aid agreement.
- The Department can respond at the operations level to incidents involving hazardous materials.
- The Department delivers vehicle rescue services at the technician level.

#### Administrative and Operational Risks, Concerns, and Observations

- Many of the visitors and seasonal residents travelling through Essex are likely unfamiliar with the town's road network.
- Commercial vehicles travel on the roads that run through Essex, which increases the risk of road/highway incidents.
- Some vehicles travelling in and through Essex may be transporting hazardous materials.

#### Determining Appropriate Fire Protection Services

##### What evidence is there to support the need for services that address this risk?

There is a high traffic volume on the county roads and local highways that run through Essex. Some of the vehicles travelling on those roads may be transporting hazardous materials. If one of those vehicles is involved in an accident, it could result in the release of hazardous substances that have the potential to cause severe harm to people and the environment.

**Does the current treatment meet the community's needs and expectations?**

The current treatment seems to meet the community's needs and expectations.

**Is the community capable of delivering the required services?**

In most cases, the Department should have the capacity to deliver the required services. If an incident occurs that exceeds the Department's resources or capabilities, the Department can request additional or specialized assistance through its mutual aid agreement.

**Is there a way to make the community safer?**

The Department can ensure that its personnel receive training about vehicle firefighting, auto extrication/rescues, and hazardous materials responses.

The Department can also ensure that its fire crews receive training about responding to incidents that involve electric vehicles.

**Are there emerging risks that the Department cannot manage or is not managing?**

As of this CRA, there are no unmanaged emerging risks.

**Recommended Risk Treatment Action and Strategy**

Mitigate

- The Department should continue providing ongoing training to its personnel about vehicle firefighting, auto extrication/rescues, and hazardous materials responses.
- The Department should ensure that its personnel receive training about responding to incidents that involve electric vehicles.

**Resources Needed**

- Implementing this RTP will require the Department's time and resources.

**Timeline**

Ongoing

- The Department should incorporate the strategies in this RTP into its regular operations.

### 13.6 Fire/Explosion in Industrial Occupancy

**Risk Level: Moderate**

**Risk Score: 80**

#### Applicable Community Profile

This risk was identified by the building stock profile, economic profile, and past loss and event history profile.

#### Current Treatment, Capability, and Services Provided

- The Department responds to fires in Essex's industrial occupancies and provides exterior and interior fire attack services and rescue services (as needed).
- If an incident occurs that exceeds the Department's resources or capabilities, the Department can request additional or specialized assistance through its mutual aid agreement.

#### Administrative and Operational Risks, Concerns, and Observations

- There are several industrial buildings in Essex. Those facilities may potentially experience a fire, explosion, or hazardous materials spill. If one of those incidents occurs, the town may need to issue evacuation orders for some of its residents (depending on wind conditions and the incident's severity).
- The Department is not conducting a consistent number of inspections of the industrial occupancies in Essex.
- The Department has completed pre-incident planning for some industrial occupancies in Essex. However, the Department needs time to complete pre-incident planning at the remaining industrial occupancies.

#### Determining Appropriate Fire Protection Services

##### What evidence is there to support the need for services that address this risk?

The Department has responded to two industrial fires in the past five years. These incidents resulted in a dollar loss of approximately \$1,400,000.

##### Does the current treatment meet the community's needs and expectations?

The current treatment seems to meet the community's needs and expectations. However, if the Department does not conduct regular inspections of Essex's industrial occupancies, it may not become aware of potential risks, which could prevent the Department from fully meeting the community's needs and expectations in the future.

### **Is the community capable of delivering the required services?**

The Department can deliver the required services for small-scale incidents. If a large-scale incident occurs, the Department can request additional or specialized assistance through its mutual aid agreement.

### **Is there a way to make the community safer?**

The Department can inspect the industrial occupancies in Essex on a regular basis.

The Department can complete the pre-incident planning process for the industrial occupancies in Essex. Doing so will provide information that the Department can use to enhance the safety of building occupants and responding fire crews. (Note: Depending on the type of occupancy or its operations, pre-planning can be an extensive and time-consuming task.)

The Department can review the fire safety plans and the material safety data sheets at the industrial occupancies in Essex. Doing so will help the Department determine which resources it will need during emergency responses at those sites.

### **Are there emerging risks that the Department cannot manage or is not managing?**

The Department is not conducting routine inspections of the industrial occupancies in Essex. As a result, emerging, unidentified risks may exist at those sites.

## **Recommended Risk Treatment Action and Strategy**

### **Mitigate**

- Ensure the Department has the time and resources needed to inspect the industrial occupancies in Essex.
- The Department should complete the pre-incident planning process for the industrial occupancies in Essex.
- The Department should review the fire safety plans and the material safety data sheets (as applicable) at the industrial occupancies in Essex.

## **Resources Needed**

- Implementing this RTP will require the Department's time and resources.

## **Timeline**

### **Ongoing**

- The Department should incorporate the strategies in this RTP into its regular operations.



### 13.7 Fire in Commercial Occupancy

**Risk Level: Moderate**

**Risk Score: 75**

#### Applicable Community Profile

This risk was identified by the building stock profile, economic profile, and past loss and event history profile.

#### Current Treatment, Capability, and Services Provided

- The Department responds to fires in Essex's commercial occupancies and provides exterior and interior fire attack services and rescue services (as needed).
- If an incident occurs that exceeds the Department's resources or capabilities, the Department can request additional or specialized assistance through its mutual aid agreement.
- The Department conducts fire inspections of the commercial occupancies in Essex.

#### Administrative and Operational Risks, Concerns, and Observations

- The Department has had limited time and resources to deliver a fire prevention program that includes regular fire safety inspections and public education initiatives for the commercial occupancies in Essex.
- The Department may face challenges completing all inspections required to verify that the commercial occupancies in Essex maintain code compliance and up-to-date safety planning.
- Some commercial occupancies in Essex have mixed-uses or contain residences. Those buildings may require the Department to conduct re-inspections in order to verify that the occupancies comply with applicable code regulations.

#### Determining Appropriate Fire Protection Services

##### What evidence is there to support the need for services that address this risk?

The Department has responded to two commercial occupancy fires over the past five years. Those incidents resulted in a combined dollar loss of approximately \$21,000.

##### Does the current treatment meet the community's needs and expectations?

Some components of the current treatment meet the community's needs and expectations. However, the Department does not inspect commercial occupancies in Essex frequently.

**Is the community capable of delivering the required services?**

The Department can deliver the required services for small-scale incidents. If a large-scale incident occurs, the Department may need to request additional or specialized assistance through its mutual aid agreement.

**Is there a way to make the community safer?**

The Department can increase its number of commercial occupancy inspections, which will help identify each building's level of code compliance. However, if the Department increases how frequently it conducts commercial occupancy inspections, it may require additional resources.

The Department can also complete the pre-incident planning process for the commercial occupancies in Essex. Doing so will provide information that the Department can use to enhance the safety of building occupants and responding fire crews.

**Are there emerging risks that the Department cannot manage or is not managing?**

The Department does not inspect the commercial occupancies in Essex on a routine basis. As a result, emerging, unidentified risks may exist at those sites.

**Recommended Risk Treatment Action and Strategy**

Mitigate

- Ensure the Department has the time and resources needed to inspect the commercial occupancies in Essex on a regular basis.
- The Department should complete the pre-incident planning process at the commercial occupancies in Essex.

**Resources Needed**

- Implementing this RTP will require the Department's time and resources.

**Timeline**

Ongoing

- The Department should incorporate the strategies in this RTP into its regular operations.

### 13.8 Critical Infrastructure Failure

**Risk Level: Moderate**

**Risk Score: 72**

#### Applicable Community Profile

This risk was identified by the critical infrastructure profile.

#### Current Treatment, Capability, and Services Provided

- The Department responds to some types of CI failures, such as downed hydro lines and gas leaks.
- If there is any damaged CI in Essex, the Department provides a safety zone (and evacuation assistance, if necessary) until the proper authorities arrive to isolate or repair the CI.

#### Administrative and Operational Risks, Concerns, and Observations

- The Department must ensure that its personnel receive training to recognize the risks posed by CI failures.
- The Department must ensure that its personnel receive training to recognize the safety precautions needed when responding to CI failures.
- Lengthy power outages can severely affect Essex's vulnerable occupancies and public services.

#### Determining Appropriate Fire Protection Services

##### What evidence is there to support the need for services that address this risk?

Critical infrastructure can fail for many reasons, including lack of maintenance or damage from external forces, such as severe weather.

Essex has experienced several CI failures in the past five years due to severe weather events. In the summer of 2023, a severe weather event occurred in Essex, and it resulted in a prolonged disruption of the town's services.

##### Does the current treatment meet the community's needs and expectations?

The current treatment seems to meet the community's needs and expectations.

##### Is the community capable of delivering the required services?

The Department has the capacity to provide a safety zone (and evacuation assistance,

if necessary) until the proper authorities arrive to isolate or repair any damaged CI in Essex.

**Is there a way to make the community safer?**

Essex can continue monitoring and maintaining the CI under its control.

The Department can provide public education about the importance of having a 72-hour emergency kit.

**Are there emerging risks that the Department cannot manage or is not managing?**

As of this CRA, there are no unmanaged emerging risks.

**Recommended Risk Treatment Action and Strategy**

Mitigate

- The Department should provide public education (using a variety of platforms) about the importance of having a 72-hour emergency kit.
- The Department should continue offering applicable services as required.

Share

- Essex and the Department should continue working with the authorities who are responsible for the critical infrastructure in Essex.

**Resources Needed**

- Implementing this RTP will require the Department's time and resources.
- Preparing and distributing public education information (such as flyers and handouts about 72-hour emergency kits) will require resources.

**Timeline**

Ongoing

- The Department should incorporate the strategies in this RTP into its regular operations.

### 13.9 Fire in Downtown Core

**Risk Level: Moderate**

**Risk Score: 64**

#### Applicable Community Profile

This risk was identified by the geographic profile, economic profile, and past loss and event history.

#### Current Treatment, Capability, and Services Provided

- The Department responds to fires in Essex's downtown core and provides exterior and interior fire attack services and rescue services (as needed).
- If an incident occurs that exceeds the Department's resources or capabilities, the Department can request additional or specialized assistance through its mutual aid agreement.

#### Administrative and Operational Risks, Concerns, and Observations

- Essex's downtown core contains commercial occupancies and mixed commercial-residential occupancies.
- Many of the buildings in Essex's downtown core were built prior to the introduction of the OBC, which means they may not contain the required fire and life safety systems.
- Due to a lack of available time and resources, the Department is not conducting routine inspections of the buildings in Essex's downtown core. As a result, some buildings may contain unidentified risks or hazards.

#### Determining Appropriate Fire Protection Services

##### What evidence is there to support the need for services that address this risk?

In the past five years, the Department has responded to several emergency calls at the commercial and residential occupancies in Essex's downtown core.

##### Does the current treatment meet the community's needs and expectations?

Some components of the current treatment meet the community's needs and expectations. However, the Department is not completing regular inspections of the occupancies in Essex's downtown core.

### **Is the community capable of delivering the required services?**

The Department can deliver the required services for small-scale incidents. If a large-scale incident occurs, the Department may need to request additional or specialized assistance through its mutual aid agreement.

### **Is there a way to make the community safer?**

The Department can conduct regular inspections of the occupancies in Essex's downtown core to verify that their life safety systems remain functional and compliant with the OFC. The Department can also verify that all applicable occupancies have an approved fire safety plan.

The Department can also complete the pre-incident planning process for applicable occupancies in Essex's downtown core. Doing so will provide information that the Department can use to enhance the safety of building occupants and responding fire crews. However, completing those tasks requires a significant amount of the Department's time and resources.

### **Are there emerging risks that the Department cannot manage or is not managing?**

The Department is not conducting routine inspections of the buildings in Essex's downtown core. As a result, some buildings may contain unidentified risks or hazards.

## **Recommended Risk Treatment Action and Strategy**

### **Mitigate**

- The Department should conduct routine inspections of the commercial occupancies in Essex's downtown core.
- The Department should verify that all applicable occupancies in Essex's downtown core have an approved, up-to-date fire safety plan.
- The Department should complete the pre-incident planning process for all applicable occupancies in Essex's downtown core.
- The Department should deliver fire safety messages to the occupants of buildings in Essex's downtown core.

## **Resources Needed**

- Implementing this RTP will require the Department's time and resources.

## **Timeline**

### **Ongoing**

- The Department should incorporate the strategies in this RTP into its regular operations.

### 13.10 Fire in Assembly Occupancy

**Risk Level: Moderate**

**Risk Score: 64**

#### Applicable Community Profile

This risk was identified by the building stock profile and demographic profile.

#### Current Treatment, Capability, and Services Provided

- The Department responds to fires in Essex's assembly occupancies and provides exterior and interior fire attack services and rescue services (as needed).
- If an incident occurs that exceeds the Department's resources or capabilities, the Department can request additional or specialized assistance through its mutual aid agreement.

#### Administrative and Operational Risks, Concerns, and Observations

- Some assembly occupancies have large occupant loads, on-site cooking facilities, and licenses to serve alcohol. If a fire occurs, variables like these can increase the potential for injuries or death.
- The Department has limited resources to conduct regular inspections of the assembly occupancies in Essex.
- The Department has not completed the pre-incident planning process for the assembly occupancies in Essex.

#### Determining Appropriate Fire Protection Services

##### What evidence is there to support the need for services that address this risk?

The Department has responded to one assembly occupancy fire in the past five years. The incident was a small electrical fire.

Because the Department has not conducted regular inspections of the assembly occupancies in Essex, the sites may contain unidentified risks that could lead to future incidents.

##### Does the current treatment meet the community's needs and expectations?

The current treatment seems to meet the community's needs and expectations.

**Is the community capable of delivering the required services?**

The Department can deliver the required services for small-scale incidents. If a large-scale incident occurs, the Department can request additional or specialized assistance through its mutual aid plan.

**Is there a way to make the community safer?**

The Department can conduct regular inspections of Essex's assembly occupancies to verify that their life safety systems remain compliant with the OFC. The Department can also verify that all applicable assembly occupancies have an approved fire safety plan. Additionally, the Department can verify that the supervisory staff working in the assembly occupancies understand their fire safety responsibilities.

The Department can also complete the pre-incident planning process for the assembly occupancies in Essex. Doing so will provide information that the Department can use to enhance the safety of building occupants and responding fire crews.

**Are there emerging risks that the Department cannot manage or is not managing?**

The Department is not conducting routine inspections of Essex's assembly occupancies. As a result, emerging, unidentified risks may exist at those sites.

**Recommended Risk Treatment Action and Strategy**

Mitigate

- The Department should conduct regular inspections of the assembly occupancies in Essex.
- The Department should complete the pre-incident planning process for all assembly occupancies in Essex.
- The Department should verify that all assembly occupancies in Essex have a fire safety plan (as applicable).
- The Department should verify that the supervisory staff working at the assembly occupancies in Essex understand their fire safety responsibilities.

**Resources Needed**

- Implementing this RTP will require the Department's time and resources.

**Timeline**

Ongoing

- The Department should incorporate the strategies in this RTP into its regular operations.



## Appendix A: Resources

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

- Fire Protection and Prevention Act, 1997
- Ontario Fire Marshal Technical Guideline 02-2019
- Ontario Regulation 213/07: Fire Code
- Ontario Regulation 378/18: Community Risk Assessments
- Statistics Canada 2016 Census of Population
- Statistics Canada 2021 Census of Population
- The Corporation of the Town of Essex By-Law 2020-01: Being a By-law to Establish and Regulate the Town of Essex Fire and Rescue Services
- Town of Essex Official Plan
  - Note: This document was undergoing a review at the time of this community risk assessment's development.
- Town of Essex Strategic Plan, 2023–2027
- Town of Essex Official Website

## Appendix B: List of Abbreviations

This community risk assessment uses the following acronyms and abbreviations:

**CI:** critical infrastructure

**Council:** Town of Essex Council

**CRA:** community risk assessment

**Department, the:** Essex Fire and Rescue

**E&R By-law:** establishing and regulating by-law

**EMO:** Emergency Management Ontario

**EOC:** emergency operations centre

**FPPA:** Fire Prevention and Protection Act

**HIRA:** hazard identification and risk assessment

**LWC:** lightweight construction systems

**OBC:** Ontario Building Code

**OFC:** Ontario Fire Code

**OFM:** Ontario Fire Marshal

**RTP:** risk treatment plan

## Appendix C: Glossary of Terms

There are varying definitions for the terms used in risk assessments and risk management. This community risk assessment uses the following definitions from Emergency Management Ontario's glossary of terms:

**Assessment:** The evaluation and interpretation of available data as a basis for decision-making.

**Catastrophe:** An emergency of particularly severe proportions.

**Community:** A generic term that refers to municipalities and First Nations communities.

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

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

**Hazard:** A phenomenon, substance, human activity, or condition that may cause a loss of life, an injury, or other health impacts. A hazard can also result in property damage, service loss, social and economic disruptions, and environmental damage. Hazards can be natural, technological, or human-caused, or some combination of these.

**Hazardous material:** A substance (gas, liquid, or solid) capable of causing harm to people, property, the environment, the economy, or services. Materials with toxic, flammable, or explosive properties are considered hazardous.

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

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

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

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

**Risk assessment:** A process used to identify and evaluate potential risks by analyzing specific hazards and estimating the likelihood and consequences of their occurrence.

## Appendix D: Copy of Fire Marshal Directive 2022 – 001

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

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

#### **Background**

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

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

Building stock profile, including any building-related risks known to the fire department, must be considered in the development of Community Risk Assessment required under O. Reg. 378/18 - Community Risk Assessments (CRA)<sup>ii</sup>.

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

#### **Directive**

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

- Ensure that information on the presence of truss and lightweight construction systems (lightweight construction) in a community's building stock, that is known and documented in the Community Risk Assessment, is used to inform fire

suppression pre-planning activities conducted within the community:

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

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

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

### **Rationale**

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

Jon Pegg  
Ontario Fire Marshal  
February 25, 2022

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<sup>i</sup> Buildings constructed using:

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

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

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

## Appendix E: Accessible Data from Figures

For accessibility purposes, Table 46 presents the data from Figure 1 as a table:

Table 46. Data from figure 1.

Risk Category	Risk Score	Risk Level
Severe weather event	120	High
Fire in residential occupancy	90	Moderate
Fire in vulnerable occupancy	85	Moderate
Road/highway incident	84	Moderate
Fire/explosion in industrial occupancy	80	Moderate
Fire in commercial occupancy	75	Moderate
Critical infrastructure failure	72	Moderate
Fire in assembly occupancy	64	Moderate
Fire in downtown core	64	Moderate



# essex

## Fire Master Plan

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Prepared by:

THE **LOOMEX** GROUP

Page 173 of 299

# **Town of Essex Fire Master Plan**

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## **Disclaimer**

The Loomex Group acted in the role of a third-party consultant to develop this fire master plan. The company conducted impartial reviews and evaluated all findings against established legislation and industry best practices. Every effort has been made to ensure that the information provided in this fire master plan is accurate as of the date the document was finalized.

All findings and recommendations presented in this fire master plan are objective and are intended to represent the best interests of the Town of Essex and its fire protection needs. However, some of the recommendations may require additional study or consideration.

Although this fire master plan provides a long-term strategic vision for the Town of Essex, the town must keep the plan current with the community's needs and circumstances. At a minimum, the Town of Essex should review this document annually to ensure the information it contains remains up to date. In addition, the Town of Essex should completely revise this fire master plan every five years.

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## Executive Summary

### Purpose

In July 2023, the Town of Essex contracted The Loomex Group to develop a fire master plan (“**FMP**”) that identifies and evaluates Essex’s current and anticipated fire protection needs.

This FMP has the following goals:

- Assess the fire protection services that Essex currently receives.
- Provide data that Essex can use to make informed decisions about the safety of its residents, businesses, visitors, and firefighters.
- Provide strategies and identify resources that Essex can use to manage its current and anticipated fire protection needs.
- Recommend ways that Essex can address its fire protection needs adequately and cost-effectively.

The Town of Essex and Essex Fire and Rescue (“**the Department**”) can reference this FMP when making policy, organizational, capital, and operational decisions for the immediate term (0 to 1 year), short-term (1 to 5 years), and long-term (5 to 10 years).

### Process

The FMP development process included the following components:

- Evaluate the Department’s organizational structure, programs, and levels of service.
- Analyze Essex’s current risks, needs, and circumstances.
- Compare Essex’s past fire loss with current trends to estimate future needs.

The Loomex Group also met with stakeholders from Essex and the Department to gain a first-hand perspective about the community and the Department’s operations.

After completing all reviews and stakeholder meetings, The Loomex Group consolidated its findings and developed the FMP document. Each section of the document focuses on a specific area of the Department’s operations.

### Findings

After reviewing the results of the FMP development process, The Loomex Group identified strengths in the Department’s operations, as well as challenges affecting its delivery of fire protection services.

The Loomex Group noted that Department has an effective operational model and delivers a high level of service to the community. In addition, the Department's fire management team has promoted a workplace that emphasizes safety, customer service, and pride in ownership.

As of this FMP, the most significant challenges facing the Department are as follows:

- Under its current structure, the Department will find it difficult to prioritize the recruitment and retention of volunteer firefighters.
- The Department's training division lacks the capacity to provide the training that Department's personnel need to obtain applicable certification requirements.
- Station 3 – Harrow is at the end of its life cycle and will not be able to support the Department's anticipated future needs.

In order to present the complete findings of the FMP development process clearly, each section of this FMP highlights ways the Department can maintain its strengths while addressing areas for improvements.

### **Recommendations**

This FMP contains 24 recommendations for the Department and the Essex Town Council ("**Council**") to consider. The recommendations focus on several areas, including the following:

- How to enhance the Department's fire prevention division.
- How the Department can invest in the Harrow community by replacing Station 3 – Harrow. Such an investment will require appropriate funding and planning.
- How to enhance the Department's training division to ensure the Department's personnel can obtain the applicable certification levels.

Unfortunately, there are no easy solutions that allow fire departments to significantly reduce operating costs and still provide sufficient protection from fires and other emergencies. As such, The Loomex Group has developed recommendations that prioritize the safety of Essex's residents and firefighters. However, The Loomex Group has also ensured that the recommendations are within Essex's means to implement and include ways the town can save money wherever possible.

Overall, the recommendations in this FMP outline strategies and resources that will help the Department provide an appropriate level of service to the community now and in the coming years.



## Summary of Recommendations

### Purpose of Recommendations

The recommendations in this FMP present strategies designed to help the Department accomplish the following objectives:

- Meet legislative obligations.
- Adhere to best practices.
- Enhance operational effectiveness.
- Protect the safety of community residents, visitors, and businesses.
- Protect firefighter safety.

### Additional Considerations

In addition to presenting strategies for the Department, the recommendations consider the following questions:

- Does the recommendation need to be implemented in order to satisfy a mandatory compliance requirement?
- Does Council need to approve the recommendation before it is implemented?
- Does the recommendation need to be included in the Department's budget through the regular budgeting process?
- What is the suggested timeframe for implementing the recommendation?
  - Immediately: Implement the recommendation within one year.
  - Short-term: Implement the recommendation within one to five years.
  - Long-term: Implement the recommendation within five to ten years.
  - Ongoing: Incorporate the recommendation into the Department's regular operations.

The answers to these questions give Essex a practical schedule for implementing this FMP's recommendations.

Table 1 collects the recommendations found in this FMP.

List of Recommendations

Table 1. List of recommendations.

#	Section	Recommendation	Considerations
3-1	Overview of Essex Fire and Rescue	The Fire Chief should prepare a report for Council’s consideration and approval that recommends changing the administrative assistant role from a part-time position to a full-time position.	Mandatory: No Council approval: Yes Budget impact: Yes Timeframe: Short-term
3-2	Overview of Essex Fire and Rescue	The Fire Chief should prepare a report for Council’s consideration and approval that recommends hiring a full-time support firefighter after the contract for the current part-time position ends.	Mandatory: No Council approval: Yes Budget impact: Yes Timeframe: Long-term
5-1	By-laws	The Fire Chief should update the Town of Essex Establishing and Regulating By-law (as needed) if the Department implements any of the recommendations in this fire master plan.	Mandatory: Yes Council approval: Yes Budget impact: No Timeframe: Immediately
5-2	By-laws	The Fire Chief should complete an annual review of the Town of Essex Establishing and Regulating By-law to verify that it remains current with all emergency and non-emergency services the Department provides.	Mandatory: No Council approval: Yes Budget impact: No Timeframe: Ongoing
5-3	By-laws	The Fire Chief should review all fire service by-laws in the Town of Essex and update them to ensure they are current and applicable. The Fire Chief should then present all updated by-laws to Council for consideration and approval.	Mandatory: No Council approval: Yes Budget impact: No Timeframe: Short-term

#	Section	Recommendation	Considerations
5-4	By-laws	The Fire Chief should establish a schedule for reviewing all fire service by-laws in the Town of Essex on a regular basis.	Mandatory: No Council approval: No Budget impact: No Timeframe: Short-term
7-1	Stakeholder Engagement	The Fire Chief should review the results of the public survey to identify ways the Department's services can provide more value to the Town of Essex's residents and businesses.	Mandatory: No Council approval: No Budget impact: No Timeframe: Immediately
7-2	Stakeholder Engagement	The Fire Chief should review the results of the SWOT analysis to determine whether the Department should update its operations to incorporate suggestions provided during the analysis.	Mandatory: No Council approval: No Budget impact: No Timeframe: Immediately
8-1	Emergency Management	The Town of Essex should assign an individual from outside the Department to serve as either the primary or alternate community emergency management coordinator. Ideally, the incumbent should have an administrative background.	Mandatory: No Council approval: Yes Budget impact: No Timeframe: Short-term
8-2	Emergency Management	The Community Emergency Management Coordinator should continue organizing annual emergency management training and exercises for the Town of Essex Municipal Emergency Control Group. Both the training and exercises should continue to incorporate external resources in order to ensure all participants can practise fulfilling their assigned duties.	Mandatory: No Council approval: No Budget impact: No Timeframe: Ongoing
9-1	Occupational Health and Safety	The Fire Chief should form a committee to develop and manage a fitness program to complement the Department's existing wellness programs.	Mandatory: No Council approval: No Budget impact: Yes Timeframe: Short-term

#	Section	Recommendation	Considerations
9-2	Occupational Health and Safety	The Fire Chief and the wellness committee should explore the possibilities of forming a partnership with local fitness facilities to provide the Department’s firefighters with better access to fitness equipment.	Mandatory: No Council approval: Yes Budget impact: Yes Timeframe: Short-term
10-1	Fire Prevention	The Fire Chief should prepare a report for Council’s consideration and approval that recommends appointing a full-time training/prevention officer who will dedicate half of their work hours to managing the Department’s fire prevention division. The officer would also perform suppression duties during daytime hours (as needed).	Mandatory: No Council approval: Yes Budget impact: Yes Timeframe: Short-term
11-1	Levels of Service	The Fire Chief should review the Department’s medical tiered response agreement and update it accordingly. The Fire Chief should then submit the revised agreement to Council for consideration and approval.	Mandatory: No Council approval: Yes Budget impact: No Timeframe: Immediately
11-2	Levels of Service	The Fire Chief should keep track of all calls the Department receives for advanced services. If there is a significant number of calls for advanced services that the Department does not currently provide, the Fire Chief should prepare a report for Council’s consideration and approval that recommends updating the Department’s list of approved advanced services.	Mandatory: Yes Council approval: Yes Budget impact: Yes Timeframe: Short-term
12-1	Training	The Fire Chief should develop a process for having para-trainers assist with the Department’s training program.	Mandatory: No Council approval: No Budget impact: No Timeframe: Immediately
12-2	Training	The Fire Chief should establish a training committee to help plan and implement the Department’s training program.	Mandatory: No Council approval: No Budget impact: Yes Timeframe: Short-term

#	Section	Recommendation	Considerations
12-3	Training	The Fire Chief should explore opportunities that allow officers to complete training and obtain certifications beyond what the Department currently offers.	Mandatory: No Council approval: No Budget impact: Yes Timeframe: Immediately
12-4	Training	The Fire Chief should prepare a report that recommends appointing a full-time training/prevention officer who will dedicate half of their work hours to managing the Department's training and development program. The Fire Chief should then submit the report to Council for consideration and approval.	Mandatory: No Council approval: Yes Budget impact: Yes Timeframe: Short-term
13-1	Performance Standards and Operational Models	The Fire Chief should continue monitoring the Department's effective response force to determine whether the Department needs to increase its staffing levels, specifically during the daytime.	Mandatory: Yes Council approval: No Budget impact: No Timeframe: Ongoing
14-1	Fire Stations	The Fire Chief should develop a report for Council that recommends replacing Station 3 – Harrow with a new fire station at 2225 Roseborough Road. The report should include a cost analysis and outline the benefits of building a new fire station at the proposed site.	Mandatory: No Council approval: Yes Budget impact: Yes Timeframe: Short-term
15-1	Water Supply	The Fire Chief should ensure that the Department's tanker shuttle service meets all applicable fire service guidelines.	Mandatory: No Council approval: No Budget impact: No Timeframe: Ongoing
16-1	Asset Management	The Fire Chief should prepare a report for Council's consideration and approval that recommends continued investment in the Department's radio communications equipment. The report should address the state of the current radio system and indicate whether the Department should upgrade to fire-quality radios.	Mandatory: Yes Council approval: Yes Budget impact: Yes Timeframe: Short-term

#	Section	Recommendation	Considerations
16-2	Asset Management	The Fire Chief should attempt to form partnerships with external agencies to share the costs of radio purchases and increase interoperability.	Mandatory: No Council approval: No Budget impact: Yes Timeframe: Short-term

## 1.0 Introduction

### 1.1 Project Team Selection

The Loomex Group assembled a team of fire service specialists and emergency management professionals to complete this FMP.

Collectively, the members of the project team have decades of experience in the following areas:

- managing fire departments
- managing emergency services providers
- conducting organizational reviews
- developing strategic plans

The project team's range of expertise has ensured that each component of this FMP is informed by technical knowledge and hands-on industry experience.

### 1.2 Role of the Project Team

The Loomex Group's project team acted in the role of a third-party consultant throughout the FMP development process. In this capacity, the project team completed all reviews from an impartial perspective and evaluated all findings against established legislation and industry best practices.

All findings and recommendations presented in this FMP are objective and are intended to represent the best interests of Essex and its fire protection needs.

### 1.3 Approach and Methodology

#### 1.3.1 Initial Stakeholder Engagement

##### Start-up Meeting

The Loomex Group's project team began this FMP by meeting with the Fire Chief to review the project work scope and discuss the project's framework.

Following the start-up meeting, The Loomex Group developed a finalized version of the project framework, which the Fire Chief reviewed and approved.

##### Stakeholder Meeting

After the start-up meeting, The Loomex Group's project team began its stakeholder engagement sessions.

The project team met with the following stakeholders:

- Doug Sweet (CAO)
- Jake Morassut (Director of Community Services)
- Jason Pilon (Fire Chief)
- Rick Arnel (former Fire Chief)
- Jacey Brockman (Deputy Chief)
- officers and firefighters of the Department
- fire administrative staff

Stakeholder engagement formed an essential part of the FMP development process, as it allowed the project team to meet with the individuals responsible for maintaining the safety of the Essex community and the effectiveness of the Department.

### **1.3.2 Data Collection and Review**

#### **Document Reviews**

The FMP development process involved reviewing various administrative, legislative, and operational information about Essex and the Department, such as:

- applicable legislation, by-laws, and agreements
- history of the Department
- organizational structure of the Department
- asset management plans
- response protocols
- operating budgets, capital budgets, and firefighter compensation
- mapping of municipal boundaries, station locations, and response data
- population development data and studies
- Town of Essex Community Risk Assessment (2023)

#### **Site Visits and Engagement Sessions**

In addition to document reviews, The Loomex Group's project team spent time in Essex to observe the community from a first-hand perspective. The project team also conducted a SWOT analysis session with the Department's personnel.

Overall, the site visits and engagement sessions provided invaluable insights into the Department's operations, which informed several of the recommendations in this FMP.



### 1.3.3 Drafting the Fire Master Plan

#### Core Content

After completing its data collection and reviews, The Loomex Group's project team analyzed its findings and began drafting the FMP. The team ensured that the draft document covered the following core areas:

- current and future community needs
- compliance with legislation, by-laws, and best practices
- firefighter recruitment, training, and retention
- fire stations, apparatus, and equipment
- public education and code enforcement
- fire suppression
- technological needs (including dispatch and radio system needs)

As it completed the draft FMP, the project team kept the following considerations in mind:

- Are there actions the Department can take to better protect firefighter safety?
- Are there actions the Department can take to better protect the community's well-being?
- Are there opportunities for the Department to introduce shared services?
- Are there actions the Department can take to save or avoid costs?

The project team also identified baselines and benchmarks that the Department can use to perform an ongoing self-assessment of its service delivery capabilities.

The FMP development process also involved regular meetings with the Department's staff, which ensured the document benefited from continual stakeholder contributions and review.

#### Recommendations

Each recommendation in this FMP contains a strategy or action that the Department or Council can implement to address legislation, protect health and safety, or improve the Department's operations. The recommendations also indicate approval, timeline, and budgetary considerations.

By following this FMP's recommendations, the Department and Council will have information they can use to complete the strategic and budgetary planning needed to ensure Essex receives the appropriate fire protection services.

### **1.3.4 Finalizing the Fire Master Plan**

After completing the draft version of the FMP, The Loomex Group provided the document to the Fire Chief for review and comment. The Loomex Group's project team then updated the FMP accordingly.

As per the terms of the project, The Loomex Group will issue the finalized FMP to the Fire Chief. The Loomex Group will then meet with Council to present highlights and recommendations from the finalized document.

## 2.0 Overview of the Town of Essex

### 2.1 Formation

The current Town of Essex was created in 1999 through the amalgamation of the former towns of Essex and Harrow and the former townships of Colchester North and Colchester South.

### 2.2 Location

Essex is one of Canada's most southerly municipalities. According to Essex's official website, the town experiences hot summers and mild winters, and there is rich agricultural land throughout the region.

Essex comprises four urban communities:

- **Essex Centre:** Essex Centre is the largest urban community in Essex. It contains many local shops and services, and its location provides easy access to the area's main transportation routes.
- **Harrow:** Harrow contains prime agricultural land and is home to Canada's research centre for greenhouse vegetables and field crops. Harrow also offers several local shops and services, and the community is a hub for some of the region's largest manufacturing companies, such as Sellick and Atlas Tube.
- **Colchester:** Colchester is a waterfront community on the shores of Lake Erie. The community has several popular attractions, including a marina, a public beach, several wineries, and the Lake Erie Waterfront Trail.
- **McGregor:** McGregor is a predominantly agricultural community. The area also hosts various outdoor sports and an annual music festival. McGregor is also home to the Essex County Steam and Gas Engine Museum.

Essex is also home to several other smaller communities.

### 2.3 Land Area

Essex is 277.53 square kilometres in area, with a population density of 76.4 persons per square kilometre.

Figure 1 shows a map of the Town of Essex.

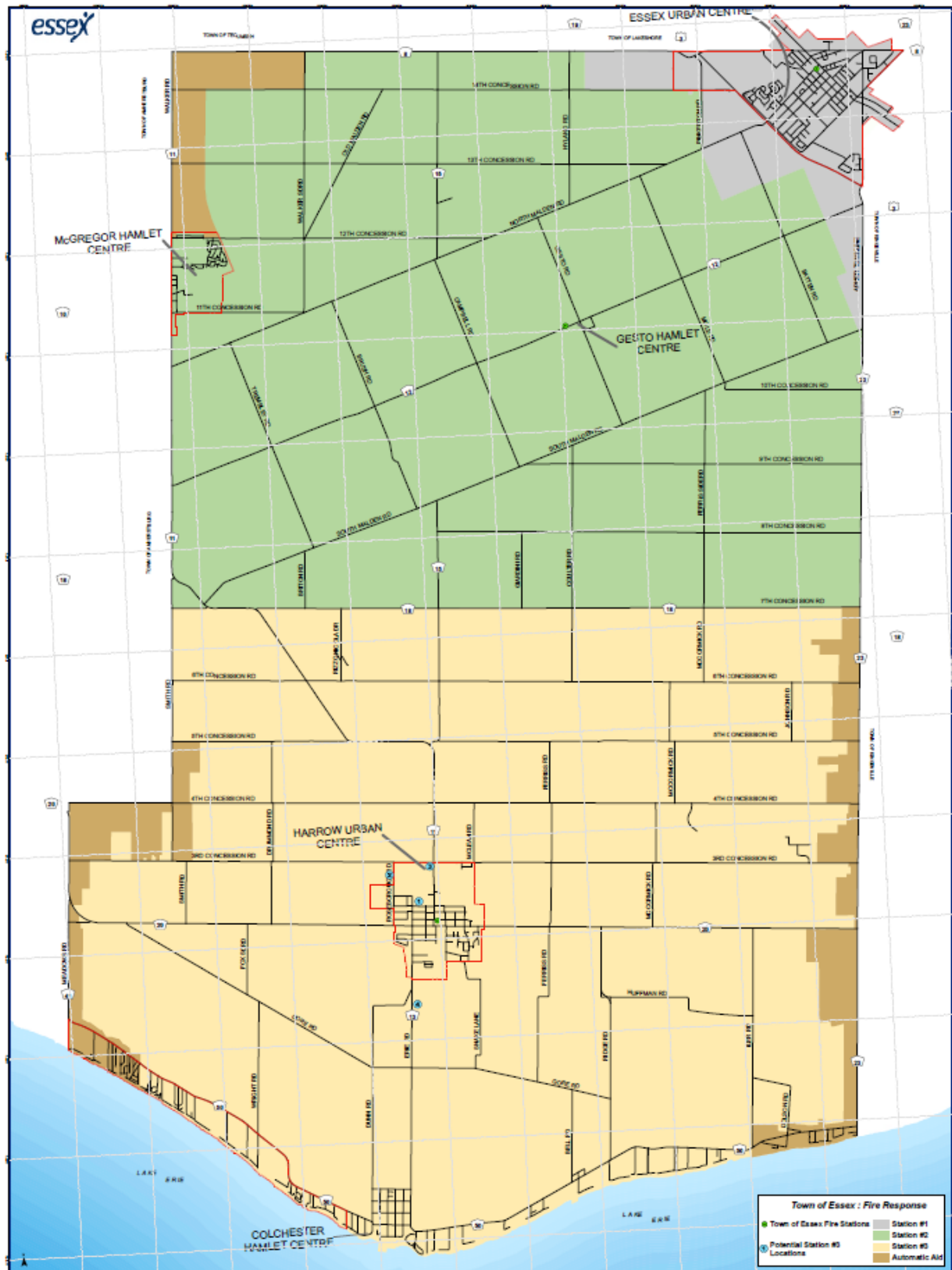


Figure 1. Map of the Town of Essex.

## 2.4 Population

According to Statistics Canada's 2021 Census of Population, the Town of Essex has a population of 21,216 year-round residents. Essex has the 85<sup>th</sup> largest population in Ontario and the 213<sup>rd</sup> largest population in Canada.

Essex's population increased by 3.9 per cent from 2016 to 2021. During this period, Ontario's population grew by 5.8 per cent, and Canada's population grew by 5.2 per cent.

In 2021, there were 8,391 private dwellings occupied by permanent residents of Essex, representing an increase of 3.8 per cent from 2016.

## 2.5 Age Distribution

Table 2 compares the age distribution in the Town of Essex to the Province of Ontario (based on the findings of the 2021 Statistics Canada census).

Table 2. Age distribution in the Town of Essex vs. the Province of Ontario.

Age Range	Essex	Ontario
0 to 14 years	15.3%	15.8%
15 to 64 years	62.8%	65.6%
65 years and over	21.9%	18.5%
85 years and over	2.6%	2.4%

Based on the census data, the average age in Essex is 44.1 (compared to the provincial average of 41.8). The median age in Essex is 46.8 (compared to the provincial average of 41.6).

The Department must remain aware of the number of older residents in the community, especially when it develops fire prevention and public education programs. If the Department relies solely on newer methods of communication (such as social media) to deliver messages, some older residents may not receive the messages, as seniors are more likely to rely on traditional methods of communication (such as local news broadcasts).

## 2.6 Language

According to the 2021 Statistics Canada census, Essex is a predominantly English-speaking community, with 92.6 per cent of its population identifying English as their first language. Overall, 99.8 per cent of the town's residents can hold a conversation in English, and 6.9 per cent are bilingual in English and French.

2.7 Level of Education

Table 3 compares the highest level of education in Essex to the provincial average (based on the findings of the 2021 Statistics Canada census).

Table 3. Education levels in the Town of Essex vs. the Province of Ontario.

Education Level	Essex	Ontario
No certificate	12.8%	15.3%
High school	28.9%	27.2%
Some post-secondary	38.5%	57.5%

### 3.0 Overview of Essex Fire and Rescue

#### 3.1 History of Essex Fire and Rescue

Since its founding in 1883, the Department has provided Essex with high-quality fire protection services. The Department's personnel have always been dedicated to protecting the safety of the town's residents, visitors, and property, especially during disasters such as the 1907 train explosion and the 1980 natural gas explosion.

As evidenced by the items displayed at its fire stations (such as the uniform patches and helmets shown in Figure 2), the Department takes pride in its history.



Figure 2. Items displayed at the fire departments in Essex.

Other items at the fire stations (such as the images of past fire apparatus, as shown in Figure 3) serve as reminders of how the Department has advanced through the decades to remain a modern, progressive organization.





Figure 3. Past fire apparatus used by Essex Fire and Rescue Services.

Overall, the items displayed at the Department's fire stations provide evidence of the Department's respect and admiration for its personnel and achievements, both past and present.

Today, fire departments recognize that preventing fires is a critical part of what it takes to protect a community and its residents and businesses. In recognition of the ultimate goal of the fire service, the Department works hard to ensure that it follows the mission statement that is posted in its fire stations:

The mandate of Essex Fire and Rescue Services is to provide fire protection services and emergency response, public fire and life safety education, and fire prevention initiatives to protect the lives and property of the citizens, businesses, and visitors to the town of Essex.

### 3.2 Structure of Essex Fire and Rescue

Essex Fire and Rescue is a volunteer fire department that operates out of three fire stations. Table 4 lists the location of each fire station and the number of personnel and apparatus at each facility.

Table 4. Essex Fire and Rescue: fire station details.

Station	Address	Year Built	# of Staff	# of Apparatus
Station 1 – Essex	55 Alice St. N	2013	1 Fire Chief 1 Deputy Fire Chief 1 Assistant Deputy Chief 18 volunteer firefighters 1 part-time support staff member 0.5 administrative support	6



Station	Address	Year Built	# of Staff	# of Apparatus
Station 2 – Gesto	3575 North Malden Rd.	2022	16 volunteer firefighters	3
Station 3 – Harrow	25 Centre St. E	1980	18 volunteer firefighters	5

For more information about the Department's fire stations and fire apparatus, refer to sections 14 and 16 of this FMP.

### 3.3 Department Personnel

#### 3.3.1 Number of Personnel

As of this FMP, the Department's full complement of 54 suppression staff includes the following members:

- 3 chief officers
- 3 volunteer district chiefs
- 12 volunteer captains
- 36 volunteer firefighters

Although volunteer numbers fluctuate, the Department strives to maintain a full complement of suppression staff. The Department also has a support staff of two part-time members.

The following subsections provide overviews of the Department's personnel and their respective duties.

#### 3.3.2 Fire Chief

In addition to the overall management of the Department, the Fire Chief's main responsibilities are as follows:

- fire suppression and emergency response
- training
- community relations
- emergency management (including acting as the community emergency management coordinator for Essex)
- budgets and funding allocation (including asset management, equipment purchasing, and volunteer firefighter forecasting and recruitment)

The Fire Chief is also responsible for collaborating with other emergency response agencies and municipal departments (as per the FPPA, corporate policies and procedures, by-laws, and other applicable legislation).

### **3.3.3 Deputy Chief**

The Deputy Chief works under the direction of the Fire Chief and has the following responsibilities:

- Coordinate the Department's training activities.
- Develop the Department's annual training schedule and lesson plans.
- Help the district chiefs and captains facilitate the Department's training program.
- Assume responsibility for managing the Department's compliance requirements with provincial and national standards, including NFPA 1001, levels 1 and 2.
- Ensure the Department is compliant with WHMIS regulations, OHSA requirements, and internal policies and procedures.
- Assist with ongoing recruitment and retention.
- Review the Department's performance standards (such as internal policies, procedures, and disciplinary matters) in accordance with applicable municipal policies and current legislation.
- Manage the Department's officer development program (including applicable course selection and bookings) to ensure the program complies with NFPA 1021, NFPA 1041, NFPA 1521, and NFPA 1561.
- Supervise the Department's personnel on and off the fireground to ensure they are operating in compliance with applicable legislation.
- Serve as an acting fire chief when the Fire Chief is absent.
- Oversee the Department's fire prevention activities.
- Enforce the Ontario Fire Code and related legislation (where applicable).
- Ensure the Department's fire apparatus and equipment comply with applicable safety standards.
- Carry out applicable emergency management duties in Essex (including acting as the town's alternate community emergency management coordinator).

### **3.3.4 Assistant Deputy Chief**

The Assistant Deputy Chief's focuses on the Department's various fire prevention, fire inspection, and public education services. The position also supports the Department's fire operations.

The Assistant Deputy Chief has the following responsibilities:

- Enforce the Ontario Fire Code and related legislation (where applicable).
- Conduct various inspections, including request, mandatory, fire safety, and vulnerable occupancy inspections.
- Conduct building inspections of the vulnerable occupancies in Essex.
- Maintain the Department's inspection records and reporting requirements.
- Use the results of building inspections to develop risk mitigation strategies and risk awareness for applicable occupancies, especially care and treatment occupancies and retirement homes.
- Maintain the Department's smoke/CO alarm awareness programs.
- Provide public education by participating in fairs, community events, station tours, school events, and other related functions.

In addition to these duties, the Assistant Deputy Chief provides support to the Deputy Chief and the Fire Chief as they perform their roles.

### **3.3.5 District Chiefs**

The Department has three district chiefs (one district for each of its fire stations). The district chiefs are volunteers within the organization, and they serve as a vital link between the Fire Chief, Deputy Chief, Assistant Deputy Chief, and firefighters.

Each district chief has the following responsibilities:

- Supervise the captains and firefighters under their command.
- Supervise the activities at their station, including all emergency operations.
- Assist the Fire Chief, Deputy Chief, and Assistant Deputy Chief (as needed) to help the Department operate effectively and compliantly with all applicable policies and legislation.

### **3.3.6 Fire Suppression Division**

The Department's fire suppression division comprises personnel from all three of its fire stations. Except for the Fire Chief, Deputy Chief, and Assistant Deputy Chief, all fire suppression personnel are volunteer firefighters. As of this FMP, the fire suppression division consists of 51 volunteer officers and firefighters.

The fire suppression division is responsible for completing suppression duties, fire prevention duties, and various public education duties.

### **3.3.7 Fire Prevention and Public Education Division**

The Department's fire prevention and public education division provides various fire and life safety education to the residents of Essex. The division has the following goals:

- Help the Department reduce injuries, fatalities, and property damage in Essex through proactive fire prevention initiatives.
- Help the Department meet applicable compliance requirements.

Some of the Department's proactive fire prevention initiatives include smoke/CO alarm programs, as well as events such as Emergency Preparedness Week and Fire Prevention Week.

As part of the fire prevention and public education division, the Assistant Deputy Chief is responsible for completing various inspections, including complaint, request, retrofit, self-initiated, and vulnerable occupancy inspections. The Assistant Deputy Chief is also responsible for verifying that the Department conducts its inspections in accordance with the FPPA and other applicable policies and legislation.

### **3.3.8 Administrative Assistant**

As of this FMP, the Department has one part-time administrative assistant who works 20 hours per week.

The administrative assistant's main responsibilities are as follows:

- Help the Fire Chief with various administrative tasks, such as reviewing insurance invoices and OFM reports.
- Complete data entry using the Standard Incident Reporting System.
- Ensure the Department's training and certification records are up to date and submitted to the proper authority (as required).
- Complete correspondence with various agencies, insurance companies, and the public on behalf of the Fire Chief, Deputy Chief, and Assistant Deputy Chief.
- Complete billing and finance reviews (including reviews of invoices and supplies) on a regular basis.
- Complete other general administrative duties for the Department (as required).

The administrative assistant plays a vital role in the Department. The position provides backup support for the Department's leadership personnel, which allows them to focus on their primary duties. However, a part-time work schedule does not give the administrative assistant enough time to complete all required duties. Going forward, the Department should consider updating the role to a full-time position.

### 3.3.9 Support Firefighter

As of this FMP, the Department has one part-time support firefighter. The position is funded by the Workplace Safety and Insurance Board through an agreement with the Department. The support firefighter works a five-day, 25-hours-per-week schedule.

The support firefighter is responsible for assisting the Fire Chief, Deputy Chief, and Assistant Deputy Chief with various tasks. The role's main responsibilities include the following duties:

- Complete vehicle movements.
- Inspect equipment and facilities.
- Inspect and repair various assets.
- Check, test, and clean various equipment, including PPE used by the Department's firefighters.

The assistance provided by the support firefighter benefits the Department in several ways:

- The additional support helps the Department complete its day-to-day operations.
- The additional support helps the Department's management team focus on their primary duties.
- The additional support helps reduce the workload assigned to the Department's volunteer firefighters, which supports retention rates.

Going forward, the Department should consider expanding the support firefighter role after the contract for the current position is terminated. For instance, it is in the Department's best interest to hire a full-time support firefighter. Doing so would ensure there is a dedicated staff member to focus on the needs of the Department and the volunteer firefighters.

The Department should also review its operational needs and the needs of its volunteer firefighters to identify other duties that it can assign to a full-time support firefighter. For instance, the support firefighter could serve as a facilities and equipment coordinator to help manage the Department's fire stations and vehicles.

### **3.4 Recommendations**

After assessing the Department's structure, The Loomex Group developed the following recommendations:

- 3-1. The Fire Chief should prepare a report for Council's consideration and approval that recommends changing the administrative assistant role from a part-time position to a full-time position.
- 3-2. The Fire Chief should prepare a report for Council's consideration and approval that recommends hiring a full-time support firefighter after the contract for the current part-time position ends.

## 4.0 Legislation and Standards

### 4.1 Overview of Legislation and Standards

In Ontario, fire departments must adhere to the following legislation:

- Fire Protection and Prevention Act, S.O. 1997 (“**FPPA**”)
- Occupational Health and Safety Act, R.S.O. 1990 (“**OHSA**”)
- Emergency Management and Civil Protection Act, R.S.O. 1990 (“**EMCPA**”)
- O. Reg. 332/12: Building Code (“**OBC**”)
- O. Reg. 213/07: Fire Code (“**OFC**”)
- Highway Traffic Act, R.S.O. 1990
- Municipal Act, S.O. 2001
- Municipal Freedom of Information and Protection of Privacy Act, R.S.O. 1990
- applicable municipal by-laws

The following standards and guidelines also influence how fire departments operate:

- National Fire Protection Association (“**NFPA**”) standards
- Ontario Fire Marshal (“**OFM**”) Public Fire Safety Guidelines
- Ontario Fire Service Health and Safety Committee’s firefighter guidance notes

Although it is not mandatory to follow the NFPA standards, OFM guidelines, and health and safety guidance notes, fire departments should strive to adhere to these standards wherever possible. Each set of policies provides benchmarks that fire departments can use to gauge the effectiveness of their operations and firefighter safety initiatives.

### 4.2 Requirements of the Fire Protection and Prevention Act

#### Context

The FPPA outlines the minimum standards that fire departments must meet. Various FPPA requirements also relate to other regulations and codes, such as the OFC and OBC, which deal with life safety systems.

Appointing a fire chief is one of the most important requirements a municipality must meet. Section 6 (3) of the FPPA states that a fire chief is the “person who is ultimately responsible to the council of [the] municipality that appointed him or her for the delivery of fire protection services.” This requirement means that fire chiefs are responsible for ensuring their fire departments meet the requirements of the FPPA.

## Findings

Table 5 lists some of the legislative requirements that all fire departments must meet. The table indicates if Essex is compliant with the stated requirements.

Table 5. Selected requirements the Fire Protection and Prevention Act.

Reference	Requirement	Compliant?
FPPA, 2 (2) (b)	"Establish a fire department."	Yes
FPPA, 2 (1) (a)	"Establish a program in the municipality which must include public education."	Yes
FPPA, 6 (1)	"Appoint a fire chief for the fire department."	Yes
OFC, Div. B, 1.1	Smoke/CO alarm program	Yes
O. Reg. 364/13	Vulnerable occupancy program	Yes
O. Reg. 365/13	Inspections completed upon complaint	Yes
O. Reg. 365/13	Inspections completed upon request	Yes
O. Reg. 378/18	Community risk assessment	Yes

As noted in the table above, the Department is currently compliant with the applicable requirements of the FPPA.

Going forward, the Department should strive to continue allocating the time and resources needed to meet its legislative obligations.



## 5.0 By-laws

### 5.1 Importance of By-laws

Over the years, many municipalities across Canada have been challenged in court over the decisions of their municipal councils. The challenges often relate to operational policies that determine how a given municipality's fire department provides its services and operates at fire scenes. One such challenge in the Province of Quebec resulted in a precedent-setting decision by the Supreme Court of Canada ("**SCC**").

In the 1989 case of *Laurentide Motel Ltd. v. Beauport*, the SCC found that Beauport, Quebec, was liable for a sizable portion of the fire loss that occurred at the Laurentide Motel in 1972. Prior to the 1980s, municipalities and fire departments were largely considered free from civil liability for firefighting efforts. An important aspect of determining liability was the issue of "Policy Decisions v. Operational Decisions." As a result of the SCC's 1989 decision, the City of Beauport had to pay over \$500,000, plus interest.

A summary of the Supreme Court Judgments reads as follows:

A client's negligence led to a fire that damaged the appellants' hotel complex in the city of Beauport. As soon as they arrived, the firefighters sprayed water from the fire truck onto the fire, but the water soon ran out owing to the impossibility of connecting with the hydrants. The latter, which were difficult to reach and covered with snow, were unusable because they were frozen or broken. It was not until some forty minutes later that water was finally obtained from the hydrants. The appellants brought an action for damages against the person who had set the fire and the respondent, alleging fault by the latter in fighting the fire, namely that its equipment had not been maintained and did not function properly, as well as fault by its employees in the performance of their duties.<sup>1</sup>

This FMP includes a summary of the *Laurentide Motel Ltd. v. Beauport* case as an object lesson for Council to consider when making decisions about fire protection services.

Council should note that the case summary identified water supply and negligence in firefighting operations as crucial issues. While there is no question that a client in the motel was responsible for causing the fire, the city's failure to maintain and operate effective fire protection services meant that the Beauport was partially responsible—and therefore liable—for most of the ensuing costs.

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<sup>1</sup> *Laurentide Motels Ltd. v. Beauport (City)*, 1 SCR 705 (1989).

In the Beauport ruling, the SCC determined that policy decisions made by a municipal council are mostly free from liability. The SCC made that decision because a municipal council is an elected body that communicates its decisions in ways that should be familiar and accessible to its community's citizens (such as by-laws, council minutes, or news reports). If most citizens are unhappy with their council's decisions, they can elect different councillors at the next election. Conversely, when operational decisions are made by fire departments, the public may not be aware of the specifics of those decisions. As a result, the public may have limited or no opportunity to question or change decisions that could adversely affect them.

Following the SCC ruling in the *Laurentide Motel Ltd. v. Beauport* case, many municipalities have updated their fire protection by-laws. The revisions give the local council the authority to make decisions about its community's fire protection services and policies rather than leaving those matters exclusively to the fire department.

## **5.2 Establishing and Regulating By-laws**

### **Context**

An establishing and regulating by-law ("**E&R By-law**") specifies which services the local fire department must provide to its community. The content of an E&R By-law is based on the recommendations of the fire department, which the local municipal council approves.

### **Findings**

As of this FMP, Essex's E&R By-law is By-law No. 2012.

### **Core Services**

Under By-law 2012, Council is responsible for approving the Department's core services, which include the following:

- fire suppression services
- fire prevention services
- fire safety education services
- mitigation and prevention services (regarding risks created by the presence of unsafe levels of carbon monoxide)
- communication services
- training services (regarding persons who provide fire protection services, rescue services, and emergency services, as well as the delivery of such services)

### **Specific Fire Protection and Emergency Services**

According to schedules “C” and “D” of By-law 2012, the Department must provide specific fire protection and emergency services, including:

- basic firefighting services (including structural and rescue services)
- vehicle rescue, extrication, and firefighting services
- grass, brush, and forestry firefighting services
- marine firefighting services (for small vessels)
- marine firefighting services (for large vessels)
- shore-based water and ice rescue services
- basic medical assistance (including CPR and defibrillation services)
- hazardous material response services (at the awareness level)
- emergency assistance (for police crews, ambulance crews, and the public)

### **Limited/Agreement Services**

Under By-law 2012, the Department provides services as part of the following agreements:

- mutual aid
- automatic aid
- fire protection agreements
- transportation incidents involving vehicles, trains, watercraft, and aircraft

### **Services Not Provided**

Under By-law 2012, the Department is not required to provide the following services:

- dive rescue services
- trench rescue services

### **5.3 Other By-laws**

In addition to By-law 2012, Essex has established the following fire protection by-laws:

- By-law 1399, a by-law regarding open-air burning.
- By-law 2040, a by-law regarding false alarms by-laws and applicable fee schedules.

- By-law 2011, a by-law regarding fireworks.
- By-law 299, a by-law regarding fire routes.
- By-law 1854, a by-law regarding a fire dispatch services with Windsor–Essex.
- By-law 2203 – A by-law regarding an emergency response plan for the Town of Essex.

### **By-law Considerations**

Some of the recommendations in this FMP will require Essex to revise its E&R by-law.

If the Department implements any recommendations that require Essex to update its by-laws, the Fire Chief must provide Council with an updated version of the E&R by-law for consideration and adoption.

### **5.4 Recommendations**

After assessing the by-laws in Essex, The Loomex Group developed the following recommendations:

- 5-1. The Fire Chief should update the Town of Essex Establishing and Regulating By-law (as needed) if the Department implements any of the recommendations in this fire master plan.
- 5-2. The Fire Chief should complete an annual review of the Town of Essex Establishing and Regulating By-law to verify that it remains current with all emergency and non-emergency services the Department provides.
- 5-3. The Fire Chief should review all fire service by-laws in the Town of Essex and update them to ensure they are current and applicable. The Fire Chief should then present all updated by-laws to Council for consideration and approval.
- 5-4. The Fire Chief should establish a schedule for reviewing all fire service by-laws in the Town of Essex on a regular basis.

## 6.0 Agreements

### 6.1 Overview of Agreements

Under the authority of Municipal Act, 2001, S.O. 2001, c. 25 and the FPPA, a municipality can enter into an agreement with another municipality to provide or receive a service.

As outlined in the OFM's Public Fire Safety Guidelines, there are several differences regarding the requirements for such agreements. The following subsections discuss those differences.

### 6.2 Mutual Aid Plans

#### Context

OFM Public Fire Safety Guideline 04-05-12: Mutual Aid states that mutual aid plans allow a participating fire department to request assistance from a neighbouring fire department that is also authorized to participate in a plan approved by the Fire Marshal.

A mutual aid plan specifies that municipalities providing service to the designated areas agree to assist each other in the event of an emergency. Section 7 of the FPPA states that the Fire Marshal may appoint fire coordinators to "establish and maintain a mutual aid plan under which the fire departments that serve the designated area agree to assist each other in the event of an emergency.

### 6.3 Automatic Aid Agreements

#### Context

OFM Public Fire Safety Guideline 04-04-12: Automatic Aid states that automatic aid agreements are considered in municipal areas where a fire department outside of a municipality is closer than the nearest fire department within the municipality.

Automatic aid agreements allow the closest fire department to respond to an incident regardless of municipal boundaries. These agreements reduce the time it takes for firefighters to arrive and extinguish a fire, which helps minimize property loss and maximize the protection of residents.

### 6.4 Fire Protection Agreements

#### Context

OFM Public Fire Safety Guideline 04-09-12: Fire Protection Agreements defines fire protection agreements as contracts between participating municipalities that address the specifics of providing or receiving fire services at a cost.

A municipality may enter into a fire protection agreement if it does not have an existing fire department and does not want to establish one. A fire protection agreement can provide a municipality with access to the following support and resources:

- specialized equipment
- staffing
- public education
- code enforcement
- various services

A municipality may also enter into a fire protection agreement to have multiple departments operating and managing a fire department jointly.

It is the responsibility of a municipal council to approve all fire protection agreements its municipality looks to establish.

## 6.5 Current Agreements

Table 6 presents the Department's current fire service agreements as listed in the E&R By-law 2012.

Table 6. Agreements in place with Essex Fire and Rescue.

Partner	Services Provided
Windsor Fire and Rescue Services	Fire protection agreement Hazardous materials response services
Kingsville Fire and Rescue	Water rescue entry/boat services
Kingsville Fire and Rescue	Ice water rescue services
Kingsville Fire and Rescue	High-angle rescue services
Kingsville Fire and Rescue	Low-angle rescue services
Provincial Heavy Urban Search and Rescue	Structural collapse response services
Tecumseh Fire Rescue Service	Confined space rescue services
Essex-Windsor EMS	Medical tiered response

## 7.0 Stakeholder Engagement

### 7.1 Engagement Sessions

The FMP development process included the following stakeholder engagement sessions:

- a series of meetings with the Fire Chief
- a series of meetings with the Deputy Chief
- a series of meetings with the Assistant Deputy Chief
- a series of meetings with the Department's personnel
- a follow-up survey for any firefighters and officers unable to attend the in-person SWOT analysis
- a meeting with the CAO
- a meeting with the Director of Community Services

The purpose of the engagement sessions was to collect first-hand insights about the Department and the Essex community from applicable stakeholders.

### 7.2 Public Survey

#### Context

The FMP development process included a short online survey designed to gather the opinions of Essex's residents and business owners regarding the fire protection services they receive.

The survey asked each respondent 15 questions related to the following topics:

- the respondent's previous interactions with the Department
- the respondent's general opinion of the Department
- the respondent's opinion on which fire protection services offered by the Department are most important

#### Findings

In total, 48 people responded to the online survey. According to the results of the online survey, residents and business owners in Essex have an overall positive impression of the Department.

Survey respondents ranked the importance of the Department's services as follows:

1. Fire responses (average score: 9.8 out of 10)
2. Responses to natural disasters in the community (average score: 9.3 out of 10)
3. Medical response (average score: 9.2 out of 10)
4. Vehicle collision response (average score: 8.9 out of 10)
5. Fire code enforcement (average score: 8.4 out of 10)
6. Conducting fire inspections for businesses (average score: 8.3 out of 10)
7. Fire prevention provided through public education (average score: 7.8 out of 10)
8. Smoke detector and carbon monoxide detector information (average score: 7.8 out of 10)
9. Conducting fire inspections for residences (average score: 6.6 out of 10)
10. Attending community events (average score: 5.9 out of 10)
11. Social media engagement (average score: 5.4 out of 10)

### **7.3 SWOT Analysis with Firefighters**

#### **Context**

A SWOT analysis is a planning method that organizations use to identify strengths, weaknesses, opportunities, and threats that affect their ability to achieve their goals. During a SWOT analysis, organizations examine both internal and external factors that may be helping or hindering their operations.

#### **Process**

The FMP development process included three SWOT analysis sessions for the Department's officers and firefighters. There were two evening sessions and one daytime session.

If any officers and firefighters were unable one of the three SWOT analysis sessions, they had the option of providing their thoughts and comments through an online survey or a face-to-face meeting. The online survey also allowed personnel to expand on their contributions to the SWOT analysis discussions (if desired).

#### **Findings**

Highlights and common themes from the SWOT analysis sessions (and other engagement opportunities) are as follows:

- The Department's officers and firefighters are committed to delivering high-quality emergency services to the Essex community.



- 
- The Department's officers and firefighters feel a deep connection to their individual fire stations, the Department as a whole, and the Essex community.
  - The Department is facing ongoing recruitment and retention concerns. To address those concerns, the firefighters suggested enhancing the Department's recognition program, which could potentially entice the Department's current staff to remain with the organization.
    - The firefighters did not identify any initiatives that could possibly bolster the recognition program.
  - The Department's personnel are satisfied with the capabilities and leadership provided by the Department's management team.
  - The Department's personnel believe that the level of morale in the Department has never been better.
  - In general, the Department's personnel are satisfied with their fire apparatus and equipment, and they believe that all equipment requests are treated as high-priority concerns. However, the personnel believe that some apparatus may not be providing the number of "seats" needed to carry responders to the scene of emergency calls. Moreover, personnel have concerns regarding future apparatus purchases to remedy the seating situation.
  - Some personnel recognize that the Department provides support through its Road to Mental Readiness program and its peer support programs. However, there is the feeling that the Department should introduce additional programs to address the overall health and wellness of its firefighters.

## **7.4 Recommendations**

After assessing the results of the stakeholder engagement sessions, The Loomex Group developed the following recommendations:

- 7-1. The Fire Chief should review the results of the public survey to identify ways the Department's services can provide more value to the Town of Essex's residents and businesses.
- 7-2. The Fire Chief should review the results of the SWOT analysis to determine whether the Department should update its operations to incorporate suggestions provided during the analysis.

## 8.0 Emergency Management

### 8.1 Overview of Emergency Management Compliance Requirements

Before they can receive their annual compliance recognition, municipalities must meet specific requirements of the EMCPA and O. Reg. 380/04: Standards.

Under the EMPCA, each municipality has the following obligations:

- Establish an emergency management program (“**EMP**”) and an EMP committee.
- Provide annual emergency management training to all members of the municipal emergency control group (“**MECG**”).
- Conduct an annual exercise that uses the EMP and involves all members of the MECG.
- Designate a primary and alternate community emergency management coordinator (“**CEMC**”).
- Review the community’s critical infrastructure annually (making updates as required).
- Review the community’s hazard identification and risk analysis annually (making updates as required).

The EMCPA states that municipalities are responsible for fulfilling these obligations, not fire departments. However, many municipalities appoint a member of their fire department’s senior management team to serve as their CEMC or alternate CEMC.

### 8.2 Community Emergency Management Coordinator

#### Findings

The Fire Chief is the CEMC for Essex, and the Deputy Chief is the town’s alternate CEMC.

Although the Department’s personnel have the requisite knowledge and skills to serve as the primary and alternate CEMCs for Essex, this setup presents a problem. When an emergency occurs, it is likely that one or both Department members will need to attend the emergency scene. If so, neither of Essex’s CEMCs will have the capacity to fulfill their required duties. Therefore, Essex should assign at least one of the CEMC positions to someone from outside the Department. Ideally, Essex should appoint someone with previous administrative experience, as this will help ensure the town can complete all required provincial compliance documentation.

### **8.3 Emergency Plans and Exercises**

#### **Findings**

The CEMC organizes all required emergency training and exercises for Essex. The CEMC has incorporated external resources for both the training and exercises, which has allowed all MECG members to practise fulfilling their assigned duties.

Essex has assessed the results of its HIRA to determine appropriate response procedures for the community. Essex has incorporated the Province of Ontario's Incident Management System model into its emergency response procedures.

The Fire Chief follows Essex's approved EMP and ensures that the Department has a prominent role in the administration of the town's ERP.

#### **8.4 Recommendations**

- 8-1. The Town of Essex should assign an individual from outside the Department to serve as either the primary or alternate community emergency management coordinator. Ideally, the incumbent should have an administrative background.
- 8-2. The Community Emergency Management Coordinator should continue organizing annual emergency management training and exercises for the Town of Essex Municipal Emergency Control Group. Both the training and exercises should continue to incorporate external resources in order to ensure all participants can practise fulfilling their assigned duties.

## 9.0 Occupational Health and Safety

### 9.1 Overview of Occupational Health and Safety

Fire departments must take occupational health and safety seriously. Firefighting is a challenging profession, and it is impossible to know what dangers a firefighter will face on any given day. Emergencies may escalate unexpectedly, involve harmful chemicals, or cause serious mental trauma to first responders.

Protecting the health and safety of firefighters is essential. It is imperative for each community to provide their firefighters with access to the necessary support and equipment. For instance, firefighters must always have access to the protective equipment they need to perform their duties, as they often need their gear at a moment's notice. All municipalities must also provide firefighters with respect and appropriate benefits for their service.

Fire departments should also ensure they take steps to protect the safety of their firefighters by implementing health and safety practices that are proactive rather than reactive.

#### 9.1.1 Essential Health and Safety Topics

This section of the FMP discusses the following topics from a health and safety perspective:

- legislation and best practices
- joint health and safety committee (“JHSC”)
- personal protective equipment (“PPE”)
- firefighter health and wellness
- competent supervisors and officer development
- driver training and licensing

### 9.2 Legislation and Best Practices

#### Context

Fire departments must comply with the OHSA and all associated regulations.

As a best practice, fire departments should also adhere to the firefighter guidance notes developed by the Ontario Fire Service Health and Safety Advisory Committee (which the Minister of Labour is responsible for reviewing and approving). The committee was formed under section 21 of the OHSA and comprises stakeholders from across Ontario.

## Findings

The Department takes a proactive approach to promoting and maintaining health and safety in the workplace. For example, the Fire Chief and representatives from the Department's fire stations organize and implement various health and safety initiatives throughout the year.

The Department has also established protocols in response to the requirements of the OHSA and related health and safety legislation. (The following subsections discuss a selection of those protocols.)

### 9.3 Joint Health and Safety Committee

#### Context

All fire departments should have a JHSC that includes representation from senior management personnel and firefighter personnel. (In some municipalities, the local fire department and municipal staff share a single health and safety committee.)

Ideally, a JHSC should perform monthly health and safety inspections and meet at quarterly intervals to discuss applicable concerns.

#### Findings

As of this FMP, the Department has a JHSC that is compliant with applicable OHSA requirements.

The JHSC comprises the Deputy Chief, a human resources manager, and representation from each of the Department's three stations. When the JHSC convenes at Station 2 – Gesto, a municipal staff member will also take part in the meeting, as the station's administrative assistant is a unionized employee of Essex.

As per its terms of reference (which are compliant with applicable regulations and by-laws), the JHSC takes all reasonable efforts to maintain a quarterly meeting schedule. If the JHSC cannot maintain this schedule, it is usually due to circumstances outside of the group's control (such as restrictions implemented during the COVID-19 pandemic). The JHSC also ensures that it completes regular station inspections and documents all relevant findings.

During its meetings, the JHSC will review the Department's operational guidelines and safety-related procedures in order to identify areas that require amendments. By doing so, the JHSC helps ensure that the Department remains up to date with current fire scene procedures, fire station protocols, and equipment recommendations. In addition, the group verifies that the Department is incorporating applicable OHSA requirements into its training program and fire ground operations.

Shortly after each meeting, the JHSC finalizes the minutes from the meeting and posts the information on the Department's health and safety boards, which are located at each of its fire stations. Figure 4 shows an example of the one of the health and safety boards.

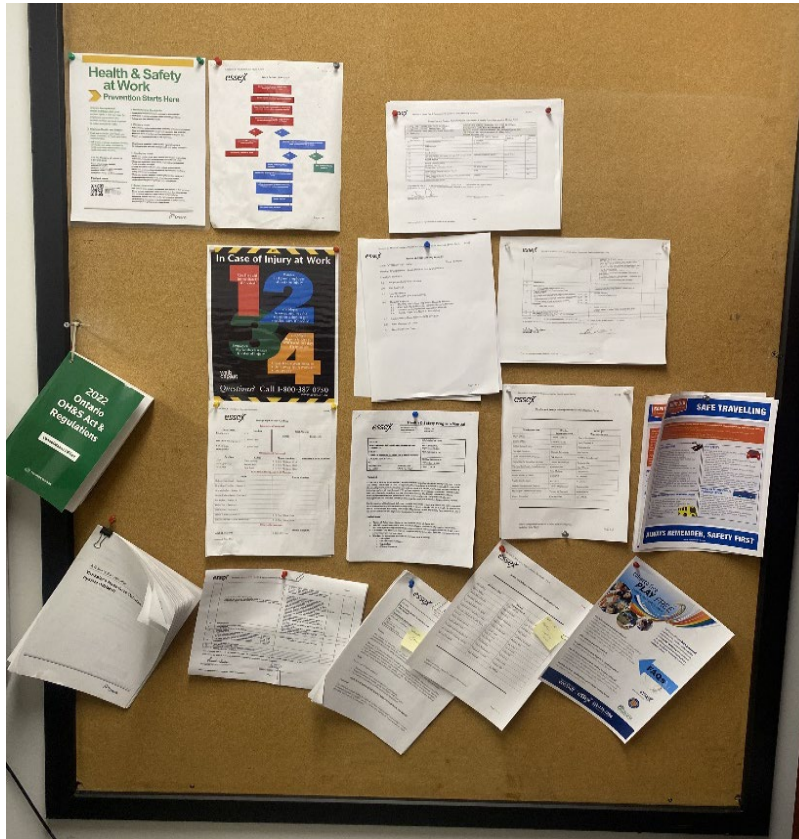


Figure 4. Health and safety board.

Although the JHSC dutifully posts its meeting minutes on the health and safety bulletin boards, some of the boards require housekeeping to make sure all postings are visible and older minutes are removed and indexed accordingly.

In addition to holding meetings and completing station inspections, the JHSC has also implemented a formal complaint process. As per this process, the Department's personnel can fill out a form to submit health and safety concerns. Upon receipt of a complaint, the JHSC will review the noted health and safety concerns and arrange appropriate follow-up actions.

Overall, the JHSC's structure and operations indicate that the Department's personnel understand the roles and responsibilities needed to advance health and safety in the workplace.

## 9.4 Personal Protective Equipment

Firefighters use many types of PPE, including:

- bunker gear (such as firefighter pants and jackets)
- helmets
- firefighting boots
- gloves
- flash hoods
- self-contained breathing apparatus (“SCBA”)

These items are the primary equipment firefighters use to protect themselves from injury and death.

### 9.4.1 Cleaning and Maintenance of Personal Protective Equipment

#### Context

Over the last few decades, health and safety agencies have conducted studies to find ways of reducing firefighter injuries and deaths. For example, WSIB Ontario has recognized that certain cancers are directly attributable to the by-products of fires and hazardous materials. As a result of these studies, the fire service has revised many of its PPE regulations.

There are now several legislative requirements that fire departments must follow in order to ensure their PPE meets compliance standards. For instance, all firefighter PPE must meet NFPA standards to comply with occupational health and safety regulations. Remaining compliant with PPE regulations is vitally important, given how frequently firefighters use their PPE.

As part of their obligation to meet PPE standards, fire departments must strive to implement robust PPE cleaning measures that limit the chances of their firefighters and fire apparatus becoming exposed to contaminants. Completing proper PPE cleaning will also help fire departments maintain clean environments in their fire stations.

#### Findings

The Department has established several PPE cleaning protocols. For example, the Department sends all its PPE to an appropriate third-party company for annual cleaning and testing. The Department also follows in-house guidelines regarding the care, cleaning, and inspection of its PPE following any contamination. The Department also instructs firefighters on post-call, inspection, and follow-up procedures. In addition, the Department conducts annual gear inspections and on-demand testing.



Best practices suggest that PPE should be replaced at least every ten years. The Department follows an eight-year replacement schedule. The Department ensures that alternate PPE is available to replace damaged PPE discovered during post-call inspections.

Overall, the Department proactively follows applicable PPE standards and is meeting legislative requirements regarding PPE cleaning and maintenance.

#### **9.4.2 Sizing of Personal Protective Equipment**

##### **Context**

When firefighters wear PPE that is too long or bulky, it may impede their movement and stability.

In some fire departments, it is common for firefighters to wear PPE that is a “close fit.” However, this practice raises health and safety concerns. For example, when female firefighters wear turnout gear designed for male firefighters, they are at a higher risk of injury or death. The NFPA and other organizations have gathered sizing data that identifies the need for female firefighters to have uniforms designed specifically for them. The sizing data also indicates that female firefighters cannot simply “size down” with their gear, as this option is ineffective and inappropriate.

Ideally, all fire departments should arrange for their firefighters to have PPE that is properly sized by a manufacturer representative. Although there is a cost to acquiring properly sized PPE, it is a necessary cost, as it helps protect firefighter safety.

##### **Findings**

As part of its PPE program, the Department ensures that all bunker gear is accurately sized for each individual member and fits appropriately and comfortably.

Overall, the Department proactively follows legislative requirements regarding PPE sizing.

#### **9.4.3 SCBA Testing and Compliance**

##### **Context**

Firefighters must wear SCBA whenever a toxic atmosphere is present or suspected, such as during fires, carbon monoxide calls, and hazardous material spills.

##### **Findings**

The Department contracts a qualified third party to inspect and service its compressor. As part of this maintenance work, a third-party provider also tests the compressor's air quality.

The Department also sends its SCBA to a qualified third party for annual inspections, tests, and repairs. In addition to this maintenance work, the Department arranges a qualified third party to complete hydrostatic testing of the SCBA cylinders every five years.

#### **9.4.4 Respirator Fit Testing**

##### **Context**

All firefighters must have fit-tested masks when they wear SCBA during an emergency response or wear an N95 mask for protection against airborne contaminants.

CAN/CSA Z94.4.18, *Selection, Use, and Care of Respirators*, outlines specific fit-testing requirements that all fire departments should follow.

##### **Findings**

The Department has a fit-testing policy regarding its respirators. As per the policy, respirator fit testing takes place every two years.

As of this FMP, the Department completed respirator fit testing in 2023. The next round of respirator fit testing is scheduled for 2025.

#### **9.5 Firefighter Health and Wellness Programs**

##### **Context**

It is crucial for employers to support the well-being of their employees in order to maintain a healthy workplace environment.

Fire departments can support their firefighters through health and wellness programs that address topics such as:

- cancer prevention
- nutrition
- physical activity
- critical incident management
- post-traumatic stress disorder

When fire departments offer physical and mental health support services, firefighters have resources they can use to manage the stresses of working in the fire service.

Health and wellness programs, such as mental wellness programs, critical incident stress management (“**CISM**”) programs, and peer support programs, can also help fire departments improve staff retention and reduce costs.

## Findings

The Department is clearly committed to health and wellness and has made a good effort to ensure that its firefighters have access to support. As of this FMP, the Department has established two main health and wellness programs: a mental wellness program (called the Road to Mental Readiness program, or R2MR program) and a peer support program.

The R2MR program is designed to improve the overall mental wellness of the Department's firefighters. The program addresses pre-incident education, CISM, and peer support.

The Department may consider forming a mental health committee to manage the R2MR program. Firefighters on the mental health committee would serve as peer support members. Peer support members provide the following services:

- Deliver onboarding training to new recruits.
- Deliver regular mental health training to fire personnel.
- Provide critical incident stress defusing and debriefing.
- Provide peer support to fire personnel.

The Department can also consider supporting health and wellness by creating a wellness committee to oversee a formalized wellness program. The wellness committee should include representation from all levels of the Department. The committee would be dedicated to building a stronger foundation for wellness and may wish to develop programs that deal with firefighter fitness. During the SWOT analysis conducted for this FMP, firefighters indicated that the Department should consider focusing on firefighter fitness as part of its wellness program.

Initially, the Department's wellness committee can consider providing the following health and fitness services:

- Contact local fitness facilities to investigate whether they can provide discounts for the Department's firefighters.
- Work with the Family Services Employee Assistance Program to provide information and training on topics such as proper nutrition, exercise, injury prevention, and general wellness strategies.

The wellness committee could also consider contacting personal fitness trainers to conduct assessments for the Department's firefighters. The fitness trainers could then use the results of the assessments to develop a personal fitness program designed to improve core firefighting performance.

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## 9.6 Competent Supervisors

### Context

According to the OHSA, when an employer appoints a worker to a supervisory role, that worker must have the prerequisites needed to qualify as a competent supervisor.

The following excerpt from the Province of Ontario's website paraphrases the OHSA's definition of a competent supervisor:

The OHSA gives employers and workers duties that help support the role of the supervisor. When appointing a supervisor, the employer must ensure the person is competent. To be competent, a supervisor must have enough knowledge, training, and experience to organize the work and how it is to be performed. He or she must also be familiar with the OHSA and any regulations under it that apply to the workplace and know about any actual or potential health and safety hazards in the workplace.<sup>2</sup>

The legislation about competent supervisors applies across different employment sectors, including the volunteer fire service.

### Findings

As of this FMP, the Department has 15 officers. All 15 officers are either certified or have their certifications grandfathered through the OFM.

The Department has provided opportunities for its officers to attend courses and complete the exam and certification processes applicable to their roles and duties. The Department has scheduled courses for individuals to attend in early 2024. In conjunction with third-party trainers from Southwest Fire Academy, the Department will provide officers with training to the following NFPA standards:

- NFPA 1041 – Fire Service Instructor, Level I
- NFPA 1021 – Fire Officer, Level I
- NFPA 1021 – Fire Officer, Level II
- NFPA 1021 – Fire Officer, Level III
- NFPA 1561 – Incident Management System & Command Safety
- NFPA 1521 – Incident Safety Officer

See section 12.4.1 for more on officer training and the Department's officer development program.

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<sup>2</sup> Ontario.ca, "Supervisors under the OHSA."

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## 9.7 Driver Training and Licencing

### Context

An individual should only operate a large vehicle (such as a fire apparatus) after completing specialized training and attaining either a DZ or AZ licence.

If a fire department allows an unqualified firefighter to operate a fire apparatus, it puts the safety of the driver and others at risk. The risk exists from the time the apparatus leaves the station to the time it returns.

Although a DZ or AZ licence is a requirement for operating large vehicles, the Highway Traffic Act outlines a limited exception for the fire service in Ontario. According to O. Reg. 340/94: Drivers Licences s.22:

Any class of driver's licence, except a Class G1, G2, M, M1 or M2 driver's licence, is authority for:

(a) a police officer or an officer appointed for carrying out the provisions of the Act to drive a motor vehicle of any class including a vehicle equipped with air brakes, other than a motorcycle, on a highway in an emergency and in the performance of his or her duties under the Act.

(a.1) a firefighter, as defined in subsection 1 (1) of the Fire Protection and Prevention Act, 1997, to drive a motor vehicle of any class including a vehicle equipped with air brakes, other than a motorcycle, on a highway in an emergency and in the performance of his or her duties under that Act; and

(b) a motor vehicle mechanic to drive a motor vehicle of any class including a vehicle equipped with air brakes, other than a motorcycle, on a highway while carrying out a road test of the vehicle in the course of servicing it. O. Reg. 340/94, s. 22; O. Reg. 115/03, s. 1; O. Reg. 83/05, s. 14; O. Reg. 254/21, s. 2.

Under O. Reg. 340/94, firefighters holding a Class G driver's licence can operate a fire apparatus when responding to an emergency scene. However, a firefighter holding a Class G driver's licence cannot operate an apparatus when it is time to return from an emergency scene or if the apparatus is needed to complete any other duties. Although O. Reg. 340/90 allows exceptions around licence certifications while responding to an emergency scene, the OHSA does not:

- Section 25 (2)(a) of the OHSA states that an employer must “provide information, instruction and supervision to a worker to protect the health or safety of the worker.”
- Section 25 (2)(h) states that an employer must “take every precaution reasonable in the circumstances for the protection of a worker.”

The firefighter guidance notes also address licence certifications. Guidance Note 6-7 recommends having firefighters complete theoretical and practical training if their role involves operating a fire apparatus.

It is critically important for fire departments to understand all licence certifications and regulations. For example, suppose a fire apparatus is involved in a traffic accident that results in an injury or fatality while it is travelling to an emergency site. If the driver of that apparatus does not have a valid DZ or AZ licence—and the fire department doesn't have a recognized driver training program in place—the municipality in question is liable for damages under the OHSA.

The example given in the previous paragraph is more than just a hypothetical scenario. Such an incident has occurred in Ontario before, and the MOL charged the municipality in question under sections 25 (2)(a) and 25 (2)(h) of the OHSA. The municipality eventually pled guilty to one of the charges and was required to develop a recognized driver training program. In addition to those penalties, the municipality lost a considerable sum of money while attempting to defend itself against the charges.

## **Findings**

The Department has implemented a driver training program, which has seen consistent levels of success.

The Department has also arranged for applicable personnel to complete courses and obtain certification to the following NFPA standards:

- NFPA 1002, Level 1: Pump Operations
- NFPA 1002, Level 2: Aerial Apparatus Driver/Operator

The Department's proactive approach to licensing certification will help ensure that the personnel who operate the Department's fire apparatus are also qualified to operate an engine pump or an aerial vehicle.

## **9.8 Recommendations**

After assessing occupational health and safety in Essex, The Loomex Group developed the following recommendations:

- 9-1. The Fire Chief should form a committee to develop and manage a fitness program to complement the Department's existing wellness programs.
- 9-2. The Fire Chief and the wellness committee should explore the possibilities of forming a partnership with local fitness facilities to provide the Department's firefighters with better access to fitness equipment.

## 10.0 Fire Prevention

### 10.1 Overview of Fire Prevention and the Three Lines of Defence

Fires are extremely dangerous incidents that can lead to fatalities and severe property damage. Due to the risks posed by fires, fire departments have traditionally viewed fire suppression as their primary focus. However, many fire departments now recognize the importance of developing proactive fire prevention initiatives to increase community safety.

Statistics show that most fires—as well as injuries, deaths, and costs resulting from fires—are preventable. For instance, structure fires often occur due to a lack of fire safety knowledge or a disregard for fire safety regulations. To address these issues, the OFM recommends following a fire safety model known as the three lines of defence, first outlined by the Honourable John B. Webber in the Report of the Public Inquiry into Fire Safety in Highrise Buildings.

The three lines of defence are as follows:

1. Public education.
2. Code enforcement.
3. Fire suppression.

The three lines of defence model encourages fire departments to focus on fire prevention initiatives to reduce the need for fire suppression. Although fire suppression must remain a critical focus for fire departments, it is important for departments to take steps to reduce the need for this kind of response. Moreover, the FPPA requires every municipality to establish a fire prevention program in the community.

Fire prevention programs should focus on educating the community and bringing fire safety issues to the forefront, but the success of these programs relies on more than just an initial implementation. Effective programs require continued monitoring and revision to ensure they remain relevant to the community's current and anticipated needs.

Unfortunately, some municipalities do not provide enough resources for public education and code enforcement initiatives. Often, municipalities believe they cannot fund a comprehensive fire prevention model because they must reallocate available resources to offset the costs of fighting fires. The reality is that fire suppression has a more significant financial impact on a community than public education and code enforcement (the other two components of the three lines of defence model). Although municipalities shouldn't reduce their spending on fire suppression, they must find ways to ensure funding is available for effective fire prevention initiatives. By prioritizing public education and code enforcement, a municipality is more likely to protect lives and property, which will result in cost savings over the long term.

## **10.2 Public Education Initiatives**

### **10.2.1 Public Education Messages**

#### **Context**

Public education initiatives raise a community's awareness about the importance of fire safety. By developing and delivering proactive public education initiatives, fire departments can help people of all ages understand ways to stay safe. Public education may help community members understand codes and regulations or teach them how to install and maintain smoke alarms, carbon monoxide detectors, and other fire safety technology. As a result, public fire safety education may reduce the number of fires in a community.

Common ways of providing public education include conducting door-to-door campaigns, arranging public service announcements, and participating in community events.

#### **Findings**

The Department provides public education throughout Essex by attending events and facilitating programs for schools, daycares, seniors' residences, and other venues.

Some of the Department's most popular public education initiatives are summarized below.

#### **Fire Prevention Week**

Fire Prevention Week is a national program across Canada and throughout the United States. The event is an opportunity to promote and educate citizens about fire prevention. During Fire Prevention Week, the Department organizes a colouring contest for elementary school students (JK to Grade 4) and teaches them about fire escape plans, cooking safety, and how to stay safe in the event of a fire. At the end of the event, the Department awards prizes and displays the students' pictures at the fire stations.

#### **After-the-Fire Program**

The Department uses the After-the-Fire program to deliver applicable safety messages following a fire in the community. The audience for the safety messages includes the homeowners who experienced a fire. The Department also provides fire safety messages to local neighbourhood residents.



## **Emergency Preparedness Week**

During Emergency Preparedness Week, the Department partners with members of the local media to raise awareness and educate the public about emergency planning.

## **Smoke/CO Alarm Programs**

The Department runs various smoke/CO alarm programs to raise awareness about the dangers of not having working smoke/CO alarms in the home. During the programs, the Department provides information to the community about how to install residential smoke/CO alarms, as well as when/how to check the alarms for functionality.

### **10.3 Inspections and Compliance**

For tracking purposes, fire departments organize their inspections into the following categories:

- complaint
- request and sale request
- vulnerable occupancies
- residential smoke and CO alarm
- other

Each category involves specific requirements that fire departments must meet for compliance purposes.

#### **10.3.1 Complaint Inspections**

##### **Context**

Fire departments conduct a complaint inspection when they receive a complaint regarding a possible fire code violation.

As per O. Reg. 365/13, fire departments must conduct complaint inspections. Fire departments must also complete follow-up actions for all complaint inspections. The most common follow-up actions are correspondence (in the form of a letter) and the addition of a note to the complaint's file.

##### **Findings**

As of this FMP, the Department is completing inspections upon complaint.

### **10.3.2 Request and Sale Request Inspections**

#### **Context**

Fire departments conduct a request or sale request inspection when they receive a notification related to any of the following:

- new occupancies
- licensing
- property sales
- fire code compliance

As per O. Reg. 365/13, fire departments must complete request and sale request inspections.

Fire departments must also complete follow-up actions for all request and sale request inspections. The most common follow-up actions are correspondence (in the form of a letter) and the addition of a note to the complaint's file.

#### **Findings**

As of this FMP, the Department is completing inspections upon request.

### **10.3.3 Vulnerable Occupancy Inspections**

#### **Context**

A vulnerable occupancy is a building or organization that functions as a retirement home, a care facility, or a care and treatment facility. As per O. Reg. 364/13, fire departments must complete vulnerable occupancy inspections and verify that all vulnerable occupancies in their community have conducted the required fire drills.

#### **Findings**

As of this FMP, the Department is completing the required vulnerable occupancy inspections.

### **10.3.4 Smoke/Carbon Monoxide Alarm Program**

#### **Context**

The FPPA requires each municipality to establish a smoke/CO alarm program. In response to this requirement, most municipalities adopt an official smoke/CO alarm by-law.

All smoke/CO alarm programs should include the following components:

- Each time a fire department interacts with community residents (such as during emergency responses), its members should verify that the residents have working alarms.
- Fire departments should proactively check residential smoke/CO alarms.
- Fire departments should have a method for tracking and keeping statistics on the number of working and non-working smoke alarms in the community.

Fire departments can accomplish most requirements of a smoke/CO alarm program by conducting home inspections and home fire escape reviews for community residents, including those in seasonal dwellings and trailer parks.

### **Findings**

The Department has implemented a residential smoke/CO alarm awareness program. The program has received support from the Rotary Club of Essex, which generously donated 120 battery-powered smoke/CO alarms for the Department to distribute to local senior citizens. Safe Community Project Zero (facilitated by Enbridge Gas) and the Rotary Club of Harrow have also donated battery-powered smoke/CO alarms for the residents of Essex. The Department's staff is available to help install alarms for any residents who cannot complete the installation independently.

### **10.3.5 Other Inspections**

#### **Context**

Fire departments also conduct inspections when they receive a notification about fire safety concerns from a home inspection program, retrofit, general inquiry, or similar means. Fire departments may also conduct inspections when they need to examine specific occupancies or areas in the community.

#### **Findings**

The Department works with the Windsor Health Unit to conduct annual inspections of the temporary foreign working housing in Essex. During the inspections, the Department distributes fire safety handouts in various applicable languages.

### **10.4 Fire Prevention Statistics**

#### **Context**

There are several reasons why fire departments must track their inspections:

- Tracking inspections is a requirement of the FPPA.

- A fire department can review its inspection statistics to identify operational needs (such as staffing) and create strategic plans to address those needs.
- A fire department can review its inspection statistics to identify occupancies that require more inspections.
- A fire department can create a fire prevention campaign targeted at residents in areas with more complaints and violations.
- Tracking inspections creates a paper trail, which can help protect building owners, municipalities, and fire departments, from potential liability issues.

Above all, tracking inspections can indicate ways to improve the safety of community residents, businesses, and visitors.

#### 10.4.1 Inspections by Occupancy Type

Table 7 shows the number of inspections the Department conducted from 2018 to 2022.

Table 7. Inspections by occupancy type, 2018 to 2022.

Type of Occupancy Inspected	2018	2019	2020	2021	2022	Avg.
Group A: Assembly	89	96	86	54	68	78.6
Group B: Care, treatment, and detention	15	18	14	16	14	15.4
Group C: Residential	78	69	94	157	182	116
Group D/E: Mercantile/commercial	123	139	115	74	48	99.8
Group F: Industrial	6	9	18	12	7	10.4
Other inspections, smoke alarms, and safety concerns	4	5	1	7	4	4.2
<b>Total Number of Responses</b>	<b>315</b>	<b>336</b>	<b>328</b>	<b>320</b>	<b>323</b>	<b>323.4</b>

The data in the table indicates that the Department is increasing the number of residential occupancy inspections it conducts. The increase is attributable to the implementation of the Department's smoke/CO alarm program.

#### 10.4.2 Inspection Reasons

Table 8 presents the number and types of inspections the Department conducted from 2018 to 2022.

Table 8. Inspection reasons, 2018 to 2022.

Type of Inspection	2018	2019	2020	2021	2022	Avg.
Complaint	8	4	23	22	12	13.8
Owner Request	36	37	38	79	67	51.4
Safety Concern/Smoke Alarm	102	125	107	99	76	101.8
Routine	166	170	160	120	110	145.2
Licensing	3	0	0	0	58	12.2
<b>Total</b>	<b>315</b>	<b>336</b>	<b>328</b>	<b>320</b>	<b>323</b>	<b>324.4</b>

The data in the table indicates that the Department's prevention division is conducting a consistent number of inspections. The consistency is attributable to the prevention division's adherence to the Department's smoke/CO alarm program.

#### 10.4.3 Violations Noted by Inspections

There are several types of OFC violations that a fire department may identify when conducting an inspection. Depending on the nature of the violation, the on-site inspector may issue one of the following notices:

- Verbal: The inspector notes an issue verbally. The issue is corrected immediately, and the officer acknowledges the correction.
- Letter of compliance: The inspector notes violations in a formal letter to the building owner. The letter includes a timeframe in which to resolve the issue.
- Immediate threat to life: According to the FPPA, if a firefighter believes that there is an immediate risk of fire, they may enter a building without a warrant to remove or reduce the risk.
- Fire service inspection report: The inspector provides a report to the building owner that notes the time of inspection and outstanding issues.
- Order: According to section 5.21.(1) of the FPPA, an inspector "may order the owner or occupant of the land or premises to take any measure necessary to ensure fire safety on the land."
- Charges: If a building owner does not comply with an order, they may be charged under the FPPA.

Table 9 lists the number of violations that the Department noted—as well as the notices it issued—during the inspections it conducted from 2018 to 2022.

Table 9. Violations noted and notices issued, 2018 to 2022.

Type of Violations and Notices	2018	2019	2020	2021	2022
Verbal	102	124	104	92	59
Letter	0	0	0	0	0
Electrical Safety Authority	0	0	0	0	0
Intermediate Threat to Life	0	0	0	0	0
Fire Service Inspection Report	17	17	15	19	67
Order	0	0	0	0	0
<b>Total</b>	<b>123</b>	<b>142</b>	<b>119</b>	<b>111</b>	<b>126</b>
<b>Resolved Violations and Notices</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

The data in the table indicates that the Department issues appropriate follow-up orders for all noted violations.

The Department is also resolving applicable violations and notices and keeping up-to-date inspection records.

## 10.5 Fire Investigations

### Context

Under the FPPA, fire departments must investigate all fires that occur within their jurisdiction. In order to gain the skills needed to conduct accurate investigations, firefighters should complete advanced training to the standards of NFPA 1033.

During a preliminary investigation, the local fire department is required to identify the cause, origin, and circumstances of the fire in question. Doing so is an essential component of fire protection. For example, if the cause of a fire is accidental, information from the inquiry reinforces the need to increase fire prevention and public education initiatives.

If the cause of the fire is suspicious, further investigations and actions are required. For example, arson is a criminal offence and is sometimes used to cover other illegal activities or defraud insurance companies. Due to the implications of incidents such as arson, fire departments must notify the OFM and the local police about all fires that appear suspicious.

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The FPPA states that assistants to the Fire Marshal must notify the OFM of all incidents that meet—or that appear to meet—any of the following criteria:

- The investigating firefighters suspect the fire or explosion is incendiary (criminal). Incendiary fires include dumpster fires, car fires, and wildland fires. All incendiary fires and explosions must be reported to the applicable police authority.
- A fire or explosion results in either a fatality or serious injury that requires a person to be hospitalized as an in-patient. In such instances, the fire department must make every reasonable effort to confirm the status of injured persons transported to hospital before releasing the fire scene.
- A fire or explosion results in significant loss for the community.
- An explosion is the primary event.
- A fire results in an unusual spread of fire or smoke.
- A fire or explosion involves circumstances that may result in widespread public concern (such as an environmental hazard).
- A fire or explosion involves clandestine drug operations or marijuana growing operations.
- A fire or explosion occurs in a multi-unit residential occupancy and the fire spread or explosion impact extends beyond the unit of origin.
- A fire or explosion occurs in a multi-unit residential occupancy and the fire department suspects that OFC violations have impacted the event.

Under the FPPA, fire departments must follow all regulated steps when conducting a fire investigation. This obligation includes notifying and working with OFM investigators (when required).

## Findings

As of this FMP, the Department's Fire Chief and Deputy Chief conduct basic fire investigations. Going forward, the Department should verify that its personnel all become certified to the NFPA 1033 standing before performing fire investigation duties.

## 10.6 Community Risk Assessment

### Context

On July 1, 2019, the Province of Ontario passed O. Reg. 378/18 under the authority of the FPPA. O. Reg. 378/18 requires every municipality to complete a CRA by July 1, 2024. All municipalities must also complete a new CRA every five years. (As a best practice, every municipality should also review its CRA annually to ensure it remains current.)

## Findings

Essex completed its mandatory CRA in conjunction with the writing of this FMP. This proactive approach ensures that Essex is compliant with applicable legislation. Completing the CRA and FMP in tandem also allowed the latter to incorporate information about the actual risks identified in the Essex community.

Figure 5 illustrates the public safety risks identified in Essex (from a fire services perspective).

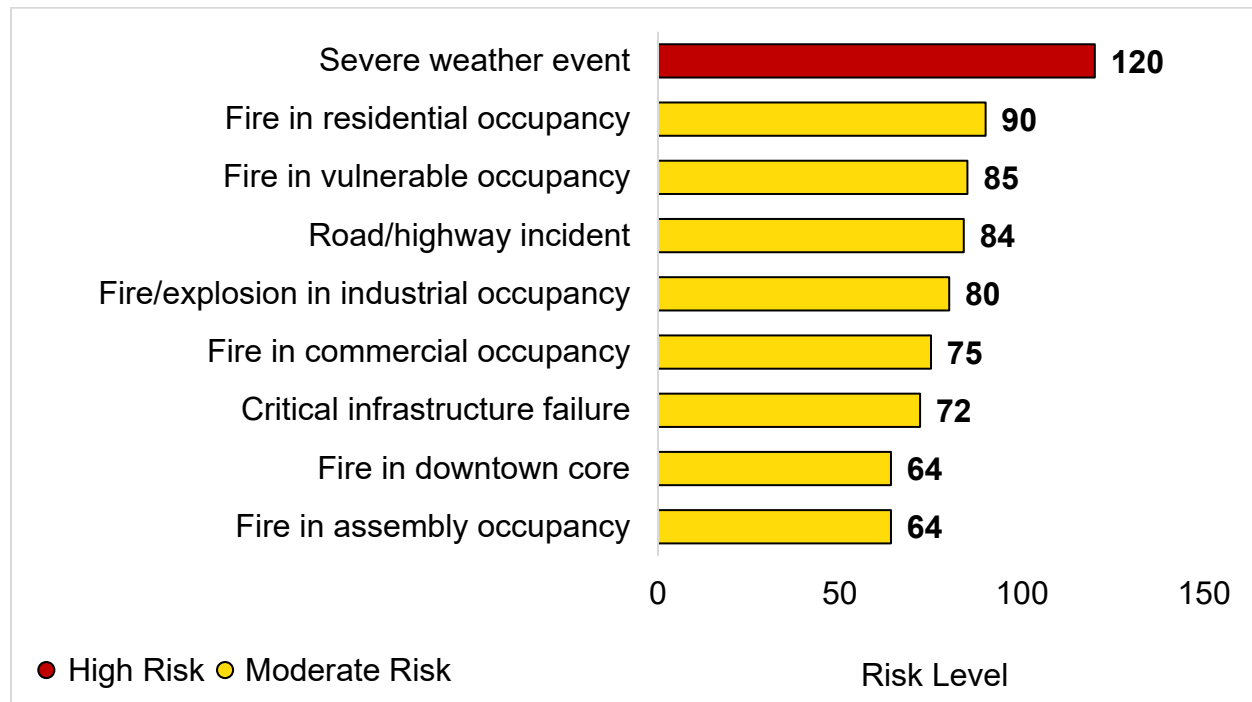


Figure 5. Public safety risks identified in Essex.

## 10.7 Pre-Incident Planning Process

### Context

Completing the pre-incident planning process is a crucial step toward protecting firefighter safety.

When firefighters respond to an emergency in a building with an unfamiliar layout, the risk to their safety increases significantly. The risk increases even more in large commercial, industrial, or institutional buildings, or in buildings where visibility is limited. However, by completing the pre-incident planning process for different occupancies in the community, firefighters can familiarize themselves with site layouts and prepare themselves for the risks inherent to a building's construction, such as the likelihood of collapse.



Fire departments should prioritize the pre-incident planning process for all buildings that are at high risk, have vulnerable occupants, or have high value to the community. Fire departments should also plan to revisit those buildings on a regular basis to reassess the results of their previous pre-incident planning.

Employers also have responsibilities as part of the pre-incident planning process. Guidance Note 6-45 addresses pre-incident planning and identifies several actions employers should complete. According to Guidance Note 7-45, employers should take the following actions:

- Develop a pre-incident planning program that compiles building information.
- Keep building data updated with information gained during fire prevention activities or from other allied agencies.
- Provide known building information to responding firefighters, including building configurations and functions.
- Coordinate building tours for firefighters.
- Train firefighters how to conduct the pre-incident planning in their occupancy, as this will provide the firefighters with information that they can use to protect their health and safety.

By working together, a community's employers and fire department can take steps to help protect the safety of firefighters and building occupants during emergency responses.

## **Findings**

The Department should assign one full-time firefighter to serve as a combination training officer/fire prevention officer. The firefighter should spend approximately 50 per cent of their time working in each division.

A combination training officer/fire prevention officer will help the Department meet applicable fire prevention, code enforcement, and fire suppression compliance requirements. The position will also allow the Department to enhance the services it provides to the community, as the Department will have another firefighter available to perform fire suppression duties (as required) during daytime hours.

For more information about assigning a combination training officer/fire prevention officer, refer to section 12 of this FMP.

## **10.8 Recommendations**

After assessing fire prevention in Essex, The Loomex Group developed the following recommendations:

- 10-1. The Fire Chief should prepare a report for Council's consideration and approval that recommends appointing a full-time training/prevention officer who will dedicate half of their work hours to managing the Department's fire prevention division. The officer would also perform suppression duties during daytime hours (as needed).

## 11.0 Levels of Service

### 11.1 Core Services and Specialized Services

Every municipality has different risks, needs, and circumstances. Those variables should determine the types and levels of services a fire department provides to its community. Some services, such as auto extrication, are a common need in many municipalities. Other services, such as heavy urban rescue, are more specialized services that not every community will require.

Although infrequent, calls that involve specialized services often place firefighter safety at a significantly higher risk than calls requiring the provision of core services. Most specialized services are also costly to deliver, and many require firefighters to receive additional ongoing training and certifications.

For most specialized services, there are three levels of service that fire departments can provide: awareness, operations, and technician. A fire department can base the level of service it provides on the following considerations:

- How many calls does the fire department receive for a specific type of service?
- What risk does the threat pose to the community?
- Is it affordable to provide a specific service?
- Does the local municipal council need to approve the service before it is offered?

### 11.2 Determining Specialized Services for Essex Fire and Rescue

At a minimum, the Department should review the following topics to determine which specialized services it should deliver:

- firefighter safety
- the current condition of the equipment needed for specific services
- the level of initial training required
- the level of ongoing training required
- the current documentation that supports each specialized service
- the relevance of each specialized service to the community
- the frequency of past incidents requiring the specialized service

After completing the review, the Fire Chief should prepare a report for Council's consideration and approval that presents evidence supporting the need for the Department to continue receiving funding—or receive additional funding—to deliver specialized services safely and effectively.

Once the Department has a set list of specialized services, it must ensure that it has the capacity to deliver those services. The Department should also ensure that its firefighters receive training that meets or exceeds the relevant occupational health and safety laws and NFPA standards.

### 11.3 Levels of Services

#### Context

A fire department should become proficient at delivering its core services before it attempts to develop specialized services. In order to have an acceptable level of proficiency, a fire department should have appropriate documentation, training, and equipment in place across the organization. A fire department should only consider delivering specialized services after verifying that it has met these criteria.

It is unlikely that a fire department will provide advanced services effectively if it does not attain proficiency in its core services.

#### Findings

Going forward, leaders from Essex and the Department should consider using a tiered approach to structure the Department's service delivery (as shown in Figure 6). The figure illustrates that the Department must build a solid foundation based on proficiency in its core services before it looks to offer specialized services.

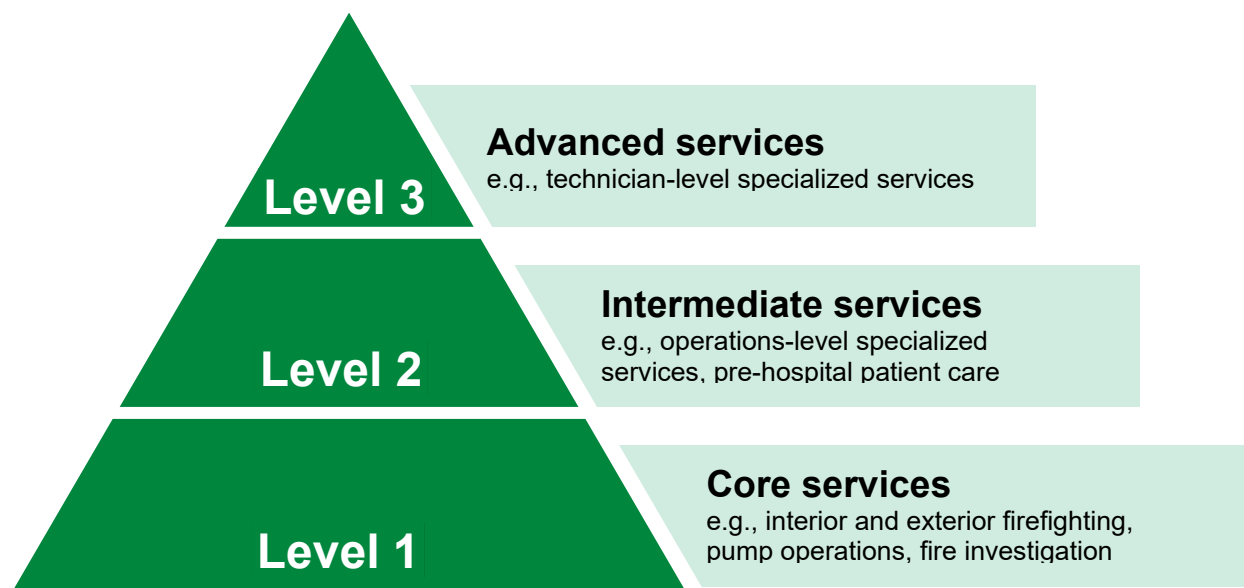


Figure 6. Tiered approach to levels of service.

### **11.3.1 Core Services**

#### **Context**

Core-level services include the main services that most fire departments offer, such as interior and exterior firefighting. For example, firefighting almost always relies on the skills of a pump operator, which means an ability to perform pump operations represents an important core firefighter skill.

#### **Findings**

The Department provides the following core-level services:

- fire suppression services (offensive)
- fire suppression services (defensive)
- rescue operation services
- motor vehicle accident response services (including extrication and fire suppression)
- grass and brush firefighting services
- marine firefighting services (defensive only for small vessels)
- property conservation services (including salvage and overhaul)
- forcible entry and search services
- public assistance response services
- confined space rescue services (at the awareness level)

The Department's core services align with the Department's level of training, standard operating guidelines, and the number of personnel and equipment it can provide for an emergency response.

### **11.3.2 Intermediate Services**

#### **Context**

Intermediate-level services include the specialized services most often provided by fire departments in Ontario.

Examples of intermediate services include common passenger vehicle rescue and emergency medical services, as well as other specialized services performed at the operations level.

## Findings

As of this FMP, the Department provides the following intermediate-level services:

- standard first aid
- CPR and defibrillation
- rescue and vehicle operations

Some of the Department's intermediate-level services are delivered as part of a medical tiered response agreement with Essex-Windsor EMS.

### 11.3.3 Advanced Services

#### Context

Once a fire department has trained and equipped its firefighters to perform core and intermediate services proficiently and safely, its leadership personnel may consider introducing an advanced level of service. Advanced services include specialized services at the technician level. Such services require significant training, as they involve a much higher risk of injury or death than other services.

#### Findings

As of this FMP, the Department has several personnel with certification to the standards of NFPA 1006 and NFPA 1670. Those certifications allow applicable Department personnel to provide water and ice rescue services at an awareness level and technician level.

As per O. Reg. 343/22, firefighters performing water and ice rescue services will require certification to the standard of NFPA 1006 by 2028. It is expected that the Department's personnel will attain the relevant certification prior to this deadline. (For more on O. Reg. 343/22, see section 12.2 of this FMP.)

Overall, the Department is providing the correct type and level of advanced services for Essex's current needs. Going forward, the Fire Chief should continue monitoring the number of calls the Department receives for advanced services. If the Fire Chief notices a significant increase in the number of calls the Department receives, the Fire Chief should approach Council with recommendations about updating the Department's level of service accordingly.

### 11.4 Recommendations

After assessing the levels of service in Essex, The Loomex Group developed the following recommendations:

- 11-1. The Fire Chief should review the Department's medical tiered response agreement and update it accordingly. The Fire Chief should then submit the revised agreement to Council for consideration and approval.
- 11-2. The Fire Chief should keep track of all calls the Department receives for advanced services. If there is a significant number of calls for advanced services that the Department does not currently provide, the Fire Chief should prepare a report for Council's consideration and approval that recommends updating the Department's list of approved advanced services.

## 12.0 Training

### 12.1 Overview of Training

Due to the inherent occupational dangers of conducting emergency responses, firefighters must receive an appropriate level of training. Each fire department offers its personnel different training based on the type of services it provides and the specific needs of the community, the fire department, and its staff members. Training gives firefighters the aptitude to recognize the appropriate actions to take during an emergency response. A well-trained firefighter is a firefighter who is properly equipped to make decisions that will mitigate risks and save lives.

The Province of Ontario requires fire departments to provide their employees with training on the following topics:

- WHMIS
- Accessibility for Ontarians with Disabilities Act
- Incident Management System
- workplace harassment
- other training (as required)

Fire departments must also offer basic training to comply with legislation. According to the OHSA, all employers must “provide information, instruction and supervision to a worker to protect the health or safety of the worker.” As such, fire departments should complete ongoing training to ensure that their operations remain safe and effective. Firefighters should also complete ongoing training to maintain their skill levels.

As per O. Reg. 297/13, subsections 4 (1) and (2), employers must keep a record of the awareness training their employees and supervisors receive. This includes a record of any worker or supervisor who is exempt from the training.

Lastly, employers should protect the well-being of their employees by providing them with health and safety training. Once employees complete a training program, employers must maintain records of the completed training to verify that measures were taken to prevent hazards, accidents, discrimination, and harassment in the workplace.

### 12.2 NFPA Certification

#### Context

O. Reg. 343/22: Firefighter Certification came into effect on July 1, 2022. The regulation falls under the authority of the FPPA and establishes the mandatory minimum certification standards for specific fire protection services.



As per O. Reg. 343/22, fire departments and municipalities must meet the following requirements:

- All firefighters must receive the minimum level of certification for all services they perform. This stipulation is designed to ensure that all firefighters receive consistent, ongoing training that matches the level of service set by their municipal council. The stipulation is also in place to help protect firefighter safety.
- Municipal councils must set the types of service and the levels of service that their fire departments will provide. Once decided, the council must arrange for its fire department to receive the appropriate level of training (based on the applicable NFPA standards) for those services.
- Firefighters must meet the NFPA standards applicable to their roles. All firefighters must also have the ability to perform the services associated with their roles. For example, a fire prevention officer must have certification at the level of inspections they provide, and captains must have certification at the level of supervision they conduct.
- Fire departments must ensure all personnel meet the level of training required under O. Reg. 343/22 by the compliance deadline.
  - NFPA 1006 certifications have a compliance deadline of July 1, 2028.
  - All other certifications have a compliance deadline of July 1, 2026.

## Findings

Like many fire departments, the Department's firefighters face potential challenges as they try to meet compliance with certification requirements before the legislated deadlines.

### 12.3 Recruitment Process and Training

#### Context

Many fire departments struggle to recruit a consistent number of volunteer firefighters. Although the factors affecting recruitment vary from region to region, there are some common themes that most fire departments face.

By taking the time to analyze the factors that affect its recruitment numbers, a fire department will gain information that it can use to develop a volunteer firefighter recruitment process that will have long-term success.

## Findings

As of this FMP, the Department uses the following process to recruit volunteer firefighters:

1. A candidate submits an application to the Department. If the Department accepts the application, the candidate is enrolled in the Department's intake program.
2. The candidate completes a written aptitude test, undergoes a medical evaluation, completes an in-person interview, and undergoes a physical test at the Department's fire station.
3. If the candidate passes the tests and physical examinations, the Department arranges training for the candidate. The candidate must complete the training to become certified to the standards of NFPA 1001, level 1 and 2. The candidate must also complete training on hazardous materials responses at the awareness and operations levels.
4. After obtaining certification to the standards listed above, the candidate becomes a probationary firefighter with the Department for 12 months. During that time, the candidate must attain certification to all standards which are applicable to the Department's operations.

Completing the Department's recruitment program is a lengthy process for potential candidates. Moreover, the Department must assign several officers to manage the recruitment program from start to finish.

The time commitments needed for the recruitment program also compound another issue: The Department is currently forecasting a shortfall of volunteer firefighters in its organization. If the Department cannot address that issue, it will not have enough personnel to maintain its usual staffing levels.

The Department recognizes the demands its recruitment program places on the organization, as well as the constant drain of internal resources needed to maintain volunteer levels. In response to these issues, the Department has entered into an agreement with Southwest Fire Academy to help bolster its recruitment strategy. Ideally, the partnership will provide the Department with the time and resources it needs to recruit and train new firefighters. The agreement provides recruits with access to online and in-person training and testing, job performance reviews, and theory-based reviews and certifications. Recruits will also have the chance to attend "station duty nights," which will provide them with opportunities to familiarize themselves with the Department's fire stations and connect with current personnel.

Overall, the Department's third-party agreement with Southwest Fire Academy should assure consistency in the Department's training program. The agreement should also help alleviate time constraints on the Department's personnel, as they would otherwise have had to manage both the recruitment and in-service training programs.

## 12.4 Training Structure of Essex Fire and Rescue

### Context

Firefighters must remain current with NFPA standards that are applicable to their roles and the services they provide. If a fire department is not required to provide a specific service (such as ice rescues), that department's firefighters do not need to complete ongoing training for that type of service.

In addition to completing ongoing training that covers NFPA standards, firefighters must complete training that addresses legislation and hazards that were not covered by previous training. For example, modern homes are constructed with different materials and in a different manner than older homes. As such, fires in modern homes have a much higher heat-release rate, and firefighters may face exposure to a higher level of risk than in years past. In response to developments like these, firefighting tactics and practices have evolved. Recent research into fire behaviour has led to new firefighting techniques aimed at improving the safety of firefighters and members of the public.

Maintaining up-to-date knowledge and skill levels is essential for delivering effective fire protection services. Therefore, fire departments should strive to provide their personnel with ongoing training that covers a variety of topics, such as:

- contemporary suppression and ventilation techniques
- building construction
- fire dynamics
- firefighter health and safety

### Findings

#### Structure of Training Program

As of this FMP, the Department provides ongoing in-service training that covers the standardized, needs-based, and specialty services it is expected to deliver to Essex.

At a minimum, the Department's in-service training sessions take place on the first and third Wednesday of each month. There are also occasional weekend training sessions to cover special topics that require more time to complete than the regular training that takes place on weeknights.

Currently, the Deputy Chief organizes the Department's training. This duty involves the development of extensive training schedules that include a one-year roll-out plan for all training topics. The training schedule also includes a list of resources that firefighters should reference, such as *Essentials of Fire Fighting and Fire Department Operations*, International Fire Service Training Association, and OFM job performance reviews.

The Deputy Chief also provides a five-year training schedule, which helps the Department monitor its training delivery and verify that it is meeting the mandatory training requirements for its personnel.

### **Scope of Training Program**

As of this FMP, the Department's current one-year training schedule covers the following topics:

- PPE
- extinguishers
- occupational health and safety
- communications and incident command
- building construction
- forcible entry
- fire dynamics
- structural search and rescue
- firefighter survival
- ground ladders
- aerial awareness
- mental health (including peer support, Road to Mental Readiness program, and applicable mental health certification requirements)
- hazmat product control and decontamination
- ventilation
- overhaul and scene preservation

The extensive scope of this training should allow the Department's firefighters to re-evaluate and maintain their knowledge and skill levels while also building on their existing abilities.

In addition to in-house training, the Department has also arranged for its officers and firefighters to receive external training from qualified third-party providers. Completing the third-party training has allowed Department personnel to become certified in the following NFPA standards:

- NFPA 1041: Fire Service Instructor
- NFPA 1561: Incident Management System and Command Safety Training
- NFPA 1021: Fire Officer I to IV

The Department's personnel have also received peer support training, as well as training on the R2MR program.

The external training opportunities allow the Department's officers and firefighters to gain valuable experience they wouldn't necessarily have access to in-house. These opportunities allow the Department access to qualified individuals who can fill current and future leadership positions. The Department's proactive approach to arranging external training is evidence of the organization's commitment to having a staff that can deliver high-quality services to the community. It is also worth recognizing the officers and firefighters for their dedication to completing additional training, as it requires them to take time away from their primary jobs and families in order to attend the training courses.

Overall, the partnership that exists between the Department's management team and its firefighters regarding training and certifications is commendable. The results of the partnership will help ensure the stability of the Department as it strives to provide a modern and effective fire service workforce.

#### **12.4.1 Officer Development Program**

##### **Context**

Many volunteer departments find it challenging to provide adequate training to prepare firefighters for greater responsibility, largely due to the time commitment required. However, fire departments must focus on developing the skills of members to ensure that potential candidates for leadership roles gain the skills needed to advance to a higher position.

A fire department should base a promotion to an officer role on the merit and qualifications of the member in question, including their track record of following departmental operating guidelines.

##### **Findings**

As of this FMP, the Department's promotional process is effective, as the Department ensures that officers meet the requirements of a competent supervisor.

The Department trains firefighters to NFPA standards, and the Department's officers have been certified to numerous standards. However, further training opportunities are limited. While the Department is successful at keeping officers engaged, it must offer higher levels of officer training to comply with NFPA standards.

## 12.5 Training Challenges

### Context

Statistics show that there are some recurring challenges that the majority of fire departments face when it comes to delivering an effective training program. The most common issues are time constraints and lack of qualified trainers.

Industry best practices have shown that many fire departments address the issues affecting their training programs by implementing standard training protocols and establishing dedicated training teams or committees.

### Findings

As of this FMP, the Deputy Chief develops the schedule for the Department's training program. Once the schedule is created, the Deputy Chief distributes it to the Department's district chiefs. The main issue with this arrangement is that the Deputy Chief is not always available to assist with the actual training delivery. When the Deputy Chief is unavailable, the district chiefs are responsible for assigning a captain or other qualified instructor to deliver the training. However, in some cases, a captain or training instructor is also unavailable, which hinders the Department's capacity to facilitate an effective training program at all.

In years past, the Department attempted to establish a committee to review its training program and other related topics. However, the committee did not have a formalized structure, nor did it hold regular meetings.

Going forward, the Department should consider appointing dedicated personnel to its training program. If the Department pursues this course of action, it has several options to consider. For example, many departments find it beneficial to establish a training committee that includes a full-time training officer. Doing so relieves leadership personnel of the time commitments needed to plan, develop, and deliver an effective ongoing training program. Other fire departments find using para-trainers is an efficient way of facilitating a training program.

Based on the Department's current structure and operations, establishing a training officer position is the most practical way of ensuring that the Department's firefighters receive the training they need. Additionally, having a training officer would provide the Department with someone to help manage the organization's NFPA certification, officer development, and firefighter retention needs. The training officer could find and promote additional training courses for officers and ensure that volunteer officers are available to attend next-level training.

A training officer could also outline and guide succession planning for the Department, ensuring that candidates are available when leadership roles become available. The Department has been successful at delivering officer development and succession

planning in the past, as noted by SWOT analysis participants. However, by hiring a dedicated training officer, the Department can ensure its officer development and succession planning programs are sustainable.

If the Department appoints a training officer, it should also consider having that officer serve as part of the fire prevention division. By allocating approximately 50 per cent of the training officer's schedule to each division, the Department would be more likely to meet the administrative, technical, and practical components of both divisions.

In order to provide even more support to its training program, the Department should consider establishing a training committee that has a formalized structure and meeting schedule. The committee would maintain and develop a strategic training program for officers and firefighters.

The evidence presented during the FMP development process also suggests that the Department would benefit from appointing para-trainers, as this would help ensure there are several qualified personnel to facilitate the required in-service training.

In summary, the Department administers an effective training program, but the training delivery is not always consistent. If the Department does not take steps to address the issues affecting the program, it is unclear whether the program will be able to accommodate the Department's future needs. Therefore, the Department should review the options for establishing a dedicated training officer role (as discussed above). Appointing such an officer will be crucial for the Department as it prepares its training program for long-term success.

## **12.6 Recommendations**

After assessing training in Essex, The Loomex Group developed the following recommendations:

- 12-1. The Fire Chief should develop a process for having para-trainers assist with the Department's training program.
- 12-2. The Fire Chief should establish a training committee to help plan and implement the Department's training program.
- 12-3. The Fire Chief should explore opportunities that allow officers to complete training and obtain certifications beyond what the Department currently offers.
- 12-4. The Fire Chief should prepare a report that recommends appointing a full-time training/prevention officer who will dedicate half of their work hours to managing the Department's training and development program. The Fire Chief should then submit the report to Council for consideration and approval.

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## 13.0 Performance Standards and Operational Models

### 13.1 Overview of Performance Standards

Every community expects its fire department to respond to emergencies when needed. In order to meet community expectations, a fire department must understand what level of service it is required to provide. Although each municipal council sets a different level of service for its fire department, all fire departments must respond promptly and with sufficient resources to provide fire protection and suppression services.

In many communities, the fire department and the municipality agree upon performance standards to ensure that residents receive the fire protection they expect. The performance standards establish how many firefighters must respond to emergencies and how long it should take for them to arrive at an incident site.

#### 13.1.1 Importance of Response Times

The response time for all emergencies that involve structure fires is critical. A fire's growth is heat-generated and is dependent upon fuel and air supply. Once the temperature in a room ablaze reaches approximately 1,000 °F (590 °C), a flashover will occur in the entire room within six to ten minutes (or less). When a flashover occurs, it significantly increases the risk of fatalities and property damage. If firefighters can arrive at the scene of a fire quickly, they have a better chance of saving lives and limiting property damage.

It is also vital to have a quick response time when a medical emergency has occurred, as research has shown that response times and mortality are correlated.<sup>3</sup> For example, when a patient is experiencing a heart attack, their survivability decreases at a rate of 10 per cent/minute.<sup>4</sup> The outcomes of many other medical emergencies also depend on fast response times.<sup>5</sup>

Although not all fire departments respond to medical incidents, they should still understand response times for all services in order to determine which services to provide and which staffing levels to set.

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<sup>3</sup> Pons et al., "Paramedic Response Time: Does It Affect Patient Survival?"

<sup>4</sup> Medical Advisory Secretariat, "Use of Automated External Defibrillators in Cardiac Arrest: An Evidence-Based Analysis."

<sup>5</sup> Blackwell and Kaufman, "Response Time Effectiveness: Comparison of Response Time and Survival in an Urban Emergency Medical Services System"; Wilde, "Do Emergency Medical System Response Times Matter for Health Outcomes?"



### 13.1.2 Importance of Leadership

A fire department's leadership team must have the capability to identify threats and make operational decisions at emergency scenes, ensuring that all decisions adhere to their department's established level of service.

It is also crucial for firefighters to receive proper supervision. Studies conducted by the National Institute for Occupational Safety and Health and the U.S. Fire Administration concluded that direct supervision improves firefighter safety. According to the U.S. Fire Administration's Firefighter Fatality Retrospective Study, many firefighter deaths occurred when firefighters became lost or disoriented and died before a fire officer or incident commander was aware that the firefighter in question required assistance. Because fire captains and other senior personnel usually have more experience and training than junior firefighters, they are better equipped to give direction during an emergency response.

### 13.1.3 Importance of Crew Size

The National Institute of Standards and Technology ("**NIST**") has conducted more than 60 controlled fire response experiments to determine the effect of fire crew size on a fire crew's ability to protect lives and property during responses to residential fires.

The NIST summarized the findings of its fire response experiments as follows:

The study found that four-person firefighting crews were able to complete 22 essential firefighting and rescue tasks in a typical residential structure 30 percent faster than two-person crews and 25 percent faster than three-person crews.

Researchers also performed simulations using NIST's Fire Dynamic Simulator to examine how the interior conditions change for trapped occupants and the firefighters if the fire develops more slowly or more rapidly than observed in the actual experiments. The fire modeling simulations demonstrated that two-person, late-arriving crews can face a fire that is twice the intensity of the fire faced by five-person, early arriving crews. Additionally, the modeling demonstrated that trapped occupants receive less exposure to toxic combustion products—such as carbon monoxide and carbon dioxide—if the firefighters arrive earlier and involve three or more persons per crew.<sup>6</sup>

Another NIST study evaluated the effectiveness of crew sizes during responses to high-rise fires. The NIST summarized that study's findings as follows:

The NIST study, conducted with 13 Washington, D.C.-area fire departments, analyzed 14 "critical tasks"—those undertaken when potential risks to building

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<sup>6</sup> National Institute of Standards and Technology, "Landmark Residential Fire Study Shows How Crew Sizes and Arrival Times Influence Saving Lives and Property."

occupants and firefighters are greatest—[and] found that three-member crews took almost 12 minutes longer than crews of four, 21 minutes longer than crews of five, and 23 minutes longer than crews of six to complete all tasks. Four-person crews took nine minutes and 11 minutes longer than five- and six-member crews, respectively.<sup>7</sup>

In addition to improved performance, firefighters who train together under the supervision of a fire captain often work more cohesively than firefighters who don't.

### **13.2 Determining Effective Response Force**

The term effective response force (“**ERF**”) refers to the following:

- The number of firefighters needed to respond to an emergency safely and effectively.
- The resources needed to respond to an emergency safely and effectively.
- The time it takes for firefighters and resources to arrive at the scene of an emergency.

Fire departments can determine an ERF by completing a critical tasks analysis for each type of emergency. This approach allows fire departments to standardize their emergency responses and ensure they dispatch the appropriate number of personnel for each type of incident.

Conducting a critical tasks analysis involves the following steps:

1. Examine the type of risks that exist at an emergency scene.
2. Identify the tasks needed to mitigate and eliminate the risks that exist at an emergency scene.
3. Determine the number of personnel needed to carry out the tasks that will mitigate and eliminate the risks that exist at an emergency scene.

Fire departments can either assign critical tasks to multiple personnel or carry out the tasks sequentially. It is common to use an assignment chart (based on information received at the time of the emergency call) to assign critical tasks on the fireground at each emergency response.

Fire departments can use the results of studies conducted by leading fire service authorities to determine some general guidelines about resource deployment. Table 10 presents a critical tasks analysis for a fire in a single-family home (based on best practices and findings from the NIST, NFPA, and OFM).

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<sup>7</sup> National Institute of Standards and Technology, “Landmark High-Rise Fire Study Evaluates Effectiveness of Crew Sizes, Elevator Use”

Table 10. Minimum firefighters required for critical tasks at single-family home fires.

Personnel	Critical Tasks	Firefighters Required
Crew #1	<ul style="list-style-type: none"> <li>Perform search and rescue duties.</li> <li>Conduct fire control/extinguishment duties on the fire floor.</li> <li>Serve as the pump operator.</li> </ul>	4
Crew #2	<ul style="list-style-type: none"> <li>Provide backup support for crew #1.</li> <li>Perform search and rescue duties.</li> <li>Locate the fire extension beyond the immediate fire area.</li> </ul>	4
Crew #3	<ul style="list-style-type: none"> <li>Assume the role/duties of a rapid intervention team.</li> <li>Conduct firefighting operations after another crew has exited the structure and is ready to take over the rapid intervention team duties.</li> </ul>	4
Chief Officer	<ul style="list-style-type: none"> <li>Serve as incident commander.</li> </ul>	1
Accountability/Scribe	<ul style="list-style-type: none"> <li>Assist the incident commander with organizing the tasks needed on the fireground.</li> </ul>	1
<b>Total</b>		<b>14</b>

Two additional considerations are as follows:

- If an incident safety officer is available, they can assess the overall safety of the incident and provide critical information to the incident commander.
- When a fire occurs in a non-hydrant area, it is critical for the responding fire department to have enough firefighters on the scene to ensure an adequate level of support and water supply.

### 13.3 Determining Response Benchmarks

#### Context

For many years, fire departments analyzed their performance by comparing their initial response times to a standard metric. Many agencies now agree that fire departments should set their own benchmarks to measure their performance.

After determining the ERF that it should provide, a fire department should examine the following factors:

- past performance
- fire station locations
- minimum dispatch time

By examining these factors, the fire department can identify its strengths and weaknesses and determine how often it has dispatched an ERF. The fire department can then establish response benchmarks that it can use to measure its performance. If a fire department can meet its benchmarks, it means that the department is operating at its self-determined optimal service delivery capacity during emergency responses. For example, a fire department may set its total response time at 12 minutes and aim to achieve that time during 90 per cent of its responses. In that example, that fire department assumes that 10 per cent of its responses will take longer than 12 minutes to arrive at an emergency.

When setting a level of service for a fire department, it is also important to ensure that the level of service meets all legislative requirements, such as those listed in the FPPA. In addition, fire departments should aim to create performance standards which adhere to the following legislation and guidelines:

- OHSA
- NFPA standards (as discussed further in section 13.3.1)
- OFM general guidance and the Public Fire Safety Guidelines

For example, under the OHSA, employers are responsible for protecting employees from workplace injuries or death. As such, employers must ensure they provide employee training and competent supervision. Fire departments and municipal councils must ensure that their firefighters receive adequate training and supervision for all services they provide.

The fire department can submit its response benchmarks to its municipal council for approval to ensure that the community understands the fire protection services it can expect to receive. It is up to leaders from each municipality and fire department to decide the level of service that is appropriate for their community. Each community has unique hazards, expectations, and needs, and reviewing the combination of factors will help shape the unique level of service for each community.

By analyzing responses that fall short of the benchmarks, a fire department can determine the issues that hinder its ability to meet its goals. This form of self-assessment can provide information that impacts decisions about station locations, staffing, apparatus deployment, and future standard development.

## Findings

As of this FMP, the Department does not measure its performance against a response time benchmark.

The Department should take the following steps to determine a benchmark:

1. Analyze each component of the Department's past dollar-loss fire response data.
2. Compare the Department's services and statistics to similar municipalities.
3. Review relevant legislation, guidelines, and standards (including the NFPA standards listed in section 13.3.1).
4. Review the location of the Department's fire station and the location of stations in neighbouring municipalities (as discussed in section 13.3.2).
5. Determine a reasonable target time in which the Department's personnel should complete each step of an emergency response.
6. Determine the percentage of responses during which the Department's personnel should achieve its target emergency response benchmark.

After completing this process, the Department should use its benchmark to evaluate the results of its future responses.

The Department should analyze all responses that take longer than the targeted response time to identify issues that it can address to reduce future response times. The Department should then implement fire protection and prevention strategies accordingly.

### 13.3.1 NFPA Standards

#### Context

Fire departments should review the following NFPA standards when determining their emergency response benchmarks:

- NFPA 1225, *Standard for Emergency Services Communications*
- NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*
- NFPA 1720, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments*

Note: Both NFPA 1710 and NFPA 1720 are scheduled to be consolidated into NFPA 1750 by 2025.

Table 11 shows the staffing and response time standards that NFPA 1720 provides for urban, suburban, rural, and remote areas.<sup>8</sup> The table defines each type of demand zone by its demographics and lists the minimum number of staff needed for responses in each area, as well as the expected response time. The table also includes a metric for measuring fire department effectiveness (which measures how often a minimum number of staff should respond within the expected time). For example, a fire department is considered effective if it can dispatch at least 15 staff to an incident in an urban area in nine minutes 90 per cent of the time.

Note: The text of Table 11 is taken directly from NFPA 1720. The NFPA uses the term Authority-Having Jurisdiction (“**AHJ**”) to refer to the body with jurisdiction over an emergency scene.

Table 11. Staffing and response time standards as per NFPA 1720.

Demand Zone <sup>9</sup>	Demographics	Minimum Staff to Respond <sup>10</sup>	Response Time <sup>11</sup> (minutes)	Meets Objective (%)
Urban area	> 1000 people/mi <sup>2</sup> (2.6 km <sup>2</sup> )	15	9	90
Suburban area	500-1000 people/mi <sup>2</sup> (2.6 km <sup>2</sup> )	10	10	80
Rural area	< 500 people/mi <sup>2</sup> (2.6 km <sup>2</sup> )	6	14	80
Remote area	Travel distance ≥ 8 mi (12.87 km)	4	Directly dependent on travel distance	90
Special risks	Determined by AHJ	Determined by AHJ based on risk	Determined by AHJ	90

<sup>8</sup> NFPA 1720 (2020), 11.

<sup>9</sup> A jurisdiction can have more than one demand zone.

<sup>10</sup> Minimum staffing includes members responding from the AHJ’s department and automatic aid.

<sup>11</sup> Response time begins upon completion of the dispatch notification and ends at the time interval shown in the table.

## Findings

As per the guidelines of NFPA 1720, Station 1 – Essex is in a suburban demand zone, while Station 2 – Gesto and Station 3 – Harrow are in rural demand zones.

The Department's policies outline apparatus response guidelines. The guidelines include a colour-coded response criteria, which categorizes incidents as follows:

- A "Priority 1" incident requires a response with emergency lights and sirens activated.
- A "Priority 2" incident requires a response without emergency lights and sirens.
- A "Priority 3" incident does not require an apparatus to respond.

According to the Department's response procedures, apparatus from two stations automatically respond to the following incidents:

- structure fires
- unknown fires
- alarm calls
- emergencies at vulnerable occupancies

By using this response criteria, the Department meets the staffing guidelines of NFPA 1720 and ensures sufficient resources are available at emergency scenes.

The Department follows this guideline unless following the guideline creates an unsafe situation. The incident commander or the officer in charge of the scene has the authority to deviate from the guideline.

## 13.4 Post-Incident Analysis and Review

### Context

In addition to setting performance standards, a fire department can fine-tune the effectiveness of its operations by conducting a post-incident analysis and review ("**PIAR**") after an incident concludes.

During a PIAR, a fire department evaluates its performance and safety practices. This process allows fire departments to identify gaps in their practices and develop measures to improve their effectiveness and safety during future responses. It is important to note that fire departments do not conduct PIARs to uncover blame but to reinforce practices that encourage high performance and excellent community service. For instance, a fire department that prioritizes safety practices will develop an internal culture that values safety.

Members of a health and safety committee should participate in and review the results of all PIARs. The committee members can then help determine if there are any safety practices their department can adopt.

## Findings

Going forward, the Department should consider conducting PIARs to improve future emergency responses. Members of the JHSC should participate in and review the results of all PIARs.

## 13.5 Response Statistics

### Context

Fire departments should review their historical performance (especially the topics of distribution and concentration) to help identify their service delivery capabilities.

Fire departments should also use modelling and the results of statistical analyses to verify that they are using their resources efficiently and effectively.

### Findings

The following tables list the Department's fire response statistics from 2018 to 2022:

- Table 12 lists the number of times per year the Department aided other agencies or responded to an emergency as per an automatic aid or mutual aid agreement.
- Table 13 lists the number and type of fire responses made by the Department per year.
- Table 14 lists the amount of dollar loss per occupancy group per year.
- Table 15 lists the amount of money saved per year.

Table 12. Automatic and mutual aid responses, 2018 to 2022.

Type of Aid	2018	2019	2020	2021	2022	Avg.
Assistance to other agencies	1	1	4	7	5	3.6
Assistance to police	0	1	2	1	0	0.8
Automatic aid	1	1	0	0	0	0.4
Mutual aid	5	1	3	3	0	2.4
<b>Total</b>	<b>7</b>	<b>4</b>	<b>9</b>	<b>11</b>	<b>5</b>	<b>7.2</b>



Table 13. Fire responses, 2018 to 2022.

Type of Response	2018	2019	2020	2021	2022	Avg.
Loss Fires: Structures	10	9	14	12	9	10.8
Loss Fires: Other	4	5	0	7	9	5.0
Loss Fires: Vehicles	1	0	0	0	9	2.0
No Loss Fires	1	0	0	0	0	0.2
Non-Fire Calls	306	259	275	286	310	287.2
<b>Total</b>	<b>322</b>	<b>273</b>	<b>289</b>	<b>305</b>	<b>337</b>	<b>305.2</b>

Table 14. Dollar loss by occupancy type, 2018 to 2022.

Occupancy	2018	2019	2020	2021	2022	Average
Group A	\$0	\$0	\$0	\$5,000	\$0	\$1,000
Group B	\$0	\$0	\$0	\$0	\$0	\$0
Group C	\$557,000	\$82,500	\$577,850	\$308,000	\$1,040,500	\$513,170
Groups D&E	\$0	\$21,000	\$0	\$0	\$0	\$4200
Group F	\$0	\$0	\$0	\$0	\$1,400,000	\$280,000
Other	\$54,000	\$22,000	\$103,000	\$120,000	\$260,000	\$111,800
<b>Yearly Loss</b>	<b>\$611,000</b>	<b>\$125,500</b>	<b>\$680,850</b>	<b>\$433,000</b>	<b>\$2,700,500</b>	<b>\$910,170</b>

Table 15: Dollar amount saved by station, 2018 to 2023.

Station	2018	2019	2020	2021	2022	Average
Station 1	\$25,000	\$180,000	\$183,000	\$400,000	\$1,700,000	\$497,600
Station 2	\$365,000	\$0	\$210,000	\$50,000	\$300,000	\$185,000
Station 3	\$933,000	\$700,000	\$743,300	\$871,000	\$4,559,000	\$1,561,260
<b>Total</b>	<b>\$1,323,000</b>	<b>\$880,000</b>	<b>\$1,136,300</b>	<b>\$1,321,000</b>	<b>\$6,559,000</b>	<b>\$2,243,860</b>

As shown in the above tables, the Department recorded an average yearly dollar loss of \$910,170 from 2018 to 2023. However, the Department saved an average of \$2,243,800 per year during the same period.

### 13.5.1 Response Time Statistics

#### Context

All fire departments must retain complete, consistent, and accurate records of their historical response times. Sound response data is essential for measuring performance, making strategic decisions, and determining service alternatives.

Every emergency response comprises the following four steps:

#### **Step 1: Public Safety Answer Point (PSAP) Call Processing Time**

- The PSAP call processing time begins when the PSAP or 911 call centre receives an emergency call and transfers the call to the Department.
- This step ends when the Department's dispatch centre answers the transferred call.

#### **Step 2: Secondary Public Safety Answer Point (SPSAP) Alarm Processing Time**

- The SPSAP alarm processing time begins when the Department's dispatch centre receives an alarm (incident beginning).
- This step ends when the communication technician/dispatcher activates the station's paging devices (dispatch time).

#### **Step 3: Chute Time**

- Chute time begins when the station activates its pagers, and the responding apparatus begins its response.
- This step ends when the apparatus's response is noted by or to dispatch via the Department's radio system (en route time).

#### **Step 4: Travel Time (First Unit)**

- Travel time begins when the responding apparatus initially acknowledges its response.
- This step ends when the responding apparatus confirms to dispatch via radio that it has arrived on-scene (on-scene time).

When they are timed and added together, the four steps listed above identify how long it takes for an emergency responder's first due unit to arrive at an emergency scene. However, in order for the resulting response data to be useful, the four steps used to calculate the response times must be measured consistently across all types of responses.

## Findings

Table 16 summarizes each of the Department's fire stations' average chute times, travel times, and response times at dollar-loss fires from 2018 to 2022 (based on data provided by the Department). The table also lists the average number of personnel at each emergency scene. Note: As of this FMP, the Department does not have access to data on its dispatch processing times.

Table 16. Average response times, 2018 to 2022.

Station	Chute Time	Travel Time	Response Time	On-scene Personnel
Station 1	4m53s	1m48s	6m40s	13
Station 2	5m08s	3m54s	9m02s	13
Station 3	6m34s	4m34s	11m08s	12

## 13.6 Deployment Models

### Context

Recently, the fire service reconsidered the way fire departments should deploy their assets. One best practice that is now widely accepted is basing deployment models on local needs and circumstances. This approach puts the risks specific to an individual community at the centre of a deployment model's considerations. Several industry-leading organizations, such as the OFM, the Metro Fire Chiefs Association, and the Commission on Fire Accreditation International, have endorsed this risk-based deployment model as the most effective way of protecting lives and property.

### Findings

CRAs identify the risks that may affect residents or property within a specific community—the greater the risk, the greater the resources required. The Department should review Essex's CRA to determine what types and levels of fire protection services it needs to provide to the community. By understanding the risks in the community, the Department can equip itself with information that it can use to determine effective resource allocation and service provision.

The Department currently uses the apparatus response procedure listed in section 13.3.1. By following the procedure, the Department ensures it deploys the required resources when responding to emergencies. As of this FMP, the suppression division is deploying its resources adequately. Going forward, the Department should continue monitoring its ERF and using the information to determine adequate staffing levels. Specifically, the Department should monitor volunteer turnout during daytime hours to determine its staffing levels. The Department should then adjust its staffing levels accordingly. (For more on staffing levels, see section 13.7 below.)

It is imperative that the Department uses all available tools and information to measure its response data. This will help the Department ensure it meets its performance objectives and response criteria.

### **13.6.1 Incident Command Structure**

#### **Context**

Many fire departments across North America have adopted the incident command structure (“**ICS**”) to ensure they have a response structure that can accomplish all necessary operational tasks.

The ICS is a proven response model used by emergency management professionals. The ICS defines the roles needed during an emergency response and the organizational structure of all personnel involved with response efforts. (As of this FMP, the firefighter guidance notes cover five topics related to the ICS: incident command, crew integrity, radio communication, incident safety officer, and reporting exposures.)

#### **Incident Commander**

Under the ICS, the incident commander is the individual who is in charge of an emergency response. The incident commander is responsible for the safety of all responders. Typically, the on-site officer with the most seniority fills the role of incident commander.

In a crew-based response structure, a fire captain is usually the first officer to arrive at an emergency scene. The fire captain is often expected to take overall command of the scene and provide direct supervision of other fire crew members.

A senior officer should take over the role of incident commander upon arrival at an emergency scene, stationing themselves inside a vehicle rather than inside the hazard zone. This arrangement allows the senior officer to monitor the safety and overall direction of the incident more effectively.

Section 2.1 of the firefighter guidance notes addresses topics related to the incident commander.

#### **Accountability/Scribe**

Under the ICS, an accountability/scribe role performs the following tasks to assist the incident commander:

- Document events occurring at the incident.
- Monitor communication devices.
- Track the location and actions of firefighters.

- The incident commander and responding units must know the location and status of firefighters during a mayday situation.

Section 5.1 of the firefighter guidance notes addresses topics related to firefighter accountability.

### **Incident Safety Officer**

Under the ICS, the incident commander assigns an incident safety officer to perform the following tasks:

- Assess the hazards associated with the incident.
- Assess firefighter operations.
- Help the incident commander manage personnel and resources at the emergency scene.
- Improve the safety of the incident.

Section 2.4 of the firefighter guidance notes addresses topics related to the incident safety officer.

### **Findings**

After determining the community's risks, needs, and circumstances, the Department should review the ICS deployment model and consider implementing it into its operations.

## **13.6.2 Effective Fireground Staffing Model**

### **Context**

The effective fireground staffing model ("**EFSM**") is a popular and accepted way of determining fire protection resources.

The OFM developed the EFSM in the 1990s as part of a comprehensive fire safety model that identified seven sub-models which impact fire protection. The EFSM comprises the following components:

- public attitude
- fire prevention effectiveness
- fire risk
- detection
- intervention time

- fireground effectiveness
- suppression capabilities

The EFSM is now widely used across Ontario and is a vital tool that helps fire departments determine the effectiveness of their responses.

## **Findings**

After determining the community's risks, needs, and circumstances, the Department should review the EFSM and consider implementing it into its operations.

### **13.7 Staffing Models**

#### **13.7.1 Factors Affecting Fire Protection Staffing Models**

The following factors influence how a municipality manages the fire protection staffing models and services in its community:

- population (including the number of year-round residents and the number of transient or migrant residents)
- land mass
- community risk
- community socioeconomics
- industrial tax base and operating budgets
- population growth
- fleet and equipment
- fire call volumes

#### **13.7.2 Municipal Comparators**

Table 17 shows municipal comparators for Essex and lists various statistics that influence their fire protection staffing models (based on data from the 2021 Statistics Canada census, as well as supplemental information provided by representatives of the municipalities used as comparators).

Table 17. Data from municipal comparators.

Staffing Consideration	Essex	Amherstburg	Kingsville	Lakeshore	LaSalle	Leamington	Tecumseh
Population	21,216	23,524	22,119	40,410	32,721	29,680	23,300
Area (km <sup>2</sup> )	277.53	83.76	246.08	529.00	64.96	261.24	94.59
Population density	76.4	128.0	89.9	76.4	503.7	113.6	246.3
Stations	3	3	2	5	3	1	2
Fire chiefs	1	1	1	1	1	1	1
Deputy chiefs	1	2	1	1	1	1	2
Assistant deputy chiefs	1	0	2	2	0	1	0
Prevention/education staff	0	1	1	2	1	2	2
Training or EMS staff	0	1	0	0	1	0	1
Full-time firefighters	0	6	1	0	12	0	0
<b>Total full-time staff</b>	<b>3</b>	<b>11</b>	<b>6</b>	<b>6</b>	<b>16</b>	<b>6</b>	<b>6</b>
Volunteer firefighters	51	60	50	95	28	0	42
Part-time firefighters	0	0	0	0	0	28	0
Administrative assistants	0.5	1	1	1	1	1	1
<b>Total fire department staff</b>	<b>54.5</b>	<b>72</b>	<b>57</b>	<b>102</b>	<b>45</b>	<b>35</b>	<b>49</b>

The above table shows that the Department has an average number of volunteers, but the lowest full-time complement out of the seven fire departments compared. It should be noted that the Town of Amherstburg has a similar population to Essex, but its fire department has a full-time staff complement.

### **13.7.3 Daytime Staffing**

All evidence presented during this FMP's development indicates that the Department has provided Essex with reliable, effective fire protection services. However, the Department is experiencing several challenges that are common to fire departments in Ontario. Those challenges include recruiting and retaining volunteer firefighters and meeting NFPA certification requirements.

The summary of municipal comparators shows there are several daytime staffing models Essex can consider for the Department (as needed). Some staffing models include using full-time response crews. Other staffing models involve assigning dedicated daytime personnel (such as a training officer) to respond to emergency calls and perform various other duties.

Going forward, the Fire Chief and Council must develop a strategy to deal with potential impacts on the type and level of service the Department provides, especially as the Essex community grows and develops. Adjustments to the Department's daytime staffing model will help the organization address some of the challenges it is currently facing.

Sections 10 and 12 of this FMP recommend adding a dedicated full-time staff member who can divide their time evenly between the training and fire prevention divisions. From a training perspective, a training officer would provide the managerial support the Department's training program needs to remain consistent and effective, which will help the Department's personnel learn the skills they need to achieve applicable NFPA certifications. From a fire prevention standpoint, a training officer would have time to assist with inspections and compliance requirements, which will allow the Department to meet its legislative obligations. The addition of a training/fire prevention officer is a good first step that will help the Department deliver required services and align its operations for long-term sustainability.

Council and the Fire Chief should review the information in this section of the FMP and discuss the factors that influence the fire protection services Essex receives. Based on the results of those reviews, Council and the Fire Chief should develop a strategy that will ensure the Department can address its current and potential staffing needs. Doing so will help the Department identify ways to adapt its operational structure (as needed) to meet the community's future risks, needs, and circumstances.



### **13.8 Recommendations**

After assessing performance standards and response statistics in Essex, The Loomex Group developed the following recommendations:

- 13-1. The Fire Chief should continue monitoring the Department's effective response force to determine whether the Department needs to increase its staffing levels, specifically during the daytime.

## 14.0 Fire Stations

### 14.1 Overview of Fire Stations

#### Context

A fire station is a facility where a fire department houses its fire apparatus and other equipment. Depending on its age, size, and configuration, a fire station may also contain features such as an administrative area, a training room, or exercise equipment.

Over the years, the legislation governing fire stations has undergone several revisions, and fire stations must now meet specific requirements. For example, fire stations in Ontario must comply with the terms of the AODA.

As of this FMP, many fire stations in Ontario are several decades old. Due to the age of the facilities, fire departments must remain aware of the functionality and capabilities of their fire stations.

#### Findings

As of this FMP, the Department operates from the following three fire stations:

- Station 1 – Essex (located at 55 Alice Street North)
- Station 2 – Gesto (located at 3575 North Malden Road)
- Station 3 – Harrow (located at 25 Centre Street East)

The fire station locations were strategically chosen to provide the Department with timely access to various parts of the Essex community.

The Essex Parks and Facilities Division is responsible for the care and maintenance of the Department's fire stations. All facilities are well maintained, and the Department's firefighters have taken proactive steps to ensure each site can support their operations as best as possible. For example, the Department has ensured each fire station has a backup generator.

Details about the Department's fire stations are discussed in the subsections below.

### 14.2 Station 1 – Essex

Station 1 – Essex was constructed in 2013, at a site located near Essex's urban core. The station is attached to a self-contained, two-bay paramedic station (as shown in Figure 7).



Figure 7. Exterior of Station 1 – Essex.

As of this FMP, the following Department personnel operate from Station 1 – Essex:

- Fire Chief
- Deputy Chief
- Assistant Deputy Chief
- part-time administrative assistant
- part-time support firefighter

### **14.3 Station 2 – Gesto**

Station 2 – Gesto (also referred to as Colchester North) is the newest of the Department's three fire stations. The station, which opened in 2022, is a state-of-the-art facility that the Department constructed to meet all current building and fire codes. The station is a fully accessible facility, and it meets the requirements of the AODA. Figure 8 shows the exterior of the station.



Figure 8. Exterior of Station 2 – Gesto.

Due to its location, Station 2 – Gesto allows the Department to provide service to a large rural/agricultural area.

Station 2 – Gesto also has space to house a training site (shown in Figure 9), which the Department uses to accommodate a variety of training sessions for firefighters of all skill levels.



Figure 9. Training site, Station 2 – Gesto.

St. Clair College also uses the training site (per an arrangement with the Department) to facilitate part of the school's pre-fire service program.

#### 14.4 Station 3 – Harrow

Station 3 – Harrow (shown in Figure 10) was built in 1980, and it is the oldest of the Department's three fire stations. The Department primarily uses this station to provide services in the village of Harrow and the southern edge of the district.



Figure 10. Exterior of Station 3 – Harrow.

Although the Department's firefighters have maintained Station 3 – Harrow over the years, it is a cramped facility that does not have the functionality or features needed to support the Department's current operations. For instance, the current three-bay apparatus floor at Station 3 – Harrow is not big enough to house the Department's apparatus and equipment and offer the Department's firefighters the space they need to operate safely.

As shown in Figure 11, the Department's current fire apparatus are much larger than the apparatus which Station 3 – Harrow was built to accommodate. As a result, the Department's firefighters do not have adequate clearance to maneuver around vehicles parked in the bay.



Figure 11. Apparatus bay, Station 3 – Harrow.



The apparatus floor at Station 3 – Harrow also lacks space for the firefighters to put on their gear before leaving the station in response to an emergency call (as shown in Figure 12). Moreover, having the firefighters' gear stored so close to the fire apparatus creates health and safety concerns, as the gear may become contaminated by exhaust or other substances emitted by the fire apparatus.

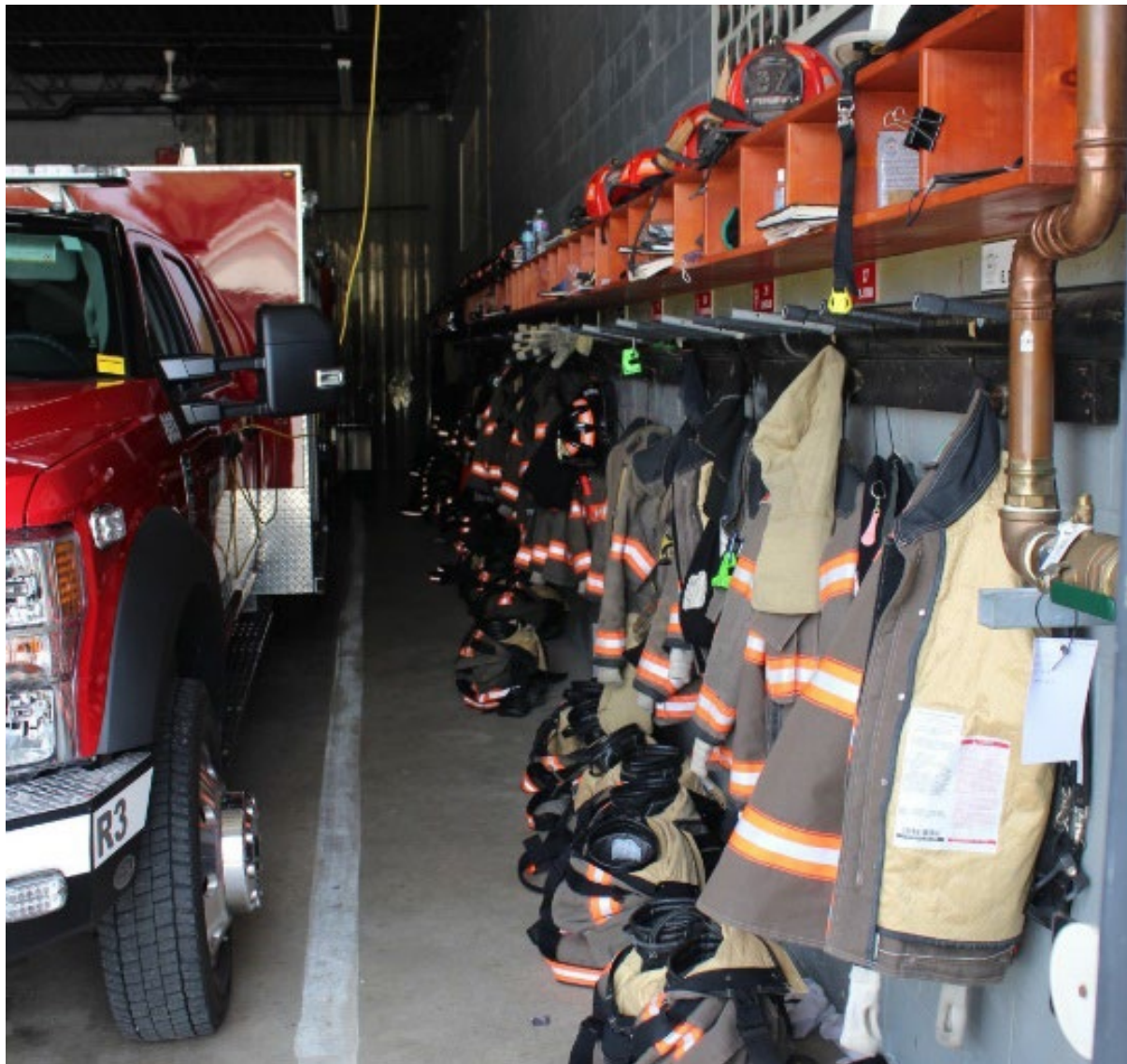


Figure 12. Bunker gear storage, Station 3 – Harrow.

There are also issues with the washroom facilities in Station 3 – Harrow. As shown in Figure 13, the station has outdated washroom facilities, and, aside from practicality concerns, the facilities do not meet current legislative requirements, such as accessibility requirements and gender-neutrality requirements (as outlined in the AODA).



Figure 13. Bathroom facilities, Station 3 – Harrow.

### 14.5 Summary of Fire Stations

As of this FMP, stations 1 and 2 have the functionality, capacity, and features needed to support the Department's current and anticipated needs.

Station 3 – Harrow does not meet the Department's current needs. Moreover, all evidence reviewed during the FMP development process indicates that the station will prove inadequate for the Department's anticipated future needs.

Council must now decide how it will address the issues presented by Station 3 – Harrow. Although Council must make a decision that is fiscally responsible, Council must also ensure that its decision will support the current (and future) needs of the Department, as well as the community. Due to the state of the station, which all evidence suggests is at the end of its life cycle, Council should not defer its decision about the facility. Any prolonged delays may require Essex to spend more money to complete upgrades or a station relocation in the future.

#### 14.5.1 Recommended Plan Regarding Fire Stations

As noted above, Station 3 – Harrow presents several issues that Council and the Department must remediate as soon as possible.

A lack of space is one of the main issues with Station 3 – Harrow. For instance, the current facility does not have the space to accommodate an adequate number of training rooms. The station also lacks sufficient assembly space. There is also a lack of space in the apparatus bay, which limits the types of apparatus the Department can house at the station. Furthermore, the facility's limited space introduces various legislative concerns, such as a lack of compliant washroom facilities.

In 2018, Essex contracted Archon Architects Incorporated, Haddad Morgan and Associates Ltd., and EXP to conduct a building condition assessment for Station 3 – Harrow. The study assessed the feasibility of improving Station 3 – Harrow through renovations, additions, or the construction of a new building. The results of that study recommend replacing Station 3 – Harrow with a new facility.

In light of the issues with Station 3 – Harrow, The Loomex Group agrees with the 2018 building condition assessment. It is more practical for Council and the Department to build a new fire station at another location than it is to try updating the existing Station 3 – Harrow facility.

There are several advantages of replacing Station 3 – Harrow with a new fire station. The main benefit is that Essex can design a facility that will meet the Department's current and anticipated needs. Another benefit is that having a new facility in a different location is not likely to affect the Department's average response times, as volunteer firefighters respond from many different areas throughout Harrow. A new fire station can also incorporate a building layout that will satisfy applicable building codes and legislation, such as the AODA.

If Essex decides to build a new fire station to replace Station 3 – Harrow, the town should ensure its decision takes into account the following considerations:

- Will the proposed building design/location provide sufficient space for parking now and in the future?
- What is the future growth potential of the proposed site?
- What is the potential future training footprint?
- Will the proposed building design/location accommodate the Department's apparatus and vehicle deployment model?
- Will the proposed building design/location support a multi-use municipal facility?

Although finding a convenient location for a new fire station is important, it is more important for Essex to choose a site that is large enough to support the community's long-term needs.



### **14.5.2 Future Station Locations**

#### **Proposed Sites for a New Fire Station in Harrow**

As of this FMP, Essex has identified four potential sites where it can locate a new fire station to replace Station 3 – Harrow:

1. Current site of the Essex Environmental Services Department (120 Sinasac Street West).
2. Current site of the Harrow Soccer Complex (2225 Roseborough Road).
3. Serviced lot across from the Harrow EMS station (intersection of 3rd Concession Road and County Road 22).
4. Lot to the south of Harrow Centre (intersection of Dunn Road and County Road 13).

Upon review of the potential sites, The Loomex Group does not recommend using locations 3 or 4, as Essex does not own the land at either site.

Figure 14 shows a map of Harrow Centre and indicates the location of the proposed replacement sites.

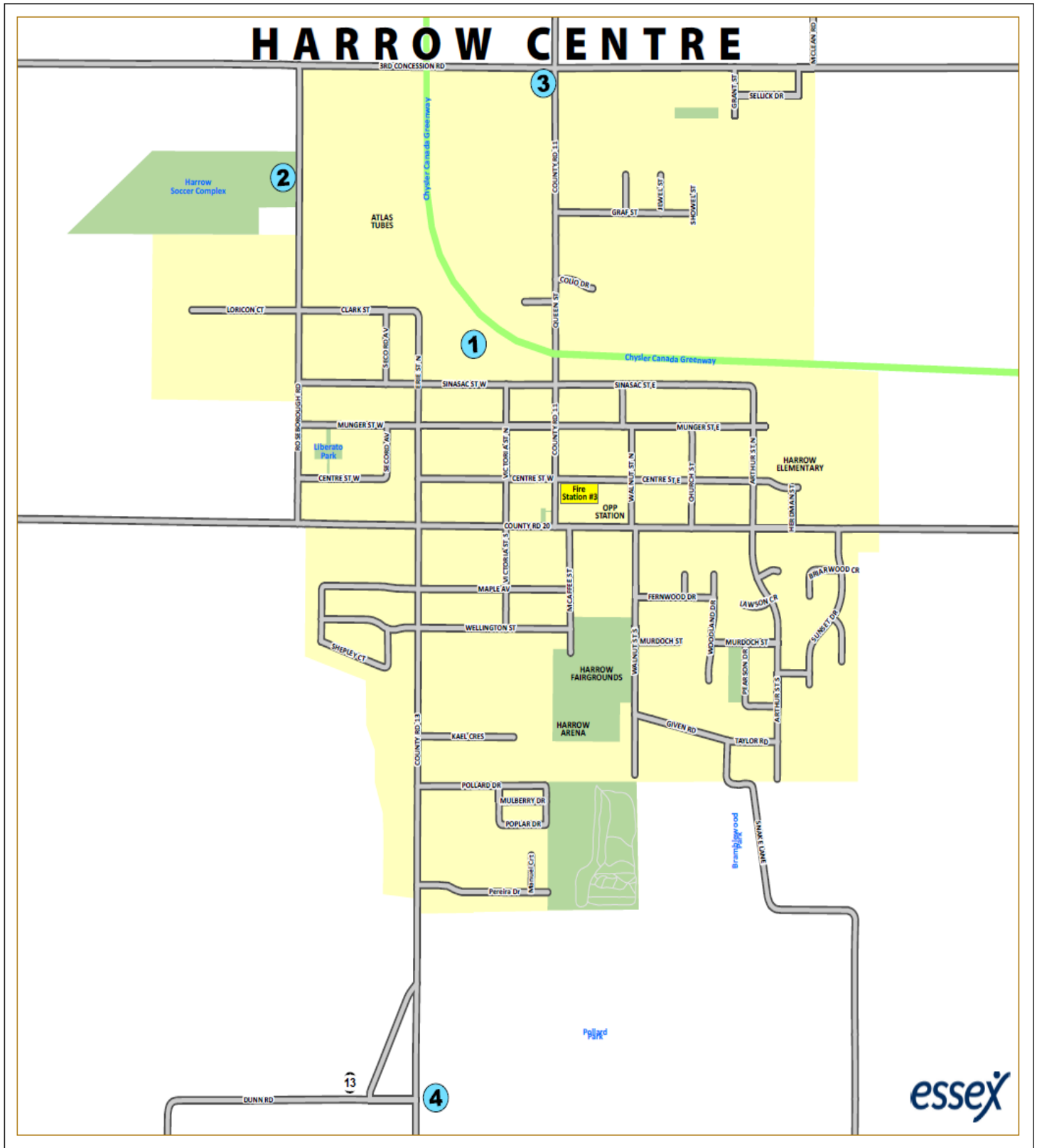


Figure 14. Potential locations for a new fire station in Harrow.

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**Location 1: Environmental Services Department Facility (120 Sinasac Street West)**

The Department should note the following observations and considerations about location 1:

- The lot would provide limited access and egress for emergency routes and services.
- Due to the existing structures on the site, the lot may lack the necessary space to store the Department's current and future apparatus.
  - Essex could consider modifying or demolishing existing structures to mitigate this issue.
- Although the lot would provide sufficient parking space for the Department's firefighters, it may cause issues related to access and egress for responders.

**Location 2: Harrow Soccer Complex (2225 Roseborough Road)**

The Department should note the following observations and considerations about location 2:

- The lot has easy access to roads and routes for emergency responses.
- The lot is large enough to accommodate a fire station with a good-sized outdoor training space.
- The lot is large enough to meet the Department's current and future apparatus storage needs.
- The lot provides sufficient parking space for firefighters and visitors.
- The lot is large enough to accommodate a facility with ample meeting space, a training room, a PPE storage room, mechanical rooms, and cleaning facilities.
- The lot is compliant with current codes and AODA requirements.

**Location 3: 3rd Concession Road and County Road 11**

The Department should note the following observations and considerations about location 3:

- The lot would provide the Department with easy access to roads during emergency responses.
- Due to the size of the lot, the station could not have a large footprint.
- Due to the size of the lot, the station would have limited parking space.
- The lot may not have the space to meet the Department's current and future apparatus storage needs.

**Recommended Site**

The Loomex Group recommends that the Department build its new station at location 2 (2225 Roseborough Road). The lot is big enough to accommodate a fire station that is likely to meet the needs of the Department and the community for the foreseeable future.

**14.6 Recommendations**

After assessing the fire stations in Essex, The Loomex Group developed the following recommendations:

- 14-1. The Fire Chief should develop a report for Council that recommends replacing Station 3 – Harrow with a new fire station at 2225 Roseborough Road. The report should include a cost analysis and outline the benefits of building a new fire station at the proposed site.

## 15.0 Water Supply

### 15.1 Types of Water Supplies

In the context of fire suppression, a water supply is classified as one of the following:

1. Municipal water supply: A municipal water supply is water accessed in hydrant-protected areas.
2. Rural water supply: A rural water supply is water accessed in non-hydrant areas.

Fire departments must remain aware of which water supplies are available in their communities, as a reliable water supply is essential for delivering effective fire suppression services.

### 15.2 Municipal Water Supplies

#### Context

In hydrant-protected areas, municipal water and distribution systems provide the water supply that firefighters use for emergency responses. Municipalities are responsible for arranging hydrant testing, repairs, and replacements.

Municipalities must maintain their water systems to the following standards:

- The municipal water system must have the capacity to provide firefighters with a water supply that has a sufficient flow for firefighting operations.
- The municipal water system must support the local distribution system, including fire hydrants.

From an insurance standpoint, hydrant-protected properties usually pay lower insurance premiums than non-hydrant-protected properties.

#### Findings

As of this FMP, the Essex Environmental Services Department is responsible for monitoring, testing, and inspecting the town's municipal hydrant system. Under the direction of the Manager of Environmental Services, the municipal hydrants in Essex undergo annual flow testing and inspections.

### 15.3 Fire Hydrant Identification for Municipal Hydrants

#### Context

Table 18 shows the fire hydrant colour-coding scheme outlined in NFPA 291, *Recommended Practice for Water Flow Testing and Marking of Hydrants*.

Table 18. NFPA colour classifications and markings for municipal hydrants.

Class	Top and Nozzle Colour	Barrel Colour	Fire Flow	Pressure
AA	Light Blue	Chrome Yellow	1,500 gpm (5,680 L/min or greater)	20 psi (140 kPa)
A	Green	Chrome Yellow	1,000 to 1,499 gpm (3,785 to 5,675 L/min)	20 psi (140 kPa)
B	Orange	Chrome Yellow	500 to 999 gpm (1,900 to 3,780 L/min)	20 psi (140 kPa)
C	Red	Chrome Yellow	500 gpm (1,900 L/min or less)	20 psi (140 kPa)

The NFPA colour scheme helps fire crews identify the amount of fire flow they can expect from a given hydrant. This allows incident commanders, water sector officers, and pump operators to arrive at an incident site and quickly verify if there is enough water to complete the necessary response services. The colour-coding scheme also ensures that fire crews can make decisions about increasing the water supply by attaching it to another hydrant (if needed).

### Findings

As of this FMP, Essex is following the NFPA colour scheme for municipal fire hydrants. The Manager of Environmental Services monitors hydrant markings to verify that they remain compliant with applicable NFPA guidelines. Figure 15 shows two examples of municipal fire hydrants in Essex.



Figure 15. Municipal fire hydrants in Essex.

Figure 16 illustrates an overview of the extensive water distribution system in Essex.



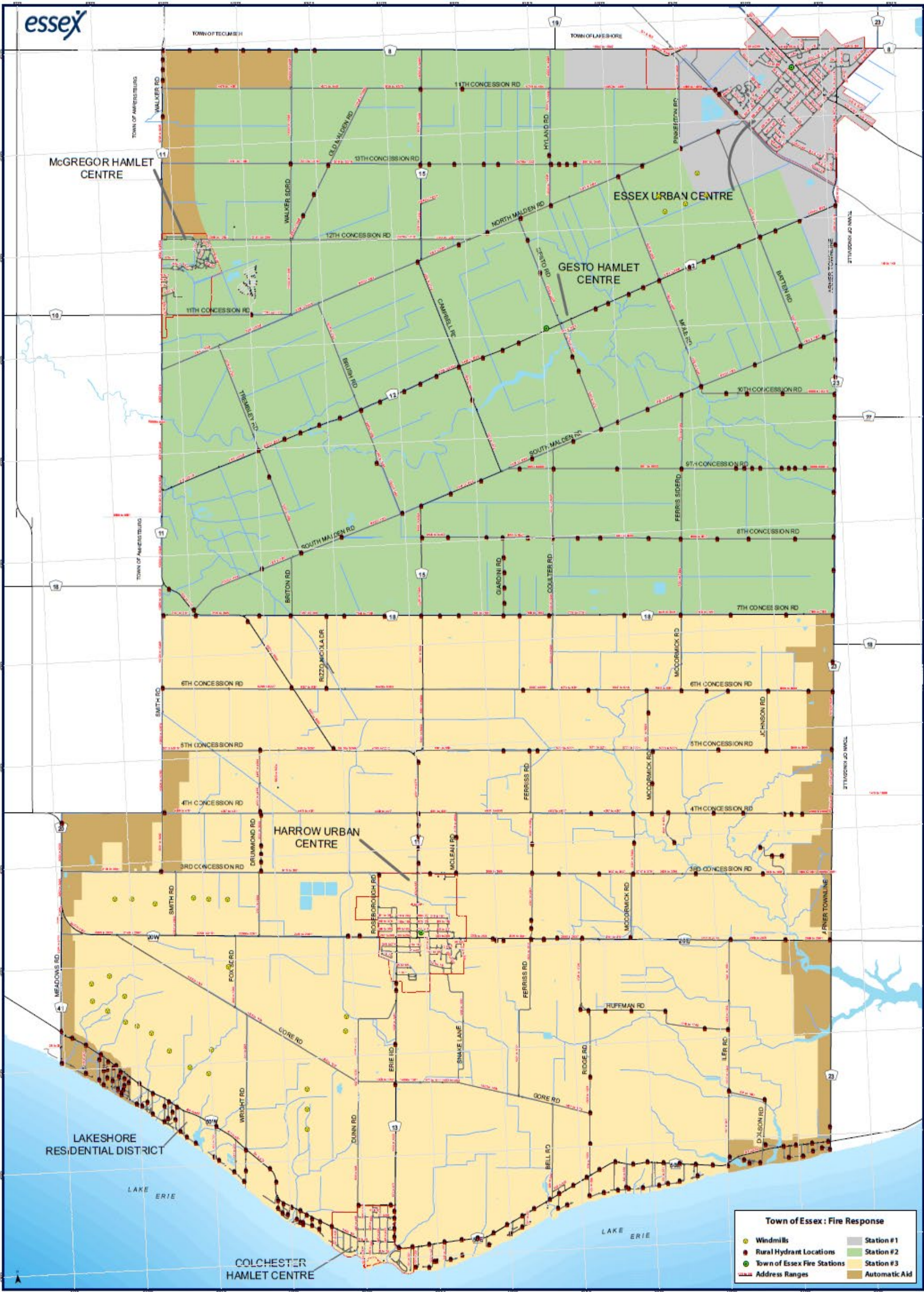


Figure 16. Water distribution system in Essex.



## 15.4 Private Hydrants

### Context

When a property has a private hydrant, the property's owner or developer must provide hydrant installation and water flow certifications to the Chief Fire Official. The Chief Fire Official must then approve that certification before the owner or developer is allowed to occupy the property. After receiving approval to occupy their property, the developer or owner must ensure they test their on-site hydrants annually to verify they remain operational.

In contrast to the NFPA colour-coding scheme, private hydrants are usually painted in a colour that distinguishes them from municipal hydrants.

### Findings

Essex contains a significant number of private hydrants, which are quickly identifiable by their silver colouring (as shown in Figure 17). As of this FMP, the county has over 70 private hydrants, and it has plans in place regarding the installation of additional hydrants.



Figure 17. Private fire hydrant in Essex.

The Department regularly works with private contractors and associations to ensure that the private hydrants in Essex undergo required inspections, testing, and maintenance. The partnership between the Department, the Essex Environmental Services Department, and private hydrant facilities is extremely effective, given the high number of private hydrants in the town.



## 15.5 Non-Hydrant-Protected Areas

### Context

When fire departments respond to emergencies in areas without fire hydrants, they must use an alternate water source to provide fire suppression services. Dry hydrants and tankers are common alternative water sources.

Dry hydrants provide fire departments with a water supply culled from rivers, lakes, ponds, or storage tanks. Many fire departments that respond to calls in non-hydrant-protected areas rely on dry hydrants.

A tanker is a type of fire apparatus that can transport water to non-hydrant-protected areas. One benefit of a tanker service is that it may lead to reduced costs for a community's residents. Many insurance providers offer reduced fire insurance premiums in communities that have fire departments with Superior Tanker Shuttle Accreditation. The Superior Tanker Shuttle Accreditation program is available for fire departments that meet the following criteria:

- The fire department can maintain a minimum water supply of 200 gallons/minute for a two-hour duration for residential properties up to 8 km away from a fire station.
- The fire department can maintain a minimum water supply of 500 gallons/minute for a two-hour duration for commercial properties up to 5 km away from a fire station.

Although using dry hydrants and tankers can help fire departments access a water supply in areas that lack municipal fire hydrants, they often require firefighters to purchase specialized equipment or complete specific training.

### Findings

As of this FMP, Essex contains a limited number of non-hydrant-protected areas, most of which are located near the village of Harrow. In order to ensure it has a reliable water supply in Essex's non-hydrant-protected areas, the Department has established a tanker shuttle service. The shuttle service operates from Station 3 – Harrow, which houses all applicable fire apparatus and vehicles.

Station 2 – Gesto can also support the Department's tanker shuttle service (if required). However, given the concentration of non-hydrant-protected areas in the Harrow community, the Department should continue keeping its tanker apparatus at Station 3 – Harrow. Doing so will keep the Department compliant with applicable tanker shuttle requirements, and it will ensure the Department can provide a reliable and uninterrupted shuttle service.

Going forward, the Department should attempt to maximize an available water supply in Essex's non-hydrant-protected areas by purchasing the necessary equipment (as needed) and having its personnel complete applicable training (as required).

### **15.6 Recommendations**

After assessing the water supply in Essex, The Loomex Group developed the following recommendations:

- 15-1. The Fire Chief should ensure that the Department's tanker shuttle service meets all applicable fire service guidelines.

## 16.0 Asset Management

### 16.1 Fire Apparatus

#### 16.1.1 Purchasing and Maintaining a Fire Apparatus

Firefighters respond to many kinds of emergencies, including fires, explosions, and motor vehicle collisions. In order to arrive at an emergency scene and deliver the required services safely and effectively, firefighters rely on a variety of fire apparatus. Common examples of fire apparatus include pumpers, tankers, rescue vehicles, and aerials.

Each fire apparatus is an expensive vehicle, and purchasing an apparatus is a significant investment for any municipality. As such, fire departments should only acquire the apparatus needed to address the risks in their communities. Each type of apparatus serves a different function, and not every fire department requires each type of apparatus.

Maintaining and replacing a fire apparatus is also costly. A fire apparatus is subject to intense conditions and use, which means most apparatus will require routine maintenance and upkeep. Therefore, municipalities must set aside funds to maintain and replace their fire apparatus as needed.

Despite the time and monetary commitments needed to purchase a fleet of fire apparatus and keep the vehicles in good working order, it is essential for fire departments to have properly equipped apparatus to control and mitigate emergencies.

#### 16.1.2 Safety Standards

Fire apparatus have undergone considerable changes over the years. For example, many modern apparatus are much larger than older apparatus, and most newer vehicles are more technologically sophisticated than older vehicles. Moreover, many older fire apparatus lack features required by current legislation, such as anti-lock braking systems and roll stability control.

Due to changes in construction materials and features, fire apparatus must meet more rigorous safety standards than in years past, including the requirements of the OHSA, NFPA 1901: *Standard for Automotive Fire Apparatus*, and ULC S515-04: *Automotive Fire Fighting Apparatus*.

Municipalities and fire departments must take the time to review all applicable legislation and safety standards before purchasing a new fire apparatus, which makes appropriate planning and budgeting to replace older apparatus more important than ever.

### **16.1.3 Inspections, Testing, and Maintenance**

A fire apparatus must undergo weekly and annual inspections, tests, and maintenance to ensure it can start and operate properly whenever an emergency occurs.

In addition to routine maintenance (such as checking and adjusting brakes and making lubrication and oil changes), a fire apparatus must undergo annual pump tests, non-destructive ladder tests, and Ministry of Transportation inspections. As a result of this routine upkeep, an apparatus will be out of service for several days each year for scheduled maintenance.

Fire departments must also recognize that maintaining a modern fire apparatus requires hiring mechanics with specialized training to inspect and repair the vehicle's safety systems, pollution control, and engine and driveline systems. In years past, a mechanically skilled firefighter could have performed those tasks, but the complex technology in modern fire apparatus has made it necessary to contract specialized assistance. Advanced maintenance work may also require a fire apparatus to be taken out of service for an extended period.

## **16.2 Fleet Renewal and Rationalization**

### **Context**

Assessing a fire fleet involves the following considerations:

- What apparatus comprise the fire department's current fire fleet?
- What types of responses does the fire department make?
- What are the fire department's available staffing levels for responses?

A fire department must keep these considerations in mind, as they will help identify which fire apparatus the department should purchase to suit its current and expected needs.

Once a fire department has identified which fire apparatus it is likely to need, it should work with its municipal council to develop a strategic plan that accounts for purchasing timelines and budgetary considerations.

### **Findings**

Table 19 summarizes information about the apparatus that comprise the Department's fire fleet at the time of this FMP.

Table 19. Apparatus comprising the Essex Fire and Rescue fire fleet.

Unit #	Type	Station	Year	Number of Service Years	Projected Replacement Year	Estimated Cost of Replacement (2023 Prices)
Aerial Platform	Sutphen 70-ft platform	2	1998	25	2024	\$2,000,000
Engine 3	American Liberty	3	2007	16	2026	\$1,000,000
Engine 1A	E-One	1	2006	17	2027	\$1,000,000
Chief 2	Ram RTR	1	2017	6	2027	\$90,000
Tanker	GMC	3	2000	23	2028	\$750,000
Chief 1	Ford	1	2021	2	2031	\$75,000
Chief 3	Ford EPR	1	2022	1	2032	\$75,000
Rescue 2	Ford DRW	2	2014	9	2034	\$750,000
Squad 1	Ram 2500	1	2018	5	2038	\$120,000
Engine 1	Spartan	1	2018	5	2038	\$1,000,000
Rescue 3	Ford DRW	3	2021	3	2040	\$750,000
Engine 2	Pierce	2	2021	2	2041	\$1,000,000
Trailer	Haul HLA	3	2021	2	2041	\$75,000
Support Unit 3	Ford 250 4x4	3	2023	1	2043	\$120,000

A review of Department's fire fleet shows that the Department has purchased apparatus that suit its deployment model. The Department has maintained the consistency of its fire fleet by purchasing replacement vehicles prudently and responsibly.

The Department's fire fleet replacement schedule is also successful because the Department has collaborated with Council to arrange the support and resources needed to purchase apparatus.

Going forward, the Department should strive to maintain the tanker shuttle service apparatus at Station 3 – Harrow, which will help the Department provide a reliable water supply in Essex's non-hydrant-protected areas.

## 16.3 Fire Service Equipment

### Context

In addition to fire apparatus, firefighters rely on a range of equipment to perform various tasks.

Examples of fire service equipment include:

- fire hoses and nozzles
- fittings
- ladders
- generators and lighting
- ventilation fans
- portable pumps
- saws
- gas detectors
- thermal imaging cameras
- various hand tools

All additional equipment is considered part of a fire department's assets. Municipalities should keep track of the equipment their fire departments use, as this will assist with budget planning for any necessary repairs or replacements.

### Findings

As of this FMP, the Department has no formalized approach for maintaining and cleaning its equipment after emergency responses. Going forward, the Department should develop a formalized program (with documentation) to make sure its equipment is always clean and ready for service.

Although the Department does not have a formalized program for cleaning its equipment, the Department ensures that its hoses receive annual testing (which the Department's personnel complete in house). In addition, Essex retains third-party contractors to complete annual pump, ladder, and vehicle testing and maintenance. Essex also arranges third-party testing for the Department's SCBA gear. Overall, this testing schedule ensures the Department remains compliant with applicable equipment regulations.

To summarize, Council and the Department must properly budget for replacing the Department's equipment at the appropriate times. Since most of the equipment used by the fire service is expensive and has a life span, having a budget plan to replace the Department's equipment cost-effectively is crucial.

Over the years, the Department has taken steps to flag specific items for replacement including:

- PPE
- pagers
- thermal imaging cameras
- hoses

The Fire Chief has also provided Council with a detailed lifecycle replacement of equipment. Doing so ensures that Essex is aware of forecasted replacement costs, and it ensures that all applicable parties are aware of financial accountability concerns. Going forward, Council and the Fire Chief should maintain their partnership and continue working together to budget for necessary equipment replacements.

## **16.4 Radio Communications**

### **Context**

Radio communication systems play a crucial role during emergency responses. First responders use radio systems to communicate with dispatch services, response agencies, and other responders at emergency scenes. Without effective radio communications, it is difficult for first responders to coordinate safe, effective response efforts.

### **Findings**

#### **Communication Systems**

The Department's communications system is integrated with the system used by Windsor Fire and Rescue Services. As part of this arrangement, the Windsor communication system provides dispatch services for the Department, and it also provides support for paging and airtime through a third-party supplier. A series of towers provide the required infrastructure to support the communication services.

#### **Radio Systems**

The Department's current radios are not considered fire-grade radios.

Although the current radio system has supported operations in Essex adequately, the town should consider upgrading the system. Ideally, the town should upgrade to a system that can support interoperability with neighbouring fire departments.

The Department understands the need to review and replace its radio and communication systems, and it has allocated funds in its lifecycle budget accordingly. Going forward, the Department should research other products to find a brand of fire-grade radios that can accommodate its needs.

## **16.5 Recommendations**

After assessing the Department's fire apparatus and equipment, The Loomex Group developed the following recommendations:

- 16-1. The Fire Chief should prepare a report for Council's consideration and approval that recommends continued investment in the Department's radio communications equipment. The report should address the state of the current radio system and indicate whether the Department should upgrade to fire-quality radios.
- 16-2. The Fire Chief should attempt to form partnerships with external agencies to share the costs of radio purchases and increase interoperability.



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## Appendix A: Legislation and References

### Applicable Legislation for the Ontario Fire Service

[Coroners Act](#): This act outlines the regulations that govern the control of bodies. The act authorizes and regulates coroner inquests and coroner inquest recommendations.

[Dangerous Goods Transportation Act](#): This act outlines the regulations that govern the transportation of dangerous goods.

[Day Nurseries Act](#): This act defines the legislative requirements that day-care operators must meet (to the satisfaction of their local fire chief) before they can operate a day-care facility.

[Development Charges Act](#): This act authorizes portions of development charges to be allocated to the fire service.

[Emergency Management and Civil Protection Act](#): This act requires every municipality to have an emergency management plan and a trained community emergency management coordinator to conduct training exercises for the emergency control group.

[Employment Standards Act](#): This act outlines regulations pertaining to human resources. (See also: [Labour Relations Act](#).)

[Environmental Protection Act](#): This act requires fire department personnel to report spills to the Ministry of the Environment, Conservation, and Parks, which was formerly referred to as the Ministry of the Environment.

[Forest Fire Prevention Act](#): This act only applies to areas classified as “fire regions.” The act outlines regulations for controlling outdoor fires in restricted fire zones. The act requires municipalities to extinguish all grass, brush, and forest fires that occur within their geographic limits. The act authorizes the applicable minister to appoint wardens and officers.

[Fire Protection and Prevention Act, 1997](#): This act outlines the regulations that govern both the OFM and municipalities. Part IX is generally the responsibility of the Ministry of Labour, except where terms and conditions in collective agreements may adversely affect the provision of fire protection.

[Highway Traffic Act](#): This act outlines several governing regulations: how fire vehicles are to operate during emergency responses; firefighter responses on roads that have been closed by police; the use of flashing green lights on the firefighters’ personal vehicles; and controlling traffic at accident scenes.

[Human Rights Code](#): This act defines how boards of inquiry, complaints, discrimination, and enforcement are handled.

[Municipal Act, 2001](#): This act authorizes the passing of by-laws that are necessary for the provision of fire protection.

[Municipal Freedom of Information and Protection of Privacy Act](#): This act defines how access to information held by institutions is granted and obtained. The intention of the act is to protect the privacy of individuals concerning personal information about themselves held by institutions.

[Occupational Health and Safety Act](#): This act outlines regulations that govern various concerns related to occupational health and safety.

[O. Reg. 332/12: Building Code](#): This regulation authorizes municipalities to appoint certain fire service personnel as building inspectors.

[O. Reg. 213/07: Fire Code](#): This regulation outlines various requirements that fire departments must observe.

[O. Reg. 207/96: Outdoor Fires](#): This regulation outlines governance for controlling outdoor fires that occur outside of restricted fire zones.

[O. Reg. 211/01 and 440/08: Propane Storage and Handling](#): These regulations require propane operators to obtain approval from the presiding fire department for all risk and safety management plans. The fire department must approve the sections of the plans that deal with fire safety, fire protection, and emergency preparedness.

[Pesticides Act](#): This act makes it mandatory to report wholesale and retail pesticide use to the fire department.

[Provincial Offences Act](#): This act authorizes assistants to the Fire Marshal as provincial offences officers (regarding offences related to smoke alarms).

[Workplace Safety and Insurance Act](#): This act requires employers to report on-the-job accidents. The act also requires employers to document employee training records and provide them upon request.

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## Appendix B: Accessible Data from Figures

For accessibility purposes, Table 20 presents the data from Figure 5 as a table:

Table 20. Accessible data from Figure 5.

Risk Category	Risk Score	Risk Level
Severe weather event	120	High
Fire in residential occupancy	90	Moderate
Fire in vulnerable occupancy	85	Moderate
Road/highway incident	84	Moderate
Fire/explosion in industrial occupancy	80	Moderate
Fire in commercial occupancy	75	Moderate
Critical infrastructure failure	72	Moderate
Fire in assembly occupancy	64	Moderate
Fire in downtown core	64	Moderate